Metric Curve Table

Circular and Spiral Curv

Functions for Layout Purpose

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FOREWORD

These tables have been prepared primarily for the purpose of facilitating field layout work utilizing horizontal circular curves defined by the radius and spiral curves defined by the spiral parameter, as adopted for use in the metric system. Adequate information is also included for design purposes.

The development of various formulae and concepts is not included in this publication, for which reference should be made to 'Highway Horizontal Alignment SI (Metric)' prepared by
Highway Design Office
Ministry of Transportation and Communications
Ontario

These tables were prepared by Messrs. Bryar & Mojsiak
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CONTENTS

I. Circular Curve

The circular curve which joins two tangents of different directions in highway horizontal alignment is defined by its radius, R.

1. Some properties of circular curve:

a) The external deflection angle Δ between the tangents, or, shortly, the intersection angle (see figure 1), is equal to the central angle Δ subtended by the arc L between those tangents. Since the arc L for a given circular curve (i.e. given radius R) is a measure of the central angle Δ subtended by that arc, it follows that the central angle

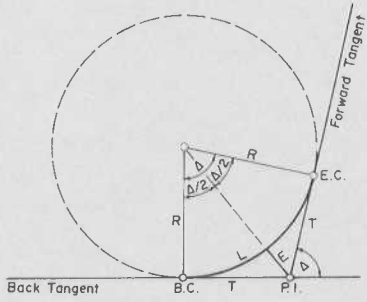


FIG. 1

$$\Delta = \frac{180}{\pi} \frac{L}{R} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where L is the arc length (in metres) between two tangency points

R is the radius (in metres) of the circular curve

Δ is the central angle (degrees) subtended by the arc L

b) The deflection angle between a secant and a tangent of the circular curve (as in figure 2), or between two secants intersecting on the arc (as in figure 3) is equal to one half o. the central angle subtended by the intercepted arc, i.e.

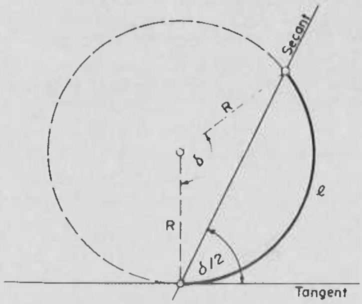


FIG. 2

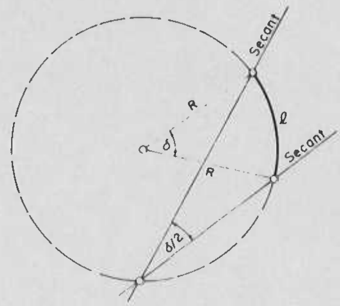


FIG. 3

$$\frac{\delta}{2} = \frac{180}{\pi}\,\frac{1}{2}\,\frac{\ell}{R}$$

$$= \frac{90}{\pi}\,\frac{\ell}{R} \qquad \text{.......... (2)}$$

where ℓ is any arc length (in metres)

δ is the central angle (degrees) subtended by the arc ℓ

c) The chord length, c (in figure 4), being the straight line distance between any two points on the arc is

$$c = 2R \sin\frac{\delta}{2} \qquad \text{.......... (3)}$$

$$= 2R \sin\left(\frac{90}{\pi}\,\frac{\ell}{R}\right) \qquad \text{.......... (3a)}$$

where c is the chord length (in metres)

δ is the central angle (degrees) subtended by the chord c, or, by the pertinent arc ℓ

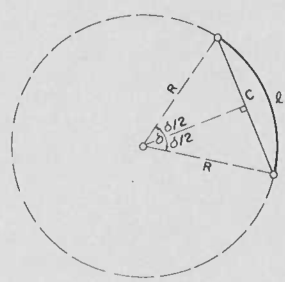


FIG. 4

and from equation (3)

$$\frac{\delta}{2} = \text{arc} \sin\left(\frac{c}{2R}\right) \qquad \text{.......... (4)}$$

Equation (4) represents the same angle as the equation (2) but in terms of chord length while equation (2) is expressed in terms of arc length.

d) Tangent distance T (see figure 1), the distance from the P.I. (the point of intersection of two tangents) to any tangency point (B.C. or E.C.) is

$$T = R \tan\left(\Delta/2\right) \quad \ldots\ldots (5)$$

e) The external distance E (see figure 1), the radial distance from the P.I. to the middle of the arc, is

$$E = R \operatorname{exsec}\left(\Delta/2\right) \quad \ldots\ldots (6)^{*}$$

f) The length of arc L (see figure 1) is the distance along the curve between two tangency points.

From equation (1)

$$L = \frac{\pi}{180} \Delta R \quad \ldots\ldots (7)$$

TABLE I

By means of equations (2) through (4) Table I provides for the range of standard radii the following data:

- deflection angles (in minutes) for a 1 m arc length
- deflection angles (in degrees, minutes and seconds) for arcs of 10, 20 and 50 m
- chord length for arcs of 10, 20 and 50 m
- deflection angles (in degrees, minutes and seconds) for chords of 10, 20 and 50 m

TABLE IA

Table IA shows the same values in metric units for the range of standard degrees of curve, based on a 100 ft. arc definition used in the imperial system.

TABLE II

By means of equations (5) through (7) Table II provides for various central angles (or intersection angles) for 100 m radius curve the following data (all in metres):

- tangent length
- external distance
- arc length

The actual curve components are determined by multiplying the table value by

$$\frac{\text{Actual Radius}}{100}$$

* $\operatorname{exsec} x = \sec x - 1 = \dfrac{1}{\cos x} - 1 = \dfrac{1 - \cos x}{\cos x} = \dfrac{\operatorname{versin} x}{\cos x}$

2. Layout procedure

To locate a horizontal circular curve several methods are available, such as:

- location of curves by deflection angles and chords
- location of curves by tangents offsets
- location of curves by chords offsets
- location of curves by mid-ordinates
- location of curves by deflection angles only

The deflection angle and chord method, which is the most commonly used and because of that can be considered as the standard one, will be the only one discussed in detail.

This method, as any other, requires that the various curve data are determined and main control points are established before the actual location of the curve can be started.

Curve data. For the known total curve deflection angle, Δ, a radius has to be selected according to the assumed design speed, projected traffic, safety and topography of the terrain.

In case of restricted conditions, the radius might be further governed by some additional limitations, such as the required external distance.

After the selection of the radius, the curve data – length of tangent, external distance and length of arc (based on equations (5) through (7), or taken directly from Table II) – have to be determined. Then, based on the known P.I. station and obtained tangent and length of total arc, the B.C. and E.C. stations have to be computed. Next, the constant arc interval for curve laying out purposes has to be adopted, and consecutive stations to be established on the curve, determined. Constant increments of arc length of 10 and 20 m are commonly used. Since the circular curve will rarely, if ever, begin or end at an even station, the first and last arc lengths will be 'odd' in order that even stations are established on the curve.

Since the first and the last arc will invariably be less than the constant arc interval, the corresponding chord lengths and pertaining deflection angles as well as the chord length and corresponding deflection angle for the constant arc interval, have to be determined by means of equations (2) through (4), or taken directly from Table I (or IA).

Based on the above data, the deflection angles between the reference line and the required consecutive stations can be calculated by the cumulative addition of the deflection angles determined for each arc.

This data, necessary for the location of the curve, can, for convenience and simplicity, be listed on a standard tabulation form,a sample of which appears on the next page.

Control points. The back and forward tangents have to be projected to their point of intersection, thus locating the P.I. With the transit at the P.I., the next two control points E.C. (end of curve) and B.C. (beginning of curve) have to be located independently according to the computed tangent distance T.

With the data prepared on the tabulation form and the main control points established on the ground, the location of the curve's intermediate points can be undertaken.

With the transit at the B.C. (see figure 5), the curve points (1, 2, 3 etc.) are located by the use of corresponding deflection angles ($\delta_i/2; \delta_i/2+\delta/2; \delta_i/2+\delta/2+\delta/2;$ etc.) turned at the B.C. from the main tangent to stations along the curve together with the use of the chord length successively measured from the preceding station to the following station along the curve. Chord lengths for various arc lengths may be obtained from Table I. In most instances arc and chord lengths will be the same.

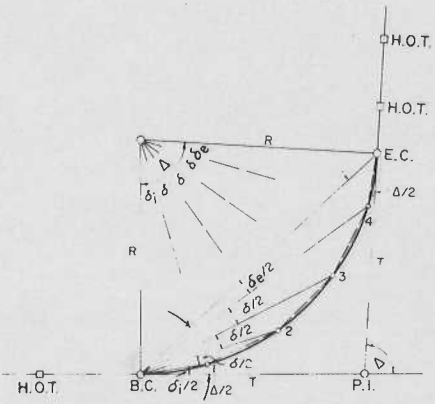


FIG. 5

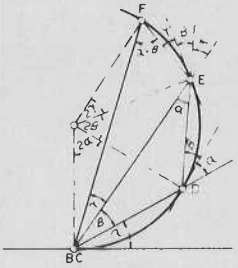
The final deflection angle equals ½ Δ and the last line of sight should intersect the E.C. The final chord length measured from the preceding point (point 4 in figure 5) should reach the E.C. as a check.

The first and all consecutive points, except the E.C., on the curve beyond B.C. toward the E.C. represent the even or plus even stations. Since cross-sections are normally taken, construction stakes are placed, and computations of earthworks are performed at these stations and/or critical points.

TABULATION

OF CIRCULAR CURVE'S DEFLECTION ANGLES AND CHORD LENGTHS FOR LAYING OUT PURPOSES FROM CURVE TABLE I OR IA AND II

TRANSIT AT THE + .	ℓ_i = . m $\Delta\ell$ = . m ℓ_e = . m	C_i = . m C = . m C_e = . m	GIVEN: P. I. STA. + . Δ = ° ' " R = m	CURVE Nº

POINT	STATION SIGHTED	CONSECUTIVE arc lenght	CONSECUTIVE defl. angles	DEFL. ∢ for STATION	DEFL ∢ for STATION to nearest second	Consecutive chord length	CURVE DATA
H.O.T.	+ .						Az (or Bear) = ° ' "
	+ .						
							Δ = ° ' " R = m T = . m L = . m E = . m
							$T = R \tan \Delta/2$ $E = R \operatorname{exsec} \Delta/2$ $L = R\Delta\ \pi/180$ } or read off Table II with Δ as table entry
							P.I. STA. + . − T − . B.C. + . +L + . E.C. + .
							$\text{Defl.}\sphericalangle = \frac{90}{\pi}\frac{\ell}{R}$ $= \text{arc sin}\left[\frac{C}{2R}\right]$ $\text{Chord} = 2R\sin\left[\frac{90}{\pi}\frac{\ell}{R}\right]$ } or read off Table I or IA with R as table entry
							

Subscript 'i' denotes initial
Subscript 'e' denotes end or last
ℓ - any arc length
$\Delta\ell$ - constant arc increament
C - chord length

With the transit at the E.C. (see figure 6), the same curve points (1, 2, 3 etc.) are located by the use of the same deflection angles ($\delta_i/2; \delta_i/2+\delta/2; \delta_i/2+\delta/2+\delta/2;$ etc.) but turned at the E.C. from the main (or long) chord (from E.C. to B.C.) to stations beyond the B.C. toward E.C. along the curve together with the use of the same chords measured from station to station along the curve. Again, the final deflection angle equals ½ Δ but the last line of sight should intersect the P.I. The final chord length measured from the preceding point should reach the E.C. as a check.

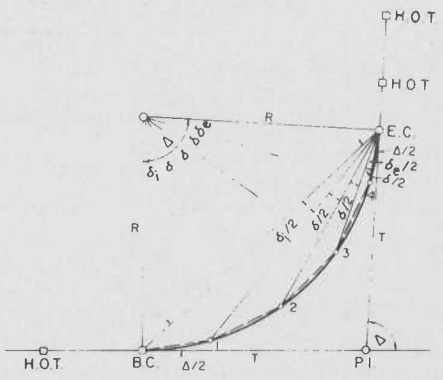


FIG. 6

The same notes, as computed from the B.C., can be used when the set up is at the E.C. That means, with the notes computed, starting at the B.C., the curve may then be run from either the B.C. or E.C.

By setting up at the E.C. instead of at the B.C., the economy of time is achieved by eliminating one set up, since the instrument would be in position for proceeding forward on the next tangent.

For long curves, it is better to run-in the second half of the curve, starting measurements and deflections from the E.C. to the centre, where small errors of surveying can be adjusted more readily.

With the transit at any intermediate point on the curve. Occasionally it might be impossible to run the entire curve with the transit at the B.C., and it is necessary to layout the rest of the curve from an intermediate point (or points) on the curve.

Figure 7 indicates transit locations at two consecutive intermediate points, D and E, which represent any stations, most probably even or plus even. It can be seen, that the angle between chord B.C.—D (projected) and chord D E equals $(\alpha + \beta)$, the total deflection angle from B.C. to E, or that the angle between chord B.C.—E (projected) and chord E F equals $(\alpha + \beta + \gamma)$, the total deflection angle from B.C. to F. With this in mind, it follows that with the transit at any intermediate point (such as D or E), previously located on the curve (D from B.C.,

or E from D), first, a backsight is taken to the last preceding transit station (B.C. for instrument at D or D for instrument at E) with the instrument reading the computed deflection angle (O for instrument at D, or α for instrument at E) for the point sighted (B.C. for instrument at D, or D for instrument at E). Then the points ahead of the transit (E for instrument at D, or F for instrument at E) are located by using the deflection angles [$(\alpha + \beta)$ for point E, or $(\alpha + \beta + \gamma)$ for point F] previously computed for these points (E, or F) as if they were located from the B.C.

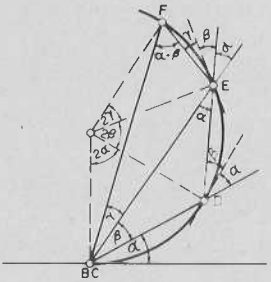


FIG. 7

Again, the original notes prepared on the basis of complete layout from the B.C. can be used. Therefore, regardless of the possible location of the instrument, all deflection angles are computed in advance as if for use at the B.C.

When the transit is at any intermediate curve point, backsight (or direct ahead) to any station on the curve with the instrument reading the deflection angle from the B.C. to that station. Then, to locate any other point (forward or backward) on the curve, set the instrument to read the deflection angle of the point to be established.

The following example should illustrate both the use of the tables and the preparation of all data required for layout purposes.

Numerical example

Given: the P.I. at station 7 + 032.54
deflection angle $\Delta = 44° 46' 36''$
selected radius R = 300 m

Required: complete curve data for layout by deflection

(a) with 20 m arc intervals
(b) with 50 m arc intervals

Solution: – Enter the given data on the tabulation form as shown on page II.

– Determine T, E and L for the given Δ (i.e. $44° 46' 36''$) from Table II. Since the given Δ involves seconds interpolation of Table II values is required

	Δ	T	E	L
	44° 46′	41.183	8.148 23	78.132 57
	44° 47′	41.200 01	8.154 71	78.161 66
Diff.	0° 1′	0.017 01	0.006 48	0.029 09

Required Δ is 44° 46′ 36″ since the difference in T, E and L indicated above are for a difference in Δ of 60″ the table values for T, E and L for a Δ of 44° 46′ must be increased by 36/60 x difference in T, E and L.

For Δ of 44° 46′ 36″ interpolated table values are:-

$$T = 41.183 + \frac{36}{60} \times 0.017\,01 = 41.193\,21$$

$$E = 8.148\,23 + \frac{36}{60} \times 0.006\,48 = 8.152\,12$$

$$L = 78.132\,57 + \frac{36}{60} \times 0.029\,09 = 78.150\,02$$

Since the above values are for a 100 m radius curve they have to be multiplied by R/100 (in this case 3) to obtain the actual values of T, E and L

Actual T = 3 x 41.193 21 = 123.580
E = 3 x 8.152 12 = 24.456
L = 3 x 78.150 02 = 234.450

Note:- actual values have been rounded to the nearest millimetre, representing the greatest accuracy that can be anticipated during layout.

– Enter T, E and L on the tabulation form

– Calculate the stations of the B.C. and E.C.
B.C. 6 + 908.96 E.C. 7 + 143.41

– Enter the required stations to be established on the form

– Calculate the distance between successive stations from the B.C. to E.C. and enter on the form. Note that the first and last distances are odd distances, 11.04 m and 3.41 m

– Enter Table I for 300 m radius and read off the deflection angle for a 1 m arc – 5.7296 minutes.

– Multiply the deflection angle for a 1 m arc by the first and last distances calculated in the previous step and enter in the tabulation form.

5.7296' x 11.04 = 1° 03' 15.3"
5.7296' x 3.41 = 0° 19' 32.3"

– Read off the deflection angle for the constant arc increment of 20 m from Table I and enter on the tabulation form; 1° 54' 35.5"

– Calculate the deflection angles for each station by cumulative addition of successive arc deflection angles

– Round the calculated deflection angles for each station to within the limits of accuracy of the instrument in use.

– Determine the chord length corresponding to the required arc length from Table I. In this example, due to the curve radius the chord length is within measurable accuracy almost the same as the arc length. Consequently the arc lengths may be used as chord lengths for layout purposes. This will be the case for most curves encountered in highway engineering except for interchange and intersection ramps. In these the chord length for the constant arc increment may be obtained directly from Table I. The chord length for the 'odd' initial and final arc lengths may be calculated by utilizing the formula or approximated by determination on a proportional basis

$$\text{(arc length} \times \frac{\text{chord length}}{\text{constant arc length}}\text{)}$$

For calculation at 50 m interval the procedure is identical to that shown above with the exception that the arc length selected requires an adjustment of the chord length as illustrated on the tabulation form on page 12 .

TABULATION

OF CIRCULAR CURVE'S DEFLECTION ANGLES AND CHORD LENGTHS FOR LAYING OUT PURPOSES FROM CURVE TABLE I OR IA AND II

TRANSIT AT THE B.C. 6 +908.96	ℓ_i = 11.04 m $\Delta\ell$ = 20.00 m ℓ_e = 3.41 m	C_1 = 11.039 m C = 19.996 m C_e = 3.410 m	GIVEN: P. I. STA. 7 +032.54 Δ = 44°46'36" R = 300 m	CURVE Nº 9

POINT	STATION SIGHTED	CONSECUTIVE arc lenght	CONSECUTIVE defl. angles	DEFL. ∢ for STATION	DEFL. ∢ for STATION to nearest second	Consecutive chord length
H.O.T.	+					
B.C.	6 +908.96			0°00'00"	0°00'00"	0
	20	11.04	1°03'15.3"	1°03'153"	1°03'15"	11.039
	40	20	1°54'35.5"	2°57'50.8"	2°57'51"	19.996
	60	20	1°54'35.5"	4°52'26.3"	4°52'26"	19.996
	80	20	1°54'35.5"	6°47'01.8"	6°47'02"	19.996
	7 +000	20	1°54'35.5"	8°41'37.3"	8°41'37"	19.996
	20	20	1°54'35.5"	10°36'12.8"	10°36'13"	19.996
	40	20	1°54'35.5"	12°30'48.3"	12°30'48"	19.996
	60	20	1°54'35.5"	14°25'23.8"	14°25'24"	19.996
	80	20	1°54'35.5"	16°19'59.3"	16°19'59"	19.996
	+100	20	1°54'35.5"	18°14'34.8"	18°14'35"	19.996
	20	20	1°54'35.5"	20°09'10.3"	20°09'10"	19.996
	40	20	1°54'35.5"	22°03'45.8"	22°03'46"	19.996
E.C.	7 +143.41	3.41	0°19'32.3"	22°23'18.1"	22°23'18"	3.410
					Δ/2=22°23'18"	CHECK
H.O.T.	+					

CURVE DATA

Az (or Bear) = ° ' "

Δ = 44°46'36"
R = 300 m
T = 123.580 m
L = 234.450 m
E = 24.456 m

T = R tan Δ/2
E = R exsec Δ/2
L = RΔ π/180
} or read off Table II with Δ as table entry

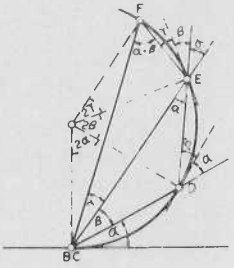
P.I. STA.	7 +032.54
- T	- 123.58
B.C.	6 +908.96
+ L	+ 234.45
E.C.	7 +143.41

$\text{Defl.}\sphericalangle = \frac{90}{\pi}\frac{\ell}{R}$

$= \arcsin\left(\frac{C}{2R}\right)$

$\text{Chord} = 2R\sin\left(\frac{90\,\ell}{\pi R}\right)$

} or read off Table I or IA with R as table entry



Az (or Bear) = ° ' "

Subscript 'i' denotes initial
Subscript 'e' denotes end or last
ℓ - any arc length
$\Delta\ell$ - constant arc increament
C - chord length

TABULATION

OF CIRCULAR CURVE'S DEFLECTION ANGLES AND CHORD LENGTHS FOR LAYING OUT PURPOSES FROM CURVE TABLE I OR IA AND II

TRANSIT AT THE B.C. 6+908.96	ℓ_i = 41.04 m $\Delta\ell$ = 50.00 m ℓ_e = 43.41 m	C_i = 41.008 m C = 49.942 m C_e = 43.372 m	GIVEN: P.I. STA. 7+032.54 Δ = 44°46'36" R = 300 m	CURVE N° 9

POINT	STATION SIGHTED	CONSECUTIVE arc lenght	CONSECUTIVE defl. angles	DEFL. ∢ for STATION	DEFL ∢ for STATION to nearest second	Consecutive chord length
H.O.T.	+					
B.C.	6+908.96			0°00'00"	0°00'00"	0
	50	41.04	3°55'08.5"	3°55'08.5"	3°55'09"	41.008
	7+000	50	4°46'28.7"	8°41'37.2"	8°41'37"	49.942
	50	50	4°46'28.7"	13°28'05.9"	13°28'06"	49.942
	+100	50	4°46'28.7"	18°14'34.6"	18°14'35"	49.942
E.C.	7+143.41	43.41	4°08'43.3"	22°23'17.9"	22°23'18"	43.372
					Δ/2=22°23'18"	CHECK
H.O.T.	+					

CURVE DATA

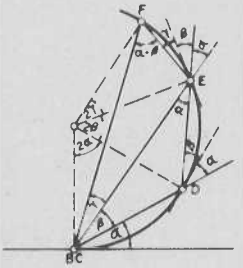
Az (or Bear) = ° ' "

Δ = 44°46'36"
R = 300 m
T = 123.580 m
L = 234.450 m
E = 24.456 m

T = R tan Δ/2
E = R sec Δ/2
L = RΔ π/180
} or read off Table II with Δ as table entry

P.I. STA.	7+032.54
−T	− 123.58
B.C.	6+908.96
+L	+ 234.46
E.C.	7+143.41

$\text{Defl.}\sphericalangle = \frac{90}{\pi}\frac{\ell}{R}$
$= \arcsin\left(\frac{C}{2R}\right)$
$\text{Chord} = 2R\sin\left(\frac{90\ell}{\pi R}\right)$
} or read off Table I or IA with R as table entry



Az (or Bear) = ° ' "

Subscript 'i' denotes initial
Subscript 'e' denotes end or last
ℓ - any arc length
$\Delta\ell$ - constant arc increament
C - chord length

II. Transition Curve

A Transition Curve joins the tangent and the circular curve (or two circular curves of substantially different radii) in highway horizontal alignment. It is defined by its parameter A and the end radius R (or radii R_1 and R_2 in case of segmental spiral).

1. Some properties of the simple spiral* (see Fig. 8 through 10):

   a) the product of any instantaneous radius r and the corresponding spiral length λ from the beginning of the spiral to that point, is equal to the product of the spiral end radius R and the entire length L_s of that spiral, that means,it is constant, i.e.

$$r\lambda = RL_s = \text{constant} = A^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

   This constant is denoted as A^2 to retain dimensional consistency since it represents a product of two lengths.

   The equations for the remaining spiral components in terms of A/R ratio for a unit radius spiral are listed on page 15.

TABLE III

Table III which is based on those equations (underlined versions) shows for various A/R ratios (being incremented by 0.0005 from 0 to 2.2) the following values of the unit radius spiral:

L_s/R,	length of unit radius spiral
X/R,	abscissa of unit radius spiral
Y/R,	ordinate of unit radius spiral
q/R,	tangent distance from the spiral's origin to the projections of the center of the end osculating circle of unit radius spiral
p/R,	tangent offset of the end osculating circle of unit radius spiral
L.T./R,	long tangent of unit radius spiral
S.T./R,	short tangent of unit radius spiral
L.C./R,	long chord of unit radius spiral
θ_s,	spiral angle
$1/3\theta_s$,	1/3 of spiral angle
ϕ_s,	spiral deflection angle
C_s,	correction for spiral's deflection angle

* Refer to the Appendix in 'Highway Horizontal Alignment', MTC Ontario, for the derivation of all equations shown herein.

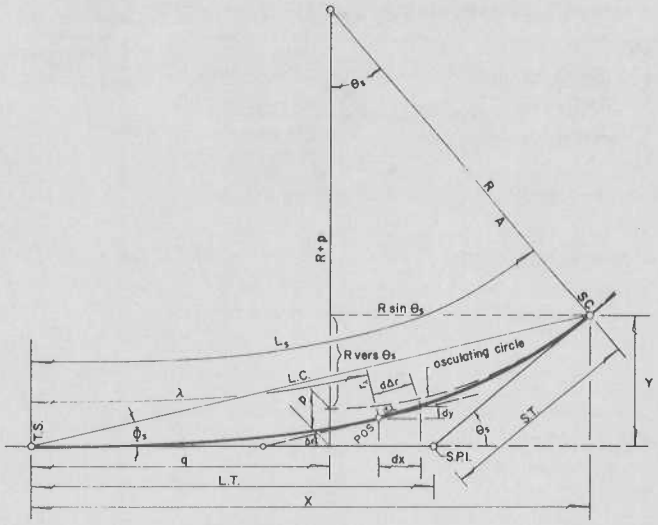


FIG. 8 Simple spiral

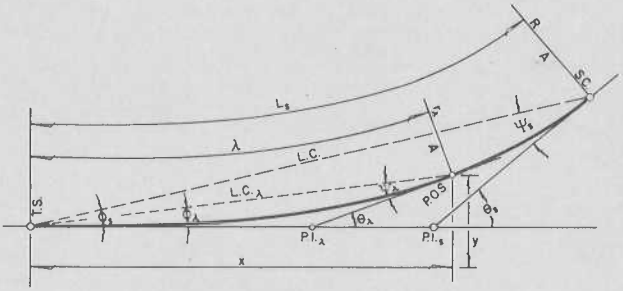


FIG. 9

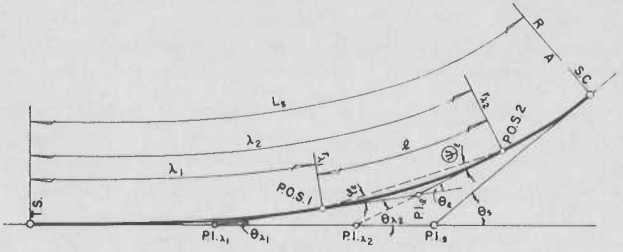


FIG. 10

SPIRAL'S COMPONENTS FORMULAE

$$RL_s = \text{constant} = A^2$$

$$\theta_{sr} = \frac{L_s}{2R} = \frac{1}{2}\left(\frac{A}{R}\right)^2 = \frac{1}{2}\left(\frac{L_s}{A}\right)^2$$

$$L_s = \sqrt{2RL_s\theta_{sr}} = A\sqrt{2\theta_{sr}} = 2R\theta_{sr} = \frac{A^2}{R}$$

$$R = \sqrt{\frac{RL_s}{2\theta_{sr}}} = \frac{A}{\sqrt{2\theta_{sr}}} = \frac{L_s}{2\theta_{sr}} = \frac{A^2}{L_s}$$

$$\frac{X}{R} = \left(\frac{A}{R}\right)^2\left[1 - \frac{(A/R)^4}{2^2\times5\times2!} + \frac{(A/R)^8}{2^4\times9\times4!} - \frac{(A/R)^{12}}{2^6\times13\times6!} + \cdots\right] = \left(\frac{A}{R}\right)^2 \times \sum_{k=1}^{k=n} \frac{(-1)^{(k+1)}\times(A/R)^{4(k-1)}}{2^{2(k-1)}\times(4k-3)\times[2(k-1)]!}$$

$$\frac{Y}{R} = \left(\frac{A}{R}\right)^2\left[\frac{(A/R)^2}{2\times3\times1!} - \frac{(A/R)^6}{2^3\times7\times3!} + \frac{(A/R)^{10}}{2^5\times11\times5!} - \frac{(A/R)^{14}}{2^7\times15\times7!} + \cdots\right] = \left(\frac{A}{R}\right)^2 \times \sum_{k=1}^{k=n} \frac{(-1)^{(k+1)}\times(A/R)^{2(2k-1)}}{2^{(2k-1)}\times(4k-1)\times(2k-1)!}$$

$$\text{L.T.} = \frac{X}{R} - \frac{Y/R}{\tan\left[\frac{1}{2}\left(\frac{A}{R}\right)^2\right]} = \left(\frac{A}{R}\right)^2\left[\frac{2}{3} + \frac{11\times(A/R)^4}{2\times3\times5\times7\times3!} + \frac{139\times(A/R)^8}{2^3\times7\times9\times11\times5!} + \frac{5437\times(A/R)^{12}}{2^5\times5\times9\times11\times13\times7!} + \frac{84977\times(A/R)^{16}}{2^7\times5\times7\times11\times17\times19\times8!} + \cdots\right]$$

$$\text{S.T.} = \frac{Y/R}{\sin\left[\frac{1}{2}\left(\frac{A}{R}\right)^2\right]} = \left(\frac{A}{R}\right)^2\left[\frac{1}{3} + \frac{(A/R)^4}{3\times7\times3!} + \frac{17\times(A/R)^8}{7\times9\times11\times5!} + \frac{13\times(A/R)^{12}}{5\times9\times11\times7!} + \frac{3^3\times13\times(A/R)^{16}}{5\times7\times11\times19\times9!} + \cdots\right]$$

$$\phi_{sr} = \text{arc tan}\,\frac{Y}{X} = \frac{(A/R)^2}{2\times3} - \frac{(A/R)^6}{3^4\times5\times7} - \frac{(A/R)^{10}}{3^5\times5^2\times7\times11} - \frac{23\times(A/R)^{14}}{3^7\times5^3\times7^2\times11\times13} - \cdots = \frac{(A/R)^2}{2\times3} - C_{sr} = \frac{1}{3}\theta_{sr} - C_{sr}$$

$$C_{sr} = \frac{(A/R)^6}{3^4\times5\times7} + \frac{(A/R)^{10}}{3^5\times5^2\times7\times11} + \frac{23\times(A/R)^{14}}{3^7\times5^3\times7^2\times11\times13} + \cdots = \frac{1}{3}\theta_{sr} - \phi_{sr}$$

$$\text{L.C.} = \frac{Y/R}{\sin\phi_{sr}} = \frac{X/R}{\cos\phi_{sr}} = \sqrt{\left(\frac{X}{R}\right)^2 + \left(\frac{Y}{R}\right)^2} = \left(\frac{A}{R}\right)^2\left[1 - \frac{(A/R)^4}{3\times5\times3!} + \frac{(A/R)^8}{3\times7\times9\times5!} - \frac{79\times(A/R)^{12}}{3\times7\times9\times11\times13\times15\times7!} + \cdots\right]$$

$$\frac{q}{R} = \frac{X}{R} - \sin\theta_{sr} = \left(\frac{A}{R}\right)^2\left[\frac{1}{2} - \frac{(A/R)^4}{2^3\times5\times3!} + \frac{(A/R)^8}{2^6\times9\times5!} - \frac{(A/R)^{12}}{2^7\times13\times7!} + \cdots\right] = \left(\frac{A}{R}\right)^2 \times \sum_{k=1}^{k=n} \frac{(-1)^{(k+1)}\times(A/R)^{4(k-1)}}{2^{(2k-1)}\times(4k-3)\times(2k-1)!}$$

$$\frac{p}{R} = \frac{Y}{R} - (1-\cos\theta_{sr}) = \left(\frac{A}{R}\right)^2\left[\frac{(A/R)^2}{2^2\times3\times2!} - \frac{(A/R)^6}{2^4\times7\times4!} + \frac{(A/R)^{10}}{2^6\times11\times6!} - \frac{(A/R)^{14}}{2^8\times15\times8} + \cdots\right] = \left(\frac{A}{R}\right)^2 \times \sum_{k=1}^{k=n} \frac{(-1)^{(k+1)}\times(A/R)^{2(2k-1)}}{2^{2k}\times(4k-1)\times(2k)!}$$

(Note: In order to obtain the value for any of the above components at any point on the spiral substitute the corresponding r for R or λ for Ls or Δ_r for θ_{sr} respectively in the above formulae.)

By inspection of the above formulae, it can be seen, that by equating R=1 (unit radius), the tables, showing all components of unit radius spiral, can easily be developed for various A/R relations.

All table values, except those for angles, have to be multiplied by the actual radius R in order to obtain the actual components of the spiral involved.

In order to obtain the value for any of the above components at any point on the unit radius spiral enter Table III with the corresponding A/r or λ/A ratio. Again, all table values, except those for angles, have to be multiplied by the actual radius r or A^2/λ in order to obtain the actual components of that portion of the spiral.

TABLE IV

From the equations on page 15, Table IV provides for each standard spiral parameter for a range of standard radii the actual values for all spiral components, in the same manner as Table III does for the unit radius spiral.

The following limiting conditions were applied in producing the Table IV:

upper limit – $\theta_s \not> 36°$ or $L_s \not> 300$ m

lower limit – $\theta_s \not< 30'$ or $L_s \not< 25$ m*

(The additional K-values – in both, decimal minutes and decimal seconds, shown under each Table IV, are explained together with Table VI on page 33.)

Note that, while Table IV provides component values for each standard spiral parameter for the entire spiral only, Table III provides these values for all spiral components for any spiral and to any point on the spiral, including the end point, i.e. the entire spiral.

b) A spiral curve diverges, in angle and offset, from a circular curve at the same rate as from the initial tangent.

This is known as the principal of the osculating circle. Fig. 11 shows that the spiral is a curve of uniformly changing curvature, (1/r), between a straight line (of curvature $1/\infty = 0$) and an osculating circle (of curvature 1/R).

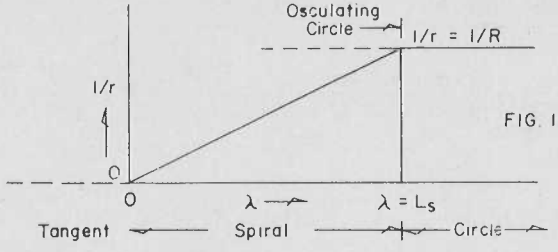


FIG. 11

* due to the above limits Table IV for A = 1800 m is eliminated.

Fig. 12 illustrates this property of the spiral showing a spiral diverging from the initial tangent having the same offsets as from the osculating circle (for the same distances along the spiral, measured from the T.S. and S.C. respectively) i.e. offsets from the initial tangent to points 1, 2, 3 etc. on the spiral are virtually equal to the offsets from points 1, 2, 3 etc. on the osculating circle at S.C. to the corresponding points 9, 8, 7 etc. on the spiral.

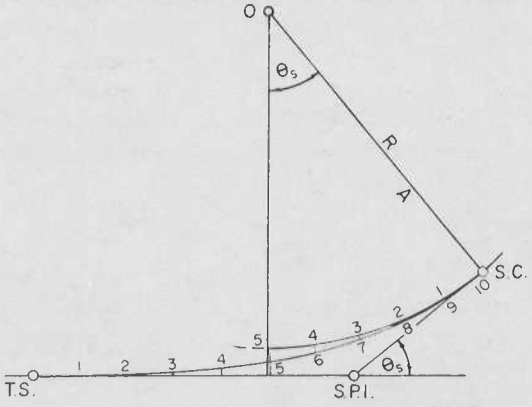
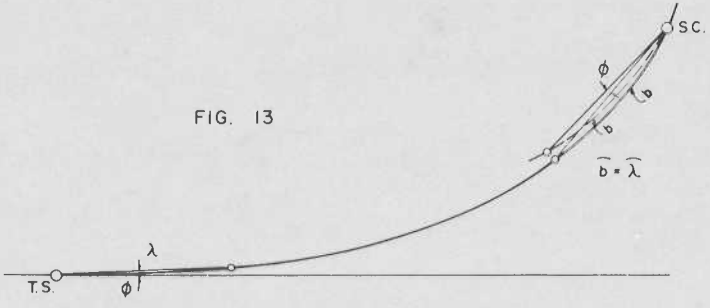


FIG. 12 Angular and linear divergence property.

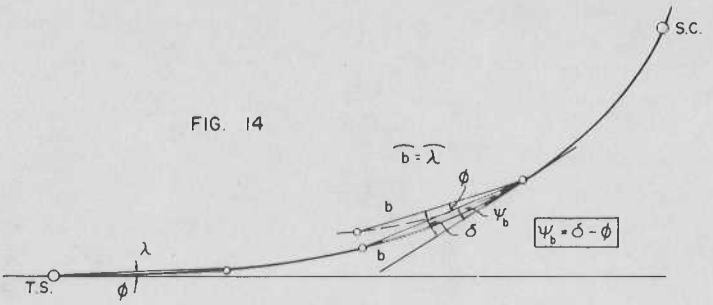
Since the spiral diverges at the same rate from the osculating circle as the spiral diverges from the initial tangent, the angle between chords to the osculating circle and spiral curve, measured at the S.C. is equal to the angle between the chord and the initial tangent when measured from the T.S. as illustrated in Fig. 13.

FIG. 13



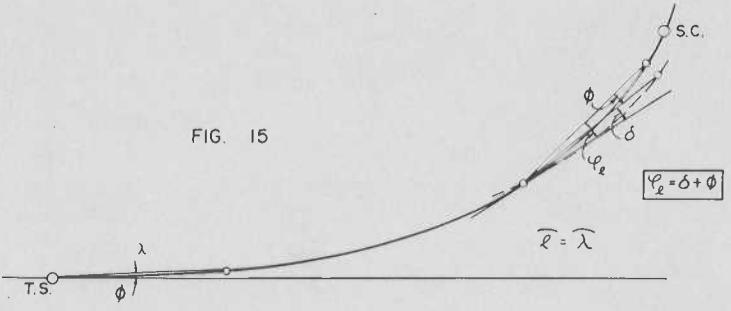
Consequently the angle between the chord to a point on the spiral and the instantaneous tangent at any point on the spiral, ψ, measured backwards, is the difference between the chord deflection angle (δ) for the osculating circle and the spiral chord deflection angle ϕ as illustrated in Fig. 14.

FIG. 14



Similarly the angle between the chord to a point on the spiral and the instantaneous tangent at any point on the spiral, φ, measured ahead, is the sum of the chord deflection angle (δ) for the osculating circle and the spiral chord deflection angle ϕ as illustrated in Fig. 15.

FIG. 15



Based on the above, the resulting final equations for practical use for various spiral deflection angles are listed on page 19, while the summaries of the two methods for determining the deflection angle from any point on the spiral are illustrated on pages 20 and 21 respectively.

For simplification of the field work, a suggested standard form for the tabulation of spiral deflection angles for layout purposes with the use of the spiral Table III, based on the first of the two methods, is illustrated on page 22.

Summary of the spiral's lay-out formulae

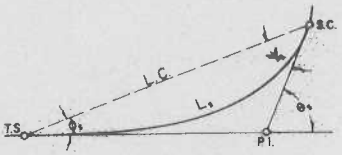
$$\boxed{\Phi_s = \frac{1}{3}\theta_s - C_s}$$

$$= a\frac{L_s}{R} - C_s = a\left(\frac{L_s}{A}\right)^2 - C_s = a\left(\frac{A}{R}\right)^2 - C_s$$

$$\boxed{\Phi_\lambda = \frac{1}{3}\theta_\lambda - C_\lambda}$$

$$= \frac{1}{3}\left(\frac{\lambda}{L_s}\right)^2 \theta_s - C_\lambda$$

$$= a\frac{\lambda^2}{RL_s} - C_\lambda = a\left(\frac{\lambda}{A}\right)^2 - C_\lambda = a\left(\frac{A}{r_\lambda}\right)^2 - C_\lambda$$



$$\boxed{\Psi_s = \theta_s - \Phi_s}$$

$$= \frac{2}{3}\theta_s + C_s$$

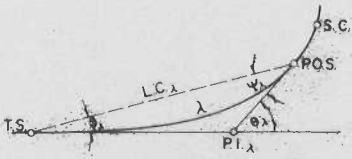
$$= 2\Phi_s + 3C_s$$

$$\boxed{\Psi_\lambda = \theta_\lambda - \Phi_\lambda}$$

$$= \frac{2}{3}\theta_\lambda + C_\lambda$$

$$= \frac{2}{3}\left(\frac{\lambda}{L_s}\right)^2 \theta_s + C_\lambda$$

$$= 2\Phi_\lambda + 3C_\lambda$$



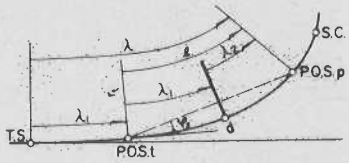
Method 1 (Recommended)

$$\varphi_\ell = a\left(\frac{\lambda}{A}\right)^2 + a\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \Phi_\lambda + \Phi_{\sqrt{\lambda_1\lambda_2}} + C_\lambda + C_{\sqrt{\lambda_1\lambda_2}} - C_\ell$$

$$\boxed{\varphi_\ell = \frac{1}{3}\theta_\lambda + \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$

$$\Psi_b = -\varphi_\ell$$

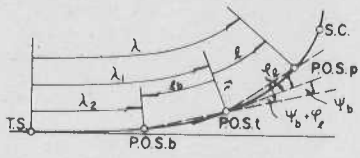


Method 2 (Not Recommended)

$$\Psi_b + \varphi_\ell = \frac{a}{A^2}(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2) + C_b - C_\ell$$

$$= \Phi_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}} + C_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}} + C_b - C_\ell$$

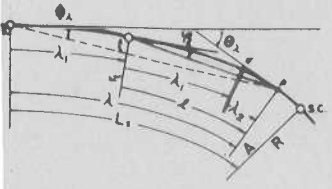
$$= \frac{1}{3}\theta_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}} + C_b - C_\ell$$



where $a(=30/\pi)$ and all angles are expressed in degrees.

All above angles can be either calculated according to the formulae shown, or read off table III for corresponding relations as the table entries.

Illustration for deflection angles with the transit at any point on the spiral (Method I)



- t – intermediate transit location
- λ_1 – distance from T.S. to the transit (point t)
- d – P.O.S. at the distance λ_1 from the transit (point t) toward S.C.
- λ_2 – distance from P.O.S. d to P.O.S. p
- λ – distance from T.S. to P.O.S. p
- ℓ – distance from the transit (point t) to the point to be laid off (point p)

NOTE: All distances are taken along the spiral arc, a (= 30/π) and all angles are in degrees.

$$\varphi_\ell = a\left(\frac{\lambda}{A}\right)^2 + a\,\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \left(\phi_\lambda + C_\lambda\right) + \left(\phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}}\right) - C_\ell$$

$$\boxed{\varphi_\ell = \tfrac{1}{3}\,\theta_\lambda + \tfrac{1}{3}\,\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$

From table III obtain:

$\phi_\lambda, C_\lambda, \frac{1}{3}\theta_\lambda$ – for the relation $\frac{\lambda}{A}\left(=\frac{A}{r_\lambda}=\sqrt{\frac{\lambda}{r_\lambda}}=\frac{\lambda}{\sqrt{RL_s}}\right)$

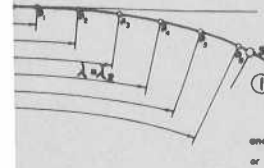
$\phi_{\sqrt{\lambda_1\lambda_2}}, C_{\sqrt{\lambda_1\lambda_2}}, \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}$ – for the relation $\frac{\sqrt{\lambda_1\lambda_2}}{A}\left(=\sqrt{\frac{\lambda_1\lambda_2}{RL_s}}=\sqrt{\frac{\lambda_2}{r_{\lambda_1}}}=\sqrt{\frac{\lambda_1}{r_{\lambda_2}}}=\frac{A}{\sqrt{r_{\lambda_1}r_{\lambda_2}}}\right)$

C_ℓ – for the relation ℓ/A

NOTE: The second term is either

positive if λ_2 is measured from its origin (point d) toward the S.C. point, or

negative if λ_2 is measured from its origin (point d) toward the T.S. point



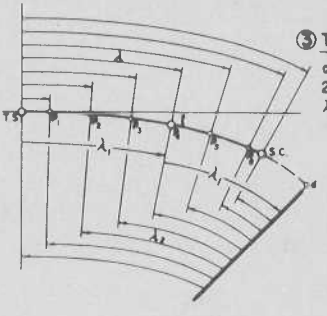
① Transit at T.S.

$\lambda_1 = 0$, then

$\lambda = \lambda_2 = \ell$ – all toward S.C.

and $\varphi_\ell = \phi_\lambda$

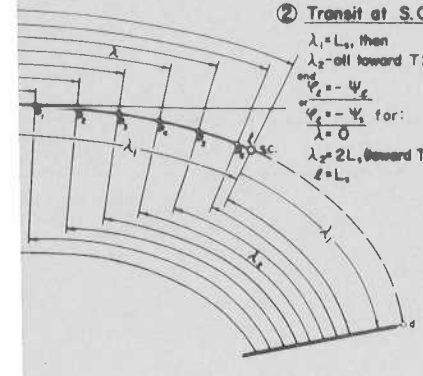
or $\varphi_\ell = \phi_{\lambda_2}$, for $\lambda = \lambda_2 = \ell = L_s$



③ Transit at any point

on the spiral such that $2\lambda_1 > L_s$, then

λ_2 – all toward T.S.



② Transit at S.C.

$\lambda_1 = L_s$, then

λ_2 – all toward T.S.

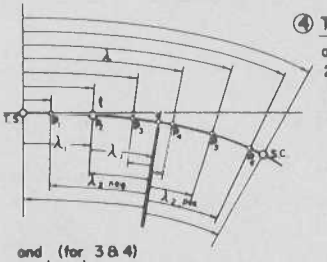
and $\varphi_\ell = -\Psi_\ell$

or $\varphi_\ell = -\Psi_{\lambda_1}$ for:

$\lambda = 0$

$\lambda_2 = 2L_s$ (toward T.S.)

$\ell = L_s$



④ Transit at any point

on the spiral such that $2\lambda_1 < L_s$, then

λ_2 – some toward S.C.
some toward T.S.

and (for 3 & 4)

$\varphi_\ell = \frac{1}{3}\theta_\lambda + \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell$ (for forward points)

or $\varphi_\ell = -\Psi_\ell$ (for backward points)

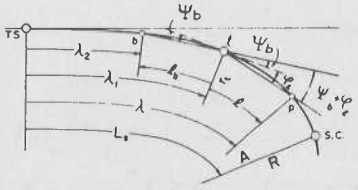
$\varphi_\ell = -\Psi_{\lambda_1}$, for $\lambda = 0$

$\lambda_2 = 2\lambda_1$ (toward T.S.)

$\ell = \lambda_1$

Illustration for deflection angles with the transit at any point on the spiral with any back point on the spiral as a reference point

(Method 2)



t - intermediate transit location

λ_1 - distance from T.S. to the transit (point t)

ℓ_b - distance from the transit (point t) to the reference point (point b)

ℓ - distance from the transit (point t) to the point to be laid off (point p)

λ_2 - distance from T.S. to the reference point (point b)

λ - distance from T.S. to the P.O.S. p

NOTE: All distances are taken along the spiral arc, $a(=30/\pi)$ and all angles are in degrees

$$\Psi_b + \varphi_\ell = \frac{a}{A^2}(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2) + C_b - C_\ell$$

$$= \Phi_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}} + C_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}} + C_b - C_\ell$$

$$= \frac{1}{3}\Theta_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}} + C_b - C_\ell$$

From table III obtain:

$\Phi_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}}$, $C_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}}$, $\frac{1}{3}\Theta_{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}}$ - for the relation $\frac{\sqrt{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda_2)}}{A}$ $\left(=\sqrt{\frac{(\lambda+\lambda_2+\lambda_1)(\lambda-\lambda}{A^2}}\right.$

C_b , C_ℓ - for the relations ℓ_b/A and ℓ/A respectively

1) with the transit at the T.S. point

$\lambda_2 = \lambda_1 = 0$

$\Psi_b = 0$

$\ell_b = 0$

$\ell = \lambda$

and

$\varphi_\ell = \Phi_\lambda$

or

$\underline{\varphi_\ell = \Phi_s}$, for $\ell = \lambda = L_s$

2) with the transit at the S.C. point

$\lambda_1 = \lambda = L_s$

$\varphi_\ell = 0$

$\ell = 0$

and

$\Psi_b = \Psi_{\ell b}$

or

$\underline{\Psi_b = \Psi_s}$, for $\ell_b = L_s$ and $\lambda_2 = 0$

3) with the transit at any intermediate point on the spiral

a) for $\Psi_b = 0$

$\ell_b = 0$

and

$\lambda_2 = \lambda_1$

$\varphi_\ell = \frac{a}{A^2}(\lambda+2\lambda_1)(\lambda-\lambda_1) - C_\ell = \frac{a}{A^2}\left[\lambda^2 + \lambda_1(\lambda-2\lambda_1)\right] - C_\ell$

or

$\underline{\varphi_\ell = \Phi_\lambda}$, for $\lambda_2 = \lambda_1 = 0$

or

$\underline{\varphi_\ell = \Phi_s}$, for $\lambda_2 = \lambda_1 = 0$ and $\lambda = \ell = L_s$

b) for $\varphi_\ell = 0$

$\ell = 0$

and

$\lambda = \lambda_1$

$\Psi_b = \frac{a}{A^2}(2\lambda_1+\lambda_2)(\lambda_1-\lambda_2) + C_b = -\left\{\frac{a}{A^2}\left[\lambda_2^2 + \lambda_1(\lambda_2-2\lambda_1)\right] - C_b\right\}$

or

$\underline{\Psi_b = \Psi_{\lambda_1}}$, for $\lambda_2 = 0$ and $\lambda_1 = \ell_b$

or

$\underline{\Psi_b = \Psi_s}$, for $\lambda_2 = 0$ and $\lambda_1 = \ell_b = L_s$

TABULATION

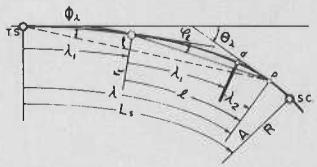
OF SPIRAL'S DEFLECTION ANGLES FOR LAYING OUT PURPOSES
FROM SPIRAL TABLE III

TRANSIT AT THE				λ_1 = m $\Delta\lambda$ = m $\Delta\lambda/A$ =		SPIRAL DATA: A = m R = m	
	T. S.	P. O. S.	P. O. S.	P. O. S.			
λ							
λ_2							
ℓ							
λ/A							
$\frac{\sqrt{\lambda_1\lambda_2}}{A}$							
ℓ/A							
$\frac{1}{3}\theta_\lambda$							
$\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}$							
C_ℓ							
φ_ℓ							

$$\varphi_\ell = a\left(\frac{\lambda}{A}\right)^2 + a\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \left(\phi_\lambda + C_\lambda\right) + \left(\phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}}\right) - C_\ell$$

$$\boxed{\varphi_\ell = \frac{1}{3}\theta_\lambda + \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$



ith the relation $\lambda/A\left(=\frac{\lambda}{\sqrt{RL_s}}=\sqrt{\frac{\lambda}{r_\lambda}}=\frac{A}{r_\lambda}\right)$ as table III entry, read off $\frac{1}{3}\theta_\lambda$ in the column '$\frac{1}{3}\theta$'

ith the relation $\frac{\sqrt{\lambda_1\lambda_2}}{A}\left(=\sqrt{\frac{\lambda_1\lambda_2}{RL_s}}=\sqrt{\frac{\lambda_2}{r_{\lambda_1}}}=\sqrt{\frac{\lambda_1}{r_{\lambda_2}}}=\frac{A}{\sqrt{r_{\lambda_1}r_{\lambda_2}}}\right)$ as table III entry, read off $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}$ in same column

ith the relation ℓ/A as table III entry, read off C_ℓ in the column 'C'

OTE: the second term, $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}\left(=\phi_{\sqrt{\lambda_1\lambda_2}}+C_{\sqrt{\lambda_1\lambda_2}}=a\frac{\lambda_1\lambda_2}{A^2}\right)$, might be either

positive if λ_2 is measured from its origin (point d) toward the S.C. point, or
negative if λ_2 is measured from its origin (point d) toward the T. S. point

$\Delta\lambda$ – is the constant interval between the consecutive points to be laid out
$a(=30/\pi)$ and all angles are expressed in degrees.
With the transit at T.S. the angle φ_ℓ becomes ϕ_λ obtainable directly from Table III

2. Layout Procedure

The laying out of a spiraled horizontal curve follows closely the procedure employed to lay out a simple circular curve.

The various curve data have to be determined and the main control points have to be established on the ground before the actual location of any curve system (spiral-curve-spiral) component can be started.

Curve data. For the known total deflection angle, Δ_T, of the curve system, a radius of the circular curve and a parameter of the spiral have to be selected according to the assumed design speed, projected traffic, type of highway, safety and topography of the terrain.

In case of restricted conditions, the above values might be modified by additional limitations, such as the required external distance. The two spirals of the curve system might be of the same or different parameters.

After the selection of the radius and parameter(s) i.e. with fixed A/R ($A_1/R, A_2/R$) ratio(s), spiral data can be read off Table III, or Table IV.

With known spiral angles, the deflection angle for the circular curve alone can be determined as follows:

$$\Delta_C = \Delta_T - 2\theta_s \quad \ldots\ldots (9)$$

if both spirals are of the same parameter, or

$$\Delta_C = \Delta_T - (\theta_{s_1} + \theta_{s_2}) \quad \ldots\ldots (10)$$

if both spirals are of different parameters.

With established Δ_C, the curve data can be obtained from Table II.

Next, with known q('s) and p('s) from spiral data the main tangents can be computed according to the formulae:

$$T_s = q + (R+p) \tan \Delta_T/2 \quad \ldots\ldots (11)$$

if both spirals are of the same parameter (see Fig. 16), or

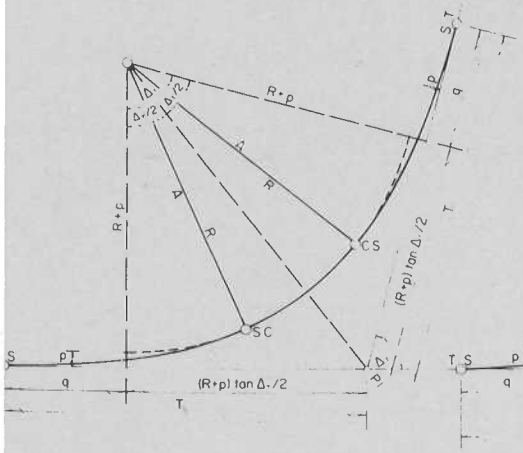


FIG 16

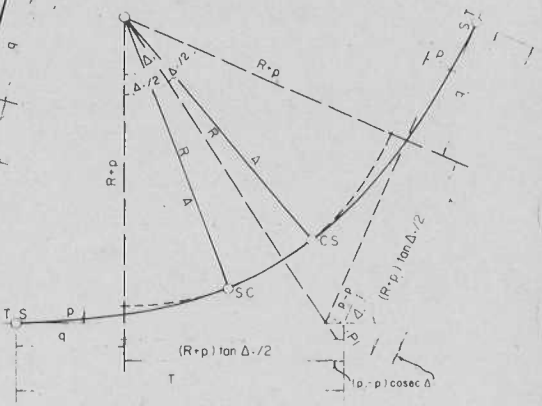


FIG 17

$$T_{S1} = q_1 + (R+p_1) \tan \Delta_T/2 + (p_2 - p_1) \operatorname{cosec} \Delta_T \quad \ldots\ldots\ldots\ldots\ldots\ldots (12)$$

$$T_{S2} = q_2 + (R+p_2) \tan \Delta_T/2 - (p_2 - p_1) \operatorname{cosec} \Delta_T \quad \ldots\ldots\ldots\ldots\ldots\ldots (13)$$

if both spirals are of different parameters (see Fig. 17).

Then, based on the P.I. station, tangent and lengths of all curve system components, the T.S., S.C., C.S., and S.T. stations have to be computed.

Next, the constant arc interval for laying out purposes has to be adopted and consecutive stations to be established on the curve system can be determined and, for convenience, listed on the appropriate standard tabulation forms.

Since the curve system components will rarely, if ever, begin or end at an even station, the first and last arc lengths on each curve component will be 'odd' in order that even stations are established on every curve component.

Control points. The back and forward tangents have to be projected to their point of intersection, thus locating the main P.I. (see Fig. 18). With the transit at the main P.I., the next two control points, the T.S. (tangent spiral) and S.T. (spiral tangent), have to be located

independently on the two main tangents according to the computed distance T_s (or T_{s1} and T_{s2} respectively). Points C.S. (curve spiral) and S.C. (spiral curve) can next be located from the S.T. and T.S. points by turning off from the main tangent the total spiral deflection angle(s) ϕ_s (or ϕ_{s2} and ϕ_{s1} respectively) and chaining the long chord(s), L.C. (or $L.C._2$ and $L.C._1$ respectively), or alternatively, the long tangent(s), L.T. (or $L.T._2$ and $L.T._1$ respectively), may be chained from S.T. (T.S.) along main forward (back) tangent to determine spiral P.I., and the total spiral angle(s), θ_s (or θ_{s2} and θ_{s1}), turned at this point and the short tangent(s), S.T. (or $S.T._2$ and $S.T._1$), chained to determine point(s) C.S. (S.C.).

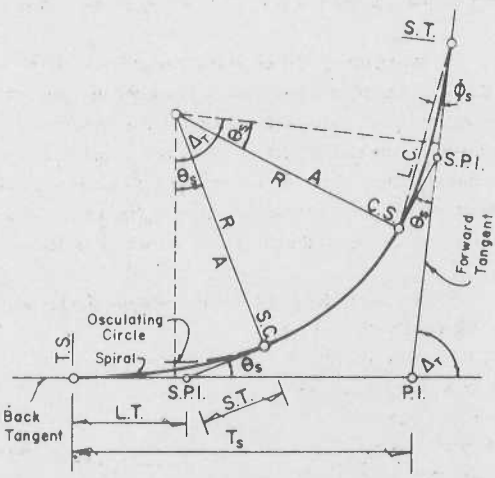


FIG. 18 Layout of spiraled curve

With all data prepared on the tabulation forms and the main control points established on the ground, the location of the curve system component's intermediate points can be undertaken.

With the transit at the T.S. (see Fig. 19), the successive points along the spiral from T.S. to S.C. can also be laid out from T.S. point by turning off from the main tangent the corresponding partial spiral deflection angles, ϕ_λ's, to the successive points on the spiral.

It should be remembered that these partial spiral deflection angles, ϕ_λ's, have to be determined, or read off Table III, separately for each successive point on the spiral and are not added to the previous reading as when laying out circular curves. Distances, however, can be measured from the preceding P.O.S. Successive points are set out at specific intervals along the spiral and finally the S.C. point is fixed by turning off the spiral deflection angle ϕ_s. As a check, the offset from the main tangent should be Y at the S.C. point.

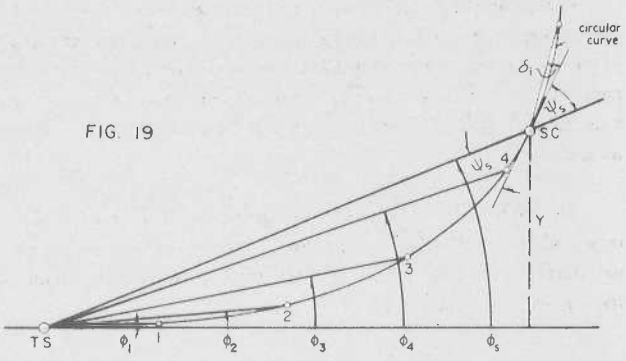


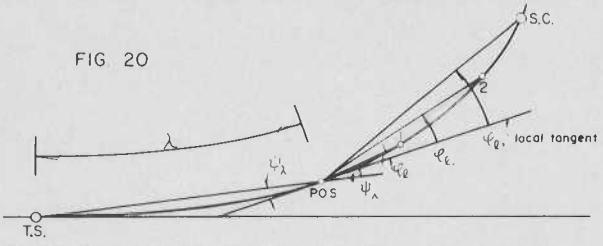
FIG. 19

The end spiral, C.S. to S.T., is then laid out similarly, working backwards from the S.T. point to the C.S. point and again checking the offset from the main tangent at the C.S. point.

The laying out of the circular curve can now be started from those two points (S.C. and C.S.) as tangent points. In order to relate the direction of the tangent at the S.C. point to that of the initial line of sight, the projected backsight from S.C. to the T.S. point has to be increased by the spiral deflection backsight angle ψ_s (see Fig. 19). If the deflection angle, δ_i, corresponding to the first point along the circular curve is added to this reading, the transit will be correctly oriented towards this point and laying out of the circular curve can continue according to the procedure previously established.

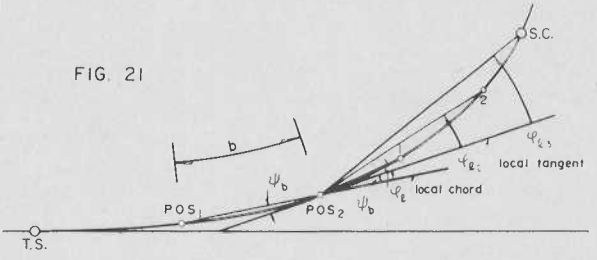
Similarly, in order to relate the direction of a tangent at any intermediate point P.O.S. on the spiral to that of the initial line of sight, the projected backsight from the P.O.S. point to the T.S. point has to be rotated through an angle of ψ_λ (see Fig. 20).

FIG. 20



Circumstances may occasionally arise when it is necessary to lay out the remainder of the spiral with the transit at an intermediate point (or points), see Fig. 20 and 21 respectively; this may be achieved by turning off from the local tangent (or local chord) at that point the corresponding deflection angles, φ_ℓ's (or $\psi_b + \varphi_\ell$'s), to the successive points on the spiral still to be established, according to one of the methods previously explained.

FIG. 21



For laying out the even and/or plus even stations at the required constant arc interval along the spiral it is usually the practice to assume that the chord length equals to the length of the corresponding arc. This is accurate enough only for spirals with relatively large parameters and moderate length. For spirals with too small parameters this assumption can cause appreciable inaccuracy in location of the entire spiral since the error is progressively accumulated.

The initial chords being located closer to the spiral origin (T.S. point) and thus having larger radii will not differ in length from their arcs, but the distant ones having small radii will start to deviate more from their arcs the further from the origin they are located and the sharper is the spiral itself.

Consequently, it seems to be appropriate that the length of the last chord being the most distant from the spiral origin and having the smallest radii should be checked against the length of the corresponding arc. In case of measurable difference the proper adjustment of the chord length should take place and be applied accordingly to all back chords differing in lengths from their arcs. With increasing radii toward the spiral origin the difference is decreasing until it is negligable in value.

Length of the chord of the spiral of given parameter between two known points on the spiral being distant λ_1 and λ_2 from the origin (see Fig. 22) can be obtained from Table III with λ_1/A and λ_2/A as table entries as follows:

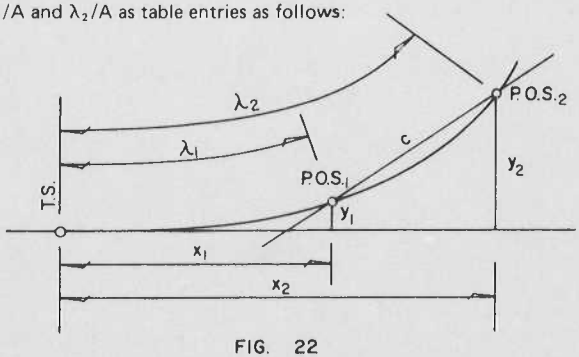


FIG. 22

Table entry	read off Table III	
λ_1/A	x_1/R_1	y_1/R_1
λ_2/A	x_2/R_2	y_2/R_2

Multiply the table value by A^2/λ_1 (= R_1) and A^2/λ_2 (= R_2) respectively to obtain x_1, y_1 and x_2, y_2, then the chord length

$$c = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad \ldots\ldots (14)$$

The difference between the arc length and the corresponding chord length (i.e. the degree of accuracy) can also be obtained from the approximate relationship between the arc ℓ and central angle α

$$\ell = R\alpha$$
$$c = 2R \sin\alpha/2$$

expanding sin function into its series form, eliminating α and ignoring terms above third power, then

$$\ell - c = \frac{\ell^3}{24R^2} \quad \ldots\ldots (15)^*$$

$$^* \ \ell - c = \frac{\ell^3}{2^2 x 3! R^2} - \frac{\ell^5}{2^4 x 5! R^4} + \frac{\ell^7}{2^6 x 7! R^6} - \cdots$$

From the above equation either the minimum radius can be obtained for a given arc length and the allowable difference (accuracy) between arc and chord, as indicated in the following table

arc	(ℓ − c) smaller than		
ℓ	1 mm	5 mm	10 mm
5 m	for R⩾75 m	R⩾35 m	R⩾25 m
10	205	95	65
20	580	260	185
50	2300	1050	725
100	6500	2900	2050

(e.g. for the required accuracy of 5 mm the curves of less than 95 m radii should not be laid out with a 10 m arc),

or, for a given arc and radius the resulting accuracy can be obtained and is indicated in the following table.

	(ℓ − c) mm						
R	50 m	75 m	100 m	150 m	200 m	250 m	300 m
ℓ = 5 m	2	1	0.5	–	–	-	–
10	17	7	4	2	1	0.5	–
20	133	60	33	15	8	5	4
50	2083	926	521	232	130	83	58
100	16667	7407	4167	1852	1042	667	463

NOTE: When using any of the preceding tables or formulae the end radius of the arc under consideration must be utilized, e.g. if 150 m spiral end radius were to be laid out utilizing 20 m arc length, the last 20 m of chord should be adjusted by 15 mm i.e. last chord should be 19.885 m. Similarly, when considering arcs other than the arc which ends at the S.C. or C.S. the instantaneous radius must be determined from the equation

$$r = \frac{A^2}{\lambda}$$

With the use of the suggested standard form for the tabulation of spiral deflection angles, a numerical example, illustrating four typical locations of the transit on the same spiral, is shown on the following pages.

Numerical example illustrating spiraled curve lay out procedure.

Given: the P.I. at sta 14 + 236.820
total deflection angle $\Delta_T = 32°41'35''$
selected: radius R = 500 m
Spiral parameter A = 250 m

Required: complete curve system component's data and all deflection angles of the first spiral for laying out purposes, based on 20 m intervals, with the transit set up at: a) T.S., b) S.C., c) an intermediate point (P.O.S.1) close to the T.S., d) an intermediate point (P.O.S.2) close to the S.C.

Solution: from Table III with the entry A/R = 250/500 = 0.5 read off

A/R	Ls/R	X/R	Y/R	Q/R	P/R	LT/R
0.5	0.25	0.249 609 66	0.010 405 05	0.124 934 92	0.002 602 71	0.166 803 28

ST/R	LC/R	θ	$1/3\,\theta = \phi + C$	ϕ	C
0.083 457 54	0.249 826 43	7° 09′ 43.1″	2° 23′ 14.4″	2° 23′ 13.2″	0° 00′ 1.1″

Multiplying the above values (except the angles) by the actual radius, R = 500 m of the above spiral, the actual components rounded to the nearest millimetre are:-

L_s = 0.25x500 = 125 m
X = 0.249 609 66x500 = 124.805 m
Y = 0.010 405 05x500 = 5.203 m
q = 0.124 934 92x500 = 62.467 m

p = 0.002 602 71x500 = 1.301 m
L.T. = 0.166 803 28x500 = 83.402 m
S.T. = 0.083 457 54x500 = 41.729 m
L.C. = 0.249 826 43x500 = 124.913 m

θ_s = 7° 09′ 43.1″
ϕ_s = 2° 23′ 13.2″

(compare with the corresponding values shown in Table IV)

From eq (9) Δ_c = 18° 22′ 08.8″

From Table II with the entry Δ_c read off

Δ	T	E	L
18° 22′	16.166 62	1.298 37	32.055 88
18° 23′	16.181 54	1.300 75	32.084 97
diff. 1′	.014 92	.002 38	.029 09
	.002 19	.000 35	.004 27
18° 22′ 08.8″	16.168 81	1.298 72	32.060 15

$\times \frac{8.8}{60}$

T = 5 x 16.168 81 = 80.844 m
L = 5 x 32.060 15 = 160.301 m
E = 5 x 1.298 72 = 6.494 m

From eq (11), $T_s = q + (R+p)\tan(\Delta_T/2)$

= 209.500 m

and the chainage is:

P.I.	14 + 236.820
T_s	− 209.500
T.S.	14 + 027.320
L_s	+ 125.000
S.C.	14 + 152.320
L	+ 160.301
C.S.	14 + 312.621
L_s	+ 125.000
S.T.	14 + 437.621

T.S.	14 + 027.320
L.T.	+ 83.402
SP.P.I.	14 + 110.722
S.C.	14 + 152.320
T	+ 80.844
C.C.P.I.	14 + 233.164
C.S.	14 + 312.621
S.T.	+ 41.729
SP.P.I.	14 + 354.350

a) Transit set up at the T.S. (see 'Tabulation' on page 35).
With the transit at the T.S.

$\lambda_1 = 0$ (always),
the stations of the points to be laid out are progressively indicated in the first row,

λ's – distances from the T.S. to the consecutive points to be laid out are indicated in the second row (λ - row),

λ_2's and ℓ's become identical with λ's and do not need to be indicated again,

λ/A relations as Table III entries for the corresponding points appear in the fifth row (λ/A row),

$\frac{\sqrt{\lambda_1 \lambda_2}}{A}$ relations are always zero with the transit at the T.S. (since $\lambda_1 = 0$),

ℓ/A relations are identical with λ/A relations (since ℓ's = λ's) and are not repeated

1/3 θ_λ angles can be read off Table III opposite the corresponding λ/A relations as table entries,

1/3 $\theta_{\sqrt{\lambda_1 \lambda_2}}$ angles are always zero with the transit at the T.S.,

C_ℓ's become C_λ's with the transit at the T.S. and can be read off Table III opposite the corresponding λ/A relations,

φ_ℓ's become ϕ_λ's with the transit at the T.S.,

ϕ_λ's can be read directly off Table III opposite the corresponding λ/A relations as indicated in the eleventh row (φ_ℓ - row).

Note that only the distance of the first point following the T.S. has to be computed as a difference between the station of that point and the station of the T.S. All other distances from the T.S. to the consecutive points, except the last one, can be obtained by increasing the distance of the previous point by the constant interval, $\Delta\lambda$.

Similarly, only the λ/A relation for the first point following the T.S. has to be computed as a quotient of the distance of that point and the spiral parameter. The λ/A relations for all consecutive points, except the last one, can be obtained by increasing the λ/A relation of the previous point by the constant value of $\Delta\lambda/A$, which is a simple decimal fraction with definite digit endings.

Most of the λ/A relations will, unfortunately, fall between the entries indicated in Table III, consequently, the corresponding deflection angle, ϕ_λ, will also be between the table values, hence, its explicit value may have to be determined by interpolation.

In many instances the difference in successive values of deflection angles is such that the interpolated value may be determined by inspection to a degree of accuracy consistent with the instrument in use.

Expressing:—

ϵ_e as the difference between the consecutive Table III entries,

ϵ_p as the difference between the calculated λ/A relation as table entry for a specific point and the nearest lower table entry, and

ϵ_ϕ as the difference between the ϕ's corresponding to the nearest higher and nearest lower table entries, then the interpolated increment, $\epsilon_{\phi p}$, by which the angle, ϕ_λ lower, opposite the nearest lower table entry has to be increased, equals $\epsilon_\phi \frac{\epsilon_p}{\epsilon_e}$ or,

$$\phi_\lambda \text{ interpolated} = \phi_\lambda \text{ lower} + \epsilon_{\phi p}$$

$$= \phi_\lambda \text{ lower} + \epsilon_\phi \frac{\epsilon_p}{\epsilon_e}$$

Schematically it can be presented as follows:

the nearest lower table entry	ϵ_p	corresponding ϕ_λ lower	$\epsilon\phi_p$
calculated table entry		interpolated ϕ_λ	
the nearest higher table entry	ϵ_e	corresponding ϕ_λ higher	ϵ_ϕ

Numerically: for P.O.S. 14 + 100, λ/A relation is 0.290 72 (see 'Tabulation' on page 35)

the nearest lower table entry is 0.2905	corresponding ϕ_λ is 0° 48′ 21.1″
calculated table entry is 0.290 72	corresponding ϕ_λ is to be interpolated
the nearest higher table entry is 0.2910	corresponding ϕ_λ is 0° 48′ 31.1″

and $\epsilon_e = 0.0005$ (constant for Table III),

$\epsilon_p = 0.000\ 2_2$ (constant for this example),

$\epsilon_\phi = 10''$,

hence, $\epsilon_{\phi_p} = 10'' \times \frac{2.2}{5} = 4.4''$

and ϕ_λ interpolated = 0° 48′ 21.1″ + 4.4″

= 0° 48′ 25.5″

b) Transit set up at the S.C. (see 'Tabulation' on page 36).

With the Transit at the S.C.

$\lambda_1 = L_s$ (always),
the stations of the points to be laid out are progressively indicated in the first row,

λ's – distances from the T.S. to the consecutive points to be laid out are indicated in the second row (λ - row),

λ_2's – the distances from point d to the consecutive points to be laid out, all being measured toward the T.S., are indicated in the third row (λ_2 - row),

ℓ's – distances from the transit point to the consecutive points to be laid out are indicated in the fourth row (ℓ - row),

λ/A, $\frac{\sqrt{\lambda_1 \lambda_2}}{A}$ and ℓ/A relations as table entries for the corresponding points appear in the fifth, sixth and seventh rows respectively,

$1/3\,\theta_\lambda$, $1/3\,\theta_{\sqrt{\lambda_1 \lambda_2}}$ and C_ℓ angles are read off Table III for the corresponding points and pertinent λ/A, $\frac{\sqrt{\lambda_1 \lambda_2}}{A}$, ℓ/A relations as indicated in the eighth, ninth and tenth row respectively,

φ_ℓ angles, which with the transit at S.C. become ψ_ℓ, as resulting turning angles for the corresponding points are indicated in the last row (φ_ℓ - row).

Note that with the transit at the S.C. all straight line corrections, $1/3\,\theta_{\sqrt{\lambda_1 \lambda_2}}$, are negative.

c) Transit set up at the P.O.S. 14 + 060 (see 'Tabulation' on page 37).
With the transit at any intermediate point on the spiral the procedure is very similar to that under (b) i.e. as if the transit were at the S.C.

Note that if the transit point is such that $2\lambda_1 < L_s$, then some straight line corrections, $1/3\,\theta_{\sqrt{\lambda_1 \lambda_2}}$, are negative, some are positive.

d) Transit set at the P.O.S. 14 + 120 (see 'Tabulation' on page 38).
Since this is just another point on the spiral, the procedure is again very similar to that under (b).

Note that if the transit point is such that $2\lambda_1 > L_s$, then all straight line corrections, $1/3\,\theta_{\sqrt{\lambda_1 \lambda_2}}$, are negative.

TABLE V

Table Va and Vb show values for design elements related to design speeds and horizontal circular curve radii for 2- and 4-lane highways for maximum superelevation of 0.06 and 0.08 respectively. The indicated parameter values are minimum required. Values in excess of those indicated (preferably standard ones) should be selected such that, first of all the ratio A/R and possibly also L_s (length of spiral = A^2/R) are rational numbers.

TABLE VI

Table VI shows a list of the standard spiral's parameters (ranging from A = 25 m to A = 1800 m) together with the corresponding constant value K, which is provided in three forms, in decimal degrees, decimal minutes and decimal seconds for each standard spiral parameter. (This constant K, is also shown under each Table IV in decimal minutes and decimal seconds.)

Referring to the formulae shown on page 19, namely,

$$\phi_s = \frac{a}{A^2} L_s^2 - C_s$$

$$\phi_\lambda = \frac{a}{A^2} \lambda^2 - C_\lambda$$

$$\varphi_\ell = \frac{a}{A^2} (\lambda^2 + \lambda_1 \lambda_2) - C_\ell$$

$$\psi_b + \varphi_\ell = \frac{a}{A^2} (\lambda + \lambda_2 + \lambda_1)(\lambda - \lambda_2) + C_b - C_\ell$$

it can be seen that a/A^2 appears in all angle formulae. For a particular spiral, i.e. for the same parameter A, a/A^2 is a constant. Substituting a/A^2 by K, the above formulae take the following form:

$$\phi_s = KL_s^2 - C_s$$

$$\phi_\lambda = K\lambda^2 - C_\lambda$$

$$\varphi_\ell = K(\lambda^2 + \lambda_1 \lambda_2) - C_\ell$$

$$\psi_b + \varphi_\ell = K(\lambda + \lambda_2 + \lambda_1)(\lambda - \lambda_2) + C_b - C_\ell$$

and since $a = 30/\pi$ expressed in degrees,

$$\therefore K = \frac{a}{A^2} = \frac{30}{\pi A^2} \text{ expressed in degrees}$$

$$= 60 \frac{a}{A^2} = \frac{1800}{\pi A^2} \text{ expressed in minutes}$$

$= 3600 \frac{a}{A^2} = \frac{108\,000}{A^2}$ expressed in seconds

From the above formulae it can be seen that any form of this constant K value if multiplied by L_s^2, or λ^2, or $(\lambda^2 + \lambda_1 \lambda_2)$, or $(\lambda + \lambda_2 + \lambda_1)(\lambda - \lambda_2)$ it provides, in corresponding units,

Spiral's deflection angle ϕ_s, or

spiral's partial deflection angle ϕ_λ, or

spiral's partial deflection foresight angle φ_ℓ, or

spiral's partial deflection backsight angle $\psi_b + \varphi_\ell$

respectively with the assumption that the corresponding correction angle, C (obtainable from Table III), is either negligible or will be applied to the resulting deflection angle. The resulting deflection angle, so obtained, will always be in decimal form and, therefore, requires conversion into degrees, minutes and seconds.

Note: The same angle is obtainable directly from Table III with the appropriate entry of A/R or L_s/A.

For example given a spiral of parameter A = 200. Determine the partial spiral's deflection angle measured from the T.S. to a point 12.84 m from the T.S.

Determine constant K from Table VI 0.859 437"

Determine λ^2 i.e. $(12.84)^2 = 164.866$

Hence $\phi_\lambda = K \lambda^2 = 164.866 \times 0.859\,437'' = 141.69'' = 2' 21.7''$

Note that for this example the correction is negligible but should be considered when it is of finite value.

TABLE VII

Table VII shows the greek alphabet.

TABULATION

OF SPIRAL'S DEFLECTION ANGLES FOR LAYING OUT PURPOSES FROM SPIRAL TABLE III

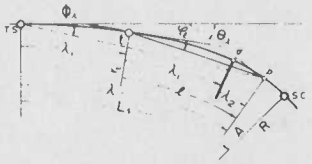
TRANSIT AT THE T S 14+027.32	λ_1 = 0 m $\Delta\lambda$ = 20 m $\Delta\lambda/A$ = 0.08	SPIRAL DATA: A = 250 m R = 500 m

	T S 14+027.32	P O S 40	P O S 60	P O S 80	P O S +100	P O S 20	P O S 40	S C 14+152 3
λ	0	12.68	32.68	52.68	72 68	92.68	112.68	125
$\lambda_2 = \lambda$								
$\ell = \lambda$								
λ/A	0	0.050 7_2	0.130 7_2	0.210 7_2	0.290 7_2	0.370 7_2	0.450 7_2	0.5
$\frac{\sqrt{\lambda\ \lambda_2}}{A} = 0$								
$\ell/A = \lambda/A$								
$\frac{1}{3}\theta_\lambda$								
$\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} = 0$								
$C_\ell = C_\lambda$								
$\varphi_\ell = \Phi_\lambda$	0	0° 01' 28.5"	0° 09' 47.5"	0° 25' 26.5"	0° 48' 25.5"	1° 18' 44.4"	1° 56' 23.1"	2° 23' 13.

$$\varphi_\ell = a\left(\frac{\lambda}{A}\right)^2 + a\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \left(\Phi_\lambda + C_\lambda\right) + \left(\Phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}}\right) - C_\ell$$

$$\boxed{\varphi_\ell = \frac{1}{3}\theta_\lambda + \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$



with the relation $\lambda/A\left(=\frac{\lambda}{\sqrt{RL_s}}=\sqrt{\frac{\lambda}{r_\lambda}}=\frac{A}{r_\lambda}\right)$ as table III entry, read off $\frac{1}{3}\theta_\lambda$ in the column '$\frac{1}{3}\cdot\theta$'

with the relation $\frac{\sqrt{\lambda_1\lambda_2}}{A}\left(=\sqrt{\frac{\lambda_1\lambda_2}{RL_s}}=\sqrt{\frac{\lambda_2}{r_{\lambda_1}}}=\sqrt{\frac{\lambda_1}{r_{\lambda_2}}}=\frac{A}{\sqrt{r_{\lambda_1}\,r_{\lambda_2}}}\right)$ as table III entry, read off $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}$ in same column

with the relation ℓ/A as table III entry, read off C_ℓ in the column 'C'

NOTE: the second term, $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}\left(=\Phi_{\sqrt{\lambda_1\lambda_2}}+C_{\sqrt{\lambda_1\lambda_2}}=a\frac{\lambda_1\lambda_2}{A^2}\right)$, might be either

positive if λ_2 is measured from its origin (point d) toward the S.C. point, or
negative if λ_2 is measured from its origin (point d) toward the T.S. point

$\Delta\lambda$ – is the constant interval between the consecutive points to be laid out

$a(=30/\pi)$ and all angles are expressed in degrees.

With the transit at T.S. the angle φ_ℓ becomes Φ_λ obtainable directly from Table III

TABULATION

OF SPIRAL'S DEFLECTION ANGLES FOR LAYING OUT PURPOSES
FROM SPIRAL TABLE III

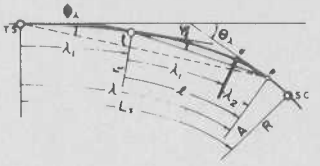
ANSIT AT THE S.C. 14+152.32	$\lambda_1 = L_s = 125$ m $\Delta\lambda = 20$ m $\Delta\lambda/A = 0.08$	SPIRAL DATA: A = 250 m R = 500 m

	T. S. 14+027.32	P. O. S. 40	P. O. S. 60	P. O. S. 80	P.O.S. +100	P. O. S. 20	P. O. S. 40	S. C. 14+152.32
	0	12.68	32.68	52.68	72.68	92.68	112.68	125
	250	237.32	217.32	197.32	177.32	157.32	137.32	125
	125	112.32	92.32	72.32	52.32	32.32	12.32	0
	0	0.050 7_2	0.130 7_2	0.210 7_2	0.290 7_2	0.370 7_2	0.450 7_2	0.5
λ_2	0.707 1_{07}	0.689 9_{41}	0.659 2_{72}	0.628 2_{04}	0.595 5_{17}	0.560 9_{28}	0.524 0_{61}	0.5
	0.5	0.449 2_8	0.369 2_8	0.289 2_8	0.209 2_8	0.129 2_8	0.049 2_8	0
λ	0	0° 01' 28.5"	0° 09' 47.5"	0° 25' 26.5"	0° 48' 25.5"	1° 18' 44.6"	1° 56' 23.7"	2° 23' 14.4"
$\sqrt{\lambda_1\lambda_2}$	4° 46' 26.7"	4° 31' 56.9"	4° 09' 01.8"	3° 46' 06.7"	3° 23' 11.6"	3° 00' 16.5"	2° 37' 21.4"	2° 23' 14.4"
	1.1"	0.6"	0.2"	0	0	0	0	0
$= \Psi_\ell$	4° 46' 29.8"	4° 30' 29.1"	3° 59' 14.5"	3° 20' 40.2"	2° 34' 46.1"	1° 41' 31.9"	0° 40' 57.7"	0

$$\Psi_\ell = a\left(\frac{\lambda}{A}\right)^2 + a\,\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \left(\phi_\lambda + C_\lambda\right) + \left(\phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}}\right) - C_\ell$$

$$\boxed{\Psi_\ell = \tfrac{1}{3}\,\theta_\lambda + \tfrac{1}{3}\,\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$



the relation $\lambda/A \left(= \frac{\lambda}{\sqrt{RL_s}} = \sqrt{\frac{\lambda}{r_\lambda}} = \frac{A}{r_\lambda}\right)$ as table III entry, read off $\underline{\frac{1}{3}\theta_\lambda}$ in the column '$\frac{1}{3}\,\theta$'

he relation $\frac{\sqrt{\lambda_1\lambda_2}}{A} \left(= \sqrt{\frac{\lambda_1\lambda_2}{RL_s}} = \sqrt{\frac{\lambda_2}{r_{\lambda_1}}} = \sqrt{\frac{\lambda_1}{r_{\lambda_2}}} = \frac{A}{\sqrt{r_{\lambda_1} r_{\lambda_2}}}\right)$ as table III entry, read off $\underline{\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}}$ in same column

he relation ℓ/A as table III entry, read off $\underline{C_\ell}$ in the column 'C'

: the second term, $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} \left(= \phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}} = a\,\frac{\lambda_1\lambda_2}{A^2}\right)$, might be either

<u>positive</u> if λ_2 is measured from its origin (point d) toward the S.C. point, or
<u>negative</u> if λ_2 is measured from its origin (point d) toward the T.S. point

$\Delta\lambda$ – is the constant interval between the consecutive points to be laid out
a(= 30/m) and all angles are expressed in degrees.
With the transit at T.S. the angle Ψ_ℓ becomes ϕ_λ obtainable directly from Table III

TABULATION

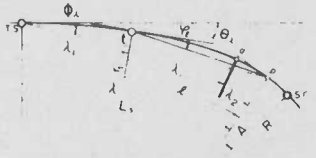
OF SPIRAL'S DEFLECTION ANGLES FOR LAYING OUT PURPOSES FROM SPIRAL TABLE III

TRANSIT AT THE P.O.S. 14+060				λ = 32.68 m $\Delta\lambda$ = 20 m $\Delta\lambda/A$ = 0.08			SPIRAL DATA: A = 250 m R = 500 m	
	T.S. 14+027.32	P.O.S. 40	P.O.S. 60	P.O.S. 80	P.O.S. +100	P.O.S. 20	P.O.S. 40	S.C. 14+152.32
λ	0	12.68	32.68	52.68	72.68	92.68	112.68	125
λ_2	65.36	52.68	32.68	12.68	7.32	27.32	47.32	59.64
ℓ	32.68	20	0	20	40	60	80	92.32
λ/A	0	$0.050\,7_2$	$0.130\,7_2$	$0.210\,7_2$	$0.290\,7_2$	$0.370\,7_2$	$0.450\,7_2$	0.5
$\frac{\sqrt{\lambda_1\lambda_2}}{A}$	$0.184\,8_{66}$	$0.165\,9_{68}$	$0.130\,7_2$	$0.081\,4_{26}$	$0.061\,8_{67}$	$0.119\,5_{20}$	$0.157\,2_{98}$	$0.176\,5_{92}$
ℓ/A	$0.130\,7_2$	0.08	0	0.08	0.16	0.24	0.32	$0.369\,2_8$
$\frac{1}{3}\theta_\lambda$	0	0° 01' 28.5"	0° 09' 47.5"	0° 25' 26.5"	0° 48' 25.5"	1° 18' 44.6"	1° 56' 23.7"	2° 23' 14.4"
$\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}$	0° 19' 34.9"	0° 15' 46.9"	0° 09' 47.5"	0° 03' 47.9"	0° 02' 11.5"	0° 08' 11.1"	0° 14' 10.6"	0° 17' 52.0"
C_ℓ	0	0	0	0	0	0	0.1"	0.2"
φ_ℓ	0° 19' 34.9"	0° 14' 18.5"	0	0° 21' 38.6"	0° 50' 37.0"	1° 26' 55.7"	2° 10' 34.2"	2° 41' 06.2"

$$\varphi_\ell = a\left(\frac{\lambda}{A}\right)^2 + a\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \left(\phi_\lambda + C_\lambda\right) + \left(\phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}}\right) - C_\ell$$

$$\boxed{\varphi_\ell = \frac{1}{3}\theta_\lambda + \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$



with the relation $\lambda/A\left(=\frac{\lambda}{\sqrt{RL_s}}=\sqrt{\frac{\lambda}{r_\lambda}}=\frac{A}{r_\lambda}\right)$ as table III entry, read off $\underline{\frac{1}{3}\theta_\lambda}$ in the column '$\frac{1}{3}\theta$'

with the relation $\frac{\sqrt{\lambda_1\lambda_2}}{A}\left(=\sqrt{\frac{\lambda_1\lambda_2}{RL_s}}=\sqrt{\frac{\lambda_2}{r_\lambda}}=\sqrt{\frac{\lambda_1}{r_{\lambda_2}}}=\frac{A}{\sqrt{r_{\lambda_1}r_{\lambda_2}}}\right)$ as table III entry, read off $\underline{\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}}$ in same column

with the relation ℓ/A as table III entry, read off $\underline{C_\ell}$ in the column 'C'

NOTE: the second term, $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}\left(=\phi_{\sqrt{\lambda_1\lambda_2}}+C_{\sqrt{\lambda_1\lambda_2}}=a\frac{\lambda_1\lambda_2}{A^2}\right)$, might be either

$\underline{\text{positive}}$ if λ_2 is measured from its origin (point d) toward the S.C. point, or
$\underline{\text{negative}}$ if λ_2 is measured from its origin (point d) toward the T.S. point

$\Delta\lambda$ – is the constant interval between the consecutive points to be laid out

$a(=30/\pi)$ and all angles are expressed in degrees.

With the transit at T.S. the angle φ_ℓ becomes ϕ_λ obtainable directly from Table III

TABULATION

OF SPIRAL'S DEFLECTION ANGLES FOR LAYING OUT PURPOSES FROM SPIRAL TABLE III

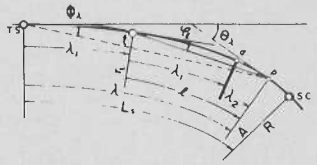
TRANSIT AT THE P.O.S. 14+120 | λ_1 = 92.68 m, $\Delta\lambda$ = 20 m, $\Delta\lambda/A$ = 0.08 | SPIRAL DATA: A = 250 m, R = 500 m

	T. S. 14+027.32	P. O. S. 40	P. O. S. 60	P. O. S. 80	P. O. S. +100	P. O. S. 20	P. O. S. 40	S.C. 14+152.32
λ	0	12.68	32.68	52.68	72.68	92.68	112.68	125
λ_2	185.36	172.68	152.68	132.68	112.68	92.68	72.68	60.36
ℓ	92.68	80	60	40	20	0	20	32.32
λ/A	0	0.050 7_2	0.130 7_2	0.210 7_2	0.290 7_2	0.370 7_2	0.450 7_2	0.5
$\frac{\sqrt{\lambda_1\lambda_2}}{A}$	0.524 2_{77}	0.506 0_{27}	0.475 8_{22}	0.443 6_{83}	0.408 7_{88}	0.370 7_2	0.328 2_{92}	0.299 1_{77}
ℓ/A	0.370 7_2	0.32	0.24	0.16	0.08	0	0.08	0.129 2_8
$\frac{1}{3}\theta_\lambda$	0	0° 01' 28.5"	0° 09' 47.5"	0° 25' 26.5"	0° 48' 25.5"	1° 18' 44.6"	1° 56' 23.7"	2° 23' 14.4"
$\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}-\ell}$	2° 37' 29.2"	2° 26' 42.9"	2° 09' 43.3"	1° 52' 43.7"	1° 35' 44.2"	1° 18' 44.6"	1° 01' 45.0"	0° 51' 17.0"
C_ℓ	0.2"	0.1"	0	0	0	0	0	0
φ_ℓ	2° 37' 29.4"	2° 25' 14.5"	1° 59' 55.8"	1° 27' 17.3"	0° 47' 18.7"	0	0° 54' 38.7"	1° 31' 57.4"

$$\varphi_\ell = a\left(\frac{\lambda}{A}\right)^2 + a\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \left(\Phi_\lambda + C_\lambda\right) + \left(\Phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}}\right) - C_\ell$$

$$\boxed{\varphi_\ell = \frac{1}{3}\theta_\lambda + \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$



th the relation $\lambda/A\left(=\frac{\lambda}{\sqrt{RL_s}}=\sqrt{\frac{\lambda}{r_\lambda}}=\frac{A}{r_\lambda}\right)$ as table III entry, read off $\frac{1}{3}\theta_\lambda$ in the column '$\frac{1}{3}\theta$'

th the relation $\frac{\sqrt{\lambda_1\lambda_2}}{A}\left(=\sqrt{\frac{\lambda_1\lambda_2}{RL_s}}=\sqrt{\frac{\lambda_2}{r_{\lambda_1}}}=\sqrt{\frac{\lambda_1}{r_{\lambda_2}}}=\frac{A}{\sqrt{r_{\lambda_1}r_{\lambda_2}}}\right)$ as table III entry, read off $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}$ in same column

th the relation ℓ/A as table III entry, read off C_ℓ in the column 'C'

OTE: the second term, $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}\left(=\Phi_{\sqrt{\lambda_1\lambda_2}}+C_{\sqrt{\lambda_1\lambda_2}}=a\frac{\lambda_1\lambda_2}{A^2}\right)$, might be either

positive if λ_2 is measured from its origin (point d) toward the S.C. point, or
negative if λ_2 is measured from its origin (point d) toward the T.S. point

$\Delta\lambda$ – is the constant interval between the consecutive points to be laid out
$\sim$(= 30/m) and all angles are expressed in degrees.

With the transit at T.S. the angle φ_ℓ becomes Φ_λ obtainable directly from Table III

TABLES

a) CIRCULAR CURVE

TABLES

a) COURBE CIRCULAIRE

TABLE I-CIRCULAR CURVES: RADII, DEFLECTION ANGLES, CHORDS
TABLE I-COURBES CIRCULAIRES: RAYONS, ANGLES DE DEFLEXION, CORDES

RADIUS RAYON	DEFLECTION ANGLES FOR ARCS OF ANGLES DE DEFLEXION POUR ARCS DE				RADIUS RAYON
R	1 M	10 M	20 M	50 M	R
M	MNT	DEG MNT SEC			M
45	38.1972	6 21 58.31	12 43 56.62	31 49 51.56	45
50	34.3775	5 43 46.48	11 27 32.96	28 38 52.40	50
55	31.2522	5 12 31.35	10 25 2.69	26 2 36.73	55
60	28.6479	4 46 28.73	9 32 57.47	23 52 23.67	60
65	26.4442	4 24 26.52	8 48 53.05	22 2 12.62	65
70	24.5553	4 5 33.20	8 11 6.40	20 27 46.00	70
75	22.9183	3 49 10.99	7 38 21.97	19 5 54.94	75
80	21.4859	3 34 51.55	7 9 43.10	17 54 17.75	80
85	20.2220	3 22 13.22	6 44 26.45	16 51 6.12	85
90	19.0986	3 10 59.16	6 21 58.31	15 54 55.78	90
95	18.0934	3 0 56.04	6 1 52.08	15 4 40.21	95
100	17.1887	2 51 53.24	5 43 46.48	14 19 26.20	100
105	16.3702	2 43 42.13	5 27 24.27	13 38 30.67	105
110	15.6261	2 36 15.67	5 12 31.35	13 1 18.37	110
115	14.9467	2 29 28.04	4 58 56.07	12 27 20.18	115
120	14.3239	2 23 14.37	4 46 28.73	11 56 11.83	120
125	13.7510	2 17 30.59	4 35 1.18	11 27 32.96	125
130	13.2221	2 12 13.26	4 24 26.52	11 1 6.31	130
140	12.2777	2 2 46.60	4 5 33.20	10 13 53.00	140
150	11.4592	1 54 35.49	3 49 10.99	9 32 57.47	150
160	10.7430	1 47 25.78	3 34 51.55	8 57 8.88	160
170	10.1110	1 41 6.61	3 22 13.22	8 25 33.06	170
180	9.5493	1 35 29.58	3 10 59.16	7 57 27.89	180
190	9.0467	1 30 28.02	3 0 56.04	7 32 20.11	190
200	8.5944	1 25 56.62	2 51 53.24	7 9 43.10	200
210	8.1851	1 21 51.07	2 43 42.13	6 49 15.33	210
220	7.8131	1 18 7.84	2 36 15.67	6 30 39.18	220
230	7.4734	1 14 44.02	2 29 28.04	6 13 40.09	230
240	7.1620	1 11 37.18	2 23 14.37	5 58 5.92	240
250	6.8755	1 8 45.30	2 17 30.59	5 43 46.48	250
280	6.1388	1 1 23.30	2 2 46.60	5 6 56.50	280
300	5.7296	0 57 17.75	1 54 35.49	4 46 28.73	300
320	5.3715	0 53 42.89	1 47 25.78	4 28 34.44	320
340	5.0555	0 50 33.31	1 41 6.61	4 12 46.53	340
350	4.9111	0 49 6.64	1 38 13.28	4 5 33.20	350
380	4.5234	0 45 14.01	1 30 28.02	3 46 10.05	380
400	4.2972	0 42 58.31	1 25 56.62	3 34 51.55	400
420	4.0926	0 40 55.53	1 21 51.07	3 24 37.67	420
450	3.8197	0 38 11.83	1 16 23.66	3 10 59.16	450
475	3.6187	0 36 11.21	1 12 22.42	3 0 56.04	475
500	3.4377	0 34 22.65	1 8 45.30	2 51 53.24	500
525	3.2740	0 32 44.43	1 5 28.85	2 43 42.13	525
550	3.1252	0 31 15.13	1 2 30.27	2 36 15.67	550
575	2.9893	0 29 53.61	0 59 47.21	2 29 28.04	575
600	2.8648	0 28 38.87	0 57 17.75	2 23 14.37	600
650	2.6444	0 26 26.65	0 52 53.30	2 12 13.26	650
700	2.4555	0 24 33.32	0 49 6.64	2 2 46.60	700
750	2.2918	0 22 55.10	0 45 50.20	1 54 35.49	750
800	2.1486	0 21 29.16	0 42 58.31	1 47 25.78	800
850	2.0222	0 20 13.32	0 40 26.64	1 41 6.61	850
900	1.9099	0 19 5.92	0 38 11.83	1 35 29.58	900
950	1.8093	0 18 5.60	0 36 11.21	1 30 28.02	950
1 000	1.7189	0 17 11.32	0 34 22.65	1 25 56.62	1 000
1 050	1.6370	0 16 22.21	0 32 44.43	1 21 51.07	1 050
1 000	1.5626	0 15 37.57	0 31 15.13	1 18 7.84	1 000
1 150	1.4947	0 14 56.80	0 29 53.61	1 14 44.02	1 150
1 100	1.4324	0 14 19.44	0 28 38.87	1 11 37.18	1 100
1 250	1.3751	0 13 45.06	0 27 30.12	1 8 45.30	1 250
1 200	1.3222	0 13 13.33	0 26 26.65	1 6 6.63	1 200
1 300	1.2278	0 12 16.66	0 24 33.32	1 1 23.30	1 300
1 500	1.1459	0 11 27.55	0 22 55.10	0 57 17.75	1 500
1 500	1.0743	0 10 44.58	0 21 29.16	0 53 42.89	1 500
1 600	1.0111	0 10 6.66	0 20 13.32	0 50 33.31	1 600
1 700	0.9549	0 9 32.96	0 19 5.92	0 47 44.79	1 700
2 000	0.8594	0 8 35.66	0 17 11.32	0 42 58.31	2 000
2 100	0.7813	0 7 48.78	0 15 37.57	0 39 3.92	2 100
2 500	0.6875	0 6 52.53	0 13 45.06	0 34 22.65	2 500
3 000	0.5730	0 5 43.77	0 11 27.55	0 28 38.87	3 000
3 500	0.4911	0 4 54.66	0 9 49.33	0 24 33.32	3 500
4 000	0.4297	0 4 17.83	0 8 35.66	0 21 29.16	4 000
4 500	0.3820	0 3 49.18	0 7 38.37	0 19 5.92	4 500
5 000	0.3438	0 3 26.26	0 6 52.53	0 17 11.32	5 000
6 000	0.2865	0 2 51.89	0 5 43.77	0 14 19.44	6 000
7 000	0.2456	0 2 27.33	0 4 54.66	0 12 16.66	7 000
8 000	0.2149	0 2 8.92	0 4 17.83	0 10 44.58	8 000
9 000	0.1910	0 1 54.59	0 3 49.18	0 9 32.96	9 000
10 000	0.1719	0 1 43.13	0 3 26.26	0 8 35.66	10 000

RADIUS RAYON	CHORD LENGTHS FOR ARCS OF LONGUEURS DE CORDES POUR ARCS DE			DEFLECTION ANGLES FOR CHORDS OF ANGLES DE DEFLEXION POUR CORDES DE			RADIUS RAYON
R	10 M	20 M	50 M	10 M	20 M	50 M	R
M	M			DEG MNT SEC			M
45	9.9794	19.8358	47.4674	6 22 45.73	12 50 22.52	33 44 56.36	45
50	9.9833	19.8665	47.9426	5 44 21.01	11 32 13.05	30 0 0.00	50
55	9.9862	19.8900	48.2959	5 12 57.27	10 28 32.45	27 2 8.49	55
60	9.9884	19.9075	48.5657	4 46 48.69	9 35 38.65	24 37 27.55	60
65	9.9901	19.9212	48.7763	4 24 42.21	8 50 59.58	22 37 11.51	65
70	9.9915	19.9320	48.9438	4 5 45.76	8 12 47.56	20 55 29.40	70
75	9.9926	19.9408	49.0792	3 49 21.19	7 39 44.12	19 28 16.39	75
80	9.9935	19.9480	49.1902	3 34 59.96	7 10 50.72	18 12 35.84	80
85	9.9942	19.9539	49.2822	3 22 20.23	6 45 22.78	17 6 16.69	85
90	9.9949	19.9589	49.3595	3 11 5.06	6 22 45.73	16 7 39.43	90
95	9.9954	19.9631	49.4249	3 1 1.06	6 2 32.38	15 15 27.08	95
100	9.9958	19.9667	49.4808	2 51 57.54	5 44 21.01	14 28 39.04	100
105	9.9962	19.9698	49.5289	2 43 45.85	5 27 54.09	13 46 26.93	105
110	9.9966	19.9725	49.5707	2 36 18.90	5 12 57.27	13 8 11.61	110
115	9.9968	19.9748	49.6071	2 29 30.86	4 59 18.75	12 32 21.09	115
120	9.9971	19.9769	49.6391	2 23 16.86	4 46 48.69	12 1 28.92	120
125	9.9973	19.9787	49.6673	2 17 32.79	4 35 18.84	11 32 13.05	125
130	9.9975	19.9803	49.6924	2 12 15.22	4 24 42.21	11 5 14.96	130
140	9.9979	19.9830	49.7347	2 2 48.17	4 5 45.76	10 17 11.62	140
150	9.9981	19.9852	49.7688	1 54 36.77	3 49 21.19	9 35 38.65	150
160	9.9984	19.9870	49.7968	1 47 26.82	3 34 59.96	8 59 21.48	160
170	9.9986	19.9885	49.8200	1 41 7.49	3 22 20.23	8 27 23.47	170
180	9.9987	19.9897	49.8394	1 35 30.32	3 11 5.06	7 59 0.80	180
190	9.9988	19.9908	49.8558	1 30 28.65	3 1 1.06	7 33 39.04	190
200	9.9990	19.9917	49.8699	1 25 57.16	2 51 57.54	7 10 50.72	200
210	9.9991	19.9924	49.8820	1 21 51.53	2 43 45.85	6 50 13.71	210
220	9.9991	19.9931	49.8925	1 18 8.24	2 36 18.90	6 31 29.92	220
230	9.9992	19.9937	49.9016	1 14 44.37	2 29 30.86	6 14 24.47	230
240	9.9993	19.9942	49.9096	1 11 37.49	2 23 16.86	5 58 44.96	240
250	9.9993	19.9947	49.9167	1 8 45.57	2 17 32.79	5 44 21.01	250
280	9.9995	19.9957	49.9336	1 1 23.50	2 2 48.17	5 7 21.06	280
300	9.9995	19.9963	49.9421	0 57 17.91	1 54 36.77	4 46 48.69	300
320	9.9996	19.9967	49.9492	0 53 43.02	1 47 26.82	4 28 50.88	320
340	9.9996	19.9971	49.9550	0 50 33.42	1 41 7.49	4 13 0.23	340
350	9.9997	19.9973	49.9575	0 49 6.74	1 38 14.08	4 5 45.76	350
380	9.9997	19.9977	49.9639	0 45 14.09	1 30 28.65	3 46 19.86	380
400	9.9997	19.9979	49.9675	0 42 58.38	1 25 57.16	3 34 59.96	400
420	9.9998	19.9981	49.9705	0 40 55.59	1 21 51.53	3 24 44.93	420
450	9.9998	19.9984	49.9743	0 38 11.88	1 16 24.04	3 11 5.06	450
475	9.9998	19.9985	49.9769	0 36 11.25	1 12 22.74	3 1 1.06	475
500	9.9998	19.9987	49.9792	0 34 22.68	1 8 45.57	2 51 57.54	500
525	9.9998	19.9988	49.9811	0 32 44.46	1 5 29.09	2 43 45.85	525
550	9.9999	19.9989	49.9828	0 31 15.16	1 2 30.48	2 36 18.90	550
575	9.9999	19.9990	49.9842	0 29 53.63	0 59 47.39	2 29 30.86	575
600	9.9999	19.9991	49.9855	0 28 38.89	0 57 17.91	2 23 16.86	600
650	9.9999	19.9992	49.9877	0 26 26.67	0 52 53.43	2 12 15.22	650
700	9.9999	19.9993	49.9894	0 24 33.33	0 49 6.74	2 2 48.17	700
750	9.9999	19.9994	49.9907	0 22 55.11	0 45 50.28	1 54 36.77	750
800	9.9999	19.9995	49.9919	0 21 29.16	0 42 58.38	1 47 26.82	800
850	9.9999	19.9995	49.9928	0 20 13.33	0 40 26.70	1 41 7.49	850
900	9.9999	19.9996	49.9936	0 19 5.92	0 38 11.88	1 35 30.32	900
950	10.0000	19.9996	49.9942	0 18 5.61	0 36 11.25	1 30 28.65	950
1 000	10.0000	19.9997	49.9948	0 17 11.33	0 34 22.68	1 25 57.16	1 000
1 050	10.0000	19.9997	49.9953	0 16 22.22	0 32 44.46	1 21 51.53	1 050
1 000	10.0000	19.9997	49.9957	0 15 37.57	0 31 15.16	1 18 8.24	1 000
1 150	10.0000	19.9997	49.9961	0 14 56.81	0 29 53.63	1 14 44.37	1 150
1 100	10.0000	19.9998	49.9964	0 14 19.44	0 28 38.89	1 11 37.49	1 100
1 250	10.0000	19.9998	49.9967	0 13 45.06	0 27 30.14	1 8 45.57	1 250
1 200	10.0000	19.9998	49.9969	0 13 13.33	0 26 26.67	1 6 6.88	1 200
1 300	10.0000	19.9998	49.9973	0 12 16.66	0 24 33.33	1 1 23.50	1 300
1 500	10.0000	19.9999	49.9977	0 11 27.55	0 22 55.11	0 57 17.91	1 500
1 500	10.0000	19.9999	49.9980	0 10 44.58	0 21 29.16	0 53 43.02	1 500
1 600	10.0000	19.9999	49.9982	0 10 6.66	0 20 13.33	0 50 33.42	1 600
1 700	10.0000	19.9999	49.9984	0 9 32.96	0 19 5.92	0 47 44.88	1 700
2 000	10.0000	19.9999	49.9987	0 8 35.66	0 17 11.33	0 42 58.38	2 000
2 100	10.0000	19.9999	49.9989	0 7 48.78	0 15 37.57	0 39 3.97	2 100
2 500	10.0000	19.9999	49.9992	0 6 52.53	0 13 45.06	0 34 22.68	2 500
3 000	10.0000	20.0000	49.9994	0 5 43.77	0 11 27.55	0 28 38.89	3 000
3 500	10.0000	20.0000	49.9996	0 4 54.66	0 9 49.33	0 24 33.33	3 500
4 000	10.0000	20.0000	49.9997	0 4 17.83	0 8 35.66	0 21 29.16	4 000
4 500	10.0000	20.0000	49.9997	0 3 49.18	0 7 38.37	0 19 5.92	4 500
5 000	10.0000	20.0000	49.9998	0 3 26.26	0 6 52.53	0 17 11.33	5 000
6 000	10.0000	20.0000	49.9999	0 2 51.89	0 5 43.77	0 14 19.44	6 000
7 000	10.0000	20.0000	49.9999	0 2 27.33	0 4 54.66	0 12 16.66	7 000
8 000	10.0000	20.0000	49.9999	0 2 8.92	0 4 17.83	0 10 44.58	8 000
9 000	10.0000	20.0000	49.9999	0 1 54.59	0 3 49.18	0 9 32.96	9 000
10 000	10.0000	20.0000	49.9999	0 1 43.13	0 3 26.26	0 8 35.66	10 000

TABLE IA-CIRC. CURVES: DEGREES,RADII,DEFL. ANGLES,CHORDS
TABLE IA-COURBES CIRC.: DEGRES,RAYONS,ANGLES DE DEFL.,CORDES

DEGREE DEGRE		RADIUS RAYON	DEFLECTION ANGLES FOR ARCS OF ANGLES DE DEFLEXION POUR ARCS DE			
D		R	1 M	10 M	20 M	50 M
DEG	MNT	M	MNT	DEG MNT SEC		
42	0	41.5804	41.3386	6 53 23.15	13 46 46.30	34 26 55.75
41	0	42.5945	40.3543	6 43 32.60	13 27 5.20	33 37 42.99
40	0	43.6594	39.3701	6 33 42.05	13 7 24.09	32 48 30.24
39	0	44.7789	38.3858	6 23 51.50	12 47 42.99	31 59 17.48
38	0	45.9572	37.4016	6 14 0.94	12 28 1.89	31 10 4.72
37	0	47.1993	36.4173	6 4 10.39	12 8 20.79	30 20 51.97
36	0	48.5104	35.4331	5 54 19.84	11 48 39.69	29 31 39.21
35	0	49.8964	34.4488	5 44 29.29	11 28 58.58	28 42 26.46
34	0	51.3640	33.4646	5 34 38.74	11 9 17.48	27 53 13.70
33	0	52.9205	32.4803	5 24 48.19	10 49 36.38	27 4 0.94
32	0	54.5742	31.4961	5 14 57.64	10 29 55.28	26 14 48.19
31	0	56.3347	30.5118	5 5 7.09	10 10 14.17	25 25 35.43
30	0	58.2125	29.5276	4 55 16.54	9 50 33.07	24 36 22.68
29	0	60.2198	28.5433	4 45 25.98	9 30 51.97	23 47 9.92
28	0	62.3705	27.5591	4 35 35.43	9 11 10.87	22 57 57.17
27	0	64.6806	26.5748	4 25 44.88	8 51 29.76	22 8 44.41
26	0	67.1683	25.5906	4 15 54.33	8 31 48.66	21 19 31.65
25	0	69.8550	24.6063	4 6 3.78	8 12 7.56	20 30 18.90
24	0	72.7656	23.6220	3 56 13.23	7 52 26.46	19 41 6.14
23	0	75.9294	22.6378	3 46 22.68	7 32 45.35	18 51 53.39
22	0	79.3807	21.6535	3 36 32.13	7 13 4.25	18 2 40.63
21	0	83.1607	20.6693	3 26 41.57	6 53 23.15	17 13 27.87
20	0	87.3188	19.6850	3 16 51.02	6 33 42.05	16 24 15.12
19	0	91.9145	18.7008	3 7 0.47	6 14 0.94	15 35 2.36
18	0	97.0209	17.7165	2 57 9.92	5 54 19.84	14 45 49.61
17	0	102.7280	16.7323	2 47 19.37	5 34 38.74	13 56 36.85
16	0	109.1485	15.7480	2 37 28.82	5 14 57.64	13 7 24.09
15	0	116.4250	14.7638	2 27 38.27	4 55 16.54	12 18 11.34
14	0	124.7411	13.7795	2 17 47.72	4 35 35.43	11 28 58.58
13	0	134.3366	12.7953	2 7 57.17	4 15 54.33	10 39 45.83
12	0	145.5313	11.8110	1 58 6.61	3 56 13.23	9 50 33.07
11	30	151.8587	11.3189	1 53 11.34	3 46 22.68	9 25 56.69
11	0	158.7614	10.8268	1 48 16.06	3 36 32.13	9 1 20.31
10	30	166.3215	10.3346	1 43 20.79	3 26 41.57	8 36 43.94
10	0	174.6375	9.8425	1 38 25.51	3 16 51.02	8 12 7.56
9	30	183.8290	9.3504	1 33 30.24	3 7 0.47	7 47 31.18
9	0	194.0417	8.8583	1 28 34.96	2 57 9.92	7 22 54.80
8	30	205.4559	8.3661	1 23 39.69	2 47 19.37	6 58 18.43
8	0	218.2969	7.8740	1 18 44.41	2 37 28.82	6 33 42.05
7	30	232.8500	7.3819	1 13 49.13	2 27 38.27	6 9 5.67
7	0	249.4822	6.8898	1 8 53.86	2 17 47.72	5 44 29.29
6	30	268.6731	6.3976	1 3 58.58	2 7 57.17	5 19 52.91
6	0	291.0626	5.9055	0 59 3.31	1 58 6.61	4 55 16.54
5	30	317.5228	5.4134	0 54 8.03	1 48 16.06	4 30 40.16
5	0	349.2751	4.9213	0 49 12.76	1 38 25.51	4 6 3.78
4	45	367.6580	4.6752	0 46 45.12	1 33 30.24	3 53 45.59
4	30	388.0834	4.4291	0 44 17.48	1 28 34.96	3 41 27.40
4	15	410.9118	4.1831	0 41 49.84	1 23 39.69	3 29 9.21
4	0	436.5938	3.9370	0 39 22.20	1 18 44.41	3 16 51.02
3	45	465.7001	3.6909	0 36 54.57	1 13 49.13	3 4 32.83
3	30	498.9644	3.4449	0 34 26.93	1 8 53.86	2 52 14.65
3	15	537.3463	3.1988	0 31 59.29	1 3 58.58	2 39 56.46
3	0	582.1251	2.9528	0 29 31.65	0 59 3.31	2 27 38.27
2	45	635.0456	2.7067	0 27 4.02	0 54 8.03	2 15 20.08
2	30	698.5501	2.4606	0 24 36.38	0 49 12.76	2 3 1.89
2	15	776.1668	2.2146	0 22 8.74	0 44 17.48	1 50 43.70
2	0	873.1877	1.9685	0 19 41.10	0 39 22.20	1 38 25.51
1	45	997.9288	1.7224	0 17 13.46	0 34 26.93	1 26 7.32
1	30	1164.2502	1.4764	0 14 45.83	0 29 31.65	1 13 49.13
1	15	1397.1003	1.2303	0 12 18.19	0 24 36.38	1 1 30.94
1	0	1746.3754	0.9843	0 9 50.55	0 19 41.10	0 49 12.76
0	45	2328.5005	0.7382	0 7 22.91	0 14 45.83	0 36 54.57
0	30	3492.7507	0.4921	0 4 55.28	0 9 50.55	0 24 36.38
0	15	6985.5014	0.2461	0 2 27.64	0 4 55.28	0 12 18.19

NOTE: DEGREE OF CURVE IS BASED ON 100 FT ARC

CHORD LENGTHS FOR ARCS OF LONG. DE CORDES POUR ARCS DE			DEFLECTION ANGLES FOR CHORDS OF ANGLES DE DEFLEXION POUR CORDES DE			RADIUS RAYON	DEGREE DEGRE
10 M	20 M	50 M	10 M	20 M	50 M	R	D
M			DEG MNT SEC			M	DEG MNT
9.9759	19.8078	47.0415	6 54 23.32	13 54 57.39	36 57 32.90	41.5804	42 0
9.9771	19.8168	47.1783	6 44 28.55	13 34 41.46	35 56 22.02	42.5945	41 0
9.9782	19.8256	47.3121	6 34 33.99	13 14 27.25	34 55 57.90	43.6594	40 0
9.9792	19.8342	47.4427	6 24 39.63	12 54 14.72	33 56 17.73	44.7789	39 0
9.9803	19.8426	47.5702	6 14 45.45	12 34 3.83	32 57 18.90	45.9572	38 0
9.9813	19.8507	47.6947	6 4 51.47	12 13 54.51	31 58 59.01	47.1993	37 0
9.9823	19.8587	47.8160	5 54 57.67	11 53 46.73	31 1 15.82	48.5104	36 0
9.9833	19.8664	47.9341	5 45 4.04	11 33 40.44	30 4 7.25	49.8964	35 0
9.9842	19.8739	48.0491	5 35 10.59	11 13 35.59	29 7 31.37	51.3640	34 0
9.9851	19.8812	48.1609	5 25 17.30	10 53 32.14	28 11 26.36	52.9205	33 0
9.9860	19.8883	48.2695	5 15 24.18	10 33 30.04	27 15 50.52	54.5742	32 0
9.9869	19.8951	48.3749	5 5 31.21	10 13 29.24	26 20 42.26	56.3347	31 0
9.9877	19.9018	48.4771	4 55 38.39	9 53 29.70	25 26 0.08	58.2125	30 0
9.9885	19.9082	48.5761	4 45 45.72	9 33 31.37	24 31 42.54	60.2198	29 0
9.9893	19.9144	48.6718	4 35 53.20	9 13 34.22	23 37 48.32	62.3705	28 0
9.9900	19.9204	48.7643	4 26 0.81	8 53 38.19	22 44 16.14	64.6806	27 0
9.9908	19.9262	48.8535	4 16 8.55	8 33 43.25	21 51 4.78	67.1683	26 0
9.9915	19.9318	48.9395	4 6 16.42	8 13 49.35	20 58 13.11	69.8550	25 0
9.9921	19.9371	49.0221	3 56 24.41	7 53 56.45	20 5 40.03	72.7656	24 0
9.9928	19.9422	49.1015	3 46 32.51	7 34 4.51	19 13 24.48	75.9294	23 0
9.9934	19.9471	49.1775	3 36 40.73	7 14 13.47	18 21 25.46	79.3807	22 0
9.9940	19.9518	49.2503	3 26 49.06	6 54 23.32	17 29 42.02	83.1607	21 0
9.9945	19.9563	49.3197	3 16 57.49	6 34 33.99	16 38 13.23	87.3188	20 0
9.9951	19.9606	49.3858	3 7 6.01	6 14 45.45	15 46 58.20	91.9145	19 0
9.9956	19.9646	49.4485	2 57 14.63	5 54 57.67	14 55 56.07	97.0209	18 0
9.9961	19.9684	49.5079	2 47 23.34	5 35 10.59	14 5 6.02	102.7280	17 0
9.9965	19.9720	49.5640	2 37 32.13	5 15 24.18	13 14 27.25	109.1485	16 0
9.9969	19.9754	49.6166	2 27 40.99	4 55 38.39	12 23 58.97	116.4250	15 0
9.9973	19.9786	49.6660	2 17 49.93	4 35 53.20	11 33 40.44	124.7411	14 0
9.9977	19.9815	49.7119	2 7 58.94	4 16 8.55	10 43 30.92	134.3366	13 0
9.9980	19.9843	49.7544	1 58 8.01	3 56 24.41	9 53 29.70	145.5313	12 0
9.9982	19.9855	49.7745	1 53 12.57	3 46 32.51	9 28 31.98	151.8587	11 30
9.9983	19.9868	49.7936	1 48 17.14	3 36 40.73	9 3 36.07	158.7614	11 0
9.9985	19.9880	49.8119	1 43 21.72	3 26 49.06	8 38 41.89	166.3215	10 30
9.9986	19.9891	49.8294	1 38 26.32	3 16 57.49	8 13 49.35	174.6375	10 0
9.9988	19.9901	49.8460	1 33 30.93	3 7 6.01	7 48 58.38	183.8290	9 30
9.9989	19.9911	49.8618	1 28 35.55	2 57 14.63	7 24 8.88	194.0417	9 0
9.9990	19.9921	49.8767	1 23 40.18	2 47 23.34	6 59 20.78	205.4559	8 30
9.9991	19.9930	49.8908	1 18 44.82	2 37 32.13	6 34 33.99	218.2969	8 0
9.9992	19.9939	49.9040	1 13 49.47	2 27 40.99	6 9 48.44	232.8500	7 30
9.9993	19.9946	49.9164	1 8 54.14	2 17 49.93	5 45 4.04	249.4822	7 0
9.9994	19.9954	49.9279	1 3 58.80	2 7 58.94	5 20 20.72	268.6731	6 30
9.9995	19.9961	49.9385	0 59 3.48	1 58 8.01	4 55 38.39	291.0626	6 0
9.9996	19.9967	49.9484	0 54 8.17	1 48 17.14	4 30 56.98	317.5228	5 30
9.9997	19.9973	49.9573	0 49 12.86	1 38 26.32	4 6 16.42	349.2751	5 0
9.9997	19.9975	49.9615	0 46 45.20	1 33 30.93	3 53 56.42	367.6580	4 45
9.9997	19.9978	49.9654	0 44 17.55	1 28 35.55	3 41 36.61	388.0834	4 30
9.9998	19.9980	49.9692	0 41 49.90	1 23 40.18	3 29 16.97	410.9118	4 15
9.9998	19.9983	49.9727	0 39 22.26	1 18 44.82	3 16 57.49	436.5938	4 0
9.9998	19.9985	49.9760	0 36 54.61	1 13 49.47	3 4 38.16	465.7001	3 45
9.9998	19.9987	49.9791	0 34 26.96	1 8 54.14	2 52 18.97	498.9644	3 30
9.9999	19.9988	49.9820	0 31 59.32	1 3 58.80	2 39 59.92	537.3463	3 15
9.9999	19.9990	49.9846	0 29 31.68	0 59 3.48	2 27 40.99	582.1251	3 0
9.9999	19.9992	49.9871	0 27 4.03	0 54 8.17	2 15 22.18	635.0456	2 45
9.9999	19.9993	49.9893	0 24 36.39	0 49 12.86	2 3 3.47	698.5501	2 30
9.9999	19.9994	49.9914	0 22 8.75	0 44 17.55	1 50 44.85	776.1668	2 15
9.9999	19.9996	49.9932	0 19 41.11	0 39 22.26	1 38 26.32	873.1877	2 0
10.0000	19.9997	49.9948	0 17 13.47	0 34 26.96	1 26 7.86	997.9288	1 45
10.0000	19.9998	49.9962	0 14 45.83	0 29 31.68	1 13 49.47	1164.2502	1 30
10.0000	19.9998	49.9973	0 12 18.19	0 24 36.39	1 1 31.14	1397.1003	1 15
10.0000	19.9999	49.9983	0 9 50.55	0 19 41.11	0 49 12.86	1746.3754	1 0
10.0000	19.9999	49.9990	0 7 22.91	0 14 45.83	0 36 54.61	2328.5005	0 45
10.0000	20.0000	49.9996	0 4 55.28	0 9 50.55	0 24 36.39	3492.7507	0 30
10.0000	20.0000	49.9999	0 2 27.64	0 4 55.28	0 12 18.19	6985.5014	0 15

NOTE: DEGRE DE LA COURBE EST BASE SUR UN ARC DE 100 PD

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
0 1	0.014 54	0.000 00	0.029 09	1 21	1.178 15	0.006 94	2.356 19
0 2	0.029 09	0.000 00	0.058 18	1 22	1.192 70	0.007 11	2.385 28
0 3	0.043 63	0.000 01	0.087 27	1 23	1.207 24	0.007 29	2.414 37
0 4	0.058 18	0.000 02	0.116 36	1 24	1.221 79	0.007 46	2.443 46
0 5	0.072 72	0.000 03	0.145 44	1 25	1.236 34	0.007 64	2.472 55
0 6	0.087 27	0.000 04	0.174 53	1 26	1.250 88	0.007 82	2.501 64
0 7	0.101 81	0.000 05	0.203 62	1 27	1.265 43	0.008 01	2.530 73
0 8	0.116 36	0.000 07	0.232 71	1 28	1.279 98	0.008 19	2.559 82
0 9	0.130 90	0.000 09	0.261 80	1 29	1.294 52	0.008 38	2.588 91
0 10	0.145 44	0.000 11	0.290 89	1 30	1.309 07	0.008 57	2.617 99
0 11	0.159 99	0.000 13	0.319 98	1 31	1.323 62	0.008 76	2.647 08
0 12	0.174 53	0.000 15	0.349 07	1 32	1.338 17	0.008 95	2.676 17
0 13	0.189 08	0.000 18	0.378 15	1 33	1.352 71	0.009 15	2.705 26
0 14	0.203 62	0.000 21	0.407 24	1 34	1.367 26	0.009 35	2.734 35
0 15	0.218 17	0.000 24	0.436 33	1 35	1.381 81	0.009 55	2.763 44
0 16	0.232 71	0.000 27	0.465 42	1 36	1.396 35	0.009 75	2.792 53
0 17	0.247 26	0.000 31	0.494 51	1 37	1.410 90	0.009 95	2.821 62
0 18	0.261 80	0.000 34	0.523 60	1 38	1.425 45	0.010 16	2.850 70
0 19	0.276 34	0.000 38	0.552 69	1 39	1.440 00	0.010 37	2.879 79
0 20	0.290 89	0.000 42	0.581 78	1 40	1.454 54	0.010 58	2.908 88
0 21	0.305 43	0.000 47	0.610 87	1 41	1.469 09	0.010 79	2.937 97
0 22	0.319 98	0.000 51	0.639 95	1 42	1.483 64	0.011 01	2.967 06
0 23	0.334 52	0.000 56	0.669 04	1 43	1.498 19	0.011 22	2.996 15
0 24	0.349 07	0.000 61	0.698 13	1 44	1.512 73	0.011 44	3.025 24
0 25	0.363 61	0.000 66	0.727 22	1 45	1.527 28	0.011 66	3.054 33
0 26	0.378 16	0.000 72	0.756 31	1 46	1.541 83	0.011 89	3.083 42
0 27	0.392 70	0.000 77	0.785 40	1 47	1.556 38	0.012 11	3.112 50
0 28	0.407 25	0.000 83	0.814 49	1 48	1.570 93	0.012 34	3.141 59
0 29	0.421 79	0.000 89	0.843 58	1 49	1.585 47	0.012 57	3.170 68
0 30	0.436 34	0.000 95	0.872 66	1 50	1.600 02	0.012 80	3.199 77
0 31	0.450 88	0.001 02	0.901 75	1 51	1.614 57	0.013 03	3.228 86
0 32	0.465 42	0.001 08	0.930 84	1 52	1.629 12	0.013 27	3.257 95
0 33	0.479 97	0.001 15	0.959 93	1 53	1.643 67	0.013 51	3.287 04
0 34	0.494 51	0.001 22	0.989 02	1 54	1.658 21	0.013 75	3.316 13
0 35	0.509 06	0.001 30	1.018 11	1 55	1.672 76	0.013 99	3.345 21
0 36	0.523 60	0.001 37	1.047 20	1 56	1.687 31	0.014 23	3.374 30
0 37	0.538 15	0.001 45	1.076 29	1 57	1.701 86	0.014 48	3.403 39
0 38	0.552 69	0.001 53	1.105 38	1 58	1.716 41	0.014 73	3.432 48
0 39	0.567 24	0.001 61	1.134 46	1 59	1.730 96	0.014 98	3.461 57
0 40	0.581 78	0.001 69	1.163 55	2 0	1.745 51	0.015 23	3.490 66
0 41	0.596 33	0.001 78	1.192 64	2 1	1.760 06	0.015 49	3.519 75
0 42	0.610 87	0.001 87	1.221 73	2 2	1.774 60	0.015 74	3.548 84
0 43	0.625 42	0.001 96	1.250 82	2 3	1.789 15	0.016 00	3.577 92
0 44	0.639 96	0.002 05	1.279 91	2 4	1.803 70	0.016 27	3.607 01
0 45	0.654 51	0.002 14	1.309 00	2 5	1.818 25	0.016 53	3.636 10
0 46	0.669 05	0.002 24	1.338 09	2 6	1.832 80	0.016 79	3.665 19
0 47	0.683 60	0.002 34	1.367 17	2 7	1.847 35	0.017 06	3.694 28
0 48	0.698 14	0.002 44	1.396 26	2 8	1.861 90	0.017 33	3.723 37
0 49	0.712 69	0.002 54	1.425 35	2 9	1.876 45	0.017 60	3.752 46
0 50	0.727 23	0.002 64	1.454 44	2 10	1.891 00	0.017 88	3.781 55
0 51	0.741 78	0.002 75	1.483 53	2 11	1.905 55	0.018 15	3.810 64
0 52	0.756 32	0.002 86	1.512 62	2 12	1.920 10	0.018 43	3.839 72
0 53	0.770 87	0.002 97	1.541 71	2 13	1.934 65	0.018 71	3.868 81
0 54	0.785 41	0.003 08	1.570 80	2 14	1.949 20	0.019 00	3.897 90
0 55	0.799 96	0.003 20	1.599 89	2 15	1.963 75	0.019 28	3.926 99
0 56	0.814 50	0.003 32	1.628 97	2 16	1.978 30	0.019 57	3.956 08
0 57	0.829 05	0.003 44	1.658 06	2 17	1.992 85	0.019 86	3.985 17
0 58	0.843 60	0.003 56	1.687 15	2 18	2.007 40	0.020 15	4.014 26
0 59	0.858 14	0.003 68	1.716 24	2 19	2.021 95	0.020 44	4.043 35
1 0	0.872 69	0.003 81	1.745 33	2 20	2.036 50	0.020 73	4.072 43
1 1	0.887 23	0.003 94	1.774 42	2 21	2.051 05	0.021 03	4.101 52
1 2	0.901 78	0.004 07	1.803 51	2 22	2.065 60	0.021 33	4.130 61
1 3	0.916 32	0.004 20	1.832 60	2 23	2.080 15	0.021 63	4.159 70
1 4	0.930 87	0.004 33	1.861 68	2 24	2.094 70	0.021 94	4.188 79
1 5	0.945 41	0.004 47	1.890 77	2 25	2.109 25	0.022 24	4.217 88
1 6	0.959 96	0.004 61	1.919 86	2 26	2.123 80	0.022 55	4.246 97
1 7	0.974 51	0.004 75	1.948 95	2 27	2.138 35	0.022 86	4.276 06
1 8	0.989 05	0.004 89	1.978 04	2 28	2.152 91	0.023 17	4.305 15
1 9	1.003 60	0.005 04	2.007 13	2 29	2.167 46	0.023 49	4.334 23
1 10	1.018 14	0.005 18	2.036 22	2 30	2.182 01	0.023 80	4.363 32
1 11	1.032 69	0.005 33	2.065 31	2 31	2.196 56	0.024 12	4.392 41
1 12	1.047 24	0.005 48	2.094 40	2 32	2.211 11	0.024 44	4.421 50
1 13	1.061 78	0.005 64	2.123 48	2 33	2.225 66	0.024 76	4.450 59
1 14	1.076 33	0.005 79	2.152 57	2 34	2.240 21	0.025 09	4.479 68
1 15	1.090 87	0.005 95	2.181 66	2 35	2.254 77	0.025 42	4.508 77
1 16	1.105 42	0.006 11	2.210 75	2 36	2.269 32	0.025 75	4.537 86
1 17	1.119 97	0.006 27	2.239 84	2 37	2.283 87	0.026 08	4.566 94
1 18	1.134 51	0.006 44	2.268 93	2 38	2.298 42	0.026 41	4.596 03
1 19	1.149 06	0.006 60	2.298 02	2 39	2.312 97	0.026 75	4.625 12
1 20	1.163 61	0.006 77	2.327 11	2 40	2.327 53	0.027 08	4.654 21

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
2 41	2.342 08	0.027 42	4.683 30	4 1	3.506 64	0.061 46	7.010 41
2 42	2.356 63	0.027 76	4.712 39	4 2	3.521 20	0.061 98	7.039 49
2 43	2.371 18	0.028 11	4.741 48	4 3	3.535 76	0.062 49	7.068 58
2 44	2.385 74	0.028 45	4.770 57	4 4	3.550 33	0.063 00	7.097 67
2 45	2.400 29	0.028 80	4.799 66	4 5	3.564 89	0.063 52	7.126 76
2 46	2.414 84	0.029 15	4.828 74	4 6	3.579 45	0.064 04	7.155 85
2 47	2.429 39	0.029 51	4.857 83	4 7	3.594 02	0.064 56	7.184 94
2 48	2.443 95	0.029 86	4.886 92	4 8	3.608 58	0.065 09	7.214 03
2 49	2.458 50	0.030 22	4.916 01	4 9	3.623 14	0.065 61	7.243 12
2 50	2.473 05	0.030 58	4.945 10	4 10	3.637 71	0.066 14	7.272 21
2 51	2.487 61	0.030 94	4.974 19	4 11	3.652 27	0.066 67	7.301 29
2 52	2.502 16	0.031 30	5.003 28	4 12	3.666 83	0.067 21	7.330 38
2 53	2.516 71	0.031 66	5.032 37	4 13	3.681 40	0.067 74	7.359 47
2 54	2.531 27	0.032 03	5.061 45	4 14	3.695 96	0.068 28	7.388 56
2 55	2.545 82	0.032 40	5.090 54	4 15	3.710 53	0.068 82	7.417 65
2 56	2.560 38	0.032 77	5.119 63	4 16	3.725 09	0.069 36	7.446 74
2 57	2.574 93	0.033 15	5.148 72	4 17	3.739 66	0.069 90	7.475 83
2 58	2.589 48	0.033 52	5.177 81	4 18	3.754 22	0.070 45	7.504 92
2 59	2.604 04	0.033 90	5.206 90	4 19	3.768 79	0.070 99	7.534 00
3 0	2.618 59	0.034 28	5.235 99	4 20	3.783 35	0.071 54	7.563 09
3 1	2.633 15	0.034 66	5.265 08	4 21	3.797 92	0.072 09	7.592 18
3 2	2.647 70	0.035 05	5.294 17	4 22	3.812 48	0.072 65	7.621 27
3 3	2.662 26	0.035 43	5.323 25	4 23	3.827 05	0.073 20	7.650 36
3 4	2.676 81	0.035 82	5.352 34	4 24	3.841 61	0.073 76	7.679 45
3 5	2.691 37	0.036 21	5.381 43	4 25	3.856 18	0.074 32	7.708 54
3 6	2.705 92	0.036 60	5.410 52	4 26	3.870 74	0.074 89	7.737 63
3 7	2.720 48	0.037 00	5.439 61	4 27	3.885 31	0.075 45	7.766 72
3 8	2.735 03	0.037 39	5.468 70	4 28	3.899 88	0.076 02	7.795 80
3 9	2.749 59	0.037 79	5.497 79	4 29	3.914 44	0.076 59	7.824 89
3 10	2.764 14	0.038 20	5.526 88	4 30	3.929 01	0.077 16	7.853 98
3 11	2.778 70	0.038 60	5.555 96	4 31	3.943 58	0.077 73	7.883 07
3 12	2.793 25	0.039 00	5.585 05	4 32	3.958 14	0.078 30	7.912 16
3 13	2.807 81	0.039 41	5.614 14	4 33	3.972 71	0.078 88	7.941 25
3 14	2.822 36	0.039 82	5.643 23	4 34	3.987 28	0.079 46	7.970 34
3 15	2.836 92	0.040 23	5.672 32	4 35	4.001 85	0.080 04	7.999 43
3 16	2.851 48	0.040 65	5.701 41	4 36	4.016 41	0.080 63	8.028 51
3 17	2.866 03	0.041 06	5.730 50	4 37	4.030 98	0.081 21	8.057 60
3 18	2.880 59	0.041 48	5.759 59	4 38	4.045 55	0.081 80	8.086 69
3 19	2.895 15	0.041 90	5.788 68	4 39	4.060 12	0.082 39	8.115 78
3 20	2.909 70	0.042 32	5.817 76	4 40	4.074 69	0.082 98	8.144 87
3 21	2.924 26	0.042 75	5.846 85	4 41	4.089 26	0.083 58	8.173 96
3 22	2.938 82	0.043 17	5.875 94	4 42	4.103 83	0.084 17	8.203 05
3 23	2.953 37	0.043 60	5.905 03	4 43	4.118 39	0.084 77	8.232 14
3 24	2.967 93	0.044 03	5.934 12	4 44	4.132 96	0.085 37	8.261 23
3 25	2.982 49	0.044 47	5.963 21	4 45	4.147 53	0.085 97	8.290 31
3 26	2.997 05	0.044 90	5.992 30	4 46	4.162 10	0.086 58	8.319 40
3 27	3.011 60	0.045 34	6.021 39	4 47	4.176 67	0.087 18	8.348 49
3 28	3.026 16	0.045 78	6.050 47	4 48	4.191 24	0.087 79	8.377 58
3 29	3.040 72	0.046 22	6.079 56	4 49	4.205 81	0.088 41	8.406 67
3 30	3.055 28	0.046 66	6.108 65	4 50	4.220 38	0.089 02	8.435 76
3 31	3.069 83	0.047 11	6.137 74	4 51	4.234 95	0.089 63	8.464 85
3 32	3.084 39	0.047 56	6.166 83	4 52	4.249 52	0.090 25	8.493 94
3 33	3.098 95	0.048 01	6.195 92	4 53	4.264 09	0.090 87	8.523 02
3 34	3.113 51	0.048 46	6.225 01	4 54	4.278 66	0.091 49	8.552 11
3 35	3.128 07	0.048 91	6.254 10	4 55	4.293 24	0.092 12	8.581 20
3 36	3.142 63	0.049 37	6.283 19	4 56	4.307 81	0.092 74	8.610 29
3 37	3.157 19	0.049 83	6.312 27	4 57	4.322 38	0.093 37	8.639 38
3 38	3.171 74	0.050 29	6.341 36	4 58	4.336 95	0.094 00	8.668 47
3 39	3.186 30	0.050 75	6.370 45	4 59	4.351 52	0.094 63	8.697 56
3 40	3.200 86	0.051 21	6.399 54	5 0	4.366 09	0.095 27	8.726 65
3 41	3.215 42	0.051 68	6.428 63	5 1	4.380 67	0.095 91	8.755 74
3 42	3.229 98	0.052 15	6.457 72	5 2	4.395 24	0.096 54	8.784 82
3 43	3.244 54	0.052 62	6.486 81	5 3	4.409 81	0.097 18	8.813 91
3 44	3.259 10	0.053 09	6.515 90	5 4	4.424 38	0.097 83	8.843 00
3 45	3.273 66	0.053 57	6.544 98	5 5	4.438 96	0.098 47	8.872 09
3 46	3.288 22	0.054 05	6.574 07	5 6	4.453 53	0.099 12	8.901 18
3 47	3.302 78	0.054 53	6.603 16	5 7	4.468 10	0.099 77	8.930 27
3 48	3.317 34	0.055 01	6.632 25	5 8	4.482 68	0.100 42	8.959 36
3 49	3.331 90	0.055 49	6.661 34	5 9	4.497 25	0.101 08	8.988 45
3 50	3.346 46	0.055 98	6.690 43	5 10	4.511 83	0.101 73	9.017 53
3 51	3.361 02	0.056 47	6.719 52	5 11	4.526 40	0.102 39	9.046 62
3 52	3.375 58	0.056 96	6.748 61	5 12	4.540 97	0.103 05	9.075 71
3 53	3.390 15	0.057 45	6.777 70	5 13	4.555 55	0.103 71	9.104 80
3 54	3.404 71	0.057 94	6.806 78	5 14	4.570 12	0.104 38	9.133 89
3 55	3.419 27	0.058 44	6.835 87	5 15	4.584 70	0.105 04	9.162 98
3 56	3.433 83	0.058 94	6.864 96	5 16	4.599 27	0.105 71	9.192 07
3 57	3.448 39	0.059 44	6.894 05	5 17	4.613 85	0.106 38	9.221 16
3 58	3.462 95	0.059 94	6.923 14	5 18	4.628 42	0.107 05	9.250 25
3 59	3.477 51	0.060 45	6.952 23	5 19	4.643 00	0.107 73	9.279 33
4 0	3.492 08	0.060 95	6.981 32	5 20	4.657 57	0.108 41	9.308 42

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
5 21	4.672 15	0.109 09	9.337 51	6 41	5.838 93	0.170 32	11.664 62
5 22	4.686 73	0.109 77	9.366 60	6 42	5.853 52	0.171 17	11.693 71
5 23	4.701 30	0.110 45	9.395 69	6 43	5.868 12	0.172 03	11.722 79
5 24	4.715 88	0.111 14	9.424 78	6 44	5.882 71	0.172 88	11.751 88
5 25	4.730 46	0.111 82	9.453 87	6 45	5.897 31	0.173 74	11.780 97
5 26	4.745 03	0.112 51	9.482 96	6 46	5.911 90	0.174 60	11.810 06
5 27	4.759 61	0.113 21	9.512 04	6 47	5.926 50	0.175 46	11.839 15
5 28	4.774 19	0.113 90	9.541 13	6 48	5.941 09	0.176 33	11.868 24
5 29	4.788 77	0.114 60	9.570 22	6 49	5.955 69	0.177 19	11.897 33
5 30	4.803 34	0.115 29	9.599 31	6 50	5.970 29	0.178 06	11.926 42
5 31	4.817 92	0.115 99	9.628 40	6 51	5.984 88	0.178 93	11.955 51
5 32	4.832 50	0.116 70	9.657 49	6 52	5.999 48	0.179 81	11.984 59
5 33	4.847 08	0.117 40	9.686 58	6 53	6.014 08	0.180 68	12.013 68
5 34	4.861 66	0.118 11	9.715 67	6 54	6.028 67	0.181 56	12.042 77
5 35	4.876 24	0.118 82	9.744 75	6 55	6.043 27	0.182 44	12.071 86
5 36	4.890 82	0.119 53	9.773 84	6 56	6.057 87	0.183 32	12.100 95
5 37	4.905 40	0.120 24	9.802 93	6 57	6.072 47	0.184 20	12.130 04
5 38	4.919 97	0.120 96	9.832 02	6 58	6.087 06	0.185 09	12.159 13
5 39	4.934 55	0.121 68	9.861 11	6 59	6.101 66	0.185 98	12.188 22
5 40	4.949 13	0.122 39	9.890 20	7 0	6.116 26	0.186 87	12.217 30
5 41	4.963 71	0.123 12	9.919 29	7 1	6.130 86	0.187 76	12.246 39
5 42	4.978 29	0.123 84	9.948 38	7 2	6.145 46	0.188 66	12.275 48
5 43	4.992 88	0.124 57	9.977 47	7 3	6.160 06	0.189 55	12.304 57
5 44	5.007 46	0.125 29	10.006 55	7 4	6.174 66	0.190 45	12.333 66
5 45	5.022 04	0.126 02	10.035 64	7 5	6.189 26	0.191 35	12.362 75
5 46	5.036 62	0.126 76	10.064 73	7 6	6.203 86	0.192 25	12.391 84
5 47	5.051 20	0.127 49	10.093 82	7 7	6.218 46	0.193 16	12.420 93
5 48	5.065 78	0.128 23	10.122 91	7 8	6.233 06	0.194 07	12.450 02
5 49	5.080 36	0.128 97	10.152 00	7 9	6.247 66	0.194 98	12.479 10
5 50	5.094 95	0.129 71	10.181 09	7 10	6.262 26	0.195 89	12.508 19
5 51	5.109 53	0.130 45	10.210 18	7 11	6.276 86	0.196 80	12.537 28
5 52	5.124 11	0.131 20	10.239 26	7 12	6.291 47	0.197 72	12.566 37
5 53	5.138 69	0.131 94	10.268 35	7 13	6.306 07	0.198 64	12.595 46
5 54	5.153 28	0.132 69	10.297 44	7 14	6.320 67	0.199 56	12.624 55
5 55	5.167 86	0.133 44	10.326 53	7 15	6.335 27	0.200 48	12.653 64
5 56	5.182 44	0.134 20	10.355 62	7 16	6.349 88	0.201 40	12.682 73
5 57	5.197 03	0.134 95	10.384 71	7 17	6.364 48	0.202 33	12.711 81
5 58	5.211 61	0.135 71	10.413 80	7 18	6.379 08	0.203 26	12.740 90
5 59	5.226 19	0.136 47	10.442 89	7 19	6.393 69	0.204 19	12.769 99
6 0	5.240 78	0.137 23	10.471 98	7 20	6.408 29	0.205 12	12.799 08
6 1	5.255 36	0.138 00	10.501 06	7 21	6.422 90	0.206 06	12.828 17
6 2	5.269 95	0.138 77	10.530 15	7 22	6.437 50	0.206 99	12.857 26
6 3	5.284 53	0.139 53	10.559 24	7 23	6.452 10	0.207 93	12.886 35
6 4	5.299 12	0.140 30	10.588 33	7 24	6.466 71	0.208 87	12.915 44
6 5	5.313 70	0.141 08	10.617 42	7 25	6.481 32	0.209 82	12.944 53
6 6	5.328 29	0.141 85	10.646 51	7 26	6.495 92	0.210 76	12.973 61
6 7	5.342 87	0.142 63	10.675 60	7 27	6.510 53	0.211 71	13.002 70
6 8	5.357 46	0.143 41	10.704 69	7 28	6.525 13	0.212 66	13.031 79
6 9	5.372 05	0.144 19	10.733 77	7 29	6.539 74	0.213 61	13.060 88
6 10	5.386 63	0.144 97	10.762 86	7 30	6.554 35	0.214 57	13.089 97
6 11	5.401 22	0.145 76	10.791 95	7 31	6.568 95	0.215 52	13.119 06
6 12	5.415 81	0.146 55	10.821 04	7 32	6.583 56	0.216 48	13.148 15
6 13	5.430 39	0.147 34	10.850 13	7 33	6.598 17	0.217 44	13.177 24
6 14	5.444 98	0.148 13	10.879 22	7 34	6.612 78	0.218 41	13.206 32
6 15	5.459 57	0.148 92	10.908 31	7 35	6.627 38	0.219 37	13.235 41
6 16	5.474 16	0.149 72	10.937 40	7 36	6.641 99	0.220 34	13.264 50
6 17	5.488 74	0.150 52	10.966 49	7 37	6.656 60	0.221 31	13.293 59
6 18	5.503 33	0.151 32	10.995 57	7 38	6.671 21	0.222 28	13.322 68
6 19	5.517 92	0.152 12	11.024 66	7 39	6.685 82	0.223 25	13.351 77
6 20	5.532 51	0.152 93	11.053 75	7 40	6.700 43	0.224 23	13.380 86
6 21	5.547 10	0.153 73	11.082 84	7 41	6.715 04	0.225 21	13.409 95
6 22	5.561 69	0.154 54	11.111 93	7 42	6.729 65	0.226 19	13.439 04
6 23	5.576 28	0.155 35	11.141 02	7 43	6.744 26	0.227 17	13.468 12
6 24	5.590 87	0.156 17	11.170 11	7 44	6.758 87	0.228 15	13.497 21
6 25	5.605 46	0.156 98	11.199 20	7 45	6.773 48	0.229 14	13.526 30
6 26	5.620 05	0.157 80	11.228 28	7 46	6.788 09	0.230 13	13.555 39
6 27	5.634 64	0.158 62	11.257 37	7 47	6.802 70	0.231 12	13.584 48
6 28	5.649 23	0.159 44	11.286 46	7 48	6.817 32	0.232 11	13.613 57
6 29	5.663 82	0.160 27	11.315 55	7 49	6.831 93	0.233 10	13.642 66
6 30	5.678 41	0.161 09	11.344 64	7 50	6.846 54	0.234 10	13.671 75
6 31	5.693 00	0.161 92	11.373 73	7 51	6.861 15	0.235 10	13.700 83
6 32	5.707 59	0.162 75	11.402 82	7 52	6.875 77	0.236 10	13.729 92
6 33	5.722 19	0.163 58	11.431 91	7 53	6.890 38	0.237 11	13.759 01
6 34	5.736 78	0.164 42	11.461 00	7 54	6.904 99	0.238 11	13.788 10
6 35	5.751 37	0.165 25	11.490 08	7 55	6.919 61	0.239 12	13.817 19
6 36	5.765 96	0.166 09	11.519 17	7 56	6.934 22	0.240 13	13.846 28
6 37	5.780 56	0.166 93	11.548 26	7 57	6.948 84	0.241 14	13.875 37
6 38	5.795 15	0.167 78	11.577 35	7 58	6.963 45	0.242 16	13.904 46
6 39	5.809 74	0.168 62	11.606 44	7 59	6.978 07	0.243 17	13.933 55
6 40	5.824 34	0.169 47	11.635 53	8 0	6.992 68	0.244 19	13.962 63

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLÈCHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
8 1	7.007 30	0.245 21	13.991 72	9 21	8.177 57	0.333 81	16.318 83
8 2	7.021 91	0.246 23	14.020 81	9 22	8.192 21	0.335 00	16.347 92
8 3	7.036 53	0.247 26	14.049 90	9 23	8.206 85	0.336 20	16.377 01
8 4	7.051 15	0.248 29	14.078 99	9 24	8.221 50	0.337 40	16.406 09
8 5	7.065 76	0.249 31	14.108 08	9 25	8.236 14	0.338 60	16.435 18
8 6	7.080 38	0.250 35	14.137 17	9 26	8.250 78	0.339 80	16.464 27
8 7	7.095 00	0.251 38	14.166 26	9 27	8.265 43	0.341 00	16.493 36
8 8	7.109 61	0.252 41	14.195 34	9 28	8.280 07	0.342 21	16.522 45
8 9	7.124 23	0.253 45	14.224 43	9 29	8.294 71	0.343 42	16.551 54
8 10	7.138 85	0.254 49	14.253 52	9 30	8.309 36	0.344 63	16.580 63
8 11	7.153 47	0.255 53	14.282 61	9 31	8.324 00	0.345 85	16.609 72
8 12	7.168 09	0.256 58	14.311 70	9 32	8.338 65	0.347 06	16.638 81
8 13	7.182 71	0.257 62	14.340 79	9 33	8.353 30	0.348 28	16.667 89
8 14	7.197 33	0.258 67	14.369 88	9 34	8.367 94	0.349 50	16.696 98
8 15	7.211 95	0.259 72	14.398 97	9 35	8.382 59	0.350 72	16.726 07
8 16	7.226 57	0.260 78	14.428 06	9 36	8.397 23	0.351 95	16.755 16
8 17	7.241 19	0.261 83	14.457 14	9 37	8.411 88	0.353 18	16.784 25
8 18	7.255 81	0.262 89	14.486 23	9 38	8.426 53	0.354 40	16.813 34
8 19	7.270 43	0.263 95	14.515 32	9 39	8.441 18	0.355 63	16.842 43
8 20	7.285 05	0.265 01	14.544 41	9 40	8.455 83	0.356 87	16.871 52
8 21	7.299 67	0.266 07	14.573 50	9 41	8.470 47	0.358 10	16.900 60
8 22	7.314 30	0.267 14	14.602 59	9 42	8.485 12	0.359 34	16.929 69
8 23	7.328 92	0.268 21	14.631 68	9 43	8.499 77	0.360 58	16.958 78
8 24	7.343 54	0.269 28	14.660 77	9 44	8.514 42	0.361 82	16.987 87
8 25	7.358 16	0.270 35	14.689 85	9 45	8.529 07	0.363 07	17.016 96
8 26	7.372 79	0.271 42	14.718 94	9 46	8.543 72	0.364 31	17.046 05
8 27	7.387 41	0.272 50	14.748 03	9 47	8.558 37	0.365 56	17.075 14
8 28	7.402 03	0.273 58	14.777 12	9 48	8.573 02	0.366 81	17.104 23
8 29	7.416 66	0.274 66	14.806 21	9 49	8.587 68	0.368 06	17.133 32
8 30	7.431 28	0.275 74	14.835 30	9 50	8.602 33	0.369 32	17.162 40
8 31	7.445 91	0.276 82	14.864 39	9 51	8.616 98	0.370 58	17.191 49
8 32	7.460 53	0.277 91	14.893 48	9 52	8.631 63	0.371 83	17.220 58
8 33	7.475 16	0.279 00	14.922 57	9 53	8.646 29	0.373 10	17.249 67
8 34	7.489 79	0.280 09	14.951 65	9 54	8.660 94	0.374 36	17.278 76
8 35	7.504 41	0.281 19	14.980 74	9 55	8.675 59	0.375 62	17.307 85
8 36	7.519 04	0.282 28	15.009 83	9 56	8.690 25	0.376 89	17.336 94
8 37	7.533 66	0.283 38	15.038 92	9 57	8.704 90	0.378 16	17.366 03
8 38	7.548 29	0.284 48	15.068 01	9 58	8.719 56	0.379 43	17.395 11
8 39	7.562 92	0.285 58	15.097 10	9 59	8.734 21	0.380 71	17.424 20
8 40	7.577 55	0.286 69	15.126 19	10 0	8.748 87	0.381 98	17.453 29
8 41	7.592 17	0.287 79	15.155 28	10 1	8.763 52	0.383 26	17.482 38
8 42	7.606 80	0.288 90	15.184 36	10 2	8.778 18	0.384 54	17.511 47
8 43	7.621 43	0.290 01	15.213 45	10 3	8.792 84	0.385 83	17.540 56
8 44	7.636 06	0.291 12	15.242 54	10 4	8.807 49	0.387 11	17.569 65
8 45	7.650 69	0.292 24	15.271 63	10 5	8.822 15	0.388 40	17.598 74
8 46	7.665 32	0.293 36	15.300 72	10 6	8.836 81	0.389 69	17.627 83
8 47	7.679 95	0.294 47	15.329 81	10 7	8.851 47	0.390 98	17.656 91
8 48	7.694 58	0.295 60	15.358 90	10 8	8.866 12	0.392 27	17.686 00
8 49	7.709 21	0.296 72	15.387 99	10 9	8.880 78	0.393 57	17.715 09
8 50	7.723 84	0.297 85	15.417 08	10 10	8.895 44	0.394 86	17.744 18
8 51	7.738 47	0.298 97	15.446 16	10 11	8.910 10	0.396 16	17.773 27
8 52	7.753 11	0.300 10	15.475 25	10 12	8.924 76	0.397 47	17.802 36
8 53	7.767 74	0.301 24	15.504 34	10 13	8.939 42	0.398 77	17.831 45
8 54	7.782 37	0.302 37	15.533 43	10 14	8.954 08	0.400 08	17.860 54
8 55	7.797 00	0.303 51	15.562 52	10 15	8.968 74	0.401 39	17.889 62
8 56	7.811 64	0.304 64	15.591 61	10 16	8.983 41	0.402 70	17.918 71
8 57	7.826 27	0.305 78	15.620 70	10 17	8.998 07	0.404 01	17.947 80
8 58	7.840 90	0.306 93	15.649 79	10 18	9.012 73	0.405 33	17.976 89
8 59	7.855 54	0.308 07	15.678 87	10 19	9.027 39	0.406 64	18.005 98
9 0	7.870 17	0.309 22	15.707 96	10 20	9.042 06	0.407 96	18.035 07
9 1	7.884 81	0.310 37	15.737 05	10 21	9.056 72	0.409 28	18.064 16
9 2	7.899 44	0.311 52	15.766 14	10 22	9.071 38	0.410 61	18.093 25
9 3	7.914 08	0.312 67	15.795 23	10 23	9.086 05	0.411 93	18.122 34
9 4	7.928 71	0.313 83	15.824 32	10 24	9.100 71	0.413 26	18.151 42
9 5	7.943 35	0.314 99	15.853 41	10 25	9.115 38	0.414 59	18.180 51
9 6	7.957 98	0.316 15	15.882 50	10 26	9.130 04	0.415 92	18.209 60
9 7	7.972 62	0.317 31	15.911 59	10 27	9.144 71	0.417 26	18.238 69
9 8	7.987 26	0.318 47	15.940 67	10 28	9.159 38	0.418 59	18.267 78
9 9	8.001 89	0.319 64	15.969 76	10 29	9.174 04	0.419 93	18.296 87
9 10	8.016 53	0.320 81	15.998 85	10 30	9.188 71	0.421 27	18.325 96
9 11	8.031 17	0.321 98	16.027 94	10 31	9.203 38	0.422 62	18.355 05
9 12	8.045 81	0.323 15	16.057 03	10 32	9.218 04	0.423 96	18.384 13
9 13	8.060 45	0.324 33	16.086 12	10 33	9.232 71	0.425 31	18.413 22
9 14	8.075 09	0.325 51	16.115 21	10 34	9.247 38	0.426 66	18.442 31
9 15	8.089 73	0.326 68	16.144 30	10 35	9.262 05	0.428 01	18.471 40
9 16	8.104 37	0.327 87	16.173 38	10 36	9.276 72	0.429 37	18.500 49
9 17	8.119 01	0.329 05	16.202 47	10 37	9.291 39	0.430 72	18.529 58
9 18	8.133 65	0.330 24	16.231 56	10 38	9.306 06	0.432 08	18.558 67
9 19	8.148 29	0.331 42	16.260 65	10 39	9.320 73	0.433 44	18.587 76
9 20	8.162 93	0.332 61	16.289 74	10 40	9.335 40	0.434 80	18.616 85

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

L. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
EG MNT	M			DEG MNT	M		
10 41	9.350 07	0.436 17	18.645 93	12 1	10.525 13	0.552 37	20.973 04
10 42	9.364 74	0.437 53	18.675 02	12 2	10.539 83	0.553 91	21.002 13
10 43	9.379 42	0.438 90	18.704 11	12 3	10.554 54	0.555 45	21.031 22
10 44	9.394 09	0.440 28	18.733 20	12 4	10.569 25	0.556 99	21.060 31
10 45	9.408 76	0.441 65	18.762 29	12 5	10.583 95	0.558 54	21.089 40
10 46	9.423 44	0.443 02	18.791 38	12 6	10.598 66	0.560 09	21.118 48
10 47	9.438 11	0.444 40	18.820 47	12 7	10.613 37	0.561 64	21.147 57
10 48	9.452 78	0.445 78	18.849 56	12 8	10.628 08	0.563 19	21.176 66
10 49	9.467 46	0.447 16	18.878 64	12 9	10.642 79	0.564 75	21.205 75
10 50	9.482 13	0.448 55	18.907 73	12 10	10.657 50	0.566 31	21.234 84
10 51	9.496 81	0.449 93	18.936 82	12 11	10.672 21	0.567 87	21.263 93
10 52	9.511 48	0.451 32	18.965 91	12 12	10.686 92	0.569 43	21.293 02
10 53	9.526 16	0.452 71	18.995 00	12 13	10.701 63	0.570 99	21.322 11
10 54	9.540 84	0.454 11	19.024 09	12 14	10.716 34	0.572 56	21.351 19
10 55	9.555 51	0.455 50	19.053 18	12 15	10.731 05	0.574 13	21.380 28
10 56	9.570 19	0.456 90	19.082 27	12 16	10.745 76	0.575 70	21.409 37
10 57	9.584 87	0.458 30	19.111 36	12 17	10.760 48	0.577 27	21.438 46
10 58	9.599 55	0.459 70	19.140 44	12 18	10.775 19	0.578 85	21.467 55
10 59	9.614 23	0.461 10	19.169 53	12 19	10.789 90	0.580 43	21.496 64
11 0	9.628 90	0.462 51	19.198 62	12 20	10.804 62	0.582 00	21.525 73
11 1	9.643 58	0.463 92	19.227 71	12 21	10.819 33	0.583 59	21.554 82
11 2	9.658 26	0.465 33	19.256 80	12 22	10.834 05	0.585 17	21.583 91
11 3	9.672 94	0.466 74	19.285 89	12 23	10.848 76	0.586 76	21.612 99
11 4	9.687 63	0.468 15	19.314 98	12 24	10.863 48	0.588 34	21.642 08
11 5	9.702 31	0.469 57	19.344 07	12 25	10.878 19	0.589 94	21.671 17
11 6	9.716 99	0.470 99	19.373 15	12 26	10.892 91	0.591 53	21.700 26
11 7	9.731 67	0.472 41	19.402 24	12 27	10.907 63	0.593 12	21.729 35
11 8	9.746 35	0.473 83	19.431 33	12 28	10.922 34	0.594 72	21.758 44
11 9	9.761 03	0.475 26	19.460 42	12 29	10.937 06	0.596 32	21.787 53
11 10	9.775 72	0.476 69	19.489 51	12 30	10.951 78	0.597 92	21.816 62
11 11	9.790 40	0.478 12	19.518 60	12 31	10.966 50	0.599 52	21.845 70
11 12	9.805 09	0.479 55	19.547 69	12 32	10.981 22	0.601 13	21.874 79
11 13	9.819 77	0.480 98	19.576 78	12 33	10.995 94	0.602 74	21.903 88
11 14	9.834 46	0.482 42	19.605 87	12 34	11.010 66	0.604 35	21.932 97
11 15	9.849 14	0.483 86	19.634 95	12 35	11.025 38	0.605 96	21.962 06
11 16	9.863 83	0.485 30	19.664 04	12 36	11.040 10	0.607 57	21.991 15
11 17	9.878 51	0.486 74	19.693 13	12 37	11.054 82	0.609 19	22.020 24
11 18	9.893 20	0.488 19	19.722 22	12 38	11.069 55	0.610 81	22.049 33
11 19	9.907 89	0.489 63	19.751 31	12 39	11.084 27	0.612 43	22.078 42
11 20	9.922 57	0.491 08	19.780 40	12 40	11.098 99	0.614 05	22.107 50
11 21	9.937 26	0.492 53	19.809 49	12 41	11.113 72	0.615 68	22.136 59
11 22	9.951 95	0.493 99	19.838 58	12 42	11.128 44	0.617 31	22.165 68
11 23	9.966 64	0.495 44	19.867 66	12 43	11.143 17	0.618 94	22.194 77
11 24	9.981 33	0.496 90	19.896 75	12 44	11.157 89	0.620 57	22.223 86
11 25	9.996 02	0.498 36	19.925 84	12 45	11.172 62	0.622 20	22.252 95
11 26	10.010 71	0.499 82	19.954 93	12 46	11.187 34	0.623 84	22.282 04
11 27	10.025 40	0.501 29	19.984 02	12 47	11.202 07	0.625 48	22.311 13
11 28	10.040 09	0.502 75	20.013 11	12 48	11.216 80	0.627 12	22.340 21
11 29	10.054 78	0.504 22	20.042 20	12 49	11.231 52	0.628 76	22.369 30
11 30	10.069 47	0.505 69	20.071 29	12 50	11.246 25	0.630 40	22.398 39
11 31	10.084 16	0.507 17	20.100 38	12 51	11.260 98	0.632 05	22.427 48
11 32	10.098 86	0.508 64	20.129 46	12 52	11.275 71	0.633 70	22.456 57
11 33	10.113 55	0.510 12	20.158 55	12 53	11.290 44	0.635 35	22.485 66
11 34	10.128 24	0.511 60	20.187 64	12 54	11.305 17	0.637 01	22.514 75
11 35	10.142 94	0.513 08	20.216 73	12 55	11.319 90	0.638 66	22.543 84
11 36	10.157 63	0.514 56	20.245 82	12 56	11.334 63	0.640 32	22.572 92
11 37	10.172 32	0.516 05	20.274 91	12 57	11.349 36	0.641 98	22.602 01
11 38	10.187 02	0.517 54	20.304 00	12 58	11.364 10	0.643 64	22.631 10
11 39	10.201 71	0.519 03	20.333 09	12 59	11.378 83	0.645 31	22.660 19
11 40	10.216 41	0.520 52	20.362 17	13 0	11.393 56	0.646 97	22.689 28
11 41	10.231 11	0.522 02	20.391 26	13 1	11.408 29	0.648 64	22.718 37
11 42	10.245 80	0.523 51	20.420 35	13 2	11.423 03	0.650 31	22.747 46
11 43	10.260 50	0.525 01	20.449 44	13 3	11.437 76	0.651 99	22.776 55
11 44	10.275 20	0.526 51	20.478 53	13 4	11.452 50	0.653 66	22.805 64
11 45	10.289 90	0.528 02	20.507 62	13 5	11.467 23	0.655 34	22.834 72
11 46	10.304 60	0.529 52	20.536 71	13 6	11.481 97	0.657 02	22.863 81
11 47	10.319 30	0.531 03	20.565 80	13 7	11.496 71	0.658 70	22.892 90
11 48	10.333 99	0.532 54	20.594 89	13 8	11.511 44	0.660 39	22.921 99
11 49	10.348 69	0.534 05	20.623 97	13 9	11.526 18	0.662 07	22.951 08
11 50	10.363 40	0.535 57	20.653 06	13 10	11.540 92	0.663 76	22.980 17
11 51	10.378 10	0.537 08	20.682 15	13 11	11.555 66	0.665 45	23.009 26
11 52	10.392 80	0.538 60	20.711 24	13 12	11.570 39	0.667 14	23.038 35
11 53	10.407 50	0.540 12	20.740 33	13 13	11.585 13	0.668 84	23.067 43
11 54	10.422 20	0.541 64	20.769 42	13 14	11.599 87	0.670 54	23.096 52
11 55	10.436 90	0.543 17	20.798 51	13 15	11.614 61	0.672 24	23.125 61
11 56	10.451 61	0.544 70	20.827 60	13 16	11.629 36	0.673 94	23.154 70
11 57	10.466 31	0.546 23	20.856 68	13 17	11.644 10	0.675 64	23.183 79
11 58	10.481 01	0.547 76	20.885 77	13 18	11.658 84	0.677 35	23.212 88
11 59	10.495 72	0.549 29	20.914 86	13 19	11.673 58	0.679 06	23.241 97
12 0	10.510 42	0.550 83	20.943 95	13 20	11.688 32	0.680 77	23.271 06

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
13 21	11.703 07	0.682 48	23.300 15	14 41	12.884 22	0.826 60	25.627 25
13 22	11.717 81	0.684 19	23.329 23	14 42	12.899 00	0.828 49	25.656 34
13 23	11.732 56	0.685 91	23.358 32	14 43	12.913 79	0.830 38	25.685 43
13 24	11.747 30	0.687 63	23.387 41	14 44	12.928 58	0.832 28	25.714 52
13 25	11.762 05	0.689 35	23.416 50	14 45	12.943 37	0.834 17	25.743 61
13 26	11.776 79	0.691 08	23.445 59	14 46	12.958 15	0.836 07	25.772 70
13 27	11.791 54	0.692 80	23.474 68	14 47	12.972 94	0.837 98	25.801 78
13 28	11.806 28	0.694 53	23.503 77	14 48	12.987 73	0.839 88	25.830 87
13 29	11.821 03	0.696 26	23.532 86	14 49	13.002 52	0.841 78	25.859 96
13 30	11.835 78	0.697 99	23.561 94	14 50	13.017 31	0.843 69	25.889 05
13 31	11.850 53	0.699 73	23.591 03	14 51	13.032 10	0.845 60	25.918 14
13 32	11.865 28	0.701 46	23.620 12	14 52	13.046 90	0.847 52	25.947 23
13 33	11.880 03	0.703 20	23.649 21	14 53	13.061 69	0.849 43	25.976 32
13 34	11.894 78	0.704 94	23.678 30	14 54	13.076 48	0.851 35	26.005 41
13 35	11.909 53	0.706 69	23.707 39	14 55	13.091 27	0.853 27	26.034 49
13 36	11.924 28	0.708 43	23.736 48	14 56	13.106 07	0.855 19	26.063 58
13 37	11.939 03	0.710 18	23.765 57	14 57	13.120 86	0.857 11	26.092 67
13 38	11.953 78	0.711 93	23.794 66	14 58	13.135 66	0.859 04	26.121 76
13 39	11.968 53	0.713 68	23.823 74	14 59	13.150 45	0.860 97	26.150 85
13 40	11.983 29	0.715 44	23.852 83	15 0	13.165 25	0.862 90	26.179 94
13 41	11.998 04	0.717 19	23.881 92	15 1	13.180 05	0.864 83	26.209 03
13 42	12.012 79	0.718 95	23.911 01	15 2	13.194 84	0.866 76	26.238 12
13 43	12.027 55	0.720 71	23.940 10	15 3	13.209 64	0.868 70	26.267 21
13 44	12.042 30	0.722 48	23.969 19	15 4	13.224 44	0.870 64	26.296 29
13 45	12.057 06	0.724 24	23.998 28	15 5	13.239 24	0.872 58	26.325 38
13 46	12.071 82	0.726 01	24.027 37	15 6	13.254 04	0.874 52	26.354 47
13 47	12.086 57	0.727 78	24.056 45	15 7	13.268 84	0.876 47	26.383 56
13 48	12.101 33	0.729 55	24.085 54	15 8	13.283 64	0.878 42	26.412 65
13 49	12.116 09	0.731 32	24.114 63	15 9	13.298 44	0.880 37	26.441 74
13 50	12.130 85	0.733 10	24.143 72	15 10	13.313 24	0.882 32	26.470 83
13 51	12.145 60	0.734 88	24.172 81	15 11	13.328 05	0.884 27	26.499 92
13 52	12.160 36	0.736 66	24.201 90	15 12	13.342 85	0.886 23	26.529 00
13 53	12.175 12	0.738 44	24.230 99	15 13	13.357 65	0.888 19	26.558 09
13 54	12.189 88	0.740 23	24.260 08	15 14	13.372 46	0.890 15	26.587 18
13 55	12.204 64	0.742 01	24.289 17	15 15	13.387 26	0.892 11	26.616 27
13 56	12.219 41	0.743 80	24.318 25	15 16	13.402 07	0.894 08	26.645 36
13 57	12.234 17	0.745 59	24.347 34	15 17	13.416 87	0.896 05	26.674 45
13 58	12.248 93	0.747 39	24.376 43	15 18	13.431 68	0.898 02	26.703 54
13 59	12.263 69	0.749 18	24.405 52	15 19	13.446 49	0.899 99	26.732 63
14 0	12.278 46	0.750 98	24.434 61	15 20	13.461 29	0.901 96	26.761 72
14 1	12.293 22	0.752 78	24.463 70	15 21	13.476 10	0.903 94	26.790 80
14 2	12.307 98	0.754 59	24.492 79	15 22	13.490 91	0.905 92	26.819 89
14 3	12.322 75	0.756 39	24.521 88	15 23	13.505 72	0.907 90	26.848 98
14 4	12.337 52	0.758 20	24.550 96	15 24	13.520 53	0.909 88	26.878 07
14 5	12.352 28	0.760 01	24.580 05	15 25	13.535 34	0.911 87	26.907 16
14 6	12.367 05	0.761 82	24.609 14	15 26	13.550 15	0.913 86	26.936 25
14 7	12.381 81	0.763 63	24.638 23	15 27	13.564 96	0.915 85	26.965 34
14 8	12.396 58	0.765 45	24.667 32	15 28	13.579 78	0.917 84	26.994 43
14 9	12.411 35	0.767 26	24.696 41	15 29	13.594 59	0.919 83	27.023 51
14 10	12.426 12	0.769 08	24.725 50	15 30	13.609 40	0.921 83	27.052 60
14 11	12.440 89	0.770 91	24.754 59	15 31	13.624 22	0.923 83	27.081 69
14 12	12.455 66	0.772 73	24.783 68	15 32	13.639 03	0.925 83	27.110 78
14 13	12.470 43	0.774 56	24.812 76	15 33	13.653 85	0.927 83	27.139 87
14 14	12.485 20	0.776 39	24.841 85	15 34	13.668 66	0.929 84	27.168 96
14 15	12.499 97	0.778 22	24.870 94	15 35	13.683 48	0.931 85	27.198 05
14 16	12.514 74	0.780 05	24.900 03	15 36	13.698 30	0.933 86	27.227 14
14 17	12.529 52	0.781 89	24.929 12	15 37	13.713 11	0.935 87	27.256 23
14 18	12.544 29	0.783 72	24.958 21	15 38	13.727 93	0.937 88	27.285 31
14 19	12.559 06	0.785 56	24.987 30	15 39	13.742 75	0.939 90	27.314 40
14 20	12.573 84	0.787 41	25.016 39	15 40	13.757 57	0.941 92	27.343 49
14 21	12.588 61	0.789 25	25.045 47	15 41	13.772 39	0.943 94	27.372 58
14 22	12.603 39	0.791 10	25.074 56	15 42	13.787 21	0.945 96	27.401 67
14 23	12.618 16	0.792 95	25.103 65	15 43	13.802 03	0.947 99	27.430 76
14 24	12.632 94	0.794 80	25.132 74	15 44	13.816 85	0.950 01	27.459 85
14 25	12.647 71	0.796 65	25.161 83	15 45	13.831 68	0.952 04	27.488 94
14 26	12.662 49	0.798 51	25.190 92	15 46	13.846 50	0.954 08	27.518 02
14 27	12.677 27	0.800 36	25.220 01	15 47	13.861 32	0.956 11	27.547 11
14 28	12.692 05	0.802 22	25.249 10	15 48	13.876 15	0.958 15	27.576 20
14 29	12.706 83	0.804 08	25.278 19	15 49	13.890 97	0.960 19	27.605 29
14 30	12.721 61	0.805 95	25.307 27	15 50	13.905 80	0.962 23	27.634 38
14 31	12.736 39	0.807 81	25.336 36	15 51	13.920 62	0.964 27	27.663 47
14 32	12.751 17	0.809 68	25.365 45	15 52	13.935 45	0.966 31	27.692 56
14 33	12.765 95	0.811 55	25.394 54	15 53	13.950 28	0.968 36	27.721 65
14 34	12.780 73	0.813 43	25.423 63	15 54	13.965 10	0.970 41	27.750 74
14 35	12.795 51	0.815 30	25.452 72	15 55	13.979 93	0.972 46	27.779 82
14 36	12.810 30	0.817 18	25.481 81	15 56	13.994 76	0.974 52	27.808 91
14 37	12.825 08	0.819 06	25.510 90	15 57	14.009 59	0.976 57	27.838 00
14 38	12.839 86	0.820 94	25.539 98	15 58	14.024 42	0.978 63	27.867 09
14 39	12.854 65	0.822 82	25.569 07	15 59	14.039 25	0.980 69	27.896 18
14 40	12.869 43	0.824 71	25.598 16	16 0	14.054 08	0.982 76	27.925 27

50 TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
16 1	14.068 92	0.984 82	27.954 36	17 21	15.257 50	1.157 26	30.281 46
16 2	14.083 75	0.986 89	27.983 45	17 22	15.272 38	1.159 51	30.310 55
16 3	14.098 58	0.988 96	28.012 53	17 23	15.287 27	1.161 75	30.339 64
16 4	14.113 42	0.991 03	28.041 62	17 24	15.302 15	1.164 00	30.368 73
16 5	14.128 25	0.993 11	28.070 71	17 25	15.317 04	1.166 26	30.397 82
16 6	14.143 08	0.995 18	28.099 80	17 26	15.331 92	1.168 51	30.426 91
16 7	14.157 92	0.997 26	28.128 89	17 27	15.346 81	1.170 77	30.456 00
16 8	14.172 76	0.999 34	28.157 98	17 28	15.361 70	1.173 03	30.485 08
16 9	14.187 59	1.001 42	28.187 07	17 29	15.376 58	1.175 29	30.514 17
16 10	14.202 43	1.003 51	28.216 16	17 30	15.391 47	1.177 55	30.543 26
16 11	14.217 27	1.005 60	28.245 25	17 31	15.406 36	1.179 82	30.572 35
16 12	14.232 11	1.007 69	28.274 33	17 32	15.421 25	1.182 09	30.601 44
16 13	14.246 95	1.009 78	28.303 42	17 33	15.436 14	1.184 36	30.630 53
16 14	14.261 79	1.011 87	28.332 51	17 34	15.451 03	1.186 63	30.659 62
16 15	14.276 63	1.013 97	28.361 60	17 35	15.465 93	1.188 91	30.688 71
16 16	14.291 47	1.016 07	28.390 69	17 36	15.480 82	1.191 18	30.717 79
16 17	14.306 31	1.018 17	28.419 78	17 37	15.495 71	1.193 46	30.746 88
16 18	14.321 15	1.020 27	28.448 87	17 38	15.510 61	1.195 75	30.775 97
16 19	14.336 00	1.022 38	28.477 96	17 39	15.525 50	1.198 03	30.805 06
16 20	14.350 84	1.024 49	28.507 04	17 40	15.540 40	1.200 32	30.834 15
16 21	14.365 68	1.026 59	28.536 13	17 41	15.555 29	1.202 60	30.863 24
16 22	14.380 53	1.028 71	28.565 22	17 42	15.570 19	1.204 89	30.892 33
16 23	14.395 37	1.030 82	28.594 31	17 43	15.585 09	1.207 19	30.921 42
16 24	14.410 22	1.032 94	28.623 40	17 44	15.599 98	1.209 48	30.950 51
16 25	14.425 07	1.035 06	28.652 49	17 45	15.614 88	1.211 78	30.979 59
16 26	14.439 91	1.037 18	28.681 58	17 46	15.629 78	1.214 08	31.008 68
16 27	14.454 76	1.039 30	28.710 67	17 47	15.644 68	1.216 38	31.037 77
16 28	14.469 61	1.041 43	28.739 76	17 48	15.659 58	1.218 69	31.066 86
16 29	14.484 46	1.043 55	28.768 84	17 49	15.674 48	1.220 99	31.095 95
16 30	14.499 31	1.045 68	28.797 93	17 50	15.689 39	1.223 30	31.125 04
16 31	14.514 16	1.047 81	28.827 02	17 51	15.704 29	1.225 61	31.154 13
16 32	14.529 01	1.049 95	28.856 11	17 52	15.719 19	1.227 93	31.183 22
16 33	14.543 86	1.052 09	28.885 20	17 53	15.734 10	1.230 24	31.212 30
16 34	14.558 72	1.054 22	28.914 29	17 54	15.749 00	1.232 56	31.241 39
16 35	14.573 57	1.056 36	28.943 38	17 55	15.763 91	1.234 88	31.270 48
16 36	14.588 42	1.058 51	28.972 47	17 56	15.778 81	1.237 20	31.299 57
16 37	14.603 28	1.060 65	29.001 55	17 57	15.793 72	1.239 53	31.328 66
16 38	14.618 13	1.062 80	29.030 64	17 58	15.808 63	1.241 85	31.357 75
16 39	14.632 99	1.064 95	29.059 73	17 59	15.823 54	1.244 18	31.386 84
16 40	14.647 84	1.067 10	29.088 82	18 0	15.838 44	1.246 51	31.415 93
16 41	14.662 70	1.069 26	29.117 91	18 1	15.853 35	1.248 85	31.445 02
16 42	14.677 56	1.071 41	29.147 00	18 2	15.868 26	1.251 18	31.474 10
16 43	14.692 42	1.073 57	29.176 09	18 3	15.883 17	1.253 52	31.503 19
16 44	14.707 27	1.075 73	29.205 18	18 4	15.898 09	1.255 86	31.532 28
16 45	14.722 13	1.077 90	29.234 26	18 5	15.913 00	1.258 20	31.561 37
16 46	14.736 99	1.080 06	29.263 35	18 6	15.927 91	1.260 55	31.590 46
16 47	14.751 85	1.082 23	29.292 44	18 7	15.942 83	1.262 89	31.619 55
16 48	14.766 72	1.084 40	29.321 53	18 8	15.957 74	1.265 24	31.648 64
16 49	14.781 58	1.086 57	29.350 62	18 9	15.972 66	1.267 59	31.677 73
16 50	14.796 44	1.088 75	29.379 71	18 10	15.987 57	1.269 95	31.706 81
16 51	14.811 30	1.090 92	29.408 80	18 11	16.002 49	1.272 30	31.735 90
16 52	14.826 17	1.093 10	29.437 89	18 12	16.017 40	1.274 66	31.764 99
16 53	14.841 03	1.095 28	29.466 98	18 13	16.032 32	1.277 02	31.794 08
16 54	14.855 90	1.097 47	29.496 06	18 14	16.047 24	1.279 39	31.823 17
16 55	14.870 76	1.099 65	29.525 15	18 15	16.062 16	1.281 75	31.852 26
16 56	14.885 63	1.101 84	29.554 24	18 16	16.077 08	1.284 12	31.881 35
16 57	14.900 50	1.104 03	29.583 33	18 17	16.092 00	1.286 49	31.910 44
16 58	14.915 36	1.106 22	29.612 42	18 18	16.106 92	1.288 86	31.939 53
16 59	14.930 23	1.108 42	29.641 51	18 19	16.121 84	1.291 23	31.968 61
17 0	14.945 10	1.110 61	29.670 60	18 20	16.136 77	1.293 61	31.997 70
17 1	14.959 97	1.112 81	29.699 69	18 21	16.151 69	1.295 99	32.026 79
17 2	14.974 84	1.115 01	29.728 77	18 22	16.166 62	1.298 37	32.055 88
17 3	14.989 71	1.117 22	29.757 86	18 23	16.181 54	1.300 75	32.084 97
17 4	15.004 58	1.119 42	29.786 95	18 24	16.196 47	1.303 14	32.114 06
17 5	15.019 45	1.121 63	29.816 04	18 25	16.211 39	1.305 52	32.143 15
17 6	15.034 33	1.123 84	29.845 13	18 26	16.226 32	1.307 91	32.172 24
17 7	15.049 20	1.126 05	29.874 22	18 27	16.241 25	1.310 31	32.201 32
17 8	15.064 08	1.128 27	29.903 31	18 28	16.256 18	1.312 70	32.230 41
17 9	15.078 95	1.130 48	29.932 40	18 29	16.271 10	1.315 10	32.259 50
17 10	15.093 83	1.132 70	29.961 49	18 30	16.286 03	1.317 50	32.288 59
17 11	15.108 70	1.134 92	29.990 57	18 31	16.300 96	1.319 90	32.317 68
17 12	15.123 58	1.137 15	30.019 66	18 32	16.315 90	1.322 30	32.346 77
17 13	15.138 46	1.139 37	30.048 75	18 33	16.330 83	1.324 71	32.375 86
17 14	15.153 33	1.141 60	30.077 84	18 34	16.345 76	1.327 11	32.404 95
17 15	15.168 21	1.143 83	30.106 93	18 35	16.360 69	1.329 52	32.434 04
17 16	15.183 09	1.146 06	30.136 02	18 36	16.375 63	1.331 94	32.463 12
17 17	15.197 97	1.148 30	30.165 11	18 37	16.390 56	1.334 35	32.492 21
17 18	15.212 85	1.150 54	30.194 20	18 38	16.405 50	1.336 77	32.521 30
17 19	15.227 73	1.152 77	30.223 28	18 39	16.420 43	1.339 19	32.550 39
17 20	15.242 62	1.155 02	30.252 37	18 40	16.435 37	1.341 61	32.579 48

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
18 41	16.450 31	1.344 03	32.608 57	20 1	17.647 70	1.545 27	34.935 67
18 42	16.465 25	1.346 46	32.637 66	20 2	17.662 69	1.547 87	34.964 76
18 43	16.480 19	1.348 89	32.666 75	20 3	17.677 69	1.550 48	34.993 85
18 44	16.495 13	1.351 32	32.695 83	20 4	17.692 69	1.553 10	35.022 94
18 45	16.510 07	1.353 75	32.724 92	20 5	17.707 69	1.555 71	35.052 03
18 46	16.525 01	1.356 18	32.754 01	20 6	17.722 69	1.558 33	35.081 12
18 47	16.539 95	1.358 62	32.783 10	20 7	17.737 69	1.560 95	35.110 21
18 48	16.554 89	1.361 06	32.812 19	20 8	17.752 70	1.563 57	35.139 30
18 49	16.569 84	1.363 50	32.841 28	20 9	17.767 70	1.566 19	35.168 38
18 50	16.584 78	1.365 95	32.870 37	20 10	17.782 70	1.568 82	35.197 47
18 51	16.599 72	1.368 39	32.899 46	20 11	17.797 71	1.571 44	35.226 56
18 52	16.614 67	1.370 84	32.928 55	20 12	17.812 71	1.574 08	35.255 65
18 53	16.629 62	1.373 29	32.957 63	20 13	17.827 72	1.576 71	35.284 74
18 54	16.644 56	1.375 74	32.986 72	20 14	17.842 73	1.579 34	35.313 83
18 55	16.659 51	1.378 20	33.015 81	20 15	17.857 73	1.581 98	35.342 92
18 56	16.674 46	1.380 66	33.044 90	20 16	17.872 74	1.584 62	35.372 01
18 57	16.689 41	1.383 12	33.073 99	20 17	17.887 75	1.587 26	35.401 09
18 58	16.704 36	1.385 58	33.103 08	20 18	17.902 76	1.589 91	35.430 18
18 59	16.719 31	1.388 04	33.132 17	20 19	17.917 77	1.592 55	35.459 27
19 0	16.734 26	1.390 51	33.161 26	20 20	17.932 79	1.595 20	35.488 36
19 1	16.749 21	1.392 98	33.190 34	20 21	17.947 80	1.597 85	35.517 45
19 2	16.764 17	1.395 45	33.219 43	20 22	17.962 81	1.600 50	35.546 54
19 3	16.779 12	1.397 92	33.248 52	20 23	17.977 83	1.603 16	35.575 63
19 4	16.794 07	1.400 40	33.277 61	20 24	17.992 84	1.605 82	35.604 72
19 5	16.809 03	1.402 88	33.306 70	20 25	18.007 86	1.608 48	35.633 81
19 6	16.823 98	1.405 36	33.335 79	20 26	18.022 87	1.611 14	35.662 89
19 7	16.838 94	1.407 84	33.364 88	20 27	18.037 89	1.613 81	35.691 98
19 8	16.853 90	1.410 32	33.393 97	20 28	18.052 91	1.616 47	35.721 07
19 9	16.868 86	1.412 81	33.423 06	20 29	18.067 93	1.619 14	35.750 16
19 10	16.883 81	1.415 30	33.452 14	20 30	18.082 95	1.621 81	35.779 25
19 11	16.898 77	1.417 79	33.481 23	20 31	18.097 97	1.624 49	35.808 34
19 12	16.913 73	1.420 29	33.510 32	20 32	18.112 99	1.627 16	35.837 43
19 13	16.928 69	1.422 78	33.539 41	20 33	18.128 01	1.629 84	35.866 52
19 14	16.943 66	1.425 28	33.568 50	20 34	18.143 03	1.632 52	35.895 60
19 15	16.958 62	1.427 78	33.597 59	20 35	18.158 06	1.635 21	35.924 69
19 16	16.973 58	1.430 28	33.626 68	20 36	18.173 08	1.637 89	35.953 78
19 17	16.988 55	1.432 79	33.655 77	20 37	18.188 11	1.640 58	35.982 87
19 18	17.003 51	1.435 30	33.684 85	20 38	18.203 13	1.643 27	36.011 96
19 19	17.018 48	1.437 81	33.713 94	20 39	18.218 16	1.645 96	36.041 05
19 20	17.033 44	1.440 32	33.743 03	20 40	18.233 19	1.648 65	36.070 14
19 21	17.048 41	1.442 83	33.772 12	20 41	18.248 21	1.651 35	36.099 23
19 22	17.063 38	1.445 35	33.801 21	20 42	18.263 24	1.654 05	36.128 32
19 23	17.078 34	1.447 87	33.830 30	20 43	18.278 27	1.656 75	36.157 40
19 24	17.093 31	1.450 39	33.859 39	20 44	18.293 30	1.659 46	36.186 49
19 25	17.108 28	1.452 91	33.888 48	20 45	18.308 34	1.662 16	36.215 58
19 26	17.123 25	1.455 44	33.917 57	20 46	18.323 37	1.664 87	36.244 67
19 27	17.138 22	1.457 97	33.946 65	20 47	18.338 40	1.667 58	36.273 76
19 28	17.153 20	1.460 50	33.975 74	20 48	18.353 43	1.670 29	36.302 85
19 29	17.168 17	1.463 03	34.004 83	20 49	18.368 47	1.673 01	36.331 94
19 30	17.183 14	1.465 56	34.033 92	20 50	18.383 50	1.675 73	36.361 03
19 31	17.198 12	1.468 10	34.063 01	20 51	18.398 54	1.678 45	36.390 11
19 32	17.213 09	1.470 64	34.092 10	20 52	18.413 58	1.681 17	36.419 20
19 33	17.228 07	1.473 18	34.121 19	20 53	18.428 62	1.683 89	36.448 29
19 34	17.243 04	1.475 72	34.150 28	20 54	18.443 65	1.686 62	36.477 38
19 35	17.258 02	1.478 27	34.179 36	20 55	18.458 69	1.689 35	36.506 47
19 36	17.273 00	1.480 82	34.208 45	20 56	18.473 73	1.692 08	36.535 56
19 37	17.287 98	1.483 37	34.237 54	20 57	18.488 78	1.694 81	36.564 65
19 38	17.302 96	1.485 92	34.266 63	20 58	18.503 82	1.697 55	36.593 74
19 39	17.317 94	1.488 48	34.295 72	20 59	18.518 86	1.700 29	36.622 83
19 40	17.332 92	1.491 03	34.324 81	21 0	18.533 90	1.703 03	36.651 91
19 41	17.347 90	1.493 59	34.353 90	21 1	18.548 95	1.705 77	36.681 00
19 42	17.362 88	1.496 16	34.382 99	21 2	18.563 99	1.708 51	36.710 09
19 43	17.377 87	1.498 72	34.412 08	21 3	18.579 04	1.711 26	36.739 18
19 44	17.392 85	1.501 29	34.441 16	21 4	18.594 09	1.714 01	36.768 27
19 45	17.407 84	1.503 86	34.470 25	21 5	18.609 13	1.716 76	36.797 36
19 46	17.422 82	1.506 43	34.499 34	21 6	18.624 18	1.719 52	36.826 45
19 47	17.437 81	1.509 00	34.528 43	21 7	18.639 23	1.722 27	36.855 54
19 48	17.452 79	1.511 58	34.557 52	21 8	18.654 28	1.725 03	36.884 62
19 49	17.467 78	1.514 15	34.586 61	21 9	18.669 33	1.727 79	36.913 71
19 50	17.482 77	1.516 73	34.615 70	21 10	18.684 39	1.730 56	36.942 80
19 51	17.497 76	1.519 32	34.644 79	21 11	18.699 44	1.733 32	36.971 89
19 52	17.512 75	1.521 90	34.673 87	21 12	18.714 49	1.736 09	37.000 98
19 53	17.527 74	1.524 49	34.702 96	21 13	18.729 55	1.738 86	37.030 07
19 54	17.542 73	1.527 08	34.732 05	21 14	18.744 60	1.741 63	37.059 16
19 55	17.557 72	1.529 67	34.761 14	21 15	18.759 66	1.744 41	37.088 25
19 56	17.572 72	1.532 26	34.790 23	21 16	18.774 71	1.747 19	37.117 34
19 57	17.587 71	1.534 86	34.819 32	21 17	18.789 77	1.749 97	37.146 42
19 58	17.602 71	1.537 46	34.848 41	21 18	18.804 83	1.752 75	37.175 51
19 59	17.617 70	1.540 06	34.877 50	21 19	18.819 89	1.755 53	37.204 60
20 0	17.632 70	1.542 66	34.906 59	21 20	18.834 95	1.758 32	37.233 69

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
21 21	18.850 01	1.761 11	37.262 78	22 41	20.057 61	1.991 70	39.589 89
21 22	18.865 07	1.763 90	37.291 87	22 42	20.072 74	1.994 68	39.618 97
21 23	18.880 13	1.766 69	37.320 96	22 43	20.087 87	1.997 66	39.648 06
21 24	18.895 20	1.769 49	37.350 05	22 44	20.103 00	2.000 64	39.677 15
21 25	18.910 26	1.772 28	37.379 13	22 45	20.118 13	2.003 62	39.706 24
21 26	18.925 33	1.775 09	37.408 22	22 46	20.133 27	2.006 61	39.735 33
21 27	18.940 39	1.777 89	37.437 31	22 47	20.148 40	2.009 60	39.764 42
21 28	18.955 46	1.780 69	37.466 40	22 48	20.163 54	2.012 59	39.793 51
21 29	18.970 52	1.783 50	37.495 49	22 49	20.178 67	2.015 58	39.822 60
21 30	18.985 59	1.786 31	37.524 58	22 50	20.193 81	2.018 58	39.851 68
21 31	19.000 66	1.789 12	37.553 67	22 51	20.208 95	2.021 57	39.880 77
21 32	19.015 73	1.791 94	37.582 76	22 52	20.224 09	2.024 57	39.909 86
21 33	19.030 80	1.794 75	37.611 85	22 53	20.239 23	2.027 58	39.938 95
21 34	19.045 87	1.797 57	37.640 93	22 54	20.254 37	2.030 58	39.968 04
21 35	19.060 95	1.800 39	37.670 02	22 55	20.269 51	2.033 59	39.997 13
21 36	19.076 02	1.803 21	37.699 11	22 56	20.284 65	2.036 60	40.026 22
21 37	19.091 09	1.806 04	37.728 20	22 57	20.299 79	2.039 61	40.055 31
21 38	19.106 17	1.808 87	37.757 29	22 58	20.314 94	2.042 62	40.084 40
21 39	19.121 25	1.811 70	37.786 38	22 59	20.330 08	2.045 64	40.113 48
21 40	19.136 32	1.814 53	37.815 47	23 0	20.345 23	2.048 66	40.142 57
21 41	19.151 40	1.817 37	37.844 56	23 1	20.360 38	2.051 68	40.171 66
21 42	19.166 48	1.820 20	37.873 64	23 2	20.375 52	2.054 70	40.200 75
21 43	19.181 56	1.823 04	37.902 73	23 3	20.390 67	2.057 73	40.229 84
21 44	19.196 64	1.825 88	37.931 82	23 4	20.405 82	2.060 75	40.258 93
21 45	19.211 72	1.828 73	37.960 91	23 5	20.420 97	2.063 78	40.288 02
21 46	19.226 80	1.831 58	37.990 00	23 6	20.436 12	2.066 82	40.317 11
21 47	19.241 88	1.834 42	38.019 09	23 7	20.451 28	2.069 85	40.346 19
21 48	19.256 96	1.837 28	38.048 18	23 8	20.466 43	2.072 89	40.375 28
21 49	19.272 05	1.840 13	38.077 27	23 9	20.481 58	2.075 93	40.404 37
21 50	19.287 13	1.842 98	38.106 36	23 10	20.496 74	2.078 97	40.433 46
21 51	19.302 22	1.845 84	38.135 44	23 11	20.511 90	2.082 02	40.462 55
21 52	19.317 31	1.848 70	38.164 53	23 12	20.527 05	2.085 06	40.491 64
21 53	19.332 39	1.851 57	38.193 62	23 13	20.542 21	2.088 11	40.520 73
21 54	19.347 48	1.854 43	38.222 71	23 14	20.557 37	2.091 16	40.549 82
21 55	19.362 57	1.857 30	38.251 80	23 15	20.572 53	2.094 22	40.578 91
21 56	19.377 66	1.860 17	38.280 89	23 16	20.587 69	2.097 27	40.607 99
21 57	19.392 75	1.863 04	38.309 98	23 17	20.602 85	2.100 33	40.637 08
21 58	19.407 84	1.865 91	38.339 07	23 18	20.618 01	2.103 39	40.666 17
21 59	19.422 94	1.868 79	38.368 15	23 19	20.633 18	2.106 45	40.695 26
22 0	19.438 03	1.871 67	38.397 24	23 20	20.648 34	2.109 52	40.724 35
22 1	19.453 13	1.874 55	38.426 33	23 21	20.663 50	2.112 59	40.753 44
22 2	19.468 22	1.877 43	38.455 42	23 22	20.678 67	2.115 66	40.782 53
22 3	19.483 32	1.880 32	38.484 51	23 23	20.693 84	2.118 73	40.811 62
22 4	19.498 41	1.883 21	38.513 60	23 24	20.709 00	2.121 80	40.840 70
22 5	19.513 51	1.886 10	38.542 69	23 25	20.724 17	2.124 88	40.869 79
22 6	19.528 61	1.888 99	38.571 78	23 26	20.739 34	2.127 96	40.898 88
22 7	19.543 71	1.891 89	38.600 87	23 27	20.754 51	2.131 04	40.927 97
22 8	19.558 81	1.894 78	38.629 95	23 28	20.769 68	2.134 13	40.957 06
22 9	19.573 91	1.897 68	38.659 04	23 29	20.784 86	2.137 21	40.986 15
22 10	19.589 01	1.900 59	38.688 13	23 30	20.800 03	2.140 30	41.015 24
22 11	19.604 12	1.903 49	38.717 22	23 31	20.815 20	2.143 39	41.044 33
22 12	19.619 22	1.906 40	38.746 31	23 32	20.830 38	2.146 49	41.073 42
22 13	19.634 32	1.909 31	38.775 40	23 33	20.845 56	2.149 58	41.102 50
22 14	19.649 43	1.912 22	38.804 49	23 34	20.860 73	2.152 68	41.131 59
22 15	19.664 54	1.915 13	38.833 58	23 35	20.875 91	2.155 78	41.160 68
22 16	19.679 64	1.918 05	38.862 66	23 36	20.891 09	2.158 88	41.189 77
22 17	19.694 75	1.920 97	38.891 75	23 37	20.906 27	2.161 99	41.218 86
22 18	19.709 86	1.923 89	38.920 84	23 38	20.921 45	2.165 10	41.247 95
22 19	19.724 97	1.926 81	38.949 93	23 39	20.936 63	2.168 21	41.277 04
22 20	19.740 08	1.929 73	38.979 02	23 40	20.951 81	2.171 32	41.306 13
22 21	19.755 19	1.932 66	39.008 11	23 41	20.967 00	2.174 43	41.335 21
22 22	19.770 31	1.935 59	39.037 20	23 42	20.982 18	2.177 55	41.364 30
22 23	19.785 42	1.938 52	39.066 29	23 43	20.997 37	2.180 67	41.393 39
22 24	19.800 53	1.941 46	39.095 38	23 44	21.012 55	2.183 79	41.422 48
22 25	19.815 65	1.944 40	39.124 46	23 45	21.027 74	2.186 92	41.451 57
22 26	19.830 76	1.947 34	39.153 55	23 46	21.042 93	2.190 04	41.480 66
22 27	19.845 88	1.950 28	39.182 64	23 47	21.058 12	2.193 17	41.509 75
22 28	19.861 00	1.953 22	39.211 73	23 48	21.073 31	2.196 30	41.538 84
22 29	19.876 12	1.956 17	39.240 82	23 49	21.088 50	2.199 44	41.567 93
22 30	19.891 24	1.959 12	39.269 91	23 50	21.103 69	2.202 57	41.597 01
22 31	19.906 36	1.962 07	39.299 00	23 51	21.118 88	2.205 71	41.626 10
22 32	19.921 48	1.965 02	39.328 09	23 52	21.134 07	2.208 85	41.655 19
22 33	19.936 60	1.967 98	39.357 17	23 53	21.149 27	2.211 99	41.684 28
22 34	19.951 72	1.970 93	39.386 26	23 54	21.164 46	2.215 14	41.713 37
22 35	19.966 85	1.973 89	39.415 35	23 55	21.179 66	2.218 29	41.742 46
22 36	19.981 97	1.976 86	39.444 44	23 56	21.194 86	2.221 44	41.771 55
22 37	19.997 10	1.979 82	39.473 53	23 57	21.210 06	2.224 59	41.800 64
22 38	20.012 22	1.982 79	39.502 62	23 58	21.225 25	2.227 74	41.829 72
22 39	20.027 35	1.985 76	39.531 71	23 59	21.240 46	2.230 90	41.858 81
22 40	20.042 48	1.988 73	39.560 80	24 0	21.255 66	2.234 06	41.887 90

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
24 1	21.270 86	2.237 22	41.916 99	25 21	22.490 13	2.497 83	44.244 10
24 2	21.286 06	2.240 39	41.946 08	25 22	22.505 41	2.501 19	44.273 19
24 3	21.301 26	2.243 55	41.975 17	25 23	22.520 69	2.504 54	44.302 27
24 4	21.316 47	2.246 72	42.004 26	25 24	22.535 97	2.507 90	44.331 36
24 5	21.331 68	2.249 89	42.033 35	25 25	22.551 26	2.511 26	44.360 45
24 6	21.346 88	2.253 07	42.062 43	25 26	22.566 54	2.514 63	44.389 54
24 7	21.362 09	2.256 24	42.091 52	25 27	22.581 83	2.517 99	44.418 63
24 8	21.377 30	2.259 42	42.120 61	25 28	22.597 11	2.521 36	44.447 72
24 9	21.392 51	2.262 60	42.149 70	25 29	22.612 40	2.524 73	44.476 81
24 10	21.407 72	2.265 78	42.178 79	25 30	22.627 69	2.528 11	44.505 90
24 11	21.422 93	2.268 97	42.207 88	25 31	22.642 98	2.531 48	44.534 98
24 12	21.438 14	2.272 16	42.236 97	25 32	22.658 27	2.534 86	44.564 07
24 13	21.453 36	2.275 35	42.266 06	25 33	22.673 56	2.538 24	44.593 16
24 14	21.468 57	2.278 54	42.295 15	25 34	22.688 85	2.541 62	44.622 25
24 15	21.483 79	2.281 73	42.324 23	25 35	22.704 15	2.545 01	44.651 34
24 16	21.499 00	2.284 93	42.353 32	25 36	22.719 44	2.548 39	44.680 43
24 17	21.514 22	2.288 13	42.382 41	25 37	22.734 74	2.551 78	44.709 52
24 18	21.529 44	2.291 33	42.411 50	25 38	22.750 03	2.555 18	44.738 61
24 19	21.544 66	2.294 54	42.440 59	25 39	22.765 33	2.558 57	44.767 70
24 20	21.559 88	2.297 74	42.469 68	25 40	22.780 63	2.561 97	44.796 78
24 21	21.575 10	2.300 95	42.498 77	25 41	22.795 93	2.565 37	44.825 87
24 22	21.590 32	2.304 16	42.527 86	25 42	22.811 23	2.568 77	44.854 96
24 23	21.605 54	2.307 38	42.556 94	25 43	22.826 53	2.572 17	44.884 05
24 24	21.620 77	2.310 59	42.586 03	25 44	22.841 84	2.575 58	44.913 14
24 25	21.635 99	2.313 81	42.615 12	25 45	22.857 14	2.578 99	44.942 23
24 26	21.651 22	2.317 03	42.644 21	25 46	22.872 44	2.582 40	44.971 32
24 27	21.666 44	2.320 26	42.673 30	25 47	22.887 75	2.585 81	45.000 41
24 28	21.681 67	2.323 48	42.702 39	25 48	22.903 06	2.589 23	45.029 49
24 29	21.696 90	2.326 71	42.731 48	25 49	22.918 37	2.592 65	45.058 58
24 30	21.712 13	2.329 94	42.760 57	25 50	22.933 67	2.596 07	45.087 67
24 31	21.727 36	2.333 17	42.789 66	25 51	22.948 98	2.599 49	45.116 76
24 32	21.742 59	2.336 41	42.818 74	25 52	22.964 29	2.602 92	45.145 85
24 33	21.757 82	2.339 64	42.847 83	25 53	22.979 61	2.606 35	45.174 94
24 34	21.773 06	2.342 88	42.876 92	25 54	22.994 92	2.609 78	45.204 03
24 35	21.788 29	2.346 13	42.906 01	25 55	23.010 23	2.613 21	45.233 12
24 36	21.803 53	2.349 37	42.935 10	25 56	23.025 55	2.616 65	45.262 21
24 37	21.818 76	2.352 62	42.964 19	25 57	23.040 86	2.620 08	45.291 29
24 38	21.834 00	2.355 87	42.993 28	25 58	23.056 18	2.623 52	45.320 38
24 39	21.849 24	2.359 12	43.022 37	25 59	23.071 50	2.626 97	45.349 47
24 40	21.864 48	2.362 37	43.051 45	26 0	23.086 82	2.630 41	45.378 56
24 41	21.879 72	2.365 63	43.080 54	26 1	23.102 14	2.633 86	45.407 65
24 42	21.894 96	2.368 89	43.109 63	26 2	23.117 46	2.637 31	45.436 74
24 43	21.910 20	2.372 15	43.138 72	26 3	23.132 78	2.640 76	45.465 83
24 44	21.925 44	2.375 41	43.167 81	26 4	23.148 11	2.644 21	45.494 92
24 45	21.940 69	2.378 68	43.196 90	26 5	23.163 43	2.647 67	45.524 00
24 46	21.955 93	2.381 95	43.225 99	26 6	23.178 76	2.651 13	45.553 09
24 47	21.971 18	2.385 22	43.255 08	26 7	23.194 08	2.654 59	45.582 18
24 48	21.986 43	2.388 49	43.284 17	26 8	23.209 41	2.658 06	45.611 27
24 49	22.001 67	2.391 77	43.313 25	26 9	23.224 74	2.661 52	45.640 36
24 50	22.016 92	2.395 04	43.342 34	26 10	23.240 07	2.664 99	45.669 45
24 51	22.032 17	2.398 32	43.371 43	26 11	23.255 40	2.668 46	45.698 54
24 52	22.047 42	2.401 61	43.400 52	26 12	23.270 73	2.671 94	45.727 63
24 53	22.062 68	2.404 89	43.429 61	26 13	23.286 06	2.675 41	45.756 72
24 54	22.077 93	2.408 18	43.458 70	26 14	23.301 40	2.678 89	45.785 80
24 55	22.093 18	2.411 47	43.487 79	26 15	23.316 73	2.682 37	45.814 89
24 56	22.108 44	2.414 76	43.516 88	26 16	23.332 07	2.685 86	45.843 98
24 57	22.123 69	2.418 05	43.545 96	26 17	23.347 40	2.689 34	45.873 07
24 58	22.138 95	2.421 35	43.575 05	26 18	23.362 74	2.692 83	45.902 16
24 59	22.154 21	2.424 65	43.604 14	26 19	23.378 08	2.696 32	45.931 25
25 0	22.169 47	2.427 95	43.633 23	26 20	23.393 42	2.699 82	45.960 34
25 1	22.184 73	2.431 26	43.662 32	26 21	23.408 76	2.703 31	45.989 43
25 2	22.199 99	2.434 56	43.691 41	26 22	23.424 10	2.706 81	46.018 51
25 3	22.215 25	2.437 87	43.720 50	26 23	23.439 44	2.710 31	46.047 60
25 4	22.230 51	2.441 18	43.749 59	26 24	23.454 79	2.713 81	46.076 69
25 5	22.245 77	2.444 49	43.778 68	26 25	23.470 13	2.717 32	46.105 78
25 6	22.261 04	2.447 81	43.807 76	26 26	23.485 48	2.720 82	46.134 87
25 7	22.276 31	2.451 13	43.836 85	26 27	23.500 83	2.724 33	46.163 96
25 8	22.291 57	2.454 45	43.865 94	26 28	23.516 17	2.727 85	46.193 05
25 9	22.306 84	2.457 77	43.895 03	26 29	23.531 52	2.731 36	46.222 14
25 10	22.322 11	2.461 10	43.924 12	26 30	23.546 87	2.734 88	46.251 23
25 11	22.337 38	2.464 43	43.953 21	26 31	23.562 23	2.738 40	46.280 31
25 12	22.352 65	2.467 76	43.982 30	26 32	23.577 58	2.741 92	46.309 40
25 13	22.367 92	2.471 09	44.011 39	26 33	23.592 93	2.745 44	46.338 49
25 14	22.383 19	2.474 42	44.040 47	26 34	23.608 29	2.748 97	46.367 58
25 15	22.398 47	2.477 76	44.069 56	26 35	23.623 64	2.752 50	46.396 67
25 16	22.413 74	2.481 10	44.098 65	26 36	23.639 00	2.756 03	46.425 76
25 17	22.429 02	2.484 44	44.127 74	26 37	23.654 36	2.759 57	46.454 85
25 18	22.444 29	2.487 79	44.156 83	26 38	23.669 71	2.763 10	46.483 94
25 19	22.459 57	2.491 13	44.185 92	26 39	23.685 07	2.766 64	46.513 02
25 20	22.474 85	2.494 48	44.215 01	26 40	23.700 44	2.770 18	46.542 11

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
26 41	23.715 80	2.773 73	46.571 20	28 1	24.948 25	3.065 10	48.898 31
26 42	23.731 16	2.777 27	46.600 29	28 2	24.963 70	3.068 84	48.927 40
26 43	23.746 52	2.780 82	46.629 38	28 3	24.979 15	3.072 59	48.956 49
26 44	23.761 89	2.784 37	46.658 47	28 4	24.994 60	3.076 33	48.985 57
26 45	23.777 26	2.787 93	46.687 56	28 5	25.010 06	3.080 08	49.014 66
26 46	23.792 62	2.791 48	46.716 65	28 6	25.025 51	3.083 83	49.043 75
26 47	23.807 99	2.795 04	46.745 74	28 7	25.040 97	3.087 58	49.072 84
26 48	23.823 36	2.798 60	46.774 82	28 8	25.056 42	3.091 34	49.101 93
26 49	23.838 73	2.802 16	46.803 91	28 9	25.071 88	3.095 10	49.131 02
26 50	23.854 10	2.805 73	46.833 00	28 10	25.087 34	3.098 86	49.160 11
26 51	23.869 47	2.809 30	46.862 09	28 11	25.102 80	3.102 62	49.189 20
26 52	23.884 85	2.812 87	46.891 18	28 12	25.118 26	3.106 39	49.218 28
26 53	23.900 22	2.816 44	46.920 27	28 13	25.133 73	3.110 16	49.247 37
26 54	23.915 60	2.820 02	46.949 36	28 14	25.149 19	3.113 93	49.276 46
26 55	23.930 98	2.823 59	46.978 45	28 15	25.164 66	3.117 70	49.305 55
26 56	23.946 35	2.827 17	47.007 53	28 16	25.180 12	3.121 47	49.334 64
26 57	23.961 73	2.830 76	47.036 62	28 17	25.195 59	3.125 25	49.363 73
26 58	23.977 11	2.834 34	47.065 71	28 18	25.211 06	3.129 03	49.392 82
26 59	23.992 49	2.837 93	47.094 80	28 19	25.226 53	3.132 82	49.421 91
27 0	24.007 88	2.841 52	47.123 89	28 20	25.242 00	3.136 60	49.451 00
27 1	24.023 26	2.845 11	47.152 98	28 21	25.257 47	3.140 39	49.480 08
27 2	24.038 64	2.848 71	47.182 07	28 22	25.272 94	3.144 18	49.509 17
27 3	24.054 03	2.852 30	47.211 16	28 23	25.288 41	3.147 97	49.538 26
27 4	24.069 42	2.855 90	47.240 25	28 24	25.303 89	3.151 77	49.567 35
27 5	24.084 80	2.859 50	47.269 33	28 25	25.319 37	3.155 56	49.596 44
27 6	24.100 19	2.863 11	47.298 42	28 26	25.334 84	3.159 36	49.625 53
27 7	24.115 58	2.866 72	47.327 51	28 27	25.350 32	3.163 17	49.654 62
27 8	24.130 97	2.870 33	47.356 60	28 28	25.365 80	3.166 97	49.683 71
27 9	24.146 36	2.873 94	47.385 69	28 29	25.381 28	3.170 78	49.712 79
27 10	24.161 76	2.877 55	47.414 78	28 30	25.396 76	3.174 59	49.741 88
27 11	24.177 15	2.881 17	47.443 87	28 31	25.412 25	3.178 40	49.770 97
27 12	24.192 55	2.884 79	47.472 96	28 32	25.427 73	3.182 22	49.800 06
27 13	24.207 94	2.888 41	47.502 04	28 33	25.443 22	3.186 03	49.829 15
27 14	24.223 34	2.892 03	47.531 13	28 34	25.458 70	3.189 85	49.858 24
27 15	24.238 74	2.895 66	47.560 22	28 35	25.474 19	3.193 67	49.887 33
27 16	24.254 14	2.899 29	47.589 31	28 36	25.489 68	3.197 50	49.916 42
27 17	24.269 54	2.902 92	47.618 40	28 37	25.505 17	3.201 33	49.945 51
27 18	24.284 94	2.906 55	47.647 49	28 38	25.520 66	3.205 16	49.974 59
27 19	24.300 34	2.910 19	47.676 58	28 39	25.536 15	3.208 99	50.003 68
27 20	24.315 75	2.913 83	47.705 67	28 40	25.551 65	3.212 82	50.032 77
27 21	24.331 15	2.917 47	47.734 76	28 41	25.567 14	3.216 66	50.061 86
27 22	24.346 56	2.921 11	47.763 84	28 42	25.582 64	3.220 50	50.090 95
27 23	24.361 96	2.924 76	47.792 93	28 43	25.598 13	3.224 34	50.120 04
27 24	24.377 37	2.928 40	47.822 02	28 44	25.613 63	3.228 18	50.149 13
27 25	24.392 78	2.932 05	47.851 11	28 45	25.629 13	3.232 03	50.178 22
27 26	24.408 19	2.935 71	47.880 20	28 46	25.644 63	3.235 88	50.207 30
27 27	24.423 60	2.939 36	47.909 29	28 47	25.660 13	3.239 73	50.236 39
27 28	24.439 02	2.943 02	47.938 38	28 48	25.675 64	3.243 59	50.265 48
27 29	24.454 43	2.946 68	47.967 47	28 49	25.691 14	3.247 44	50.294 57
27 30	24.469 84	2.950 34	47.996 55	28 50	25.706 64	3.251 30	50.323 66
27 31	24.485 26	2.954 01	48.025 64	28 51	25.722 15	3.255 16	50.352 75
27 32	24.500 68	2.957 68	48.054 73	28 52	25.737 66	3.259 03	50.381 84
27 33	24.516 10	2.961 35	48.083 82	28 53	25.753 17	3.262 90	50.410 93
27 34	24.531 51	2.965 02	48.112 91	28 54	25.768 68	3.266 76	50.440 02
27 35	24.546 93	2.968 69	48.142 00	28 55	25.784 19	3.270 64	50.469 10
27 36	24.562 36	2.972 37	48.171 09	28 56	25.799 70	3.274 51	50.498 19
27 37	24.577 78	2.976 05	48.200 18	28 57	25.815 21	3.278 39	50.527 28
27 38	24.593 20	2.979 73	48.229 26	28 58	25.830 73	3.282 27	50.556 37
27 39	24.608 63	2.983 42	48.258 35	28 59	25.846 24	3.286 15	50.585 46
27 40	24.624 05	2.987 11	48.287 44	29 0	25.861 76	3.290 03	50.614 55
27 41	24.639 48	2.990 80	48.316 53	29 1	25.877 28	3.293 92	50.643 64
27 42	24.654 91	2.994 49	48.345 62	29 2	25.892 80	3.297 81	50.672 73
27 43	24.670 34	2.998 18	48.374 71	29 3	25.908 32	3.301 70	50.701 81
27 44	24.685 77	3.001 88	48.403 80	29 4	25.923 84	3.305 59	50.730 90
27 45	24.701 20	3.005 58	48.432 89	29 5	25.939 36	3.309 49	50.759 99
27 46	24.716 63	3.009 28	48.461 98	29 6	25.954 88	3.313 39	50.789 08
27 47	24.732 06	3.012 98	48.491 06	29 7	25.970 41	3.317 29	50.818 17
27 48	24.747 50	3.016 69	48.520 15	29 8	25.985 93	3.321 19	50.847 26
27 49	24.762 93	3.020 40	48.549 24	29 9	26.001 46	3.325 10	50.876 35
27 50	24.778 37	3.024 11	48.578 33	29 10	26.016 99	3.329 01	50.905 44
27 51	24.793 81	3.027 83	48.607 42	29 11	26.032 52	3.332 92	50.934 53
27 52	24.809 25	3.031 54	48.636 51	29 12	26.048 05	3.336 83	50.963 61
27 53	24.824 69	3.035 26	48.665 60	29 13	26.063 58	3.340 75	50.992 70
27 54	24.840 13	3.038 98	48.694 69	29 14	26.079 11	3.344 67	51.021 79
27 55	24.855 57	3.042 71	48.723 77	29 15	26.094 65	3.348 59	51.050 88
27 56	24.871 02	3.046 43	48.752 86	29 16	26.110 18	3.352 51	51.079 97
27 57	24.886 46	3.050 16	48.781 95	29 17	26.125 72	3.356 44	51.109 06
27 58	24.901 91	3.053 89	48.811 04	29 18	26.141 26	3.360 37	51.138 15
27 59	24.917 35	3.057 63	48.840 13	29 19	26.156 80	3.364 30	51.167 24
28 0	24.932 80	3.061 36	48.869 22	29 20	26.172 34	3.368 23	51.196 32

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
29 21	26.187 88	3.372 17	51.225 41	30 41	27.435 08	3.695 15	53.552 52
29 22	26.203 42	3.376 11	51.254 50	30 42	27.450 72	3.699 29	53.581 61
29 23	26.218 96	3.380 05	51.283 59	30 43	27.466 37	3.703 43	53.610 70
29 24	26.234 51	3.383 99	51.312 68	30 44	27.482 01	3.707 57	53.639 79
29 25	26.250 05	3.387 94	51.341 77	30 45	27.497 65	3.711 72	53.668 87
29 26	26.265 60	3.391 88	51.370 86	30 46	27.513 30	3.715 87	53.697 96
29 27	26.281 15	3.395 84	51.399 95	30 47	27.528 94	3.720 02	53.727 05
29 28	26.296 70	3.399 79	51.429 04	30 48	27.544 59	3.724 17	53.756 14
29 29	26.312 25	3.403 75	51.458 12	30 49	27.560 24	3.728 33	53.785 23
29 30	26.327 80	3.407 70	51.487 21	30 50	27.575 89	3.732 49	53.814 32
29 31	26.343 36	3.411 66	51.516 30	30 51	27.591 54	3.736 65	53.843 41
29 32	26.358 91	3.415 63	51.545 39	30 52	27.607 19	3.740 82	53.872 50
29 33	26.374 47	3.419 59	51.574 48	30 53	27.622 84	3.744 98	53.901 59
29 34	26.390 02	3.423 56	51.603 57	30 54	27.638 50	3.749 15	53.930 67
29 35	26.405 58	3.427 53	51.632 66	30 55	27.654 16	3.753 32	53.959 76
29 36	26.421 14	3.431 51	51.661 75	30 56	27.669 81	3.757 50	53.988 85
29 37	26.436 70	3.435 48	51.690 83	30 57	27.685 47	3.761 68	54.017 94
29 38	26.452 26	3.439 46	51.719 92	30 58	27.701 13	3.765 85	54.047 03
29 39	26.467 82	3.443 44	51.749 01	30 59	27.716 79	3.770 04	54.076 12
29 40	26.483 39	3.447 43	51.778 10	31 0	27.732 45	3.774 22	54.105 21
29 41	26.498 95	3.451 41	51.807 19	31 1	27.748 12	3.778 41	54.134 30
29 42	26.514 52	3.455 40	51.836 28	31 2	27.763 78	3.782 60	54.163 38
29 43	26.530 09	3.459 39	51.865 37	31 3	27.779 45	3.786 79	54.192 47
29 44	26.545 66	3.463 38	51.894 46	31 4	27.795 12	3.790 98	54.221 56
29 45	26.561 23	3.467 38	51.923 55	31 5	27.810 79	3.795 18	54.250 65
29 46	26.576 80	3.471 38	51.952 63	31 6	27.826 46	3.799 38	54.279 74
29 47	26.592 37	3.475 38	51.981 72	31 7	27.842 13	3.803 58	54.308 83
29 48	26.607 94	3.479 38	52.010 81	31 8	27.857 80	3.807 79	54.337 92
29 49	26.623 52	3.483 39	52.039 90	31 9	27.873 47	3.812 00	54.367 01
29 50	26.639 09	3.487 40	52.068 99	31 10	27.889 15	3.816 21	54.396 10
29 51	26.654 67	3.491 41	52.098 08	31 11	27.904 82	3.820 42	54.425 18
29 52	26.670 25	3.495 42	52.127 17	31 12	27.920 50	3.824 63	54.454 27
29 53	26.685 83	3.499 44	52.156 26	31 13	27.936 18	3.828 85	54.483 36
29 54	26.701 41	3.503 46	52.185 34	31 14	27.951 86	3.833 07	54.512 45
29 55	26.716 99	3.507 48	52.214 43	31 15	27.967 54	3.837 29	54.541 54
29 56	26.732 57	3.511 50	52.243 52	31 16	27.983 22	3.841 52	54.570 63
29 57	26.748 16	3.515 53	52.272 61	31 17	27.998 91	3.845 75	54.599 72
29 58	26.763 74	3.519 55	52.301 70	31 18	28.014 59	3.849 98	54.628 81
29 59	26.779 33	3.523 58	52.330 79	31 19	28.030 28	3.854 21	54.657 89
30 0	26.794 92	3.527 62	52.359 88	31 20	28.045 97	3.858 44	54.686 98
30 1	26.810 51	3.531 65	52.388 97	31 21	28.061 66	3.862 68	54.716 07
30 2	26.826 10	3.535 69	52.418 06	31 22	28.077 35	3.866 92	54.745 16
30 3	26.841 69	3.539 73	52.447 14	31 23	28.093 04	3.871 16	54.774 25
30 4	26.857 28	3.543 78	52.476 23	31 24	28.108 73	3.875 41	54.803 34
30 5	26.872 88	3.547 82	52.505 32	31 25	28.124 43	3.879 66	54.832 43
30 6	26.888 47	3.551 87	52.534 41	31 26	28.140 12	3.883 91	54.861 52
30 7	26.904 07	3.555 92	52.563 50	31 27	28.155 82	3.888 16	54.890 60
30 8	26.919 67	3.559 98	52.592 59	31 28	28.171 52	3.892 42	54.919 69
30 9	26.935 27	3.564 03	52.621 68	31 29	28.187 22	3.896 68	54.948 78
30 10	26.950 87	3.568 09	52.650 77	31 30	28.202 92	3.900 94	54.977 87
30 11	26.966 47	3.572 15	52.679 85	31 31	28.218 62	3.905 20	55.006 96
30 12	26.982 07	3.576 21	52.708 94	31 32	28.234 32	3.909 47	55.036 05
30 13	26.997 67	3.580 28	52.738 03	31 33	28.250 03	3.913 73	55.065 14
30 14	27.013 28	3.584 35	52.767 12	31 34	28.265 73	3.918 00	55.094 23
30 15	27.028 89	3.588 42	52.796 21	31 35	28.281 44	3.922 28	55.123 32
30 16	27.044 49	3.592 49	52.825 30	31 36	28.297 15	3.926 55	55.152 40
30 17	27.060 10	3.596 57	52.854 39	31 37	28.312 86	3.930 83	55.181 49
30 18	27.075 71	3.600 65	52.883 48	31 38	28.328 57	3.935 11	55.210 58
30 19	27.091 32	3.604 73	52.912 57	31 39	28.344 28	3.939 40	55.239 67
30 20	27.106 94	3.608 81	52.941 65	31 40	28.359 99	3.943 68	55.268 76
30 21	27.122 55	3.612 90	52.970 74	31 41	28.375 71	3.947 97	55.297 85
30 22	27.138 17	3.616 99	52.999 83	31 42	28.391 43	3.952 26	55.326 94
30 23	27.153 78	3.621 08	53.028 92	31 43	28.407 14	3.956 56	55.356 03
30 24	27.169 40	3.625 17	53.058 01	31 44	28.422 86	3.960 85	55.385 11
30 25	27.185 02	3.629 27	53.087 10	31 45	28.438 58	3.965 15	55.414 20
30 26	27.200 64	3.633 37	53.116 19	31 46	28.454 30	3.969 45	55.443 29
30 27	27.216 26	3.637 47	53.145 28	31 47	28.470 03	3.973 76	55.472 38
30 28	27.231 88	3.641 57	53.174 36	31 48	28.485 75	3.978 06	55.501 47
30 29	27.247 50	3.645 68	53.203 45	31 49	28.501 47	3.982 37	55.530 56
30 30	27.263 13	3.649 79	53.232 54	31 50	28.517 20	3.986 69	55.559 65
30 31	27.278 76	3.653 90	53.261 63	31 51	28.532 93	3.991 00	55.588 74
30 32	27.294 38	3.658 01	53.290 72	31 52	28.548 66	3.995 32	55.617 83
30 33	27.310 01	3.662 13	53.319 81	31 53	28.564 39	3.999 64	55.646 91
30 34	27.325 64	3.666 25	53.348 90	31 54	28.580 12	4.003 96	55.676 00
30 35	27.341 27	3.670 37	53.377 99	31 55	28.595 85	4.008 28	55.705 09
30 36	27.356 90	3.674 49	53.407 08	31 56	28.611 59	4.012 61	55.734 18
30 37	27.372 54	3.678 62	53.436 16	31 57	28.627 32	4.016 94	55.763 27
30 38	27.388 17	3.682 75	53.465 25	31 58	28.643 06	4.021 27	55.792 36
30 39	27.403 81	3.686 88	53.494 34	31 59	28.658 80	4.025 61	55.821 45
30 40	27.419 45	3.691 01	53.523 43	32 0	28.674 54	4.029 94	55.850 54

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
32 1	28.690 28	4.034 28	55.879 62	33 21	29.953 88	4.389 82	58.206 73
32 2	28.706 02	4.038 63	55.908 71	33 22	29.969 73	4.394 37	58.235 82
32 3	28.721 77	4.042 97	55.937 80	33 23	29.985 58	4.398 92	58.264 91
32 4	28.737 51	4.047 32	55.966 89	33 24	30.001 44	4.403 48	58.294 00
32 5	28.753 26	4.051 67	55.995 98	33 25	30.017 29	4.408 04	58.323 09
32 6	28.769 00	4.056 02	56.025 07	33 26	30.033 15	4.412 59	58.352 17
32 7	28.784 75	4.060 38	56.054 16	33 27	30.049 00	4.417 16	58.381 26
32 8	28.800 50	4.064 73	56.083 25	33 28	30.064 86	4.421 72	58.410 35
32 9	28.816 25	4.069 09	56.112 34	33 29	30.080 72	4.426 29	58.439 44
32 10	28.832 01	4.073 46	56.141 42	33 30	30.096 58	4.430 86	58.468 53
32 11	28.847 76	4.077 82	56.170 51	33 31	30.112 45	4.435 43	58.497 62
32 12	28.863 52	4.082 19	56.199 60	33 32	30.128 31	4.440 01	58.526 71
32 13	28.879 27	4.086 56	56.228 69	33 33	30.144 18	4.444 58	58.555 80
32 14	28.895 03	4.090 94	56.257 78	33 34	30.160 04	4.449 17	58.584 89
32 15	28.910 79	4.095 31	56.286 87	33 35	30.175 91	4.453 75	58.613 97
32 16	28.926 55	4.099 69	56.315 96	33 36	30.191 78	4.458 33	58.643 06
32 17	28.942 31	4.104 07	56.345 05	33 37	30.207 65	4.462 92	58.672 15
32 18	28.958 08	4.108 45	56.374 13	33 38	30.223 52	4.467 51	58.701 24
32 19	28.973 84	4.112 84	56.403 22	33 39	30.239 40	4.472 11	58.730 33
32 20	28.989 61	4.117 23	56.432 31	33 40	30.255 27	4.476 70	58.759 42
32 21	29.005 38	4.121 62	56.461 40	33 41	30.271 15	4.481 30	58.788 51
32 22	29.021 14	4.126 01	56.490 49	33 42	30.287 03	4.485 90	58.817 60
32 23	29.036 91	4.130 41	56.519 58	33 43	30.302 91	4.490 51	58.846 68
32 24	29.052 69	4.134 81	56.548 67	33 44	30.318 79	4.495 11	58.875 77
32 25	29.068 46	4.139 21	56.577 76	33 45	30.334 67	4.499 72	58.904 86
32 26	29.084 23	4.143 62	56.606 85	33 46	30.350 55	4.504 33	58.933 95
32 27	29.100 01	4.148 02	56.635 93	33 47	30.366 44	4.508 95	58.963 04
32 28	29.115 78	4.152 43	56.665 02	33 48	30.382 32	4.513 57	58.992 13
32 29	29.131 56	4.156 84	56.694 11	33 49	30.398 21	4.518 19	59.021 22
32 30	29.147 34	4.161 26	56.723 20	33 50	30.414 10	4.522 81	59.050 31
32 31	29.163 12	4.165 67	56.752 29	33 51	30.429 99	4.527 43	59.079 40
32 32	29.178 90	4.170 09	56.781 38	33 52	30.445 88	4.532 06	59.108 48
32 33	29.194 69	4.174 52	56.810 47	33 53	30.461 78	4.536 69	59.137 57
32 34	29.210 47	4.178 94	56.839 56	33 54	30.477 67	4.541 32	59.166 66
32 35	29.226 26	4.183 37	56.868 64	33 55	30.493 57	4.545 96	59.195 75
32 36	29.242 05	4.187 80	56.897 73	33 56	30.509 46	4.550 60	59.224 84
32 37	29.257 84	4.192 23	56.926 82	33 57	30.525 36	4.555 24	59.253 93
32 38	29.273 63	4.196 67	56.955 91	33 58	30.541 26	4.559 88	59.283 02
32 39	29.289 42	4.201 10	56.985 00	33 59	30.557 16	4.564 53	59.312 11
32 40	29.305 21	4.205 54	57.014 09	34 0	30.573 07	4.569 18	59.341 19
32 41	29.321 00	4.209 99	57.043 18	34 1	30.588 97	4.573 83	59.370 28
32 42	29.336 80	4.214 43	57.072 27	34 2	30.604 88	4.578 48	59.399 37
32 43	29.352 60	4.218 88	57.101 36	34 3	30.620 79	4.583 14	59.428 46
32 44	29.368 39	4.223 33	57.130 44	34 4	30.636 70	4.587 80	59.457 55
32 45	29.384 19	4.227 78	57.159 53	34 5	30.652 61	4.592 46	59.486 64
32 46	29.399 99	4.232 24	57.188 62	34 6	30.668 52	4.597 12	59.515 73
32 47	29.415 80	4.236 70	57.217 71	34 7	30.684 43	4.601 79	59.544 82
32 48	29.431 60	4.241 16	57.246 80	34 8	30.700 34	4.606 46	59.573 91
32 49	29.447 41	4.245 62	57.275 89	34 9	30.716 26	4.611 13	59.602 99
32 50	29.463 21	4.250 09	57.304 98	34 10	30.732 18	4.615 81	59.632 08
32 51	29.479 02	4.254 56	57.334 07	34 11	30.748 10	4.620 48	59.661 17
32 52	29.494 83	4.259 03	57.363 15	34 12	30.764 02	4.625 16	59.690 26
32 53	29.510 64	4.263 50	57.392 24	34 13	30.779 94	4.629 85	59.719 35
32 54	29.526 45	4.267 98	57.421 33	34 14	30.795 86	4.634 53	59.748 44
32 55	29.542 26	4.272 46	57.450 42	34 15	30.811 79	4.639 22	59.777 53
32 56	29.558 08	4.276 94	57.479 51	34 16	30.827 71	4.643 91	59.806 62
32 57	29.573 89	4.281 42	57.508 60	34 17	30.843 64	4.648 60	59.835 70
32 58	29.589 71	4.285 91	57.537 69	34 18	30.859 57	4.653 30	59.864 79
32 59	29.605 53	4.290 40	57.566 78	34 19	30.875 50	4.658 00	59.893 88
33 0	29.621 35	4.294 89	57.595 87	34 20	30.891 43	4.662 70	59.922 97
33 1	29.637 17	4.299 39	57.624 95	34 21	30.907 36	4.667 40	59.952 06
33 2	29.652 99	4.303 88	57.654 04	34 22	30.923 30	4.672 11	59.981 15
33 3	29.668 82	4.308 38	57.683 13	34 23	30.939 23	4.676 82	60.010 24
33 4	29.684 64	4.312 89	57.712 22	34 24	30.955 17	4.681 53	60.039 33
33 5	29.700 47	4.317 39	57.741 31	34 25	30.971 11	4.686 24	60.068 42
33 6	29.716 30	4.321 90	57.770 40	34 26	30.987 05	4.690 96	60.097 50
33 7	29.732 13	4.326 41	57.799 49	34 27	31.002 99	4.695 68	60.126 59
33 8	29.747 96	4.330 92	57.828 58	34 28	31.018 93	4.700 40	60.155 68
33 9	29.763 79	4.335 44	57.857 66	34 29	31.034 88	4.705 13	60.184 77
33 10	29.779 62	4.339 95	57.886 75	34 30	31.050 83	4.709 86	60.213 86
33 11	29.795 46	4.344 47	57.915 84	34 31	31.066 77	4.714 59	60.242 95
33 12	29.811 29	4.349 00	57.944 93	34 32	31.082 72	4.719 32	60.272 04
33 13	29.827 13	4.353 52	57.974 02	34 33	31.098 67	4.724 05	60.301 13
33 14	29.842 97	4.358 05	58.003 11	34 34	31.114 62	4.728 79	60.330 21
33 15	29.858 81	4.362 58	58.032 20	34 35	31.130 58	4.733 53	60.359 30
33 16	29.874 65	4.367 12	58.061 29	34 36	31.146 53	4.738 28	60.388 39
33 17	29.890 50	4.371 65	58.090 38	34 37	31.162 49	4.743 02	60.417 48
33 18	29.906 34	4.376 19	58.119 46	34 38	31.178 45	4.747 77	60.446 57
33 19	29.922 19	4.380 73	58.148 55	34 39	31.194 40	4.752 52	60.475 66
33 20	29.938 03	4.385 28	58.177 64	34 40	31.210 36	4.757 28	60.504 75

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
34 41	31.226 33	4.762 03	60.533 84	36 1	32.508 05	5.151 19	62.860
34 42	31.242 29	4.766 79	60.562 93	36 2	32.524 13	5.156 17	62.890
34 43	31.258 25	4.771 55	60.592 01	36 3	32.540 22	5.161 14	62.919
34 44	31.274 22	4.776 32	60.621 10	36 4	32.556 30	5.166 12	62.948
34 45	31.290 19	4.781 09	60.650 19	36 5	32.572 39	5.171 10	62.977
34 46	31.306 16	4.785 86	60.679 28	36 6	32.588 48	5.176 08	63.006
34 47	31.322 13	4.790 63	60.708 37	36 7	32.604 57	5.181 07	63.035
34 48	31.338 10	4.795 40	60.737 46	36 8	32.620 66	5.186 06	63.064
34 49	31.354 07	4.800 18	60.766 55	36 9	32.636 75	5.191 05	63.093
34 50	31.370 05	4.804 96	60.795 64	36 10	32.652 84	5.196 05	63.122
34 51	31.386 03	4.809 74	60.824 72	36 11	32.668 94	5.201 04	63.151
34 52	31.402 00	4.814 53	60.853 81	36 12	32.685 04	5.206 04	63.180
34 53	31.417 98	4.819 32	60.882 90	36 13	32.701 14	5.211 05	63.210
34 54	31.433 96	4.824 11	60.911 99	36 14	32.717 24	5.216 05	63.239
34 55	31.449 95	4.828 90	60.941 08	36 15	32.733 34	5.221 06	63.268
34 56	31.465 93	4.833 70	60.970 17	36 16	32.749 44	5.226 07	63.297
34 57	31.481 91	4.838 50	60.999 26	36 17	32.765 55	5.231 08	63.326
34 58	31.497 90	4.843 30	61.028 35	36 18	32.781 65	5.236 10	63.355
34 59	31.513 89	4.848 11	61.057 43	36 19	32.797 76	5.241 12	63.384
35 0	31.529 88	4.852 91	61.086 52	36 20	32.813 87	5.246 14	63.413
35 1	31.545 87	4.857 72	61.115 61	36 21	32.829 98	5.251 17	63.442
35 2	31.561 86	4.862 53	61.144 70	36 22	32.846 10	5.256 19	63.471
35 3	31.577 86	4.867 35	61.173 79	36 23	32.862 21	5.261 22	63.500
35 4	31.593 85	4.872 17	61.202 88	36 24	32.878 33	5.266 25	63.529
35 5	31.609 85	4.876 99	61.231 97	36 25	32.894 44	5.271 29	63.559
35 6	31.625 85	4.881 81	61.261 06	36 26	32.910 56	5.276 33	63.588
35 7	31.641 85	4.886 64	61.290 15	36 27	32.926 68	5.281 37	63.617
35 8	31.657 85	4.891 46	61.319 23	36 28	32.942 81	5.286 41	63.646
35 9	31.673 85	4.896 30	61.348 32	36 29	32.958 93	5.291 46	63.675
35 10	31.689 86	4.901 13	61.377 41	36 30	32.975 05	5.296 51	63.704
35 11	31.705 86	4.905 97	61.406 50	36 31	32.991 18	5.301 56	63.733
35 12	31.721 87	4.910 80	61.435 59	36 32	33.007 31	5.306 61	63.762
35 13	31.737 88	4.915 65	61.464 68	36 33	33.023 44	5.311 67	63.791
35 14	31.753 89	4.920 49	61.493 77	36 34	33.039 57	5.316 73	63.820
35 15	31.769 90	4.925 34	61.522 86	36 35	33.055 70	5.321 79	63.849
35 16	31.785 91	4.930 19	61.551 94	36 36	33.071 84	5.326 86	63.879
35 17	31.801 93	4.935 04	61.581 03	36 37	33.087 97	5.331 92	63.908
35 18	31.817 94	4.939 89	61.610 12	36 38	33.104 11	5.336 99	63.937
35 19	31.833 96	4.944 75	61.639 21	36 39	33.120 25	5.342 07	63.966
35 20	31.849 98	4.949 61	61.668 30	36 40	33.136 39	5.347 14	63.995
35 21	31.866 00	4.954 48	61.697 39	36 41	33.152 53	5.352 22	64.024
35 22	31.882 02	4.959 34	61.726 48	36 42	33.168 68	5.357 30	64.053
35 23	31.898 05	4.964 21	61.755 57	36 43	33.184 82	5.362 39	64.082
35 24	31.914 07	4.969 08	61.784 66	36 44	33.200 97	5.367 47	64.111
35 25	31.930 10	4.973 95	61.813 74	36 45	33.217 12	5.372 56	64.140
35 26	31.946 13	4.978 83	61.842 83	36 46	33.233 27	5.377 65	64.169
35 27	31.962 15	4.983 71	61.871 92	36 47	33.249 42	5.382 75	64.199
35 28	31.978 19	4.988 59	61.901 01	36 48	33.265 57	5.387 85	64.228
35 29	31.994 22	4.993 48	61.930 10	36 49	33.281 73	5.392 95	64.257
35 30	32.010 25	4.998 36	61.959 19	36 50	33.297 88	5.398 05	64.286
35 31	32.026 29	5.003 25	61.988 28	36 51	33.314 04	5.403 16	64.315
35 32	32.042 32	5.008 15	62.017 37	36 52	33.330 20	5.408 26	64.344
35 33	32.058 36	5.013 04	62.046 45	36 53	33.346 36	5.413 38	64.373
35 34	32.074 40	5.017 94	62.075 54	36 54	33.362 52	5.418 49	64.402
35 35	32.090 44	5.022 84	62.104 63	36 55	33.378 69	5.423 61	64.431
35 36	32.106 49	5.027 74	62.133 72	36 56	33.394 85	5.428 73	64.460
35 37	32.122 53	5.032 65	62.162 81	36 57	33.411 02	5.433 85	64.489
35 38	32.138 58	5.037 56	62.191 90	36 58	33.427 19	5.438 97	64.519
35 39	32.154 63	5.042 47	62.220 99	36 59	33.443 36	5.444 10	64.548
35 40	32.170 67	5.047 38	62.250 08	37 0	33.459 53	5.449 23	64.577
35 41	32.186 72	5.052 30	62.279 17	37 1	33.475 71	5.454 36	64.606
35 42	32.202 78	5.057 22	62.308 25	37 2	33.491 88	5.459 50	64.635
35 43	32.218 83	5.062 14	62.337 34	37 3	33.508 06	5.464 64	64.664
35 44	32.234 89	5.067 06	62.366 43	37 4	33.524 24	5.469 78	64.693
35 45	32.250 94	5.071 99	62.395 52	37 5	33.540 42	5.474 92	64.722
35 46	32.267 00	5.076 92	62.424 61	37 6	33.556 60	5.480 07	64.751
35 47	32.283 06	5.081 85	62.453 70	37 7	33.572 78	5.485 22	64.780
35 48	32.299 12	5.086 79	62.482 79	37 8	33.588 96	5.490 37	64.809
35 49	32.315 18	5.091 73	62.511 88	37 9	33.605 15	5.495 53	64.838
35 50	32.331 25	5.096 67	62.540 96	37 10	33.621 34	5.500 68	64.868
35 51	32.347 31	5.101 61	62.570 05	37 11	33.637 53	5.505 84	64.897
35 52	32.363 38	5.106 56	62.599 14	37 12	33.653 72	5.511 01	64.926
35 53	32.379 45	5.111 51	62.628 23	37 13	33.669 91	5.516 17	64.955
35 54	32.395 52	5.116 46	62.657 32	37 14	33.686 10	5.521 34	64.984
35 55	32.411 59	5.121 41	62.686 41	37 15	33.702 30	5.526 51	65.013
35 56	32.427 66	5.126 37	62.715 50	37 16	33.718 50	5.531 69	65.042
35 57	32.443 74	5.131 33	62.744 59	37 17	33.734 70	5.536 86	65.071
35 58	32.459 81	5.136 29	62.773 68	37 18	33.750 90	5.542 04	65.100
35 59	32.475 89	5.141 25	62.802 76	37 19	33.767 10	5.547 23	65.129
36 0	32.491 97	5.146 22	62.831 85	37 20	33.783 30	5.552 41	65.158

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

L. ANG. . DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
EG MNT	M			DEG MNT	M		
37 21	33.799 51	5.557 60	65.188 05	38 41	35.101 16	5.981 56	67.515 15
37 22	33.815 71	5.562 79	65.217 14	38 42	35.117 50	5.986 97	67.544 24
37 23	33.831 92	5.567 98	65.246 23	38 43	35.133 84	5.992 39	67.573 33
37 24	33.848 13	5.573 18	65.275 31	38 44	35.150 18	5.997 81	67.602 42
37 25	33.864 34	5.578 38	65.304 40	38 45	35.166 52	6.003 23	67.631 51
37 26	33.880 56	5.583 58	65.333 49	38 46	35.182 87	6.008 65	67.660 60
37 27	33.896 77	5.588 78	65.362 58	38 47	35.199 21	6.014 08	67.689 69
37 28	33.912 99	5.593 99	65.391 67	38 48	35.215 56	6.019 51	67.718 77
37 29	33.929 21	5.599 20	65.420 76	38 49	35.231 91	6.024 94	67.747 86
37 30	33.945 43	5.604 41	65.449 85	38 50	35.248 26	6.030 37	67.776 95
37 31	33.961 65	5.609 63	65.478 94	38 51	35.264 61	6.035 81	67.806 04
37 32	33.977 87	5.614 85	65.508 02	38 52	35.280 96	6.041 25	67.835 13
37 33	33.994 09	5.620 07	65.537 11	38 53	35.297 32	6.046 69	67.864 22
37 34	34.010 32	5.625 29	65.566 20	38 54	35.313 68	6.052 14	67.893 31
37 35	34.026 55	5.630 52	65.595 29	38 55	35.330 04	6.057 59	67.922 40
37 36	34.042 78	5.635 75	65.624 38	38 56	35.346 40	6.063 04	67.951 49
37 37	34.059 01	5.640 98	65.653 47	38 57	35.362 76	6.068 49	67.980 57
37 38	34.075 24	5.646 21	65.682 56	38 58	35.379 12	6.073 95	68.009 66
37 39	34.091 47	5.651 45	65.711 65	38 59	35.395 49	6.079 41	68.038 75
37 40	34.107 71	5.656 69	65.740 74	39 0	35.411 86	6.084 87	68.067 84
37 41	34.123 95	5.661 93	65.769 82	39 1	35.428 23	6.090 34	68.096 93
37 42	34.140 19	5.667 18	65.798 91	39 2	35.444 60	6.095 80	68.126 02
37 43	34.156 43	5.672 43	65.828 00	39 3	35.460 97	6.101 27	68.155 11
37 44	34.172 67	5.677 68	65.857 09	39 4	35.477 34	6.106 75	68.184 20
37 45	34.188 91	5.682 93	65.886 18	39 5	35.493 72	6.112 22	68.213 28
37 46	34.205 16	5.688 19	65.915 27	39 6	35.510 10	6.117 70	68.242 37
37 47	34.221 40	5.693 45	65.944 36	39 7	35.526 48	6.123 19	68.271 46
37 48	34.237 65	5.698 71	65.973 45	39 8	35.542 86	6.128 67	68.300 55
37 49	34.253 90	5.703 97	66.002 53	39 9	35.559 24	6.134 16	68.329 64
37 50	34.270 15	5.709 24	66.031 62	39 10	35.575 62	6.139 65	68.358 73
37 51	34.286 41	5.714 51	66.060 71	39 11	35.592 01	6.145 14	68.387 82
37 52	34.302 66	5.719 78	66.089 80	39 12	35.608 40	6.150 64	68.416 91
37 53	34.318 92	5.725 06	66.118 89	39 13	35.624 79	6.156 14	68.446 00
37 54	34.335 18	5.730 34	66.147 98	39 14	35.641 18	6.161 64	68.475 08
37 55	34.351 44	5.735 62	66.177 07	39 15	35.657 57	6.167 14	68.504 17
37 56	34.367 70	5.740 90	66.206 16	39 16	35.673 97	6.172 65	68.533 26
37 57	34.383 96	5.746 19	66.235 25	39 17	35.690 36	6.178 16	68.562 35
37 58	34.400 23	5.751 48	66.264 33	39 18	35.706 76	6.183 67	68.591 44
37 59	34.416 49	5.756 77	66.293 42	39 19	35.723 16	6.189 19	68.620 53
38 0	34.432 76	5.762 07	66.322 51	39 20	35.739 56	6.194 71	68.649 62
38 1	34.449 03	5.767 37	66.351 60	39 21	35.755 96	6.200 23	68.678 71
38 2	34.465 30	5.772 67	66.380 69	39 22	35.772 37	6.205 75	68.707 79
38 3	34.481 58	5.777 97	66.409 78	39 23	35.788 78	6.211 28	68.736 88
38 4	34.497 85	5.783 28	66.438 87	39 24	35.805 18	6.216 81	68.765 97
38 5	34.514 13	5.788 59	66.467 96	39 25	35.821 59	6.222 34	68.795 06
38 6	34.530 40	5.793 90	66.497 04	39 26	35.838 01	6.227 88	68.824 15
38 7	34.546 68	5.799 21	66.526 13	39 27	35.854 42	6.233 42	68.853 24
38 8	34.562 96	5.804 53	66.555 22	39 28	35.870 83	6.238 96	68.882 33
38 9	34.579 25	5.809 85	66.584 31	39 29	35.887 25	6.244 50	68.911 42
38 10	34.595 53	5.815 17	66.613 40	39 30	35.903 67	6.250 05	68.940 51
38 11	34.611 82	5.820 50	66.642 49	39 31	35.920 09	6.255 60	68.969 59
38 12	34.628 10	5.825 83	66.671 58	39 32	35.936 51	6.261 15	68.998 68
38 13	34.644 39	5.831 16	66.700 67	39 33	35.952 93	6.266 71	69.027 77
38 14	34.660 68	5.836 49	66.729 76	39 34	35.969 36	6.272 27	69.056 86
38 15	34.676 98	5.841 83	66.758 84	39 35	35.985 79	6.277 83	69.085 95
38 16	34.693 27	5.847 17	66.787 93	39 36	36.002 22	6.283 39	69.115 04
38 17	34.709 57	5.852 51	66.817 02	39 37	36.018 65	6.288 96	69.144 13
38 18	34.725 86	5.857 86	66.846 11	39 38	36.035 08	6.294 53	69.173 22
38 19	34.742 16	5.863 20	66.875 20	39 39	36.051 51	6.300 10	69.202 30
38 20	34.758 46	5.868 55	66.904 29	39 40	36.067 95	6.305 68	69.231 39
38 21	34.774 77	5.873 91	66.933 38	39 41	36.084 38	6.311 25	69.260 48
38 22	34.791 07	5.879 26	66.962 47	39 42	36.100 82	6.316 84	69.289 57
38 23	34.807 38	5.884 62	66.991 55	39 43	36.117 26	6.322 42	69.318 66
38 24	34.823 68	5.889 99	67.020 64	39 44	36.133 71	6.328 01	69.347 75
38 25	34.839 99	5.895 35	67.049 73	39 45	36.150 15	6.333 60	69.376 84
38 26	34.856 30	5.900 72	67.078 82	39 46	36.166 60	6.339 19	69.405 93
38 27	34.872 62	5.906 09	67.107 91	39 47	36.183 05	6.344 78	69.435 02
38 28	34.888 93	5.911 46	67.137 00	39 48	36.199 49	6.350 38	69.464 10
38 29	34.905 25	5.916 84	67.166 09	39 49	36.215 95	6.355 98	69.493 19
38 30	34.921 56	5.922 21	67.195 18	39 50	36.232 40	6.361 58	69.522 28
38 31	34.937 88	5.927 60	67.224 27	39 51	36.248 85	6.367 19	69.551 37
38 32	34.954 20	5.932 98	67.253 35	39 52	36.265 31	6.372 80	69.580 46
38 33	34.970 53	5.938 37	67.282 44	39 53	36.281 77	6.378 41	69.609 55
38 34	34.986 85	5.943 76	67.311 53	39 54	36.298 23	6.384 03	69.638 64
38 35	35.003 17	5.949 15	67.340 62	39 55	36.314 69	6.389 65	69.667 73
38 36	35.019 50	5.954 54	67.369 71	39 56	36.331 15	6.395 27	69.696 81
38 37	35.035 83	5.959 94	67.398 80	39 57	36.347 62	6.400 89	69.725 90
38 38	35.052 16	5.965 34	67.427 89	39 58	36.364 08	6.406 52	69.754 99
38 39	35.068 49	5.970 75	67.456 98	39 59	36.380 55	6.412 15	69.784 08
38 40	35.084 83	5.976 15	67.486 06	40 0	36.397 02	6.417 78	69.813 17

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.-FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.-FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
40 1	36.413 50	6.423 41	69.842 26	41 21	37.737 00	6.883 49	72.169 36
40 2	36.429 97	6.429 05	69.871 35	41 22	37.753 61	6.889 36	72.198 45
40 3	36.446 44	6.434 69	69.900 44	41 23	37.770 23	6.895 23	72.227 54
40 4	36.462 92	6.440 33	69.929 53	41 24	37.786 85	6.901 10	72.256 63
40 5	36.479 40	6.445 98	69.958 61	41 25	37.803 47	6.906 98	72.285 72
40 6	36.495 88	6.451 63	69.987 70	41 26	37.820 10	6.912 86	72.314 81
40 7	36.512 36	6.457 28	70.016 79	41 27	37.836 72	6.918 74	72.343 90
40 8	36.528 85	6.462 94	70.045 88	41 28	37.853 35	6.924 63	72.372 99
40 9	36.545 33	6.468 59	70.074 97	41 29	37.869 98	6.930 52	72.402 08
40 10	36.561 82	6.474 25	70.104 06	41 30	37.886 61	6.936 41	72.431 16
40 11	36.578 31	6.479 92	70.133 15	41 31	37.903 24	6.942 30	72.460 25
40 12	36.594 80	6.485 58	70.162 24	41 32	37.919 88	6.948 20	72.489 34
40 13	36.611 30	6.491 25	70.191 32	41 33	37.936 52	6.954 10	72.518 43
40 14	36.627 79	6.496 93	70.220 41	41 34	37.953 15	6.960 00	72.547 52
40 15	36.644 29	6.502 60	70.249 50	41 35	37.969 79	6.965 91	72.576 61
40 16	36.660 79	6.508 28	70.278 59	41 36	37.986 44	6.971 82	72.605 70
40 17	36.677 29	6.513 96	70.307 68	41 37	38.003 08	6.977 73	72.634 79
40 18	36.693 79	6.519 64	70.336 77	41 38	38.019 73	6.983 64	72.663 87
40 19	36.710 29	6.525 33	70.365 86	41 39	38.036 37	6.989 56	72.692 96
40 20	36.726 80	6.531 02	70.394 95	41 40	38.053 02	6.995 48	72.722 05
40 21	36.743 30	6.536 71	70.424 04	41 41	38.069 68	7.001 40	72.751 14
40 22	36.759 81	6.542 40	70.453 12	41 42	38.086 33	7.007 33	72.780 23
40 23	36.776 32	6.548 10	70.482 21	41 43	38.102 98	7.013 26	72.809 32
40 24	36.792 84	6.553 80	70.511 30	41 44	38.119 64	7.019 19	72.838 41
40 25	36.809 35	6.559 51	70.540 39	41 45	38.136 30	7.025 12	72.867 50
40 26	36.825 87	6.565 21	70.569 48	41 46	38.152 96	7.031 06	72.896 59
40 27	36.842 38	6.570 92	70.598 57	41 47	38.169 62	7.037 00	72.925 67
40 28	36.858 90	6.576 63	70.627 66	41 48	38.186 29	7.042 95	72.954 76
40 29	36.875 42	6.582 35	70.656 75	41 49	38.202 95	7.048 89	72.983 85
40 30	36.891 95	6.588 07	70.685 83	41 50	38.219 62	7.054 84	73.012 94
40 31	36.908 47	6.593 79	70.714 92	41 51	38.236 29	7.060 80	73.042 03
40 32	36.925 00	6.599 51	70.744 01	41 52	38.252 96	7.066 75	73.071 12
40 33	36.941 53	6.605 24	70.773 10	41 53	38.269 64	7.072 71	73.100 21
40 34	36.958 06	6.610 97	70.802 19	41 54	38.286 31	7.078 67	73.129 30
40 35	36.974 59	6.616 70	70.831 28	41 55	38.302 99	7.084 63	73.158 38
40 36	36.991 12	6.622 43	70.860 37	41 56	38.319 67	7.090 60	73.187 47
40 37	37.007 66	6.628 17	70.889 46	41 57	38.336 35	7.096 57	73.216 56
40 38	37.024 20	6.633 91	70.918 55	41 58	38.353 03	7.102 54	73.245 65
40 39	37.040 73	6.639 66	70.947 63	41 59	38.369 72	7.108 52	73.274 74
40 40	37.057 28	6.645 40	70.976 72	42 0	38.386 40	7.114 50	73.303 83
40 41	37.073 82	6.651 15	71.005 81	42 1	38.403 09	7.120 48	73.332 92
40 42	37.090 36	6.656 90	71.034 90	42 2	38.419 78	7.126 47	73.362 01
40 43	37.106 91	6.662 66	71.063 99	42 3	38.436 47	7.132 45	73.391 10
40 44	37.123 46	6.668 42	71.093 08	42 4	38.453 17	7.138 44	73.420 18
40 45	37.140 01	6.674 18	71.122 17	42 5	38.469 86	7.144 44	73.449 27
40 46	37.156 56	6.679 94	71.151 26	42 6	38.486 56	7.150 43	73.478 36
40 47	37.173 11	6.685 71	71.180 34	42 7	38.503 26	7.156 43	73.507 45
40 48	37.189 67	6.691 48	71.209 43	42 8	38.519 96	7.162 44	73.536 54
40 49	37.206 22	6.697 25	71.238 52	42 9	38.536 67	7.168 44	73.565 63
40 50	37.222 78	6.703 02	71.267 61	42 10	38.553 37	7.174 45	73.594 72
40 51	37.239 34	6.708 80	71.296 70	42 11	38.570 08	7.180 46	73.623 81
40 52	37.255 90	6.714 58	71.325 79	42 12	38.586 79	7.186 47	73.652 89
40 53	37.272 47	6.720 37	71.354 88	42 13	38.603 50	7.192 49	73.681 98
40 54	37.289 03	6.726 15	71.383 97	42 14	38.620 21	7.198 51	73.711 07
40 55	37.305 60	6.731 94	71.413 06	42 15	38.636 93	7.204 53	73.740 16
40 56	37.322 17	6.737 74	71.442 14	42 16	38.653 64	7.210 56	73.769 25
40 57	37.338 74	6.743 53	71.471 23	42 17	38.670 36	7.216 59	73.798 34
40 58	37.355 32	6.749 33	71.500 32	42 18	38.687 08	7.222 62	73.827 43
40 59	37.371 89	6.755 13	71.529 41	42 19	38.703 80	7.228 66	73.856 52
41 0	37.388 47	6.760 94	71.558 50	42 20	38.720 53	7.234 69	73.885 61
41 1	37.405 05	6.766 74	71.587 59	42 21	38.737 25	7.240 73	73.914 69
41 2	37.421 63	6.772 55	71.616 68	42 22	38.753 98	7.246 78	73.943 78
41 3	37.438 21	6.778 37	71.645 77	42 23	38.770 71	7.252 82	73.972 87
41 4	37.454 79	6.784 18	71.674 85	42 24	38.787 44	7.258 87	74.001 96
41 5	37.471 38	6.790 00	71.703 94	42 25	38.804 18	7.264 93	74.031 05
41 6	37.487 97	6.795 82	71.733 03	42 26	38.820 91	7.270 98	74.060 14
41 7	37.504 56	6.801 65	71.762 12	42 27	38.837 65	7.277 04	74.089 23
41 8	37.521 15	6.807 47	71.791 21	42 28	38.854 39	7.283 10	74.118 32
41 9	37.537 74	6.813 30	71.820 30	42 29	38.871 13	7.289 16	74.147 40
41 10	37.554 33	6.819 14	71.849 39	42 30	38.887 87	7.295 23	74.176 49
41 11	37.570 93	6.824 97	71.878 48	42 31	38.904 62	7.301 30	74.205 58
41 12	37.587 53	6.830 81	71.907 57	42 32	38.921 36	7.307 37	74.234 67
41 13	37.604 13	6.836 65	71.936 65	42 33	38.938 11	7.313 45	74.263 76
41 14	37.620 73	6.842 50	71.965 74	42 34	38.954 86	7.319 53	74.292 85
41 15	37.637 33	6.848 35	71.994 83	42 35	38.971 62	7.325 61	74.321 94
41 16	37.653 94	6.854 20	72.023 92	42 36	38.988 37	7.331 70	74.351 03
41 17	37.670 55	6.860 05	72.053 01	42 37	39.005 13	7.337 78	74.380 11
41 18	37.687 16	6.865 91	72.082 10	42 38	39.021 89	7.343 88	74.409 20
41 19	37.703 77	6.871 76	72.111 19	42 39	39.038 65	7.349 97	74.438 29
41 20	37.720 38	6.877 63	72.140 28	42 40	39.055 41	7.356 07	74.467 38

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
42 41	39.072 17	7.362 17	74.496 47	44 1	40.419 54	7.859 81	76.823 58
42 42	39.088 94	7.368 27	74.525 56	44 2	40.436 46	7.866 16	76.852 66
42 43	39.105 70	7.374 37	74.554 65	44 3	40.453 39	7.872 50	76.881 75
42 44	39.122 47	7.380 48	74.583 74	44 4	40.470 31	7.878 85	76.910 84
42 45	39.139 25	7.386 59	74.612 83	44 5	40.487 24	7.885 20	76.939 93
42 46	39.156 02	7.392 71	74.641 91	44 6	40.504 17	7.891 56	76.969 02
42 47	39.172 79	7.398 83	74.671 00	44 7	40.521 10	7.897 91	76.998 11
42 48	39.189 57	7.404 95	74.700 09	44 8	40.538 04	7.904 27	77.027 20
42 49	39.206 35	7.411 07	74.729 18	44 9	40.554 97	7.910 64	77.056 29
42 50	39.223 13	7.417 20	74.758 27	44 10	40.571 91	7.917 00	77.085 38
42 51	39.239 91	7.423 33	74.787 36	44 11	40.588 85	7.923 37	77.114 46
42 52	39.256 70	7.429 46	74.816 45	44 12	40.605 79	7.929 75	77.143 55
42 53	39.273 49	7.435 59	74.845 54	44 13	40.622 73	7.936 12	77.172 64
42 54	39.290 27	7.441 73	74.874 62	44 14	40.639 68	7.942 50	77.201 73
42 55	39.307 07	7.447 87	74.903 71	44 15	40.656 63	7.948 88	77.230 82
42 56	39.323 86	7.454 02	74.932 80	44 16	40.673 58	7.955 27	77.259 91
42 57	39.340 65	7.460 16	74.961 89	44 17	40.690 53	7.961 66	77.289 00
42 58	39.357 45	7.466 31	74.990 98	44 18	40.707 48	7.968 05	77.318 09
42 59	39.374 25	7.472 47	75.020 07	44 19	40.724 44	7.974 44	77.347 17
43 0	39.391 05	7.478 62	75.049 16	44 20	40.741 39	7.980 84	77.376 26
43 1	39.407 85	7.484 78	75.078 25	44 21	40.758 35	7.987 24	77.405 35
43 2	39.424 65	7.490 95	75.107 34	44 22	40.775 31	7.993 64	77.434 44
43 3	39.441 46	7.497 11	75.136 42	44 23	40.792 28	8.000 05	77.463 53
43 4	39.458 27	7.503 28	75.165 51	44 24	40.809 24	8.006 46	77.492 62
43 5	39.475 08	7.509 45	75.194 60	44 25	40.826 21	8.012 87	77.521 71
43 6	39.491 89	7.515 62	75.223 69	44 26	40.843 18	8.019 28	77.550 80
43 7	39.508 70	7.521 80	75.252 78	44 27	40.860 15	8.025 70	77.579 89
43 8	39.525 52	7.527 98	75.281 87	44 28	40.877 13	8.032 12	77.608 97
43 9	39.542 34	7.534 16	75.310 96	44 29	40.894 10	8.038 55	77.638 06
43 10	39.559 16	7.540 35	75.340 05	44 30	40.911 08	8.044 97	77.667 15
43 11	39.575 98	7.546 54	75.369 13	44 31	40.928 06	8.051 40	77.696 24
43 12	39.592 80	7.552 73	75.398 22	44 32	40.945 04	8.057 84	77.725 33
43 13	39.609 63	7.558 93	75.427 31	44 33	40.962 03	8.064 27	77.754 42
43 14	39.626 45	7.565 12	75.456 40	44 34	40.979 01	8.070 71	77.783 51
43 15	39.643 28	7.571 32	75.485 49	44 35	40.996 00	8.077 16	77.812 60
43 16	39.660 11	7.577 53	75.514 58	44 36	41.012 99	8.083 60	77.841 68
43 17	39.676 95	7.583 74	75.543 67	44 37	41.029 98	8.090 05	77.870 77
43 18	39.693 78	7.589 95	75.572 76	44 38	41.046 97	8.096 50	77.899 86
43 19	39.710 62	7.596 16	75.601 85	44 39	41.063 97	8.102 96	77.928 95
43 20	39.727 46	7.602 37	75.630 93	44 40	41.080 97	8.109 42	77.958 04
43 21	39.744 30	7.608 59	75.660 02	44 41	41.097 97	8.115 88	77.987 13
43 22	39.761 14	7.614 81	75.689 11	44 42	41.114 97	8.122 34	78.016 22
43 23	39.777 99	7.621 04	75.718 20	44 43	41.131 97	8.128 81	78.045 31
43 24	39.794 83	7.627 27	75.747 29	44 44	41.148 98	8.135 28	78.074 40
43 25	39.811 68	7.633 50	75.776 38	44 45	41.165 99	8.141 75	78.103 48
43 26	39.828 53	7.639 73	75.805 47	44 46	41.183 00	8.148 23	78.132 57
43 27	39.845 39	7.645 97	75.834 56	44 47	41.200 01	8.154 71	78.161 66
43 28	39.862 24	7.652 21	75.863 64	44 48	41.217 03	8.161 19	78.190 75
43 29	39.879 10	7.658 45	75.892 73	44 49	41.234 04	8.167 68	78.219 84
43 30	39.895 95	7.664 70	75.921 82	44 50	41.251 06	8.174 17	78.248 93
43 31	39.912 82	7.670 95	75.950 91	44 51	41.268 08	8.180 66	78.278 02
43 32	39.929 68	7.677 20	75.980 00	44 52	41.285 10	8.187 15	78.307 11
43 33	39.946 54	7.683 45	76.009 09	44 53	41.302 13	8.193 65	78.336 19
43 34	39.963 41	7.689 71	76.038 18	44 54	41.319 15	8.200 15	78.365 28
43 35	39.980 28	7.695 97	76.067 27	44 55	41.336 18	8.206 65	78.394 37
43 36	39.997 15	7.702 24	76.096 36	44 56	41.353 21	8.213 16	78.423 46
43 37	40.014 02	7.708 50	76.125 44	44 57	41.370 25	8.219 67	78.452 55
43 38	40.030 89	7.714 77	76.154 53	44 58	41.387 28	8.226 18	78.481 64
43 39	40.047 77	7.721 05	76.183 62	44 59	41.404 32	8.232 70	78.510 73
43 40	40.064 65	7.727 32	76.212 71	45 0	41.421 36	8.239 22	78.539 82
43 41	40.081 53	7.733 60	76.241 80	45 1	41.438 40	8.245 74	78.568 91
43 42	40.098 41	7.739 88	76.270 89	45 2	41.455 44	8.252 27	78.597 99
43 43	40.115 29	7.746 17	76.299 98	45 3	41.472 48	8.258 80	78.627 08
43 44	40.132 18	7.752 46	76.329 07	45 4	41.489 53	8.265 33	78.656 17
43 45	40.149 07	7.758 75	76.358 15	45 5	41.506 58	8.271 86	78.685 26
43 46	40.165 96	7.765 04	76.387 24	45 6	41.523 63	8.278 40	78.714 35
43 47	40.182 85	7.771 34	76.416 33	45 7	41.540 69	8.284 94	78.743 44
43 48	40.199 74	7.777 64	76.445 42	45 8	41.557 74	8.291 49	78.772 53
43 49	40.216 64	7.783 94	76.474 51	45 9	41.574 80	8.298 03	78.801 62
43 50	40.233 54	7.790 25	76.503 60	45 10	41.591 86	8.304 58	78.830 70
43 51	40.250 44	7.796 56	76.532 69	45 11	41.608 92	8.311 14	78.859 79
43 52	40.267 34	7.802 87	76.561 78	45 12	41.625 98	8.317 69	78.888 88
43 53	40.284 24	7.809 18	76.590 87	45 13	41.643 05	8.324 25	78.917 97
43 54	40.301 15	7.815 50	76.619 95	45 14	41.660 12	8.330 81	78.947 06
43 55	40.318 05	7.821 82	76.649 04	45 15	41.677 19	8.337 38	78.976 15
43 56	40.334 96	7.828 15	76.678 13	45 16	41.694 26	8.343 95	79.005 24
43 57	40.351 88	7.834 47	76.707 22	45 17	41.711 33	8.350 52	79.034 33
43 58	40.368 79	7.840 80	76.736 31	45 18	41.728 41	8.357 09	79.063 42
43 59	40.385 70	7.847 13	76.765 40	45 19	41.745 48	8.363 67	79.092 50
44 0	40.402 62	7.853 47	76.794 49	45 20	41.762 57	8.370 25	79.121 59

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
45 21	41.779 65	8.376 84	79.150 68	46 41	43.153 04	8.913 66	81.477
45 22	41.796 73	8.383 42	79.179 77	46 42	43.170 30	8.920 50	81.506
45 23	41.813 82	8.390 02	79.208 86	46 43	43.187 55	8.927 34	81.535
45 24	41.830 91	8.396 61	79.237 95	46 44	43.204 81	8.934 18	81.565
45 25	41.848 00	8.403 20	79.267 04	46 45	43.222 07	8.941 03	81.594
45 26	41.865 09	8.409 80	79.296 13	46 46	43.239 33	8.947 88	81.623
45 27	41.882 18	8.416 41	79.325 21	46 47	43.256 60	8.954 73	81.652
45 28	41.899 28	8.423 01	79.354 30	46 48	43.273 86	8.961 59	81.681
45 29	41.916 38	8.429 62	79.383 39	46 49	43.291 13	8.968 45	81.710
45 30	41.933 48	8.436 23	79.412 48	46 50	43.308 40	8.975 31	81.739
45 31	41.950 58	8.442 85	79.441 57	46 51	43.325 68	8.982 17	81.768
45 32	41.967 69	8.449 47	79.470 66	46 52	43.342 95	8.989 04	81.797
45 33	41.984 80	8.456 09	79.499 75	46 53	43.360 23	8.995 92	81.826
45 34	42.001 90	8.462 71	79.528 84	46 54	43.377 51	9.002 79	81.855
45 35	42.019 02	8.469 34	79.557 93	46 55	43.394 79	9.009 67	81.885
45 36	42.036 13	8.475 97	79.587 01	46 56	43.412 08	9.016 55	81.914
45 37	42.053 24	8.482 60	79.616 10	46 57	43.429 36	9.023 44	81.943
45 38	42.070 36	8.489 24	79.645 19	46 58	43.446 65	9.030 32	81.972
45 39	42.087 48	8.495 88	79.674 28	46 59	43.463 94	9.037 22	82.001
45 40	42.104 60	8.502 52	79.703 37	47 0	43.481 24	9.044 11	82.030
45 41	42.121 73	8.509 17	79.732 46	47 1	43.498 53	9.051 01	82.059
45 42	42.138 85	8.515 82	79.761 55	47 2	43.515 83	9.057 91	82.088
45 43	42.155 98	8.522 47	79.790 64	47 3	43.533 13	9.064 81	82.117
45 44	42.173 11	8.529 13	79.819 72	47 4	43.550 43	9.071 72	82.146
45 45	42.190 24	8.535 79	79.848 81	47 5	43.567 74	9.078 63	82.175
45 46	42.207 38	8.542 45	79.877 90	47 6	43.585 04	9.085 56	82.205
45 47	42.224 52	8.549 11	79.906 99	47 7	43.602 35	9.092 46	82.234
45 48	42.241 65	8.555 78	79.936 00	47 8	43.619 66	9.099 38	82.263
45 49	42.258 79	8.562 45	79.965 17	47 9	43.636 97	9.106 30	82.292
45 50	42.275 94	8.569 12	79.994 26	47 10	43.654 29	9.113 23	82.321
45 51	42.293 08	8.575 80	80.023 35	47 11	43.671 61	9.120 16	82.350
45 52	42.310 23	8.582 48	80.052 44	47 12	43.688 93	9.127 09	82.379
45 53	42.327 38	8.589 17	80.081 52	47 13	43.706 25	9.134 03	82.408
45 54	42.344 53	8.595 85	80.110 61	47 14	43.723 57	9.140 97	82.437
45 55	42.361 68	8.602 54	80.139 70	47 15	43.740 90	9.147 91	82.466
45 56	42.378 84	8.609 24	80.168 79	47 16	43.758 23	9.154 85	82.495
45 57	42.396 00	8.615 93	80.197 88	47 17	43.775 56	9.161 80	82.524
45 58	42.413 16	8.622 63	80.226 97	47 18	43.792 89	9.168 76	82.554
45 59	42.430 32	8.629 33	80.256 06	47 19	43.810 22	9.175 71	82.583
46 0	42.447 48	8.636 04	80.285 15	47 20	43.827 56	9.182 67	82.612
46 1	42.464 65	8.642 75	80.314 23	47 21	43.844 90	9.189 63	82.641
46 2	42.481 82	8.649 46	80.343 32	47 22	43.862 24	9.196 59	82.670
46 3	42.498 99	8.656 17	80.372 41	47 23	43.879 59	9.203 56	82.699
46 4	42.516 16	8.662 89	80.401 50	47 24	43.896 93	9.210 53	82.728
46 5	42.533 33	8.669 61	80.430 59	47 25	43.914 28	9.217 51	82.757
46 6	42.550 51	8.676 34	80.459 68	47 26	43.931 63	9.224 48	82.786
46 7	42.567 69	8.683 06	80.488 77	47 27	43.948 98	9.231 47	82.815
46 8	42.584 87	8.689 79	80.517 86	47 28	43.966 34	9.238 45	82.844
46 9	42.602 05	8.696 53	80.546 94	47 29	43.983 69	9.245 44	82.874
46 10	42.619 24	8.703 26	80.576 03	47 30	44.001 05	9.252 43	82.903
46 11	42.636 43	8.710 00	80.605 12	47 31	44.018 41	9.259 42	82.932
46 12	42.653 61	8.716 75	80.634 21	47 32	44.035 78	9.266 42	82.961
46 13	42.670 81	8.723 49	80.663 30	47 33	44.053 14	9.273 42	82.990
46 14	42.688 00	8.730 24	80.692 39	47 34	44.070 51	9.280 42	83.019
46 15	42.705 20	8.736 99	80.721 48	47 35	44.087 88	9.287 43	83.048
46 16	42.722 39	8.743 75	80.750 57	47 36	44.105 26	9.294 44	83.077
46 17	42.739 59	8.750 51	80.779 66	47 37	44.122 63	9.301 45	83.106
46 18	42.756 80	8.757 27	80.808 74	47 38	44.140 01	9.308 46	83.135
46 19	42.774 00	8.764 03	80.837 83	47 39	44.157 39	9.315 48	83.164
46 20	42.791 21	8.770 80	80.866 92	47 40	44.174 77	9.322 51	83.194
46 21	42.808 42	8.777 57	80.896 01	47 41	44.192 15	9.329 53	83.223
46 22	42.825 63	8.784 35	80.925 10	47 42	44.209 54	9.336 56	83.252
46 23	42.842 84	8.791 13	80.954 19	47 43	44.226 93	9.343 59	83.281
46 24	42.860 05	8.797 91	80.983 28	47 44	44.244 32	9.350 63	83.310
46 25	42.877 27	8.804 69	81.012 37	47 45	44.261 71	9.357 66	83.339
46 26	42.894 49	8.811 48	81.041 45	47 46	44.279 10	9.364 71	83.368
46 27	42.911 71	8.818 27	81.070 54	47 47	44.296 50	9.371 75	83.397
46 28	42.928 94	8.825 06	81.099 63	47 48	44.313 90	9.378 80	83.426
46 29	42.946 16	8.831 86	81.128 72	47 49	44.331 30	9.385 85	83.455
46 30	42.963 39	8.838 66	81.157 81	47 50	44.348 71	9.392 91	83.484
46 31	42.980 62	8.845 46	81.186 90	47 51	44.366 11	9.399 96	83.514
46 32	42.997 85	8.852 26	81.215 99	47 52	44.383 52	9.407 02	83.543
46 33	43.015 09	8.859 07	81.245 08	47 53	44.400 93	9.414 09	83.572
46 34	43.032 32	8.865 89	81.274 17	47 54	44.418 34	9.421 16	83.601
46 35	43.049 56	8.872 70	81.303 25	47 55	44.435 76	9.428 23	83.630
46 36	43.066 80	8.879 52	81.332 34	47 56	44.453 18	9.435 30	83.659
46 37	43.084 05	8.886 34	81.361 43	47 57	44.470 60	9.442 38	83.688
46 38	43.101 29	8.893 17	81.390 52	47 58	44.488 02	9.449 46	83.717
46 39	43.118 54	8.899 99	81.419 61	47 59	44.505 44	9.456 54	83.746
46 40	43.135 79	8.906 82	81.448 70	48 0	44.522 87	9.463 63	83.775

BLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
BLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
MNT	M			DEG MNT	M		
1	44.540 30	9.470 72	83.804 89	49 21	45.942 01	10.048 48	86.132 00
2	44.557 73	9.477 81	83.833 98	49 22	45.959 62	10.055 84	86.161 09
3	44.575 16	9.484 91	83.863 07	49 23	45.977 24	10.063 19	86.190 18
4	44.592 60	9.492 01	83.892 16	49 24	45.994 86	10.070 56	86.219 27
5	44.610 03	9.499 11	83.921 25	49 25	46.012 48	10.077 92	86.248 35
6	44.627 47	9.506 22	83.950 34	49 26	46.030 11	10.085 29	86.277 44
7	44.644 92	9.513 33	83.979 43	49 27	46.047 74	10.092 66	86.306 53
8	44.662 36	9.520 44	84.008 51	49 28	46.065 37	10.100 04	86.335 62
9	44.679 81	9.527 55	84.037 60	49 29	46.083 00	10.107 41	86.364 71
10	44.697 26	9.534 67	84.066 69	49 30	46.100 63	10.114 80	86.393 80
11	44.714 71	9.541 80	84.095 78	49 31	46.118 27	10.122 18	86.422 89
12	44.732 16	9.548 92	84.124 87	49 32	46.135 91	10.129 57	86.451 98
13	44.749 62	9.556 05	84.153 96	49 33	46.153 55	10.136 96	86.481 06
14	44.767 08	9.563 18	84.183 05	49 34	46.171 19	10.144 36	86.510 15
15	44.784 54	9.570 32	84.212 14	49 35	46.188 84	10.151 75	86.539 24
16	44.802 00	9.577 46	84.241 23	49 36	46.206 49	10.159 16	86.568 33
17	44.819 46	9.584 60	84.270 31	49 37	46.224 14	10.166 56	86.597 42
18	44.836 93	9.591 74	84.299 40	49 38	46.241 79	10.173 97	86.626 51
19	44.854 40	9.598 89	84.328 49	49 39	46.259 45	10.181 38	86.655 60
20	44.871 87	9.606 04	84.357 58	49 40	46.277 10	10.188 79	86.684 69
21	44.889 35	9.613 20	84.386 67	49 41	46.294 77	10.196 21	86.713 78
22	44.906 82	9.620 36	84.415 76	49 42	46.312 43	10.203 63	86.742 86
23	44.924 30	9.627 52	84.444 85	49 43	46.330 09	10.211 06	86.771 95
24	44.941 78	9.634 68	84.473 94	49 44	46.347 76	10.218 49	86.801 04
25	44.959 27	9.641 85	84.503 02	49 45	46.365 43	10.225 92	86.830 13
26	44.976 75	9.649 02	84.532 11	49 46	46.383 10	10.233 35	86.859 22
27	44.994 24	9.656 20	84.561 20	49 47	46.400 78	10.240 79	86.888 31
28	45.011 73	9.663 37	84.590 29	49 48	46.418 45	10.248 23	86.917 40
29	45.029 22	9.670 56	84.619 38	49 49	46.436 13	10.255 68	86.946 49
30	45.046 72	9.677 74	84.648 47	49 50	46.453 82	10.263 13	86.975 57
31	45.064 21	9.684 93	84.677 56	49 51	46.471 50	10.270 58	87.004 66
32	45.081 71	9.692 12	84.706 65	49 52	46.489 19	10.278 03	87.033 75
33	45.099 21	9.699 31	84.735 74	49 53	46.506 88	10.285 49	87.062 84
34	45.116 72	9.706 51	84.764 82	49 54	46.524 57	10.292 95	87.091 93
35	45.134 22	9.713 71	84.793 91	49 55	46.542 26	10.300 42	87.121 02
36	45.151 73	9.720 91	84.823 00	49 56	46.559 96	10.307 89	87.150 11
37	45.169 24	9.728 12	84.852 09	49 57	46.577 66	10.315 36	87.179 20
38	45.186 76	9.735 33	84.881 18	49 58	46.595 36	10.322 83	87.208 28
39	45.204 27	9.742 54	84.910 27	49 59	46.613 06	10.330 31	87.237 37
40	45.221 79	9.749 76	84.939 36	50 0	46.630 77	10.337 79	87.266 46
41	45.239 31	9.756 98	84.968 45	50 1	46.648 47	10.345 28	87.295 55
42	45.256 83	9.764 20	84.997 53	50 2	46.666 18	10.352 77	87.324 64
43	45.274 35	9.771 43	85.026 62	50 3	46.683 90	10.360 26	87.353 73
44	45.291 88	9.778 66	85.055 71	50 4	46.701 61	10.367 75	87.382 82
45	45.309 41	9.785 89	85.084 80	50 5	46.719 33	10.375 25	87.411 91
46	45.326 94	9.793 13	85.113 89	50 6	46.737 05	10.382 75	87.441 00
47	45.344 48	9.800 37	85.142 98	50 7	46.754 77	10.390 26	87.470 08
48	45.362 01	9.807 61	85.172 07	50 8	46.772 50	10.397 77	87.499 17
49	45.379 55	9.814 86	85.201 16	50 9	46.790 23	10.405 28	87.528 26
50	45.397 09	9.822 11	85.230 25	50 10	46.807 96	10.412 79	87.557 35
51	45.414 63	9.829 36	85.259 33	50 11	46.825 69	10.420 31	87.586 44
52	45.432 18	9.836 62	85.288 42	50 12	46.843 42	10.427 83	87.615 53
53	45.449 73	9.843 88	85.317 51	50 13	46.861 16	10.435 36	87.644 62
54	45.467 28	9.851 14	85.346 60	50 14	46.878 90	10.442 89	87.673 71
55	45.484 83	9.858 41	85.375 69	50 15	46.896 64	10.450 42	87.702 79
56	45.502 38	9.865 68	85.404 78	50 16	46.914 39	10.457 95	87.731 88
57	45.519 94	9.872 95	85.433 87	50 17	46.932 13	10.465 49	87.760 97
58	45.537 50	9.880 23	85.462 96	50 18	46.949 88	10.473 03	87.790 06
59	45.555 06	9.887 50	85.492 04	50 19	46.967 63	10.480 58	87.819 15
60	45.572 63	9.894 79	85.521 13	50 20	46.985 39	10.488 13	87.848 24
61	45.590 19	9.902 07	85.550 22	50 21	47.003 14	10.495 68	87.877 33
62	45.607 76	9.909 36	85.579 31	50 22	47.020 90	10.503 24	87.906 42
63	45.625 33	9.916 65	85.608 40	50 23	47.038 66	10.510 80	87.935 51
64	45.642 90	9.923 95	85.637 49	50 24	47.056 43	10.518 36	87.964 59
65	45.660 48	9.931 25	85.666 58	50 25	47.074 19	10.525 92	87.993 68
66	45.678 06	9.938 55	85.695 67	50 26	47.091 96	10.533 49	88.022 77
67	45.695 64	9.945 86	85.724 76	50 27	47.109 73	10.541 06	88.051 86
68	45.713 22	9.953 17	85.753 84	50 28	47.127 51	10.548 64	88.080 95
69	45.730 81	9.960 48	85.782 93	50 29	47.145 28	10.556 22	88.110 04
70	45.748 39	9.967 79	85.812 02	50 30	47.163 06	10.563 80	88.139 13
71	45.765 98	9.975 11	85.841 11	50 31	47.180 84	10.571 39	88.168 22
72	45.783 57	9.982 43	85.870 20	50 32	47.198 63	10.578 98	88.197 30
73	45.801 17	9.989 76	85.899 29	50 33	47.216 41	10.586 57	88.226 39
74	45.818 77	9.997 09	85.928 38	50 34	47.234 20	10.594 17	88.255 48
75	45.836 36	10.004 42	85.957 47	50 35	47.251 99	10.601 77	88.284 57
76	45.853 97	10.011 75	85.986 55	50 36	47.269 78	10.609 37	88.313 66
77	45.871 57	10.019 09	86.015 64	50 37	47.287 58	10.616 97	88.342 75
78	45.889 18	10.026 44	86.044 73	50 38	47.305 38	10.624 58	88.371 84
79	45.906 78	10.033 78	86.073 82	50 39	47.323 18	10.632 20	88.400 93
80	45.924 39	10.041 13	86.102 91	50 40	47.340 98	10.639 81	88.430 02

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
50 41	47.358 79	10.647 43	88.459 10	52 1	48.791 26	11.268 09	90.786 21
50 42	47.376 59	10.655 06	88.488 19	52 2	48.809 27	11.275 99	90.815 30
50 43	47.394 40	10.662 68	88.517 28	52 3	48.827 28	11.283 89	90.844 39
50 44	47.412 22	10.670 31	88.546 37	52 4	48.845 30	11.291 79	90.873 48
50 45	47.430 03	10.677 95	88.575 46	52 5	48.863 31	11.299 70	90.902 57
50 46	47.447 85	10.685 58	88.604 55	52 6	48.881 33	11.307 61	90.931 65
50 47	47.465 67	10.693 22	88.633 64	52 7	48.899 35	11.315 53	90.960 74
50 48	47.483 49	10.700 87	88.662 73	52 8	48.917 37	11.323 45	90.989 83
50 49	47.501 32	10.708 51	88.691 81	52 9	48.935 40	11.331 37	91.018 92
50 50	47.519 14	10.716 16	88.720 90	52 10	48.953 43	11.339 29	91.048 01
50 51	47.536 97	10.723 82	88.749 99	52 11	48.971 46	11.347 22	91.077 10
50 52	47.554 81	10.731 47	88.779 08	52 12	48.989 49	11.355 16	91.106 19
50 53	47.572 64	10.739 14	88.808 17	52 13	49.007 53	11.363 09	91.135 28
50 54	47.590 48	10.746 80	88.837 26	52 14	49.025 57	11.371 03	91.164 36
50 55	47.608 32	10.754 47	88.866 35	52 15	49.043 61	11.378 97	91.193 45
50 56	47.626 16	10.762 14	88.895 44	52 16	49.061 66	11.386 92	91.222 54
50 57	47.644 00	10.769 81	88.924 53	52 17	49.079 70	11.394 87	91.251 63
50 58	47.661 85	10.777 49	88.953 61	52 18	49.097 75	11.402 82	91.280 72
50 59	47.679 70	10.785 17	88.982 70	52 19	49.115 80	11.410 78	91.309 81
51 0	47.697 55	10.792 85	89.011 79	52 20	49.133 86	11.418 74	91.338 90
51 1	47.715 41	10.800 54	89.040 88	52 21	49.151 91	11.426 71	91.367 99
51 2	47.733 26	10.808 23	89.069 97	52 22	49.169 97	11.434 67	91.397 08
51 3	47.751 12	10.815 93	89.099 06	52 23	49.188 04	11.442 64	91.426 16
51 4	47.768 99	10.823 63	89.128 15	52 24	49.206 10	11.450 62	91.455 25
51 5	47.786 85	10.831 33	89.157 24	52 25	49.224 17	11.458 60	91.484 34
51 6	47.804 72	10.839 03	89.186 32	52 26	49.242 24	11.466 58	91.513 43
51 7	47.822 59	10.846 74	89.215 41	52 27	49.260 31	11.474 56	91.542 52
51 8	47.840 46	10.854 45	89.244 50	52 28	49.278 38	11.482 55	91.571 61
51 9	47.858 33	10.862 17	89.273 59	52 29	49.296 46	11.490 54	91.600 70
51 10	47.876 21	10.869 89	89.302 68	52 30	49.314 54	11.498 54	91.629 79
51 11	47.894 09	10.877 61	89.331 77	52 31	49.332 63	11.506 54	91.658 87
51 12	47.911 97	10.885 33	89.360 86	52 32	49.350 71	11.514 54	91.687 96
51 13	47.929 86	10.893 06	89.389 95	52 33	49.368 80	11.522 55	91.717 05
51 14	47.947 74	10.900 79	89.419 04	52 34	49.386 89	11.530 56	91.746 14
51 15	47.965 63	10.908 53	89.448 12	52 35	49.404 98	11.538 57	91.775 23
51 16	47.983 52	10.916 27	89.477 21	52 36	49.423 08	11.546 59	91.804 32
51 17	48.001 42	10.924 01	89.506 30	52 37	49.441 18	11.554 61	91.833 41
51 18	48.019 32	10.931 76	89.535 39	52 38	49.459 28	11.562 63	91.862 50
51 19	48.037 22	10.939 51	89.564 48	52 39	49.477 38	11.570 66	91.891 59
51 20	48.055 12	10.947 26	89.593 57	52 40	49.495 49	11.578 69	91.920 67
51 21	48.073 02	10.955 02	89.622 66	52 41	49.513 60	11.586 72	91.949 76
51 22	48.090 93	10.962 77	89.651 75	52 42	49.531 71	11.594 76	91.978 85
51 23	48.108 84	10.970 54	89.680 83	52 43	49.549 82	11.602 80	92.007 94
51 24	48.126 75	10.978 30	89.709 92	52 44	49.567 94	11.610 84	92.037 03
51 25	48.144 66	10.986 07	89.739 01	52 45	49.586 06	11.618 89	92.066 12
51 26	48.162 58	10.993 85	89.768 10	52 46	49.604 18	11.626 94	92.095 21
51 27	48.180 50	11.001 62	89.797 19	52 47	49.622 30	11.635 00	92.124 30
51 28	48.198 42	11.009 40	89.826 28	52 48	49.640 43	11.643 06	92.153 38
51 29	48.216 35	11.017 19	89.855 37	52 49	49.658 56	11.651 12	92.182 47
51 30	48.234 27	11.024 98	89.884 46	52 50	49.676 69	11.659 19	92.211 56
51 31	48.252 20	11.032 77	89.913 55	52 51	49.694 83	11.667 26	92.240 65
51 32	48.270 14	11.040 56	89.942 63	52 52	49.712 97	11.675 33	92.269 74
51 33	48.288 07	11.048 36	89.971 72	52 53	49.731 11	11.683 40	92.298 83
51 34	48.306 01	11.056 16	90.000 81	52 54	49.749 25	11.691 48	92.327 92
51 35	48.323 95	11.063 96	90.029 90	52 55	49.767 39	11.699 57	92.357 01
51 36	48.341 89	11.071 77	90.058 99	52 56	49.785 54	11.707 66	92.386 10
51 37	48.359 83	11.079 58	90.088 08	52 57	49.803 69	11.715 75	92.415 18
51 38	48.377 78	11.087 40	90.117 17	52 58	49.821 85	11.723 84	92.444 27
51 39	48.395 73	11.095 21	90.146 26	52 59	49.840 00	11.731 94	92.473 36
51 40	48.413 68	11.103 04	90.175 34	53 0	49.858 16	11.740 04	92.502 45
51 41	48.431 64	11.110 86	90.204 43	53 1	49.876 32	11.748 14	92.531 54
51 42	48.449 59	11.118 69	90.233 52	53 2	49.894 49	11.756 25	92.560 63
51 43	48.467 55	11.126 52	90.262 61	53 3	49.912 65	11.764 36	92.589 72
51 44	48.485 52	11.134 36	90.291 70	53 4	49.930 82	11.772 48	92.618 81
51 45	48.503 48	11.142 20	90.320 79	53 5	49.948 99	11.780 60	92.647 89
51 46	48.521 45	11.150 04	90.349 88	53 6	49.967 17	11.788 72	92.676 98
51 47	48.539 42	11.157 88	90.378 97	53 7	49.985 34	11.796 85	92.706 07
51 48	48.557 39	11.165 73	90.408 06	53 8	50.003 52	11.804 98	92.735 16
51 49	48.575 37	11.173 59	90.437 14	53 9	50.021 71	11.813 11	92.764 25
51 50	48.593 34	11.181 44	90.466 23	53 10	50.039 89	11.821 24	92.793 34
51 51	48.611 32	11.189 30	90.495 32	53 11	50.058 08	11.829 38	92.822 43
51 52	48.629 31	11.197 16	90.524 41	53 12	50.076 27	11.837 53	92.851 52
51 53	48.647 29	11.205 03	90.553 50	53 13	50.094 46	11.845 68	92.880 61
51 54	48.665 28	11.212 90	90.582 59	53 14	50.112 66	11.853 83	92.909 69
51 55	48.683 27	11.220 77	90.611 68	53 15	50.130 86	11.861 98	92.938 78
51 56	48.701 26	11.228 65	90.640 77	53 16	50.149 06	11.870 14	92.967 87
51 57	48.719 26	11.236 53	90.669 85	53 17	50.167 26	11.878 30	92.996 96
51 58	48.737 26	11.244 42	90.698 94	53 18	50.185 47	11.886 47	93.026 05
51 59	48.755 26	11.252 30	90.728 03	53 19	50.203 68	11.894 63	93.055 14
52 0	48.773 26	11.260 19	90.757 12	53 20	50.221 89	11.902 81	93.084 23

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
53 21	50.240 10	11.910 98	93.113 32	54 41	51.705 98	12.576 68	95.440 42
53 22	50.258 32	11.919 16	93.142 40	54 42	51.724 41	12.585 14	95.469 51
53 23	50.276 54	11.927 34	93.171 49	54 43	51.742 85	12.593 62	95.498 60
53 24	50.294 76	11.935 53	93.200 58	54 44	51.761 29	12.602 09	95.527 69
53 25	50.312 99	11.943 72	93.229 67	54 45	51.779 73	12.610 57	95.556 78
53 26	50.331 21	11.951 91	93.258 76	54 46	51.798 18	12.619 05	95.585 87
53 27	50.349 44	11.960 11	93.287 85	54 47	51.816 63	12.627 54	95.614 95
53 28	50.367 68	11.968 31	93.316 94	54 48	51.835 08	12.636 03	95.644 04
53 29	50.385 91	11.976 52	93.346 03	54 49	51.853 53	12.644 52	95.673 13
53 30	50.404 15	11.984 72	93.375 11	54 50	51.871 99	12.653 02	95.702 22
53 31	50.422 39	11.992 93	93.404 20	54 51	51.890 45	12.661 52	95.731 31
53 32	50.440 63	12.001 15	93.433 29	54 52	51.908 91	12.670 03	95.760 40
53 33	50.458 88	12.009 37	93.462 38	54 53	51.927 37	12.678 53	95.789 49
53 34	50.477 13	12.017 59	93.491 47	54 54	51.945 84	12.687 05	95.818 58
53 35	50.495 38	12.025 82	93.520 56	54 55	51.964 31	12.695 56	95.847 66
53 36	50.513 63	12.034 05	93.549 65	54 56	51.982 78	12.704 08	95.876 75
53 37	50.531 89	12.042 28	93.578 74	54 57	52.001 26	12.712 60	95.905 84
53 38	50.550 15	12.050 51	93.607 83	54 58	52.019 74	12.721 13	95.934 93
53 39	50.568 41	12.058 75	93.636 91	54 59	52.038 22	12.729 66	95.964 02
53 40	50.586 68	12.067 00	93.666 00	55 0	52.056 71	12.738 19	95.993 11
53 41	50.604 95	12.075 25	93.695 09	55 1	52.075 19	12.746 73	96.022 20
53 42	50.623 22	12.083 50	93.724 18	55 2	52.093 68	12.755 27	96.051 29
53 43	50.641 49	12.091 75	93.753 27	55 3	52.112 18	12.763 82	96.080 38
53 44	50.659 77	12.100 01	93.782 36	55 4	52.130 67	12.772 37	96.109 46
53 45	50.678 04	12.108 27	93.811 45	55 5	52.149 17	12.780 92	96.138 55
53 46	50.696 33	12.116 53	93.840 54	55 6	52.167 67	12.789 48	96.167 64
53 47	50.714 61	12.124 80	93.869 62	55 7	52.186 17	12.798 04	96.196 73
53 48	50.732 90	12.133 08	93.898 71	55 8	52.204 68	12.806 60	96.225 82
53 49	50.751 18	12.141 35	93.927 80	55 9	52.223 19	12.815 17	96.254 91
53 50	50.769 48	12.149 63	93.956 89	55 10	52.241 70	12.823 74	96.284 00
53 51	50.787 77	12.157 91	93.985 98	55 11	52.260 22	12.832 31	96.313 09
53 52	50.806 07	12.166 20	94.015 07	55 12	52.278 74	12.840 89	96.342 17
53 53	50.824 37	12.174 49	94.044 16	55 13	52.297 26	12.849 47	96.371 26
53 54	50.842 67	12.182 78	94.073 25	55 14	52.315 78	12.858 06	96.400 35
53 55	50.860 98	12.191 08	94.102 34	55 15	52.334 31	12.866 65	96.429 44
53 56	50.879 29	12.199 38	94.131 42	55 16	52.352 84	12.875 24	96.458 53
53 57	50.897 60	12.207 69	94.160 51	55 17	52.371 37	12.883 84	96.487 62
53 58	50.915 91	12.216 00	94.189 60	55 18	52.389 90	12.892 44	96.516 71
53 59	50.934 23	12.224 31	94.218 69	55 19	52.408 44	12.901 04	96.545 80
54 0	50.952 54	12.232 62	94.247 78	55 20	52.426 98	12.909 65	96.574 89
54 1	50.970 87	12.240 94	94.276 87	55 21	52.445 53	12.918 26	96.603 97
54 2	50.989 19	12.249 27	94.305 96	55 22	52.464 07	12.926 87	96.633 06
54 3	51.007 52	12.257 59	94.335 05	55 23	52.482 62	12.935 49	96.662 15
54 4	51.025 85	12.265 92	94.364 13	55 24	52.501 17	12.944 12	96.691 24
54 5	51.044 18	12.274 26	94.393 22	55 25	52.519 73	12.952 74	96.720 33
54 6	51.062 52	12.282 59	94.422 31	55 26	52.538 29	12.961 37	96.749 42
54 7	51.080 85	12.290 93	94.451 40	55 27	52.556 85	12.970 01	96.778 51
54 8	51.099 19	12.299 28	94.480 49	55 28	52.575 41	12.978 64	96.807 60
54 9	51.117 54	12.307 63	94.509 58	55 29	52.593 98	12.987 28	96.836 68
54 10	51.135 88	12.315 98	94.538 67	55 30	52.612 55	12.995 93	96.865 77
54 11	51.154 23	12.324 33	94.567 76	55 31	52.631 12	13.004 58	96.894 86
54 12	51.172 59	12.332 69	94.596 85	55 32	52.649 69	13.013 23	96.923 95
54 13	51.190 94	12.341 05	94.625 93	55 33	52.668 27	13.021 89	96.953 04
54 14	51.209 30	12.349 42	94.655 02	55 34	52.686 85	13.030 55	96.982 13
54 15	51.227 66	12.357 79	94.684 11	55 35	52.705 43	13.039 21	97.011 22
54 16	51.246 02	12.366 16	94.713 20	55 36	52.724 02	13.047 88	97.040 31
54 17	51.264 38	12.374 54	94.742 29	55 37	52.742 61	13.056 55	97.069 40
54 18	51.282 75	12.382 92	94.771 38	55 38	52.761 20	13.065 22	97.098 48
54 19	51.301 12	12.391 30	94.800 47	55 39	52.779 79	13.073 90	97.127 57
54 20	51.319 50	12.399 69	94.829 56	55 40	52.798 39	13.082 58	97.156 66
54 21	51.337 87	12.408 08	94.858 64	55 41	52.816 99	13.091 27	97.185 75
54 22	51.356 25	12.416 48	94.887 73	55 42	52.835 60	13.099 96	97.214 84
54 23	51.374 63	12.424 88	94.916 82	55 43	52.854 20	13.108 65	97.243 93
54 24	51.393 02	12.433 28	94.945 91	55 44	52.872 81	13.117 35	97.273 02
54 25	51.411 41	12.441 69	94.975 00	55 45	52.891 42	13.126 05	97.302 11
54 26	51.429 80	12.450 10	95.004 09	55 46	52.910 04	13.134 75	97.331 19
54 27	51.448 19	12.458 51	95.033 18	55 47	52.928 65	13.143 46	97.360 28
54 28	51.466 58	12.466 93	95.062 27	55 48	52.947 27	13.152 17	97.389 37
54 29	51.484 98	12.475 35	95.091 36	55 49	52.965 90	13.160 89	97.418 46
54 30	51.503 38	12.483 77	95.120 44	55 50	52.984 52	13.169 61	97.447 55
54 31	51.521 79	12.492 20	95.149 53	55 51	53.003 15	13.178 33	97.476 64
54 32	51.540 19	12.500 63	95.178 62	55 52	53.021 78	13.187 06	97.505 73
54 33	51.558 60	12.509 06	95.207 71	55 53	53.040 42	13.195 79	97.534 82
54 34	51.577 02	12.517 50	95.236 80	55 54	53.059 06	13.204 52	97.563 91
54 35	51.595 43	12.525 95	95.265 89	55 55	53.077 70	13.213 26	97.592 99
54 36	51.613 85	12.534 39	95.294 98	55 56	53.096 34	13.222 00	97.622 08
54 37	51.632 27	12.542 84	95.324 07	55 57	53.114 99	13.230 75	97.651 17
54 38	51.650 69	12.551 30	95.353 15	55 58	53.133 64	13.239 50	97.680 26
54 39	51.669 12	12.559 75	95.382 24	55 59	53.152 29	13.248 25	97.709 35
54 40	51.687 55	12.568 21	95.411 33	56 0	53.170 94	13.257 01	97.738 44

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEU
DEG MNT	M			DEG MNT	M		
56 1	53.189 60	13.265 77	97.767 53	57 21	54.691 70	13.978 87	100.094
56 2	53.208 26	13.274 53	97.796 62	57 22	54.710 60	13.987 94	100.123
56 3	53.226 93	13.283 30	97.825 70	57 23	54.729 50	13.997 01	100.152
56 4	53.245 59	13.292 07	97.854 79	57 24	54.748 40	14.006 08	100.181
56 5	53.264 26	13.300 85	97.883 88	57 25	54.767 31	14.015 16	100.210
56 6	53.282 93	13.309 62	97.912 97	57 26	54.786 21	14.024 25	100.240
56 7	53.301 61	13.318 41	97.942 06	57 27	54.805 13	14.033 34	100.269
56 8	53.320 29	13.327 19	97.971 15	57 28	54.824 04	14.042 43	100.298
56 9	53.338 97	13.335 98	98.000 24	57 29	54.842 96	14.051 52	100.327
56 10	53.357 65	13.344 78	98.029 33	57 30	54.861 88	14.060 62	100.356
56 11	53.376 34	13.353 58	98.058 42	57 31	54.880 80	14.069 73	100.385
56 12	53.395 03	13.362 38	98.087 50	57 32	54.899 73	14.078 83	100.414
56 13	53.413 72	13.371 18	98.116 59	57 33	54.918 66	14.087 94	100.443
56 14	53.432 42	13.379 99	98.145 68	57 34	54.937 59	14.097 06	100.472
56 15	53.451 11	13.388 81	98.174 77	57 35	54.956 53	14.106 18	100.501
56 16	53.469 81	13.397 62	98.203 86	57 36	54.975 47	14.115 30	100.530
56 17	53.488 52	13.406 44	98.232 95	57 37	54.994 41	14.124 43	100.560
56 18	53.507 23	13.415 27	98.262 04	57 38	55.013 35	14.133 56	100.589
56 19	53.525 94	13.424 10	98.291 13	57 39	55.032 30	14.142 69	100.618
56 20	53.544 65	13.432 93	98.320 21	57 40	55.051 25	14.151 83	100.647
56 21	53.563 36	13.441 76	98.349 30	57 41	55.070 20	14.160 97	100.676
56 22	53.582 08	13.450 60	98.378 39	57 42	55.089 16	14.170 12	100.705
56 23	53.600 80	13.459 45	98.407 48	57 43	55.108 12	14.179 27	100.734
56 24	53.619 53	13.468 29	98.436 57	57 44	55.127 08	14.188 42	100.763
56 25	53.638 26	13.477 15	98.465 66	57 45	55.146 05	14.197 58	100.792
56 26	53.656 99	13.486 00	98.494 75	57 46	55.165 02	14.206 74	100.821
56 27	53.675 72	13.494 86	98.523 84	57 47	55.183 99	14.215 90	100.850
56 28	53.694 46	13.503 72	98.552 93	57 48	55.202 97	14.225 07	100.880
56 29	53.713 20	13.512 59	98.582 01	57 49	55.221 94	14.234 25	100.909
56 30	53.731 94	13.521 46	98.611 10	57 50	55.240 93	14.243 42	100.938
56 31	53.750 68	13.530 33	98.640 19	57 51	55.259 91	14.252 60	100.967
56 32	53.769 43	13.539 21	98.669 28	57 52	55.278 90	14.261 79	100.996
56 33	53.788 18	13.548 09	98.698 37	57 53	55.297 89	14.270 98	101.025
56 34	53.806 94	13.556 97	98.727 46	57 54	55.316 88	14.280 17	101.054
56 35	53.825 69	13.565 86	98.756 55	57 55	55.335 88	14.289 37	101.083
56 36	53.844 45	13.574 76	98.785 64	57 56	55.354 88	14.298 57	101.112
56 37	53.863 21	13.583 65	98.814 72	57 57	55.373 88	14.307 77	101.141
56 38	53.881 98	13.592 55	98.843 81	57 58	55.392 88	14.316 98	101.170
56 39	53.900 75	13.601 46	98.872 90	57 59	55.411 89	14.326 19	101.200
56 40	53.919 52	13.610 36	98.901 99	58 0	55.430 91	14.335 41	101.229
56 41	53.938 29	13.619 28	98.931 08	58 1	55.449 92	14.344 63	101.258
56 42	53.957 07	13.628 19	98.960 17	58 2	55.468 94	14.353 85	101.287
56 43	53.975 85	13.637 11	98.989 26	58 3	55.487 96	14.363 08	101.316
56 44	53.994 64	13.646 03	99.018 35	58 4	55.506 98	14.372 31	101.345
56 45	54.013 42	13.654 96	99.047 44	58 5	55.526 01	14.381 54	101.374
56 46	54.032 21	13.663 89	99.076 52	58 6	55.545 04	14.390 78	101.403
56 47	54.051 00	13.672 82	99.105 61	58 7	55.564 07	14.400 03	101.432
56 48	54.069 80	13.681 76	99.134 70	58 8	55.583 11	14.409 27	101.461
56 49	54.088 60	13.690 70	99.163 79	58 9	55.602 15	14.418 53	101.490
56 50	54.107 40	13.699 65	99.192 88	58 10	55.621 19	14.427 78	101.519
56 51	54.126 20	13.708 60	99.221 97	58 11	55.640 24	14.437 04	101.549
56 52	54.145 01	13.717 55	99.251 06	58 12	55.659 29	14.446 30	101.578
56 53	54.163 82	13.726 51	99.280 15	58 13	55.678 34	14.455 57	101.607
56 54	54.182 63	13.735 47	99.309 23	58 14	55.697 39	14.464 84	101.636
56 55	54.201 45	13.744 44	99.338 32	58 15	55.716 45	14.474 11	101.665
56 56	54.220 27	13.753 41	99.367 41	58 16	55.735 51	14.483 39	101.694
56 57	54.239 09	13.762 38	99.396 50	58 17	55.754 58	14.492 68	101.723
56 58	54.257 91	13.771 35	99.425 59	58 18	55.773 64	14.501 96	101.752
56 59	54.276 74	13.780 33	99.454 68	58 19	55.792 71	14.511 25	101.781
57 0	54.295 57	13.789 32	99.483 77	58 20	55.811 79	14.520 55	101.810
57 1	54.314 40	13.798 31	99.512 86	58 21	55.830 86	14.529 84	101.839
57 2	54.333 24	13.807 30	99.541 95	58 22	55.849 94	14.539 15	101.869
57 3	54.352 08	13.816 29	99.571 03	58 23	55.869 03	14.548 45	101.898
57 4	54.370 92	13.825 29	99.600 12	58 24	55.888 11	14.557 76	101.927
57 5	54.389 77	13.834 30	99.629 21	58 25	55.907 20	14.567 08	101.956
57 6	54.408 62	13.843 30	99.658 30	58 26	55.926 29	14.576 39	101.985
57 7	54.427 47	13.852 31	99.687 39	58 27	55.945 39	14.585 72	102.014
57 8	54.446 32	13.861 33	99.716 48	58 28	55.964 49	14.595 04	102.043
57 9	54.465 18	13.870 35	99.745 57	58 29	55.983 59	14.604 37	102.072
57 10	54.484 04	13.879 37	99.774 66	58 30	56.002 69	14.613 71	102.101
57 11	54.502 90	13.888 39	99.803 74	58 31	56.021 80	14.623 04	102.130
57 12	54.521 77	13.897 42	99.832 83	58 32	56.040 91	14.632 38	102.159
57 13	54.540 64	13.906 46	99.861 92	58 33	56.060 02	14.641 73	102.189
57 14	54.559 51	13.915 50	99.891 01	58 34	56.079 14	14.651 08	102.218
57 15	54.578 39	13.924 54	99.920 10	58 35	56.098 26	14.660 43	102.247
57 16	54.597 27	13.933 58	99.949 19	58 36	56.117 38	14.669 79	102.276
57 17	54.616 15	13.942 63	99.978 28	58 37	56.136 51	14.679 15	102.305
57 18	54.635 03	13.951 69	100.007 37	58 38	56.155 64	14.688 52	102.334
57 19	54.653 92	13.960 74	100.036 45	58 39	56.174 77	14.697 89	102.363
57 20	54.672 81	13.969 80	100.065 54	58 40	56.193 91	14.707 26	102.392

BLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
BLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
MNT	M			DEG MNT	M		
41	56.213 05	14.716 64	102.421 74	60 1	57.754 42	15.479 75	104.748 84
42	56.232 19	14.726 02	102.450 83	60 2	57.773 82	15.489 45	104.777 93
43	56.251 33	14.735 40	102.479 92	60 3	57.793 22	15.499 16	104.807 02
44	56.270 48	14.744 79	102.509 00	60 4	57.812 62	15.508 87	104.836 11
45	56.289 63	14.754 18	102.538 09	60 5	57.832 03	15.518 59	104.865 20
46	56.308 79	14.763 58	102.567 18	60 6	57.851 44	15.528 30	104.894 29
47	56.327 94	14.772 98	102.596 27	60 7	57.870 85	15.538 03	104.923 38
48	56.347 10	14.782 39	102.625 36	60 8	57.890 27	15.547 75	104.952 47
49	56.366 27	14.791 79	102.654 45	60 9	57.909 69	15.557 49	104.981 55
50	56.385 43	14.801 21	102.683 54	60 10	57.929 12	15.567 22	105.010 64
51	56.404 61	14.810 62	102.712 63	60 11	57.948 54	15.576 96	105.039 73
52	56.423 78	14.820 05	102.741 72	60 12	57.967 97	15.586 70	105.068 82
53	56.442 95	14.829 47	102.770 80	60 13	57.987 41	15.596 45	105.097 91
54	56.462 13	14.838 90	102.799 89	60 14	58.006 84	15.606 20	105.127 00
55	56.481 32	14.848 33	102.828 98	60 15	58.026 28	15.615 96	105.156 09
56	56.500 50	14.857 77	102.858 07	60 16	58.045 73	15.625 72	105.185 18
57	56.519 69	14.867 21	102.887 16	60 17	58.065 17	15.635 48	105.214 27
58	56.538 88	14.876 65	102.916 25	60 18	58.084 62	15.645 25	105.243 35
59	56.558 08	14.886 10	102.945 34	60 19	58.104 08	15.655 02	105.272 44
0	56.577 28	14.895 55	102.974 43	60 20	58.123 53	15.664 80	105.301 53
1	56.596 48	14.905 01	103.003 51	60 21	58.142 99	15.674 58	105.330 62
2	56.615 68	14.914 47	103.032 60	60 22	58.162 45	15.684 36	105.359 71
3	56.634 89	14.923 94	103.061 69	60 23	58.181 92	15.694 15	105.388 80
4	56.654 10	14.933 40	103.090 78	60 24	58.201 39	15.703 94	105.417 89
5	56.673 32	14.942 88	103.119 87	60 25	58.220 86	15.713 74	105.446 98
6	56.692 54	14.952 35	103.148 96	60 26	58.240 34	15.723 54	105.476 06
7	56.711 76	14.961 83	103.178 05	60 27	58.259 82	15.733 34	105.505 15
8	56.730 98	14.971 32	103.207 14	60 28	58.279 30	15.743 15	105.534 24
9	56.750 21	14.980 81	103.236 23	60 29	58.298 79	15.752 96	105.563 33
10	56.769 44	14.990 30	103.265 31	60 30	58.318 28	15.762 78	105.592 42
11	56.788 67	14.999 80	103.294 40	60 31	58.337 77	15.772 60	105.621 51
12	56.807 91	15.009 30	103.323 49	60 32	58.357 26	15.782 43	105.650 60
13	56.827 15	15.018 80	103.352 58	60 33	58.376 76	15.792 26	105.679 69
14	56.846 39	15.028 31	103.381 67	60 34	58.396 27	15.802 09	105.708 78
15	56.865 64	15.037 82	103.410 76	60 35	58.415 77	15.811 93	105.737 86
16	56.884 88	15.047 34	103.439 85	60 36	58.435 28	15.821 77	105.766 95
17	56.904 14	15.056 86	103.468 94	60 37	58.454 79	15.831 61	105.796 04
18	56.923 39	15.066 38	103.498 02	60 38	58.474 31	15.841 46	105.825 13
19	56.942 65	15.075 91	103.527 11	60 39	58.493 83	15.851 32	105.854 22
20	56.961 91	15.085 44	103.556 20	60 40	58.513 35	15.861 18	105.883 31
21	56.981 18	15.094 98	103.585 29	60 41	58.532 88	15.871 04	105.912 40
22	57.000 45	15.104 52	103.614 38	60 42	58.552 41	15.880 91	105.941 49
23	57.019 72	15.114 07	103.643 47	60 43	58.571 94	15.890 78	105.970 57
24	57.038 99	15.123 61	103.672 56	60 44	58.591 48	15.900 65	105.999 66
25	57.058 27	15.133 17	103.701 65	60 45	58.611 01	15.910 53	106.028 75
26	57.077 55	15.142 72	103.730 74	60 46	58.630 56	15.920 41	106.057 84
27	57.096 84	15.152 28	103.759 82	60 47	58.650 10	15.930 30	106.086 93
28	57.116 12	15.161 85	103.788 91	60 48	58.669 65	15.940 19	106.116 02
29	57.135 41	15.171 42	103.818 00	60 49	58.689 20	15.950 09	106.145 11
30	57.154 71	15.180 99	103.847 09	60 50	58.708 76	15.959 99	106.174 20
31	57.174 01	15.190 57	103.876 18	60 51	58.728 32	15.969 89	106.203 28
32	57.193 31	15.200 15	103.905 27	60 52	58.747 88	15.979 80	106.232 37
33	57.212 61	15.209 73	103.934 36	60 53	58.767 45	15.989 71	106.261 46
34	57.231 92	15.219 32	103.963 45	60 54	58.787 02	15.999 63	106.290 55
35	57.251 23	15.228 92	103.992 53	60 55	58.806 59	16.009 55	106.319 64
36	57.270 54	15.238 51	104.021 62	60 56	58.826 16	16.019 47	106.348 73
37	57.289 86	15.248 11	104.050 71	60 57	58.845 74	16.029 40	106.377 82
38	57.309 18	15.257 72	104.079 80	60 58	58.865 33	16.039 33	106.406 91
39	57.328 50	15.267 33	104.108 89	60 59	58.884 91	16.049 27	106.436 00
40	57.347 83	15.276 94	104.137 98	61 0	58.904 50	16.059 21	106.465 08
41	57.367 15	15.286 56	104.167 07	61 1	58.924 09	16.069 16	106.494 17
42	57.386 49	15.296 18	104.196 16	61 2	58.943 69	16.079 11	106.523 26
43	57.405 82	15.305 80	104.225 25	61 3	58.963 29	16.089 06	106.552 35
44	57.425 16	15.315 43	104.254 33	61 4	58.982 89	16.099 02	106.581 44
45	57.444 50	15.325 07	104.283 42	61 5	59.002 50	16.108 98	106.610 53
46	57.463 85	15.334 70	104.312 51	61 6	59.022 11	16.118 94	106.639 62
47	57.483 20	15.344 35	104.341 60	61 7	59.041 72	16.128 91	106.668 71
48	57.502 55	15.353 99	104.370 69	61 8	59.061 34	16.138 89	106.697 79
49	57.521 91	15.363 64	104.399 78	61 9	59.080 96	16.148 87	106.726 88
50	57.541 26	15.373 29	104.428 87	61 10	59.100 58	16.158 85	106.755 97
51	57.560 63	15.382 95	104.457 96	61 11	59.120 21	16.168 84	106.785 06
52	57.579 99	15.392 61	104.487 04	61 12	59.139 84	16.178 83	106.814 15
53	57.599 36	15.402 28	104.516 13	61 13	59.159 47	16.188 82	106.843 24
54	57.618 73	15.411 95	104.545 22	61 14	59.179 10	16.198 82	106.872 33
55	57.638 10	15.421 62	104.574 31	61 15	59.198 74	16.208 83	106.901 42
56	57.657 48	15.431 30	104.603 40	61 16	59.218 39	16.218 83	106.930 51
57	57.676 86	15.440 98	104.632 49	61 17	59.238 03	16.228 85	106.959 59
58	57.696 25	15.450 67	104.661 58	61 18	59.257 68	16.238 86	106.988 68
59	57.715 64	15.460 36	104.690 67	61 19	59.277 34	16.248 88	107.017 77
0	57.735 03	15.470 05	104.719 76	61 20	59.296 99	16.258 91	107.046 86

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
61 21	59.316 65	16.268 94	107.075 95	62 41	60.900 60	17.084 94	109.403
61 22	59.336 32	16.278 97	107.105 04	62 42	60.920 54	17.095 31	109.432
61 23	59.355 98	16.289 01	107.134 13	62 43	60.940 49	17.105 69	109.461
61 24	59.375 65	16.299 05	107.163 22	62 44	60.960 43	17.116 07	109.490
61 25	59.395 33	16.309 09	107.192 30	62 45	60.980 39	17.126 46	109.519
61 26	59.415 01	16.319 14	107.221 39	62 46	61.000 34	17.136 85	109.548
61 27	59.434 69	16.329 20	107.250 48	62 47	61.020 30	17.147 24	109.577
61 28	59.454 37	16.339 25	107.279 57	62 48	61.040 26	17.157 64	109.606
61 29	59.474 06	16.349 32	107.308 66	62 49	61.060 23	17.168 05	109.635
61 30	59.493 75	16.359 38	107.337 75	62 50	61.080 19	17.178 45	109.664
61 31	59.513 44	16.369 45	107.366 84	62 51	61.100 17	17.188 87	109.693
61 32	59.533 14	16.379 53	107.395 93	62 52	61.120 14	17.199 28	109.723
61 33	59.552 84	16.389 61	107.425 02	62 53	61.140 12	17.209 70	109.752
61 34	59.572 55	16.399 69	107.454 10	62 54	61.160 11	17.220 13	109.781
61 35	59.592 25	16.409 78	107.483 19	62 55	61.180 09	17.230 56	109.810
61 36	59.611 96	16.419 87	107.512 28	62 56	61.200 08	17.240 99	109.839
61 37	59.631 68	16.429 97	107.541 37	62 57	61.220 08	17.251 43	109.868
61 38	59.651 40	16.440 07	107.570 46	62 58	61.240 07	17.261 87	109.897
61 39	59.671 12	16.450 17	107.599 55	62 59	61.260 07	17.272 32	109.926
61 40	59.690 84	16.460 28	107.628 64	63 0	61.280 08	17.282 77	109.955
61 41	59.710 57	16.470 39	107.657 73	63 1	61.300 09	17.293 23	109.984
61 42	59.730 30	16.480 51	107.686 81	63 2	61.320 10	17.303 68	110.013
61 43	59.750 04	16.490 63	107.715 90	63 3	61.340 11	17.314 15	110.043
61 44	59.769 78	16.500 76	107.744 99	63 4	61.360 13	17.324 62	110.072
61 45	59.789 52	16.510 89	107.774 08	63 5	61.380 15	17.335 09	110.101
61 46	59.809 26	16.521 02	107.803 17	63 6	61.400 18	17.345 57	110.130
61 47	59.829 01	16.531 16	107.832 26	63 7	61.420 21	17.356 05	110.159
61 48	59.848 77	16.541 30	107.861 35	63 8	61.440 24	17.366 53	110.188
61 49	59.868 52	16.551 45	107.890 44	63 9	61.460 28	17.377 02	110.217
61 50	59.888 28	16.561 60	107.919 53	63 10	61.480 32	17.387 52	110.246
61 51	59.908 04	16.571 75	107.948 61	63 11	61.500 36	17.398 02	110.275
61 52	59.927 81	16.581 91	107.977 70	63 12	61.520 41	17.408 52	110.304
61 53	59.947 58	16.592 08	108.006 79	63 13	61.540 46	17.419 03	110.333
61 54	59.967 35	16.602 24	108.035 88	63 14	61.560 52	17.429 54	110.362
61 55	59.987 13	16.612 42	108.064 97	63 15	61.580 57	17.440 06	110.392
61 56	60.006 91	16.622 59	108.094 06	63 16	61.600 64	17.450 58	110.421
61 57	60.026 69	16.632 77	108.123 15	63 17	61.620 70	17.461 10	110.450
61 58	60.046 48	16.642 96	108.152 24	63 18	61.640 77	17.471 63	110.479
61 59	60.066 27	16.653 15	108.181 32	63 19	61.660 84	17.482 17	110.508
62 0	60.086 06	16.663 34	108.210 41	63 20	61.680 92	17.492 70	110.537
62 1	60.105 86	16.673 54	108.239 50	63 21	61.701 00	17.503 25	110.566
62 2	60.125 66	16.683 74	108.268 59	63 22	61.721 08	17.513 79	110.595
62 3	60.145 46	16.693 95	108.297 68	63 23	61.741 17	17.524 35	110.624
62 4	60.165 27	16.704 16	108.326 77	63 24	61.761 26	17.534 90	110.653
62 5	60.185 08	16.714 37	108.355 86	63 25	61.781 35	17.545 46	110.682
62 6	60.204 90	16.724 59	108.384 95	63 26	61.801 45	17.556 03	110.712
62 7	60.224 71	16.734 81	108.414 04	63 27	61.821 55	17.566 60	110.741
62 8	60.244 54	16.745 04	108.443 12	63 28	61.841 66	17.577 17	110.770
62 9	60.264 36	16.755 27	108.472 21	63 29	61.861 77	17.587 75	110.799
62 10	60.284 19	16.765 51	108.501 30	63 30	61.881 88	17.598 33	110.828
62 11	60.304 02	16.775 75	108.530 39	63 31	61.901 99	17.608 91	110.857
62 12	60.323 86	16.785 99	108.559 48	63 32	61.922 11	17.619 51	110.886
62 13	60.343 70	16.796 24	108.588 57	63 33	61.942 24	17.630 10	110.915
62 14	60.363 54	16.806 49	108.617 66	63 34	61.962 36	17.640 70	110.944
62 15	60.383 38	16.816 75	108.646 75	63 35	61.982 49	17.651 30	110.973
62 16	60.403 23	16.827 01	108.675 83	63 36	62.002 63	17.661 91	111.002
62 17	60.423 09	16.837 28	108.704 92	63 37	62.022 76	17.672 53	111.032
62 18	60.442 94	16.847 55	108.734 01	63 38	62.042 91	17.683 14	111.061
62 19	60.462 80	16.857 82	108.763 10	63 39	62.063 05	17.693 76	111.090
62 20	60.482 66	16.868 10	108.792 19	63 40	62.083 20	17.704 39	111.119
62 21	60.502 53	16.878 38	108.821 28	63 41	62.103 35	17.715 02	111.148
62 22	60.522 40	16.888 67	108.850 37	63 42	62.123 51	17.725 66	111.177
62 23	60.542 28	16.898 96	108.879 46	63 43	62.143 67	17.736 30	111.206
62 24	60.562 15	16.909 26	108.908 55	63 44	62.163 83	17.746 94	111.235
62 25	60.582 03	16.919 56	108.937 63	63 45	62.184 00	17.757 59	111.264
62 26	60.601 92	16.929 86	108.966 72	63 46	62.204 17	17.768 24	111.293
62 27	60.621 81	16.940 17	108.995 81	63 47	62.224 34	17.778 90	111.322
62 28	60.641 70	16.950 48	109.024 90	63 48	62.244 52	17.789 56	111.352
62 29	60.661 59	16.960 80	109.053 99	63 49	62.264 70	17.800 22	111.381
62 30	60.681 49	16.971 12	109.083 08	63 50	62.284 88	17.810 89	111.410
62 31	60.701 39	16.981 45	109.112 17	63 51	62.305 07	17.821 57	111.439
62 32	60.721 30	16.991 78	109.141 26	63 52	62.325 27	17.832 25	111.468
62 33	60.741 21	17.002 11	109.170 34	63 53	62.345 46	17.842 93	111.497
62 34	60.761 12	17.012 45	109.199 43	63 54	62.365 66	17.853 62	111.526
62 35	60.781 03	17.022 79	109.228 52	63 55	62.385 86	17.864 31	111.555
62 36	60.800 95	17.033 14	109.257 61	63 56	62.406 07	17.875 01	111.584
62 37	60.820 88	17.043 49	109.286 70	63 57	62.426 28	17.885 71	111.613
62 38	60.840 80	17.053 85	109.315 79	63 58	62.446 50	17.896 42	111.642
62 39	60.860 73	17.064 21	109.344 88	63 59	62.466 71	17.907 13	111.671
62 40	60.880 67	17.074 57	109.373 97	64 0	62.486 94	17.917 84	111.701

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

L. ANG. - DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
EG MNT	M			DEG MNT	M		
64 1	62.507 16	17.928 56	111.730 16	65 21	64.137 26	18.800 62	114.057 27
64 2	62.527 39	17.939 28	111.759 25	65 22	64.157 79	18.811 71	114.086 36
64 3	62.547 62	17.950 01	111.788 34	65 23	64.178 32	18.822 80	114.115 44
64 4	62.567 86	17.960 74	111.817 43	65 24	64.198 86	18.833 89	114.144 53
64 5	62.588 10	17.971 48	111.846 52	65 25	64.219 40	18.844 99	114.173 62
64 6	62.608 34	17.982 22	111.875 61	65 26	64.239 94	18.856 09	114.202 71
64 7	62.628 59	17.992 97	111.904 69	65 27	64.260 49	18.867 20	114.231 80
64 8	62.648 84	18.003 72	111.933 78	65 28	64.281 05	18.878 31	114.260 89
64 9	62.669 10	18.014 47	111.962 87	65 29	64.301 60	18.889 43	114.289 98
64 10	62.689 35	18.025 23	111.991 96	65 30	64.322 16	18.900 55	114.319 07
64 11	62.709 62	18.035 99	112.021 05	65 31	64.342 73	18.911 67	114.348 15
64 12	62.729 88	18.046 76	112.050 14	65 32	64.363 29	18.922 80	114.377 24
64 13	62.750 15	18.057 53	112.079 23	65 33	64.383 86	18.933 94	114.406 33
64 14	62.770 42	18.068 31	112.108 32	65 34	64.404 44	18.945 08	114.435 42
64 15	62.790 70	18.079 09	112.137 40	65 35	64.425 02	18.956 22	114.464 51
64 16	62.810 98	18.089 88	112.166 49	65 36	64.445 60	18.967 37	114.493 60
64 17	62.831 27	18.100 67	112.195 58	65 37	64.466 19	18.978 53	114.522 69
64 18	62.851 55	18.111 46	112.224 67	65 38	64.486 78	18.989 68	114.551 78
64 19	62.871 85	18.122 26	112.253 76	65 39	64.507 37	19.000 85	114.580 87
64 20	62.892 14	18.133 07	112.282 85	65 40	64.527 97	19.012 01	114.609 95
64 21	62.912 44	18.143 88	112.311 94	65 41	64.548 58	19.023 19	114.639 04
64 22	62.932 74	18.154 69	112.341 03	65 42	64.569 18	19.034 36	114.668 13
64 23	62.953 05	18.165 50	112.370 12	65 43	64.589 79	19.045 54	114.697 22
64 24	62.973 36	18.176 33	112.399 20	65 44	64.610 41	19.056 73	114.726 31
64 25	62.993 67	18.187 15	112.428 29	65 45	64.631 02	19.067 92	114.755 40
64 26	63.013 99	18.197 98	112.457 38	65 46	64.651 65	19.079 11	114.784 49
64 27	63.034 31	18.208 82	112.486 47	65 47	64.672 27	19.090 31	114.813 58
64 28	63.054 64	18.219 66	112.515 56	65 48	64.692 90	19.101 52	114.842 66
64 29	63.074 97	18.230 50	112.544 65	65 49	64.713 53	19.112 73	114.871 75
64 30	63.095 30	18.241 35	112.573 74	65 50	64.734 17	19.123 94	114.900 84
64 31	63.115 64	18.252 20	112.602 83	65 51	64.754 81	19.135 16	114.929 93
64 32	63.135 98	18.263 06	112.631 91	65 52	64.775 46	19.146 38	114.959 02
64 33	63.156 32	18.273 92	112.661 00	65 53	64.796 11	19.157 61	114.988 11
64 34	63.176 67	18.284 79	112.690 09	65 54	64.816 76	19.168 84	115.017 20
64 35	63.197 02	18.295 66	112.719 18	65 55	64.837 42	19.180 08	115.046 29
64 36	63.217 38	18.306 54	112.748 27	65 56	64.858 08	19.191 32	115.075 38
64 37	63.237 73	18.317 42	112.777 36	65 57	64.878 74	19.202 56	115.104 46
64 38	63.258 10	18.328 30	112.806 45	65 58	64.899 41	19.213 81	115.133 55
64 39	63.278 46	18.339 19	112.835 54	65 59	64.920 08	19.225 07	115.162 64
64 40	63.298 83	18.350 08	112.864 62	66 0	64.940 76	19.236 33	115.191 73
64 41	63.319 21	18.360 98	112.893 71	66 1	64.961 44	19.247 59	115.220 82
64 42	63.339 59	18.371 88	112.922 80	66 2	64.982 12	19.258 86	115.249 91
64 43	63.359 97	18.382 79	112.951 89	66 3	65.002 81	19.270 14	115.279 00
64 44	63.380 35	18.393 70	112.980 98	66 4	65.023 50	19.281 42	115.308 09
64 45	63.400 74	18.404 62	113.010 07	66 5	65.044 20	19.292 70	115.337 17
64 46	63.421 13	18.415 54	113.039 16	66 6	65.064 90	19.303 99	115.366 26
64 47	63.441 53	18.426 47	113.068 25	66 7	65.085 60	19.315 28	115.395 35
64 48	63.461 93	18.437 39	113.097 34	66 8	65.106 31	19.326 58	115.424 44
64 49	63.482 33	18.448 33	113.126 42	66 9	65.127 02	19.337 88	115.453 53
64 50	63.502 74	18.459 27	113.155 51	66 10	65.147 74	19.349 18	115.482 62
64 51	63.523 15	18.470 21	113.184 60	66 11	65.168 46	19.360 49	115.511 71
64 52	63.543 57	18.481 16	113.213 69	66 12	65.189 18	19.371 81	115.540 80
64 53	63.563 99	18.492 11	113.242 78	66 13	65.209 91	19.383 13	115.569 89
64 54	63.584 41	18.503 07	113.271 87	66 14	65.230 64	19.394 46	115.598 97
64 55	63.604 84	18.514 03	113.300 96	66 15	65.251 37	19.405 79	115.628 06
64 56	63.625 27	18.525 00	113.330 05	66 16	65.272 11	19.417 12	115.657 15
64 57	63.645 70	18.535 97	113.359 13	66 17	65.292 86	19.428 46	115.686 24
64 58	63.666 14	18.546 94	113.388 22	66 18	65.313 60	19.439 80	115.715 33
64 59	63.686 58	18.557 92	113.417 31	66 19	65.334 35	19.451 15	115.744 42
65 0	63.707 03	18.568 90	113.446 40	66 20	65.355 11	19.462 51	115.773 51
65 1	63.727 48	18.579 89	113.475 49	66 21	65.375 87	19.473 86	115.802 60
65 2	63.747 93	18.590 89	113.504 58	66 22	65.396 63	19.485 23	115.831 68
65 3	63.768 39	18.601 88	113.533 67	66 23	65.417 40	19.496 59	115.860 77
65 4	63.788 85	18.612 89	113.562 76	66 24	65.438 17	19.507 96	115.889 86
65 5	63.809 31	18.623 89	113.591 85	66 25	65.458 94	19.519 34	115.918 95
65 6	63.829 78	18.634 90	113.620 93	66 26	65.479 72	19.530 72	115.948 04
65 7	63.850 25	18.645 92	113.650 02	66 27	65.500 50	19.542 11	115.977 13
65 8	63.870 73	18.656 94	113.679 11	66 28	65.521 29	19.553 50	116.006 22
65 9	63.891 21	18.667 97	113.708 20	66 29	65.542 08	19.564 89	116.035 31
65 10	63.911 69	18.679 00	113.737 29	66 30	65.562 87	19.576 29	116.064 40
65 11	63.932 18	18.690 03	113.766 38	66 31	65.583 67	19.587 70	116.093 48
65 12	63.952 67	18.701 07	113.795 47	66 32	65.604 47	19.599 11	116.122 57
65 13	63.973 16	18.712 11	113.824 56	66 33	65.625 28	19.610 52	116.151 66
65 14	63.993 66	18.723 16	113.853 64	66 34	65.646 09	19.621 94	116.180 75
65 15	64.014 16	18.734 21	113.882 73	66 35	65.666 90	19.633 37	116.209 84
65 16	64.034 67	18.745 27	113.911 82	66 36	65.687 72	19.644 79	116.238 93
65 17	64.055 18	18.756 33	113.940 91	66 37	65.708 54	19.656 23	116.268 02
65 18	64.075 69	18.767 40	113.970 00	66 38	65.729 37	19.667 67	116.297 11
65 19	64.096 21	18.778 47	113.999 09	66 39	65.750 20	19.679 11	116.326 19
65 20	64.116 73	18.789 54	114.028 18	66 40	65.771 03	19.690 56	116.355 28

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
66 41	65.791 87	19.702 01	116.384 37	68 1	67.472 02	20.633 63	118.711 4
66 42	65.812 71	19.713 46	116.413 46	68 2	67.493 18	20.645 47	118.740 5
66 43	65.833 56	19.724 93	116.442 55	68 3	67.514 36	20.657 32	118.769 6
66 44	65.854 41	19.736 39	116.471 64	68 4	67.535 53	20.669 17	118.798 7
66 45	65.875 26	19.747 86	116.500 73	68 5	67.556 71	20.681 02	118.827 8
66 46	65.896 12	19.759 34	116.529 82	68 6	67.577 90	20.692 88	118.856 9
66 47	65.916 98	19.770 82	116.558 91	68 7	67.599 08	20.704 75	118.886 0
66 48	65.937 85	19.782 30	116.587 99	68 8	67.620 28	20.716 62	118.915 1
66 49	65.958 72	19.793 79	116.617 08	68 9	67.641 47	20.728 49	118.944 1
66 50	65.979 60	19.805 29	116.646 17	68 10	67.662 68	20.740 37	118.973 2
66 51	66.000 47	19.816 79	116.675 26	68 11	67.683 88	20.752 26	119.002 3
66 52	66.021 36	19.828 29	116.704 35	68 12	67.705 09	20.764 15	119.031 4
66 53	66.042 24	19.839 80	116.733 44	68 13	67.726 30	20.776 04	119.060 5
66 54	66.063 13	19.851 31	116.762 53	68 14	67.747 52	20.787 94	119.089 6
66 55	66.084 03	19.862 83	116.791 62	68 15	67.768 74	20.799 85	119.118 7
66 56	66.104 92	19.874 35	116.820 70	68 16	67.789 97	20.811 75	119.147 8
66 57	66.125 83	19.885 88	116.849 79	68 17	67.811 20	20.823 67	119.176 9
66 58	66.146 73	19.897 41	116.878 88	68 18	67.832 43	20.835 59	119.205 9
66 59	66.167 64	19.908 95	116.907 97	68 19	67.853 67	20.847 51	119.235 0
67 0	66.188 56	19.920 49	116.937 06	68 20	67.874 92	20.859 44	119.264 1
67 1	66.209 47	19.932 04	116.966 15	68 21	67.896 16	20.871 37	119.293 2
67 2	66.230 40	19.943 59	116.995 24	68 22	67.917 41	20.883 31	119.322 3
67 3	66.251 32	19.955 15	117.024 33	68 23	67.938 67	20.895 26	119.351 4
67 4	66.272 25	19.966 71	117.053 42	68 24	67.959 93	20.907 20	119.380 5
67 5	66.293 19	19.978 28	117.082 50	68 25	67.981 19	20.919 16	119.409 6
67 6	66.314 13	19.989 85	117.111 59	68 26	68.002 46	20.931 12	119.438 7
67 7	66.335 07	20.001 42	117.140 68	68 27	68.023 73	20.943 08	119.467 7
67 8	66.356 01	20.013 00	117.169 77	68 28	68.045 01	20.955 05	119.496 8
67 9	66.376 97	20.024 59	117.198 86	68 29	68.066 29	20.967 02	119.525 9
67 10	66.397 92	20.036 18	117.227 95	68 30	68.087 58	20.979 00	119.555 0
67 11	66.418 88	20.047 77	117.257 04	68 31	68.108 87	20.990 98	119.584 1
67 12	66.439 84	20.059 37	117.286 13	68 32	68.130 16	21.002 97	119.613 2
67 13	66.460 81	20.070 97	117.315 21	68 33	68.151 46	21.014 96	119.642 3
67 14	66.481 78	20.082 58	117.344 30	68 34	68.172 76	21.026 96	119.671 4
67 15	66.502 75	20.094 20	117.373 39	68 35	68.194 06	21.038 96	119.700 5
67 16	66.523 73	20.105 82	117.402 48	68 36	68.215 37	21.050 97	119.729 5
67 17	66.544 72	20.117 44	117.431 57	68 37	68.236 69	21.062 98	119.758 6
67 18	66.565 70	20.129 07	117.460 66	68 38	68.258 01	21.075 00	119.787 7
67 19	66.586 69	20.140 70	117.489 75	68 39	68.279 33	21.087 02	119.816 8
67 20	66.607 69	20.152 34	117.518 84	68 40	68.300 66	21.099 05	119.845 9
67 21	66.628 69	20.163 98	117.547 93	68 41	68.321 99	21.111 08	119.875 0
67 22	66.649 69	20.175 63	117.577 01	68 42	68.343 33	21.123 12	119.904 1
67 23	66.670 70	20.187 28	117.606 10	68 43	68.364 67	21.135 16	119.933 2
67 24	66.691 71	20.198 94	117.635 19	68 44	68.386 01	21.147 21	119.962 3
67 25	66.712 73	20.210 60	117.664 28	68 45	68.407 36	21.159 26	119.991 3
67 26	66.733 74	20.222 26	117.693 37	68 46	68.428 71	21.171 32	120.020 4
67 27	66.754 77	20.233 93	117.722 46	68 47	68.450 07	21.183 38	120.049 5
67 28	66.775 80	20.245 61	117.751 55	68 48	68.471 43	21.195 45	120.078 6
67 29	66.796 83	20.257 29	117.780 64	68 49	68.492 79	21.207 52	120.107 7
67 30	66.817 86	20.268 98	117.809 72	68 50	68.514 16	21.219 60	120.136 8
67 31	66.838 90	20.280 67	117.838 81	68 51	68.535 54	21.231 68	120.165 9
67 32	66.859 95	20.292 36	117.867 90	68 52	68.556 92	21.243 77	120.195 0
67 33	66.881 00	20.304 06	117.896 99	68 53	68.578 30	21.255 86	120.224 1
67 34	66.902 05	20.315 77	117.926 08	68 54	68.599 69	21.267 95	120.253 1
67 35	66.923 10	20.327 48	117.955 17	68 55	68.621 08	21.280 06	120.282 2
67 36	66.944 17	20.339 19	117.984 26	68 56	68.642 47	21.292 16	120.311 3
67 37	66.965 23	20.350 91	118.013 35	68 57	68.663 87	21.304 28	120.340 4
67 38	66.986 30	20.362 64	118.042 44	68 58	68.685 28	21.316 39	120.369 5
67 39	67.007 37	20.374 37	118.071 52	68 59	68.706 68	21.328 51	120.398 6
67 40	67.028 45	20.386 10	118.100 61	69 0	68.728 10	21.340 64	120.427 7
67 41	67.049 53	20.397 84	118.129 70	69 1	68.749 51	21.352 77	120.456 8
67 42	67.070 61	20.409 58	118.158 79	69 2	68.770 93	21.364 91	120.485 9
67 43	67.091 70	20.421 33	118.187 88	69 3	68.792 36	21.377 05	120.514 9
67 44	67.112 80	20.433 08	118.216 97	69 4	68.813 79	21.389 20	120.544 0
67 45	67.133 89	20.444 84	118.246 06	69 5	68.835 22	21.401 35	120.573 1
67 46	67.155 00	20.456 60	118.275 15	69 6	68.856 66	21.413 51	120.602 2
67 47	67.176 10	20.468 37	118.304 23	69 7	68.878 10	21.425 67	120.631 3
67 48	67.197 21	20.480 14	118.333 32	69 8	68.899 55	21.437 84	120.660 4
67 49	67.218 33	20.491 92	118.362 41	69 9	68.921 00	21.450 01	120.689 5
67 50	67.239 44	20.503 70	118.391 50	69 10	68.942 46	21.462 18	120.718 6
67 51	67.260 57	20.515 49	118.420 59	69 11	68.963 92	21.474 37	120.747 7
67 52	67.281 69	20.527 28	118.449 68	69 12	68.985 38	21.486 55	120.776 7
67 53	67.302 82	20.539 08	118.478 77	69 13	69.006 85	21.498 74	120.805 8
67 54	67.323 96	20.550 88	118.507 86	69 14	69.028 32	21.510 94	120.834 9
67 55	67.345 10	20.562 69	118.536 95	69 15	69.049 80	21.523 14	120.864 0
67 56	67.366 24	20.574 50	118.566 03	69 16	69.071 28	21.535 35	120.893 1
67 57	67.387 39	20.586 32	118.595 12	69 17	69.092 76	21.547 56	120.922 2
67 58	67.408 54	20.598 14	118.624 21	69 18	69.114 25	21.559 78	120.951 3
67 59	67.429 69	20.609 96	118.653 30	69 19	69.135 75	21.572 00	120.980 4
68 0	67.450 85	20.621 79	118.682 39	69 20	69.157 25	21.584 23	121.009 4

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

L. ANG. . DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
EG MNT	M			DEG MNT	M		
69 21	69.178 75	21.596 46	121.038 58	70 41	70.913 18	22.591 51	123.365 69
69 22	69.200 26	21.608 70	121.067 67	70 42	70.935 04	22.604 16	123.394 78
69 23	69.221 77	21.620 94	121.096 76	70 43	70.956 91	22.616 81	123.423 87
69 24	69.243 28	21.633 19	121.125 85	70 44	70.978 78	22.629 47	123.452 96
69 25	69.264 80	21.645 44	121.154 94	70 45	71.000 65	22.642 13	123.482 04
69 26	69.286 33	21.657 70	121.184 03	70 46	71.022 53	22.654 80	123.511 13
69 27	69.307 86	21.669 96	121.213 12	70 47	71.044 41	22.667 47	123.540 22
69 28	69.329 39	21.682 23	121.242 21	70 48	71.066 30	22.680 15	123.569 31
69 29	69.350 93	21.694 50	121.271 29	70 49	71.088 19	22.692 83	123.598 40
69 30	69.372 47	21.706 78	121.300 38	70 50	71.110 09	22.705 52	123.627 49
69 31	69.394 01	21.719 06	121.329 47	70 51	71.131 99	22.718 21	123.656 58
69 32	69.415 57	21.731 35	121.358 56	70 52	71.153 90	22.730 91	123.685 67
69 33	69.437 12	21.743 64	121.387 65	70 53	71.175 81	22.743 62	123.714 76
69 34	69.458 68	21.755 94	121.416 74	70 54	71.197 72	22.756 33	123.743 84
69 35	69.480 24	21.768 24	121.445 83	70 55	71.219 64	22.769 04	123.772 93
69 36	69.501 81	21.780 55	121.474 92	70 56	71.241 57	22.781 76	123.802 02
69 37	69.523 38	21.792 86	121.504 00	70 57	71.263 49	22.794 49	123.831 11
69 38	69.544 96	21.805 18	121.533 09	70 58	71.285 43	22.807 22	123.860 20
69 39	69.566 54	21.817 50	121.562 18	70 59	71.307 36	22.819 95	123.889 29
69 40	69.588 13	21.829 83	121.591 27	71 0	71.329 31	22.832 69	123.918 38
69 41	69.609 72	21.842 16	121.620 36	71 1	71.351 25	22.845 44	123.947 47
69 42	69.631 31	21.854 50	121.649 45	71 2	71.373 20	22.858 19	123.976 55
69 43	69.652 91	21.866 84	121.678 54	71 3	71.395 16	22.870 94	124.005 64
69 44	69.674 51	21.879 19	121.707 63	71 4	71.417 12	22.883 71	124.034 73
69 45	69.696 12	21.891 55	121.736 72	71 5	71.439 09	22.896 47	124.063 82
69 46	69.717 73	21.903 90	121.765 80	71 6	71.461 06	22.909 24	124.092 91
69 47	69.739 35	21.916 27	121.794 89	71 7	71.483 03	22.922 02	124.122 00
69 48	69.760 97	21.928 64	121.823 98	71 8	71.505 01	22.934 80	124.151 09
69 49	69.782 59	21.941 01	121.853 07	71 9	71.526 99	22.947 59	124.180 18
69 50	69.804 22	21.953 39	121.882 16	71 10	71.548 98	22.960 39	124.209 27
69 51	69.825 85	21.965 77	121.911 25	71 11	71.570 97	22.973 18	124.238 35
69 52	69.847 49	21.978 16	121.940 34	71 12	71.592 97	22.985 99	124.267 44
69 53	69.869 13	21.990 56	121.969 43	71 13	71.614 97	22.998 80	124.296 53
69 54	69.890 78	22.002 96	121.998 51	71 14	71.636 98	23.011 61	124.325 62
69 55	69.912 43	22.015 36	122.027 60	71 15	71.658 99	23.024 43	124.354 71
69 56	69.934 09	22.027 77	122.056 69	71 16	71.681 00	23.037 25	124.383 80
69 57	69.955 75	22.040 18	122.085 78	71 17	71.703 02	23.050 08	124.412 89
69 58	69.977 41	22.052 60	122.114 87	71 18	71.725 05	23.062 92	124.441 98
69 59	69.999 08	22.065 03	122.143 96	71 19	71.747 08	23.075 76	124.471 06
70 0	70.020 75	22.077 46	122.173 05	71 20	71.769 11	23.088 61	124.500 15
70 1	70.042 43	22.089 89	122.202 14	71 21	71.791 15	23.101 46	124.529 24
70 2	70.064 11	22.102 33	122.231 23	71 22	71.813 19	23.114 31	124.558 33
70 3	70.085 80	22.114 78	122.260 31	71 23	71.835 24	23.127 18	124.587 42
70 4	70.107 49	22.127 23	122.289 40	71 24	71.857 29	23.140 04	124.616 51
70 5	70.129 19	22.139 69	122.318 49	71 25	71.879 35	23.152 91	124.645 60
70 6	70.150 89	22.152 15	122.347 58	71 26	71.901 41	23.165 79	124.674 69
70 7	70.172 59	22.164 61	122.376 67	71 27	71.923 47	23.178 68	124.703 78
70 8	70.194 30	22.177 08	122.405 76	71 28	71.945 54	23.191 56	124.732 86
70 9	70.216 01	22.189 56	122.434 85	71 29	71.967 62	23.204 46	124.761 95
70 10	70.237 73	22.202 04	122.463 94	71 30	71.989 70	23.217 36	124.791 04
70 11	70.259 45	22.214 53	122.493 02	71 31	72.011 78	23.230 26	124.820 13
70 12	70.281 18	22.227 02	122.522 11	71 32	72.033 87	23.243 17	124.849 22
70 13	70.302 91	22.239 51	122.551 20	71 33	72.055 97	23.256 08	124.878 31
70 14	70.324 64	22.252 02	122.580 29	71 34	72.078 06	23.269 00	124.907 40
70 15	70.346 38	22.264 52	122.609 38	71 35	72.100 17	23.281 93	124.936 49
70 16	70.368 13	22.277 03	122.638 47	71 36	72.122 27	23.294 86	124.965 57
70 17	70.389 88	22.289 55	122.667 56	71 37	72.144 39	23.307 80	124.994 66
70 18	70.411 63	22.302 07	122.696 65	71 38	72.166 50	23.320 74	125.023 75
70 19	70.433 39	22.314 60	122.725 74	71 39	72.188 63	23.333 68	125.052 84
70 20	70.455 15	22.327 13	122.754 82	71 40	72.210 75	23.346 64	125.081 93
70 21	70.476 91	22.339 67	122.783 91	71 41	72.232 88	23.359 59	125.111 02
70 22	70.498 69	22.352 22	122.813 00	71 42	72.255 02	23.372 56	125.140 11
70 23	70.520 46	22.364 76	122.842 09	71 43	72.277 16	23.385 52	125.169 20
70 24	70.542 24	22.377 32	122.871 18	71 44	72.299 30	23.398 50	125.198 29
70 25	70.564 02	22.389 88	122.900 27	71 45	72.321 45	23.411 48	125.227 37
70 26	70.585 81	22.402 44	122.929 36	71 46	72.343 61	23.424 46	125.256 46
70 27	70.607 61	22.415 01	122.958 45	71 47	72.365 76	23.437 45	125.285 55
70 28	70.629 40	22.427 58	122.987 53	71 48	72.387 93	23.450 44	125.314 64
70 29	70.651 21	22.440 16	123.016 62	71 49	72.410 10	23.463 44	125.343 73
70 30	70.673 01	22.452 74	123.045 71	71 50	72.432 27	23.476 45	125.372 82
70 31	70.694 82	22.465 33	123.074 80	71 51	72.454 45	23.489 46	125.401 91
70 32	70.716 64	22.477 93	123.103 89	71 52	72.476 63	23.502 48	125.431 00
70 33	70.738 46	22.490 53	123.132 98	71 53	72.498 81	23.515 50	125.460 08
70 34	70.760 28	22.503 13	123.162 07	71 54	72.521 01	23.528 52	125.489 17
70 35	70.782 11	22.515 74	123.191 16	71 55	72.543 20	23.541 56	125.518 26
70 36	70.803 95	22.528 36	123.220 25	71 56	72.565 40	23.554 59	125.547 35
70 37	70.825 78	22.540 98	123.249 33	71 57	72.587 61	23.567 64	125.576 44
70 38	70.847 63	22.553 61	123.278 42	71 58	72.609 82	23.580 69	125.605 53
70 39	70.869 47	22.566 24	123.307 51	71 59	72.632 03	23.593 74	125.634 62
70 40	70.891 33	22.578 87	123.336 60	72 0	72.654 25	23.606 80	125.663 71

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEU
DEG MNT	M			DEG MNT	M		
72 1	72.676 48	23.619 86	125.692 79	73 21	74.469 85	24.682 63	128.019
72 2	72.698 71	23.632 93	125.721 88	73 22	74.492 46	24.696 14	128.048
72 3	72.720 94	23.646 01	125.750 97	73 23	74.515 08	24.709 65	128.078
72 4	72.743 18	23.659 09	125.780 06	73 24	74.537 70	24.723 17	128.107
72 5	72.765 42	23.672 17	125.809 15	73 25	74.560 33	24.736 69	128.136
72 6	72.787 67	23.685 26	125.838 24	73 26	74.582 96	24.750 22	128.165
72 7	72.809 92	23.698 36	125.867 33	73 27	74.605 60	24.763 76	128.194
72 8	72.832 18	23.711 46	125.896 42	73 28	74.628 24	24.777 30	128.223
72 9	72.854 44	23.724 57	125.925 51	73 29	74.650 89	24.790 85	128.252
72 10	72.876 71	23.737 68	125.954 59	73 30	74.673 54	24.804 40	128.281
72 11	72.898 98	23.750 80	125.983 68	73 31	74.696 20	24.817 96	128.310
72 12	72.921 25	23.763 93	126.012 77	73 32	74.718 86	24.831 52	128.339
72 13	72.943 54	23.777 05	126.041 86	73 33	74.741 53	24.845 09	128.368
72 14	72.965 82	23.790 19	126.070 95	73 34	74.764 20	24.858 66	128.398
72 15	72.988 11	23.803 33	126.100 04	73 35	74.786 88	24.872 24	128.427
72 16	73.010 41	23.816 47	126.129 13	73 36	74.809 56	24.885 83	128.456
72 17	73.032 71	23.829 63	126.158 22	73 37	74.832 24	24.899 42	128.485
72 18	73.055 01	23.842 78	126.187 30	73 38	74.854 94	24.913 02	128.514
72 19	73.077 32	23.855 94	126.216 39	73 39	74.877 63	24.926 62	128.543
72 20	73.099 63	23.869 11	126.245 48	73 40	74.900 33	24.940 23	128.572
72 21	73.121 95	23.882 28	126.274 57	73 41	74.923 04	24.953 84	128.601
72 22	73.144 28	23.895 46	126.303 66	73 42	74.945 75	24.967 46	128.630
72 23	73.166 60	23.908 64	126.332 75	73 43	74.968 47	24.981 08	128.659
72 24	73.188 94	23.921 83	126.361 84	73 44	74.991 19	24.994 71	128.688
72 25	73.211 27	23.935 03	126.390 93	73 45	75.013 92	25.008 35	128.718
72 26	73.233 62	23.948 23	126.420 02	73 46	75.036 65	25.021 99	128.747
72 27	73.255 96	23.961 43	126.449 10	73 47	75.059 38	25.035 64	128.776
72 28	73.278 32	23.974 64	126.478 19	73 48	75.082 12	25.049 29	128.805
72 29	73.300 67	23.987 86	126.507 28	73 49	75.104 87	25.062 95	128.834
72 30	73.323 03	24.001 08	126.536 37	73 50	75.127 62	25.076 61	128.863
72 31	73.345 40	24.014 30	126.565 46	73 51	75.150 38	25.090 28	128.892
72 32	73.367 77	24.027 54	126.594 55	73 52	75.173 14	25.103 96	128.921
72 33	73.390 15	24.040 77	126.623 64	73 53	75.195 90	25.117 64	128.950
72 34	73.412 53	24.054 02	126.652 73	73 54	75.218 67	25.131 33	128.979
72 35	73.434 91	24.067 27	126.681 81	73 55	75.241 45	25.145 02	129.008
72 36	73.457 30	24.080 52	126.710 90	73 56	75.264 23	25.158 72	129.038
72 37	73.479 70	24.093 78	126.739 99	73 57	75.287 02	25.172 42	129.067
72 38	73.502 10	24.107 04	126.769 08	73 58	75.309 81	25.186 13	129.096
72 39	73.524 50	24.120 31	126.798 17	73 59	75.332 60	25.199 85	129.125
72 40	73.546 91	24.133 59	126.827 26	74 0	75.355 41	25.213 57	129.154
72 41	73.569 33	24.146 87	126.856 35	74 1	75.378 21	25.227 29	129.183
72 42	73.591 74	24.160 16	126.885 44	74 2	75.401 02	25.241 02	129.212
72 43	73.614 17	24.173 45	126.914 53	74 3	75.423 84	25.254 76	129.241
72 44	73.636 60	24.186 75	126.943 61	74 4	75.446 66	25.268 50	129.270
72 45	73.659 03	24.200 05	126.972 70	74 5	75.469 48	25.282 25	129.299
72 46	73.681 47	24.213 36	127.001 79	74 6	75.492 32	25.296 01	129.328
72 47	73.703 91	24.226 67	127.030 88	74 7	75.515 15	25.309 77	129.357
72 48	73.726 36	24.239 99	127.059 97	74 8	75.537 99	25.323 53	129.387
72 49	73.748 81	24.253 32	127.089 06	74 9	75.560 84	25.337 31	129.416
72 50	73.771 27	24.266 65	127.118 15	74 10	75.583 69	25.351 08	129.445
72 51	73.793 73	24.279 99	127.147 24	74 11	75.606 54	25.364 87	129.474
72 52	73.816 20	24.293 33	127.176 32	74 12	75.629 41	25.378 65	129.503
72 53	73.838 67	24.306 67	127.205 41	74 13	75.652 27	25.392 45	129.532
72 54	73.861 15	24.320 03	127.234 50	74 14	75.675 14	25.406 25	129.561
72 55	73.883 63	24.333 38	127.263 59	74 15	75.698 02	25.420 05	129.590
72 56	73.906 11	24.346 75	127.292 68	74 16	75.720 90	25.433 87	129.619
72 57	73.928 61	24.360 12	127.321 77	74 17	75.743 79	25.447 68	129.648
72 58	73.951 10	24.373 49	127.350 86	74 18	75.766 68	25.461 51	129.677
72 59	73.973 60	24.386 87	127.379 95	74 19	75.789 57	25.475 33	129.707
73 0	73.996 11	24.400 26	127.409 04	74 20	75.812 48	25.489 17	129.736
73 1	74.018 62	24.413 65	127.439 12	74 21	75.835 38	25.503 01	129.765
73 2	74.041 13	24.427 04	127.467 21	74 22	75.858 29	25.516 85	129.794
73 3	74.063 65	24.440 45	127.496 30	74 23	75.881 21	25.530 71	129.823
73 4	74.086 18	24.453 85	127.525 39	74 24	75.904 13	25.544 56	129.852
73 5	74.108 71	24.467 27	127.554 48	74 25	75.927 06	25.558 43	129.881
73 6	74.131 24	24.480 69	127.583 57	74 26	75.949 99	25.572 29	129.910
73 7	74.153 78	24.494 11	127.612 66	74 27	75.972 93	25.586 17	129.939
73 8	74.176 33	24.507 54	127.641 75	74 28	75.995 87	25.600 05	129.968
73 9	74.198 88	24.520 98	127.670 83	74 29	76.018 82	25.613 93	129.997
73 10	74.221 43	24.534 42	127.699 92	74 30	76.041 77	25.627 82	130.027
73 11	74.243 99	24.547 86	127.729 01	74 31	76.064 72	25.641 72	130.056
73 12	74.266 55	24.561 31	127.758 10	74 32	76.087 69	25.655 62	130.085
73 13	74.289 12	24.574 77	127.787 19	74 33	76.110 65	25.669 53	130.114
73 14	74.311 70	24.588 23	127.816 28	74 34	76.133 63	25.683 45	130.143
73 15	74.334 28	24.601 70	127.845 37	74 35	76.156 60	25.697 37	130.172
73 16	74.356 86	24.615 18	127.874 46	74 36	76.179 59	25.711 29	130.201
73 17	74.379 45	24.628 66	127.903 55	74 37	76.202 57	25.725 22	130.230
73 18	74.402 04	24.642 14	127.932 63	74 38	76.225 57	25.739 16	130.259
73 19	74.424 64	24.655 63	127.961 72	74 39	76.248 56	25.753 11	130.288
73 20	74.447 24	24.669 13	127.990 81	74 40	76.271 57	25.767 05	130.317

ABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
ABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
G MNT	M			DEG MNT	M		
4 41	76.294 57	25.781 01	130.347 01	76 1	78.151 99	26.916 24	132.674 11
4 42	76.317 59	25.794 97	130.376 10	76 2	78.175 42	26.930 67	132.703 20
4 43	76.340 61	25.808 93	130.405 18	76 3	78.198 85	26.945 11	132.732 29
4 44	76.363 63	25.822 91	130.434 27	76 4	78.222 29	26.959 55	132.761 38
4 45	76.386 66	25.836 88	130.463 36	76 5	78.245 74	26.974 00	132.790 47
4 46	76.409 69	25.850 87	130.492 45	76 6	78.269 19	26.988 45	132.819 56
4 47	76.432 73	25.864 86	130.521 54	76 7	78.292 65	27.002 91	132.848 64
4 48	76.455 77	25.878 85	130.550 63	76 8	78.316 11	27.017 37	132.877 73
4 49	76.478 82	25.892 85	130.579 72	76 9	78.339 58	27.031 85	132.906 82
4 50	76.501 88	25.906 86	130.608 81	76 10	78.363 05	27.046 32	132.935 91
4 51	76.524 94	25.920 87	130.637 89	76 11	78.386 53	27.060 81	132.965 00
4 52	76.548 00	25.934 89	130.666 98	76 12	78.410 02	27.075 29	132.994 09
4 53	76.571 07	25.948 91	130.696 07	76 13	78.433 50	27.089 79	133.023 18
4 54	76.594 14	25.962 94	130.725 16	76 14	78.457 00	27.104 29	133.052 27
4 55	76.617 22	25.976 98	130.754 25	76 15	78.480 50	27.118 80	133.081 36
4 56	76.640 31	25.991 02	130.783 34	76 16	78.504 00	27.133 31	133.110 44
4 57	76.663 40	26.005 07	130.812 43	76 17	78.527 52	27.147 83	133.139 53
4 58	76.686 49	26.019 12	130.841 52	76 18	78.551 03	27.162 35	133.168 62
4 59	76.709 59	26.033 18	130.870 61	76 19	78.574 55	27.176 89	133.197 71
5 0	76.732 70	26.047 24	130.899 69	76 20	78.598 08	27.191 42	133.226 80
5 1	76.755 81	26.061 31	130.928 78	76 21	78.621 61	27.205 97	133.255 89
5 2	76.778 93	26.075 39	130.957 87	76 22	78.645 15	27.220 52	133.284 98
5 3	76.802 05	26.089 47	130.986 96	76 23	78.668 69	27.235 07	133.314 07
5 4	76.825 17	26.103 56	131.016 05	76 24	78.692 24	27.249 63	133.343 15
5 5	76.848 30	26.117 65	131.045 14	76 25	78.715 79	27.264 20	133.372 24
5 6	76.871 44	26.131 75	131.074 23	76 26	78.739 35	27.278 77	133.401 33
5 7	76.894 58	26.145 85	131.103 32	76 27	78.762 92	27.293 35	133.430 42
5 8	76.917 73	26.159 97	131.132 40	76 28	78.786 49	27.307 94	133.459 51
5 9	76.940 88	26.174 08	131.161 49	76 29	78.810 06	27.322 53	133.488 60
5 10	76.964 04	26.188 20	131.190 58	76 30	78.833 64	27.337 12	133.517 69
5 11	76.987 20	26.202 33	131.219 67	76 31	78.857 23	27.351 73	133.546 78
5 12	77.010 37	26.216 47	131.248 76	76 32	78.880 82	27.366 34	133.575 87
5 13	77.033 54	26.230 61	131.277 85	76 33	78.904 42	27.380 95	133.604 95
5 14	77.056 72	26.244 75	131.306 94	76 34	78.928 02	27.395 57	133.634 04
5 15	77.079 90	26.258 91	131.336 03	76 35	78.951 63	27.410 20	133.663 13
5 16	77.103 09	26.273 06	131.365 12	76 36	78.975 24	27.424 84	133.692 22
5 17	77.126 28	26.287 23	131.394 20	76 37	78.998 86	27.439 48	133.721 31
5 18	77.149 48	26.301 40	131.423 29	76 38	79.022 48	27.454 12	133.750 40
5 19	77.172 69	26.315 57	131.452 38	76 39	79.046 11	27.468 77	133.779 49
5 20	77.195 89	26.329 75	131.481 47	76 40	79.069 75	27.483 43	133.808 58
5 21	77.219 11	26.343 94	131.510 56	76 41	79.093 39	27.498 09	133.837 66
5 22	77.242 33	26.358 13	131.539 65	76 42	79.117 03	27.512 76	133.866 75
5 23	77.265 55	26.372 33	131.568 74	76 43	79.140 69	27.527 44	133.895 84
5 24	77.288 78	26.386 53	131.597 83	76 44	79.164 34	27.542 12	133.924 93
5 25	77.312 02	26.400 74	131.626 91	76 45	79.188 00	27.556 81	133.954 02
5 26	77.335 26	26.414 96	131.656 00	76 46	79.211 67	27.571 51	133.983 11
5 27	77.358 50	26.429 18	131.685 09	76 47	79.235 34	27.586 21	134.012 20
5 28	77.381 76	26.443 41	131.714 18	76 48	79.259 02	27.600 91	134.041 29
5 29	77.405 01	26.457 64	131.743 27	76 49	79.282 71	27.615 62	134.070 38
5 30	77.428 27	26.471 88	131.772 36	76 50	79.306 40	27.630 34	134.099 46
5 31	77.451 54	26.486 13	131.801 45	76 51	79.330 09	27.645 07	134.128 55
5 32	77.474 81	26.500 38	131.830 54	76 52	79.353 79	27.659 80	134.157 64
5 33	77.498 09	26.514 64	131.859 62	76 53	79.377 50	27.674 54	134.186 73
5 34	77.521 37	26.528 90	131.888 71	76 54	79.401 21	27.689 28	134.215 82
5 35	77.544 66	26.543 17	131.917 80	76 55	79.424 93	27.704 03	134.244 91
5 36	77.567 95	26.557 45	131.946 89	76 56	79.448 65	27.718 78	134.274 00
5 37	77.591 25	26.571 73	131.975 98	76 57	79.472 38	27.733 54	134.303 09
5 38	77.614 55	26.586 01	132.005 07	76 58	79.496 11	27.748 31	134.332 17
5 39	77.637 86	26.600 31	132.034 16	76 59	79.519 85	27.763 09	134.361 26
5 40	77.661 18	26.614 60	132.063 25	77 0	79.543 59	27.777 87	134.390 35
5 41	77.684 49	26.628 91	132.092 34	77 1	79.567 34	27.792 65	134.419 44
5 42	77.707 82	26.643 22	132.121 42	77 2	79.591 10	27.807 44	134.448 53
5 43	77.731 15	26.657 54	132.150 51	77 3	79.614 86	27.822 24	134.477 62
5 44	77.754 48	26.671 86	132.179 60	77 4	79.638 62	27.837 05	134.506 71
5 45	77.777 82	26.686 19	132.208 69	77 5	79.662 40	27.851 86	134.535 80
5 46	77.801 17	26.700 52	132.237 78	77 6	79.686 17	27.866 67	134.564 89
5 47	77.824 52	26.714 86	132.266 87	77 7	79.709 95	27.881 50	134.593 97
5 48	77.847 88	26.729 21	132.295 96	77 8	79.733 74	27.896 32	134.623 06
5 49	77.871 24	26.743 56	132.325 05	77 9	79.757 54	27.911 16	134.652 15
5 50	77.894 60	26.757 92	132.354 13	77 10	79.781 34	27.926 00	134.681 24
5 51	77.917 98	26.772 28	132.383 22	77 11	79.805 14	27.940 85	134.710 33
5 52	77.941 35	26.786 65	132.412 31	77 12	79.828 95	27.955 70	134.739 42
5 53	77.964 74	26.801 03	132.441 40	77 13	79.852 77	27.970 56	134.768 51
5 54	77.988 12	26.815 41	132.470 49	77 14	79.876 59	27.985 43	134.797 60
5 55	78.011 52	26.829 79	132.499 58	77 15	79.900 42	28.000 30	134.826 68
5 56	78.034 92	26.844 19	132.528 67	77 16	79.924 25	28.015 18	134.855 77
5 57	78.058 32	26.858 59	132.557 76	77 17	79.948 09	28.030 06	134.884 86
5 58	78.081 73	26.872 99	132.586 85	77 18	79.971 93	28.044 95	134.913 95
5 59	78.105 14	26.887 40	132.615 93	77 19	79.995 78	28.059 85	134.943 04
6 0	78.128 56	26.901 82	132.645 02	77 20	80.019 63	28.074 75	134.972 13

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE 7
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
77 21	80.043 49	28.089 66	135.001 22	78 41	81.970 56	29.302 64	137.328 3
77 22	80.067 36	28.104 57	135.030 31	78 42	81.994 88	29.318 06	137.357 4
77 23	80.091 23	28.119 50	135.059 40	78 43	82.019 21	29.333 49	137.386 5
77 24	80.115 11	28.134 42	135.088 48	78 44	82.043 54	29.348 92	137.415 5
77 25	80.138 99	28.149 36	135.117 57	78 45	82.067 88	29.364 36	137.444 6
77 26	80.162 88	28.164 30	135.146 66	78 46	82.092 22	29.379 80	137.473 7
77 27	80.186 77	28.179 24	135.175 75	78 47	82.116 57	29.395 25	137.502 8
77 28	80.210 67	28.194 19	135.204 84	78 48	82.140 93	29.410 71	137.531 9
77 29	80.234 57	28.209 15	135.233 93	78 49	82.165 29	29.426 17	137.561 0
77 30	80.258 49	28.224 12	135.263 02	78 50	82.189 65	29.441 64	137.590 1
77 31	80.282 40	28.239 09	135.292 11	78 51	82.214 03	29.457 12	137.619 2
77 32	80.306 32	28.254 07	135.321 19	78 52	82.238 40	29.472 60	137.648 3
77 33	80.330 25	28.269 05	135.350 28	78 53	82.262 79	29.488 09	137.677 3
77 34	80.354 18	28.284 04	135.379 37	78 54	82.287 18	29.503 59	137.706 4
77 35	80.378 12	28.299 03	135.408 46	78 55	82.311 57	29.519 09	137.735 5
77 36	80.402 06	28.314 04	135.437 55	78 56	82.335 97	29.534 60	137.764 6
77 37	80.426 01	28.329 04	135.466 64	78 57	82.360 38	29.550 12	137.793 7
77 38	80.449 97	28.344 06	135.495 73	78 58	82.384 79	29.565 64	137.822 8
77 39	80.473 93	28.359 08	135.524 82	78 59	82.409 21	29.581 17	137.851 9
77 40	80.497 90	28.374 11	135.553 91	79 0	82.433 64	29.596 70	137.881 0
77 41	80.521 87	28.389 14	135.582 99	79 1	82.458 07	29.612 24	137.910 1
77 42	80.545 84	28.404 18	135.612 08	79 2	82.482 51	29.627 79	137.939 1
77 43	80.569 83	28.419 22	135.641 17	79 3	82.506 95	29.643 34	137.968 2
77 44	80.593 82	28.434 28	135.670 26	79 4	82.531 40	29.658 90	137.997 3
77 45	80.617 81	28.449 33	135.699 35	79 5	82.555 85	29.674 47	138.026 4
77 46	80.641 81	28.464 40	135.728 44	79 6	82.580 31	29.690 04	138.055 5
77 47	80.665 82	28.479 47	135.757 53	79 7	82.604 78	29.705 62	138.084 6
77 48	80.689 83	28.494 55	135.786 62	79 8	82.629 25	29.721 21	138.113 7
77 49	80.713 84	28.509 63	135.815 70	79 9	82.653 73	29.736 80	138.142 8
77 50	80.737 87	28.524 72	135.844 79	79 10	82.678 21	29.752 40	138.171 9
77 51	80.761 90	28.539 81	135.873 88	79 11	82.702 70	29.768 01	138.200 9
77 52	80.785 93	28.554 92	135.902 97	79 12	82.727 19	29.783 62	138.230 0
77 53	80.809 97	28.570 02	135.932 06	79 13	82.751 70	29.799 24	138.259 1
77 54	80.834 01	28.585 14	135.961 15	79 14	82.776 20	29.814 87	138.288 2
77 55	80.858 06	28.600 26	135.990 24	79 15	82.800 72	29.830 50	138.317 3
77 56	80.882 12	28.615 39	136.019 33	79 16	82.825 23	29.846 14	138.346 4
77 57	80.906 18	28.630 52	136.048 42	79 17	82.849 76	29.861 78	138.375 5
77 58	80.930 25	28.645 66	136.077 50	79 18	82.874 29	29.877 43	138.404 6
77 59	80.954 32	28.660 80	136.106 59	79 19	82.898 83	29.893 09	138.433 7
78 0	80.978 40	28.675 96	136.135 68	79 20	82.923 37	29.908 76	138.462 7
78 1	81.002 49	28.691 11	136.164 77	79 21	82.947 92	29.924 43	138.491 8
78 2	81.026 58	28.706 28	136.193 86	79 22	82.972 47	29.940 11	138.520 9
78 3	81.050 67	28.721 45	136.222 95	79 23	82.997 03	29.955 79	138.550 0
78 4	81.074 78	28.736 63	136.252 04	79 24	83.021 60	29.971 48	138.579 1
78 5	81.098 88	28.751 81	136.281 13	79 25	83.046 17	29.987 18	138.608 2
78 6	81.123 00	28.767 00	136.310 21	79 26	83.070 75	30.002 88	138.637 3
78 7	81.147 12	28.782 20	136.339 30	79 27	83.095 33	30.018 59	138.666 4
78 8	81.171 24	28.797 40	136.368 39	79 28	83.119 92	30.034 31	138.695 5
78 9	81.195 37	28.812 61	136.397 48	79 29	83.144 52	30.050 03	138.724 5
78 10	81.219 51	28.827 82	136.426 57	79 30	83.169 12	30.065 76	138.753 6
78 11	81.243 65	28.843 05	136.455 66	79 31	83.193 73	30.081 50	138.782 7
78 12	81.267 80	28.858 27	136.484 75	79 32	83.218 34	30.097 24	138.811 8
78 13	81.291 95	28.873 51	136.513 84	79 33	83.242 96	30.112 99	138.840 9
78 14	81.316 11	28.888 75	136.542 93	79 34	83.267 59	30.128 75	138.870 0
78 15	81.340 27	28.903 99	136.572 01	79 35	83.292 22	30.144 51	138.899 1
78 16	81.364 44	28.919 25	136.601 10	79 36	83.316 86	30.160 28	138.928 2
78 17	81.388 62	28.934 51	136.630 19	79 37	83.341 50	30.176 06	138.957 3
78 18	81.412 80	28.949 77	136.659 28	79 38	83.366 15	30.191 84	138.986 3
78 19	81.436 99	28.965 05	136.688 37	79 39	83.390 81	30.207 63	139.015 4
78 20	81.461 18	28.980 32	136.717 46	79 40	83.415 47	30.223 43	139.044 5
78 21	81.485 38	28.995 61	136.746 55	79 41	83.440 14	30.239 23	139.073 6
78 22	81.509 58	29.010 90	136.775 64	79 42	83.464 81	30.255 04	139.102 7
78 23	81.533 79	29.026 20	136.804 72	79 43	83.489 49	30.270 85	139.131 8
78 24	81.558 01	29.041 50	136.833 81	79 44	83.514 18	30.286 67	139.160 9
78 25	81.582 23	29.056 81	136.862 90	79 45	83.538 87	30.302 50	139.190 0
78 26	81.606 46	29.072 13	136.891 99	79 46	83.563 57	30.318 34	139.219 1
78 27	81.630 69	29.087 45	136.921 08	79 47	83.588 27	30.334 18	139.248 1
78 28	81.654 93	29.102 78	136.950 17	79 48	83.612 98	30.350 03	139.277 2
78 29	81.679 18	29.118 12	136.979 26	79 49	83.637 69	30.365 88	139.306 3
78 30	81.703 43	29.133 46	137.008 35	79 50	83.662 42	30.381 75	139.335 4
78 31	81.727 68	29.148 81	137.037 44	79 51	83.687 14	30.397 61	139.364 5
78 32	81.751 95	29.164 16	137.066 52	79 52	83.711 88	30.413 49	139.393 6
78 33	81.776 21	29.179 52	137.095 61	79 53	83.736 62	30.429 37	139.422 7
78 34	81.800 49	29.194 89	137.124 70	79 54	83.761 36	30.445 26	139.451 8
78 35	81.824 77	29.210 26	137.153 79	79 55	83.786 11	30.461 15	139.480 9
78 36	81.849 05	29.225 64	137.182 88	79 56	83.810 87	30.477 06	139.509 9
78 37	81.873 34	29.241 03	137.211 97	79 57	83.835 64	30.492 96	139.539 0
78 38	81.897 64	29.256 42	137.241 06	79 58	83.860 41	30.508 88	139.568 1
78 39	81.921 94	29.271 82	137.270 15	79 59	83.885 18	30.524 80	139.597 2
78 40	81.946 25	29.287 23	137.299 23	80 0	83.909 96	30.540 73	139.626 3

4 TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

EFL. ANG. NG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
80 1	83.934 75	30.556 66	139.655 43	81 21	85.937 68	31.853 27	141.982 53
80 2	83.959 55	30.572 61	139.684 52	81 22	85.962 97	31.869 76	142.011 62
80 3	83.984 35	30.588 55	139.713 61	81 23	85.988 27	31.886 25	142.040 71
80 4	84.009 15	30.604 51	139.742 70	81 24	86.013 57	31.902 74	142.069 80
80 5	84.033 96	30.620 47	139.771 78	81 25	86.038 88	31.919 25	142.098 89
80 6	84.058 78	30.636 44	139.800 87	81 26	86.064 19	31.935 76	142.127 98
80 7	84.083 61	30.652 41	139.829 96	81 27	86.089 51	31.952 28	142.157 07
80 8	84.108 44	30.668 39	139.859 05	81 28	86.114 84	31.968 81	142.186 16
80 9	84.133 27	30.684 38	139.888 14	81 29	86.140 17	31.985 34	142.215 25
80 10	84.158 12	30.700 38	139.917 23	81 30	86.165 51	32.001 88	142.244 33
80 11	84.182 96	30.716 38	139.946 32	81 31	86.190 86	32.018 42	142.273 42
80 12	84.207 82	30.732 39	139.975 41	81 32	86.216 21	32.034 98	142.302 51
80 13	84.232 68	30.748 40	140.004 49	81 33	86.241 57	32.051 54	142.331 60
80 14	84.257 55	30.764 42	140.033 58	81 34	86.266 94	32.068 10	142.360 69
80 15	84.282 42	30.780 45	140.062 67	81 35	86.292 31	32.084 68	142.389 78
80 16	84.307 30	30.796 49	140.091 76	81 36	86.317 68	32.101 26	142.418 87
80 17	84.332 18	30.812 53	140.120 85	81 37	86.343 07	32.117 85	142.447 96
80 18	84.357 08	30.828 58	140.149 94	81 38	86.368 46	32.134 44	142.477 04
80 19	84.381 97	30.844 63	140.179 03	81 39	86.393 86	32.151 04	142.506 13
80 20	84.406 88	30.860 69	140.208 12	81 40	86.419 26	32.167 65	142.535 22
80 21	84.431 79	30.876 76	140.237 21	81 41	86.444 67	32.184 27	142.564 31
80 22	84.456 70	30.892 84	140.266 29	81 42	86.470 09	32.200 89	142.593 40
80 23	84.481 62	30.908 92	140.295 38	81 43	86.495 51	32.217 52	142.622 49
80 24	84.506 55	30.925 01	140.324 47	81 44	86.520 94	32.234 16	142.651 58
80 25	84.531 49	30.941 10	140.353 56	81 45	86.546 37	32.250 80	142.680 67
80 26	84.556 43	30.957 20	140.382 65	81 46	86.571 81	32.267 45	142.709 76
80 27	84.581 37	30.973 31	140.411 74	81 47	86.597 26	32.284 11	142.738 84
80 28	84.606 33	30.989 43	140.440 83	81 48	86.622 72	32.300 78	142.767 93
80 29	84.631 28	31.005 55	140.469 92	81 49	86.648 18	32.317 45	142.797 02
80 30	84.656 25	31.021 68	140.499 00	81 50	86.673 65	32.334 13	142.826 11
80 31	84.681 22	31.037 82	140.528 09	81 51	86.699 12	32.350 81	142.855 20
80 32	84.706 20	31.053 96	140.557 18	81 52	86.724 60	32.367 50	142.884 29
80 33	84.731 18	31.070 11	140.586 27	81 53	86.750 09	32.384 20	142.913 38
80 34	84.756 17	31.086 26	140.615 36	81 54	86.775 58	32.400 91	142.942 47
80 35	84.781 17	31.102 43	140.644 45	81 55	86.801 08	32.417 62	142.971 55
80 36	84.806 17	31.118 60	140.673 54	81 56	86.826 59	32.434 35	143.000 64
80 37	84.831 18	31.134 77	140.702 63	81 57	86.852 10	32.451 07	143.029 73
80 38	84.856 19	31.150 95	140.731 72	81 58	86.877 62	32.467 81	143.058 82
80 39	84.881 21	31.167 14	140.760 80	81 59	86.903 14	32.484 55	143.087 91
80 40	84.906 24	31.183 34	140.789 89	82 0	86.928 67	32.501 30	143.117 00
80 41	84.931 27	31.199 54	140.818 98	82 1	86.954 21	32.518 06	143.146 09
80 42	84.956 31	31.215 75	140.848 07	82 2	86.979 76	32.534 82	143.175 18
80 43	84.981 35	31.231 97	140.877 16	82 3	87.005 31	32.551 59	143.204 27
80 44	85.006 40	31.248 20	140.906 25	82 4	87.030 87	32.568 37	143.233 35
80 45	85.031 46	31.264 43	140.935 34	82 5	87.056 43	32.585 15	143.262 44
80 46	85.056 53	31.280 66	140.964 43	82 6	87.082 00	32.601 94	143.291 53
80 47	85.081 59	31.296 91	140.993 51	82 7	87.107 58	32.618 74	143.320 62
80 48	85.106 67	31.313 16	141.022 60	82 8	87.133 16	32.635 54	143.349 71
80 49	85.131 75	31.329 42	141.051 69	82 9	87.158 75	32.652 36	143.378 80
80 50	85.156 84	31.345 68	141.080 78	82 10	87.184 35	32.669 18	143.407 89
80 51	85.181 94	31.361 95	141.109 87	82 11	87.209 95	32.686 00	143.436 98
80 52	85.207 04	31.378 23	141.138 96	82 12	87.235 56	32.702 84	143.466 06
80 53	85.232 14	31.394 51	141.168 05	82 13	87.261 18	32.719 68	143.495 15
80 54	85.257 26	31.410 81	141.197 14	82 14	87.286 80	32.736 53	143.524 24
80 55	85.282 38	31.427 10	141.226 23	82 15	87.312 43	32.753 38	143.553 33
80 56	85.307 50	31.443 41	141.255 31	82 16	87.338 06	32.770 24	143.582 42
80 57	85.332 63	31.459 72	141.284 40	82 17	87.363 71	32.787 11	143.611 51
80 58	85.357 77	31.476 04	141.313 49	82 18	87.389 35	32.803 99	143.640 60
80 59	85.382 92	31.492 37	141.342 58	82 19	87.415 01	32.820 87	143.669 69
81 0	85.408 07	31.508 70	141.371 67	82 20	87.440 67	32.837 76	143.698 78
81 1	85.433 23	31.525 04	141.400 76	82 21	87.466 34	32.854 66	143.727 86
81 2	85.458 39	31.541 39	141.429 85	82 22	87.492 01	32.871 56	143.756 95
81 3	85.483 56	31.557 74	141.458 94	82 23	87.517 69	32.888 48	143.786 04
81 4	85.508 73	31.574 10	141.488 02	82 24	87.543 38	32.905 39	143.815 13
81 5	85.533 92	31.590 47	141.517 11	82 25	87.569 08	32.922 32	143.844 22
81 6	85.559 10	31.606 84	141.546 20	82 26	87.594 78	32.939 25	143.873 31
81 7	85.584 30	31.623 22	141.575 29	82 27	87.620 48	32.956 19	143.902 40
81 8	85.609 50	31.639 61	141.604 38	82 28	87.646 20	32.973 14	143.931 49
81 9	85.634 71	31.656 00	141.633 47	82 29	87.671 92	32.990 10	143.960 57
81 10	85.659 92	31.672 40	141.662 56	82 30	87.697 65	33.007 06	143.989 66
81 11	85.685 14	31.688 81	141.691 65	82 31	87.723 38	33.024 03	144.018 75
81 12	85.710 37	31.705 23	141.720 74	82 32	87.749 12	33.041 00	144.047 84
81 13	85.735 60	31.721 65	141.749 82	82 33	87.774 87	33.057 98	144.076 93
81 14	85.760 84	31.738 08	141.778 91	82 34	87.800 62	33.074 97	144.106 02
81 15	85.786 08	31.754 51	141.808 00	82 35	87.826 38	33.091 97	144.135 11
81 16	85.811 33	31.770 96	141.837 09	82 36	87.852 15	33.108 98	144.164 20
81 17	85.836 59	31.787 41	141.866 18	82 37	87.877 92	33.125 99	144.193 29
81 18	85.861 85	31.803 86	141.895 27	82 38	87.903 70	33.143 01	144.222 37
81 19	85.887 12	31.820 33	141.924 36	82 39	87.929 49	33.160 03	144.251 46
81 20	85.912 40	31.836 80	141.953 45	82 40	87.955 28	33.177 07	144.280 55

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGT LONGUE
DEG MNT	M			DEG MNT	M		
82 41	87.981 08	33.194 11	144.309 64	84 1	90.066 74	34.580 90	146.636
82 42	88.006 88	33.211 15	144.338 73	84 2	90.093 09	34.598 53	146.665
82 43	88.032 70	33.228 21	144.367 82	84 3	90.119 44	34.616 17	146.694
82 44	88.058 52	33.245 27	144.396 91	84 4	90.145 80	34.633 82	146.724
82 45	88.084 34	33.262 34	144.426 00	84 5	90.172 17	34.651 48	146.753
82 46	88.110 17	33.279 42	144.455 08	84 6	90.198 54	34.669 14	146.782
82 47	88.136 01	33.296 50	144.484 17	84 7	90.224 93	34.686 81	146.811
82 48	88.161 86	33.313 59	144.513 26	84 8	90.251 31	34.704 49	146.840
82 49	88.187 71	33.330 69	144.542 35	84 9	90.277 71	34.722 18	146.869
82 50	88.213 57	33.347 79	144.571 44	84 10	90.304 11	34.739 87	146.898
82 51	88.239 44	33.364 91	144.600 53	84 11	90.330 52	34.757 57	146.927
82 52	88.265 31	33.382 03	144.629 62	84 12	90.356 93	34.775 28	146.956
82 53	88.291 19	33.399 15	144.658 71	84 13	90.383 36	34.792 99	146.985
82 54	88.317 07	33.416 29	144.687 79	84 14	90.409 79	34.810 72	147.014
82 55	88.342 97	33.433 43	144.716 88	84 15	90.436 22	34.828 45	147.043
82 56	88.368 86	33.450 58	144.745 97	84 16	90.462 67	34.846 19	147.073
82 57	88.394 77	33.467 73	144.775 06	84 17	90.489 12	34.863 93	147.102
82 58	88.420 68	33.484 89	144.804 15	84 18	90.515 57	34.881 68	147.131
82 59	88.446 60	33.502 06	144.833 24	84 19	90.542 04	34.899 45	147.160
83 0	88.472 53	33.519 24	144.862 33	84 20	90.568 51	34.917 21	147.189
83 1	88.498 46	33.536 43	144.891 42	84 21	90.594 99	34.934 99	147.218
83 2	88.524 40	33.553 62	144.920 51	84 22	90.621 47	34.952 77	147.247
83 3	88.550 34	33.570 82	144.949 59	84 23	90.647 96	34.970 56	147.276
83 4	88.576 30	33.588 02	144.978 68	84 24	90.674 46	34.988 36	147.305
83 5	88.602 25	33.605 24	145.007 77	84 25	90.700 97	35.006 17	147.334
83 6	88.628 22	33.622 46	145.036 86	84 26	90.727 48	35.023 98	147.363
83 7	88.654 19	33.639 69	145.065 95	84 27	90.754 00	35.041 80	147.393
83 8	88.680 17	33.656 92	145.095 04	84 28	90.780 53	35.059 63	147.422
83 9	88.706 16	33.674 16	145.124 13	84 29	90.807 06	35.077 47	147.451
83 10	88.732 15	33.691 41	145.153 22	84 30	90.833 60	35.095 31	147.480
83 11	88.758 15	33.708 67	145.182 30	84 31	90.860 15	35.113 17	147.509
83 12	88.784 15	33.725 94	145.211 39	84 32	90.886 71	35.131 02	147.538
83 13	88.810 17	33.743 21	145.240 48	84 33	90.913 27	35.148 89	147.567
83 14	88.836 19	33.760 49	145.269 57	84 34	90.939 84	35.166 77	147.596
83 15	88.862 21	33.777 77	145.298 66	84 35	90.966 42	35.184 65	147.625
83 16	88.888 25	33.795 07	145.327 75	84 36	90.993 00	35.202 54	147.654
83 17	88.914 28	33.812 37	145.356 84	84 37	91.019 59	35.220 43	147.683
83 18	88.940 33	33.829 68	145.385 93	84 38	91.046 19	35.238 34	147.713
83 19	88.966 38	33.846 99	145.415 02	84 39	91.072 79	35.256 25	147.742
83 20	88.992 44	33.864 32	145.444 10	84 40	91.099 40	35.274 17	147.771
83 21	89.018 51	33.881 65	145.473 19	84 41	91.126 02	35.292 10	147.800
83 22	89.044 58	33.898 98	145.502 28	84 42	91.152 65	35.310 03	147.829
83 23	89.070 66	33.916 33	145.531 37	84 43	91.179 28	35.327 98	147.858
83 24	89.096 75	33.933 68	145.560 46	84 44	91.205 92	35.345 93	147.887
83 25	89.122 84	33.951 04	145.589 55	84 45	91.232 57	35.363 88	147.916
83 26	89.148 94	33.968 41	145.618 64	84 46	91.259 22	35.381 85	147.945
83 27	89.175 05	33.985 78	145.647 73	84 47	91.285 88	35.399 82	147.974
83 28	89.201 16	34.003 16	145.676 81	84 48	91.312 55	35.417 80	148.003
83 29	89.227 29	34.020 55	145.705 90	84 49	91.339 22	35.435 79	148.033
83 30	89.253 41	34.037 95	145.734 99	84 50	91.365 91	35.453 79	148.062
83 31	89.279 55	34.055 35	145.764 08	84 51	91.392 59	35.471 79	148.091
83 32	89.305 69	34.072 76	145.793 17	84 52	91.419 29	35.489 80	148.120
83 33	89.331 84	34.090 18	145.822 26	84 53	91.445 99	35.507 82	148.149
83 34	89.357 99	34.107 61	145.851 35	84 54	91.472 70	35.525 85	148.178
83 35	89.384 15	34.125 04	145.880 44	84 55	91.499 42	35.543 88	148.207
83 36	89.410 32	34.142 48	145.909 53	84 56	91.526 15	35.561 93	148.236
83 37	89.436 49	34.159 93	145.938 61	84 57	91.552 88	35.579 98	148.265
83 38	89.462 68	34.177 38	145.967 70	84 58	91.579 62	35.598 03	148.294
83 39	89.488 86	34.194 85	145.996 79	84 59	91.606 36	35.616 10	148.323
83 40	89.515 06	34.212 32	146.025 88	85 0	91.633 12	35.634 17	148.352
83 41	89.541 26	34.229 79	146.054 97	85 1	91.659 88	35.652 25	148.382
83 42	89.567 47	34.247 28	146.084 06	85 2	91.686 65	35.670 34	148.411
83 43	89.593 69	34.264 77	146.113 15	85 3	91.713 42	35.688 44	148.440
83 44	89.619 91	34.282 27	146.142 24	85 4	91.740 20	35.706 54	148.469
83 45	89.646 14	34.299 78	146.171 32	85 5	91.766 99	35.724 65	148.498
83 46	89.672 38	34.317 29	146.200 41	85 6	91.793 79	35.742 77	148.527
83 47	89.698 62	34.334 81	146.229 50	85 7	91.820 59	35.760 90	148.556
83 48	89.724 87	34.352 34	146.258 59	85 8	91.847 40	35.779 03	148.585
83 49	89.751 13	34.369 88	146.287 68	85 9	91.874 22	35.797 17	148.614
83 50	89.777 39	34.387 42	146.316 77	85 10	91.901 04	35.815 32	148.643
83 51	89.803 66	34.404 97	146.345 86	85 11	91.927 87	35.833 48	148.672
83 52	89.829 94	34.422 53	146.374 95	85 12	91.954 71	35.851 64	148.702
83 53	89.856 22	34.440 10	146.404 04	85 13	91.981 56	35.869 82	148.731
83 54	89.882 51	34.457 67	146.433 12	85 14	92.008 41	35.888 00	148.760
83 55	89.908 81	34.475 26	146.462 21	85 15	92.035 27	35.906 19	148.789
83 56	89.935 12	34.492 84	146.491 30	85 16	92.062 14	35.924 38	148.818
83 57	89.961 43	34.510 44	146.520 39	85 17	92.089 02	35.942 59	148.847
83 58	89.987 75	34.528 04	146.549 48	85 18	92.115 90	35.960 80	148.876
83 59	90.014 07	34.545 65	146.578 57	85 19	92.142 79	35.979 02	148.905
84 0	90.040 40	34.563 27	146.607 66	85 20	92.169 69	35.997 25	148.934

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. / ANG. DEFL.	TANGENT / TANGENTE	EXTERNAL / CONT.FL.	LENGTH / LONGUEUR	DEFL. ANG. / ANG. DEFL.	TANGENT / TANGENTE	EXTERNAL / CONT.FL.	LENGTH / LONGUEUR
DEG MNT	M			DEG MNT	M		
85 21	92.196 59	36.015 48	148.963 85	86 41	94.372 63	37.499 79	151.290 96
85 22	92.223 50	36.033 72	148.992 94	86 42	94.400 13	37.518 67	151.320 05
85 23	92.250 42	36.051 97	149.022 03	86 43	94.427 64	37.537 56	151.349 13
85 24	92.277 34	36.070 23	149.051 12	86 44	94.455 16	37.556 45	151.378 22
85 25	92.304 29	36.088 50	149.080 21	86 45	94.482 68	37.575 35	151.407 31
85 26	92.331 22	36.106 77	149.109 30	86 46	94.510 21	37.594 26	151.436 40
85 27	92.358 16	36.125 05	149.138 38	86 47	94.537 75	37.613 18	151.465 49
85 28	92.385 12	36.143 34	149.167 47	86 48	94.565 30	37.632 10	151.494 58
85 29	92.412 08	36.161 64	149.196 56	86 49	94.592 85	37.651 04	151.523 67
85 30	92.439 05	36.179 95	149.225 65	86 50	94.620 42	37.669 98	151.552 76
85 31	92.466 03	36.198 26	149.254 74	86 51	94.647 99	37.688 93	151.581 85
85 32	92.493 01	36.216 58	149.283 83	86 52	94.675 56	37.707 89	151.610 93
85 33	92.520 00	36.234 91	149.312 92	86 53	94.703 15	37.726 85	151.640 02
85 34	92.547 00	36.253 24	149.342 01	86 54	94.730 74	37.745 83	151.669 11
85 35	92.574 00	36.271 59	149.371 10	86 55	94.758 34	37.764 81	151.698 20
85 36	92.601 02	36.289 94	149.400 18	86 56	94.785 95	37.783 80	151.727 29
85 37	92.628 04	36.308 30	149.429 27	86 57	94.813 56	37.802 80	151.756 38
85 38	92.655 06	36.326 67	149.458 36	86 58	94.841 19	37.821 81	151.785 47
85 39	92.682 10	36.345 04	149.487 45	86 59	94.868 82	37.840 82	151.814 56
85 40	92.709 14	36.363 43	149.516 54	87 0	94.896 46	37.859 85	151.843 64
85 41	92.736 19	36.381 82	149.545 63	87 1	94.924 10	37.878 88	151.872 73
85 42	92.763 24	36.400 22	149.574 72	87 2	94.951 76	37.897 92	151.901 82
85 43	92.790 31	36.418 62	149.603 81	87 3	94.979 42	37.916 97	151.930 91
85 44	92.817 38	36.437 04	149.632 89	87 4	95.007 09	37.936 02	151.960 00
85 45	92.844 46	36.455 46	149.661 98	87 5	95.034 76	37.955 09	151.989 09
85 46	92.871 54	36.473 89	149.691 07	87 6	95.062 45	37.974 16	152.018 18
85 47	92.898 63	36.492 33	149.720 16	87 7	95.090 14	37.993 24	152.047 27
85 48	92.925 73	36.510 78	149.749 25	87 8	95.117 84	38.012 33	152.076 36
85 49	92.952 84	36.529 23	149.778 34	87 9	95.145 55	38.031 43	152.105 44
85 50	92.979 96	36.547 69	149.807 43	87 10	95.173 26	38.050 53	152.134 53
85 51	93.007 08	36.566 16	149.836 52	87 11	95.200 98	38.069 65	152.163 62
85 52	93.034 21	36.584 64	149.865 61	87 12	95.228 71	38.088 77	152.192 71
85 53	93.061 35	36.603 13	149.894 69	87 13	95.256 45	38.107 90	152.221 80
85 54	93.088 49	36.621 62	149.923 78	87 14	95.284 20	38.127 04	152.250 89
85 55	93.115 64	36.640 12	149.952 87	87 15	95.311 95	38.146 18	152.279 98
85 56	93.142 80	36.658 63	149.981 96	87 16	95.339 71	38.165 34	152.309 07
85 57	93.169 97	36.677 15	150.011 05	87 17	95.367 48	38.184 50	152.338 15
85 58	93.197 14	36.695 67	150.040 14	87 18	95.395 26	38.203 67	152.367 24
85 59	93.224 32	36.714 21	150.069 23	87 19	95.423 04	38.222 85	152.396 33
86 0	93.251 51	36.732 75	150.098 32	87 20	95.450 83	38.242 04	152.425 42
86 1	93.278 70	36.751 29	150.127 40	87 21	95.478 63	38.261 23	152.454 51
86 2	93.305 91	36.769 85	150.156 49	87 22	95.506 44	38.280 44	152.483 60
86 3	93.333 12	36.788 42	150.185 58	87 23	95.534 25	38.299 65	152.512 69
86 4	93.360 34	36.806 99	150.214 67	87 24	95.562 08	38.318 87	152.541 78
86 5	93.387 56	36.825 57	150.243 76	87 25	95.589 91	38.338 10	152.570 87
86 6	93.414 79	36.844 16	150.272 85	87 26	95.617 74	38.357 34	152.599 95
86 7	93.442 03	36.862 75	150.301 94	87 27	95.645 59	38.376 58	152.629 04
86 8	93.469 28	36.881 36	150.331 03	87 28	95.673 44	38.395 84	152.658 13
86 9	93.496 54	36.899 97	150.360 12	87 29	95.701 31	38.415 10	152.687 22
86 10	93.523 80	36.918 59	150.389 20	87 30	95.729 17	38.434 37	152.716 31
86 11	93.551 07	36.937 22	150.418 29	87 31	95.757 05	38.453 65	152.745 40
86 12	93.578 34	36.955 86	150.447 38	87 32	95.784 94	38.472 94	152.774 49
86 13	93.605 63	36.974 50	150.476 47	87 33	95.812 83	38.492 23	152.803 58
86 14	93.632 92	36.993 15	150.505 56	87 34	95.840 73	38.511 53	152.832 66
86 15	93.660 22	37.011 81	150.534 65	87 35	95.868 64	38.530 85	152.861 75
86 16	93.687 53	37.030 48	150.563 74	87 36	95.896 55	38.550 17	152.890 84
86 17	93.714 84	37.049 16	150.592 83	87 37	95.924 48	38.569 50	152.919 93
86 18	93.742 16	37.067 84	150.621 91	87 38	95.952 41	38.588 83	152.949 02
86 19	93.769 49	37.086 53	150.651 00	87 39	95.980 35	38.608 18	152.978 11
86 20	93.796 83	37.105 23	150.680 09	87 40	96.008 29	38.627 53	153.007 20
86 21	93.824 17	37.123 94	150.709 18	87 41	96.036 25	38.646 89	153.036 29
86 22	93.851 53	37.142 66	150.738 27	87 42	96.064 21	38.666 26	153.065 38
86 23	93.878 88	37.161 38	150.767 36	87 43	96.092 18	38.685 64	153.094 46
86 24	93.906 25	37.180 11	150.796 45	87 44	96.120 16	38.705 03	153.123 55
86 25	93.933 62	37.198 86	150.825 54	87 45	96.148 15	38.724 42	153.152 64
86 26	93.961 01	37.217 60	150.854 63	87 46	96.176 14	38.743 83	153.181 73
86 27	93.988 39	37.236 36	150.883 71	87 47	96.204 14	38.763 24	153.210 82
86 28	94.015 79	37.255 12	150.912 80	87 48	96.232 15	38.782 66	153.239 91
86 29	94.043 20	37.273 90	150.941 89	87 49	96.260 17	38.802 09	153.269 00
86 30	94.070 61	37.292 68	150.970 98	87 50	96.288 19	38.821 53	153.298 09
86 31	94.098 03	37.311 47	151.000 07	87 51	96.316 23	38.840 97	153.327 17
86 32	94.125 45	37.330 26	151.029 16	87 52	96.344 27	38.860 43	153.356 26
86 33	94.152 89	37.349 07	151.058 25	87 53	96.372 32	38.879 89	153.385 35
86 34	94.180 33	37.367 88	151.087 34	87 54	96.400 37	38.899 36	153.414 44
86 35	94.207 78	37.386 70	151.116 42	87 55	96.428 44	38.918 84	153.443 53
86 36	94.235 23	37.405 53	151.145 51	87 56	96.456 51	38.938 32	153.472 62
86 37	94.262 70	37.424 36	151.174 60	87 57	96.484 59	38.957 82	153.501 71
86 38	94.290 17	37.443 21	151.203 69	87 58	96.512 68	38.977 33	153.530 80
86 39	94.317 65	37.462 06	151.232 78	87 59	96.540 77	38.996 84	153.559 89
86 40	94.345 13	37.480 92	151.261 87	88 0	96.568 88	39.016 36	153.588 97

TABLE II-100 M RADIUS CIRC. CURVE: TANGENT,EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE II-100 M RAYON COURBE CIRC.: TANGENTE,CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR	DEFL. ANG. ANG. DEFL.	TANGENT TANGENTE	EXTERNAL CONT.FL.	LENGTH LONGUEUR
DEG MNT	M			DEG MNT	M		
88 1	96.596 99	39.035 89	153.618 06	89 21	98.871 92	40.625 95	155.945 1
88 2	96.625 11	39.055 43	153.647 15	89 22	98.900 69	40.646 17	155.974 2
88 3	96.653 24	39.074 97	153.676 24	89 23	98.929 46	40.666 41	156.003 3
88 4	96.681 37	39.094 53	153.705 33	89 24	98.958 25	40.686 65	156.032 4
88 5	96.709 52	39.114 09	153.734 42	89 25	98.987 04	40.706 91	156.061 5
88 6	96.737 67	39.133 66	153.763 51	89 26	99.015 84	40.727 17	156.090 6
88 7	96.765 83	39.153 24	153.792 60	89 27	99.044 65	40.747 44	156.119 7
88 8	96.793 99	39.172 83	153.821 68	89 28	99.073 46	40.767 72	156.148 7
88 9	96.822 17	39.192 43	153.850 77	89 29	99.102 29	40.788 01	156.177 8
88 10	96.850 35	39.212 03	153.879 86	89 30	99.131 12	40.808 31	156.206 9
88 11	96.878 54	39.231 65	153.908 95	89 31	99.159 96	40.828 61	156.236 0
88 12	96.906 74	39.251 27	153.938 04	89 32	99.188 81	40.848 93	156.265 1
88 13	96.934 95	39.270 90	153.967 13	89 33	99.217 67	40.869 25	156.294 2
88 14	96.963 16	39.290 54	153.996 22	89 34	99.246 54	40.889 58	156.323 3
88 15	96.991 39	39.310 19	154.025 31	89 35	99.275 41	40.909 93	156.352 4
88 16	97.019 62	39.329 85	154.054 40	89 36	99.304 29	40.930 28	156.381 5
88 17	97.047 86	39.349 51	154.083 48	89 37	99.333 19	40.950 64	156.410 5
88 18	97.076 10	39.369 18	154.112 57	89 38	99.362 08	40.971 00	156.439 6
88 19	97.104 36	39.388 87	154.141 66	89 39	99.390 99	40.991 38	156.468 7
88 20	97.132 62	39.408 56	154.170 75	89 40	99.419 91	41.011 77	156.497 8
88 21	97.160 89	39.428 26	154.199 84	89 41	99.448 83	41.032 16	156.526 9
88 22	97.189 17	39.447 96	154.228 93	89 42	99.477 77	41.052 57	156.556 0
88 23	97.217 46	39.467 68	154.258 02	89 43	99.506 71	41.072 98	156.585 1
88 24	97.245 75	39.487 40	154.287 11	89 44	99.535 66	41.093 40	156.614 2
88 25	97.274 05	39.507 14	154.316 19	89 45	99.564 62	41.113 83	156.643 3
88 26	97.302 36	39.526 88	154.345 28	89 46	99.593 58	41.134 27	156.672 3
88 27	97.330 68	39.546 63	154.374 37	89 47	99.622 56	41.154 72	156.701 4
88 28	97.359 01	39.566 39	154.403 46	89 48	99.651 54	41.175 17	156.730 5
88 29	97.387 34	39.586 16	154.432 55	89 49	99.680 53	41.195 64	156.759 6
88 30	97.415 69	39.605 93	154.461 64	89 50	99.709 53	41.216 12	156.788 7
88 31	97.444 04	39.625 72	154.490 73	89 51	99.738 54	41.236 60	156.817 8
88 32	97.472 40	39.645 51	154.519 82	89 52	99.767 56	41.257 09	156.846 9
88 33	97.500 76	39.665 31	154.548 91	89 53	99.796 59	41.277 59	156.876 0
88 34	97.529 14	39.685 12	154.577 99	89 54	99.825 62	41.298 10	156.905 1
88 35	97.557 52	39.704 94	154.607 08	89 55	99.854 66	41.318 62	156.934 1
88 36	97.585 91	39.724 77	154.636 17	89 56	99.883 71	41.339 15	156.963 2
88 37	97.614 31	39.744 60	154.665 26	89 57	99.912 77	41.359 69	156.992 3
88 38	97.642 72	39.764 45	154.694 35	89 58	99.941 84	41.380 24	157.021 4
88 39	97.671 13	39.784 30	154.723 44	89 59	99.970 92	41.400 79	157.050 5
88 40	97.699 56	39.804 16	154.752 53	90 0	100.000 00	41.421 36	157.079 6
88 41	97.727 99	39.824 03	154.781 62	90 10	100.291 31	41.627 49	157.370 5
88 42	97.756 43	39.843 91	154.810 70	90 20	100.583 48	41.834 54	157.661 4
88 43	97.784 88	39.863 80	154.839 79	90 30	100.876 49	42.042 48	157.952 3
88 44	97.813 33	39.883 69	154.868 88	90 40	101.170 38	42.251 34	158.243 1
88 45	97.841 80	39.903 60	154.897 97	90 50	101.465 12	42.461 12	158.534 0
88 46	97.870 27	39.923 51	154.927 06	91 0	101.760 74	42.671 82	158.824 9
88 47	97.898 75	39.943 43	154.956 15	91 10	102.057 23	42.883 45	159.115 8
88 48	97.927 24	39.963 36	154.985 24	91 20	102.354 61	43.096 00	159.406 7
88 49	97.955 73	39.983 30	155.014 33	91 30	102.652 87	43.309 50	159.697 6
88 50	97.984 24	40.003 25	155.043 42	91 40	102.952 03	43.523 93	159.988 5
88 51	98.012 75	40.023 21	155.072 50	91 50	103.252 08	43.739 32	160.279 4
88 52	98.041 27	40.043 17	155.101 59	92 0	103.553 03	43.955 65	160.570 2
88 53	98.069 80	40.063 15	155.130 68	92 10	103.854 89	44.172 95	160.861 1
88 54	98.098 33	40.083 13	155.159 77	92 20	104.157 67	44.391 20	161.152 0
88 55	98.126 88	40.103 12	155.188 86	92 30	104.461 36	44.610 43	161.442 9
88 56	98.155 43	40.123 12	155.217 95	92 40	104.765 98	44.830 63	161.733 8
88 57	98.183 99	40.143 13	155.247 04	92 50	105.071 53	45.051 81	162.024 7
88 58	98.212 56	40.163 15	155.276 13	93 0	105.378 01	45.273 97	162.315 6
88 59	98.241 14	40.183 17	155.305 21	93 10	105.685 44	45.497 12	162.606 5
89 0	98.269 73	40.203 21	155.334 30	93 20	105.993 81	45.721 27	162.897 4
89 1	98.298 32	40.223 25	155.363 39	93 30	106.303 13	45.946 41	163.188 3
89 2	98.326 92	40.243 30	155.392 48	93 40	106.613 41	46.172 57	163.479 1
89 3	98.355 53	40.263 36	155.421 57	93 50	106.924 66	46.399 73	163.770 0
89 4	98.384 15	40.283 43	155.450 66	94 0	107.236 87	46.627 92	164.060 9
89 5	98.412 78	40.303 51	155.479 75	94 10	107.550 06	46.857 13	164.351 8
89 6	98.441 41	40.323 60	155.508 84	94 20	107.864 23	47.087 36	164.642 7
89 7	98.470 06	40.343 69	155.537 93	94 30	108.179 39	47.318 64	164.933 6
89 8	98.498 71	40.363 80	155.567 01	94 40	108.495 54	47.550 95	165.224 5
89 9	98.527 37	40.383 91	155.596 10	94 50	108.812 69	47.784 31	165.515 3
89 10	98.556 03	40.404 03	155.625 19	95 0	109.130 85	48.018 72	165.806 2
89 11	98.584 71	40.424 16	155.654 28	95 10	109.450 02	48.254 20	166.097 1
89 12	98.613 39	40.444 30	155.683 37	95 20	109.770 20	48.490 73	166.388 0
89 13	98.642 09	40.464 45	155.712 46	95 30	110.091 41	48.728 34	166.678 9
89 14	98.670 79	40.484 61	155.741 55	95 40	110.413 65	48.967 03	166.969 8
89 15	98.699 50	40.504 77	155.770 64	95 50	110.736 93	49.206 80	167.260 7
89 16	98.728 21	40.524 94	155.799 72	96 0	111.061 25	49.447 65	167.551 6
89 17	98.756 94	40.545 13	155.828 81	96 10	111.386 62	49.689 61	167.842 5
89 18	98.785 67	40.565 32	155.857 90	96 20	111.713 05	49.932 67	168.133 3
89 19	98.814 41	40.585 52	155.886 99	96 30	112.040 53	50.176 83	168.424 2
89 20	98.843 16	40.605 73	155.916 08	96 40	112.369 09	50.422 11	168.715 1

TABLE 11-100 M RADIUS CIRC. CURVE: TANGENT, EXTERNAL AND LENGTH VS. CENTRAL DEFLECTION ANGLE
TABLE 11-100 M RAYON COURBE CIRC.: TANGENTE, CONTRE-FLECHE ET LONGUEUR VS. ANGLE DE DEFL. CENTRAL

DEFL. ANG. / ANG. DEFL.	TANGENT / TANGENTE	EXTERNAL / CONT.FL.	LENGTH / LONGUEUR	DEFL. ANG. / ANG. DEFL.	TANGENT / TANGENTE	EXTERNAL / CONT.FL.	LENGTH / LONGUEUR
DEG MNT	M			DEG MNT	M		
96 50	112.698 72	50.668 52	169.006 05	110 10	143.257 81	74.707 76	192.277 11
97 0	113.029 44	50.916 05	169.296 94	110 20	143.702 68	75.072 73	192.567 99
97 10	113.361 24	51.164 72	169.587 83	110 30	144.149 40	75.439 59	192.858 88
97 20	113.694 14	51.414 52	169.878 71	110 40	144.598 01	75.808 37	193.149 77
97 30	114.028 15	51.665 48	170.169 60	110 50	145.048 50	76.179 08	193.440 66
97 40	114.363 26	51.917 59	170.460 49	111 0	145.500 90	76.551 73	193.731 55
97 50	114.699 49	52.170 87	170.751 38	111 10	145.955 22	76.926 33	194.022 44
98 0	115.036 84	52.425 31	171.042 27	111 20	146.411 47	77.302 90	194.313 32
98 10	115.375 32	52.680 93	171.333 15	111 30	146.869 67	77.681 46	194.604 21
98 20	115.714 95	52.937 73	171.624 04	111 40	147.329 83	78.062 01	194.895 10
98 30	116.055 71	53.195 72	171.914 93	111 50	147.791 97	78.444 57	195.185 99
98 40	116.397 63	53.454 91	172.205 82	112 0	148.256 10	78.829 16	195.476 88
98 50	116.740 71	53.715 30	172.496 71	112 10	148.722 23	79.215 80	195.767 76
99 0	117.084 96	53.976 90	172.787 60	112 20	149.190 39	79.604 49	196.058 65
99 10	117.430 38	54.239 73	173.078 48	112 30	149.660 58	79.995 24	196.349 54
99 20	117.776 98	54.503 78	173.369 37	112 40	150.132 82	80.388 09	196.640 43
99 30	118.124 77	54.769 06	173.660 26	112 50	150.607 13	80.783 04	196.931 32
99 40	118.473 76	55.035 58	173.951 15	113 0	151.083 52	81.180 10	197.222 21
99 50	118.823 95	55.303 35	174.242 04	113 10	151.562 01	81.579 30	197.513 09
100 0	119.175 36	55.572 38	174.532 93	113 20	152.042 61	81.980 65	197.803 98
100 10	119.527 99	55.842 68	174.823 81	113 30	152.525 35	82.384 16	198.094 87
100 20	119.881 84	56.114 24	175.114 70	113 40	153.010 23	82.789 85	198.385 76
100 30	120.236 93	56.387 08	175.405 59	113 50	153.497 27	83.197 74	198.676 65
100 40	120.593 27	56.661 21	175.696 48	114 0	153.986 50	83.607 85	198.967 53
100 50	120.950 85	56.936 64	175.987 37	114 10	154.477 92	84.020 18	199.258 42
101 0	121.309 70	57.213 37	176.278 25	114 20	154.971 55	84.434 76	199.549 31
101 10	121.669 82	57.491 41	176.569 14	114 30	155.467 41	84.851 61	199.840 20
101 20	122.031 21	57.770 77	176.860 03	114 40	155.965 52	85.270 73	200.131 09
101 30	122.393 89	58.051 46	177.150 92	114 50	156.465 90	85.692 16	200.421 98
101 40	122.757 86	58.333 48	177.441 81	115 0	156.968 56	86.115 90	200.712 86
101 50	123.123 13	58.616 85	177.732 70	115 10	157.473 52	86.541 97	201.003 75
102 0	123.489 72	58.901 57	178.023 58	115 20	157.980 79	86.970 40	201.294 64
102 10	123.857 62	59.187 66	178.314 47	115 30	158.490 41	87.401 20	201.585 53
102 20	124.226 85	59.475 11	178.605 36	115 40	159.002 38	87.834 38	201.876 42
102 30	124.597 42	59.763 94	178.896 25	115 50	159.516 72	88.269 98	202.167 31
102 40	124.969 33	60.054 16	179.187 14	116 0	160.033 45	88.707 99	202.458 19
102 50	125.342 60	60.345 77	179.478 02	116 10	160.552 60	89.148 45	202.749 08
103 0	125.717 23	60.638 79	179.768 91	116 20	161.074 17	89.591 38	203.039 97
103 10	126.093 23	60.933 23	180.059 80	116 30	161.598 20	90.036 78	203.330 86
103 20	126.470 62	61.229 08	180.350 69	116 40	162.124 69	90.484 69	203.621 75
103 30	126.849 40	61.526 37	180.641 58	116 50	162.653 68	90.935 12	203.912 63
103 40	127.229 57	61.825 10	180.932 47	117 0	163.185 17	91.388 09	204.203 52
103 50	127.611 16	62.125 28	181.223 35	117 10	163.719 19	91.843 62	204.494 41
104 0	127.994 16	62.426 92	181.514 24	117 20	164.255 76	92.301 73	204.785 30
104 10	128.378 60	62.730 03	181.805 13	117 30	164.794 90	92.762 44	205.076 19
104 20	128.764 47	63.034 62	182.096 02	117 40	165.336 63	93.225 78	205.367 08
104 30	129.151 79	63.340 70	182.386 91	117 50	165.880 97	93.691 76	205.657 96
104 40	129.540 57	63.648 28	182.677 80	118 0	166.427 95	94.160 40	205.948 85
104 50	129.930 81	63.957 36	182.968 68	118 10	166.977 58	94.631 73	206.239 74
105 0	130.322 54	64.267 96	183.259 57	118 20	167.529 88	95.105 77	206.530 63
105 10	130.715 75	64.580 09	183.550 46	118 30	168.084 89	95.582 54	206.821 52
105 20	131.110 46	64.893 76	183.841 35	118 40	168.642 61	96.062 06	207.112 40
105 30	131.506 68	65.208 98	184.132 24	118 50	169.203 08	96.544 35	207.403 29
105 40	131.904 41	65.525 75	184.423 12	119 0	169.766 31	97.029 44	207.694 18
105 50	132.303 68	65.844 05	184.714 01	119 10	170.332 33	97.517 35	207.985 07
106 0	132.704 48	66.164 01	185.004 90	119 20	170.901 16	98.008 10	208.275 96
106 10	133.106 84	66.485 53	185.295 79	119 30	171.472 83	98.501 72	208.566 85
106 20	133.510 75	66.808 64	185.586 68	119 40	172.047 36	98.998 22	208.857 73
106 30	133.916 24	67.133 36	185.877 57	119 50	172.624 77	99.497 64	209.148 62
106 40	134.323 31	67.459 70	186.168 45	120 0	173.205 08	100.000 00	209.439 51
106 50	134.731 98	67.787 68	186.459 34	120 10	173.788 33	100.505 32	209.730 40
107 0	135.142 24	68.117 30	186.750 23	120 20	174.374 53	101.013 62	210.021 29
107 10	135.554 13	68.448 57	187.041 12	120 30	174.963 71	101.524 94	210.312 17
107 20	135.967 64	68.781 51	187.332 01	120 40	175.555 90	102.039 29	210.603 06
107 30	136.382 79	69.116 13	187.622 89	120 50	176.151 12	102.556 70	210.893 95
107 40	136.799 59	69.452 44	187.913 78	121 0	176.749 40	103.077 20	211.184 84
107 50	137.218 06	69.790 44	188.204 67	121 10	177.350 76	103.600 82	211.475 73
108 0	137.638 19	70.130 16	188.495 56	121 20	177.955 24	104.127 57	211.766 62
108 10	138.060 01	70.471 60	188.786 45	121 30	178.562 85	104.657 50	212.057 50
108 20	138.483 53	70.814 78	189.077 34	121 40	179.173 62	105.190 61	212.348 39
108 30	138.908 76	71.159 70	189.368 22	121 50	179.787 59	105.726 95	212.639 28
108 40	139.335 71	71.506 39	189.659 11	122 0	180.404 78	106.266 53	212.930 17
108 50	139.764 40	71.854 84	189.950 00	122 10	181.025 21	106.809 40	213.221 06
109 0	140.194 83	72.205 08	190.240 89	122 20	181.648 92	107.355 56	213.511 95
109 10	140.627 02	72.557 12	190.531 78	122 30	182.275 93	107.905 06	213.802 83
109 20	141.060 98	72.910 96	190.822 66	122 40	182.906 28	108.457 92	214.093 72
109 30	141.496 73	73.266 63	191.113 55	122 50	183.539 99	109.014 18	214.384 61
109 40	141.934 27	73.624 13	191.404 44	123 0	184.177 09	109.573 85	214.675 50
109 50	142.373 62	73.983 47	191.695 33	123 10	184.817 61	110.136 98	214.966 39
110 0	142.814 80	74.344 68	191.986 22	123 20	185.461 59	110.703 59	215.257 27

c) DESIGN ELEMENTS

c) ELEMENTS DE DESIGN

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

R= / A= / S/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0005	0.000 000 25	0.000 000 25	0.000 000 00	0.000 000 12	0.000 000 00	0.000 000 17
0010	0.000 001 00	0.000 001 00	0.000 000 00	0.000 000 50	0.000 000 00	0.000 000 67
0015	0.000 002 25	0.000 002 25	0.000 000 00	0.000 001 12	0.000 000 00	0.000 001 50
0020	0.000 004 00	0.000 004 00	0.000 000 00	0.000 002 00	0.000 000 00	0.000 002 67
0025	0.000 006 25	0.000 006 25	0.000 000 00	0.000 003 12	0.000 000 00	0.000 004 17
0030	0.000 009 00	0.000 009 00	0.000 000 00	0.000 004 50	0.000 000 00	0.000 006 00
0035	0.000 012 25	0.000 012 25	0.000 000 00	0.000 006 12	0.000 000 00	0.000 008 17
0040	0.000 016 00	0.000 016 00	0.000 000 00	0.000 008 00	0.000 000 00	0.000 010 67
0045	0.000 020 25	0.000 020 25	0.000 000 00	0.000 010 12	0.000 000 00	0.000 013 50
0050	0.000 025 00	0.000 025 00	0.000 000 00	0.000 012 50	0.000 000 00	0.000 016 67
0055	0.000 030 25	0.000 030 25	0.000 000 00	0.000 015 12	0.000 000 00	0.000 020 17
0060	0.000 036 00	0.000 036 00	0.000 000 00	0.000 018 00	0.000 000 00	0.000 024 00
0065	0.000 042 25	0.000 042 25	0.000 000 00	0.000 021 12	0.000 000 00	0.000 028 17
0070	0.000 049 00	0.000 049 00	0.000 000 00	0.000 024 50	0.000 000 00	0.000 032 67
0075	0.000 056 25	0.000 056 25	0.000 000 00	0.000 028 12	0.000 000 00	0.000 037 50
0080	0.000 064 00	0.000 064 00	0.000 000 00	0.000 032 00	0.000 000 00	0.000 042 67
0085	0.000 072 25	0.000 072 25	0.000 000 00	0.000 036 12	0.000 000 00	0.000 048 17
0090	0.000 081 00	0.000 081 00	0.000 000 00	0.000 040 50	0.000 000 00	0.000 054 00
0095	0.000 090 25	0.000 090 25	0.000 000 00	0.000 045 12	0.000 000 00	0.000 060 17
0100	0.000 100 00	0.000 100 00	0.000 000 00	0.000 050 00	0.000 000 00	0.000 066 67
0105	0.000 110 25	0.000 110 25	0.000 000 00	0.000 055 12	0.000 000 00	0.000 073 50
0110	0.000 121 00	0.000 121 00	0.000 000 00	0.000 060 50	0.000 000 00	0.000 080 67
0115	0.000 132 25	0.000 132 25	0.000 000 00	0.000 066 12	0.000 000 00	0.000 088 17
0120	0.000 144 00	0.000 144 00	0.000 000 00	0.000 072 00	0.000 000 00	0.000 096 00
0125	0.000 156 25	0.000 156 25	0.000 000 00	0.000 078 12	0.000 000 00	0.000 104 17
0130	0.000 169 00	0.000 169 00	0.000 000 00	0.000 084 50	0.000 000 00	0.000 112 67
0135	0.000 182 25	0.000 182 25	0.000 000 01	0.000 091 12	0.000 000 00	0.000 121 50
0140	0.000 196 00	0.000 196 00	0.000 000 01	0.000 098 00	0.000 000 00	0.000 130 67
0145	0.000 210 25	0.000 210 25	0.000 000 01	0.000 105 12	0.000 000 00	0.000 140 17
0150	0.000 225 00	0.000 225 00	0.000 000 01	0.000 112 50	0.000 000 00	0.000 150 00
0155	0.000 240 25	0.000 240 25	0.000 000 01	0.000 120 12	0.000 000 00	0.000 160 17
0160	0.000 256 00	0.000 256 00	0.000 000 01	0.000 128 00	0.000 000 00	0.000 170 67
0165	0.000 272 25	0.000 272 25	0.000 000 01	0.000 136 12	0.000 000 00	0.000 181 50
0170	0.000 289 00	0.000 289 00	0.000 000 01	0.000 144 50	0.000 000 00	0.000 192 67
0175	0.000 306 25	0.000 306 25	0.000 000 02	0.000 153 12	0.000 000 00	0.000 204 17
0180	0.000 324 00	0.000 324 00	0.000 000 02	0.000 162 00	0.000 000 00	0.000 216 00
0185	0.000 342 25	0.000 342 25	0.000 000 02	0.000 171 12	0.000 000 00	0.000 228 17
0190	0.000 361 00	0.000 361 00	0.000 000 02	0.000 180 50	0.000 000 01	0.000 240 67
0195	0.000 380 25	0.000 380 25	0.000 000 02	0.000 190 12	0.000 000 01	0.000 253 50
0200	0.000 400 00	0.000 400 00	0.000 000 03	0.000 200 00	0.000 000 01	0.000 266 67
0205	0.000 420 25	0.000 420 25	0.000 000 03	0.000 210 12	0.000 000 01	0.000 280 17
0210	0.000 441 00	0.000 441 00	0.000 000 03	0.000 220 50	0.000 000 01	0.000 294 00
0215	0.000 462 25	0.000 462 25	0.000 000 04	0.000 231 12	0.000 000 01	0.000 308 17
0220	0.000 484 00	0.000 484 00	0.000 000 04	0.000 242 00	0.000 000 01	0.000 322 67
0225	0.000 506 25	0.000 506 25	0.000 000 04	0.000 253 12	0.000 000 01	0.000 337 50
0230	0.000 529 00	0.000 529 00	0.000 000 05	0.000 264 50	0.000 000 01	0.000 352 67
0235	0.000 552 25	0.000 552 25	0.000 000 05	0.000 276 12	0.000 000 01	0.000 368 17
0240	0.000 576 00	0.000 576 00	0.000 000 06	0.000 288 00	0.000 000 01	0.000 384 00
0245	0.000 600 25	0.000 600 25	0.000 000 06	0.000 300 12	0.000 000 02	0.000 400 17
0250	0.000 625 00	0.000 625 00	0.000 000 07	0.000 312 50	0.000 000 02	0.000 416 67
0255	0.000 650 25	0.000 650 25	0.000 000 07	0.000 325 12	0.000 000 02	0.000 433 50
0260	0.000 676 00	0.000 676 00	0.000 000 08	0.000 338 00	0.000 000 02	0.000 450 67
0265	0.000 702 25	0.000 702 25	0.000 000 08	0.000 351 12	0.000 000 02	0.000 468 17
0270	0.000 729 00	0.000 729 00	0.000 000 09	0.000 364 50	0.000 000 02	0.000 486 00
0275	0.000 756 25	0.000 756 25	0.000 000 10	0.000 378 12	0.000 000 02	0.000 504 17
0280	0.000 784 00	0.000 784 00	0.000 000 10	0.000 392 00	0.000 000 03	0.000 522 67
0285	0.000 812 25	0.000 812 25	0.000 000 11	0.000 406 12	0.000 000 03	0.000 541 50
0290	0.000 841 00	0.000 841 00	0.000 000 12	0.000 420 50	0.000 000 03	0.000 560 67
0295	0.000 870 25	0.000 870 25	0.000 000 13	0.000 435 12	0.000 000 03	0.000 580 17
0300	0.000 900 00	0.000 900 00	0.000 000 13	0.000 450 00	0.000 000 03	0.000 600 00
0305	0.000 930 25	0.000 930 25	0.000 000 14	0.000 465 12	0.000 000 04	0.000 620 17
0310	0.000 961 00	0.000 961 00	0.000 000 15	0.000 480 50	0.000 000 04	0.000 640 67
0315	0.000 992 25	0.000 992 25	0.000 000 16	0.000 496 12	0.000 000 04	0.000 661 50
0320	0.001 024 00	0.001 024 00	0.000 000 17	0.000 512 00	0.000 000 04	0.000 682 67
0325	0.001 056 25	0.001 056 25	0.000 000 19	0.000 528 12	0.000 000 05	0.000 704 17
0330	0.001 089 00	0.001 089 00	0.000 000 20	0.000 544 50	0.000 000 05	0.000 726 00
0335	0.001 122 25	0.001 122 25	0.000 000 21	0.000 561 12	0.000 000 05	0.000 748 17
0340	0.001 156 00	0.001 156 00	0.000 000 22	0.000 578 00	0.000 000 06	0.000 770 67
0345	0.001 190 25	0.001 190 25	0.000 000 24	0.000 595 12	0.000 000 06	0.000 793 50
0350	0.001 225 00	0.001 225 00	0.000 000 25	0.000 612 50	0.000 000 06	0.000 816 67
0355	0.001 260 25	0.001 260 25	0.000 000 26	0.000 630 12	0.000 000 07	0.000 840 17
0360	0.001 296 00	0.001 296 00	0.000 000 28	0.000 648 00	0.000 000 07	0.000 864 00
0365	0.001 332 25	0.001 332 25	0.000 000 30	0.000 666 12	0.000 000 07	0.000 888 17
0370	0.001 369 00	0.001 369 00	0.000 000 31	0.000 684 50	0.000 000 08	0.000 912 67
0375	0.001 406 25	0.001 406 25	0.000 000 33	0.000 703 12	0.000 000 08	0.000 937 50
0380	0.001 444 00	0.001 444 00	0.000 000 35	0.000 722 00	0.000 000 09	0.000 962 67
0385	0.001 482 25	0.001 482 25	0.000 000 37	0.000 741 12	0.000 000 09	0.000 988 17
0390	0.001 521 00	0.001 521 00	0.000 000 39	0.000 760 50	0.000 000 10	0.001 014 00
0395	0.001 560 25	0.001 560 25	0.000 000 41	0.000 780 12	0.000 000 10	0.001 040 17
0400	0.001 600 00	0.001 600 00	0.000 000 43	0.000 800 00	0.000 000 11	0.001 066 67

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
0.0005	0.000 000 08	0.000 000 25	0 0 0.0	0 0 0.0	0 0 0.0	0 0 0.
0.0010	0.000 000 33	0.000 001 00	0 0 0.1	0 0 0.0	0 0 0.0	0 0 0.
0.0015	0.000 000 75	0.000 002 25	0 0 0.2	0 0 0.1	0 0 0.1	0 0 0.
0.0020	0.000 001 33	0.000 004 00	0 0 0.4	0 0 0.1	0 0 0.1	0 0 0.
0.0025	0.000 002 08	0.000 006 25	0 0 0.6	0 0 0.2	0 0 0.2	0 0 0.
0.0030	0.000 003 00	0.000 009 00	0 0 0.9	0 0 0.3	0 0 0.3	0 0 0.
0.0035	0.000 004 08	0.000 012 25	0 0 1.3	0 0 0.4	0 0 0.4	0 0 0.
0.0040	0.000 005 33	0.000 016 00	0 0 1.7	0 0 0.6	0 0 0.6	0 0 0.
0.0045	0.000 006 75	0.000 020 25	0 0 2.1	0 0 0.7	0 0 0.7	0 0 0.
0.0050	0.000 008 33	0.000 025 00	0 0 2.6	0 0 0.9	0 0 0.9	0 0 0.
0.0055	0.000 010 08	0.000 030 25	0 0 3.1	0 0 1.0	0 0 1.0	0 0 0.
0.0060	0.000 012 00	0.000 036 00	0 0 3.7	0 0 1.2	0 0 1.2	0 0 0.
0.0065	0.000 014 08	0.000 042 25	0 0 4.4	0 0 1.5	0 0 1.5	0 0 0.
0.0070	0.000 016 33	0.000 049 00	0 0 5.1	0 0 1.7	0 0 1.7	0 0 0.
0.0075	0.000 018 75	0.000 056 25	0 0 5.8	0 0 1.9	0 0 1.9	0 0 0.
0.0080	0.000 021 33	0.000 064 00	0 0 6.6	0 0 2.2	0 0 2.2	0 0 0.
0.0085	0.000 024 08	0.000 072 25	0 0 7.5	0 0 2.5	0 0 2.5	0 0 0.
0.0090	0.000 027 00	0.000 081 00	0 0 8.4	0 0 2.8	0 0 2.8	0 0 0.
0.0095	0.000 030 08	0.000 090 25	0 0 9.3	0 0 3.1	0 0 3.1	0 0 0.
0.0100	0.000 033 33	0.000 100 00	0 0 10.3	0 0 3.4	0 0 3.4	0 0 0.
0.0105	0.000 036 75	0.000 110 25	0 0 11.4	0 0 3.8	0 0 3.8	0 0 0.
0.0110	0.000 040 33	0.000 121 00	0 0 12.5	0 0 4.2	0 0 4.2	0 0 0.
0.0115	0.000 044 08	0.000 132 25	0 0 13.6	0 0 4.5	0 0 4.5	0 0 0.
0.0120	0.000 048 00	0.000 144 00	0 0 14.9	0 0 5.0	0 0 5.0	0 0 0.
0.0125	0.000 052 08	0.000 156 25	0 0 16.1	0 0 5.4	0 0 5.4	0 0 0.
0.0130	0.000 056 33	0.000 169 00	0 0 17.4	0 0 5.8	0 0 5.8	0 0 0.
0.0135	0.000 060 75	0.000 182 25	0 0 18.8	0 0 6.3	0 0 6.3	0 0 0.
0.0140	0.000 065 33	0.000 196 00	0 0 20.2	0 0 6.7	0 0 6.7	0 0 0.
0.0145	0.000 070 08	0.000 210 25	0 0 21.7	0 0 7.2	0 0 7.2	0 0 0.
0.0150	0.000 075 00	0.000 225 00	0 0 23.2	0 0 7.7	0 0 7.7	0 0 0.
0.0155	0.000 080 08	0.000 240 25	0 0 24.8	0 0 8.3	0 0 8.3	0 0 0.
0.0160	0.000 085 33	0.000 256 00	0 0 26.4	0 0 8.8	0 0 8.8	0 0 0.
0.0165	0.000 090 75	0.000 272 25	0 0 28.1	0 0 9.4	0 0 9.4	0 0 0.
0.0170	0.000 096 33	0.000 289 00	0 0 29.8	0 0 9.9	0 0 9.9	0 0 0.
0.0175	0.000 102 08	0.000 306 25	0 0 31.6	0 0 10.5	0 0 10.5	0 0 0.
0.0180	0.000 108 00	0.000 324 00	0 0 33.4	0 0 11.1	0 0 11.1	0 0 0.
0.0185	0.000 114 08	0.000 342 25	0 0 35.3	0 0 11.8	0 0 11.8	0 0 0.
0.0190	0.000 120 33	0.000 361 00	0 0 37.2	0 0 12.4	0 0 12.4	0 0 0.
0.0195	0.000 126 75	0.000 380 25	0 0 39.2	0 0 13.1	0 0 13.1	0 0 0.
0.0200	0.000 133 33	0.000 400 00	0 0 41.3	0 0 13.8	0 0 13.8	0 0 0.
0.0205	0.000 140 08	0.000 420 25	0 0 43.3	0 0 14.4	0 0 14.4	0 0 0.
0.0210	0.000 147 00	0.000 441 00	0 0 45.5	0 0 15.2	0 0 15.2	0 0 0.
0.0215	0.000 154 08	0.000 462 25	0 0 47.7	0 0 15.9	0 0 15.9	0 0 0.
0.0220	0.000 161 33	0.000 484 00	0 0 49.9	0 0 16.6	0 0 16.6	0 0 0.
0.0225	0.000 168 75	0.000 506 25	0 0 52.2	0 0 17.4	0 0 17.4	0 0 0.
0.0230	0.000 176 33	0.000 529 00	0 0 54.6	0 0 18.2	0 0 18.2	0 0 0.
0.0235	0.000 184 08	0.000 552 25	0 0 57.0	0 0 19.0	0 0 19.0	0 0 0.
0.0240	0.000 192 00	0.000 576 00	0 0 59.4	0 0 19.8	0 0 19.8	0 0 0.
0.0245	0.000 200 08	0.000 600 25	0 1 1.9	0 0 20.6	0 0 20.6	0 0 0.
0.0250	0.000 208 33	0.000 625 00	0 1 4.5	0 0 21.5	0 0 21.5	0 0 0.
0.0255	0.000 216 75	0.000 650 25	0 1 7.1	0 0 22.4	0 0 22.4	0 0 0.
0.0260	0.000 225 33	0.000 676 00	0 1 9.7	0 0 23.2	0 0 23.2	0 0 0.
0.0265	0.000 234 08	0.000 702 25	0 1 12.4	0 0 24.1	0 0 24.1	0 0 0.
0.0270	0.000 243 00	0.000 729 00	0 1 15.2	0 0 25.1	0 0 25.1	0 0 0.
0.0275	0.000 252 08	0.000 756 25	0 1 18.0	0 0 26.0	0 0 26.0	0 0 0.
0.0280	0.000 261 33	0.000 784 00	0 1 20.9	0 0 27.0	0 0 27.0	0 0 0.
0.0285	0.000 270 75	0.000 812 25	0 1 23.8	0 0 27.9	0 0 27.9	0 0 0.
0.0290	0.000 280 33	0.000 841 00	0 1 26.7	0 0 28.9	0 0 28.9	0 0 0.
0.0295	0.000 290 08	0.000 870 25	0 1 29.8	0 0 29.9	0 0 29.9	0 0 0.
0.0300	0.000 300 00	0.000 900 00	0 1 32.8	0 0 30.9	0 0 30.9	0 0 0.
0.0305	0.000 310 08	0.000 930 25	0 1 35.9	0 0 32.0	0 0 32.0	0 0 0.
0.0310	0.000 320 33	0.000 961 00	0 1 39.1	0 0 33.0	0 0 33.0	0 0 0.
0.0315	0.000 330 75	0.000 992 25	0 1 42.3	0 0 34.1	0 0 34.1	0 0 0.
0.0320	0.000 341 33	0.001 024 00	0 1 45.6	0 0 35.2	0 0 35.2	0 0 0.
0.0325	0.000 352 08	0.001 056 25	0 1 48.9	0 0 36.3	0 0 36.3	0 0 0.
0.0330	0.000 363 00	0.001 089 00	0 1 52.3	0 0 37.4	0 0 37.4	0 0 0.
0.0335	0.000 374 08	0.001 122 25	0 1 55.7	0 0 38.6	0 0 38.6	0 0 0.
0.0340	0.000 385 33	0.001 156 00	0 1 59.2	0 0 39.7	0 0 39.7	0 0 0.
0.0345	0.000 396 75	0.001 190 25	0 2 2.8	0 0 40.9	0 0 40.9	0 0 0.
0.0350	0.000 408 33	0.001 225 00	0 2 6.3	0 0 42.1	0 0 42.1	0 0 0.
0.0355	0.000 420 08	0.001 260 25	0 2 10.0	0 0 43.3	0 0 43.3	0 0 0.
0.0360	0.000 432 00	0.001 296 00	0 2 13.7	0 0 44.6	0 0 44.6	0 0 0.
0.0365	0.000 444 08	0.001 332 25	0 2 17.4	0 0 45.8	0 0 45.8	0 0 0.
0.0370	0.000 456 33	0.001 369 00	0 2 21.2	0 0 47.1	0 0 47.1	0 0 0.
0.0375	0.000 468 75	0.001 406 25	0 2 25.0	0 0 48.3	0 0 48.3	0 0 0.
0.0380	0.000 481 33	0.001 444 00	0 2 28.9	0 0 49.6	0 0 49.6	0 0 0.
0.0385	0.000 494 08	0.001 482 25	0 2 32.9	0 0 51.0	0 0 51.0	0 0 0.
0.0390	0.000 507 00	0.001 521 00	0 2 36.9	0 0 52.3	0 0 52.3	0 0 0.
0.0395	0.000 520 08	0.001 560 25	0 2 40.9	0 0 53.6	0 0 53.6	0 0 0.
0.0400	0.000 533 33	0.001 600 00	0 2 45.0	0 0 55.0	0 0 55.0	0 0 0.

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.001 640 25	0.001 640 25	0.000 000 45	0.000 820 12	0.000 000 11	0.001 093 50
0.001 681 00	0.001 681 00	0.000 000 47	0.000 840 50	0.000 000 12	0.001 120 67
0.001 722 25	0.001 722 25	0.000 000 49	0.000 861 12	0.000 000 12	0.001 148 17
0.001 764 00	0.001 764 00	0.000 000 52	0.000 882 00	0.000 000 13	0.001 176 00
0.001 806 25	0.001 806 25	0.000 000 54	0.000 903 12	0.000 000 14	0.001 204 17
0.001 849 00	0.001 849 00	0.000 000 57	0.000 924 50	0.000 000 14	0.001 232 67
0.001 892 25	0.001 892 25	0.000 000 60	0.000 946 12	0.000 000 15	0.001 261 50
0.001 936 00	0.001 936 00	0.000 000 62	0.000 968 00	0.000 000 16	0.001 290 67
0.001 980 25	0.001 980 25	0.000 000 65	0.000 990 12	0.000 000 16	0.001 320 17
0.002 025 00	0.002 025 00	0.000 000 68	0.001 012 50	0.000 000 17	0.001 350 00
0.002 070 25	0.002 070 25	0.000 000 71	0.001 035 12	0.000 000 18	0.001 380 17
0.002 116 00	0.002 116 00	0.000 000 75	0.001 058 00	0.000 000 19	0.001 410 67
0.002 162 25	0.002 162 25	0.000 000 78	0.001 081 12	0.000 000 19	0.001 441 50
0.002 209 00	0.002 209 00	0.000 000 81	0.001 104 50	0.000 000 20	0.001 472 67
0.002 256 25	0.002 256 25	0.000 000 85	0.001 128 12	0.000 000 21	0.001 504 17
0.002 304 00	0.002 304 00	0.000 000 88	0.001 152 00	0.000 000 22	0.001 536 00
0.002 352 25	0.002 352 25	0.000 000 92	0.001 176 12	0.000 000 23	0.001 568 17
0.002 401 00	0.002 401 00	0.000 000 96	0.001 200 50	0.000 000 24	0.001 600 67
0.002 450 25	0.002 450 25	0.000 001 00	0.001 225 12	0.000 000 25	0.001 633 50
0.002 500 00	0.002 500 00	0.000 001 04	0.001 250 00	0.000 000 26	0.001 666 67
0.002 550 25	0.002 550 25	0.000 001 08	0.001 275 12	0.000 000 27	0.001 700 17
0.002 601 00	0.002 601 00	0.000 001 13	0.001 300 50	0.000 000 28	0.001 734 00
0.002 652 25	0.002 652 25	0.000 001 17	0.001 326 12	0.000 000 29	0.001 768 17
0.002 704 00	0.002 704 00	0.000 001 22	0.001 352 00	0.000 000 30	0.001 802 67
0.002 756 25	0.002 756 25	0.000 001 27	0.001 378 12	0.000 000 32	0.001 837 50
0.002 809 00	0.002 809 00	0.000 001 32	0.001 404 50	0.000 000 33	0.001 872 67
0.002 862 25	0.002 862 25	0.000 001 37	0.001 431 12	0.000 000 34	0.001 908 17
0.002 916 00	0.002 916 00	0.000 001 42	0.001 458 00	0.000 000 35	0.001 944 00
0.002 970 25	0.002 970 25	0.000 001 47	0.001 485 12	0.000 000 37	0.001 980 17
0.003 025 00	0.003 025 00	0.000 001 53	0.001 512 50	0.000 000 38	0.002 016 67
0.003 080 25	0.003 080 25	0.000 001 58	0.001 540 12	0.000 000 40	0.002 053 50
0.003 136 00	0.003 136 00	0.000 001 64	0.001 568 00	0.000 000 41	0.002 090 67
0.003 192 25	0.003 192 25	0.000 001 70	0.001 596 12	0.000 000 42	0.002 128 17
0.003 249 00	0.003 249 00	0.000 001 76	0.001 624 50	0.000 000 44	0.002 166 00
0.003 306 25	0.003 306 25	0.000 001 82	0.001 653 12	0.000 000 46	0.002 204 17
0.003 364 00	0.003 364 00	0.000 001 89	0.001 682 00	0.000 000 47	0.002 242 67
0.003 422 25	0.003 422 25	0.000 001 95	0.001 711 12	0.000 000 49	0.002 281 50
0.003 481 00	0.003 481 00	0.000 002 02	0.001 740 50	0.000 000 50	0.002 320 67
0.003 540 25	0.003 540 25	0.000 002 09	0.001 770 12	0.000 000 52	0.002 360 17
0.003 600 00	0.003 600 00	0.000 002 16	0.001 800 00	0.000 000 54	0.002 400 00
0.003 660 25	0.003 660 25	0.000 002 23	0.001 830 12	0.000 000 56	0.002 440 17
0.003 721 00	0.003 721 00	0.000 002 31	0.001 860 50	0.000 000 58	0.002 480 67
0.003 782 25	0.003 782 25	0.000 002 38	0.001 891 12	0.000 000 60	0.002 521 50
0.003 844 00	0.003 844 00	0.000 002 46	0.001 922 00	0.000 000 62	0.002 562 67
0.003 906 25	0.003 906 25	0.000 002 54	0.001 953 12	0.000 000 64	0.002 604 17
0.003 969 00	0.003 969 00	0.000 002 63	0.001 984 50	0.000 000 66	0.002 646 00
0.004 032 25	0.004 032 25	0.000 002 71	0.002 016 12	0.000 000 68	0.002 688 17
0.004 096 00	0.004 096 00	0.000 002 80	0.002 048 00	0.000 000 70	0.002 730 67
0.004 160 25	0.004 160 25	0.000 002 88	0.002 080 12	0.000 000 72	0.002 773 50
0.004 225 00	0.004 225 00	0.000 002 98	0.002 112 50	0.000 000 74	0.002 816 67
0.004 290 25	0.004 290 25	0.000 003 07	0.002 145 12	0.000 000 77	0.002 860 17
0.004 356 00	0.004 356 00	0.000 003 16	0.002 178 00	0.000 000 79	0.002 904 00
0.004 422 25	0.004 422 25	0.000 003 26	0.002 211 12	0.000 000 81	0.002 948 17
0.004 489 00	0.004 489 00	0.000 003 36	0.002 244 50	0.000 000 84	0.002 992 67
0.004 556 25	0.004 556 25	0.000 003 46	0.002 278 12	0.000 000 86	0.003 037 50
0.004 624 00	0.004 624 00	0.000 003 56	0.002 312 00	0.000 000 89	0.003 082 67
0.004 692 25	0.004 692 25	0.000 003 67	0.002 346 12	0.000 000 92	0.003 128 17
0.004 761 00	0.004 761 00	0.000 003 78	0.002 380 50	0.000 000 94	0.003 174 00
0.004 830 25	0.004 830 25	0.000 003 89	0.002 415 12	0.000 000 97	0.003 220 17
0.004 900 00	0.004 900 00	0.000 004 00	0.002 450 00	0.000 001 00	0.003 266 67
0.004 970 25	0.004 970 25	0.000 004 12	0.002 485 12	0.000 001 03	0.003 313 50
0.005 041 00	0.005 041 00	0.000 004 24	0.002 520 50	0.000 001 06	0.003 360 67
0.005 112 25	0.005 112 25	0.000 004 36	0.002 556 12	0.000 001 09	0.003 408 17
0.005 184 00	0.005 184 00	0.000 004 48	0.002 592 00	0.000 001 12	0.003 456 00
0.005 256 25	0.005 256 25	0.000 004 60	0.002 628 12	0.000 001 15	0.003 504 17
0.005 329 00	0.005 329 00	0.000 004 73	0.002 664 50	0.000 001 18	0.003 552 67
0.005 402 25	0.005 402 25	0.000 004 86	0.002 701 12	0.000 001 22	0.003 601 50
0.005 476 00	0.005 476 00	0.000 005 00	0.002 738 00	0.000 001 25	0.003 650 67
0.005 550 25	0.005 550 25	0.000 005 13	0.002 775 12	0.000 001 28	0.003 700 17
0.005 625 00	0.005 625 00	0.000 005 27	0.002 812 50	0.000 001 32	0.003 750 00
0.005 700 25	0.005 700 25	0.000 005 42	0.002 850 12	0.000 001 35	0.003 800 17
0.005 776 00	0.005 776 00	0.000 005 56	0.002 888 00	0.000 001 39	0.003 850 67
0.005 852 25	0.005 852 24	0.000 005 71	0.002 926 12	0.000 001 43	0.003 901 50
0.005 929 00	0.005 928 99	0.000 005 86	0.002 964 50	0.000 001 46	0.003 952 67
0.006 006 25	0.006 006 24	0.000 006 01	0.003 003 12	0.000 001 50	0.004 004 17
0.006 084 00	0.006 083 99	0.000 006 17	0.003 042 00	0.000 001 54	0.004 056 00
0.006 162 25	0.006 162 24	0.000 006 33	0.003 081 12	0.000 001 58	0.004 108 17
0.006 241 00	0.006 240 99	0.000 006 49	0.003 120 50	0.000 001 62	0.004 160 67
0.006 320 25	0.006 320 24	0.000 006 66	0.003 160 12	0.000 001 66	0.004 213 50
0.006 400 00	0.006 399 99	0.000 006 83	0.003 200 00	0.000 001 71	0.004 266 67

A/R= =LS/A= =VLS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
0.0405	0.000 546 75	0.001 640 25	0 2 49.2	0 0 56.4	0 0 56.4	0 0 0.0
0.0410	0.000 560 33	0.001 681 00	0 2 53.4	0 0 57.8	0 0 57.8	0 0 0.0
0.0415	0.000 574 08	0.001 722 25	0 2 57.6	0 0 59.2	0 0 59.2	0 0 0.0
0.0420	0.000 588 00	0.001 764 00	0 3 1.9	0 1 0.6	0 1 0.6	0 0 0.0
0.0425	0.000 602 08	0.001 806 25	0 3 6.3	0 1 2.1	0 1 2.1	0 0 0.0
0.0430	0.000 616 33	0.001 849 00	0 3 10.7	0 1 3.6	0 1 3.6	0 0 0.0
0.0435	0.000 630 75	0.001 892 25	0 3 15.2	0 1 5.1	0 1 5.1	0 0 0.0
0.0440	0.000 645 33	0.001 936 00	0 3 19.7	0 1 6.6	0 1 6.6	0 0 0.0
0.0445	0.000 660 08	0.001 980 25	0 3 24.2	0 1 8.1	0 1 8.1	0 0 0.0
0.0450	0.000 675 00	0.002 025 00	0 3 28.8	0 1 9.6	0 1 9.6	0 0 0.0
0.0455	0.000 690 08	0.002 070 25	0 3 33.5	0 1 11.2	0 1 11.2	0 0 0.0
0.0460	0.000 705 33	0.002 116 00	0 3 38.2	0 1 12.7	0 1 12.7	0 0 0.0
0.0465	0.000 720 75	0.002 162 25	0 3 43.0	0 1 14.3	0 1 14.3	0 0 0.0
0.0470	0.000 736 33	0.002 209 00	0 3 47.8	0 1 15.9	0 1 15.9	0 0 0.0
0.0475	0.000 752 08	0.002 256 25	0 3 52.7	0 1 17.6	0 1 17.6	0 0 0.0
0.0480	0.000 768 00	0.002 304 00	0 3 57.6	0 1 19.2	0 1 19.2	0 0 0.0
0.0485	0.000 784 08	0.002 352 25	0 4 2.6	0 1 20.9	0 1 20.9	0 0 0.0
0.0490	0.000 800 33	0.002 401 00	0 4 7.6	0 1 22.5	0 1 22.5	0 0 0.0
0.0495	0.000 816 75	0.002 450 25	0 4 12.7	0 1 24.2	0 1 24.2	0 0 0.0
0.0500	0.000 833 33	0.002 500 00	0 4 17.8	0 1 25.9	0 1 25.9	0 0 0.0
0.0505	0.000 850 08	0.002 550 25	0 4 23.0	0 1 27.7	0 1 27.7	0 0 0.0
0.0510	0.000 867 00	0.002 601 00	0 4 28.2	0 1 29.4	0 1 29.4	0 0 0.0
0.0515	0.000 884 08	0.002 652 25	0 4 33.5	0 1 31.2	0 1 31.2	0 0 0.0
0.0520	0.000 901 33	0.002 704 00	0 4 38.9	0 1 33.0	0 1 33.0	0 0 0.0
0.0525	0.000 918 75	0.002 756 25	0 4 44.3	0 1 34.8	0 1 34.8	0 0 0.0
0.0530	0.000 936 33	0.002 809 00	0 4 49.7	0 1 36.6	0 1 36.6	0 0 0.0
0.0535	0.000 954 08	0.002 862 25	0 4 55.2	0 1 38.4	0 1 38.4	0 0 0.0
0.0540	0.000 972 00	0.002 916 00	0 5 0.7	0 1 40.2	0 1 40.2	0 0 0.0
0.0545	0.000 990 08	0.002 970 25	0 5 6.3	0 1 42.1	0 1 42.1	0 0 0.0
0.0550	0.001 008 33	0.003 025 00	0 5 12.0	0 1 44.0	0 1 44.0	0 0 0.0
0.0555	0.001 026 75	0.003 080 25	0 5 17.7	0 1 45.9	0 1 45.9	0 0 0.0
0.0560	0.001 045 33	0.003 136 00	0 5 23.4	0 1 47.8	0 1 47.8	0 0 0.0
0.0565	0.001 064 08	0.003 192 25	0 5 29.2	0 1 49.7	0 1 49.7	0 0 0.0
0.0570	0.001 083 00	0.003 249 00	0 5 35.1	0 1 51.7	0 1 51.7	0 0 0.0
0.0575	0.001 102 08	0.003 306 25	0 5 41.0	0 1 53.7	0 1 53.7	0 0 0.0
0.0580	0.001 121 33	0.003 364 00	0 5 46.9	0 1 55.6	0 1 55.6	0 0 0.0
0.0585	0.001 140 75	0.003 422 25	0 5 52.9	0 1 57.6	0 1 57.6	0 0 0.0
0.0590	0.001 160 33	0.003 481 00	0 5 59.0	0 1 59.7	0 1 59.7	0 0 0.0
0.0595	0.001 180 08	0.003 540 25	0 6 5.1	0 2 1.7	0 2 1.7	0 0 0.0
0.0600	0.001 200 00	0.003 600 00	0 6 11.3	0 2 3.8	0 2 3.8	0 0 0.0
0.0605	0.001 220 08	0.003 660 25	0 6 17.5	0 2 5.8	0 2 5.8	0 0 0.0
0.0610	0.001 240 33	0.003 721 00	0 6 23.8	0 2 7.9	0 2 7.9	0 0 0.0
0.0615	0.001 260 75	0.003 782 25	0 6 30.1	0 2 10.0	0 2 10.0	0 0 0.0
0.0620	0.001 281 33	0.003 844 00	0 6 36.4	0 2 12.1	0 2 12.1	0 0 0.0
0.0625	0.001 302 08	0.003 906 25	0 6 42.9	0 2 14.3	0 2 14.3	0 0 0.0
0.0630	0.001 323 00	0.003 969 00	0 6 49.3	0 2 16.4	0 2 16.4	0 0 0.0
0.0635	0.001 344 08	0.004 032 25	0 6 55.9	0 2 18.6	0 2 18.6	0 0 0.0
0.0640	0.001 365 33	0.004 096 00	0 7 2.4	0 2 20.8	0 2 20.8	0 0 0.0
0.0645	0.001 386 75	0.004 160 25	0 7 9.1	0 2 23.0	0 2 23.0	0 0 0.0
0.0650	0.001 408 33	0.004 225 00	0 7 15.7	0 2 25.2	0 2 25.2	0 0 0.0
0.0655	0.001 430 08	0.004 290 25	0 7 22.5	0 2 27.5	0 2 27.5	0 0 0.0
0.0660	0.001 452 00	0.004 356 00	0 7 29.2	0 2 29.7	0 2 29.7	0 0 0.0
0.0665	0.001 474 08	0.004 422 25	0 7 36.1	0 2 32.0	0 2 32.0	0 0 0.0
0.0670	0.001 496 33	0.004 489 00	0 7 43.0	0 2 34.3	0 2 34.3	0 0 0.0
0.0675	0.001 518 75	0.004 556 25	0 7 49.9	0 2 36.6	0 2 36.6	0 0 0.0
0.0680	0.001 541 33	0.004 624 00	0 7 56.9	0 2 39.0	0 2 39.0	0 0 0.0
0.0685	0.001 564 08	0.004 692 25	0 8 3.9	0 2 41.3	0 2 41.3	0 0 0.0
0.0690	0.001 587 00	0.004 761 00	0 8 11.0	0 2 43.7	0 2 43.7	0 0 0.0
0.0695	0.001 610 08	0.004 830 25	0 8 18.2	0 2 46.1	0 2 46.1	0 0 0.0
0.0700	0.001 633 33	0.004 900 00	0 8 25.3	0 2 48.4	0 2 48.4	0 0 0.0
0.0705	0.001 656 75	0.004 970 25	0 8 32.6	0 2 50.9	0 2 50.9	0 0 0.0
0.0710	0.001 680 33	0.005 041 00	0 8 39.9	0 2 53.3	0 2 53.3	0 0 0.0
0.0715	0.001 704 08	0.005 112 25	0 8 47.2	0 2 55.7	0 2 55.7	0 0 0.0
0.0720	0.001 728 00	0.005 184 00	0 8 54.6	0 2 58.2	0 2 58.2	0 0 0.0
0.0725	0.001 752 08	0.005 256 25	0 9 2.1	0 3 0.7	0 3 0.7	0 0 0.0
0.0730	0.001 776 33	0.005 329 00	0 9 9.6	0 3 3.2	0 3 3.2	0 0 0.0
0.0735	0.001 800 75	0.005 402 25	0 9 17.1	0 3 5.7	0 3 5.7	0 0 0.0
0.0740	0.001 825 33	0.005 476 00	0 9 24.8	0 3 8.3	0 3 8.3	0 0 0.0
0.0745	0.001 850 08	0.005 550 25	0 9 32.4	0 3 10.8	0 3 10.8	0 0 0.0
0.0750	0.001 875 00	0.005 625 00	0 9 40.1	0 3 13.4	0 3 13.4	0 0 0.0
0.0755	0.001 900 08	0.005 700 25	0 9 47.9	0 3 16.0	0 3 16.0	0 0 0.0
0.0760	0.001 925 33	0.005 776 00	0 9 55.7	0 3 18.6	0 3 18.6	0 0 0.0
0.0765	0.001 950 75	0.005 852 25	0 10 3.6	0 3 21.2	0 3 21.2	0 0 0.0
0.0770	0.001 976 33	0.005 929 00	0 10 11.5	0 3 23.8	0 3 23.8	0 0 0.0
0.0775	0.002 002 09	0.006 006 25	0 10 19.4	0 3 26.5	0 3 26.5	0 0 0.0
0.0780	0.002 028 00	0.006 084 00	0 10 27.5	0 3 29.2	0 3 29.2	0 0 0.0
0.0785	0.002 054 09	0.006 162 25	0 10 35.5	0 3 31.8	0 3 31.8	0 0 0.0
0.0790	0.002 080 34	0.006 241 00	0 10 43.6	0 3 34.5	0 3 34.5	0 0 0.0
0.0795	0.002 106 75	0.006 320 25	0 10 51.8	0 3 37.3	0 3 37.3	0 0 0.0
0.0800	0.002 133 34	0.006 400 00	0 11 0.0	0 3 40.0	0 3 40.0	0 0 0.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.0805	0.006 480 25	0.006 480 24	0.000 007 00	0.003 240 12	0.000 001 75	0.004 320 17
0.0810	0.006 561 00	0.006 560 99	0.000 007 17	0.003 280 50	0.000 001 79	0.004 374 00
0.0815	0.006 642 25	0.006 642 24	0.000 007 35	0.003 321 12	0.000 001 84	0.004 428 17
0.0820	0.006 724 00	0.006 723 99	0.000 007 54	0.003 362 00	0.000 001 88	0.004 482 67
0.0825	0.006 806 25	0.006 806 24	0.000 007 72	0.003 403 12	0.000 001 93	0.004 537 50
0.0830	0.006 889 00	0.006 888 99	0.000 007 91	0.003 444 50	0.000 001 98	0.004 592 67
0.0835	0.006 972 25	0.006 972 24	0.000 008 10	0.003 486 12	0.000 002 03	0.004 648 17
0.0840	0.007 056 00	0.007 055 99	0.000 008 30	0.003 528 00	0.000 002 07	0.004 704 00
0.0845	0.007 140 25	0.007 140 24	0.000 008 50	0.003 570 12	0.000 002 12	0.004 760 17
0.0850	0.007 225 00	0.007 224 99	0.000 008 70	0.003 612 50	0.000 002 18	0.004 816 67
0.0855	0.007 310 25	0.007 310 24	0.000 008 91	0.003 655 12	0.000 002 23	0.004 873 50
0.0860	0.007 396 00	0.007 395 99	0.000 009 12	0.003 698 00	0.000 002 28	0.004 930 67
0.0865	0.007 482 25	0.007 482 24	0.000 009 33	0.003 741 12	0.000 002 33	0.004 988 17
0.0870	0.007 569 00	0.007 568 99	0.000 009 55	0.003 784 50	0.000 002 39	0.005 046 00
0.0875	0.007 656 25	0.007 656 24	0.000 009 77	0.003 828 12	0.000 002 44	0.005 104 17
0.0880	0.007 744 00	0.007 743 99	0.000 009 99	0.003 872 00	0.000 002 50	0.005 162 67
0.0885	0.007 832 25	0.007 832 24	0.000 010 22	0.003 916 12	0.000 002 56	0.005 221 50
0.0890	0.007 921 00	0.007 920 99	0.000 010 46	0.003 960 50	0.000 002 61	0.005 280 67
0.0895	0.008 010 25	0.008 010 24	0.000 010 69	0.004 005 12	0.000 002 67	0.005 340 17
0.0900	0.008 100 00	0.008 099 99	0.000 010 93	0.004 050 00	0.000 002 73	0.005 400 00
0.0905	0.008 190 25	0.008 190 24	0.000 011 18	0.004 095 12	0.000 002 80	0.005 460 17
0.0910	0.008 281 00	0.008 280 99	0.000 011 43	0.004 140 50	0.000 002 86	0.005 520 67
0.0915	0.008 372 25	0.008 372 24	0.000 011 68	0.004 186 12	0.000 002 92	0.005 581 51
0.0920	0.008 464 00	0.008 463 98	0.000 011 94	0.004 232 00	0.000 002 98	0.005 642 67
0.0925	0.008 556 25	0.008 556 23	0.000 012 20	0.004 278 12	0.000 003 05	0.005 704 17
0.0930	0.008 649 00	0.008 648 98	0.000 012 47	0.004 324 50	0.000 003 12	0.005 766 01
0.0935	0.008 742 25	0.008 742 23	0.000 012 74	0.004 371 12	0.000 003 18	0.005 828 17
0.0940	0.008 836 00	0.008 835 98	0.000 013 01	0.004 418 00	0.000 003 25	0.005 890 67
0.0945	0.008 930 25	0.008 930 23	0.000 013 29	0.004 465 12	0.000 003 32	0.005 953 51
0.0950	0.009 025 00	0.009 024 98	0.000 013 58	0.004 512 50	0.000 003 39	0.006 016 67
0.0955	0.009 120 25	0.009 120 23	0.000 013 86	0.004 560 12	0.000 003 47	0.006 080 17
0.0960	0.009 216 00	0.009 215 98	0.000 014 16	0.004 608 00	0.000 003 54	0.006 144 01
0.0965	0.009 312 25	0.009 312 23	0.000 014 45	0.004 656 12	0.000 003 61	0.006 208 17
0.0970	0.009 409 00	0.009 408 98	0.000 014 75	0.004 704 50	0.000 003 69	0.006 272 67
0.0975	0.009 506 25	0.009 506 23	0.000 015 06	0.004 753 12	0.000 003 77	0.006 337 51
0.0980	0.009 604 00	0.009 603 98	0.000 015 37	0.004 802 00	0.000 003 84	0.006 402 67
0.0985	0.009 702 25	0.009 702 23	0.000 015 69	0.004 851 12	0.000 003 92	0.006 468 17
0.0990	0.009 801 00	0.009 800 98	0.000 016 01	0.004 900 50	0.000 004 00	0.006 534 01
0.0995	0.009 900 25	0.009 900 23	0.000 016 34	0.004 950 12	0.000 004 08	0.006 600 18
0.1000	0.010 000 00	0.009 999 98	0.000 016 67	0.005 000 00	0.000 004 17	0.006 666 68
0.1005	0.010 100 25	0.010 100 22	0.000 017 00	0.005 050 12	0.000 004 25	0.006 733 51
0.1010	0.010 201 00	0.010 200 97	0.000 017 34	0.005 100 50	0.000 004 34	0.006 800 68
0.1015	0.010 302 25	0.010 302 22	0.000 017 69	0.005 151 12	0.000 004 42	0.006 868 18
0.1020	0.010 404 00	0.010 403 97	0.000 018 04	0.005 202 00	0.000 004 51	0.006 936 01
0.1025	0.010 506 25	0.010 506 22	0.000 018 40	0.005 253 12	0.000 004 60	0.007 004 18
0.1030	0.010 609 00	0.010 608 97	0.000 018 76	0.005 304 50	0.000 004 69	0.007 072 68
0.1035	0.010 712 25	0.010 712 22	0.000 019 13	0.005 356 12	0.000 004 78	0.007 141 51
0.1040	0.010 816 00	0.010 815 97	0.000 019 50	0.005 407 99	0.000 004 87	0.007 210 68
0.1045	0.010 920 25	0.010 920 22	0.000 019 88	0.005 460 12	0.000 004 97	0.007 280 18
0.1050	0.011 025 00	0.011 024 97	0.000 020 26	0.005 512 49	0.000 005 06	0.007 350 01
0.1055	0.011 130 25	0.011 130 22	0.000 020 65	0.005 565 12	0.000 005 16	0.007 420 18
0.1060	0.011 236 00	0.011 235 96	0.000 021 04	0.005 617 99	0.000 005 26	0.007 490 68
0.1065	0.011 342 25	0.011 342 21	0.000 021 44	0.005 671 12	0.000 005 36	0.007 561 51
0.1070	0.011 449 00	0.011 448 96	0.000 021 85	0.005 724 49	0.000 005 46	0.007 632 68
0.1075	0.011 556 25	0.011 556 21	0.000 022 26	0.005 778 12	0.000 005 56	0.007 704 18
0.1080	0.011 664 00	0.011 663 96	0.000 022 67	0.005 831 99	0.000 005 67	0.007 776 01
0.1085	0.011 772 25	0.011 772 21	0.000 023 10	0.005 886 12	0.000 005 77	0.007 848 18
0.1090	0.011 881 00	0.011 880 96	0.000 023 53	0.005 940 49	0.000 005 88	0.007 920 68
0.1095	0.011 990 25	0.011 990 21	0.000 023 96	0.005 995 12	0.000 005 99	0.007 993 52
0.1100	0.012 100 00	0.012 099 96	0.000 024 40	0.006 049 99	0.000 006 10	0.008 066 68
0.1105	0.012 210 25	0.012 210 20	0.000 024 85	0.006 105 12	0.000 006 21	0.008 140 18
0.1110	0.012 321 00	0.012 320 95	0.000 025 30	0.006 160 49	0.000 006 33	0.008 214 02
0.1115	0.012 432 25	0.012 432 20	0.000 025 76	0.006 216 12	0.000 006 44	0.008 288 18
0.1120	0.012 544 00	0.012 543 95	0.000 026 23	0.006 271 99	0.000 006 56	0.008 362 68
0.1125	0.012 656 25	0.012 656 20	0.000 026 70	0.006 328 12	0.000 006 67	0.008 437 52
0.1130	0.012 769 00	0.012 768 95	0.000 027 17	0.006 384 49	0.000 006 79	0.008 512 68
0.1135	0.012 882 25	0.012 882 20	0.000 027 66	0.006 441 12	0.000 006 91	0.008 588 19
0.1140	0.012 996 00	0.012 995 95	0.000 028 15	0.006 497 99	0.000 007 04	0.008 664 02
0.1145	0.013 110 25	0.013 110 19	0.000 028 65	0.006 555 12	0.000 007 16	0.008 740 19
0.1150	0.013 225 00	0.013 224 94	0.000 029 15	0.006 612 49	0.000 007 29	0.008 816 69
0.1155	0.013 340 25	0.013 340 19	0.000 029 66	0.006 670 12	0.000 007 42	0.008 893 52
0.1160	0.013 456 00	0.013 455 94	0.000 030 18	0.006 727 99	0.000 007 54	0.008 970 69
0.1165	0.013 572 25	0.013 572 19	0.000 030 70	0.006 786 11	0.000 007 68	0.009 048 19
0.1170	0.013 689 00	0.013 688 94	0.000 031 23	0.006 844 49	0.000 007 81	0.009 126 02
0.1175	0.013 806 25	0.013 806 18	0.000 031 77	0.006 903 11	0.000 007 94	0.009 204 19
0.1180	0.013 924 00	0.013 923 93	0.000 032 31	0.006 961 99	0.000 008 08	0.009 282 69
0.1185	0.014 042 25	0.014 042 18	0.000 032 86	0.007 021 11	0.000 008 22	0.009 361 52
0.1190	0.014 161 00	0.014 160 93	0.000 033 42	0.007 080 49	0.000 008 36	0.009 440 69
0.1195	0.014 280 25	0.014 280 18	0.000 033 99	0.007 140 11	0.000 008 50	0.009 520 19
0.1200	0.014 400 00	0.014 399 93	0.000 034 56	0.007 199 99	0.000 008 64	0.009 600 03

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
0.0805	0.002 160 09	0.006 480 25	0 11 8.3	0 3 42.8	0 3 42.8	0 0 0.0
0.0810	0.002 187 00	0.006 561 00	0 11 16.7	0 3 45.6	0 3 45.6	0 0 0.0
0.0815	0.002 214 09	0.006 642 25	0 11 25.0	0 3 48.3	0 3 48.3	0 0 0.0
0.0820	0.002 241 34	0.006 724 00	0 11 33.5	0 3 51.2	0 3 51.2	0 0 0.0
0.0825	0.002 268 75	0.006 806 25	0 11 41.9	0 3 54.0	0 3 54.0	0 0 0.0
0.0830	0.002 296 34	0.006 889 00	0 11 50.5	0 3 56.8	0 3 56.8	0 0 0.0
0.0835	0.002 324 09	0.006 972 25	0 11 59.1	0 3 59.7	0 3 59.7	0 0 0.0
0.0840	0.002 352 00	0.007 056 00	0 12 7.7	0 4 2.6	0 4 2.6	0 0 0.0
0.0845	0.002 380 09	0.007 140 25	0 12 16.4	0 4 5.5	0 4 5.5	0 0 0.0
0.0850	0.002 408 34	0.007 225 00	0 12 25.1	0 4 8.4	0 4 8.4	0 0 0.0
0.0855	0.002 436 75	0.007 310 25	0 12 33.9	0 4 11.3	0 4 11.3	0 0 0.0
0.0860	0.002 465 34	0.007 396 00	0 12 42.8	0 4 14.3	0 4 14.3	0 0 0.0
0.0865	0.002 494 09	0.007 482 25	0 12 51.7	0 4 17.2	0 4 17.2	0 0 0.0
0.0870	0.002 523 00	0.007 569 00	0 13 0.6	0 4 20.2	0 4 20.2	0 0 0.0
0.0875	0.002 552 09	0.007 656 25	0 13 9.6	0 4 23.2	0 4 23.2	0 0 0.0
0.0880	0.002 581 34	0.007 743 99	0 13 18.7	0 4 26.2	0 4 26.2	0 0 0.0
0.0885	0.002 610 75	0.007 832 24	0 13 27.8	0 4 29.3	0 4 29.3	0 0 0.0
0.0890	0.002 640 34	0.007 920 99	0 13 36.9	0 4 32.3	0 4 32.3	0 0 0.0
0.0895	0.002 670 09	0.008 010 24	0 13 46.1	0 4 35.4	0 4 35.4	0 0 0.0
0.0900	0.002 700 00	0.008 099 99	0 13 55.4	0 4 38.5	0 4 38.5	0 0 0.0
0.0905	0.002 730 09	0.008 190 24	0 14 4.7	0 4 41.6	0 4 41.6	0 0 0.0
0.0910	0.002 760 34	0.008 280 99	0 14 14.0	0 4 44.7	0 4 44.7	0 0 0.0
0.0915	0.002 790 75	0.008 372 24	0 14 23.5	0 4 47.8	0 4 47.8	0 0 0.0
0.0920	0.002 821 34	0.008 463 99	0 14 32.9	0 4 51.0	0 4 51.0	0 0 0.0
0.0925	0.002 852 09	0.008 556 24	0 14 42.4	0 4 54.1	0 4 54.1	0 0 0.0
0.0930	0.002 883 01	0.008 648 99	0 14 52.0	0 4 57.3	0 4 57.3	0 0 0.0
0.0935	0.002 914 09	0.008 742 24	0 15 1.6	0 5 0.5	0 5 0.5	0 0 0.0
0.0940	0.002 945 34	0.008 835 99	0 15 11.3	0 5 3.8	0 5 3.8	0 0 0.0
0.0945	0.002 976 76	0.008 930 24	0 15 21.0	0 5 7.0	0 5 7.0	0 0 0.0
0.0950	0.003 008 34	0.009 024 99	0 15 30.8	0 5 10.3	0 5 10.3	0 0 0.0
0.0955	0.003 040 09	0.009 120 24	0 15 40.6	0 5 13.5	0 5 13.5	0 0 0.0
0.0960	0.003 072 01	0.009 215 99	0 15 50.5	0 5 16.8	0 5 16.8	0 0 0.0
0.0965	0.003 104 09	0.009 312 24	0 16 0.4	0 5 20.1	0 5 20.1	0 0 0.0
0.0970	0.003 136 34	0.009 408 99	0 16 10.4	0 5 23.5	0 5 23.5	0 0 0.0
0.0975	0.003 168 76	0.009 506 24	0 16 20.4	0 5 26.8	0 5 26.8	0 0 0.0
0.0980	0.003 201 34	0.009 603 99	0 16 30.5	0 5 30.2	0 5 30.2	0 0 0.0
0.0985	0.003 234 09	0.009 702 24	0 16 40.6	0 5 33.5	0 5 33.5	0 0 0.0
0.0990	0.003 267 01	0.009 800 99	0 16 50.8	0 5 36.9	0 5 36.9	0 0 0.0
0.0995	0.003 300 09	0.009 900 24	0 17 1.0	0 5 40.3	0 5 40.3	0 0 0.0
0.1000	0.003 333 34	0.009 999 99	0 17 11.3	0 5 43.8	0 5 43.8	0 0 0.0
0.1005	0.003 366 76	0.010 100 24	0 17 21.7	0 5 47.2	0 5 47.2	0 0 0.0
0.1010	0.003 400 34	0.010 200 99	0 17 32.1	0 5 50.7	0 5 50.7	0 0 0.0
0.1015	0.003 434 09	0.010 302 24	0 17 42.5	0 5 54.2	0 5 54.2	0 0 0.0
0.1020	0.003 468 01	0.010 403 99	0 17 53.0	0 5 57.7	0 5 57.7	0 0 0.0
0.1025	0.003 502 09	0.010 506 24	0 18 3.5	0 6 1.2	0 6 1.2	0 0 0.0
0.1030	0.003 536 34	0.010 608 99	0 18 14.1	0 6 4.7	0 6 4.7	0 0 0.0
0.1035	0.003 570 76	0.010 712 24	0 18 24.8	0 6 8.3	0 6 8.3	0 0 0.0
0.1040	0.003 605 34	0.010 815 99	0 18 35.5	0 6 11.8	0 6 11.8	0 0 0.0
0.1045	0.003 640 09	0.010 920 24	0 18 46.2	0 6 15.4	0 6 15.4	0 0 0.0
0.1050	0.003 675 01	0.011 024 99	0 18 57.0	0 6 19.0	0 6 19.0	0 0 0.0
0.1055	0.003 710 09	0.011 130 23	0 19 7.9	0 6 22.6	0 6 22.6	0 0 0.0
0.1060	0.003 745 34	0.011 235 98	0 19 18.8	0 6 26.3	0 6 26.3	0 0 0.0
0.1065	0.003 780 76	0.011 342 23	0 19 29.8	0 6 29.9	0 6 29.9	0 0 0.0
0.1070	0.003 816 35	0.011 448 98	0 19 40.8	0 6 33.6	0 6 33.6	0 0 0.0
0.1075	0.003 852 10	0.011 556 23	0 19 51.8	0 6 37.3	0 6 37.3	0 0 0.0
0.1080	0.003 888 01	0.011 663 98	0 20 2.9	0 6 41.0	0 6 41.0	0 0 0.0
0.1085	0.003 924 10	0.011 772 23	0 20 14.1	0 6 44.7	0 6 44.7	0 0 0.0
0.1090	0.003 960 35	0.011 880 98	0 20 25.3	0 6 48.4	0 6 48.4	0 0 0.0
0.1095	0.003 996 76	0.011 990 23	0 20 36.6	0 6 52.2	0 6 52.2	0 0 0.0
0.1100	0.004 033 35	0.012 099 98	0 20 47.9	0 6 56.0	0 6 56.0	0 0 0.0
0.1105	0.004 070 10	0.012 210 23	0 20 59.3	0 6 59.8	0 6 59.8	0 0 0.0
0.1110	0.004 107 01	0.012 320 98	0 21 10.7	0 7 3.6	0 7 3.6	0 0 0.0
0.1115	0.004 144 10	0.012 432 23	0 21 22.2	0 7 7.4	0 7 7.4	0 0 0.0
0.1120	0.004 181 35	0.012 543 98	0 21 33.7	0 7 11.2	0 7 11.2	0 0 0.0
0.1125	0.004 218 77	0.012 656 23	0 21 45.3	0 7 15.1	0 7 15.1	0 0 0.0
0.1130	0.004 256 35	0.012 768 98	0 21 56.9	0 7 19.0	0 7 19.0	0 0 0.0
0.1135	0.004 294 10	0.012 882 23	0 22 8.6	0 7 22.9	0 7 22.9	0 0 0.0
0.1140	0.004 332 02	0.012 995 98	0 22 20.3	0 7 26.8	0 7 26.8	0 0 0.0
0.1145	0.004 370 10	0.013 110 22	0 22 32.1	0 7 30.7	0 7 30.7	0 0 0.0
0.1150	0.004 408 35	0.013 224 97	0 22 43.9	0 7 34.6	0 7 34.6	0 0 0.0
0.1155	0.004 446 77	0.013 340 22	0 22 55.8	0 7 38.6	0 7 38.6	0 0 0.0
0.1160	0.004 485 35	0.013 455 97	0 23 7.7	0 7 42.6	0 7 42.6	0 0 0.0
0.1165	0.004 524 10	0.013 572 22	0 23 19.7	0 7 46.6	0 7 46.6	0 0 0.0
0.1170	0.004 563 02	0.013 688 97	0 23 31.8	0 7 50.6	0 7 50.6	0 0 0.0
0.1175	0.004 602 10	0.013 806 22	0 23 43.9	0 7 54.6	0 7 54.6	0 0 0.0
0.1180	0.004 641 35	0.013 923 97	0 23 56.0	0 7 58.7	0 7 58.7	0 0 0.0
0.1185	0.004 680 77	0.014 042 22	0 24 8.2	0 8 2.7	0 8 2.7	0 0 0.0
0.1190	0.004 720 36	0.014 160 97	0 24 20.5	0 8 6.8	0 8 6.8	0 0 0.0
0.1195	0.004 760 11	0.014 280 22	0 24 32.8	0 8 10.9	0 8 10.9	0 0 0.0
0.1200	0.004 800 02	0.014 399 97	0 24 45.1	0 8 15.0	0 8 15.0	0 0 0.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.1205	0.014 520 25	0.014 520 17	0.000 035 14	0.007 260 11	0.000 008 78	0.009 680 19
0.1210	0.014 641 00	0.014 640 92	0.000 035 73	0.007 320 49	0.000 008 93	0.009 760 69
0.1215	0.014 762 25	0.014 762 17	0.000 036 32	0.007 381 11	0.000 009 08	0.009 841 53
0.1220	0.014 884 00	0.014 883 92	0.000 036 92	0.007 441 99	0.000 009 23	0.009 922 70
0.1225	0.015 006 25	0.015 006 17	0.000 037 53	0.007 503 11	0.000 009 38	0.010 004 20
0.1230	0.015 129 00	0.015 128 91	0.000 038 15	0.007 564 49	0.000 009 54	0.010 086 03
0.1235	0.015 252 25	0.015 252 16	0.000 038 77	0.007 626 11	0.000 009 69	0.010 168 20
0.1240	0.015 376 00	0.015 375 91	0.000 039 40	0.007 687 98	0.000 009 85	0.010 250 70
0.1245	0.015 500 25	0.015 500 16	0.000 040 04	0.007 750 11	0.000 010 01	0.010 333 53
0.1250	0.015 625 00	0.015 624 90	0.000 040 69	0.007 812 48	0.000 010 17	0.010 416 70
0.1255	0.015 750 25	0.015 750 15	0.000 041 34	0.007 875 11	0.000 010 34	0.010 500 20
0.1260	0.015 876 00	0.015 875 90	0.000 042 01	0.007 937 98	0.000 010 50	0.010 584 03
0.1265	0.016 002 25	0.016 002 15	0.000 042 68	0.008 001 11	0.000 010 67	0.010 668 20
0.1270	0.016 129 00	0.016 128 90	0.000 043 36	0.008 064 48	0.000 010 84	0.010 752 70
0.1275	0.016 256 25	0.016 256 14	0.000 044 04	0.008 128 11	0.000 011 01	0.010 837 54
0.1280	0.016 384 00	0.016 383 89	0.000 044 74	0.008 191 98	0.000 011 18	0.010 922 71
0.1285	0.016 512 25	0.016 512 14	0.000 045 44	0.008 256 11	0.000 011 36	0.011 008 21
0.1290	0.016 641 00	0.016 640 88	0.000 046 15	0.008 320 48	0.000 011 54	0.011 094 04
0.1295	0.016 770 25	0.016 770 13	0.000 046 87	0.008 385 11	0.000 011 72	0.011 180 21
0.1300	0.016 900 00	0.016 899 88	0.000 047 60	0.008 449 98	0.000 011 90	0.011 266 71
0.1305	0.017 030 25	0.017 030 13	0.000 048 34	0.008 515 10	0.000 012 08	0.011 353 54
0.1310	0.017 161 00	0.017 160 87	0.000 049 08	0.008 580 48	0.000 012 27	0.011 440 71
0.1315	0.017 292 25	0.017 292 12	0.000 049 84	0.008 646 10	0.000 012 46	0.011 528 21
0.1320	0.017 424 00	0.017 423 87	0.000 050 60	0.008 711 98	0.000 012 65	0.011 616 05
0.1325	0.017 556 25	0.017 556 11	0.000 051 37	0.008 778 10	0.000 012 84	0.011 704 21
0.1330	0.017 689 00	0.017 688 86	0.000 052 15	0.008 844 48	0.000 013 04	0.011 792 71
0.1335	0.017 822 25	0.017 822 11	0.000 052 94	0.008 911 10	0.000 013 23	0.011 881 55
0.1340	0.017 956 00	0.017 955 86	0.000 053 74	0.008 977 98	0.000 013 43	0.011 970 72
0.1345	0.018 090 25	0.018 090 10	0.000 054 54	0.009 045 10	0.000 013 64	0.012 060 22
0.1350	0.018 225 00	0.018 224 85	0.000 055 36	0.009 112 47	0.000 013 84	0.012 150 05
0.1355	0.018 360 25	0.018 360 10	0.000 056 18	0.009 180 10	0.000 014 05	0.012 240 22
0.1360	0.018 496 00	0.018 495 84	0.000 057 02	0.009 247 97	0.000 014 25	0.012 330 72
0.1365	0.018 632 25	0.018 632 09	0.000 057 86	0.009 316 10	0.000 014 46	0.012 421 56
0.1370	0.018 769 00	0.018 768 83	0.000 058 71	0.009 384 47	0.000 014 68	0.012 512 72
0.1375	0.018 906 25	0.018 906 08	0.000 059 57	0.009 453 10	0.000 014 89	0.012 604 23
0.1380	0.019 044 00	0.019 043 83	0.000 060 45	0.009 521 97	0.000 015 11	0.012 696 06
0.1385	0.019 182 25	0.019 182 07	0.000 061 33	0.009 591 10	0.000 015 33	0.012 788 23
0.1390	0.019 321 00	0.019 320 82	0.000 062 22	0.009 660 47	0.000 015 55	0.012 880 73
0.1395	0.019 460 25	0.019 460 07	0.000 063 12	0.009 730 09	0.000 015 78	0.012 973 56
0.1400	0.019 600 00	0.019 599 81	0.000 064 03	0.009 799 97	0.000 016 01	0.013 066 73
0.1405	0.019 740 25	0.019 740 06	0.000 064 95	0.009 870 09	0.000 016 24	0.013 160 23
0.1410	0.019 881 00	0.019 880 80	0.000 065 88	0.009 940 47	0.000 016 47	0.013 254 07
0.1415	0.020 022 25	0.020 022 05	0.000 066 81	0.010 011 09	0.000 016 70	0.013 348 24
0.1420	0.020 164 00	0.020 163 80	0.000 067 76	0.010 081 97	0.000 016 94	0.013 442 74
0.1425	0.020 306 25	0.020 306 04	0.000 068 72	0.010 153 09	0.000 017 18	0.013 537 57
0.1430	0.020 449 00	0.020 448 79	0.000 069 69	0.010 224 46	0.000 017 42	0.013 632 74
0.1435	0.020 592 25	0.020 592 03	0.000 070 67	0.010 296 09	0.000 017 67	0.013 728 24
0.1440	0.020 736 00	0.020 735 78	0.000 071 66	0.010 367 96	0.000 017 92	0.013 824 08
0.1445	0.020 880 25	0.020 880 02	0.000 072 66	0.010 440 09	0.000 018 17	0.013 920 25
0.1450	0.021 025 00	0.021 024 77	0.000 073 67	0.010 512 46	0.000 018 42	0.014 016 75
0.1455	0.021 170 25	0.021 170 01	0.000 074 70	0.010 585 09	0.000 018 67	0.014 113 58
0.1460	0.021 316 00	0.021 315 76	0.000 075 73	0.010 657 96	0.000 018 93	0.014 210 75
0.1465	0.021 462 25	0.021 462 00	0.000 076 77	0.010 731 08	0.000 019 19	0.014 308 25
0.1470	0.021 609 00	0.021 608 75	0.000 077 82	0.010 804 46	0.000 019 46	0.014 406 09
0.1475	0.021 756 25	0.021 755 99	0.000 078 89	0.010 878 08	0.000 019 72	0.014 504 26
0.1480	0.021 904 00	0.021 903 74	0.000 079 96	0.010 951 96	0.000 019 99	0.014 602 76
0.1485	0.022 052 25	0.022 051 98	0.000 081 05	0.011 026 08	0.000 020 26	0.014 701 59
0.1490	0.022 201 00	0.022 200 73	0.000 082 15	0.011 100 45	0.000 020 54	0.014 800 76
0.1495	0.022 350 25	0.022 349 97	0.000 083 25	0.011 175 08	0.000 020 81	0.014 900 26
0.1500	0.022 500 00	0.022 499 72	0.000 084 37	0.011 249 95	0.000 021 09	0.015 000 10
0.1505	0.022 650 25	0.022 649 96	0.000 085 50	0.011 325 08	0.000 021 38	0.015 100 27
0.1510	0.022 801 00	0.022 800 70	0.000 086 65	0.011 400 45	0.000 021 66	0.015 200 77
0.1515	0.022 952 25	0.022 951 95	0.000 087 80	0.011 476 07	0.000 021 95	0.015 301 61
0.1520	0.023 104 00	0.023 103 69	0.000 088 96	0.011 551 95	0.000 022 24	0.015 402 77
0.1525	0.023 256 25	0.023 255 94	0.000 090 14	0.011 628 07	0.000 022 54	0.015 504 28
0.1530	0.023 409 00	0.023 408 68	0.000 091 33	0.011 704 45	0.000 022 83	0.015 606 11
0.1535	0.023 562 25	0.023 561 92	0.000 092 53	0.011 781 07	0.000 023 13	0.015 708 28
0.1540	0.023 716 00	0.023 715 67	0.000 093 74	0.011 857 94	0.000 023 44	0.015 810 78
0.1545	0.023 870 25	0.023 869 91	0.000 094 96	0.011 935 07	0.000 023 74	0.015 913 62
0.1550	0.024 025 00	0.024 024 65	0.000 096 20	0.012 012 44	0.000 024 05	0.016 016 79
0.1555	0.024 180 25	0.024 179 90	0.000 097 45	0.012 090 07	0.000 024 36	0.016 120 29
0.1560	0.024 336 00	0.024 335 64	0.000 098 71	0.012 167 94	0.000 024 68	0.016 224 13
0.1565	0.024 492 25	0.024 491 88	0.000 099 98	0.012 246 06	0.000 024 99	0.016 328 29
0.1570	0.024 649 00	0.024 648 63	0.000 101 26	0.012 324 44	0.000 025 32	0.016 432 80
0.1575	0.024 806 25	0.024 805 87	0.000 102 56	0.012 403 06	0.000 025 64	0.016 537 63
0.1580	0.024 964 00	0.024 963 61	0.000 103 87	0.012 481 94	0.000 025 97	0.016 642 80
0.1585	0.025 122 25	0.025 121 85	0.000 105 19	0.012 561 06	0.000 026 30	0.016 748 31
0.1590	0.025 281 00	0.025 280 60	0.000 106 52	0.012 640 43	0.000 026 63	0.016 854 14
0.1595	0.025 440 25	0.025 439 84	0.000 107 87	0.012 720 06	0.000 026 97	0.016 960 31
0.1600	0.025 600 00	0.025 599 58	0.000 109 23	0.012 799 93	0.000 027 31	0.017 066 81

TABLE III-FONCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
0.1205	0.004 840 11	0.014 520 22	0 24 57.5	0 8 19.2	0 8 19.2	0 0 0.0
0.1210	0.004 880 36	0.014 640 97	0 25 10.0	0 8 23.3	0 8 23.3	0 0 0.0
0.1215	0.004 920 78	0.014 762 21	0 25 22.5	0 8 27.5	0 8 27.5	0 0 0.0
0.1220	0.004 961 36	0.014 883 96	0 25 35.0	0 8 31.7	0 8 31.7	0 0 0.0
0.1225	0.005 002 11	0.015 006 21	0 25 47.6	0 8 35.9	0 8 35.9	0 0 0.0
0.1230	0.005 043 03	0.015 128 96	0 26 0.3	0 8 40.1	0 8 40.1	0 0 0.0
0.1235	0.005 084 11	0.015 252 21	0 26 13.0	0 8 44.3	0 8 44.3	0 0 0.0
0.1240	0.005 125 36	0.015 375 96	0 26 25.8	0 8 48.6	0 8 48.6	0 0 0.0
0.1245	0.005 166 78	0.015 500 21	0 26 38.6	0 8 52.9	0 8 52.9	0 0 0.0
0.1250	0.005 208 36	0.015 624 96	0 26 51.4	0 8 57.1	0 8 57.1	0 0 0.0
0.1255	0.005 250 11	0.015 750 21	0 27 4.4	0 9 1.5	0 9 1.5	0 0 0.0
0.1260	0.005 292 03	0.015 875 96	0 27 17.3	0 9 5.8	0 9 5.8	0 0 0.0
0.1265	0.005 334 12	0.016 002 20	0 27 30.4	0 9 10.1	0 9 10.1	0 0 0.0
0.1270	0.005 376 37	0.016 128 95	0 27 43.4	0 9 14.5	0 9 14.5	0 0 0.0
0.1275	0.005 418 78	0.016 256 20	0 27 56.5	0 9 18.8	0 9 18.8	0 0 0.0
0.1280	0.005 461 37	0.016 383 95	0 28 9.7	0 9 23.2	0 9 23.2	0 0 0.0
0.1285	0.005 504 12	0.016 512 20	0 28 22.9	0 9 27.6	0 9 27.6	0 0 0.0
0.1290	0.005 547 04	0.016 640 95	0 28 36.2	0 9 32.1	0 9 32.1	0 0 0.0
0.1295	0.005 590 12	0.016 770 20	0 28 49.6	0 9 36.5	0 9 36.5	0 0 0.0
0.1300	0.005 633 37	0.016 899 95	0 29 2.9	0 9 41.0	0 9 41.0	0 0 0.0
0.1305	0.005 676 79	0.017 030 20	0 29 16.4	0 9 45.5	0 9 45.5	0 0 0.0
0.1310	0.005 720 37	0.017 160 94	0 29 29.9	0 9 50.0	0 9 50.0	0 0 0.0
0.1315	0.005 764 12	0.017 292 19	0 29 43.4	0 9 54.5	0 9 54.5	0 0 0.0
0.1320	0.005 808 04	0.017 423 94	0 29 57.0	0 9 59.0	0 9 59.0	0 0 0.0
0.1325	0.005 852 13	0.017 556 19	0 30 10.6	0 10 3.5	0 10 3.5	0 0 0.0
0.1330	0.005 896 38	0.017 688 94	0 30 24.3	0 10 8.1	0 10 8.1	0 0 0.0
0.1335	0.005 940 79	0.017 822 19	0 30 38.1	0 10 12.7	0 10 12.7	0 0 0.0
0.1340	0.005 985 38	0.017 955 94	0 30 51.8	0 10 17.3	0 10 17.3	0 0 0.0
0.1345	0.006 030 13	0.018 090 18	0 31 5.7	0 10 21.9	0 10 21.9	0 0 0.0
0.1350	0.006 075 05	0.018 224 93	0 31 19.6	0 10 26.5	0 10 26.5	0 0 0.0
0.1355	0.006 120 13	0.018 360 18	0 31 33.5	0 10 31.2	0 10 31.2	0 0 0.0
0.1360	0.006 165 38	0.018 495 93	0 31 47.5	0 10 35.8	0 10 35.8	0 0 0.0
0.1365	0.006 210 80	0.018 632 18	0 32 1.6	0 10 40.5	0 10 40.5	0 0 0.0
0.1370	0.006 256 39	0.018 768 93	0 32 15.7	0 10 45.2	0 10 45.2	0 0 0.0
0.1375	0.006 302 14	0.018 906 17	0 32 29.8	0 10 49.9	0 10 49.9	0 0 0.0
0.1380	0.006 348 05	0.019 043 92	0 32 44.1	0 10 54.7	0 10 54.7	0 0 0.0
0.1385	0.006 394 14	0.019 182 17	0 32 58.3	0 10 59.4	0 10 59.4	0 0 0.0
0.1390	0.006 440 39	0.019 320 92	0 33 12.6	0 11 4.2	0 11 4.2	0 0 0.0
0.1395	0.006 486 81	0.019 460 17	0 33 27.0	0 11 9.0	0 11 9.0	0 0 0.0
0.1400	0.006 533 39	0.019 599 92	0 33 41.4	0 11 13.8	0 11 13.8	0 0 0.0
0.1405	0.006 580 14	0.019 740 16	0 33 55.9	0 11 18.6	0 11 18.6	0 0 0.0
0.1410	0.006 627 06	0.019 880 91	0 34 10.4	0 11 23.5	0 11 23.5	0 0 0.0
0.1415	0.006 674 15	0.020 022 16	0 34 24.9	0 11 28.3	0 11 28.3	0 0 0.0
0.1420	0.006 721 40	0.020 163 91	0 34 39.6	0 11 33.2	0 11 33.2	0 0 0.0
0.1425	0.006 768 82	0.020 306 16	0 34 54.2	0 11 38.1	0 11 38.1	0 0 0.0
0.1430	0.006 816 40	0.020 448 90	0 35 9.0	0 11 43.0	0 11 43.0	0 0 0.0
0.1435	0.006 864 15	0.020 592 15	0 35 23.7	0 11 47.9	0 11 47.9	0 0 0.0
0.1440	0.006 912 07	0.020 735 90	0 35 38.6	0 11 52.9	0 11 52.9	0 0 0.0
0.1445	0.006 960 16	0.020 880 15	0 35 53.4	0 11 57.8	0 11 57.8	0 0 0.0
0.1450	0.007 008 41	0.021 024 90	0 36 8.4	0 12 2.8	0 12 2.8	0 0 0.0
0.1455	0.007 056 83	0.021 170 14	0 36 23.3	0 12 7.8	0 12 7.8	0 0 0.0
0.1460	0.007 105 41	0.021 315 89	0 36 38.4	0 12 12.8	0 12 12.8	0 0 0.0
0.1465	0.007 154 16	0.021 462 14	0 36 53.5	0 12 17.8	0 12 17.8	0 0 0.0
0.1470	0.007 203 08	0.021 608 89	0 37 8.6	0 12 22.9	0 12 22.9	0 0 0.0
0.1475	0.007 252 17	0.021 756 14	0 37 23.8	0 12 27.9	0 12 27.9	0 0 0.0
0.1480	0.007 301 42	0.021 903 88	0 37 39.0	0 12 33.0	0 12 33.0	0 0 0.0
0.1485	0.007 350 84	0.022 052 13	0 37 54.3	0 12 38.1	0 12 38.1	0 0 0.0
0.1490	0.007 400 42	0.022 200 88	0 38 9.6	0 12 43.2	0 12 43.2	0 0 0.0
0.1495	0.007 450 17	0.022 350 13	0 38 25.0	0 12 48.3	0 12 48.3	0 0 0.0
0.1500	0.007 500 09	0.022 499 87	0 38 40.5	0 12 53.5	0 12 53.5	0 0 0.0
0.1505	0.007 550 18	0.022 650 12	0 38 56.0	0 12 58.7	0 12 58.7	0 0 0.0
0.1510	0.007 600 43	0.022 800 87	0 39 11.5	0 13 3.8	0 13 3.8	0 0 0.0
0.1515	0.007 650 85	0.022 952 12	0 39 27.1	0 13 9.0	0 13 9.0	0 0 0.0
0.1520	0.007 701 43	0.023 103 86	0 39 42.8	0 13 14.3	0 13 14.3	0 0 0.0
0.1525	0.007 752 18	0.023 256 11	0 39 58.5	0 13 19.5	0 13 19.5	0 0 0.0
0.1530	0.007 803 10	0.023 408 86	0 40 14.2	0 13 24.7	0 13 24.7	0 0 0.0
0.1535	0.007 854 19	0.023 562 10	0 40 30.0	0 13 30.0	0 13 30.0	0 0 0.0
0.1540	0.007 905 44	0.023 715 85	0 40 45.9	0 13 35.3	0 13 35.3	0 0 0.0
0.1545	0.007 956 86	0.023 870 10	0 41 1.8	0 13 40.6	0 13 40.6	0 0 0.0
0.1550	0.008 008 44	0.024 024 85	0 41 17.8	0 13 45.9	0 13 45.9	0 0 0.0
0.1555	0.008 060 20	0.024 180 09	0 41 33.8	0 13 51.3	0 13 51.3	0 0 0.0
0.1560	0.008 112 11	0.024 335 84	0 41 49.8	0 13 56.6	0 13 56.6	0 0 0.0
0.1565	0.008 164 20	0.024 492 09	0 42 5.9	0 14 2.0	0 14 2.0	0 0 0.0
0.1570	0.008 216 45	0.024 648 83	0 42 22.1	0 14 7.4	0 14 7.4	0 0 0.0
0.1575	0.008 268 87	0.024 806 08	0 42 38.3	0 14 12.8	0 14 12.8	0 0 0.0
0.1580	0.008 321 46	0.024 963 83	0 42 54.6	0 14 18.2	0 14 18.2	0 0 0.0
0.1585	0.008 374 21	0.025 122 07	0 43 10.9	0 14 23.6	0 14 23.6	0 0 0.0
0.1590	0.008 427 13	0.025 280 82	0 43 27.3	0 14 29.1	0 14 29.1	0 0 0.0
0.1595	0.008 480 21	0.025 440 07	0 43 43.7	0 14 34.6	0 14 34.6	0 0 0.0
0.1600	0.008 533 47	0.025 599 81	0 44 0.2	0 14 40.1	0 14 40.1	0 0 0.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.1605	0.025 760 25	0.025 759 82	0.000 110 60	0.012 880 05	0.000 027 65	0.017 173 65
0.1610	0.025 921 00	0.025 920 56	0.000 111 98	0.012 960 43	0.000 028 00	0.017 280 82
0.1615	0.026 082 25	0.026 081 81	0.000 113 38	0.013 041 05	0.000 028 34	0.017 388 32
0.1620	0.026 244 00	0.026 243 55	0.000 114 79	0.013 121 92	0.000 028 70	0.017 496 16
0.1625	0.026 406 25	0.026 405 79	0.000 116 21	0.013 203 05	0.000 029 05	0.017 604 33
0.1630	0.026 569 00	0.026 568 53	0.000 117 65	0.013 284 42	0.000 029 41	0.017 712 83
0.1635	0.026 732 25	0.026 731 77	0.000 119 10	0.013 366 05	0.000 029 78	0.017 821 67
0.1640	0.026 896 00	0.026 895 51	0.000 120 56	0.013 447 92	0.000 030 14	0.017 930 84
0.1645	0.027 060 25	0.027 059 75	0.000 122 04	0.013 530 04	0.000 030 51	0.018 040 34
0.1650	0.027 225 00	0.027 224 50	0.000 123 53	0.013 612 42	0.000 030 88	0.018 150 18
0.1655	0.027 390 25	0.027 389 74	0.000 125 04	0.013 695 04	0.000 031 26	0.018 260 35
0.1660	0.027 556 00	0.027 555 48	0.000 126 55	0.013 777 91	0.000 031 64	0.018 370 85
0.1665	0.027 722 25	0.027 721 72	0.000 128 09	0.013 861 04	0.000 032 02	0.018 481 69
0.1670	0.027 889 00	0.027 888 46	0.000 129 63	0.013 944 41	0.000 032 41	0.018 592 86
0.1675	0.028 056 25	0.028 055 70	0.000 131 19	0.014 028 03	0.000 032 80	0.018 704 36
0.1680	0.028 224 00	0.028 223 44	0.000 132 76	0.014 111 91	0.000 033 19	0.018 816 20
0.1685	0.028 392 25	0.028 391 68	0.000 134 35	0.014 196 03	0.000 033 59	0.018 928 37
0.1690	0.028 561 00	0.028 560 42	0.000 135 95	0.014 280 40	0.000 033 99	0.019 040 87
0.1695	0.028 730 25	0.028 729 66	0.000 137 57	0.014 365 03	0.000 034 39	0.019 153 71
0.1700	0.028 900 00	0.028 899 40	0.000 139 20	0.014 449 90	0.000 034 80	0.019 266 88
0.1705	0.029 070 25	0.029 069 64	0.000 140 84	0.014 535 02	0.000 035 21	0.019 380 38
0.1710	0.029 241 00	0.029 240 37	0.000 142 50	0.014 620 40	0.000 035 63	0.019 494 22
0.1715	0.029 412 25	0.029 411 61	0.000 144 18	0.014 706 02	0.000 036 04	0.019 608 39
0.1720	0.029 584 00	0.029 583 35	0.000 145 87	0.014 791 89	0.000 036 47	0.019 722 89
0.1725	0.029 756 25	0.029 755 59	0.000 147 57	0.014 878 02	0.000 036 89	0.019 837 73
0.1730	0.029 929 00	0.029 928 33	0.000 149 29	0.014 964 39	0.000 037 32	0.019 952 90
0.1735	0.030 102 25	0.030 101 57	0.000 151 02	0.015 051 01	0.000 037 76	0.020 068 40
0.1740	0.030 276 00	0.030 275 31	0.000 152 77	0.015 137 88	0.000 038 19	0.020 184 24
0.1745	0.030 450 25	0.030 449 54	0.000 154 53	0.015 225 01	0.000 038 63	0.020 300 41
0.1750	0.030 625 00	0.030 624 28	0.000 156 31	0.015 312 38	0.000 039 08	0.020 416 92
0.1755	0.030 800 25	0.030 799 52	0.000 158 11	0.015 400 00	0.000 039 53	0.020 533 76
0.1760	0.030 976 00	0.030 975 26	0.000 159 92	0.015 487 88	0.000 039 98	0.020 650 93
0.1765	0.031 152 25	0.031 151 49	0.000 161 74	0.015 576 00	0.000 040 44	0.020 768 43
0.1770	0.031 329 00	0.031 328 23	0.000 163 58	0.015 664 37	0.000 040 90	0.020 886 27
0.1775	0.031 506 25	0.031 505 47	0.000 165 44	0.015 752 99	0.000 041 36	0.021 004 44
0.1780	0.031 684 00	0.031 683 20	0.000 167 31	0.015 841 87	0.000 041 83	0.021 122 94
0.1785	0.031 862 25	0.031 861 44	0.000 169 20	0.015 930 99	0.000 042 30	0.021 241 78
0.1790	0.032 041 00	0.032 040 18	0.000 171 10	0.016 020 36	0.000 042 78	0.021 360 95
0.1795	0.032 220 25	0.032 219 41	0.000 173 02	0.016 109 99	0.000 043 26	0.021 480 46
0.1800	0.032 400 00	0.032 399 15	0.000 174 96	0.016 199 86	0.000 043 74	0.021 600 30
0.1805	0.032 580 25	0.032 579 39	0.000 176 91	0.016 289 98	0.000 044 23	0.021 720 47
0.1810	0.032 761 00	0.032 760 12	0.000 178 88	0.016 380 35	0.000 044 72	0.021 840 97
0.1815	0.032 942 25	0.032 941 36	0.000 180 86	0.016 470 98	0.000 045 22	0.021 961 81
0.1820	0.033 124 00	0.033 123 09	0.000 182 86	0.016 561 85	0.000 045 72	0.022 082 98
0.1825	0.033 306 25	0.033 305 33	0.000 184 88	0.016 652 97	0.000 046 22	0.022 204 49
0.1830	0.033 489 00	0.033 488 06	0.000 186 92	0.016 744 34	0.000 046 73	0.022 326 33
0.1835	0.033 672 25	0.033 671 30	0.000 188 97	0.016 835 97	0.000 047 24	0.022 448 50
0.1840	0.033 856 00	0.033 855 03	0.000 191 03	0.016 927 84	0.000 047 76	0.022 571 01
0.1845	0.034 040 25	0.034 039 26	0.000 193 12	0.017 019 96	0.000 048 28	0.022 693 84
0.1850	0.034 225 00	0.034 224 00	0.000 195 22	0.017 112 33	0.000 048 81	0.022 817 02
0.1855	0.034 410 25	0.034 409 23	0.000 197 34	0.017 204 96	0.000 049 34	0.022 940 52
0.1860	0.034 596 00	0.034 594 96	0.000 199 48	0.017 297 83	0.000 049 87	0.023 064 36
0.1865	0.034 782 25	0.034 781 20	0.000 201 63	0.017 390 95	0.000 050 41	0.023 188 53
0.1870	0.034 969 00	0.034 967 93	0.000 203 80	0.017 484 32	0.000 050 95	0.023 313 04
0.1875	0.035 156 25	0.035 155 16	0.000 205 99	0.017 577 94	0.000 051 50	0.023 437 88
0.1880	0.035 344 00	0.035 342 90	0.000 208 20	0.017 671 82	0.000 052 05	0.023 563 05
0.1885	0.035 532 25	0.035 531 13	0.000 210 42	0.017 765 94	0.000 052 61	0.023 688 56
0.1890	0.035 721 00	0.035 719 86	0.000 212 66	0.017 860 31	0.000 053 17	0.023 814 40
0.1895	0.035 910 25	0.035 909 09	0.000 214 92	0.017 954 93	0.000 053 73	0.023 940 57
0.1900	0.036 100 00	0.036 098 82	0.000 217 20	0.018 049 80	0.000 054 30	0.024 067 08
0.1905	0.036 290 25	0.036 289 06	0.000 219 49	0.018 144 93	0.000 054 87	0.024 193 92
0.1910	0.036 481 00	0.036 479 79	0.000 221 81	0.018 240 30	0.000 055 45	0.024 321 09
0.1915	0.036 672 25	0.036 671 02	0.000 224 14	0.018 335 92	0.000 056 03	0.024 448 60
0.1920	0.036 864 00	0.036 862 75	0.000 226 49	0.018 431 79	0.000 056 62	0.024 576 44
0.1925	0.037 056 25	0.037 054 98	0.000 228 86	0.018 527 91	0.000 057 21	0.024 704 61
0.1930	0.037 249 00	0.037 247 71	0.000 231 24	0.018 624 28	0.000 057 81	0.024 833 12
0.1935	0.037 442 25	0.037 440 94	0.000 233 65	0.018 720 91	0.000 058 41	0.024 961 96
0.1940	0.037 636 00	0.037 634 67	0.000 236 07	0.018 817 78	0.000 059 02	0.025 091 13
0.1945	0.037 830 25	0.037 828 90	0.000 238 52	0.018 914 90	0.000 059 63	0.025 220 64
0.1950	0.038 025 00	0.038 023 63	0.000 240 98	0.019 012 27	0.000 060 25	0.025 350 48
0.1955	0.038 220 25	0.038 218 85	0.000 243 46	0.019 109 89	0.000 060 87	0.025 480 65
0.1960	0.038 416 00	0.038 414 58	0.000 245 96	0.019 207 76	0.000 061 49	0.025 611 16
0.1965	0.038 612 25	0.038 610 81	0.000 248 48	0.019 305 89	0.000 062 12	0.025 742 00
0.1970	0.038 809 00	0.038 807 54	0.000 251 02	0.019 404 26	0.000 062 75	0.025 873 18
0.1975	0.039 006 25	0.039 004 77	0.000 253 57	0.019 502 88	0.000 063 39	0.026 004 68
0.1980	0.039 204 00	0.039 202 49	0.000 256 15	0.019 601 75	0.000 064 04	0.026 136 53
0.1985	0.039 402 25	0.039 400 72	0.000 258 75	0.019 700 87	0.000 064 69	0.026 268 70
0.1990	0.039 601 00	0.039 599 45	0.000 261 37	0.019 800 24	0.000 065 34	0.026 401 21
0.1995	0.039 800 25	0.039 798 67	0.000 264 00	0.019 899 86	0.000 066 00	0.026 534 05
0.2000	0.040 000 00	0.039 998 40	0.000 266 66	0.019 999 73	0.000 066 67	0.026 667 23

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
			DEG MNT SEC			
0.1605	0.008 586 89	0.025 760 06	0 44 16.7	0 14 45.6	0 14 45.6	0 0 0.0
0.1610	0.008 640 47	0.025 920 81	0 44 33.3	0 14 51.1	0 14 51.1	0 0 0.0
0.1615	0.008 694 22	0.026 082 05	0 44 49.9	0 14 56.6	0 14 56.6	0 0 0.0
0.1620	0.008 748 14	0.026 243 80	0 45 6.6	0 15 2.2	0 15 2.2	0 0 0.0
0.1625	0.008 802 23	0.026 406 05	0 45 23.3	0 15 7.8	0 15 7.8	0 0 0.0
0.1630	0.008 856 48	0.026 568 79	0 45 40.1	0 15 13.4	0 15 13.4	0 0 0.0
0.1635	0.008 910 90	0.026 732 04	0 45 57.0	0 15 19.0	0 15 19.0	0 0 0.0
0.1640	0.008 965 49	0.026 895 78	0 46 13.8	0 15 24.6	0 15 24.6	0 0 0.0
0.1645	0.009 020 24	0.027 060 03	0 46 30.8	0 15 30.3	0 15 30.3	0 0 0.0
0.1650	0.009 075 16	0.027 224 78	0 46 47.8	0 15 35.9	0 15 35.9	0 0 0.0
0.1655	0.009 130 25	0.027 390 02	0 47 4.8	0 15 41.6	0 15 41.6	0 0 0.0
0.1660	0.009 185 50	0.027 555 77	0 47 21.9	0 15 47.3	0 15 47.3	0 0 0.0
0.1665	0.009 240 92	0.027 722 01	0 47 39.1	0 15 53.0	0 15 53.0	0 0 0.0
0.1670	0.009 296 51	0.027 888 76	0 47 56.3	0 15 58.8	0 15 58.8	0 0 0.0
0.1675	0.009 352 26	0.028 056 00	0 48 13.5	0 16 4.5	0 16 4.5	0 0 0.0
0.1680	0.009 408 18	0.028 223 75	0 48 30.8	0 16 10.3	0 16 10.3	0 0 0.0
0.1685	0.009 464 26	0.028 392 00	0 48 48.2	0 16 16.1	0 16 16.1	0 0 0.0
0.1690	0.009 520 52	0.028 560 74	0 49 5.6	0 16 21.9	0 16 21.9	0 0 0.0
0.1695	0.009 576 94	0.028 729 99	0 49 23.0	0 16 27.7	0 16 27.7	0 0 0.0
0.1700	0.009 633 52	0.028 899 73	0 49 40.5	0 16 33.5	0 16 33.5	0 0 0.0
0.1705	0.009 690 28	0.029 069 98	0 49 58.1	0 16 39.4	0 16 39.4	0 0 0.0
0.1710	0.009 747 20	0.029 240 72	0 50 15.7	0 16 45.2	0 16 45.2	0 0 0.0
0.1715	0.009 804 29	0.029 411 97	0 50 33.4	0 16 51.1	0 16 51.1	0 0 0.0
0.1720	0.009 861 54	0.029 583 71	0 50 51.1	0 16 57.0	0 16 57.0	0 0 0.0
0.1725	0.009 918 96	0.029 755 96	0 51 8.8	0 17 2.9	0 17 2.9	0 0 0.0
0.1730	0.009 976 55	0.029 928 70	0 51 26.6	0 17 8.9	0 17 8.9	0 0 0.0
0.1735	0.010 034 30	0.030 101 95	0 51 44.5	0 17 14.8	0 17 14.8	0 0 0.0
0.1740	0.010 092 22	0.030 275 69	0 52 2.4	0 17 20.8	0 17 20.8	0 0 0.0
0.1745	0.010 150 31	0.030 449 94	0 52 20.4	0 17 26.8	0 17 26.8	0 0 0.0
0.1750	0.010 208 56	0.030 624 68	0 52 38.4	0 17 32.8	0 17 32.8	0 0 0.0
0.1755	0.010 266 98	0.030 799 93	0 52 56.5	0 17 38.8	0 17 38.8	0 0 0.0
0.1760	0.010 325 57	0.030 975 67	0 53 14.6	0 17 44.9	0 17 44.9	0 0 0.0
0.1765	0.010 384 32	0.031 151 91	0 53 32.8	0 17 50.9	0 17 50.9	0 0 0.0
0.1770	0.010 443 24	0.031 328 66	0 53 51.0	0 17 57.0	0 17 57.0	0 0 0.0
0.1775	0.010 502 33	0.031 505 90	0 54 9.3	0 18 3.1	0 18 3.1	0 0 0.0
0.1780	0.010 561 55	0.031 683 65	0 54 27.6	0 18 9.2	0 18 9.2	0 0 0.0
0.1785	0.010 621 01	0.031 861 89	0 54 46.0	0 18 15.3	0 18 15.3	0 0 0.0
0.1790	0.010 680 59	0.032 040 63	0 55 4.5	0 18 21.5	0 18 21.5	0 0 0.0
0.1795	0.010 740 35	0.032 219 88	0 55 23.0	0 18 27.7	0 18 27.6	0 0 0.0
0.1800	0.010 800 27	0.032 399 62	0 55 41.5	0 18 33.8	0 18 33.8	0 0 0.0
0.1805	0.010 860 36	0.032 579 87	0 56 0.1	0 18 40.0	0 18 40.0	0 0 0.0
0.1810	0.010 920 61	0.032 760 61	0 56 18.7	0 18 46.2	0 18 46.2	0 0 0.0
0.1815	0.010 981 03	0.032 941 85	0 56 37.4	0 18 52.5	0 18 52.5	0 0 0.0
0.1820	0.011 041 62	0.033 123 60	0 56 56.2	0 18 58.7	0 18 58.7	0 0 0.0
0.1825	0.011 102 38	0.033 305 84	0 57 15.0	0 19 5.0	0 19 5.0	0 0 0.0
0.1830	0.011 163 30	0.033 488 58	0 57 33.8	0 19 11.3	0 19 11.3	0 0 0.0
0.1835	0.011 224 39	0.033 671 83	0 57 52.7	0 19 17.6	0 19 17.6	0 0 0.0
0.1840	0.011 285 64	0.033 855 57	0 58 11.7	0 19 23.9	0 19 23.9	0 0 0.0
0.1845	0.011 347 06	0.034 039 81	0 58 30.7	0 19 30.2	0 19 30.2	0 0 0.0
0.1850	0.011 408 65	0.034 224 55	0 58 49.7	0 19 36.6	0 19 36.6	0 0 0.0
0.1855	0.011 470 41	0.034 409 80	0 59 8.8	0 19 42.9	0 19 42.9	0 0 0.0
0.1860	0.011 532 33	0.034 595 54	0 59 28.0	0 19 49.3	0 19 49.3	0 0 0.0
0.1865	0.011 594 42	0.034 781 78	0 59 47.2	0 19 55.7	0 19 55.7	0 0 0.0
0.1870	0.011 656 67	0.034 968 52	1 0 6.4	0 20 2.1	0 20 2.1	0 0 0.0
0.1875	0.011 719 09	0.035 155 77	1 0 25.7	0 20 8.6	0 20 8.6	0 0 0.0
0.1880	0.011 781 68	0.035 343 51	1 0 45.1	0 20 15.0	0 20 15.0	0 0 0.0
0.1885	0.011 844 44	0.035 531 75	1 1 4.5	0 20 21.5	0 20 21.5	0 0 0.0
0.1890	0.011 907 36	0.035 720 49	1 1 24.0	0 20 28.0	0 20 28.0	0 0 0.0
0.1895	0.011 970 45	0.035 909 74	1 1 43.5	0 20 34.5	0 20 34.5	0 0 0.0
0.1900	0.012 033 71	0.036 099 48	1 2 3.1	0 20 41.0	0 20 41.0	0 0 0.0
0.1905	0.012 097 13	0.036 289 72	1 2 22.7	0 20 47.6	0 20 47.6	0 0 0.0
0.1910	0.012 160 72	0.036 480 46	1 2 42.4	0 20 54.1	0 20 54.1	0 0 0.0
0.1915	0.012 224 47	0.036 671 70	1 3 2.1	0 21 0.7	0 21 0.7	0 0 0.0
0.1920	0.012 288 40	0.036 863 44	1 3 21.9	0 21 7.3	0 21 7.3	0 0 0.0
0.1925	0.012 352 49	0.037 055 68	1 3 41.7	0 21 13.9	0 21 13.9	0 0 0.0
0.1930	0.012 416 74	0.037 248 43	1 4 1.6	0 21 20.5	0 21 20.5	0 0 0.0
0.1935	0.012 481 17	0.037 441 67	1 4 21.5	0 21 27.2	0 21 27.2	0 0 0.0
0.1940	0.012 545 76	0.037 635 41	1 4 41.5	0 21 33.8	0 21 33.8	0 0 0.0
0.1945	0.012 610 51	0.037 829 65	1 5 1.5	0 21 40.5	0 21 40.5	0 0 0.0
0.1950	0.012 675 44	0.038 024 39	1 5 21.6	0 21 47.2	0 21 47.2	0 0 0.0
0.1955	0.012 740 53	0.038 219 63	1 5 41.7	0 21 53.9	0 21 53.9	0 0 0.0
0.1960	0.012 805 78	0.038 415 37	1 6 1.9	0 22 0.6	0 22 0.6	0 0 0.0
0.1965	0.012 871 21	0.038 611 61	1 6 22.2	0 22 7.4	0 22 7.4	0 0 0.0
0.1970	0.012 936 80	0.038 808 35	1 6 42.5	0 22 14.2	0 22 14.2	0 0 0.0
0.1975	0.013 002 55	0.039 005 59	1 7 2.8	0 22 20.9	0 22 20.9	0 0 0.0
0.1980	0.013 068 48	0.039 203 33	1 7 23.2	0 22 27.7	0 22 27.7	0 0 0.0
0.1985	0.013 134 57	0.039 401 57	1 7 43.6	0 22 34.5	0 22 34.5	0 0 0.0
0.1990	0.013 200 83	0.039 600 31	1 8 4.1	0 22 41.4	0 22 41.4	0 0 0.0
0.1995	0.013 267 25	0.039 799 55	1 8 24.7	0 22 48.2	0 22 48.2	0 0 0.0
0.2000	0.013 333 84	0.039 999 29	1 8 45.3	0 22 55.1	0 22 55.1	0 0 0.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.2005	0.040 200 25	0.040 198 63	0.000 269 34	0.020 099 85	0.000 067 33	0.026 800 73
0.2010	0.040 401 00	0.040 399 35	0.000 272 03	0.020 200 23	0.000 068 01	0.026 934 58
0.2015	0.040 602 25	0.040 600 58	0.000 274 75	0.020 300 85	0.000 068 69	0.027 068 75
0.2020	0.040 804 00	0.040 802 30	0.000 277 49	0.020 401 72	0.000 069 37	0.027 203 26
0.2025	0.041 006 25	0.041 004 53	0.000 280 24	0.020 502 84	0.000 070 06	0.027 338 10
0.2030	0.041 209 00	0.041 207 25	0.000 283 02	0.020 604 21	0.000 070 76	0.027 473 28
0.2035	0.041 412 25	0.041 410 47	0.000 285 82	0.020 705 83	0.000 071 46	0.027 608 79
0.2040	0.041 616 00	0.041 614 20	0.000 288 64	0.020 807 70	0.000 072 16	0.027 744 63
0.2045	0.041 820 25	0.041 818 42	0.000 291 48	0.020 909 82	0.000 072 87	0.027 880 81
0.2050	0.042 025 00	0.042 023 14	0.000 294 34	0.021 012 19	0.000 073 59	0.028 017 31
0.2055	0.042 230 25	0.042 228 37	0.000 297 22	0.021 114 81	0.000 074 31	0.028 154 16
0.2060	0.042 436 00	0.042 434 09	0.000 300 13	0.021 217 68	0.000 075 03	0.028 291 33
0.2065	0.042 642 25	0.042 640 31	0.000 303 05	0.021 320 80	0.000 075 76	0.028 428 84
0.2070	0.042 849 00	0.042 847 03	0.000 306 00	0.021 424 17	0.000 076 50	0.028 566 69
0.2075	0.043 056 25	0.043 054 25	0.000 308 96	0.021 527 79	0.000 077 24	0.028 704 86
0.2080	0.043 264 00	0.043 261 98	0.000 311 95	0.021 631 66	0.000 077 99	0.028 843 37
0.2085	0.043 472 25	0.043 470 20	0.000 314 96	0.021 735 78	0.000 078 74	0.028 982 22
0.2090	0.043 681 00	0.043 678 92	0.000 317 99	0.021 840 15	0.000 079 50	0.029 121 39
0.2095	0.043 890 25	0.043 888 14	0.000 321 05	0.021 944 77	0.000 080 26	0.029 260 90
0.2100	0.044 100 00	0.044 097 86	0.000 324 12	0.022 049 64	0.000 081 03	0.029 400 75
0.2105	0.044 310 25	0.044 308 08	0.000 327 22	0.022 154 76	0.000 081 81	0.029 540 93
0.2110	0.044 521 00	0.044 518 79	0.000 330 34	0.022 260 13	0.000 082 59	0.029 681 44
0.2115	0.044 732 25	0.044 730 01	0.000 333 48	0.022 365 75	0.000 083 37	0.029 822 28
0.2120	0.044 944 00	0.044 941 73	0.000 336 65	0.022 471 62	0.000 084 16	0.029 963 46
0.2125	0.045 156 25	0.045 153 95	0.000 339 84	0.022 577 74	0.000 084 96	0.030 104 97
0.2130	0.045 369 00	0.045 366 67	0.000 343 05	0.022 684 11	0.000 085 76	0.030 246 82
0.2135	0.045 582 25	0.045 579 88	0.000 346 28	0.022 790 73	0.000 086 57	0.030 388 99
0.2140	0.045 796 00	0.045 793 60	0.000 349 53	0.022 897 60	0.000 087 38	0.030 531 51
0.2145	0.046 010 25	0.046 007 82	0.000 352 81	0.023 004 72	0.000 088 20	0.030 674 35
0.2150	0.046 225 00	0.046 222 53	0.000 356 11	0.023 112 09	0.000 089 03	0.030 817 53
0.2155	0.046 440 25	0.046 437 75	0.000 359 44	0.023 219 71	0.000 089 86	0.030 961 04
0.2160	0.046 656 00	0.046 653 46	0.000 362 78	0.023 327 58	0.000 090 70	0.031 104 89
0.2165	0.046 872 25	0.046 869 68	0.000 366 15	0.023 435 70	0.000 091 54	0.031 249 07
0.2170	0.047 089 00	0.047 086 39	0.000 369 55	0.023 544 06	0.000 092 39	0.031 393 58
0.2175	0.047 306 25	0.047 303 60	0.000 372 97	0.023 652 68	0.000 093 24	0.031 538 42
0.2180	0.047 524 00	0.047 521 32	0.000 376 41	0.023 761 55	0.000 094 10	0.031 683 60
0.2185	0.047 742 25	0.047 739 53	0.000 379 87	0.023 870 67	0.000 094 97	0.031 829 12
0.2190	0.047 961 00	0.047 958 24	0.000 383 36	0.023 980 04	0.000 095 84	0.031 974 96
0.2195	0.048 180 25	0.048 177 45	0.000 386 87	0.024 089 66	0.000 096 72	0.032 121 14
0.2200	0.048 400 00	0.048 397 17	0.000 390 41	0.024 199 53	0.000 097 60	0.032 267 66
0.2205	0.048 620 25	0.048 617 38	0.000 393 97	0.024 309 65	0.000 098 49	0.032 414 50
0.2210	0.048 841 00	0.048 838 09	0.000 397 56	0.024 420 01	0.000 099 39	0.032 561 68
0.2215	0.049 062 25	0.049 059 30	0.000 401 17	0.024 530 63	0.000 100 29	0.032 709 20
0.2220	0.049 284 00	0.049 281 01	0.000 404 80	0.024 641 50	0.000 101 20	0.032 857 05
0.2225	0.049 506 25	0.049 503 22	0.000 408 46	0.024 752 62	0.000 102 12	0.033 005 23
0.2230	0.049 729 00	0.049 725 93	0.000 412 14	0.024 863 99	0.000 103 04	0.033 153 74
0.2235	0.049 952 25	0.049 949 13	0.000 415 85	0.024 975 61	0.000 103 97	0.033 302 59
0.2240	0.050 176 00	0.050 172 84	0.000 419 59	0.025 087 47	0.000 104 90	0.033 451 77
0.2245	0.050 400 25	0.050 397 05	0.000 423 34	0.025 199 59	0.000 105 84	0.033 601 28
0.2250	0.050 625 00	0.050 621 76	0.000 427 13	0.025 311 96	0.000 106 78	0.033 751 13
0.2255	0.050 850 25	0.050 846 46	0.000 430 94	0.025 424 58	0.000 107 74	0.033 901 31
0.2260	0.051 076 00	0.051 072 67	0.000 434 77	0.025 537 44	0.000 108 70	0.034 051 83
0.2265	0.051 302 25	0.051 298 87	0.000 438 63	0.025 650 56	0.000 109 66	0.034 202 68
0.2270	0.051 529 00	0.051 525 58	0.000 442 52	0.025 763 93	0.000 110 63	0.034 353 86
0.2275	0.051 756 25	0.051 752 78	0.000 446 43	0.025 877 55	0.000 111 61	0.034 505 38
0.2280	0.051 984 00	0.051 980 49	0.000 450 37	0.025 991 41	0.000 112 59	0.034 657 23
0.2285	0.052 212 25	0.052 208 69	0.000 454 33	0.026 105 53	0.000 113 59	0.034 809 41
0.2290	0.052 441 00	0.052 437 39	0.000 458 32	0.026 219 90	0.000 114 58	0.034 961 93
0.2295	0.052 670 25	0.052 666 60	0.000 462 34	0.026 334 52	0.000 115 59	0.035 114 78
0.2300	0.052 900 00	0.052 896 30	0.000 466 38	0.026 449 38	0.000 116 60	0.035 267 96
0.2305	0.053 130 25	0.053 126 50	0.000 470 45	0.026 564 50	0.000 117 61	0.035 421 48
0.2310	0.053 361 00	0.053 357 20	0.000 474 54	0.026 679 87	0.000 118 64	0.035 575 33
0.2315	0.053 592 25	0.053 588 40	0.000 478 66	0.026 795 48	0.000 119 67	0.035 729 51
0.2320	0.053 824 00	0.053 820 10	0.000 482 81	0.026 911 35	0.000 120 71	0.035 884 03
0.2325	0.054 056 25	0.054 052 30	0.000 486 99	0.027 027 47	0.000 121 75	0.036 038 88
0.2330	0.054 289 00	0.054 285 00	0.000 491 19	0.027 143 83	0.000 122 80	0.036 194 06
0.2335	0.054 522 25	0.054 518 20	0.000 495 42	0.027 260 45	0.000 123 86	0.036 349 58
0.2340	0.054 756 00	0.054 751 90	0.000 499 68	0.027 377 32	0.000 124 92	0.036 505 43
0.2345	0.054 990 25	0.054 986 09	0.000 503 96	0.027 494 43	0.000 125 99	0.036 661 62
0.2350	0.055 225 00	0.055 220 79	0.000 508 27	0.027 611 80	0.000 127 07	0.036 818 14
0.2355	0.055 460 25	0.055 455 99	0.000 512 61	0.027 729 41	0.000 128 16	0.036 974 99
0.2360	0.055 696 00	0.055 691 68	0.000 516 98	0.027 847 28	0.000 129 25	0.037 132 18
0.2365	0.055 932 25	0.055 927 88	0.000 521 37	0.027 965 40	0.000 130 35	0.037 289 69
0.2370	0.056 169 00	0.056 164 57	0.000 525 80	0.028 083 76	0.000 131 45	0.037 447 55
0.2375	0.056 406 25	0.056 401 76	0.000 530 25	0.028 202 38	0.000 132 57	0.037 605 73
0.2380	0.056 644 00	0.056 639 46	0.000 534 73	0.028 321 24	0.000 133 69	0.037 764 25
0.2385	0.056 882 25	0.056 877 65	0.000 539 23	0.028 440 36	0.000 134 81	0.037 923 11
0.2390	0.057 121 00	0.057 116 34	0.000 543 77	0.028 559 72	0.000 135 95	0.038 082 29
0.2395	0.057 360 25	0.057 355 53	0.000 548 33	0.028 679 34	0.000 137 09	0.038 241 81
0.2400	0.057 600 00	0.057 595 22	0.000 552 93	0.028 799 20	0.000 138 24	0.038 401 67

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
0.2005	0.013 400 60	0.040 199 53	1 9 5.9	0 23 2.0	0 23 2.0	0 0 0.0
0.2010	0.013 467 52	0.040 400 27	1 9 26.7	0 23 8.9	0 23 8.9	0 0 0.0
0.2015	0.013 534 61	0.040 601 51	1 9 47.4	0 23 15.8	0 23 15.8	0 0 0.0
0.2020	0.013 601 87	0.040 803 25	1 10 8.2	0 23 22.7	0 23 22.7	0 0 0.0
0.2025	0.013 669 30	0.041 005 48	1 10 29.1	0 23 29.7	0 23 29.7	0 0 0.0
0.2030	0.013 736 85	0.041 208 22	1 10 50.0	0 23 36.7	0 23 36.7	0 0 0.0
0.2035	0.013 804 65	0.041 411 46	1 11 10.9	0 23 43.6	0 23 43.6	0 0 0.0
0.2040	0.013 872 57	0.041 615 20	1 11 32.0	0 23 50.7	0 23 50.6	0 0 0.0
0.2045	0.013 940 66	0.041 819 44	1 11 53.0	0 23 57.7	0 23 57.7	0 0 0.0
0.2050	0.014 008 92	0.042 024 18	1 12 14.1	0 24 4.7	0 24 4.7	0 0 0.0
0.2055	0.014 077 35	0.042 229 41	1 12 35.3	0 24 11.8	0 24 11.8	0 0 0.0
0.2060	0.014 145 94	0.042 435 15	1 12 56.5	0 24 18.8	0 24 18.8	0 0 0.0
0.2065	0.014 214 70	0.042 641 39	1 13 17.8	0 24 25.9	0 24 25.9	0 0 0.0
0.2070	0.014 283 62	0.042 848 13	1 13 39.1	0 24 33.0	0 24 33.0	0 0 0.0
0.2075	0.014 352 72	0.043 055 36	1 14 0.5	0 24 40.2	0 24 40.2	0 0 0.0
0.2080	0.014 421 98	0.043 263 10	1 14 21.9	0 24 47.3	0 24 47.3	0 0 0.0
0.2085	0.014 491 40	0.043 471 34	1 14 43.4	0 24 54.5	0 24 54.5	0 0 0.0
0.2090	0.014 560 99	0.043 680 07	1 15 4.9	0 25 1.6	0 25 1.6	0 0 0.0
0.2095	0.014 630 75	0.043 889 31	1 15 26.5	0 25 8.8	0 25 8.8	0 0 0.0
0.2100	0.014 700 68	0.044 099 05	1 15 48.1	0 25 16.0	0 25 16.0	0 0 0.0
0.2105	0.014 770 77	0.044 309 28	1 16 9.8	0 25 23.3	0 25 23.3	0 0 0.0
0.2110	0.014 841 03	0.044 520 02	1 16 31.6	0 25 30.5	0 25 30.5	0 0 0.0
0.2115	0.014 911 46	0.044 731 26	1 16 53.3	0 25 37.8	0 25 37.8	0 0 0.0
0.2120	0.014 982 05	0.044 942 99	1 17 15.2	0 25 45.1	0 25 45.1	0 0 0.0
0.2125	0.015 052 81	0.045 155 23	1 17 37.1	0 25 52.4	0 25 52.4	0 0 0.0
0.2130	0.015 123 74	0.045 367 96	1 17 59.0	0 25 59.7	0 25 59.7	0 0 0.0
0.2135	0.015 194 84	0.045 581 20	1 18 21.0	0 26 7.0	0 26 7.0	0 0 0.0
0.2140	0.015 266 10	0.045 794 93	1 18 43.1	0 26 14.4	0 26 14.3	0 0 0.0
0.2145	0.015 337 52	0.046 009 17	1 19 5.1	0 26 21.7	0 26 21.7	0 0 0.0
0.2150	0.015 409 12	0.046 223 90	1 19 27.3	0 26 29.1	0 26 29.1	0 0 0.0
0.2155	0.015 480 88	0.046 439 14	1 19 49.5	0 26 36.5	0 26 36.5	0 0 0.0
0.2160	0.015 552 81	0.046 654 87	1 20 11.7	0 26 43.9	0 26 43.9	0 0 0.0
0.2165	0.015 624 90	0.046 871 11	1 20 34.0	0 26 51.3	0 26 51.3	0 0 0.0
0.2170	0.015 697 16	0.047 087 84	1 20 56.4	0 26 58.8	0 26 58.8	0 0 0.0
0.2175	0.015 769 59	0.047 305 07	1 21 18.8	0 27 6.3	0 27 6.3	0 0 0.0
0.2180	0.015 842 19	0.047 522 81	1 21 41.3	0 27 13.8	0 27 13.7	0 0 0.0
0.2185	0.015 914 95	0.047 741 04	1 22 3.8	0 27 21.3	0 27 21.2	0 0 0.0
0.2190	0.015 987 88	0.047 959 77	1 22 26.3	0 27 28.8	0 27 28.8	0 0 0.0
0.2195	0.016 060 97	0.048 179 01	1 22 48.9	0 27 36.3	0 27 36.3	0 0 0.0
0.2200	0.016 134 23	0.048 398 74	1 23 11.6	0 27 43.9	0 27 43.9	0 0 0.0
0.2205	0.016 207 66	0.048 618 97	1 23 34.3	0 27 51.4	0 27 51.4	0 0 0.0
0.2210	0.016 281 26	0.048 839 71	1 23 57.1	0 27 59.0	0 27 59.0	0 0 0.0
0.2215	0.016 355 02	0.049 060 94	1 24 19.9	0 28 6.6	0 28 6.6	0 0 0.0
0.2220	0.016 428 95	0.049 282 67	1 24 42.8	0 28 14.3	0 28 14.3	0 0 0.0
0.2225	0.016 503 05	0.049 504 90	1 25 5.7	0 28 21.9	0 28 21.9	0 0 0.0
0.2230	0.016 577 31	0.049 727 63	1 25 28.7	0 28 29.6	0 28 29.5	0 0 0.0
0.2235	0.016 651 74	0.049 950 87	1 25 51.7	0 28 37.2	0 28 37.2	0 0 0.0
0.2240	0.016 726 34	0.050 174 60	1 26 14.8	0 28 44.9	0 28 44.9	0 0 0.0
0.2245	0.016 801 10	0.050 398 83	1 26 37.9	0 28 52.6	0 28 52.6	0 0 0.0
0.2250	0.016 876 03	0.050 623 56	1 27 1.1	0 29 0.4	0 29 0.3	0 0 0.0
0.2255	0.016 951 13	0.050 848 79	1 27 24.3	0 29 8.1	0 29 8.1	0 0 0.0
0.2260	0.017 026 39	0.051 074 52	1 27 47.6	0 29 15.9	0 29 15.9	0 0 0.0
0.2265	0.017 101 82	0.051 300 75	1 28 10.9	0 29 23.6	0 29 23.6	0 0 0.0
0.2270	0.017 177 42	0.051 527 48	1 28 34.3	0 29 31.4	0 29 31.4	0 0 0.0
0.2275	0.017 253 18	0.051 754 71	1 28 57.7	0 29 39.2	0 29 39.2	0 0 0.0
0.2280	0.017 329 11	0.051 982 44	1 29 21.2	0 29 47.1	0 29 47.1	0 0 0.0
0.2285	0.017 405 21	0.052 210 67	1 29 44.8	0 29 54.9	0 29 54.9	0 0 0.0
0.2290	0.017 481 48	0.052 439 40	1 30 8.4	0 30 2.8	0 30 2.8	0 0 0.0
0.2295	0.017 557 91	0.052 668 63	1 30 32.0	0 30 10.7	0 30 10.7	0 0 0.0
0.2300	0.017 634 51	0.052 898 36	1 30 55.7	0 30 18.6	0 30 18.6	0 0 0.0
0.2305	0.017 711 27	0.053 128 58	1 31 19.5	0 30 26.5	0 30 26.5	0 0 0.0
0.2310	0.017 788 21	0.053 359 31	1 31 43.2	0 30 34.4	0 30 34.4	0 0 0.0
0.2315	0.017 865 31	0.053 590 54	1 32 7.1	0 30 42.4	0 30 42.4	0 0 0.0
0.2320	0.017 942 57	0.053 822 27	1 32 31.0	0 30 50.3	0 30 50.3	0 0 0.0
0.2325	0.018 020 00	0.054 054 49	1 32 55.0	0 30 58.3	0 30 58.3	0 0 0.0
0.2330	0.018 097 60	0.054 287 22	1 33 19.0	0 31 6.3	0 31 6.3	0 0 0.0
0.2335	0.018 175 37	0.054 520 45	1 33 43.0	0 31 14.3	0 31 14.3	0 0 0.0
0.2340	0.018 253 30	0.054 754 18	1 34 7.1	0 31 22.4	0 31 22.4	0 0 0.0
0.2345	0.018 331 40	0.054 988 40	1 34 31.3	0 31 30.4	0 31 30.4	0 0 0.0
0.2350	0.018 409 67	0.055 223 13	1 34 55.5	0 31 38.5	0 31 38.5	0 0 0.0
0.2355	0.018 488 10	0.055 458 35	1 35 19.7	0 31 46.6	0 31 46.6	0 0 0.0
0.2360	0.018 566 70	0.055 694 08	1 35 44.1	0 31 54.7	0 31 54.7	0 0 0.0
0.2365	0.018 645 47	0.055 930 31	1 36 8.4	0 32 2.8	0 32 2.8	0 0 0.0
0.2370	0.018 724 41	0.056 167 03	1 36 32.8	0 32 10.9	0 32 10.9	0 0 0.0
0.2375	0.018 803 51	0.056 404 26	1 36 57.3	0 32 19.1	0 32 19.1	0 0 0.0
0.2380	0.018 882 78	0.056 641 98	1 37 21.8	0 32 27.3	0 32 27.3	0 0 0.0
0.2385	0.018 962 21	0.056 880 21	1 37 46.4	0 32 35.5	0 32 35.5	0 0 0.0
0.2390	0.019 041 81	0.057 118 93	1 38 11.0	0 32 43.7	0 32 43.7	0 0 0.0
0.2395	0.019 121 58	0.057 358 15	1 38 35.7	0 32 51.9	0 32 51.9	0 0 0.0
0.2400	0.019 201 52	0.057 597 88	1 39 0.4	0 33 0.1	0 33 0.1	0 0 0.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√L3/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.2405	0.057 840 25	0.057 835 41	0.000 557 55	0.028 919 32	0.000 139 39	0.038 561 86
0.2410	0.058 081 00	0.058 076 10	0.000 562 20	0.029 039 68	0.000 140 55	0.038 722 38
0.2415	0.058 322 25	0.058 317 29	0.000 566 88	0.029 160 30	0.000 141 72	0.038 883 23
0.2420	0.058 564 00	0.058 558 98	0.000 571 59	0.029 281 16	0.000 142 90	0.039 044 42
0.2425	0.058 806 25	0.058 801 17	0.000 576 33	0.029 402 28	0.000 144 09	0.039 205 94
0.2430	0.059 049 00	0.059 043 85	0.000 581 09	0.029 523 64	0.000 145 28	0.039 367 80
0.2435	0.059 292 25	0.059 287 04	0.000 585 89	0.029 645 26	0.000 146 48	0.039 529 99
0.2440	0.059 536 00	0.059 530 72	0.000 590 72	0.029 767 12	0.000 147 68	0.039 692 51
0.2445	0.059 780 25	0.059 774 91	0.000 595 58	0.029 889 23	0.000 148 90	0.039 855 37
0.2450	0.060 025 00	0.060 019 59	0.000 600 46	0.030 011 60	0.000 150 12	0.040 018 55
0.2455	0.060 270 25	0.060 264 78	0.000 605 38	0.030 134 21	0.000 151 35	0.040 182 08
0.2460	0.060 516 00	0.060 510 46	0.000 610 32	0.030 257 08	0.000 152 59	0.040 345 93
0.2465	0.060 762 25	0.060 756 64	0.000 615 30	0.030 380 19	0.000 153 83	0.040 510 13
0.2470	0.061 009 00	0.061 003 32	0.000 620 31	0.030 503 55	0.000 155 08	0.040 674 65
0.2475	0.061 256 25	0.061 250 50	0.000 625 35	0.030 627 17	0.000 156 34	0.040 839 51
0.2480	0.061 504 00	0.061 498 18	0.000 630 41	0.030 751 03	0.000 157 61	0.041 004 70
0.2485	0.061 752 25	0.061 746 36	0.000 635 51	0.030 875 14	0.000 158 88	0.041 170 22
0.2490	0.062 001 00	0.061 995 04	0.000 640 64	0.030 999 51	0.000 160 17	0.041 336 08
0.2495	0.062 250 25	0.062 244 22	0.000 645 80	0.031 124 12	0.000 161 46	0.041 502 27
0.2500	0.062 500 00	0.062 493 90	0.000 651 00	0.031 248 98	0.000 162 75	0.041 668 80
0.2505	0.062 750 25	0.062 744 07	0.000 656 22	0.031 374 10	0.000 164 06	0.041 835 66
0.2510	0.063 001 00	0.062 994 75	0.000 661 47	0.031 499 46	0.000 165 37	0.042 002 85
0.2515	0.063 252 25	0.063 245 92	0.000 666 76	0.031 625 07	0.000 166 70	0.042 170 38
0.2520	0.063 504 00	0.063 497 60	0.000 672 08	0.031 750 93	0.000 168 03	0.042 338 24
0.2525	0.063 756 25	0.063 749 77	0.000 677 43	0.031 877 05	0.000 169 36	0.042 506 43
0.2530	0.064 009 00	0.064 002 44	0.000 682 81	0.032 003 41	0.000 170 71	0.042 674 96
0.2535	0.064 262 25	0.064 255 62	0.000 688 22	0.032 130 02	0.000 172 06	0.042 843 82
0.2540	0.064 516 00	0.064 509 29	0.000 693 67	0.032 256 88	0.000 173 42	0.043 013 01
0.2545	0.064 770 25	0.064 763 46	0.000 699 15	0.032 383 99	0.000 174 79	0.043 182 54
0.2550	0.065 025 00	0.065 018 13	0.000 704 66	0.032 511 35	0.000 176 17	0.043 352 40
0.2555	0.065 280 25	0.065 273 30	0.000 710 20	0.032 638 97	0.000 177 56	0.043 522 60
0.2560	0.065 536 00	0.065 528 96	0.000 715 77	0.032 766 83	0.000 178 95	0.043 693 12
0.2565	0.065 792 25	0.065 785 13	0.000 721 38	0.032 894 94	0.000 180 35	0.043 863 99
0.2570	0.066 049 00	0.066 041 80	0.000 727 02	0.033 023 30	0.000 181 76	0.044 035 18
0.2575	0.066 306 25	0.066 298 96	0.000 732 70	0.033 151 91	0.000 183 18	0.044 206 71
0.2580	0.066 564 00	0.066 556 63	0.000 738 40	0.033 280 77	0.000 184 61	0.044 378 58
0.2585	0.066 822 25	0.066 814 79	0.000 744 14	0.033 409 88	0.000 186 04	0.044 550 77
0.2590	0.067 081 00	0.067 073 45	0.000 749 92	0.033 539 24	0.000 187 49	0.044 723 30
0.2595	0.067 340 25	0.067 332 62	0.000 755 72	0.033 668 85	0.000 188 94	0.044 896 17
0.2600	0.067 600 00	0.067 592 28	0.000 761 56	0.033 798 71	0.000 190 40	0.045 069 36
0.2605	0.067 860 25	0.067 852 44	0.000 767 44	0.033 928 82	0.000 191 87	0.045 242 90
0.2610	0.068 121 00	0.068 113 10	0.000 773 35	0.034 059 18	0.000 193 34	0.045 416 76
0.2615	0.068 382 25	0.068 374 26	0.000 779 29	0.034 189 79	0.000 194 83	0.045 590 96
0.2620	0.068 644 00	0.068 635 91	0.000 785 27	0.034 320 65	0.000 196 33	0.045 765 49
0.2625	0.068 906 25	0.068 898 07	0.000 791 28	0.034 451 76	0.000 197 83	0.045 940 36
0.2630	0.069 169 00	0.069 160 73	0.000 797 32	0.034 583 12	0.000 199 34	0.046 115 56
0.2635	0.069 432 25	0.069 423 88	0.000 803 40	0.034 714 73	0.000 200 86	0.046 291 09
0.2640	0.069 696 00	0.069 687 54	0.000 809 52	0.034 846 59	0.000 202 39	0.046 466 96
0.2645	0.069 960 25	0.069 951 69	0.000 815 67	0.034 978 70	0.000 203 93	0.046 643 16
0.2650	0.070 225 00	0.070 216 34	0.000 821 85	0.035 111 06	0.000 205 47	0.046 819 69
0.2655	0.070 490 25	0.070 481 49	0.000 828 07	0.035 243 67	0.000 207 03	0.046 996 56
0.2660	0.070 756 00	0.070 747 14	0.000 834 33	0.035 376 52	0.000 208 59	0.047 173 76
0.2665	0.071 022 25	0.071 013 29	0.000 840 62	0.035 509 63	0.000 210 16	0.047 351 29
0.2670	0.071 289 00	0.071 279 94	0.000 846 94	0.035 642 99	0.000 211 75	0.047 529 16
0.2675	0.071 556 25	0.071 547 09	0.000 853 30	0.035 776 60	0.000 213 34	0.047 707 37
0.2680	0.071 824 00	0.071 814 74	0.000 859 70	0.035 910 46	0.000 214 94	0.047 885 90
0.2685	0.072 092 25	0.072 082 88	0.000 866 14	0.036 044 56	0.000 216 54	0.048 064 77
0.2690	0.072 361 00	0.072 351 53	0.000 872 60	0.036 178 92	0.000 218 16	0.048 243 97
0.2695	0.072 630 25	0.072 620 67	0.000 879 11	0.036 313 53	0.000 219 79	0.048 423 51
0.2700	0.072 900 00	0.072 890 32	0.000 885 65	0.036 448 39	0.000 221 42	0.048 603 38
0.2705	0.073 170 25	0.073 160 46	0.000 892 23	0.036 583 49	0.000 223 07	0.048 783 59
0.2710	0.073 441 00	0.073 431 10	0.000 898 84	0.036 718 85	0.000 224 72	0.048 964 13
0.2715	0.073 712 25	0.073 702 24	0.000 905 49	0.036 854 46	0.000 226 38	0.049 145 00
0.2720	0.073 984 00	0.073 973 88	0.000 912 18	0.036 990 31	0.000 228 06	0.049 326 20
0.2725	0.074 256 25	0.074 246 01	0.000 918 91	0.037 126 42	0.000 229 74	0.049 507 74
0.2730	0.074 529 00	0.074 518 65	0.000 925 67	0.037 262 78	0.000 231 43	0.049 689 61
0.2735	0.074 802 25	0.074 791 79	0.000 932 47	0.037 399 38	0.000 233 13	0.049 871 82
0.2740	0.075 076 00	0.075 065 42	0.000 939 31	0.037 536 24	0.000 234 84	0.050 054 36
0.2745	0.075 350 25	0.075 339 56	0.000 946 18	0.037 673 34	0.000 236 56	0.050 237 24
0.2750	0.075 625 00	0.075 614 19	0.000 953 09	0.037 810 70	0.000 238 29	0.050 420 44
0.2755	0.075 900 25	0.075 889 32	0.000 960 04	0.037 948 30	0.000 240 02	0.050 603 98
0.2760	0.076 176 00	0.076 164 95	0.000 967 03	0.038 086 16	0.000 241 77	0.050 787 86
0.2765	0.076 452 25	0.076 441 08	0.000 974 06	0.038 224 26	0.000 243 53	0.050 972 07
0.2770	0.076 729 00	0.076 717 71	0.000 981 12	0.038 362 62	0.000 245 29	0.051 156 61
0.2775	0.077 006 25	0.076 994 83	0.000 988 22	0.038 501 22	0.000 247 07	0.051 341 49
0.2780	0.077 284 00	0.077 272 46	0.000 995 36	0.038 640 08	0.000 248 85	0.051 526 70
0.2785	0.077 562 25	0.077 550 59	0.001 002 54	0.038 779 18	0.000 250 65	0.051 712 24
0.2790	0.077 841 00	0.077 829 21	0.001 009 76	0.038 918 53	0.000 252 45	0.051 898 12
0.2795	0.078 120 25	0.078 108 33	0.001 017 02	0.039 058 14	0.000 254 27	0.052 084 33
0.2800	0.078 400 00	0.078 387 95	0.001 024 31	0.039 197 99	0.000 256 09	0.052 270 87

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
0.2405	0.019 201 62	0.057 838 10	1 39 25.2	0 33 8.4	0 33 8.4	0 0 0.0
0.2410	0.019 241 85	0.058 078 82	1 39 50.0	0 33 16.7	0 33 16.7	0 0 0.0
0.2415	0.019 442 32	0.058 320 05	1 40 14.9	0 33 25.0	0 33 25.0	0 0 0.0
0.2420	0.019 522 93	0.058 561 77	1 40 39.8	0 33 33.3	0 33 33.3	0 0 0.0
0.2425	0.019 603 70	0.058 803 99	1 41 4.8	0 33 41.6	0 33 41.6	0 0 0.0
0.2430	0.019 684 63	0.059 046 71	1 41 29.9	0 33 50.0	0 33 49.9	0 0 0.0
0.2435	0.019 765 74	0.059 289 93	1 41 55.0	0 33 58.3	0 33 58.3	0 0 0.0
0.2440	0.019 847 01	0.059 533 66	1 42 20.1	0 34 6.7	0 34 6.7	0 0 0.0
0.2445	0.019 928 45	0.059 777 88	1 42 45.3	0 34 15.1	0 34 15.1	0 0 0.0
0.2450	0.020 010 05	0.060 022 60	1 43 10.5	0 34 23.5	0 34 23.5	0 0 0.0
0.2455	0.020 091 82	0.060 267 82	1 43 35.8	0 34 31.9	0 34 31.9	0 0 0.0
0.2460	0.020 173 76	0.060 513 54	1 44 1.2	0 34 40.4	0 34 40.4	0 0 0.0
0.2465	0.020 255 86	0.060 759 76	1 44 26.6	0 34 48.8	0 34 48.8	0 0 0.0
0.2470	0.020 338 14	0.061 006 48	1 44 52.0	0 34 57.3	0 34 57.3	0 0 0.0
0.2475	0.020 420 57	0.061 253 70	1 45 17.5	0 35 5.8	0 35 5.8	0 0 0.0
0.2480	0.020 503 18	0.061 501 41	1 45 43.1	0 35 14.4	0 35 14.3	0 0 0.0
0.2485	0.020 585 95	0.061 749 63	1 46 8.7	0 35 22.9	0 35 22.9	0 0 0.0
0.2490	0.020 668 89	0.061 998 35	1 46 34.3	0 35 31.4	0 35 31.4	0 0 0.0
0.2495	0.020 752 00	0.062 247 57	1 47 0.0	0 35 40.0	0 35 40.0	0 0 0.0
0.2500	0.020 835 27	0.062 497 29	1 47 25.8	0 35 48.6	0 35 48.6	0 0 0.0
0.2505	0.020 918 71	0.062 747 50	1 47 51.6	0 35 57.2	0 35 57.2	0 0 0.0
0.2510	0.021 002 32	0.062 998 22	1 48 17.4	0 36 5.8	0 36 5.8	0 0 0.0
0.2515	0.021 086 09	0.063 249 44	1 48 43.4	0 36 14.5	0 36 14.4	0 0 0.0
0.2520	0.021 170 03	0.063 501 15	1 49 9.3	0 36 23.1	0 36 23.1	0 0 0.0
0.2525	0.021 254 14	0.063 753 37	1 49 35.3	0 36 31.8	0 36 31.8	0 0 0.0
0.2530	0.021 338 41	0.064 006 09	1 50 1.4	0 36 40.5	0 36 40.4	0 0 0.0
0.2535	0.021 422 86	0.064 259 30	1 50 27.5	0 36 49.2	0 36 49.2	0 0 0.0
0.2540	0.021 507 46	0.064 513 02	1 50 53.7	0 36 57.9	0 36 57.9	0 0 0.0
0.2545	0.021 592 24	0.064 767 23	1 51 19.9	0 37 6.6	0 37 6.6	0 0 0.0
0.2550	0.021 677 18	0.065 021 95	1 51 46.2	0 37 15.4	0 37 15.4	0 0 0.0
0.2555	0.021 762 29	0.065 277 16	1 52 12.5	0 37 24.2	0 37 24.1	0 0 0.0
0.2560	0.021 847 57	0.065 532 87	1 52 38.9	0 37 33.0	0 37 32.9	0 0 0.0
0.2565	0.021 933 01	0.065 789 09	1 53 5.3	0 37 41.8	0 37 41.8	0 0 0.0
0.2570	0.022 018 62	0.066 045 80	1 53 31.8	0 37 50.6	0 37 50.6	0 0 0.0
0.2575	0.022 104 40	0.066 303 01	1 53 58.3	0 37 59.4	0 37 59.4	0 0 0.0
0.2580	0.022 190 34	0.066 560 72	1 54 24.9	0 38 8.3	0 38 8.3	0 0 0.0
0.2585	0.022 276 45	0.066 818 93	1 54 51.5	0 38 17.2	0 38 17.2	0 0 0.0
0.2590	0.022 362 73	0.067 077 65	1 55 18.2	0 38 26.1	0 38 26.1	0 0 0.0
0.2595	0.022 449 17	0.067 336 86	1 55 45.0	0 38 35.0	0 38 35.0	0 0 0.0
0.2600	0.022 535 79	0.067 596 57	1 56 11.8	0 38 43.9	0 38 43.9	0 0 0.0
0.2605	0.022 622 56	0.067 856 78	1 56 38.6	0 38 52.9	0 38 52.8	0 0 0.0
0.2610	0.022 709 51	0.068 117 49	1 57 5.5	0 39 1.8	0 39 1.8	0 0 0.0
0.2615	0.022 796 62	0.068 378 70	1 57 32.4	0 39 10.8	0 39 10.8	0 0 0.0
0.2620	0.022 883 90	0.068 640 41	1 57 59.4	0 39 19.8	0 39 19.8	0 0 0.0
0.2625	0.022 971 35	0.068 902 61	1 58 26.5	0 39 28.8	0 39 28.8	0 0 0.0
0.2630	0.023 058 96	0.069 165 32	1 58 53.6	0 39 37.9	0 39 37.8	0 0 0.0
0.2635	0.023 146 74	0.069 428 53	1 59 20.7	0 39 46.9	0 39 46.9	0 0 0.0
0.2640	0.023 234 69	0.069 692 24	1 59 47.9	0 39 56.0	0 39 55.9	0 0 0.0
0.2645	0.023 322 80	0.069 956 45	2 0 15.2	0 40 5.1	0 40 5.0	0 0 0.0
0.2650	0.023 411 08	0.070 221 15	2 0 42.5	0 40 14.2	0 40 14.1	0 0 0.0
0.2655	0.023 499 53	0.070 486 36	2 1 9.8	0 40 23.3	0 40 23.3	0 0 0.0
0.2660	0.023 588 15	0.070 752 06	2 1 37.2	0 40 32.4	0 40 32.4	0 0 0.0
0.2665	0.023 676 93	0.071 018 27	2 2 4.7	0 40 41.6	0 40 41.5	0 0 0.0
0.2670	0.023 765 88	0.071 284 97	2 2 32.2	0 40 50.7	0 40 50.7	0 0 0.0
0.2675	0.023 854 99	0.071 552 18	2 2 59.8	0 40 59.9	0 40 59.9	0 0 0.0
0.2680	0.023 944 27	0.071 819 88	2 3 27.4	0 41 9.1	0 41 9.1	0 0 0.0
0.2685	0.024 033 72	0.072 088 09	2 3 55.0	0 41 18.3	0 41 18.3	0 0 0.0
0.2690	0.024 123 34	0.072 356 79	2 4 22.8	0 41 27.6	0 41 27.6	0 0 0.0
0.2695	0.024 213 12	0.072 625 99	2 4 50.5	0 41 36.8	0 41 36.8	0 0 0.0
0.2700	0.024 303 08	0.072 895 70	2 5 18.4	0 41 46.1	0 41 46.1	0 0 0.0
0.2705	0.024 393 19	0.073 165 90	2 5 46.2	0 41 55.4	0 41 55.4	0 0 0.0
0.2710	0.024 483 48	0.073 436 60	2 6 14.1	0 42 4.7	0 42 4.7	0 0 0.0
0.2715	0.024 573 93	0.073 707 80	2 6 42.1	0 42 14.0	0 42 14.0	0 0 0.0
0.2720	0.024 664 55	0.073 979 50	2 7 10.1	0 42 23.4	0 42 23.4	0 0 0.0
0.2725	0.024 755 33	0.074 251 70	2 7 38.2	0 42 32.7	0 42 32.7	0 0 0.0
0.2730	0.024 846 25	0.074 524 40	2 8 6.4	0 42 42.1	0 42 42.1	0 0 0.0
0.2735	0.024 937 41	0.074 797 60	2 8 34.5	0 42 51.5	0 42 51.5	0 0 0.0
0.2740	0.025 028 69	0.075 071 30	2 9 2.8	0 43 0.9	0 43 0.9	0 0 0.0
0.2745	0.025 120 15	0.075 345 50	2 9 31.1	0 43 10.4	0 43 10.3	0 0 0.0
0.2750	0.025 211 77	0.075 620 19	2 9 59.4	0 43 19.8	0 43 19.8	0 0 0.0
0.2755	0.025 303 55	0.075 895 39	2 10 27.8	0 43 29.3	0 43 29.2	0 0 0.0
0.2760	0.025 395 51	0.076 171 09	2 10 56.2	0 43 38.7	0 43 38.7	0 0 0.0
0.2765	0.025 487 63	0.076 447 29	2 11 24.7	0 43 48.2	0 43 48.2	0 0 0.0
0.2770	0.025 579 92	0.076 723 98	2 11 53.2	0 43 57.7	0 43 57.7	0 0 0.0
0.2775	0.025 672 37	0.077 001 18	2 12 21.8	0 44 7.3	0 44 7.2	0 0 0.0
0.2780	0.025 765 00	0.077 278 87	2 12 50.5	0 44 16.8	0 44 16.8	0 0 0.0
0.2785	0.025 857 79	0.077 557 07	2 13 19.2	0 44 26.4	0 44 26.4	0 0 0.0
0.2790	0.025 950 74	0.077 835 76	2 13 47.9	0 44 36.0	0 44 35.9	0 0 0.0
0.2795	0.026 043 87	0.078 114 95	2 14 16.7	0 44 45.6	0 44 45.5	0 0 0.0
0.2800	0.026 137 16	0.078 394 65	2 14 45.6	0 44 55.2	0 44 55.2	0 0 0.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.2805	0.078 680 25	0.078 668 07	0.001 031 65	0.039 338 10	0.000 257 93	0.052 457 75
0.2810	0.078 961 00	0.078 948 69	0.001 039 02	0.039 478 45	0.000 259 77	0.052 644 97
0.2815	0.079 242 25	0.079 229 81	0.001 046 44	0.039 619 05	0.000 261 62	0.052 832 51
0.2820	0.079 524 00	0.079 511 43	0.001 053 89	0.039 759 90	0.000 263 49	0.053 020 39
0.2825	0.079 806 25	0.079 793 54	0.001 061 39	0.039 901 01	0.000 265 36	0.053 208 60
0.2830	0.080 089 00	0.080 076 16	0.001 068 92	0.040 042 36	0.000 267 25	0.053 397 15
0.2835	0.080 372 25	0.080 359 27	0.001 076 49	0.040 183 96	0.000 269 14	0.053 586 03
0.2840	0.080 656 00	0.080 642 88	0.001 084 11	0.040 325 81	0.000 271 04	0.053 775 25
0.2845	0.080 940 25	0.080 926 99	0.001 091 76	0.040 467 92	0.000 272 96	0.053 964 80
0.2850	0.081 225 00	0.081 211 60	0.001 099 45	0.040 610 27	0.000 274 88	0.054 154 68
0.2855	0.081 510 25	0.081 496 71	0.001 107 19	0.040 752 87	0.000 276 81	0.054 344 90
0.2860	0.081 796 00	0.081 782 32	0.001 114 96	0.040 895 72	0.000 278 76	0.054 535 45
0.2865	0.082 082 25	0.082 068 43	0.001 122 78	0.041 038 82	0.000 280 71	0.054 726 33
0.2870	0.082 369 00	0.082 355 03	0.001 130 64	0.041 182 17	0.000 282 68	0.054 917 55
0.2875	0.082 656 25	0.082 642 13	0.001 138 54	0.041 325 77	0.000 284 65	0.055 109 10
0.2880	0.082 944 00	0.082 929 74	0.001 146 48	0.041 469 62	0.000 286 64	0.055 300 98
0.2885	0.083 232 25	0.083 217 84	0.001 154 46	0.041 613 72	0.000 288 63	0.055 493 20
0.2890	0.083 521 00	0.083 506 44	0.001 162 48	0.041 758 07	0.000 290 64	0.055 685 75
0.2895	0.083 810 25	0.083 795 53	0.001 170 55	0.041 902 67	0.000 292 65	0.055 878 64
0.2900	0.084 100 00	0.084 085 13	0.001 178 65	0.042 047 52	0.000 294 68	0.056 071 86
0.2905	0.084 390 25	0.084 375 23	0.001 186 80	0.042 192 62	0.000 296 72	0.056 265 41
0.2910	0.084 681 00	0.084 665 82	0.001 194 99	0.042 337 97	0.000 298 77	0.056 459 30
0.2915	0.084 972 25	0.084 956 91	0.001 203 23	0.042 483 57	0.000 300 83	0.056 653 52
0.2920	0.085 264 00	0.085 248 50	0.001 211 50	0.042 629 42	0.000 302 89	0.056 848 08
0.2925	0.085 556 25	0.085 540 59	0.001 219 82	0.042 775 52	0.000 304 97	0.057 042 97
0.2930	0.085 849 00	0.085 833 18	0.001 228 18	0.042 921 86	0.000 307 07	0.057 238 19
0.2935	0.086 142 25	0.086 126 27	0.001 236 58	0.043 068 46	0.000 309 17	0.057 433 75
0.2940	0.086 436 00	0.086 419 86	0.001 245 03	0.043 215 31	0.000 311 28	0.057 629 64
0.2945	0.086 730 25	0.086 713 94	0.001 253 52	0.043 362 41	0.000 313 40	0.057 825 86
0.2950	0.087 025 00	0.087 008 52	0.001 262 05	0.043 509 75	0.000 315 53	0.058 022 42
0.2955	0.087 320 25	0.087 303 61	0.001 270 63	0.043 657 35	0.000 317 68	0.058 219 31
0.2960	0.087 616 00	0.087 599 19	0.001 279 25	0.043 805 20	0.000 319 83	0.058 416 54
0.2965	0.087 912 25	0.087 895 27	0.001 287 92	0.043 953 29	0.000 322 00	0.058 614 10
0.2970	0.088 209 00	0.088 191 84	0.001 296 62	0.044 101 64	0.000 324 18	0.058 811 99
0.2975	0.088 506 25	0.088 488 92	0.001 305 38	0.044 250 24	0.000 326 37	0.059 010 22
0.2980	0.088 804 00	0.088 786 49	0.001 314 17	0.044 399 08	0.000 328 57	0.059 208 78
0.2985	0.089 102 25	0.089 084 57	0.001 323 01	0.044 548 18	0.000 330 78	0.059 407 68
0.2990	0.089 401 00	0.089 383 14	0.001 331 90	0.044 697 52	0.000 333 00	0.059 606 91
0.2995	0.089 700 25	0.089 682 21	0.001 340 83	0.044 847 12	0.000 335 23	0.059 806 47
0.3000	0.090 000 00	0.089 981 78	0.001 349 80	0.044 996 96	0.000 337 48	0.060 006 37
0.3005	0.090 300 25	0.090 281 84	0.001 358 82	0.045 147 06	0.000 339 73	0.060 206 60
0.3010	0.090 601 00	0.090 582 41	0.001 367 89	0.045 297 40	0.000 342 00	0.060 407 16
0.3015	0.090 902 25	0.090 883 47	0.001 377 00	0.045 448 00	0.000 344 28	0.060 608 06
0.3020	0.091 204 00	0.091 185 04	0.001 386 16	0.045 598 84	0.000 346 56	0.060 809 29
0.3025	0.091 506 25	0.091 487 10	0.001 395 36	0.045 749 93	0.000 348 87	0.061 010 86
0.3030	0.091 809 00	0.091 789 66	0.001 404 60	0.045 901 28	0.000 351 18	0.061 212 76
0.3035	0.092 112 25	0.092 092 71	0.001 413 90	0.046 052 87	0.000 353 50	0.061 414 99
0.3040	0.092 416 00	0.092 396 27	0.001 423 24	0.046 204 71	0.000 355 84	0.061 617 56
0.3045	0.092 720 25	0.092 700 32	0.001 432 62	0.046 356 80	0.000 358 18	0.061 820 46
0.3050	0.093 025 00	0.093 004 88	0.001 442 05	0.046 509 15	0.000 360 54	0.062 023 70
0.3055	0.093 330 25	0.093 309 93	0.001 451 53	0.046 661 74	0.000 362 91	0.062 227 27
0.3060	0.093 636 00	0.093 615 48	0.001 461 05	0.046 814 58	0.000 365 29	0.062 431 17
0.3065	0.093 942 25	0.093 921 53	0.001 470 63	0.046 967 67	0.000 367 69	0.062 635 41
0.3070	0.094 249 00	0.094 228 07	0.001 480 24	0.047 121 01	0.000 370 09	0.062 839 98
0.3075	0.094 556 25	0.094 535 12	0.001 489 91	0.047 274 60	0.000 372 51	0.063 044 88
0.3080	0.094 864 00	0.094 842 66	0.001 499 62	0.047 428 44	0.000 374 94	0.063 250 12
0.3085	0.095 172 25	0.095 150 70	0.001 509 38	0.047 582 53	0.000 377 38	0.063 455 69
0.3090	0.095 481 00	0.095 459 24	0.001 519 19	0.047 736 87	0.000 379 83	0.063 661 60
0.3095	0.095 790 25	0.095 768 28	0.001 529 04	0.047 891 46	0.000 382 29	0.063 867 84
0.3100	0.096 100 00	0.096 077 81	0.001 538 95	0.048 046 30	0.000 384 77	0.064 074 42
0.3105	0.096 410 25	0.096 387 85	0.001 548 90	0.048 201 39	0.000 387 26	0.064 281 33
0.3110	0.096 721 00	0.096 698 38	0.001 558 90	0.048 356 73	0.000 389 76	0.064 488 57
0.3115	0.097 032 25	0.097 009 41	0.001 568 95	0.048 512 32	0.000 392 27	0.064 696 14
0.3120	0.097 344 00	0.097 320 94	0.001 579 04	0.048 668 16	0.000 394 79	0.064 904 05
0.3125	0.097 656 25	0.097 632 97	0.001 589 19	0.048 824 24	0.000 397 33	0.065 112 30
0.3130	0.097 969 00	0.097 945 50	0.001 599 38	0.048 980 58	0.000 399 88	0.065 320 88
0.3135	0.098 282 25	0.098 258 52	0.001 609 62	0.049 137 17	0.000 402 44	0.065 529 79
0.3140	0.098 596 00	0.098 572 04	0.001 619 91	0.049 294 01	0.000 405 01	0.065 739 04
0.3145	0.098 910 25	0.098 886 06	0.001 630 25	0.049 451 09	0.000 407 60	0.065 948 62
0.3150	0.099 225 00	0.099 200 58	0.001 640 64	0.049 608 43	0.000 410 20	0.066 158 53
0.3155	0.099 540 25	0.099 515 60	0.001 651 08	0.049 766 02	0.000 412 81	0.066 368 78
0.3160	0.099 856 00	0.099 831 11	0.001 661 57	0.049 923 85	0.000 415 43	0.066 579 36
0.3165	0.100 172 25	0.100 147 12	0.001 672 11	0.050 081 94	0.000 418 07	0.066 790 28
0.3170	0.100 489 00	0.100 463 63	0.001 682 70	0.050 240 27	0.000 420 71	0.067 001 53
0.3175	0.100 806 25	0.100 780 64	0.001 693 34	0.050 398 86	0.000 423 37	0.067 213 11
0.3180	0.101 124 00	0.101 098 15	0.001 704 03	0.050 557 69	0.000 426 05	0.067 425 03
0.3185	0.101 442 25	0.101 416 16	0.001 714 77	0.050 716 78	0.000 428 73	0.067 637 28
0.3190	0.101 761 00	0.101 734 66	0.001 725 56	0.050 876 11	0.000 431 43	0.067 849 87
0.3195	0.102 080 25	0.102 053 66	0.001 736 41	0.051 035 69	0.000 434 14	0.068 062 79
0.3200	0.102 400 00	0.102 373 16	0.001 747 30	0.051 195 53	0.000 436 87	0.068 276 04

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC	DEG MNT SEC	
0.2805	0.026 230 62	0.078 674 84	2 15 14.5	0 45 4.8	0 45 4.8	0 0 0.0
0.2810	0.026 324 24	0.078 955 53	2 15 43.4	0 45 14.5	0 45 14.4	0 0 0.0
0.2815	0.026 418 03	0.079 236 72	2 16 12.4	0 45 24.1	0 45 24.1	0 0 0.0
0.2820	0.026 511 99	0.079 518 41	2 16 41.5	0 45 33.8	0 45 33.8	0 0 0.0
0.2825	0.026 606 12	0.079 800 60	2 17 10.6	0 45 43.5	0 45 43.5	0 0 0.0
0.2830	0.026 700 41	0.080 083 29	2 17 39.8	0 45 53.3	0 45 53.2	0 0 0.0
0.2835	0.026 794 87	0.080 366 48	2 18 9.0	0 46 3.0	0 46 3.0	0 0 0.0
0.2840	0.026 889 50	0.080 650 17	2 18 38.2	0 46 12.7	0 46 12.7	0 0 0.0
0.2845	0.026 984 25	0.080 934 36	2 19 7.6	0 46 22.5	0 46 22.5	0 0 0.0
0.2850	0.027 079 25	0.081 219 05	2 19 36.9	0 46 32.3	0 46 32.3	0 0 0.0
0.2855	0.027 174 38	0.081 504 23	2 20 6.3	0 46 42.1	0 46 42.1	0 0 0.0
0.2860	0.027 269 68	0.081 789 92	2 20 35.8	0 46 51.9	0 46 51.9	0 0 0.0
0.2865	0.027 365 14	0.082 076 11	2 21 5.3	0 47 1.8	0 47 1.7	0 0 0.0
0.2870	0.027 460 77	0.082 362 79	2 21 34.9	0 47 11.6	0 47 11.6	0 0 0.0
0.2875	0.027 556 57	0.082 649 98	2 22 4.5	0 47 21.5	0 47 21.5	0 0 0.0
0.2880	0.027 652 53	0.082 937 66	2 22 34.2	0 47 31.4	0 47 31.4	0 0 0.0
0.2885	0.027 748 66	0.083 225 84	2 23 3.9	0 47 41.3	0 47 41.3	0 0 0.0
0.2890	0.027 844 96	0.083 514 53	2 23 33.7	0 47 51.2	0 47 51.2	0 0 0.0
0.2895	0.027 941 42	0.083 803 71	2 24 3.6	0 48 1.2	0 48 1.1	0 0 0.0
0.2900	0.028 038 06	0.084 093 39	2 24 33.4	0 48 11.1	0 48 11.1	0 0 0.0
0.2905	0.028 134 85	0.084 383 57	2 25 3.4	0 48 21.1	0 48 21.1	0 0 0.0
0.2910	0.028 231 82	0.084 674 25	2 25 33.4	0 48 31.1	0 48 31.1	0 0 0.0
0.2915	0.028 328 95	0.084 965 43	2 26 3.4	0 48 41.1	0 48 41.1	0 0 0.0
0.2920	0.028 426 25	0.085 257 11	2 26 33.5	0 48 51.2	0 48 51.1	0 0 0.0
0.2925	0.028 523 72	0.085 549 29	2 27 3.6	0 49 1.2	0 49 1.2	0 0 0.0
0.2930	0.028 621 36	0.085 841 97	2 27 33.8	0 49 11.3	0 49 11.2	0 0 0.0
0.2935	0.028 719 16	0.086 135 15	2 28 4.1	0 49 21.4	0 49 21.3	0 0 0.0
0.2940	0.028 817 13	0.086 428 82	2 28 34.4	0 49 31.5	0 49 31.4	0 0 0.0
0.2945	0.028 915 26	0.086 723 00	2 29 4.7	0 49 41.6	0 49 41.5	0 0 0.0
0.2950	0.029 013 57	0.087 017 68	2 29 35.1	0 49 51.7	0 49 51.7	0 0 0.0
0.2955	0.029 112 04	0.087 312 85	2 30 5.5	0 50 1.8	0 50 1.8	0 0 0.0
0.2960	0.029 210 67	0.087 608 53	2 30 36.0	0 50 12.0	0 50 12.0	0 0 0.0
0.2965	0.029 309 48	0.087 904 70	2 31 6.6	0 50 22.2	0 50 22.2	0 0 0.0
0.2970	0.029 408 45	0.088 201 37	2 31 37.2	0 50 32.4	0 50 32.4	0 0 0.0
0.2975	0.029 507 59	0.088 498 55	2 32 7.9	0 50 42.6	0 50 42.6	0 0 0.1
0.2980	0.029 606 89	0.088 796 22	2 32 38.6	0 50 52.9	0 50 52.8	0 0 0.1
0.2985	0.029 706 37	0.089 094 39	2 33 9.3	0 51 3.1	0 51 3.1	0 0 0.1
0.2990	0.029 806 01	0.089 393 06	2 33 40.1	0 51 13.4	0 51 13.3	0 0 0.1
0.2995	0.029 905 81	0.089 692 23	2 34 11.0	0 51 23.7	0 51 23.6	0 0 0.1
0.3000	0.030 005 79	0.089 991 90	2 34 41.9	0 51 34.0	0 51 33.9	0 0 0.1
0.3005	0.030 105 93	0.090 292 07	2 35 12.9	0 51 44.3	0 51 44.2	0 0 0.1
0.3010	0.030 206 24	0.090 592 74	2 35 43.9	0 51 54.6	0 51 54.6	0 0 0.1
0.3015	0.030 306 71	0.090 893 90	2 36 15.0	0 52 5.0	0 52 4.9	0 0 0.1
0.3020	0.030 407 36	0.091 195 57	2 36 46.1	0 52 15.4	0 52 15.3	0 0 0.1
0.3025	0.030 508 17	0.091 497 74	2 37 17.3	0 52 25.8	0 52 25.7	0 0 0.1
0.3030	0.030 609 14	0.091 800 40	2 37 48.5	0 52 36.2	0 52 36.1	0 0 0.1
0.3035	0.030 710 29	0.092 103 57	2 38 19.8	0 52 46.6	0 52 46.5	0 0 0.1
0.3040	0.030 811 60	0.092 407 23	2 38 51.1	0 52 57.0	0 52 57.0	0 0 0.1
0.3045	0.030 913 08	0.092 711 39	2 39 22.5	0 53 7.5	0 53 7.4	0 0 0.1
0.3050	0.031 014 72	0.093 016 06	2 39 53.9	0 53 18.0	0 53 17.9	0 0 0.1
0.3055	0.031 116 54	0.093 321 22	2 40 25.4	0 53 28.5	0 53 28.4	0 0 0.1
0.3060	0.031 218 52	0.093 626 88	2 40 56.9	0 53 39.0	0 53 38.9	0 0 0.1
0.3065	0.031 320 66	0.093 933 04	2 41 28.5	0 53 49.5	0 53 49.4	0 0 0.1
0.3070	0.031 422 98	0.094 239 70	2 42 0.1	0 54 0.0	0 53 60.0	0 0 0.1
0.3075	0.031 525 46	0.094 546 86	2 42 31.8	0 54 10.6	0 54 10.5	0 0 0.1
0.3080	0.031 628 11	0.094 854 51	2 43 3.6	0 54 21.2	0 54 21.1	0 0 0.1
0.3085	0.031 730 93	0.095 162 67	2 43 35.3	0 54 31.8	0 54 31.7	0 0 0.1
0.3090	0.031 833 91	0.095 471 33	2 44 7.2	0 54 42.4	0 54 42.3	0 0 0.1
0.3095	0.031 937 06	0.095 780 48	2 44 39.1	0 54 53.0	0 54 53.0	0 0 0.1
0.3100	0.032 040 38	0.096 090 14	2 45 11.0	0 55 3.7	0 55 3.6	0 0 0.1
0.3105	0.032 143 86	0.096 400 29	2 45 43.0	0 55 14.3	0 55 14.3	0 0 0.1
0.3110	0.032 247 52	0.096 710 95	2 46 15.1	0 55 25.0	0 55 25.0	0 0 0.1
0.3115	0.032 351 34	0.097 022 10	2 46 47.2	0 55 35.7	0 55 35.7	0 0 0.1
0.3120	0.032 455 32	0.097 333 75	2 47 19.3	0 55 46.4	0 55 46.4	0 0 0.1
0.3125	0.032 559 48	0.097 645 90	2 47 51.5	0 55 57.2	0 55 57.1	0 0 0.1
0.3130	0.032 663 80	0.097 958 55	2 48 23.8	0 56 7.9	0 56 7.9	0 0 0.1
0.3135	0.032 768 29	0.098 271 70	2 48 56.1	0 56 18.7	0 56 18.6	0 0 0.1
0.3140	0.032 872 94	0.098 585 35	2 49 28.4	0 56 29.5	0 56 29.4	0 0 0.1
0.3145	0.032 977 77	0.098 899 50	2 50 0.9	0 56 40.3	0 56 40.2	0 0 0.1
0.3150	0.033 082 76	0.099 214 15	2 50 33.3	0 56 51.1	0 56 51.0	0 0 0.1
0.3155	0.033 187 91	0.099 529 29	2 51 5.8	0 57 1.9	0 57 1.9	0 0 0.1
0.3160	0.033 293 24	0.099 844 94	2 51 38.4	0 57 12.8	0 57 12.7	0 0 0.1
0.3165	0.033 398 73	0.100 161 08	2 52 11.0	0 57 23.7	0 57 23.6	0 0 0.1
0.3170	0.033 504 39	0.100 477 73	2 52 43.7	0 57 34.6	0 57 34.5	0 0 0.1
0.3175	0.033 610 22	0.100 794 87	2 53 16.4	0 57 45.5	0 57 45.4	0 0 0.1
0.3180	0.033 716 21	0.101 112 51	2 53 49.2	0 57 56.4	0 57 56.3	0 0 0.1
0.3185	0.033 822 37	0.101 430 65	2 54 22.0	0 58 7.3	0 58 7.3	0 0 0.1
0.3190	0.033 928 70	0.101 749 29	2 54 54.9	0 58 18.3	0 58 18.2	0 0 0.1
0.3195	0.034 035 19	0.102 068 43	2 55 27.8	0 58 29.3	0 58 29.2	0 0 0.1
0.3200	0.034 141 86	0.102 388 07	2 56 0.8	0 58 40.3	0 58 40.2	0 0 0.1

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.3205	0.102 720 25	0.102 693 16	0.001 758 24	0.051 355 61	0.000 439 60	0.068 409 63
0.3210	0.103 041 00	0.103 013 65	0.001 769 24	0.051 515 94	0.000 442 35	0.068 703 55
0.3215	0.103 362 25	0.103 334 65	0.001 780 29	0.051 676 52	0.000 445 11	0.068 917 81
0.3220	0.103 684 00	0.103 656 14	0.001 791 38	0.051 837 36	0.000 447 89	0.069 132 40
0.3225	0.104 006 25	0.103 978 13	0.001 802 54	0.051 998 44	0.000 450 68	0.069 347 32
0.3230	0.104 329 00	0.104 300 61	0.001 813 74	0.052 159 77	0.000 453 48	0.069 562 58
0.3235	0.104 652 25	0.104 623 60	0.001 824 99	0.052 321 35	0.000 456 29	0.069 778 18
0.3240	0.104 976 00	0.104 947 08	0.001 836 30	0.052 483 18	0.000 459 12	0.069 994 10
0.3245	0.105 300 25	0.105 271 06	0.001 847 66	0.052 645 26	0.000 461 96	0.070 210 36
0.3250	0.105 625 00	0.105 595 54	0.001 859 07	0.052 807 59	0.000 464 81	0.070 426 96
0.3255	0.105 950 25	0.105 920 52	0.001 870 53	0.052 970 17	0.000 467 68	0.070 643 89
0.3260	0.106 276 00	0.106 246 00	0.001 882 05	0.053 133 00	0.000 470 56	0.070 861 15
0.3265	0.106 602 25	0.106 571 97	0.001 893 62	0.053 296 08	0.000 473 45	0.071 078 75
0.3270	0.106 929 00	0.106 898 44	0.001 905 25	0.053 459 41	0.000 476 36	0.071 296 68
0.3275	0.107 256 25	0.107 225 41	0.001 916 92	0.053 622 98	0.000 479 28	0.071 514 94
0.3280	0.107 584 00	0.107 552 87	0.001 928 65	0.053 786 81	0.000 482 21	0.071 733 54
0.3285	0.107 912 25	0.107 880 84	0.001 940 44	0.053 950 89	0.000 485 16	0.071 952 47
0.3290	0.108 241 00	0.108 209 30	0.001 952 28	0.054 115 22	0.000 488 12	0.072 171 74
0.3295	0.108 570 25	0.108 538 26	0.001 964 17	0.054 279 79	0.000 491 09	0.072 391 34
0.3300	0.108 900 00	0.108 867 72	0.001 976 12	0.054 444 62	0.000 494 08	0.072 611 28
0.3305	0.109 230 25	0.109 197 67	0.001 988 12	0.054 609 70	0.000 497 08	0.072 831 55
0.3310	0.109 561 00	0.109 528 13	0.002 000 17	0.054 775 02	0.000 500 10	0.073 052 15
0.3315	0.109 892 25	0.109 859 08	0.002 012 28	0.054 940 60	0.000 503 13	0.073 273 09
0.3320	0.110 224 00	0.110 190 53	0.002 024 45	0.055 106 42	0.000 506 17	0.073 494 36
0.3325	0.110 556 25	0.110 522 47	0.002 036 67	0.055 272 50	0.000 509 22	0.073 715 97
0.3330	0.110 889 00	0.110 854 92	0.002 048 95	0.055 438 82	0.000 512 29	0.073 937 91
0.3335	0.111 222 25	0.111 187 86	0.002 061 28	0.055 605 39	0.000 515 38	0.074 160 18
0.3340	0.111 556 00	0.111 521 30	0.002 073 66	0.055 772 22	0.000 518 47	0.074 382 79
0.3345	0.111 890 25	0.111 855 24	0.002 086 10	0.055 939 29	0.000 521 58	0.074 605 73
0.3350	0.112 225 00	0.112 189 67	0.002 098 60	0.056 106 61	0.000 524 71	0.074 829 01
0.3355	0.112 560 25	0.112 524 60	0.002 111 16	0.056 274 18	0.000 527 85	0.075 052 62
0.3360	0.112 896 00	0.112 860 03	0.002 123 77	0.056 442 01	0.000 531 00	0.075 276 57
0.3365	0.113 232 25	0.113 195 96	0.002 136 43	0.056 610 08	0.000 534 17	0.075 500 85
0.3370	0.113 569 00	0.113 532 39	0.002 149 16	0.056 778 40	0.000 537 35	0.075 725 46
0.3375	0.113 906 25	0.113 869 31	0.002 161 94	0.056 946 97	0.000 540 55	0.075 950 41
0.3380	0.114 244 00	0.114 206 73	0.002 174 77	0.057 115 79	0.000 543 76	0.076 175 69
0.3385	0.114 582 25	0.114 544 65	0.002 187 67	0.057 284 86	0.000 546 98	0.076 401 30
0.3390	0.114 921 00	0.114 883 06	0.002 200 62	0.057 454 18	0.000 550 22	0.076 627 25
0.3395	0.115 260 25	0.115 221 98	0.002 213 63	0.057 623 75	0.000 553 47	0.076 853 54
0.3400	0.115 600 00	0.115 561 39	0.002 226 70	0.057 793 56	0.000 556 74	0.077 080 16
0.3405	0.115 940 25	0.115 901 29	0.002 239 82	0.057 963 63	0.000 560 02	0.077 307 11
0.3410	0.116 281 00	0.116 241 70	0.002 253 00	0.058 133 95	0.000 563 32	0.077 534 40
0.3415	0.116 622 25	0.116 582 60	0.002 266 24	0.058 304 52	0.000 566 63	0.077 762 02
0.3420	0.116 964 00	0.116 924 00	0.002 279 54	0.058 475 33	0.000 569 95	0.077 989 97
0.3425	0.117 306 25	0.117 265 90	0.002 292 90	0.058 646 40	0.000 573 29	0.078 218 26
0.3430	0.117 649 00	0.117 608 30	0.002 306 31	0.058 817 72	0.000 576 65	0.078 446 89
0.3435	0.117 992 25	0.117 951 19	0.002 319 79	0.058 989 28	0.000 580 02	0.078 675 85
0.3440	0.118 336 00	0.118 294 58	0.002 333 32	0.059 161 10	0.000 583 40	0.078 905 14
0.3445	0.118 680 25	0.118 638 47	0.002 346 91	0.059 333 16	0.000 586 80	0.079 134 77
0.3450	0.119 025 00	0.118 982 85	0.002 360 56	0.059 505 47	0.000 590 21	0.079 364 73
0.3455	0.119 370 25	0.119 327 73	0.002 374 27	0.059 678 04	0.000 593 64	0.079 595 02
0.3460	0.119 716 00	0.119 673 11	0.002 388 04	0.059 850 85	0.000 597 09	0.079 825 65
0.3465	0.120 062 25	0.120 018 99	0.002 401 87	0.060 023 91	0.000 600 55	0.080 056 61
0.3470	0.120 409 00	0.120 365 36	0.002 415 76	0.060 197 23	0.000 604 02	0.080 287 91
0.3475	0.120 756 25	0.120 712 24	0.002 429 71	0.060 370 79	0.000 607 51	0.080 519 54
0.3480	0.121 104 00	0.121 059 60	0.002 443 72	0.060 544 60	0.000 611 01	0.080 751 51
0.3485	0.121 452 25	0.121 407 47	0.002 457 79	0.060 718 66	0.000 614 53	0.080 983 81
0.3490	0.121 801 00	0.121 755 83	0.002 471 93	0.060 892 97	0.000 618 06	0.081 216 45
0.3495	0.122 150 25	0.122 104 69	0.002 486 12	0.061 067 53	0.000 621 61	0.081 449 42
0.3500	0.122 500 00	0.122 454 05	0.002 500 37	0.061 242 34	0.000 625 18	0.081 682 72
0.3505	0.122 850 25	0.122 803 91	0.002 514 69	0.061 417 40	0.000 628 76	0.081 916 36
0.3510	0.123 201 00	0.123 154 26	0.002 529 06	0.061 592 71	0.000 632 35	0.082 150 33
0.3515	0.123 552 25	0.123 505 11	0.002 543 50	0.061 768 27	0.000 635 96	0.082 384 64
0.3520	0.123 904 00	0.123 856 45	0.002 558 00	0.061 944 08	0.000 639 59	0.082 619 28
0.3525	0.124 256 25	0.124 208 30	0.002 572 56	0.062 120 13	0.000 643 23	0.082 854 25
0.3530	0.124 609 00	0.124 560 64	0.002 587 18	0.062 296 44	0.000 646 89	0.083 089 56
0.3535	0.124 962 25	0.124 913 47	0.002 601 87	0.062 473 00	0.000 650 56	0.083 325 21
0.3540	0.125 316 00	0.125 266 81	0.002 616 62	0.062 649 80	0.000 654 25	0.083 561 19
0.3545	0.125 670 25	0.125 620 64	0.002 631 43	0.062 826 86	0.000 657 95	0.083 797 50
0.3550	0.126 025 00	0.125 974 97	0.002 646 30	0.063 004 16	0.000 661 67	0.084 034 15
0.3555	0.126 380 25	0.126 329 80	0.002 661 24	0.063 181 72	0.000 665 40	0.084 271 13
0.3560	0.126 736 00	0.126 685 12	0.002 676 23	0.063 359 52	0.000 669 15	0.084 508 44
0.3565	0.127 092 25	0.127 040 94	0.002 691 30	0.063 537 57	0.000 672 92	0.084 746 10
0.3570	0.127 449 00	0.127 397 26	0.002 706 42	0.063 715 88	0.000 676 70	0.084 984 08
0.3575	0.127 806 25	0.127 754 07	0.002 721 61	0.063 894 43	0.000 680 50	0.085 222 40
0.3580	0.128 164 00	0.128 111 38	0.002 736 87	0.064 073 23	0.000 684 32	0.085 461 05
0.3585	0.128 522 25	0.128 469 19	0.002 752 18	0.064 252 28	0.000 688 15	0.085 700 04
0.3590	0.128 881 00	0.128 827 49	0.002 767 56	0.064 431 58	0.000 691 99	0.085 939 36
0.3595	0.129 240 25	0.129 186 29	0.002 783 01	0.064 611 13	0.000 695 86	0.086 179 02
0.3600	0.129 600 00	0.129 545 59	0.002 798 52	0.064 790 93	0.000 699 74	0.086 419 01

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
				DEG MNT SEC		
0.3205	0.034 248 69	0.102 708 21	2 56 33.8	0 58 51.3	0 58 51.2	0 0 0.1
0.3210	0.034 355 69	0.103 028 84	2 57 6.9	0 59 2.3	0 59 2.2	0 0 0.1
0.3215	0.034 462 85	0.103 349 98	2 57 40.0	0 59 13.3	0 59 13.3	0 0 0.1
0.3220	0.034 570 18	0.103 671 62	2 58 13.2	0 59 24.4	0 59 24.3	0 0 0.1
0.3225	0.034 677 68	0.103 993 75	2 58 46.4	0 59 35.5	0 59 35.4	0 0 0.1
0.3230	0.034 785 35	0.104 316 38	2 59 19.7	0 59 46.6	0 59 46.5	0 0 0.1
0.3235	0.034 893 18	0.104 639 52	2 59 53.0	0 59 57.7	0 59 57.6	0 0 0.1
0.3240	0.035 001 18	0.104 963 15	3 0 26.4	1 0 8.8	1 0 8.7	0 0 0.1
0.3245	0.035 109 35	0.105 287 28	3 0 59.9	1 0 20.0	1 0 19.9	0 0 0.1
0.3250	0.035 217 69	0.105 611 91	3 1 33.4	1 0 31.1	1 0 31.0	0 0 0.1
0.3255	0.035 326 19	0.105 937 04	3 2 6.9	1 0 42.3	1 0 42.2	0 0 0.1
0.3260	0.035 434 86	0.106 262 66	3 2 40.5	1 0 53.5	1 0 53.4	0 0 0.1
0.3265	0.035 543 70	0.106 588 79	3 3 14.1	1 1 4.7	1 1 4.6	0 0 0.1
0.3270	0.035 652 71	0.106 915 42	3 3 47.8	1 1 15.9	1 1 15.9	0 0 0.1
0.3275	0.035 761 88	0.107 242 54	3 4 21.6	1 1 27.2	1 1 27.1	0 0 0.1
0.3280	0.035 871 22	0.107 570 16	3 4 55.4	1 1 38.5	1 1 38.4	0 0 0.1
0.3285	0.035 980 73	0.107 898 29	3 5 29.2	1 1 49.7	1 1 49.7	0 0 0.1
0.3290	0.036 090 40	0.108 226 91	3 6 3.2	1 2 1.1	1 2 1.0	0 0 0.1
0.3295	0.036 200 24	0.108 556 03	3 6 37.1	1 2 12.4	1 2 12.3	0 0 0.1
0.3300	0.036 310 25	0.108 885 65	3 7 11.1	1 2 23.7	1 2 23.6	0 0 0.1
0.3305	0.036 420 43	0.109 215 77	3 7 45.2	1 2 35.1	1 2 35.0	0 0 0.1
0.3310	0.036 530 77	0.109 546 39	3 8 19.3	1 2 46.4	1 2 46.3	0 0 0.1
0.3315	0.036 641 29	0.109 877 51	3 8 53.5	1 2 57.8	1 2 57.7	0 0 0.1
0.3320	0.036 751 96	0.110 209 12	3 9 27.7	1 3 9.2	1 3 9.1	0 0 0.1
0.3325	0.036 862 81	0.110 541 24	3 10 1.9	1 3 20.6	1 3 20.5	0 0 0.1
0.3330	0.036 973 83	0.110 873 85	3 10 36.2	1 3 32.1	1 3 32.0	0 0 0.1
0.3335	0.037 085 01	0.111 206 96	3 11 10.6	1 3 43.5	1 3 43.4	0 0 0.1
0.3340	0.037 196 36	0.111 540 58	3 11 45.0	1 3 55.0	1 3 54.9	0 0 0.1
0.3345	0.037 307 87	0.111 874 69	3 12 19.5	1 4 6.5	1 4 6.4	0 0 0.1
0.3350	0.037 419 55	0.112 209 30	3 12 54.0	1 4 18.0	1 4 17.9	0 0 0.1
0.3355	0.037 531 41	0.112 544 41	3 13 28.6	1 4 29.5	1 4 29.4	0 0 0.1
0.3360	0.037 643 42	0.112 880 01	3 14 3.2	1 4 41.1	1 4 41.0	0 0 0.1
0.3365	0.037 755 61	0.113 216 12	3 14 37.9	1 4 52.6	1 4 52.5	0 0 0.1
0.3370	0.037 867 96	0.113 552 73	3 15 12.6	1 5 4.2	1 5 4.1	0 0 0.1
0.3375	0.037 980 48	0.113 889 83	3 15 47.4	1 5 15.8	1 5 15.7	0 0 0.1
0.3380	0.038 093 17	0.114 227 43	3 16 22.3	1 5 27.4	1 5 27.3	0 0 0.1
0.3385	0.038 206 03	0.114 565 54	3 16 57.1	1 5 39.0	1 5 38.9	0 0 0.1
0.3390	0.038 319 05	0.114 904 14	3 17 32.1	1 5 50.7	1 5 50.6	0 0 0.1
0.3395	0.038 432 24	0.115 243 24	3 18 7.1	1 6 2.4	1 6 2.2	0 0 0.1
0.3400	0.038 545 60	0.115 582 84	3 18 42.1	1 6 14.0	1 6 13.9	0 0 0.1
0.3405	0.038 659 12	0.115 922 93	3 19 17.2	1 6 25.7	1 6 25.6	0 0 0.1
0.3410	0.038 772 82	0.116 263 53	3 19 52.3	1 6 37.4	1 6 37.3	0 0 0.1
0.3415	0.038 886 68	0.116 604 63	3 20 27.5	1 6 49.2	1 6 49.1	0 0 0.1
0.3420	0.039 000 70	0.116 946 22	3 21 2.8	1 7 0.9	1 7 0.8	0 0 0.1
0.3425	0.039 114 90	0.117 288 32	3 21 38.1	1 7 12.7	1 7 12.6	0 0 0.1
0.3430	0.039 229 26	0.117 630 91	3 22 13.4	1 7 24.5	1 7 24.4	0 0 0.1
0.3435	0.039 343 79	0.117 974 00	3 22 48.8	1 7 36.3	1 7 36.2	0 0 0.1
0.3440	0.039 458 49	0.118 317 59	3 23 24.3	1 7 48.1	1 7 48.0	0 0 0.1
0.3445	0.039 573 35	0.118 661 68	3 23 59.8	1 7 59.9	1 7 59.8	0 0 0.1
0.3450	0.039 688 39	0.119 006 27	3 24 35.3	1 8 11.8	1 8 11.7	0 0 0.1
0.3455	0.039 803 59	0.119 351 35	3 25 10.9	1 8 23.6	1 8 23.5	0 0 0.1
0.3460	0.039 918 96	0.119 696 94	3 25 46.6	1 8 35.5	1 8 35.4	0 0 0.1
0.3465	0.040 034 45	0.120 043 02	3 26 22.3	1 8 47.4	1 8 47.3	0 0 0.1
0.3470	0.040 150 19	0.120 389 60	3 26 58.1	1 8 59.4	1 8 59.2	0 0 0.1
0.3475	0.040 266 06	0.120 736 69	3 27 33.9	1 9 11.3	1 9 11.2	0 0 0.1
0.3480	0.040 382 10	0.121 084 27	3 28 9.7	1 9 23.2	1 9 23.1	0 0 0.1
0.3485	0.040 498 31	0.121 432 35	3 28 45.7	1 9 35.2	1 9 35.1	0 0 0.1
0.3490	0.040 614 68	0.121 780 92	3 29 21.6	1 9 47.2	1 9 47.1	0 0 0.1
0.3495	0.040 731 22	0.122 130 00	3 29 57.6	1 9 59.2	1 9 59.1	0 0 0.1
0.3500	0.040 847 93	0.122 479 58	3 30 33.7	1 10 11.2	1 10 11.1	0 0 0.1
0.3505	0.040 964 80	0.122 829 65	3 31 9.8	1 10 23.3	1 10 23.1	0 0 0.1
0.3510	0.041 081 85	0.123 180 22	3 31 46.0	1 10 35.3	1 10 35.2	0 0 0.1
0.3515	0.041 199 06	0.123 531 30	3 32 22.2	1 10 47.4	1 10 47.3	0 0 0.1
0.3520	0.041 316 44	0.123 882 87	3 32 58.5	1 10 59.5	1 10 59.4	0 0 0.1
0.3525	0.041 433 98	0.124 234 93	3 33 34.8	1 11 11.6	1 11 11.5	0 0 0.1
0.3530	0.041 551 70	0.124 587 50	3 34 11.2	1 11 23.7	1 11 23.6	0 0 0.1
0.3535	0.041 669 58	0.124 940 57	3 34 47.7	1 11 35.9	1 11 35.7	0 0 0.1
0.3540	0.041 787 63	0.125 294 13	3 35 24.1	1 11 48.0	1 11 47.9	0 0 0.1
0.3545	0.041 905 84	0.125 648 20	3 36 0.7	1 12 0.2	1 12 0.1	0 0 0.1
0.3550	0.042 024 23	0.126 002 76	3 36 37.3	1 12 12.4	1 12 12.3	0 0 0.1
0.3555	0.042 142 78	0.126 357 82	3 37 13.9	1 12 24.6	1 12 24.5	0 0 0.1
0.3560	0.042 261 50	0.126 713 38	3 37 50.6	1 12 36.9	1 12 36.7	0 0 0.1
0.3565	0.042 380 38	0.127 069 44	3 38 27.3	1 12 49.1	1 12 49.0	0 0 0.1
0.3570	0.042 499 44	0.127 426 00	3 39 4.1	1 13 1.4	1 13 1.2	0 0 0.2
0.3575	0.042 618 66	0.127 783 06	3 39 41.0	1 13 13.7	1 13 13.5	0 0 0.2
0.3580	0.042 738 05	0.128 140 61	3 40 17.9	1 13 26.0	1 13 25.8	0 0 0.2
0.3585	0.042 857 61	0.128 498 66	3 40 54.8	1 13 38.3	1 13 38.1	0 0 0.2
0.3590	0.042 977 33	0.128 857 22	3 41 31.8	1 13 50.6	1 13 50.4	0 0 0.2
0.3595	0.043 097 22	0.129 216 27	3 42 8.9	1 14 3.0	1 14 2.8	0 0 0.2
0.3600	0.043 217 28	0.129 575 82	3 42 46.0	1 14 15.3	1 14 15.2	0 0 0.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.3605	0.129 960 25	0.129 905 39	0.002 814 10	0.064 970 98	0.000 703 63	0.086 659 34
0.3610	0.130 321 00	0.130 265 68	0.002 829 74	0.065 151 28	0.000 707 54	0.086 900 00
0.3615	0.130 682 25	0.130 626 47	0.002 845 44	0.065 331 83	0.000 711 47	0.087 140 99
0.3620	0.131 044 00	0.130 987 75	0.002 861 21	0.065 512 62	0.000 715 41	0.087 382 32
0.3625	0.131 406 25	0.131 349 53	0.002 877 05	0.065 693 67	0.000 719 37	0.087 623 98
0.3630	0.131 769 00	0.131 711 81	0.002 892 95	0.065 874 97	0.000 723 35	0.087 865 98
0.3635	0.132 132 25	0.132 074 59	0.002 908 91	0.066 056 51	0.000 727 34	0.088 108 31
0.3640	0.132 496 00	0.132 437 86	0.002 924 95	0.066 238 31	0.000 731 35	0.088 350 98
0.3645	0.132 860 25	0.132 801 63	0.002 941 05	0.066 420 35	0.000 735 38	0.088 593 98
0.3650	0.133 225 00	0.133 165 90	0.002 957 21	0.066 602 65	0.000 739 42	0.088 837 32
0.3655	0.133 590 25	0.133 530 66	0.002 973 44	0.066 785 19	0.000 743 48	0.089 080 99
0.3660	0.133 956 00	0.133 895 92	0.002 989 74	0.066 967 99	0.000 747 56	0.089 324 99
0.3665	0.134 322 25	0.134 261 68	0.003 006 11	0.067 151 03	0.000 751 65	0.089 569 33
0.3670	0.134 689 00	0.134 627 93	0.003 022 54	0.067 334 32	0.000 755 76	0.089 814 01
0.3675	0.135 056 25	0.134 994 68	0.003 039 04	0.067 517 86	0.000 759 88	0.090 059 02
0.3680	0.135 424 00	0.135 361 92	0.003 055 61	0.067 701 65	0.000 764 03	0.090 304 36
0.3685	0.135 792 25	0.135 729 66	0.003 072 24	0.067 885 69	0.000 768 19	0.090 550 04
0.3690	0.136 161 00	0.136 097 90	0.003 088 95	0.068 069 98	0.000 772 36	0.090 796 05
0.3695	0.136 530 25	0.136 466 64	0.003 105 72	0.068 254 52	0.000 776 56	0.091 042 39
0.3700	0.136 900 00	0.136 835 87	0.003 122 56	0.068 439 31	0.000 780 77	0.091 289 08
0.3705	0.137 270 25	0.137 205 60	0.003 139 46	0.068 624 35	0.000 785 00	0.091 536 09
0.3710	0.137 641 00	0.137 575 82	0.003 156 44	0.068 809 64	0.000 789 24	0.091 783 44
0.3715	0.138 012 25	0.137 946 55	0.003 173 48	0.068 995 17	0.000 793 51	0.092 031 13
0.3720	0.138 384 00	0.138 317 76	0.003 190 60	0.069 180 96	0.000 797 79	0.092 279 15
0.3725	0.138 756 25	0.138 689 48	0.003 207 78	0.069 367 00	0.000 802 08	0.092 527 50
0.3730	0.139 129 00	0.139 061 69	0.003 225 03	0.069 553 28	0.000 806 40	0.092 776 19
0.3735	0.139 502 25	0.139 434 39	0.003 242 35	0.069 739 81	0.000 810 73	0.093 025 21
0.3740	0.139 876 00	0.139 807 60	0.003 259 74	0.069 926 60	0.000 815 08	0.093 274 57
0.3745	0.140 250 25	0.140 181 30	0.003 277 20	0.070 113 63	0.000 819 44	0.093 524 26
0.3750	0.140 625 00	0.140 555 49	0.003 294 73	0.070 300 91	0.000 823 83	0.093 774 29
0.3755	0.141 000 25	0.140 930 19	0.003 312 34	0.070 488 45	0.000 828 23	0.094 024 65
0.3760	0.141 376 00	0.141 305 37	0.003 330 01	0.070 676 23	0.000 832 65	0.094 275 35
0.3765	0.141 752 25	0.141 681 06	0.003 347 75	0.070 864 26	0.000 837 09	0.094 526 38
0.3770	0.142 129 00	0.142 057 24	0.003 365 56	0.071 052 54	0.000 841 54	0.094 777 74
0.3775	0.142 506 25	0.142 433 92	0.003 383 44	0.071 241 07	0.000 846 01	0.095 029 44
0.378	0.142 884 00	0.142 811 09	0.003 401 40	0.071 429 85	0.000 850 50	0.095 281 48
0.3785	0.143 262 25	0.143 188 76	0.003 419 43	0.071 618 88	0.000 855 01	0.095 533 85
0.3790	0.143 641 00	0.143 566 93	0.003 437 52	0.071 808 15	0.000 859 54	0.095 786 55
0.3795	0.144 020 25	0.143 945 59	0.003 455 69	0.071 997 68	0.000 864 08	0.096 039 59
0.3800	0.144 400 00	0.144 324 74	0.003 473 93	0.072 187 46	0.000 868 64	0.096 292 97
0.3805	0.144 780 25	0.144 704 40	0.003 492 25	0.072 377 48	0.000 873 22	0.096 546 67
0.3810	0.145 161 00	0.145 084 55	0.003 510 63	0.072 567 76	0.000 877 82	0.096 800 72
0.3815	0.145 542 25	0.145 465 20	0.003 529 09	0.072 758 28	0.000 882 44	0.097 055 10
0.3820	0.145 924 00	0.145 846 34	0.003 547 62	0.072 949 05	0.000 887 07	0.097 309 81
0.3825	0.146 306 25	0.146 227 98	0.003 566 22	0.073 140 08	0.000 891 73	0.097 564 85
0.3830	0.146 689 00	0.146 610 11	0.003 584 90	0.073 331 35	0.000 896 40	0.097 820 24
0.3835	0.147 072 25	0.146 992 74	0.003 603 65	0.073 522 87	0.000 901 09	0.098 075 95
0.3840	0.147 456 00	0.147 375 87	0.003 622 47	0.073 714 64	0.000 905 79	0.098 332 00
0.3845	0.147 840 25	0.147 759 49	0.003 641 37	0.073 906 66	0.000 910 52	0.098 588 39
0.3850	0.148 225 00	0.148 143 61	0.003 660 34	0.074 098 93	0.000 915 26	0.098 845 11
0.3855	0.148 610 25	0.148 528 22	0.003 679 38	0.074 291 45	0.000 920 03	0.099 102 17
0.3860	0.148 996 00	0.148 913 33	0.003 698 50	0.074 484 22	0.000 924 81	0.099 359 56
0.3865	0.149 382 25	0.149 298 93	0.003 717 69	0.074 677 24	0.000 929 61	0.099 617 28
0.3870	0.149 769 00	0.149 685 04	0.003 736 96	0.074 870 50	0.000 934 43	0.099 875 34
0.3875	0.150 156 25	0.150 071 63	0.003 756 30	0.075 064 02	0.000 939 27	0.100 133 74
0.3880	0.150 544 00	0.150 458 73	0.003 775 72	0.075 257 79	0.000 944 12	0.100 392 47
0.3885	0.150 932 25	0.150 846 31	0.003 795 21	0.075 451 80	0.000 949 00	0.100 651 53
0.3890	0.151 321 00	0.151 234 40	0.003 814 78	0.075 646 06	0.000 953 89	0.100 910 93
0.3895	0.151 710 25	0.151 622 58	0.003 834 42	0.075 840 58	0.000 958 80	0.101 170 67
0.3900	0.152 100 00	0.152 012 05	0.003 854 14	0.076 035 34	0.000 963 73	0.101 430 74
0.3905	0.152 490 25	0.152 401 63	0.003 873 94	0.076 230 35	0.000 968 69	0.101 691 14
0.3910	0.152 881 00	0.152 791 69	0.003 893 81	0.076 425 61	0.000 973 66	0.101 951 88
0.3915	0.153 272 25	0.153 182 26	0.003 913 75	0.076 621 12	0.000 978 64	0.102 212 95
0.3920	0.153 664 00	0.153 573 31	0.003 933 78	0.076 816 88	0.000 983 65	0.102 474 36
0.3925	0.154 056 25	0.153 964 87	0.003 953 88	0.077 012 89	0.000 988 68	0.102 736 10
0.3930	0.154 449 00	0.154 356 92	0.003 974 06	0.077 209 15	0.000 993 73	0.102 998 18
0.3935	0.154 842 25	0.154 749 46	0.003 994 31	0.077 405 66	0.000 998 79	0.103 260 60
0.3940	0.155 236 00	0.155 142 50	0.004 014 64	0.077 602 42	0.001 003 88	0.103 523 34
0.3945	0.155 630 25	0.155 536 04	0.004 035 05	0.077 799 42	0.001 008 98	0.103 786 43
0.3950	0.156 025 00	0.155 930 07	0.004 055 54	0.077 996 68	0.001 014 10	0.104 049 85
0.3955	0.156 420 25	0.156 324 60	0.004 076 10	0.078 194 18	0.001 019 25	0.104 313 60
0.3960	0.156 816 00	0.156 719 62	0.004 096 74	0.078 391 93	0.001 024 41	0.104 577 69
0.3965	0.157 212 25	0.157 115 14	0.004 117 46	0.078 589 94	0.001 029 59	0.104 842 11
0.3970	0.157 609 00	0.157 511 15	0.004 138 26	0.078 788 19	0.001 034 80	0.105 106 87
0.3975	0.158 006 25	0.157 907 66	0.004 159 14	0.078 986 69	0.001 040 02	0.105 371 96
0.3980	0.158 404 00	0.158 304 66	0.004 180 10	0.079 185 44	0.001 045 26	0.105 637 39
0.3985	0.158 802 25	0.158 702 16	0.004 201 13	0.079 384 44	0.001 050 52	0.105 903 15
0.3990	0.159 201 00	0.159 100 16	0.004 222 25	0.079 583 69	0.001 055 80	0.106 169 25
0.3995	0.159 600 25	0.159 498 65	0.004 243 44	0.079 783 19	0.001 061 10	0.106 435 68
0.4000	0.160 000 00	0.159 897 63	0.004 264 72	0.079 982 94	0.001 066 42	0.106 702 45

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
			DEG MNT SEC			
0.3605	0.043 337 51	0.129 935 86	3 43 23.1	1 14 27.7	1 14 27.5	0 0 0.2
0.3610	0.043 457 91	0.130 296 41	3 44 0.3	1 14 40.1	1 14 39.9	0 0 0.2
0.3615	0.043 578 47	0.130 657 45	3 44 37.6	1 14 52.5	1 14 52.4	0 0 0.2
0.3620	0.043 699 20	0.131 019 00	3 45 14.9	1 15 5.0	1 15 4.8	0 0 0.2
0.3625	0.043 820 10	0.131 381 04	3 45 52.2	1 15 17.4	1 15 17.2	0 0 0.2
0.3630	0.043 941 17	0.131 743 58	3 46 29.7	1 15 29.9	1 15 29.7	0 0 0.2
0.3635	0.044 062 40	0.132 106 62	3 47 7.1	1 15 42.4	1 15 42.2	0 0 0.2
0.3640	0.044 183 80	0.132 470 16	3 47 44.6	1 15 54.9	1 15 54.7	0 0 0.2
0.3645	0.044 305 37	0.132 834 19	3 48 22.2	1 16 7.4	1 16 7.2	0 0 0.2
0.3650	0.044 427 11	0.133 198 73	3 48 59.8	1 16 19.9	1 16 19.8	0 0 0.2
0.3655	0.044 549 01	0.133 563 76	3 49 37.5	1 16 32.5	1 16 32.3	0 0 0.2
0.3660	0.044 671 09	0.133 929 29	3 50 15.2	1 16 45.1	1 16 44.9	0 0 0.2
0.3665	0.044 793 33	0.134 295 32	3 50 53.0	1 16 57.7	1 16 57.5	0 0 0.2
0.3670	0.044 915 73	0.134 661 85	3 51 30.8	1 17 10.3	1 17 10.1	0 0 0.2
0.3675	0.045 038 31	0.135 028 88	3 52 8.7	1 17 22.9	1 17 22.7	0 0 0.2
0.3680	0.045 161 05	0.135 396 41	3 52 46.6	1 17 35.5	1 17 35.4	0 0 0.2
0.3685	0.045 283 97	0.135 764 43	3 53 24.6	1 17 48.2	1 17 48.0	0 0 0.2
0.3690	0.045 407 04	0.136 132 55	3 54 2.6	1 18 0.9	1 18 0.7	0 0 0.2
0.3695	0.045 530 29	0.136 501 97	3 54 40.7	1 18 13.6	1 18 13.4	0 0 0.2
0.3700	0.045 653 71	0.136 871 49	3 55 18.8	1 18 26.3	1 18 26.1	0 0 0.2
0.3705	0.045 777 29	0.137 241 51	3 55 57.0	1 18 39.0	1 18 38.8	0 0 0.2
0.3710	0.045 901 04	0.137 612 03	3 56 35.2	1 18 51.7	1 18 51.6	0 0 0.2
0.3715	0.046 024 96	0.137 983 04	3 57 13.5	1 19 4.5	1 19 4.3	0 0 0.2
0.3720	0.046 149 04	0.138 354 56	3 57 51.9	1 19 17.3	1 19 17.1	0 0 0.2
0.3725	0.046 273 30	0.138 726 57	3 58 30.3	1 19 30.1	1 19 29.9	0 0 0.2
0.3730	0.046 397 72	0.139 099 08	3 59 8.7	1 19 42.9	1 19 42.7	0 0 0.2
0.3735	0.046 522 31	0.139 472 09	3 59 47.2	1 19 55.7	1 19 55.5	0 0 0.2
0.3740	0.046 647 06	0.139 845 59	4 0 25.7	1 20 8.6	1 20 8.4	0 0 0.2
0.3745	0.046 771 99	0.140 219 60	4 1 4.3	1 20 21.4	1 20 21.2	0 0 0.2
0.3750	0.046 897 08	0.140 594 10	4 1 43.0	1 20 34.3	1 20 34.1	0 0 0.2
0.3755	0.047 022 34	0.140 969 11	4 2 21.7	1 20 47.2	1 20 47.0	0 0 0.2
0.3760	0.047 147 77	0.141 344 61	4 3 0.4	1 21 0.1	1 20 59.9	0 0 0.2
0.3765	0.047 273 37	0.141 720 60	4 3 39.3	1 21 13.1	1 21 12.9	0 0 0.2
0.3770	0.047 399 13	0.142 097 10	4 4 18.1	1 21 26.0	1 21 25.8	0 0 0.2
0.3775	0.047 525 06	0.142 474 10	4 4 57.0	1 21 39.0	1 21 38.8	0 0 0.2
0.3780	0.047 651 16	0.142 851 59	4 5 36.0	1 21 52.0	1 21 51.8	0 0 0.2
0.3785	0.047 777 43	0.143 229 58	4 6 15.0	1 22 5.0	1 22 4.8	0 0 0.2
0.3790	0.047 903 87	0.143 608 07	4 6 54.0	1 22 18.0	1 22 17.8	0 0 0.2
0.3795	0.048 030 47	0.143 987 06	4 7 33.2	1 22 31.1	1 22 30.8	0 0 0.2
0.3800	0.048 157 24	0.144 366 55	4 8 12.3	1 22 44.1	1 22 43.9	0 0 0.2
0.3805	0.048 284 18	0.144 746 53	4 8 51.5	1 22 57.2	1 22 57.0	0 0 0.2
0.3810	0.048 411 29	0.145 127 02	4 9 30.8	1 23 10.3	1 23 10.0	0 0 0.2
0.3815	0.048 538 56	0.145 508 00	4 10 10.1	1 23 23.4	1 23 23.1	0 0 0.2
0.3820	0.048 666 01	0.145 889 48	4 10 49.5	1 23 36.5	1 23 36.3	0 0 0.2
0.3825	0.048 793 62	0.146 271 46	4 11 28.9	1 23 49.6	1 23 49.4	0 0 0.2
0.3830	0.048 921 40	0.146 653 93	4 12 8.4	1 24 2.8	1 24 2.6	0 0 0.2
0.3835	0.049 049 35	0.147 036 91	4 12 47.9	1 24 16.0	1 24 15.7	0 0 0.2
0.3840	0.049 177 46	0.147 420 38	4 13 27.5	1 24 29.2	1 24 28.9	0 0 0.2
0.3845	0.049 305 74	0.147 804 35	4 14 7.1	1 24 42.4	1 24 42.1	0 0 0.2
0.3850	0.049 434 19	0.148 188 82	4 14 46.8	1 24 55.6	1 24 55.4	0 0 0.2
0.3855	0.049 562 81	0.148 573 79	4 15 26.5	1 25 8.8	1 25 8.6	0 0 0.2
0.3860	0.049 691 60	0.148 959 25	4 16 6.3	1 25 22.1	1 25 21.9	0 0 0.2
0.3865	0.049 820 55	0.149 345 21	4 16 46.2	1 25 35.4	1 25 35.1	0 0 0.2
0.3870	0.049 949 68	0.149 731 68	4 17 26.0	1 25 48.7	1 25 48.4	0 0 0.2
0.3875	0.050 078 97	0.150 118 64	4 18 6.0	1 26 2.0	1 26 1.7	0 0 0.2
0.3880	0.050 208 43	0.150 506 09	4 18 46.0	1 26 15.3	1 26 15.1	0 0 0.2
0.3885	0.050 338 05	0.150 894 05	4 19 26.0	1 26 28.7	1 26 28.4	0 0 0.3
0.3890	0.050 467 85	0.151 282 50	4 20 6.1	1 26 42.0	1 26 41.8	0 0 0.3
0.3895	0.050 597 81	0.151 671 46	4 20 46.2	1 26 55.4	1 26 55.2	0 0 0.3
0.3900	0.050 727 94	0.152 060 91	4 21 26.4	1 27 8.8	1 27 8.6	0 0 0.3
0.3905	0.050 858 24	0.152 450 85	4 22 6.7	1 27 22.2	1 27 22.0	0 0 0.3
0.3910	0.050 988 71	0.152 841 30	4 22 47.0	1 27 35.7	1 27 35.4	0 0 0.3
0.3915	0.051 119 34	0.153 232 25	4 23 27.3	1 27 49.1	1 27 48.8	0 0 0.3
0.3920	0.051 250 15	0.153 623 69	4 24 7.7	1 28 2.6	1 28 2.3	0 0 0.3
0.3925	0.051 381 12	0.154 015 63	4 24 48.2	1 28 16.1	1 28 15.8	0 0 0.3
0.3930	0.051 512 26	0.154 408 07	4 25 28.7	1 28 29.6	1 28 29.3	0 0 0.3
0.3935	0.051 643 57	0.154 801 00	4 26 9.3	1 28 43.1	1 28 42.8	0 0 0.3
0.3940	0.051 775 04	0.155 194 44	4 26 49.9	1 28 56.6	1 28 56.3	0 0 0.3
0.3945	0.051 906 69	0.155 588 37	4 27 30.5	1 29 10.2	1 29 9.9	0 0 0.3
0.3950	0.052 038 50	0.155 982 80	4 28 11.2	1 29 23.7	1 29 23.5	0 0 0.3
0.3955	0.052 170 48	0.156 377 73	4 28 52.0	1 29 37.3	1 29 37.1	0 0 0.3
0.3960	0.052 302 62	0.156 773 16	4 29 32.8	1 29 50.9	1 29 50.7	0 0 0.3
0.3965	0.052 434 94	0.157 169 08	4 30 13.7	1 30 4.6	1 30 4.3	0 0 0.3
0.3970	0.052 567 43	0.157 565 50	4 30 54.6	1 30 18.2	1 30 17.9	0 0 0.3
0.3975	0.052 700 08	0.157 962 42	4 31 35.6	1 30 31.9	1 30 31.6	0 0 0.3
0.3980	0.052 832 90	0.158 359 84	4 32 16.6	1 30 45.5	1 30 45.2	0 0 0.3
0.3985	0.052 965 89	0.158 757 76	4 32 57.7	1 30 59.2	1 30 58.9	0 0 0.3
0.3990	0.053 099 04	0.159 156 17	4 33 38.8	1 31 12.9	1 31 12.6	0 0 0.3
0.3995	0.053 232 37	0.159 555 08	4 34 20.0	1 31 26.7	1 31 26.4	0 0 0.3
0.4000	0.053 365 86	0.159 954 49	4 35 1.2	1 31 40.4	1 31 40.1	0 0 0.3

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.4005	0.160 400 25	0.160 297 11	0.004 286 07	0.080 182 93	0.001 071 76	0.106 969 55
0.4010	0.160 801 00	0.160 697 09	0.004 307 50	0.080 383 18	0.001 077 12	0.107 236 99
0.4015	0.161 202 25	0.161 097 56	0.004 329 02	0.080 583 67	0.001 082 51	0.107 504 76
0.4020	0.161 604 00	0.161 498 52	0.004 350 61	0.080 784 42	0.001 087 91	0.107 772 87
0.4025	0.162 006 25	0.161 899 98	0.004 372 29	0.080 985 41	0.001 093 33	0.108 041 31
0.4030	0.162 409 00	0.162 301 94	0.004 394 04	0.081 186 65	0.001 098 77	0.108 310 09
0.4035	0.162 812 25	0.162 704 39	0.004 415 88	0.081 388 15	0.001 104 23	0.108 579 20
0.4040	0.163 216 00	0.163 107 33	0.004 437 80	0.081 589 89	0.001 109 71	0.108 848 65
0.4045	0.163 620 25	0.163 510 77	0.004 459 80	0.081 791 88	0.001 115 22	0.109 118 43
0.4050	0.164 025 00	0.163 914 71	0.004 481 88	0.081 994 12	0.001 120 74	0.109 388 55
0.4055	0.164 430 25	0.164 319 14	0.004 504 04	0.082 196 60	0.001 126 28	0.109 659 00
0.4060	0.164 836 00	0.164 724 07	0.004 526 29	0.082 399 34	0.001 131 85	0.109 929 79
0.4065	0.165 242 25	0.165 129 49	0.004 548 62	0.082 602 33	0.001 137 43	0.110 200 92
0.4070	0.165 649 00	0.165 535 40	0.004 571 02	0.082 805 56	0.001 143 04	0.110 472 37
0.4075	0.166 056 25	0.165 941 81	0.004 593 52	0.083 009 05	0.001 148 66	0.110 744 17
0.4080	0.166 464 00	0.166 348 72	0.004 616 09	0.083 212 78	0.001 154 31	0.111 016 30
0.4085	0.166 872 25	0.166 756 12	0.004 638 75	0.083 416 77	0.001 159 98	0.111 288 76
0.4090	0.167 281 00	0.167 164 01	0.004 661 49	0.083 621 00	0.001 165 66	0.111 561 56
0.4095	0.167 690 25	0.167 572 40	0.004 684 32	0.083 825 48	0.001 171 37	0.111 834 69
0.4100	0.168 100 00	0.167 981 29	0.004 707 23	0.084 030 21	0.001 177 10	0.112 108 16
0.4105	0.168 510 25	0.168 390 67	0.004 730 22	0.084 235 19	0.001 182 85	0.112 381 97
0.4110	0.168 921 00	0.168 800 54	0.004 753 29	0.084 440 42	0.001 188 63	0.112 656 11
0.4115	0.169 332 25	0.169 210 91	0.004 776 46	0.084 645 90	0.001 194 42	0.112 930 58
0.4120	0.169 744 00	0.169 621 77	0.004 799 70	0.084 851 63	0.001 200 23	0.113 205 39
0.4125	0.170 156 25	0.170 033 13	0.004 823 03	0.085 057 60	0.001 206 07	0.113 480 54
0.4130	0.170 569 00	0.170 444 98	0.004 846 45	0.085 263 83	0.001 211 93	0.113 756 02
0.4135	0.170 982 25	0.170 857 33	0.004 869 95	0.085 470 30	0.001 217 80	0.114 031 84
0.4140	0.171 396 00	0.171 270 17	0.004 893 53	0.085 677 02	0.001 223 70	0.114 307 99
0.4145	0.171 810 25	0.171 683 50	0.004 917 20	0.085 884 00	0.001 229 62	0.114 584 47
0.4150	0.172 225 00	0.172 097 33	0.004 940 96	0.086 091 22	0.001 235 57	0.114 861 30
0.4155	0.172 640 25	0.172 511 66	0.004 964 80	0.086 298 69	0.001 241 53	0.115 138 45
0.4160	0.173 056 00	0.172 926 48	0.004 988 73	0.086 506 41	0.001 247 52	0.115 415 55
0.4165	0.173 472 25	0.173 341 79	0.005 012 74	0.086 714 38	0.001 253 52	0.115 693 77
0.4170	0.173 889 00	0.173 757 60	0.005 036 84	0.086 922 60	0.001 259 55	0.115 971 94
0.4175	0.174 306 25	0.174 173 90	0.005 061 03	0.087 131 06	0.001 265 60	0.116 250 43
0.4180	0.174 724 00	0.174 590 70	0.005 085 31	0.087 339 78	0.001 271 67	0.116 529 27
0.4185	0.175 142 25	0.175 007 99	0.005 109 67	0.087 548 74	0.001 277 77	0.116 808 44
0.4190	0.175 561 00	0.175 425 77	0.005 134 12	0.087 757 96	0.001 283 88	0.117 087 94
0.4195	0.175 980 25	0.175 844 05	0.005 158 65	0.087 967 42	0.001 290 02	0.117 367 78
0.4200	0.176 400 00	0.176 262 82	0.005 183 28	0.088 177 13	0.001 296 18	0.117 647 96
0.4205	0.176 820 25	0.176 682 09	0.005 207 99	0.088 387 10	0.001 302 36	0.117 928 47
0.4210	0.177 241 00	0.177 101 85	0.005 232 79	0.088 597 31	0.001 308 57	0.118 209 31
0.4215	0.177 662 25	0.177 522 11	0.005 257 68	0.088 807 76	0.001 314 79	0.118 490 49
0.4220	0.178 084 00	0.177 942 86	0.005 282 66	0.089 018 47	0.001 321 04	0.118 772 01
0.4225	0.178 506 25	0.178 364 10	0.005 307 73	0.089 229 43	0.001 327 31	0.119 053 86
0.4230	0.178 929 00	0.178 785 84	0.005 332 88	0.089 440 64	0.001 333 60	0.119 336 05
0.4235	0.179 352 25	0.179 208 07	0.005 358 13	0.089 652 09	0.001 339 92	0.119 618 57
0.4240	0.179 776 00	0.179 630 80	0.005 383 46	0.089 863 80	0.001 346 25	0.119 901 43
0.4245	0.180 200 25	0.180 054 02	0.005 408 88	0.090 075 75	0.001 352 61	0.120 184 62
0.4250	0.180 625 00	0.180 477 73	0.005 434 40	0.090 287 95	0.001 359 00	0.120 468 15
0.4255	0.181 050 25	0.180 901 94	0.005 460 00	0.090 500 40	0.001 365 40	0.120 752 02
0.4260	0.181 476 00	0.181 326 64	0.005 485 70	0.090 713 10	0.001 371 83	0.121 036 22
0.4265	0.181 902 25	0.181 751 84	0.005 511 48	0.090 926 05	0.001 378 28	0.121 320 75
0.4270	0.182 329 00	0.182 177 53	0.005 537 36	0.091 139 25	0.001 384 75	0.121 605 63
0.4275	0.182 756 25	0.182 603 71	0.005 563 32	0.091 352 70	0.001 391 25	0.121 890 83
0.4280	0.183 184 00	0.183 030 38	0.005 589 38	0.091 566 39	0.001 397 76	0.122 176 37
0.4285	0.183 612 25	0.183 457 56	0.005 615 53	0.091 780 34	0.001 404 30	0.122 462 25
0.4290	0.184 041 00	0.183 885 22	0.005 641 77	0.091 994 53	0.001 410 87	0.122 748 47
0.4295	0.184 470 25	0.184 313 38	0.005 668 10	0.092 208 98	0.001 417 46	0.123 035 01
0.4300	0.184 900 00	0.184 742 03	0.005 694 52	0.092 423 67	0.001 424 07	0.123 321 90
0.4305	0.185 330 25	0.185 171 17	0.005 721 04	0.092 638 61	0.001 430 70	0.123 609 12
0.4310	0.185 761 00	0.185 600 81	0.005 747 65	0.092 853 80	0.001 437 35	0.123 896 67
0.4315	0.186 192 25	0.186 030 94	0.005 774 35	0.093 069 24	0.001 444 03	0.124 184 57
0.4320	0.186 624 00	0.186 461 57	0.005 801 14	0.093 284 92	0.001 450 74	0.124 472 79
0.4325	0.187 056 25	0.186 892 69	0.005 828 03	0.093 500 86	0.001 457 46	0.124 761 35
0.4330	0.187 489 00	0.187 324 30	0.005 855 01	0.093 717 05	0.001 464 21	0.125 050 25
0.4335	0.187 922 25	0.187 756 41	0.005 882 08	0.093 933 48	0.001 470 98	0.125 339 49
0.4340	0.188 356 00	0.188 189 01	0.005 909 25	0.094 150 16	0.001 477 78	0.125 629 06
0.4345	0.188 790 25	0.188 622 10	0.005 936 51	0.094 367 10	0.001 484 60	0.125 918 96
0.4350	0.189 225 00	0.189 055 68	0.005 963 87	0.094 584 28	0.001 491 44	0.126 209 20
0.4355	0.189 660 25	0.189 489 76	0.005 991 32	0.094 801 71	0.001 498 31	0.126 499 78
0.4360	0.190 096 00	0.189 924 34	0.006 018 86	0.095 019 38	0.001 505 20	0.126 790 69
0.4365	0.190 532 25	0.190 359 40	0.006 046 50	0.095 237 31	0.001 512 12	0.127 081 94
0.4370	0.190 969 00	0.190 794 96	0.006 074 24	0.095 455 49	0.001 519 05	0.127 373 52
0.4375	0.191 406 25	0.191 231 01	0.006 102 07	0.095 673 91	0.001 526 02	0.127 665 44
0.4380	0.191 844 00	0.191 667 56	0.006 129 99	0.095 892 59	0.001 533 00	0.127 957 69
0.4385	0.192 282 25	0.192 104 60	0.006 158 01	0.096 111 51	0.001 540 01	0.128 250 29
0.4390	0.192 721 00	0.192 542 13	0.006 186 13	0.096 330 68	0.001 547 04	0.128 543 21
0.4395	0.193 160 25	0.192 980 15	0.006 214 34	0.096 550 10	0.001 554 10	0.128 836 47
0.4400	0.193 600 00	0.193 418 67	0.006 242 65	0.096 769 77	0.001 561 18	0.129 130 07

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
			DEG MNT SEC	DEG MNT SEC	DEG MNT SEC	
0.4005	0.053 499 52	0.160 354 40	4 35 42.5	1 31 54.2	1 31 53.9	0 0 0.3
0.4010	0.053 633 35	0.160 754 81	4 36 23.8	1 32 7.9	1 32 7.6	0 0 0.3
0.4015	0.053 767 35	0.161 155 71	4 37 5.2	1 32 21.7	1 32 21.4	0 0 0.3
0.4020	0.053 901 52	0.161 557 11	4 37 46.6	1 32 35.5	1 32 35.2	0 0 0.3
0.4025	0.054 035 85	0.161 959 01	4 38 28.1	1 32 49.4	1 32 49.1	0 0 0.3
0.4030	0.054 170 35	0.162 361 41	4 39 9.6	1 33 3.2	1 33 2.9	0 0 0.3
0.4035	0.054 305 03	0.162 764 30	4 39 51.2	1 33 17.1	1 33 16.8	0 0 0.3
0.4040	0.054 439 86	0.163 167 69	4 40 32.9	1 33 31.0	1 33 30.6	0 0 0.3
0.4045	0.054 574 87	0.163 571 58	4 41 14.5	1 33 44.8	1 33 44.5	0 0 0.3
0.4050	0.054 710 05	0.163 975 97	4 41 56.3	1 33 58.8	1 33 58.4	0 0 0.3
0.4055	0.054 845 39	0.164 380 86	4 42 38.1	1 34 12.7	1 34 12.4	0 0 0.3
0.4060	0.054 980 90	0.164 786 24	4 43 19.9	1 34 26.6	1 34 26.3	0 0 0.3
0.4065	0.055 116 58	0.165 192 12	4 44 1.8	1 34 40.6	1 34 40.3	0 0 0.3
0.4070	0.055 252 43	0.165 598 50	4 44 43.8	1 34 54.6	1 34 54.3	0 0 0.3
0.4075	0.055 388 45	0.166 005 38	4 45 25.8	1 35 8.6	1 35 8.3	0 0 0.3
0.4080	0.055 524 64	0.166 412 75	4 46 7.8	1 35 22.6	1 35 22.3	0 0 0.3
0.4085	0.055 660 99	0.166 820 62	4 46 49.9	1 35 36.6	1 35 36.3	0 0 0.3
0.4090	0.055 797 51	0.167 228 99	4 47 32.1	1 35 50.7	1 35 50.4	0 0 0.3
0.4095	0.055 934 20	0.167 637 86	4 48 14.3	1 36 4.8	1 36 4.4	0 0 0.3
0.4100	0.056 071 06	0.168 047 23	4 48 56.6	1 36 18.9	1 36 18.5	0 0 0.3
0.4105	0.056 208 09	0.168 457 09	4 49 38.9	1 36 33.0	1 36 32.6	0 0 0.3
0.4110	0.056 345 28	0.168 867 45	4 50 21.2	1 36 47.1	1 36 46.7	0 0 0.4
0.4115	0.056 482 65	0.169 278 31	4 51 3.6	1 37 1.2	1 37 0.9	0 0 0.4
0.4120	0.056 620 18	0.169 689 66	4 51 46.1	1 37 15.4	1 37 15.0	0 0 0.4
0.4125	0.056 757 88	0.170 101 52	4 52 28.6	1 37 29.5	1 37 29.2	0 0 0.4
0.4130	0.056 895 75	0.170 513 87	4 53 11.2	1 37 43.7	1 37 43.4	0 0 0.4
0.4135	0.057 033 79	0.170 926 72	4 53 53.8	1 37 57.9	1 37 57.6	0 0 0.4
0.4140	0.057 171 99	0.171 340 06	4 54 36.5	1 38 12.2	1 38 11.8	0 0 0.4
0.4145	0.057 310 36	0.171 753 91	4 55 19.2	1 38 26.4	1 38 26.0	0 0 0.4
0.4150	0.057 448 91	0.172 168 25	4 56 2.0	1 38 40.7	1 38 40.3	0 0 0.4
0.4155	0.057 587 62	0.172 583 08	4 56 44.8	1 38 54.9	1 38 54.6	0 0 0.4
0.4160	0.057 726 50	0.172 998 42	4 57 27.7	1 39 9.2	1 39 8.8	0 0 0.4
0.4165	0.057 865 55	0.173 414 25	4 58 10.6	1 39 23.5	1 39 23.2	0 0 0.4
0.4170	0.058 004 76	0.173 830 59	4 58 53.6	1 39 37.9	1 39 37.5	0 0 0.4
0.4175	0.058 144 15	0.174 247 41	4 59 36.6	1 39 52.2	1 39 51.8	0 0 0.4
0.4180	0.058 283 70	0.174 664 74	5 0 19.7	1 40 6.6	1 40 6.2	0 0 0.4
0.4185	0.058 423 42	0.175 082 56	5 1 2.8	1 40 20.9	1 40 20.6	0 0 0.4
0.4190	0.058 563 31	0.175 500 88	5 1 46.0	1 40 35.3	1 40 34.9	0 0 0.4
0.4195	0.058 703 37	0.175 919 70	5 2 29.3	1 40 49.8	1 40 49.4	0 0 0.4
0.4200	0.058 843 60	0.176 339 02	5 3 12.6	1 41 4.2	1 41 3.8	0 0 0.4
0.4205	0.058 983 99	0.176 758 83	5 3 55.9	1 41 18.6	1 41 18.2	0 0 0.4
0.4210	0.059 124 56	0.177 179 14	5 4 39.3	1 41 33.1	1 41 32.7	0 0 0.4
0.4215	0.059 265 29	0.177 599 95	5 5 22.7	1 41 47.6	1 41 47.2	0 0 0.4
0.4220	0.059 406 19	0.178 021 26	5 6 6.2	1 42 2.1	1 42 1.7	0 0 0.4
0.4225	0.059 547 26	0.178 443 06	5 6 49.8	1 42 16.6	1 42 16.2	0 0 0.4
0.4230	0.059 688 50	0.178 865 36	5 7 33.4	1 42 31.1	1 42 30.7	0 0 0.4
0.4235	0.059 829 91	0.179 288 16	5 8 17.0	1 42 45.7	1 42 45.3	0 0 0.4
0.4240	0.059 971 48	0.179 711 45	5 9 0.7	1 43 0.2	1 42 59.8	0 0 0.4
0.4245	0.060 113 23	0.180 135 24	5 9 44.5	1 43 14.8	1 43 14.4	0 0 0.4
0.4250	0.060 255 14	0.180 559 53	5 10 28.3	1 43 29.4	1 43 29.0	0 0 0.4
0.4255	0.060 397 22	0.180 984 32	5 11 12.1	1 43 44.0	1 43 43.6	0 0 0.4
0.4260	0.060 539 47	0.181 409 60	5 11 56.1	1 43 58.7	1 43 58.3	0 0 0.4
0.4265	0.060 681 89	0.181 835 38	5 12 40.0	1 44 13.3	1 44 12.9	0 0 0.4
0.4270	0.060 824 48	0.182 261 66	5 13 24.0	1 44 28.0	1 44 27.6	0 0 0.4
0.4275	0.060 967 24	0.182 688 44	5 14 8.1	1 44 42.7	1 44 42.3	0 0 0.4
0.4280	0.061 110 16	0.183 115 71	5 14 52.2	1 44 57.4	1 44 57.0	0 0 0.4
0.4285	0.061 253 25	0.183 543 48	5 15 36.4	1 45 12.1	1 45 11.7	0 0 0.5
0.4290	0.061 396 52	0.183 971 75	5 16 20.6	1 45 26.9	1 45 26.4	0 0 0.5
0.4295	0.061 539 95	0.184 400 51	5 17 4.9	1 45 41.6	1 45 41.2	0 0 0.5
0.4300	0.061 683 55	0.184 829 77	5 17 49.2	1 45 56.4	1 45 55.9	0 0 0.5
0.4305	0.061 827 32	0.185 259 53	5 18 33.6	1 46 11.2	1 46 10.7	0 0 0.5
0.4310	0.061 971 25	0.185 689 79	5 19 18.0	1 46 26.0	1 46 25.5	0 0 0.5
0.4315	0.062 115 36	0.186 120 54	5 20 2.5	1 46 40.8	1 46 40.3	0 0 0.5
0.4320	0.062 259 63	0.186 551 79	5 20 47.0	1 46 55.7	1 46 55.2	0 0 0.5
0.4325	0.062 404 08	0.186 983 54	5 21 31.6	1 47 10.5	1 47 10.0	0 0 0.5
0.4330	0.062 548 69	0.187 415 78	5 22 16.2	1 47 25.4	1 47 24.9	0 0 0.5
0.4335	0.062 693 47	0.187 848 52	5 23 0.9	1 47 40.3	1 47 39.8	0 0 0.5
0.4340	0.062 838 42	0.188 281 76	5 23 45.6	1 47 55.2	1 47 54.7	0 0 0.5
0.4345	0.062 983 54	0.188 715 50	5 24 30.4	1 48 10.1	1 48 9.6	0 0 0.5
0.4350	0.063 128 82	0.189 149 73	5 25 15.2	1 48 25.1	1 48 24.6	0 0 0.5
0.4355	0.063 274 28	0.189 584 46	5 26 0.1	1 48 40.0	1 48 39.5	0 0 0.5
0.4360	0.063 419 90	0.190 019 68	5 26 45.1	1 48 55.0	1 48 54.5	0 0 0.5
0.4365	0.063 565 70	0.190 455 41	5 27 30.0	1 49 10.0	1 49 9.5	0 0 0.5
0.4370	0.063 711 66	0.190 891 63	5 28 15.1	1 49 25.0	1 49 24.5	0 0 0.5
0.4375	0.063 857 79	0.191 328 35	5 29 0.2	1 49 40.1	1 49 39.6	0 0 0.5
0.4380	0.064 004 09	0.191 765 56	5 29 45.3	1 49 55.1	1 49 54.6	0 0 0.5
0.4385	0.064 150 56	0.192 203 27	5 30 30.5	1 50 10.2	1 50 9.7	0 0 0.5
0.4390	0.064 297 20	0.192 641 48	5 31 15.8	1 50 25.3	1 50 24.7	0 0 0.5
0.4395	0.064 444 00	0.193 080 18	5 32 1.1	1 50 40.4	1 50 39.8	0 0 0.5
0.4400	0.064 590 98	0.193 519 39	5 32 46.4	1 50 55.5	1 50 54.9	0 0 0.5

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.4405	0.194 040 25	0.193 857 68	0.006 271 05	0.096 989 69	0.001 568 29	0.129 424 01
0.4410	0.194 481 00	0.194 297 18	0.006 299 55	0.097 209 86	0.001 575 42	0.129 718 28
0.4415	0.194 922 25	0.194 737 18	0.006 328 15	0.097 430 27	0.001 582 57	0.130 012 88
0.4420	0.195 364 00	0.195 177 67	0.006 356 85	0.097 650 94	0.001 589 75	0.130 307 82
0.4425	0.195 806 25	0.195 618 65	0.006 385 64	0.097 871 85	0.001 596 96	0.130 603 10
0.4430	0.196 249 00	0.196 060 13	0.006 414 53	0.098 093 02	0.001 604 18	0.130 898 71
0.4435	0.196 692 25	0.196 502 10	0.006 443 52	0.098 314 43	0.001 611 44	0.131 194 66
0.4440	0.197 136 00	0.196 944 56	0.006 472 61	0.098 536 09	0.001 618 71	0.131 490 95
0.4445	0.197 580 25	0.197 387 51	0.006 501 79	0.098 758 00	0.001 626 01	0.131 787 57
0.4450	0.198 025 00	0.197 830 95	0.006 531 07	0.098 980 15	0.001 633 34	0.132 084 52
0.4455	0.198 470 25	0.198 274 89	0.006 560 46	0.099 202 56	0.001 640 69	0.132 381 82
0.4460	0.198 916 00	0.198 719 32	0.006 589 94	0.099 425 21	0.001 648 07	0.132 679 44
0.4465	0.199 362 25	0.199 164 25	0.006 619 52	0.099 648 12	0.001 655 47	0.132 977 41
0.4470	0.199 809 00	0.199 609 66	0.006 649 20	0.099 871 27	0.001 662 89	0.133 275 71
0.4475	0.200 256 25	0.200 055 57	0.006 678 98	0.100 094 67	0.001 670 34	0.133 574 34
0.4480	0.200 704 00	0.200 501 97	0.006 708 85	0.100 318 32	0.001 677 82	0.133 873 32
0.4485	0.201 152 25	0.200 948 87	0.006 738 83	0.100 542 22	0.001 685 32	0.134 172 62
0.4490	0.201 601 00	0.201 396 25	0.006 768 91	0.100 766 37	0.001 692 84	0.134 472 27
0.4495	0.202 050 25	0.201 844 13	0.006 799 09	0.100 990 77	0.001 700 39	0.134 772 25
0.4500	0.202 500 00	0.202 292 50	0.006 829 37	0.101 215 41	0.001 707 97	0.135 072 56
0.4505	0.202 950 25	0.202 741 37	0.006 859 75	0.101 440 30	0.001 715 57	0.135 373 22
0.4510	0.203 401 00	0.203 190 72	0.006 890 24	0.101 665 45	0.001 723 20	0.135 674 20
0.4515	0.203 852 25	0.203 640 57	0.006 920 82	0.101 890 84	0.001 730 85	0.135 975 53
0.4520	0.204 304 00	0.204 090 91	0.006 951 50	0.102 116 48	0.001 738 52	0.136 277 19
0.4525	0.204 756 25	0.204 541 74	0.006 982 29	0.102 342 37	0.001 746 23	0.136 579 19
0.4530	0.205 209 00	0.204 993 07	0.007 013 18	0.102 568 50	0.001 753 95	0.136 881 52
0.4535	0.205 662 25	0.205 444 88	0.007 044 17	0.102 794 89	0.001 761 71	0.137 184 19
0.4540	0.206 116 00	0.205 897 19	0.007 075 26	0.103 021 52	0.001 769 49	0.137 487 19
0.4545	0.206 570 25	0.206 349 99	0.007 106 46	0.103 248 41	0.001 777 29	0.137 790 53
0.4550	0.207 025 00	0.206 803 29	0.007 137 76	0.103 475 54	0.001 785 12	0.138 094 21
0.4555	0.207 480 25	0.207 257 07	0.007 169 16	0.103 702 92	0.001 792 98	0.138 398 22
0.4560	0.207 936 00	0.207 711 35	0.007 200 67	0.103 930 55	0.001 800 86	0.138 702 57
0.4565	0.208 392 25	0.208 166 12	0.007 232 28	0.104 158 43	0.001 808 77	0.139 007 26
0.4570	0.208 849 00	0.208 621 38	0.007 263 99	0.104 386 56	0.001 816 71	0.139 312 28
0.4575	0.209 306 25	0.209 077 13	0.007 295 81	0.104 614 93	0.001 824 67	0.139 617 64
0.4580	0.209 764 00	0.209 533 37	0.007 327 73	0.104 843 55	0.001 832 65	0.139 923 33
0.4585	0.210 222 25	0.209 990 11	0.007 359 76	0.105 072 43	0.001 840 67	0.140 229 36
0.4590	0.210 681 00	0.210 447 34	0.007 391 89	0.105 301 55	0.001 848 70	0.140 535 73
0.4595	0.211 140 25	0.210 905 05	0.007 424 12	0.105 530 92	0.001 856 77	0.140 842 43
0.4600	0.211 600 00	0.211 363 27	0.007 456 46	0.105 760 54	0.001 864 86	0.141 149 47
0.4605	0.212 060 25	0.211 821 97	0.007 488 91	0.105 990 40	0.001 872 98	0.141 456 84
0.4610	0.212 521 00	0.212 281 16	0.007 521 46	0.106 220 52	0.001 881 12	0.141 764 55
0.4615	0.212 982 25	0.212 740 85	0.007 554 12	0.106 450 88	0.001 889 29	0.142 072 60
0.4620	0.213 444 00	0.213 201 02	0.007 586 88	0.106 681 50	0.001 897 49	0.142 380 99
0.4625	0.213 906 25	0.213 661 69	0.007 619 75	0.106 912 36	0.001 905 72	0.142 689 71
0.4630	0.214 369 00	0.214 122 85	0.007 652 73	0.107 143 47	0.001 913 97	0.142 998 76
0.4635	0.214 832 25	0.214 584 50	0.007 685 81	0.107 374 83	0.001 922 25	0.143 308 16
0.4640	0.215 296 00	0.215 046 65	0.007 719 00	0.107 606 43	0.001 930 55	0.143 617 89
0.4645	0.215 760 25	0.215 509 28	0.007 752 30	0.107 838 29	0.001 938 88	0.143 927 95
0.4650	0.216 225 00	0.215 972 41	0.007 785 71	0.108 070 39	0.001 947 24	0.144 238 35
0.4655	0.216 690 25	0.216 436 02	0.007 819 22	0.108 302 74	0.001 955 62	0.144 549 09
0.4660	0.217 156 00	0.216 900 13	0.007 852 84	0.108 535 35	0.001 964 04	0.144 860 17
0.4665	0.217 622 25	0.217 364 73	0.007 886 57	0.108 768 20	0.001 972 48	0.145 171 58
0.4670	0.218 089 00	0.217 829 82	0.007 920 41	0.109 001 29	0.001 980 94	0.145 483 33
0.4675	0.218 556 25	0.218 295 40	0.007 954 35	0.109 234 64	0.001 989 44	0.145 795 41
0.4680	0.219 024 00	0.218 761 47	0.007 988 41	0.109 468 24	0.001 997 96	0.146 107 83
0.4685	0.219 492 25	0.219 228 04	0.008 022 57	0.109 702 08	0.002 006 51	0.146 420 59
0.4690	0.219 961 00	0.219 695 09	0.008 056 84	0.109 936 17	0.002 015 08	0.146 733 68
0.4695	0.220 430 25	0.220 162 64	0.008 091 23	0.110 170 51	0.002 023 68	0.147 047 11
0.4700	0.220 900 00	0.220 630 67	0.008 125 72	0.110 405 10	0.002 032 31	0.147 360 88
0.4705	0.221 370 25	0.221 099 20	0.008 160 32	0.110 639 94	0.002 040 97	0.147 674 98
0.4710	0.221 841 00	0.221 568 22	0.008 195 03	0.110 875 03	0.002 049 66	0.147 989 42
0.4715	0.222 312 25	0.222 037 73	0.008 229 86	0.111 110 36	0.002 058 37	0.148 304 20
0.4720	0.222 784 00	0.222 507 72	0.008 264 79	0.111 345 94	0.002 067 11	0.148 619 31
0.4725	0.223 256 25	0.222 978 21	0.008 299 83	0.111 581 78	0.002 075 88	0.148 934 76
0.4730	0.223 729 00	0.223 449 20	0.008 334 99	0.111 817 86	0.002 084 68	0.149 250 55
0.4735	0.224 202 25	0.223 920 67	0.008 370 26	0.112 054 18	0.002 093 50	0.149 566 67
0.4740	0.224 676 00	0.224 392 63	0.008 405 64	0.112 290 76	0.002 102 36	0.149 883 13
0.4745	0.225 150 25	0.224 865 08	0.008 441 13	0.112 527 59	0.002 111 24	0.150 199 93
0.4750	0.225 625 00	0.225 338 02	0.008 476 73	0.112 764 66	0.002 120 15	0.150 517 06
0.4755	0.226 100 25	0.225 811 46	0.008 512 45	0.113 001 98	0.002 129 08	0.150 834 53
0.4760	0.226 576 00	0.226 285 38	0.008 548 27	0.113 239 55	0.002 138 05	0.151 152 34
0.4765	0.227 052 25	0.226 759 80	0.008 584 21	0.113 477 37	0.002 147 04	0.151 470 48
0.4770	0.227 529 00	0.227 234 70	0.008 620 27	0.113 715 44	0.002 156 06	0.151 788 96
0.4775	0.228 006 25	0.227 710 10	0.008 656 43	0.113 953 75	0.002 165 11	0.152 107 78
0.4780	0.228 484 00	0.228 185 98	0.008 692 72	0.114 192 32	0.002 174 19	0.152 426 93
0.4785	0.228 962 25	0.228 662 36	0.008 729 11	0.114 431 13	0.002 183 30	0.152 746 42
0.4790	0.229 441 00	0.229 139 22	0.008 765 62	0.114 670 19	0.002 192 43	0.153 066 25
0.4795	0.229 920 25	0.229 616 58	0.008 802 24	0.114 909 50	0.002 201 60	0.153 386 41
0.4800	0.230 400 00	0.230 094 42	0.008 838 98	0.115 149 06	0.002 210 79	0.153 706 91

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
0.4405	0.064 738 12	0.193 959 09	5 33 31.8	1 51 10.6	1 51 10.1	0 0 0.5
0.4410	0.064 885 44	0.194 399 28	5 34 17.3	1 51 25.8	1 51 25.2	0 0 0.5
0.4415	0.065 032 92	0.194 839 97	5 35 2.8	1 51 40.9	1 51 40.4	0 0 0.5
0.4420	0.065 180 57	0.195 281 16	5 35 48.4	1 51 56.1	1 51 55.6	0 0 0.5
0.4425	0.065 328 39	0.195 722 85	5 36 34.0	1 52 11.3	1 52 10.8	0 0 0.5
0.4430	0.065 476 38	0.196 165 03	5 37 19.6	1 52 26.5	1 52 26.0	0 0 0.6
0.4435	0.065 624 54	0.196 607 71	5 38 5.3	1 52 41.8	1 52 41.2	0 0 0.6
0.4440	0.065 772 86	0.197 050 89	5 38 51.1	1 52 57.0	1 52 56.5	0 0 0.6
0.4445	0.065 921 36	0.197 494 56	5 39 36.9	1 53 12.3	1 53 11.7	0 0 0.6
0.4450	0.066 070 03	0.197 938 73	5 40 22.8	1 53 27.6	1 53 27.0	0 0 0.6
0.4455	0.066 218 86	0.198 383 40	5 41 8.7	1 53 42.9	1 53 42.3	0 0 0.6
0.4460	0.066 367 86	0.198 828 56	5 41 54.7	1 53 58.2	1 53 57.7	0 0 0.6
0.4465	0.066 517 03	0.199 274 22	5 42 40.7	1 54 13.6	1 54 13.0	0 0 0.6
0.4470	0.066 666 38	0.199 720 38	5 43 26.8	1 54 28.9	1 54 28.3	0 0 0.6
0.4475	0.066 815 89	0.200 167 03	5 44 12.9	1 54 44.3	1 54 43.7	0 0 0.6
0.4480	0.066 965 56	0.200 614 18	5 44 59.1	1 54 59.7	1 54 59.1	0 0 0.6
0.4485	0.067 115 41	0.201 061 83	5 45 45.3	1 55 15.1	1 55 14.5	0 0 0.6
0.4490	0.067 265 43	0.201 509 97	5 46 31.6	1 55 30.5	1 55 29.9	0 0 0.6
0.4495	0.067 415 62	0.201 958 61	5 47 17.9	1 55 46.0	1 55 45.4	0 0 0.6
0.4500	0.067 565 97	0.202 407 75	5 48 4.3	1 56 1.4	1 56 0.8	0 0 0.6
0.4505	0.067 716 50	0.202 857 38	5 48 50.7	1 56 16.9	1 56 16.3	0 0 0.6
0.4510	0.067 867 19	0.203 307 51	5 49 37.2	1 56 32.4	1 56 31.8	0 0 0.6
0.4515	0.068 018 05	0.203 758 14	5 50 23.8	1 56 47.9	1 56 47.3	0 0 0.6
0.4520	0.068 169 09	0.204 209 26	5 51 10.4	1 57 3.5	1 57 2.8	0 0 0.6
0.4525	0.068 320 29	0.204 660 88	5 51 57.0	1 57 19.0	1 57 18.4	0 0 0.6
0.4530	0.068 471 66	0.205 113 00	5 52 43.7	1 57 34.6	1 57 33.9	0 0 0.6
0.4535	0.068 623 20	0.205 565 61	5 53 30.4	1 57 50.1	1 57 49.5	0 0 0.6
0.4540	0.068 774 91	0.206 018 72	5 54 17.2	1 58 5.7	1 58 5.1	0 0 0.6
0.4545	0.068 926 78	0.206 472 33	5 55 4.1	1 58 21.4	1 58 20.7	0 0 0.6
0.4550	0.069 078 83	0.206 926 43	5 55 51.0	1 58 37.0	1 58 36.3	0 0 0.6
0.4555	0.069 231 05	0.207 381 03	5 56 37.9	1 58 52.6	1 58 52.0	0 0 0.7
0.4560	0.069 383 43	0.207 836 12	5 57 24.9	1 59 8.3	1 59 7.7	0 0 0.7
0.4565	0.069 535 99	0.208 291 71	5 58 12.0	1 59 24.0	1 59 23.3	0 0 0.7
0.4570	0.069 688 71	0.208 747 80	5 58 59.1	1 59 39.7	1 59 39.0	0 0 0.7
0.4575	0.069 841 61	0.209 204 38	5 59 46.3	1 59 55.4	1 59 54.8	0 0 0.7
0.4580	0.069 994 67	0.209 661 46	6 0 33.5	2 0 11.2	2 0 10.5	0 0 0.7
0.4585	0.070 147 90	0.210 119 04	6 1 20.7	2 0 26.9	2 0 26.2	0 0 0.7
0.4590	0.070 301 30	0.210 577 11	6 2 8.0	2 0 42.7	2 0 42.0	0 0 0.7
0.4595	0.070 454 87	0.211 035 68	6 2 55.4	2 0 58.5	2 0 57.8	0 0 0.7
0.4600	0.070 608 61	0.211 494 75	6 3 42.8	2 1 14.3	2 1 13.6	0 0 0.7
0.4605	0.070 762 52	0.211 954 31	6 4 30.3	2 1 30.1	2 1 29.4	0 0 0.7
0.4610	0.070 916 60	0.212 414 37	6 5 17.8	2 1 45.9	2 1 45.2	0 0 0.7
0.4615	0.071 070 85	0.212 874 92	6 6 5.4	2 2 1.8	2 2 1.1	0 0 0.7
0.4620	0.071 225 27	0.213 335 97	6 6 53.0	2 2 17.7	2 2 17.0	0 0 0.7
0.4625	0.071 379 85	0.213 797 52	6 7 40.7	2 2 33.6	2 2 32.8	0 0 0.7
0.4630	0.071 534 61	0.214 259 56	6 8 28.4	2 2 49.5	2 2 48.7	0 0 0.7
0.4635	0.071 689 54	0.214 722 10	6 9 16.2	2 3 5.4	2 3 4.7	0 0 0.7
0.4640	0.071 844 63	0.215 185 14	6 10 4.0	2 3 21.3	2 3 20.6	0 0 0.7
0.4645	0.071 999 89	0.215 648 67	6 10 51.9	2 3 37.3	2 3 36.6	0 0 0.7
0.4650	0.072 155 33	0.216 112 70	6 11 39.8	2 3 53.3	2 3 52.5	0 0 0.7
0.4655	0.072 310 93	0.216 577 22	6 12 27.8	2 4 9.3	2 4 8.5	0 0 0.7
0.4660	0.072 466 70	0.217 042 24	6 13 15.8	2 4 25.3	2 4 24.5	0 0 0.7
0.4665	0.072 622 65	0.217 507 76	6 14 3.9	2 4 41.3	2 4 40.6	0 0 0.8
0.4670	0.072 778 76	0.217 973 77	6 14 52.0	2 4 57.3	2 4 56.6	0 0 0.8
0.4675	0.072 935 04	0.218 440 27	6 15 40.2	2 5 13.4	2 5 12.7	0 0 0.8
0.4680	0.073 091 49	0.218 907 28	6 16 28.5	2 5 29.5	2 5 28.7	0 0 0.8
0.4685	0.073 248 11	0.219 374 78	6 17 16.8	2 5 45.6	2 5 44.8	0 0 0.8
0.4690	0.073 404 90	0.219 842 77	6 18 5.1	2 6 1.7	2 6 0.9	0 0 0.8
0.4695	0.073 561 86	0.220 311 27	6 18 53.5	2 6 17.8	2 6 17.1	0 0 0.8
0.4700	0.073 718 99	0.220 780 25	6 19 41.9	2 6 34.0	2 6 33.2	0 0 0.8
0.4705	0.073 876 29	0.221 249 74	6 20 30.4	2 6 50.1	2 6 49.4	0 0 0.8
0.4710	0.074 033 76	0.221 719 72	6 21 19.0	2 7 6.3	2 7 5.5	0 0 0.8
0.4715	0.074 191 40	0.222 190 19	6 22 7.6	2 7 22.5	2 7 21.7	0 0 0.8
0.4720	0.074 349 20	0.222 661 16	6 22 56.2	2 7 38.7	2 7 37.9	0 0 0.8
0.4725	0.074 507 18	0.223 132 63	6 23 45.0	2 7 55.0	2 7 54.2	0 0 0.8
0.4730	0.074 665 33	0.223 604 59	6 24 33.7	2 8 11.2	2 8 10.4	0 0 0.8
0.4735	0.074 823 64	0.224 077 05	6 25 22.5	2 8 27.5	2 8 26.7	0 0 0.8
0.4740	0.074 982 13	0.224 550 01	6 26 11.4	2 8 43.8	2 8 43.0	0 0 0.8
0.4745	0.075 140 78	0.225 023 46	6 27 0.3	2 9 0.1	2 8 59.3	0 0 0.8
0.4750	0.075 299 61	0.225 497 41	6 27 49.2	2 9 16.4	2 9 15.6	0 0 0.8
0.4755	0.075 458 61	0.225 971 85	6 28 38.3	2 9 32.8	2 9 31.9	0 0 0.8
0.4760	0.075 617 77	0.226 446 79	6 29 27.3	2 9 49.1	2 9 48.3	0 0 0.8
0.4765	0.075 777 10	0.226 922 22	6 30 16.4	2 10 5.5	2 10 4.6	0 0 0.9
0.4770	0.075 936 61	0.227 398 15	6 31 5.6	2 10 21.9	2 10 21.0	0 0 0.9
0.4775	0.076 096 28	0.227 874 57	6 31 54.8	2 10 38.3	2 10 37.4	0 0 0.9
0.4780	0.076 256 13	0.228 351 49	6 32 44.1	2 10 54.7	2 10 53.8	0 0 0.9
0.4785	0.076 416 14	0.228 828 91	6 33 33.4	2 11 11.1	2 11 10.3	0 0 0.9
0.4790	0.076 576 32	0.229 306 82	6 34 22.8	2 11 27.6	2 11 26.7	0 0 0.9
0.4795	0.076 736 68	0.229 785 23	6 35 12.2	2 11 44.1	2 11 43.2	0 0 0.9
0.4800	0.076 897 20	0.230 264 13	6 36 1.7	2 12 0.6	2 11 59.7	0 0 0.9

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.4805	0.230 880 25	0.230 572 76	0.008 875 83	0.115 388 86	0.002 220 01	0.154 027 75
0.4810	0.231 361 00	0.231 051 58	0.008 912 79	0.115 628 92	0.002 229 26	0.154 348 92
0.4815	0.231 842 25	0.231 530 90	0.008 949 88	0.115 869 22	0.002 238 54	0.154 670 43
0.4820	0.232 324 00	0.232 010 71	0.008 987 07	0.116 109 77	0.002 247 85	0.154 992 28
0.4825	0.232 806 25	0.232 491 C0	0.009 024 39	0.116 350 57	0.002 257 19	0.155 314 47
0.4830	0.233 289 00	0.232 971 79	0.009 061 81	0.116 591 62	0.002 266 55	0.155 636 99
0.4835	0.233 772 25	0.233 453 C6	0.009 099 36	0.116 832 91	0.002 275 95	0.155 959 85
0.4840	0.234 256 CC	0.233 934 83	0.009 137 02	0.117 074 46	0.002 285 37	0.156 283 04
0.4845	0.234 740 25	0.234 417 C8	0.009 174 80	0.117 316 25	0.002 294 83	0.156 606 57
0.4850	0.235 225 00	0.234 899 83	0.009 212 69	0.117 558 29	0.002 304 31	0.156 930 44
0.4855	0.235 710 25	0.235 383 06	0.009 250 70	0.117 800 58	0.002 313 82	0.157 254 65
0.4860	0.236 196 00	0.235 866 79	0.009 288 83	0.118 043 12	0.002 323 37	0.157 579 19
0.4865	0.236 682 25	0.236 351 00	0.009 327 08	0.118 285 90	0.002 332 94	0.157 904 07
0.4870	0.237 169 00	0.236 835 70	0.009 365 44	0.118 528 94	0.002 342 54	0.158 229 29
0.4875	0.237 656 25	0.237 320 90	0.009 403 93	0.118 772 22	0.002 352 17	0.158 554 84
0.4880	0.238 144 00	0.237 806 58	0.009 442 53	0.119 015 75	0.002 361 83	0.158 880 73
0.4885	0.238 632 25	0.238 292 75	0.009 481 25	0.119 259 53	0.002 371 52	0.159 206 96
0.4890	0.239 121 00	0.238 779 41	0.009 520 08	0.119 503 55	0.002 381 24	0.159 533 53
0.4895	0.239 610 25	0.239 266 56	0.009 559 C4	0.119 747 83	0.002 390 99	0.159 860 43
0.4900	0.240 100 00	0.239 754 2C	0.009 598 12	0.119 992 35	0.002 400 76	0.160 187 67
0.4905	0.240 590 25	0.240 242 33	0.009 637 31	0.120 237 12	0.002 410 57	0.160 515 25
0.4910	0.241 081 00	0.240 730 94	0.009 676 63	0.120 482 14	0.002 420 41	0.160 843 16
0.4915	0.241 572 25	0.241 220 C5	0.009 716 06	0.120 727 41	0.002 430 28	0.161 171 41
0.4920	0.242 064 00	0.241 709 65	0.009 755 62	0.120 972 93	0.002 440 18	0.161 500 00
0.4925	0.242 556 25	0.242 199 73	0.009 795 29	0.121 218 69	0.002 450 11	0.161 828 93
0.4930	0.243 049 00	0.242 690 31	0.009 835 09	0.121 464 70	0.002 460 07	0.162 158 19
0.4935	0.243 542 25	0.243 181 37	0.009 875 01	0.121 710 96	0.002 470 06	0.162 487 79
0.4940	0.244 036 00	0.243 672 92	0.009 915 04	0.121 957 47	0.002 480 08	0.162 817 73
0.4945	0.244 530 25	0.244 164 96	0.009 955 20	0.122 204 23	0.002 490 13	0.163 148 00
0.4950	0.245 025 00	0.244 657 49	0.009 995 49	0.122 451 23	0.002 500 21	0.163 478 61
0.4955	0.245 520 25	0.245 150 51	0.010 035 89	0.122 698 48	0.002 510 32	0.163 809 56
0.4960	0.246 016 CC	0.245 644 C1	0.010 076 42	0.122 945 99	0.002 520 47	0.164 140 85
0.4965	0.246 512 25	0.246 138 01	0.010 117 06	0.123 193 73	0.002 530 64	0.164 472 47
0.4970	0.247 009 00	0.246 632 49	0.010 157 83	0.123 441 73	0.002 540 84	0.164 804 43
0.4575	0.247 506 25	0.247 127 47	0.010 198 73	0.123 689 98	0.002 551 08	0.165 136 73
0.4980	0.248 004 00	0.247 622 53	0.010 239 74	0.123 938 47	0.002 561 34	0.165 469 36
0.4985	0.248 502 25	0.248 118 88	0.010 280 88	0.124 187 21	0.002 571 64	0.165 802 34
0.4990	0.249 001 00	0.248 615 32	0.010 322 15	0.124 436 20	0.002 581 97	0.166 135 65
0.4995	0.249 500 25	0.249 112 24	0.010 363 54	0.124 685 44	0.002 592 32	0.166 469 29
0.5000	0.250 000 00	0.249 609 66	0.010 405 05	0.124 934 92	0.002 602 71	0.166 803 28
0.5005	0.250 500 25	0.250 107 56	0.010 446 68	0.125 184 66	0.002 613 13	0.167 137 60
0.5010	0.251 001 00	0.250 605 95	0.010 488 44	0.125 434 64	0.002 623 59	0.167 472 26
0.5015	0.251 502 25	0.251 104 83	0.010 530 33	0.125 684 87	0.002 634 07	0.167 807 26
0.5020	0.252 004 00	0.251 604 20	0.010 572 34	0.125 935 35	0.002 644 58	0.168 142 59
0.5025	0.252 506 25	0.252 104 C6	0.010 614 47	0.126 186 07	0.002 655 13	0.168 478 27
0.5030	0.253 009 00	0.252 604 40	0.010 656 74	0.126 437 05	0.002 665 71	0.168 814 28
0.5035	0.253 512 25	0.253 105 23	0.010 699 12	0.126 688 27	0.002 676 32	0.169 150 62
0.5040	0.254 016 00	0.253 606 55	0.010 741 64	0.126 939 74	0.002 686 96	0.169 487 31
0.5045	0.254 520 25	0.254 108 36	0.010 784 28	0.127 191 46	0.002 697 63	0.169 824 33
0.5050	0.255 025 00	0.254 610 66	0.010 827 04	0.127 443 42	0.002 708 33	0.170 161 69
0.5055	0.255 530 25	0.255 113 44	0.010 869 94	0.127 695 64	0.002 719 07	0.170 499 39
0.5060	0.256 036 00	0.255 616 71	0.010 912 96	0.127 948 10	0.002 729 84	0.170 837 43
0.5065	0.256 542 25	0.256 120 47	0.010 956 10	0.128 200 81	0.002 740 64	0.171 175 80
0.5070	0.257 049 00	0.256 624 72	0.010 999 38	0.128 453 76	0.002 751 47	0.171 514 51
0.5075	0.257 556 25	0.257 129 45	0.011 042 78	0.128 706 97	0.002 762 33	0.171 853 56
0.5080	0.258 064 CC	0.257 634 67	0.011 086 31	0.128 960 42	0.002 773 23	0.172 192 95
0.5085	0.258 572 25	0.258 140 38	0.011 129 97	0.129 214 12	0.002 784 15	0.172 532 67
0.5090	0.259 081 00	0.258 646 58	0.011 173 76	0.129 468 C7	0.002 795 11	0.172 872 73
0.5095	0.259 590 25	0.259 153 27	0.011 217 68	0.129 722 27	0.002 806 11	0.173 213 13
0.5100	0.260 100 00	0.259 660 44	0.011 261 72	0.129 976 72	0.002 817 13	0.173 553 87
0.5105	0.260 610 25	0.260 168 10	0.011 305 90	0.130 231 41	0.002 828 19	0.173 894 94
0.5110	0.261 121 00	0.260 676 24	0.011 350 20	0.130 486 35	0.002 839 28	0.174 236 36
0.5115	0.261 632 25	0.261 184 88	0.011 394 63	0.130 741 54	0.002 850 40	0.174 578 11
0.5120	0.262 144 00	0.261 694 C0	0.011 439 20	0.130 996 98	0.002 861 56	0.174 920 19
0.5125	0.262 656 25	0.262 203 61	0.011 483 89	0.131 252 66	0.002 872 74	0.175 262 62
0.5130	0.263 169 00	0.262 713 70	0.011 528 72	0.131 508 59	0.002 883 96	0.175 605 38
0.5135	0.263 682 25	0.263 224 28	0.011 573 68	0.131 764 77	0.002 895 22	0.175 948 49
0.5140	0.264 196 00	0.263 735 35	0.011 618 76	0.132 021 20	0.002 906 50	0.176 291 93
0.5145	0.264 710 25	0.264 246 91	0.011 663 98	0.132 277 88	0.002 917 82	0.176 635 70
0.5150	0.265 225 00	0.264 758 95	0.011 709 33	0.132 534 80	0.002 929 17	0.176 979 82
0.5155	0.265 740 25	0.265 271 48	0.011 754 81	0.132 791 97	0.002 940 56	0.177 324 27
0.5160	0.266 256 00	0.265 784 50	0.011 800 43	0.133 049 39	0.002 951 98	0.177 669 07
0.5165	0.266 772 25	0.266 298 CC	0.011 846 17	0.133 307 06	0.002 963 43	0.178 014 20
0.5170	0.267 289 00	0.266 811 99	0.011 892 05	0.133 564 97	0.002 974 91	0.178 359 66
0.5175	0.267 806 25	0.267 326 47	0.011 938 06	0.133 823 14	0.002 986 43	0.178 705 47
0.5180	0.268 324 00	0.267 841 43	0.011 984 21	0.134 081 55	0.002 997 98	0.179 051 61
0.5185	0.268 842 25	0.268 356 88	0.012 030 49	0.134 340 20	0.003 009 56	0.179 398 10
0.5190	0.269 361 00	0.268 872 82	0.012 076 90	0.134 599 11	0.003 021 18	0.179 744 92
0.5195	0.269 880 25	0.269 389 24	0.012 123 45	0.134 858 26	0.003 032 83	0.180 092 07
0.5200	0.270 400 00	0.269 906 15	0.012 170 13	0.135 117 66	0.003 044 52	0.180 439 57

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
			DEG MNT SEC			
0.4805	0.077 057 89	0.230 743 53	6 36 51.2	2 12 17.1	2 12 16.2	0 0 0.9
0.4810	0.077 218 76	0.231 223 43	6 37 40.8	2 12 33.6	2 12 32.7	0 0 0.9
0.4815	0.077 379 79	0.231 703 82	6 38 30.4	2 12 50.1	2 12 49.2	0 0 0.9
0.4820	0.077 540 99	0.232 184 70	6 39 20.1	2 13 6.7	2 13 5.8	0 0 0.9
0.4825	0.077 702 36	0.232 666 08	6 40 9.9	2 13 23.3	2 13 22.4	0 0 0.9
0.4830	0.077 863 91	0.233 147 96	6 40 59.7	2 13 39.9	2 13 39.0	0 0 0.9
0.4835	0.078 025 62	0.233 630 33	6 41 49.5	2 13 56.5	2 13 55.6	0 0 0.9
0.4840	0.078 187 50	0.234 113 20	6 42 39.4	2 14 13.1	2 14 12.2	0 0 0.9
0.4845	0.078 349 55	0.234 596 56	6 43 29.3	2 14 29.8	2 14 28.8	0 0 0.9
0.4850	0.078 511 78	0.235 080 42	6 44 19.3	2 14 46.4	2 14 45.5	0 0 0.9
0.4855	0.078 674 17	0.235 564 77	6 45 9.4	2 15 3.1	2 15 2.2	0 0 1.0
0.4860	0.078 836 73	0.236 049 62	6 45 59.5	2 15 19.8	2 15 18.9	0 0 1.0
0.4865	0.078 999 46	0.236 534 97	6 46 49.6	2 15 36.5	2 15 35.6	0 0 1.0
0.4870	0.079 162 36	0.237 020 80	6 47 39.8	2 15 53.3	2 15 52.3	0 0 1.0
0.4875	0.079 325 44	0.237 507 14	6 48 30.1	2 16 10.0	2 16 9.0	0 0 1.0
0.4880	0.079 488 68	0.237 993 97	6 49 20.4	2 16 26.8	2 16 25.8	0 0 1.0
0.4885	0.079 652 09	0.238 481 30	6 50 10.7	2 16 43.6	2 16 42.6	0 0 1.0
0.4890	0.079 815 67	0.238 969 12	6 51 1.1	2 17 0.4	2 16 59.4	0 0 1.0
0.4895	0.079 979 43	0.239 457 43	6 51 51.6	2 17 17.2	2 17 16.2	0 0 1.0
0.4900	0.080 143 35	0.239 946 24	6 52 42.1	2 17 34.0	2 17 33.0	0 0 1.0
0.4905	0.080 307 44	0.240 435 55	6 53 32.7	2 17 50.9	2 17 49.9	0 0 1.0
0.4910	0.080 471 70	0.240 925 35	6 54 23.3	2 18 7.8	2 18 6.7	0 0 1.0
0.4915	0.080 636 14	0.241 415 65	6 55 13.9	2 18 24.6	2 18 23.6	0 0 1.0
0.4920	0.080 800 74	0.241 906 44	6 56 4.6	2 18 41.5	2 18 40.5	0 0 1.0
0.4925	0.080 965 51	0.242 397 73	6 56 55.4	2 18 58.5	2 18 57.4	0 0 1.0
0.4930	0.081 130 46	0.242 889 51	6 57 46.2	2 19 15.4	2 19 14.4	0 0 1.0
0.4935	0.081 295 57	0.243 381 79	6 58 37.1	2 19 32.4	2 19 31.3	0 0 1.1
0.4940	0.081 460 85	0.243 874 56	6 59 28.0	2 19 49.3	2 19 48.3	0 0 1.1
0.4945	0.081 626 31	0.244 367 83	7 0 19.0	2 20 6.3	2 20 5.3	0 0 1.1
0.4950	0.081 791 93	0.244 861 59	7 1 10.0	2 20 23.3	2 20 22.3	0 0 1.1
0.4955	0.081 957 73	0.245 355 84	7 2 1.1	2 20 40.4	2 20 39.3	0 0 1.1
0.4960	0.082 123 69	0.245 850 60	7 2 52.2	2 20 57.4	2 20 56.3	0 0 1.1
0.4965	0.082 289 83	0.246 345 84	7 3 43.4	2 21 14.5	2 21 13.4	0 0 1.1
0.4970	0.082 456 13	0.246 841 59	7 4 34.6	2 21 31.5	2 21 30.4	0 0 1.1
0.4975	0.082 622 61	0.247 337 82	7 5 25.9	2 21 48.6	2 21 47.5	0 0 1.1
0.4980	0.082 789 25	0.247 834 56	7 6 17.2	2 22 5.7	2 22 4.6	0 0 1.1
0.4985	0.082 956 07	0.248 331 78	7 7 8.6	2 22 22.9	2 22 21.8	0 0 1.1
0.4990	0.083 123 06	0.248 829 50	7 8 0.1	2 22 40.0	2 22 38.9	0 0 1.1
0.4995	0.083 290 21	0.249 327 72	7 8 51.6	2 22 57.2	2 22 56.1	0 0 1.1
0.5000	0.083 457 54	0.249 826 43	7 9 43.1	2 23 14.4	2 23 13.2	0 0 1.1
0.5005	0.083 625 04	0.250 325 64	7 10 34.7	2 23 31.6	2 23 30.4	0 0 1.1
0.5010	0.083 792 71	0.250 825 34	7 11 26.3	2 23 48.8	2 23 47.6	0 0 1.2
0.5015	0.083 960 55	0.251 325 53	7 12 18.0	2 24 6.0	2 24 4.9	0 0 1.2
0.5020	0.084 128 56	0.251 826 23	7 13 9.8	2 24 23.3	2 24 22.1	0 0 1.2
0.5025	0.084 296 74	0.252 327 41	7 14 1.6	2 24 40.5	2 24 39.4	0 0 1.2
0.5030	0.084 465 09	0.252 829 09	7 14 53.4	2 24 57.8	2 24 56.6	0 0 1.2
0.5035	0.084 633 61	0.253 331 26	7 15 45.3	2 25 15.1	2 25 13.9	0 0 1.2
0.5040	0.084 802 30	0.253 833 93	7 16 37.3	2 25 32.4	2 25 31.2	0 0 1.2
0.5045	0.084 971 16	0.254 337 10	7 17 29.3	2 25 49.8	2 25 48.6	0 0 1.2
0.5050	0.085 140 19	0.254 840 76	7 18 21.3	2 26 7.1	2 26 5.9	0 0 1.2
0.5055	0.085 309 39	0.255 344 91	7 19 13.4	2 26 24.5	2 26 23.3	0 0 1.2
0.5060	0.085 478 77	0.255 849 56	7 20 5.6	2 26 41.9	2 26 40.6	0 0 1.2
0.5065	0.085 648 31	0.256 354 70	7 20 57.8	2 26 59.3	2 26 58.0	0 0 1.2
0.5070	0.085 818 03	0.256 860 33	7 21 50.1	2 27 16.7	2 27 15.5	0 0 1.2
0.5075	0.085 987 91	0.257 366 47	7 22 42.4	2 27 34.1	2 27 32.9	0 0 1.2
0.5080	0.086 157 97	0.257 873 09	7 23 34.8	2 27 51.6	2 27 50.3	0 0 1.3
0.5085	0.086 328 19	0.258 380 21	7 24 27.2	2 28 9.1	2 28 7.8	0 0 1.3
0.5090	0.086 498 59	0.258 887 83	7 25 19.6	2 28 26.5	2 28 25.3	0 0 1.3
0.5095	0.086 669 16	0.259 395 93	7 26 12.2	2 28 44.1	2 28 42.8	0 0 1.3
0.5100	0.086 839 90	0.259 904 54	7 27 4.7	2 29 1.6	2 29 0.3	0 0 1.3
0.5105	0.087 010 81	0.260 413 64	7 27 57.4	2 29 19.1	2 29 17.8	0 0 1.3
0.5110	0.087 181 89	0.260 923 23	7 28 50.0	2 29 36.7	2 29 35.4	0 0 1.3
0.5115	0.087 353 14	0.261 433 31	7 29 42.8	2 29 54.3	2 29 53.0	0 0 1.3
0.5120	0.087 524 56	0.261 943 89	7 30 35.5	2 30 11.8	2 30 10.5	0 0 1.3
0.5125	0.087 696 15	0.262 454 97	7 31 28.4	2 30 29.5	2 30 28.1	0 0 1.3
0.5130	0.087 867 91	0.262 966 54	7 32 21.3	2 30 47.1	2 30 45.8	0 0 1.3
0.5135	0.088 039 85	0.263 478 60	7 33 14.2	2 31 4.7	2 31 3.4	0 0 1.3
0.5140	0.088 211 95	0.263 991 16	7 34 7.2	2 31 22.4	2 31 21.0	0 0 1.3
0.5145	0.088 384 23	0.264 504 21	7 35 0.2	2 31 40.1	2 31 38.7	0 0 1.4
0.5150	0.088 556 67	0.265 017 76	7 35 53.3	2 31 57.8	2 31 56.4	0 0 1.4
0.5155	0.088 729 29	0.265 531 80	7 36 46.4	2 32 15.5	2 32 14.1	0 0 1.4
0.5160	0.088 902 08	0.266 046 33	7 37 39.6	2 32 33.2	2 32 31.8	0 0 1.4
0.5165	0.089 075 04	0.266 561 36	7 38 32.9	2 32 51.0	2 32 49.6	0 0 1.4
0.5170	0.089 248 17	0.267 076 88	7 39 26.2	2 33 8.7	2 33 7.3	0 0 1.4
0.5175	0.089 421 47	0.267 592 90	7 40 19.5	2 33 26.5	2 33 25.1	0 0 1.4
0.5180	0.089 594 94	0.268 109 41	7 41 12.9	2 33 44.3	2 33 42.9	0 0 1.4
0.5185	0.089 768 58	0.268 626 41	7 42 6.3	2 34 2.1	2 34 0.7	0 0 1.4
0.5190	0.089 942 40	0.269 143 91	7 42 59.8	2 34 19.9	2 34 18.5	0 0 1.4
0.5195	0.090 116 38	0.269 661 90	7 43 53.4	2 34 37.8	2 34 36.4	0 0 1.4
0.5200	0.090 290 54	0.270 180 39	7 44 47.0	2 34 55.7	2 34 54.2	0 0 1.4

TABLE III—FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III—FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.5205	0.270 920 25	0.270 423 55	0.012 216 94	0.135 377 31	0.003 056 24	0.180 787 40
0.5210	0.271 441 00	0.270 941 43	0.012 263 89	0.135 637 21	0.003 067 99	0.181 135 58
0.5215	0.271 962 25	0.271 459 80	0.012 310 97	0.135 897 35	0.003 079 78	0.181 484 09
0.5220	0.272 484 00	0.271 978 65	0.012 358 19	0.136 157 75	0.003 091 60	0.181 832 94
0.5225	0.273 006 25	0.272 497 99	0.012 405 55	0.136 418 39	0.003 103 45	0.182 182 12
0.5230	0.273 529 00	0.273 017 82	0.012 453 04	0.136 679 27	0.003 115 34	0.182 531 65
0.5235	0.274 052 25	0.273 538 13	0.012 500 66	0.136 940 41	0.003 127 26	0.182 881 51
0.5240	0.274 576 00	0.274 058 93	0.012 548 42	0.137 201 79	0.003 139 22	0.183 231 71
0.5245	0.275 100 25	0.274 580 22	0.012 596 32	0.137 463 42	0.003 151 21	0.183 582 26
0.5250	0.275 625 00	0.275 101 99	0.012 644 36	0.137 725 30	0.003 163 23	0.183 933 13
0.5255	0.276 150 25	0.275 624 24	0.012 692 53	0.137 987 43	0.003 175 29	0.184 284 35
0.5260	0.276 676 00	0.276 146 98	0.012 740 84	0.138 249 80	0.003 187 39	0.184 635 91
0.5265	0.277 202 25	0.276 670 21	0.012 789 29	0.138 512 42	0.003 199 52	0.184 987 80
0.5270	0.277 729 00	0.277 193 92	0.012 837 87	0.138 775 29	0.003 211 68	0.185 340 03
0.5275	0.278 256 25	0.277 718 12	0.012 886 59	0.139 038 40	0.003 223 88	0.185 692 60
0.5280	0.278 784 00	0.278 242 81	0.012 935 45	0.139 301 77	0.003 236 11	0.186 045 51
0.5285	0.279 312 25	0.278 767 98	0.012 984 45	0.139 565 38	0.003 248 38	0.186 398 76
0.5290	0.279 841 00	0.279 293 63	0.013 033 59	0.139 829 24	0.003 260 68	0.186 752 34
0.5295	0.280 370 25	0.279 819 77	0.013 082 87	0.140 093 35	0.003 273 01	0.187 106 27
0.5300	0.280 900 00	0.280 346 40	0.013 132 28	0.140 357 70	0.003 285 39	0.187 460 53
0.5305	0.281 430 25	0.280 873 51	0.013 181 84	0.140 622 30	0.003 297 79	0.187 815 13
0.5310	0.281 961 00	0.281 401 10	0.013 231 53	0.140 887 15	0.003 310 23	0.188 170 07
0.5315	0.282 492 25	0.281 929 19	0.013 281 37	0.141 152 25	0.003 322 71	0.188 525 35
0.5320	0.283 024 00	0.282 457 75	0.013 331 35	0.141 417 59	0.003 335 22	0.188 880 97
0.5325	0.283 556 25	0.282 986 80	0.013 381 46	0.141 683 18	0.003 347 77	0.189 236 92
0.5330	0.284 089 00	0.283 516 34	0.013 431 72	0.141 949 02	0.003 360 35	0.189 593 22
0.5335	0.284 622 25	0.284 046 36	0.013 482 12	0.142 215 11	0.003 372 97	0.189 949 85
0.5340	0.285 156 00	0.284 576 87	0.013 532 66	0.142 481 44	0.003 385 62	0.190 306 82
0.5345	0.285 690 25	0.285 107 86	0.013 583 34	0.142 748 02	0.003 398 31	0.190 664 13
0.5350	0.286 225 00	0.285 639 33	0.013 634 16	0.143 014 85	0.003 411 04	0.191 021 78
0.5355	0.286 760 25	0.286 171 29	0.013 685 13	0.143 281 93	0.003 423 80	0.191 379 77
0.5360	0.287 296 00	0.286 703 74	0.013 736 24	0.143 549 25	0.003 436 59	0.191 738 10
0.5365	0.287 832 25	0.287 236 67	0.013 787 49	0.143 816 82	0.003 449 42	0.192 096 76
0.5370	0.288 369 00	0.287 770 08	0.013 838 88	0.144 084 64	0.003 462 29	0.192 455 77
0.5375	0.288 906 25	0.288 303 98	0.013 890 42	0.144 352 71	0.003 475 19	0.192 815 11
0.5380	0.289 444 00	0.288 838 36	0.013 942 10	0.144 621 02	0.003 488 13	0.193 174 79
0.5385	0.289 982 25	0.289 373 23	0.013 993 92	0.144 889 58	0.003 501 11	0.193 534 81
0.5390	0.290 521 00	0.289 908 58	0.014 045 89	0.145 158 39	0.003 514 12	0.193 895 17
0.5395	0.291 060 25	0.290 444 42	0.014 098 00	0.145 427 45	0.003 527 17	0.194 255 87
0.5400	0.291 600 00	0.290 980 74	0.014 150 26	0.145 696 75	0.003 540 25	0.194 616 90
0.5405	0.292 140 25	0.291 517 54	0.014 202 66	0.145 966 30	0.003 553 37	0.194 978 28
0.5410	0.292 681 00	0.292 054 83	0.014 255 20	0.146 236 10	0.003 566 53	0.195 340 00
0.5415	0.293 222 25	0.292 592 60	0.014 307 90	0.146 506 14	0.003 579 72	0.195 702 05
0.5420	0.293 764 00	0.293 130 86	0.014 360 73	0.146 776 43	0.003 592 95	0.196 064 44
0.5425	0.294 306 25	0.293 669 60	0.014 413 72	0.147 046 97	0.003 606 22	0.196 427 18
0.5430	0.294 849 00	0.294 208 82	0.014 466 84	0.147 317 76	0.003 619 52	0.196 790 25
0.5435	0.295 392 25	0.294 748 53	0.014 520 12	0.147 588 79	0.003 632 86	0.197 153 66
0.5440	0.295 936 00	0.295 288 72	0.014 573 54	0.147 860 08	0.003 646 24	0.197 517 41
0.5445	0.296 480 25	0.295 829 39	0.014 627 11	0.148 131 60	0.003 659 65	0.197 881 49
0.5450	0.297 025 00	0.296 370 55	0.014 680 83	0.148 403 38	0.003 673 10	0.198 245 92
0.5455	0.297 570 25	0.296 912 19	0.014 734 69	0.148 675 40	0.003 686 59	0.198 610 69
0.5460	0.298 116 00	0.297 454 32	0.014 788 70	0.148 947 67	0.003 700 11	0.198 975 79
0.5465	0.298 662 25	0.297 996 93	0.014 842 86	0.149 220 19	0.003 713 67	0.199 341 24
0.5470	0.299 209 00	0.298 540 02	0.014 897 17	0.149 492 96	0.003 727 27	0.199 707 02
0.5475	0.299 756 25	0.299 083 59	0.014 951 62	0.149 765 97	0.003 740 91	0.200 073 15
0.5480	0.300 304 00	0.299 627 65	0.015 006 23	0.150 039 23	0.003 754 58	0.200 439 61
0.5485	0.300 852 25	0.300 172 19	0.015 060 98	0.150 312 73	0.003 768 29	0.200 806 41
0.5490	0.301 401 00	0.300 717 22	0.015 115 88	0.150 586 49	0.003 782 04	0.201 173 55
0.5495	0.301 950 25	0.301 262 73	0.015 170 94	0.150 860 49	0.003 795 82	0.201 541 03
0.5500	0.302 500 00	0.301 808 72	0.015 226 14	0.151 134 74	0.003 809 65	0.201 908 85
0.5505	0.303 050 25	0.302 355 19	0.015 281 49	0.151 409 23	0.003 823 51	0.202 277 01
0.5510	0.303 601 00	0.302 902 15	0.015 336 99	0.151 683 97	0.003 837 41	0.202 645 51
0.5515	0.304 152 25	0.303 449 59	0.015 392 65	0.151 958 96	0.003 851 34	0.203 014 35
0.5520	0.304 704 00	0.303 997 51	0.015 448 45	0.152 234 20	0.003 865 32	0.203 383 53
0.5525	0.305 256 25	0.304 545 91	0.015 504 41	0.152 509 68	0.003 879 33	0.203 753 04
0.5530	0.305 809 00	0.305 094 80	0.015 560 51	0.152 785 41	0.003 893 38	0.204 122 90
0.5535	0.306 362 25	0.305 644 17	0.015 616 77	0.153 061 39	0.003 907 47	0.204 493 10
0.5540	0.306 916 00	0.306 194 02	0.015 673 18	0.153 337 62	0.003 921 59	0.204 863 63
0.5545	0.307 470 25	0.306 744 35	0.015 729 75	0.153 614 09	0.003 935 76	0.205 234 51
0.5550	0.308 025 00	0.307 295 17	0.015 786 46	0.153 890 81	0.003 949 96	0.205 605 72
0.5555	0.308 580 25	0.307 846 47	0.015 843 33	0.154 167 77	0.003 964 20	0.205 977 28
0.5560	0.309 136 00	0.308 398 25	0.015 900 35	0.154 444 99	0.003 978 48	0.206 349 17
0.5565	0.309 692 25	0.308 950 51	0.015 957 53	0.154 722 45	0.003 992 80	0.206 721 40
0.5570	0.310 249 00	0.309 503 26	0.016 014 85	0.155 000 15	0.004 007 16	0.207 093 98
0.5575	0.310 806 25	0.310 056 49	0.016 072 34	0.155 278 11	0.004 021 55	0.207 466 89
0.5580	0.311 364 00	0.310 610 20	0.016 129 97	0.155 556 31	0.004 035 99	0.207 840 14
0.5585	0.311 922 25	0.311 164 39	0.016 187 76	0.155 834 76	0.004 050 46	0.208 213 73
0.5590	0.312 481 00	0.311 719 06	0.016 245 71	0.156 113 45	0.004 064 97	0.208 587 67
0.5595	0.313 040 25	0.312 274 22	0.016 303 81	0.156 392 39	0.004 079 52	0.208 961 94
0.5600	0.313 600 00	0.312 829 85	0.016 362 06	0.156 671 58	0.004 094 11	0.209 336 55

A/R= =LS/A= =VLS/R	ST/R	LC/P	θ	1/3 θ=Φ+C	Φ	C
			DEG MNT SEC			
0.5205	0.090 464 87	0.270 699 37	7 45 40.7	2 35 13.6	2 35 12.1	0 0 1.4
0.5210	0.090 639 36	0.271 218 84	7 46 34.4	2 35 31.5	2 35 30.0	0 0 1.5
0.5215	0.090 814 03	0.271 738 81	7 47 28.1	2 35 49.4	2 35 47.9	0 0 1.5
0.5220	0.090 988 87	0.272 259 27	7 48 21.9	2 36 7.3	2 36 5.8	0 0 1.5
0.5225	0.091 163 88	0.272 780 23	7 49 15.8	2 36 25.3	2 36 23.8	0 0 1.5
0.5230	0.091 339 07	0.273 301 68	7 50 9.7	2 36 43.2	2 36 41.7	0 0 1.5
0.5235	0.091 514 42	0.273 823 62	7 51 3.7	2 37 1.2	2 36 59.7	0 0 1.5
0.5240	0.091 689 95	0.274 346 06	7 51 57.7	2 37 19.2	2 37 17.7	0 0 1.5
0.5245	0.091 865 64	0.274 868 99	7 52 51.7	2 37 37.2	2 37 35.7	0 0 1.5
0.5250	0.092 041 51	0.275 392 41	7 53 45.9	2 37 55.3	2 37 53.8	0 0 1.5
0.5255	0.092 217 55	0.275 916 33	7 54 40.0	2 38 13.3	2 38 11.8	0 0 1.5
0.5260	0.092 393 76	0.276 440 74	7 55 34.3	2 38 31.4	2 38 29.9	0 0 1.5
0.5265	0.092 570 14	0.276 965 65	7 56 28.5	2 38 49.5	2 38 48.0	0 0 1.6
0.5270	0.092 746 69	0.277 491 05	7 57 22.9	2 39 7.6	2 39 6.1	0 0 1.6
0.5275	0.092 923 41	0.278 016 94	7 58 17.2	2 39 25.7	2 39 24.2	0 0 1.6
0.5280	0.093 100 31	0.278 543 33	7 59 11.7	2 39 43.9	2 39 42.3	0 0 1.6
0.5285	0.093 277 37	0.279 070 21	8 0 6.1	2 40 2.0	2 40 0.5	0 0 1.6
0.5290	0.093 454 61	0.279 597 58	8 1 0.7	2 40 20.2	2 40 18.6	0 0 1.6
0.5295	0.093 632 02	0.280 125 45	8 1 55.3	2 40 38.4	2 40 36.8	0 0 1.6
0.5300	0.093 809 60	0.280 653 81	8 2 49.9	2 40 56.6	2 40 55.0	0 0 1.6
0.5305	0.093 987 35	0.281 182 66	8 3 44.6	2 41 14.9	2 41 13.2	0 0 1.6
0.5310	0.094 165 27	0.281 712 01	8 4 39.3	2 41 33.1	2 41 31.5	0 0 1.6
0.5315	0.094 343 37	0.282 241 85	8 5 34.1	2 41 51.4	2 41 49.7	0 0 1.6
0.5320	0.094 521 63	0.282 772 18	8 6 28.9	2 42 9.6	2 42 8.0	0 0 1.7
0.5325	0.094 700 07	0.283 303 01	8 7 23.8	2 42 27.9	2 42 26.3	0 0 1.7
0.5330	0.094 878 68	0.283 834 33	8 8 18.8	2 42 46.3	2 42 44.6	0 0 1.7
0.5335	0.095 057 46	0.284 366 14	8 9 13.8	2 43 4.6	2 43 2.9	0 0 1.7
0.5340	0.095 236 41	0.284 898 45	8 10 8.8	2 43 22.9	2 43 21.3	0 0 1.7
0.5345	0.095 415 53	0.285 431 25	8 11 3.9	2 43 41.3	2 43 39.6	0 0 1.7
0.5350	0.095 594 83	0.285 964 54	8 11 59.1	2 43 59.7	2 43 58.0	0 0 1.7
0.5355	0.095 774 30	0.286 498 33	8 12 54.3	2 44 18.1	2 44 16.4	0 0 1.7
0.5360	0.095 953 93	0.287 032 61	8 13 49.5	2 44 36.5	2 44 34.8	0 0 1.7
0.5365	0.096 133 74	0.287 567 38	8 14 44.8	2 44 54.9	2 44 53.2	0 0 1.7
0.5370	0.096 313 72	0.288 102 65	8 15 40.2	2 45 13.4	2 45 11.7	0 0 1.7
0.5375	0.096 493 88	0.288 638 40	8 16 35.6	2 45 31.9	2 45 30.1	0 0 1.8
0.5380	0.096 674 20	0.289 174 66	8 17 31.1	2 45 50.4	2 45 48.6	0 0 1.8
0.5385	0.096 854 70	0.289 711 40	8 18 26.6	2 46 8.9	2 46 7.1	0 0 1.8
0.5390	0.097 035 37	0.290 248 64	8 19 22.1	2 46 27.4	2 46 25.6	0 0 1.8
0.5395	0.097 216 21	0.290 786 37	8 20 17.7	2 46 45.9	2 46 44.1	0 0 1.8
0.5400	0.097 397 22	0.291 324 59	8 21 13.4	2 47 4.5	2 47 2.7	0 0 1.8
0.5405	0.097 578 40	0.291 863 31	8 22 9.1	2 47 23.0	2 47 21.2	0 0 1.8
0.5410	0.097 759 75	0.292 402 52	8 23 4.9	2 47 41.6	2 47 39.8	0 0 1.8
0.5415	0.097 941 28	0.292 942 22	8 24 0.7	2 48 0.2	2 47 58.4	0 0 1.8
0.5420	0.098 122 98	0.293 482 42	8 24 56.6	2 48 18.9	2 48 17.0	0 0 1.8
0.5425	0.098 304 85	0.294 023 11	8 25 52.5	2 48 37.5	2 48 35.6	0 0 1.9
0.5430	0.098 486 89	0.294 564 29	8 26 48.5	2 48 56.2	2 48 54.3	0 0 1.9
0.5435	0.098 669 11	0.295 105 96	8 27 44.5	2 49 14.8	2 49 13.0	0 0 1.9
0.5440	0.098 851 49	0.295 648 13	8 28 40.6	2 49 33.5	2 49 31.6	0 0 1.9
0.5445	0.099 034 05	0.296 190 79	8 29 36.7	2 49 52.2	2 49 50.3	0 0 1.9
0.5450	0.099 216 78	0.296 733 94	8 30 32.9	2 50 11.0	2 50 9.1	0 0 1.9
0.5455	0.099 399 68	0.297 277 58	8 31 29.1	2 50 29.7	2 50 27.8	0 0 1.9
0.5460	0.099 582 76	0.297 821 72	8 32 25.4	2 50 48.5	2 50 46.5	0 0 1.9
0.5465	0.099 766 00	0.298 366 35	8 33 21.8	2 51 7.3	2 51 5.3	0 0 1.9
0.5470	0.099 949 42	0.298 911 47	8 34 18.1	2 51 26.0	2 51 24.1	0 0 1.9
0.5475	0.100 133 01	0.299 457 09	8 35 14.6	2 51 44.9	2 51 42.9	0 0 2.0
0.5480	0.100 316 77	0.300 003 19	8 36 11.1	2 52 3.7	2 52 1.7	0 0 2.0
0.5485	0.100 500 71	0.300 549 79	8 37 7.6	2 52 22.5	2 52 20.6	0 0 2.0
0.5490	0.100 684 81	0.301 096 89	8 38 4.2	2 52 41.4	2 52 39.4	0 0 2.0
0.5495	0.100 869 08	0.301 644 47	8 39 0.9	2 53 0.3	2 52 58.3	0 0 2.0
0.5500	0.101 053 54	0.302 192 55	8 39 57.6	2 53 19.2	2 53 17.2	0 0 2.0
0.5505	0.101 238 16	0.302 741 12	8 40 54.3	2 53 38.1	2 53 36.1	0 0 2.0
0.5510	0.101 422 96	0.303 290 18	8 41 51.1	2 53 57.0	2 53 55.0	0 0 2.0
0.5515	0.101 607 92	0.303 839 73	8 42 48.0	2 54 16.0	2 54 13.9	0 0 2.0
0.5520	0.101 793 06	0.304 389 78	8 43 44.9	2 54 35.0	2 54 32.9	0 0 2.1
0.5525	0.101 978 37	0.304 940 32	8 44 41.8	2 54 53.9	2 54 51.9	0 0 2.1
0.5530	0.102 163 86	0.305 491 35	8 45 38.8	2 55 12.9	2 55 10.9	0 0 2.1
0.5535	0.102 349 51	0.306 042 87	8 46 35.9	2 55 32.0	2 55 29.9	0 0 2.1
0.5540	0.102 535 34	0.306 594 89	8 47 33.0	2 55 51.0	2 55 48.9	0 0 2.1
0.5545	0.102 721 34	0.307 147 40	8 48 30.1	2 56 10.0	2 56 7.9	0 0 2.1
0.5550	0.102 907 51	0.307 700 40	8 49 27.4	2 56 29.1	2 56 27.0	0 0 2.1
0.5555	0.103 093 86	0.308 253 89	8 50 24.6	2 56 48.2	2 56 46.1	0 0 2.1
0.5560	0.103 280 38	0.308 807 87	8 51 21.9	2 57 7.3	2 57 5.2	0 0 2.2
0.5565	0.103 467 07	0.309 362 35	8 52 19.3	2 57 26.4	2 57 24.3	0 0 2.2
0.5570	0.103 653 93	0.309 917 32	8 53 16.7	2 57 45.6	2 57 43.4	0 0 2.2
0.5575	0.103 840 96	0.310 472 78	8 54 14.2	2 58 4.7	2 58 2.5	0 0 2.2
0.5580	0.104 028 17	0.311 028 73	8 55 11.7	2 58 23.9	2 58 21.7	0 0 2.2
0.5585	0.104 215 55	0.311 585 17	8 56 9.3	2 58 43.1	2 58 40.9	0 0 2.2
0.5590	0.104 403 10	0.312 142 11	8 57 6.9	2 59 2.3	2 59 0.1	0 0 2.2
0.5595	0.104 590 83	0.312 699 54	8 58 4.6	2 59 21.5	2 59 19.3	0 0 2.2
0.5600	0.104 778 72	0.313 257 46	8 59 2.3	2 59 40.8	2 59 38.5	0 0 2.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.5605	0.314 160 25	0.313 385 97	0.016 420 48	0.156 951 02	0.004 108 74	0.209 711 50
0.5610	0.314 721 00	0.313 942 57	0.016 479 04	0.157 230 70	0.004 123 41	0.210 086 79
0.5615	0.315 282 25	0.314 499 65	0.016 537 77	0.157 510 63	0.004 138 11	0.210 462 42
0.5620	0.315 844 CC	0.315 057 21	0.016 596 64	0.157 790 81	0.004 152 86	0.210 838 39
0.5625	0.316 406 25	0.315 615 26	0.016 655 68	0.158 071 23	0.004 167 64	0.211 214 70
0.5630	0.316 969 CC	0.316 173 78	0.016 714 87	0.158 351 90	0.004 182 47	0.211 591 35
0.5635	0.317 532 25	0.316 732 79	0.016 774 22	0.158 632 82	0.004 197 33	0.211 968 35
0.5640	0.318 096 00	0.317 292 28	0.016 833 73	0.158 913 98	0.004 212 24	0.212 345 68
0.5645	0.318 660 25	0.317 852 25	0.016 893 40	0.159 195 39	0.004 227 18	0.212 723 35
0.5650	0.319 225 00	0.318 412 70	0.016 953 22	0.159 477 05	0.004 242 16	0.213 101 36
0.5655	0.319 790 25	0.318 973 63	0.017 013 20	0.159 758 96	0.004 257 19	0.213 479 71
0.5660	0.320 356 00	0.319 535 04	0.017 073 34	0.160 041 11	0.004 272 25	0.213 858 40
0.5665	0.320 922 25	0.320 096 93	0.017 133 64	0.160 323 51	0.004 287 35	0.214 237 43
0.5670	0.321 489 00	0.320 659 30	0.017 194 10	0.160 606 15	0.004 302 49	0.214 616 80
0.5675	0.322 056 25	0.321 222 16	0.017 254 71	0.160 889 04	0.004 317 68	0.214 996 51
0.5680	0.322 624 00	0.321 785 49	0.017 315 49	0.161 172 18	0.004 332 90	0.215 376 56
0.5685	0.323 192 25	0.322 349 31	0.017 376 43	0.161 455 57	0.004 348 16	0.215 756 96
0.5690	0.323 761 00	0.322 913 60	0.017 437 52	0.161 739 20	0.004 363 46	0.216 137 69
0.5695	0.324 330 25	0.323 478 38	0.017 498 78	0.162 023 08	0.004 378 81	0.216 518 76
0.5700	0.324 900 00	0.324 043 64	0.017 560 20	0.162 307 20	0.004 394 19	0.216 900 17
0.5705	0.325 470 25	0.324 609 37	0.017 621 78	0.162 591 58	0.004 409 61	0.217 281 92
0.5710	0.326 041 00	0.325 175 59	0.017 683 52	0.162 876 19	0.004 425 08	0.217 664 02
0.5715	0.326 612 25	0.325 742 29	0.017 745 42	0.163 161 06	0.004 440 58	0.218 046 45
0.5720	0.327 184 00	0.326 309 46	0.017 807 48	0.163 446 17	0.004 456 13	0.218 429 22
0.5725	0.327 756 25	0.326 877 12	0.017 869 71	0.163 731 53	0.004 471 72	0.218 812 34
0.5730	0.328 329 00	0.327 445 26	0.017 932 10	0.164 017 14	0.004 487 34	0.219 195 79
0.5735	0.328 902 25	0.328 013 87	0.017 994 65	0.164 302 99	0.004 503 01	0.219 579 59
0.5740	0.329 476 00	0.328 582 97	0.018 057 36	0.164 589 09	0.004 518 72	0.219 963 72
0.5745	0.330 050 25	0.329 152 55	0.018 120 24	0.164 875 43	0.004 534 47	0.220 348 20
0.5750	0.330 625 00	0.329 722 60	0.018 183 28	0.165 162 02	0.004 550 26	0.220 733 02
0.5755	0.331 200 25	0.330 293 14	0.018 246 49	0.165 448 86	0.004 566 09	0.221 118 17
0.5760	0.331 776 00	0.330 864 15	0.018 309 86	0.165 735 95	0.004 581 97	0.221 503 67
0.5765	0.332 352 25	0.331 435 65	0.018 373 39	0.166 023 28	0.004 597 88	0.221 889 51
0.5770	0.332 929 00	0.332 007 62	0.018 437 09	0.166 310 86	0.004 613 84	0.222 275 69
0.5775	0.333 506 25	0.332 580 08	0.018 500 95	0.166 598 68	0.004 629 83	0.222 662 21
0.5780	0.334 084 00	0.333 153 01	0.018 564 98	0.166 886 75	0.004 645 87	0.223 049 07
0.5785	0.334 662 25	0.333 726 42	0.018 629 17	0.167 175 07	0.004 661 95	0.223 436 27
0.5790	0.335 241 00	0.334 300 31	0.018 693 53	0.167 463 64	0.004 678 08	0.223 823 81
0.5795	0.335 820 25	0.334 874 68	0.018 758 06	0.167 752 45	0.004 694 24	0.224 211 69
0.5800	0.336 400 00	0.335 449 53	0.018 822 75	0.168 041 51	0.004 710 45	0.224 599 92
0.5805	0.336 980 25	0.336 024 86	0.018 887 61	0.168 330 81	0.004 726 69	0.224 988 48
0.5810	0.337 561 00	0.336 600 66	0.018 952 63	0.168 620 36	0.004 742 98	0.225 377 38
0.5815	0.338 142 25	0.337 176 95	0.019 017 82	0.168 910 16	0.004 759 31	0.225 766 63
0.5820	0.338 724 00	0.337 753 71	0.019 083 18	0.169 200 20	0.004 775 69	0.226 156 22
0.5825	0.339 306 25	0.338 330 95	0.019 148 71	0.169 490 49	0.004 792 10	0.226 546 14
0.5830	0.339 889 00	0.338 908 67	0.019 214 41	0.169 781 02	0.004 808 56	0.226 936 41
0.5835	0.340 472 25	0.339 486 87	0.019 280 27	0.170 071 81	0.004 825 06	0.227 327 02
0.5840	0.341 056 00	0.340 065 55	0.019 346 30	0.170 362 84	0.004 841 60	0.227 717 97
0.5845	0.341 640 25	0.340 644 71	0.019 412 50	0.170 654 11	0.004 858 19	0.228 109 26
0.5850	0.342 225 00	0.341 224 34	0.019 478 87	0.170 945 63	0.004 874 81	0.228 500 89
0.5855	0.342 810 25	0.341 804 45	0.019 545 41	0.171 237 40	0.004 891 48	0.228 892 87
0.5860	0.343 396 00	0.342 385 04	0.019 612 12	0.171 529 42	0.004 908 20	0.229 285 18
0.5865	0.343 982 25	0.342 966 11	0.019 679 00	0.171 821 68	0.004 924 95	0.229 677 84
0.5870	0.344 569 00	0.343 547 66	0.019 746 05	0.172 114 18	0.004 941 75	0.230 070 83
0.5875	0.345 156 25	0.344 129 68	0.019 813 27	0.172 406 94	0.004 958 59	0.230 464 17
0.5880	0.345 744 00	0.344 712 18	0.019 880 66	0.172 699 94	0.004 975 48	0.230 857 85
0.5885	0.346 332 25	0.345 295 16	0.019 948 23	0.172 993 18	0.004 992 40	0.231 251 87
0.5890	0.346 921 00	0.345 878 62	0.020 015 96	0.173 286 67	0.005 009 37	0.231 646 23
0.5895	0.347 510 25	0.346 462 55	0.020 083 87	0.173 580 41	0.005 026 39	0.232 040 94
0.5900	0.348 100 00	0.347 046 96	0.020 151 94	0.173 874 40	0.005 043 44	0.232 435 98
0.5905	0.348 690 25	0.347 631 85	0.020 220 19	0.174 168 63	0.005 060 54	0.232 831 37
0.5910	0.349 281 00	0.348 217 22	0.020 288 62	0.174 463 10	0.005 077 68	0.233 227 09
0.5915	0.349 872 25	0.348 803 06	0.020 357 21	0.174 757 83	0.005 094 87	0.233 623 16
0.5920	0.350 464 00	0.349 389 39	0.020 425 98	0.175 052 80	0.005 112 10	0.234 019 57
0.5925	0.351 056 25	0.349 976 18	0.020 494 92	0.175 348 01	0.005 129 37	0.234 416 32
0.5930	0.351 649 00	0.350 563 46	0.020 564 04	0.175 643 47	0.005 146 69	0.234 813 41
0.5935	0.352 242 25	0.351 151 21	0.020 633 33	0.175 939 18	0.005 164 05	0.235 210 85
0.5940	0.352 836 00	0.351 739 44	0.020 702 79	0.176 235 13	0.005 181 46	0.235 608 62
0.5945	0.353 430 25	0.352 328 14	0.020 772 43	0.176 531 33	0.005 198 90	0.236 006 74
0.5950	0.354 025 00	0.352 917 33	0.020 842 25	0.176 827 78	0.005 216 40	0.236 405 20
0.5955	0.354 620 25	0.353 506 99	0.020 912 23	0.177 124 47	0.005 233 93	0.236 804 00
0.5960	0.355 216 00	0.354 097 12	0.020 982 40	0.177 421 41	0.005 251 51	0.237 203 14
0.5965	0.355 812 25	0.354 687 73	0.021 052 74	0.177 718 60	0.005 269 14	0.237 602 63
0.5970	0.356 409 00	0.355 278 82	0.021 123 25	0.178 016 03	0.005 286 81	0.238 002 45
0.5975	0.357 006 25	0.355 870 38	0.021 193 95	0.178 313 70	0.005 304 52	0.238 402 62
0.5980	0.357 604 00	0.356 462 43	0.021 264 82	0.178 611 62	0.005 322 28	0.238 803 13
0.5985	0.358 202 25	0.357 054 94	0.021 335 86	0.178 909 79	0.005 340 08	0.239 203 98
0.5990	0.358 801 00	0.357 647 93	0.021 407 08	0.179 208 21	0.005 357 93	0.239 605 17
0.5995	0.359 400 25	0.358 241 40	0.021 478 48	0.179 506 87	0.005 375 82	0.240 006 71
0.6000	0.360 000 00	0.358 835 35	0.021 550 06	0.179 805 77	0.005 393 76	0.240 408 58

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
0.5605	0.104 966 79	0.313 815 87	9 0 0.1	3 0 0.0	2 59 57.8	0 0 2.3
0.5610	0.105 155 04	0.314 374 77	9 0 57.9	3 0 19.3	3 0 17.0	0 0 2.3
0.5615	0.105 343 45	0.314 934 17	9 1 55.8	3 0 38.6	3 0 36.3	0 0 2.3
0.5620	0.105 532 04	0.315 494 05	9 2 53.8	3 0 57.9	3 0 55.6	0 0 2.3
0.5625	0.105 720 80	0.316 054 43	9 3 51.7	3 1 17.2	3 1 14.9	0 0 2.3
0.5630	0.105 909 73	0.316 615 30	9 4 49.8	3 1 36.6	3 1 34.3	0 0 2.3
0.5635	0.106 098 84	0.317 176 66	9 5 47.9	3 1 56.0	3 1 53.6	0 0 2.3
0.5640	0.106 288 12	0.317 738 52	9 6 46.0	3 2 15.3	3 2 13.0	0 0 2.3
0.5645	0.106 477 57	0.318 300 86	9 7 44.2	3 2 34.7	3 2 32.4	0 0 2.4
0.5650	0.106 667 19	0.318 863 70	9 8 42.4	3 2 54.1	3 2 51.8	0 0 2.4
0.5655	0.106 856 99	0.319 427 02	9 9 40.7	3 3 13.6	3 3 11.2	0 0 2.4
0.5660	0.107 046 96	0.319 990 84	9 10 39.1	3 3 33.0	3 3 30.6	0 0 2.4
0.5665	0.107 237 10	0.320 555 15	9 11 37.5	3 3 52.5	3 3 50.1	0 0 2.4
0.5670	0.107 427 41	0.321 119 96	9 12 35.9	3 4 12.0	3 4 9.6	0 0 2.4
0.5675	0.107 617 90	0.321 685 25	9 13 34.4	3 4 31.5	3 4 29.0	0 0 2.4
0.5680	0.107 808 56	0.322 251 03	9 14 33.0	3 4 51.0	3 4 48.6	0 0 2.4
0.5685	0.107 999 40	0.322 817 31	9 15 31.6	3 5 10.5	3 5 8.1	0 0 2.5
0.5690	0.108 190 40	0.323 384 08	9 16 30.2	3 5 30.1	3 5 27.6	0 0 2.5
0.5695	0.108 381 58	0.323 951 34	9 17 29.0	3 5 49.7	3 5 47.2	0 0 2.5
0.5700	0.108 572 94	0.324 519 09	9 18 27.7	3 6 9.2	3 6 6.7	0 0 2.5
0.5705	0.108 764 46	0.325 087 33	9 19 26.5	3 6 28.8	3 6 26.3	0 0 2.5
0.5710	0.108 956 16	0.325 656 06	9 20 25.4	3 6 48.5	3 6 45.9	0 0 2.5
0.5715	0.109 148 03	0.326 225 29	9 21 24.3	3 7 8.1	3 7 5.6	0 0 2.5
0.5720	0.109 340 08	0.326 795 00	9 22 23.3	3 7 27.8	3 7 25.2	0 0 2.5
0.5725	0.109 532 29	0.327 365 21	9 23 22.3	3 7 47.4	3 7 44.9	0 0 2.6
0.5730	0.109 724 69	0.327 935 90	9 24 21.4	3 8 7.1	3 8 4.5	0 0 2.6
0.5735	0.109 917 25	0.328 507 09	9 25 20.5	3 8 26.8	3 8 24.2	0 0 2.6
0.5740	0.110 109 99	0.329 078 77	9 26 19.7	3 8 46.6	3 8 43.9	0 0 2.6
0.5745	0.110 302 90	0.329 650 94	9 27 18.9	3 9 6.3	3 9 3.7	0 0 2.6
0.5750	0.110 495 98	0.330 223 60	9 28 18.2	3 9 26.1	3 9 23.4	0 0 2.6
0.5755	0.110 689 24	0.330 796 75	9 29 17.5	3 9 45.8	3 9 43.2	0 0 2.6
0.5760	0.110 882 67	0.331 370 40	9 30 16.9	3 10 5.6	3 10 3.0	0 0 2.7
0.5765	0.111 076 27	0.331 944 53	9 31 16.3	3 10 25.4	3 10 22.8	0 0 2.7
0.5770	0.111 270 05	0.332 519 15	9 32 15.8	3 10 45.3	3 10 42.6	0 0 2.7
0.5775	0.111 464 00	0.333 094 27	9 33 15.3	3 11 5.1	3 11 2.4	0 0 2.7
0.5780	0.111 658 12	0.333 669 87	9 34 14.9	3 11 25.0	3 11 22.2	0 0 2.7
0.5785	0.111 852 42	0.334 245 97	9 35 14.5	3 11 44.8	3 11 42.1	0 0 2.7
0.5790	0.112 046 89	0.334 822 56	9 36 14.2	3 12 4.7	3 12 2.0	0 0 2.7
0.5795	0.112 241 53	0.335 399 64	9 37 13.9	3 12 24.6	3 12 21.9	0 0 2.8
0.5800	0.112 436 35	0.335 977 20	9 38 13.7	3 12 44.6	3 12 41.8	0 0 2.8
0.5805	0.112 631 34	0.336 555 26	9 39 13.6	3 13 4.5	3 13 1.7	0 0 2.8
0.5810	0.112 826 50	0.337 133 81	9 40 13.5	3 13 24.5	3 13 21.7	0 0 2.8
0.5815	0.113 021 84	0.337 712 85	9 41 13.4	3 13 44.5	3 13 41.7	0 0 2.8
0.5820	0.113 217 35	0.338 292 38	9 42 13.4	3 14 4.5	3 14 1.6	0 0 2.8
0.5825	0.113 413 04	0.338 872 40	9 43 13.5	3 14 24.5	3 14 21.6	0 0 2.8
0.5830	0.113 608 89	0.339 452 92	9 44 13.6	3 14 44.5	3 14 41.7	0 0 2.9
0.5835	0.113 804 93	0.340 033 92	9 45 13.7	3 15 4.6	3 15 1.7	0 0 2.9
0.5840	0.114 001 13	0.340 615 41	9 46 13.9	3 15 24.6	3 15 21.8	0 0 2.9
0.5845	0.114 197 51	0.341 197 39	9 47 14.2	3 15 44.7	3 15 41.8	0 0 2.9
0.5850	0.114 394 06	0.341 779 87	9 48 14.5	3 16 4.8	3 16 1.9	0 0 2.9
0.5855	0.114 590 79	0.342 362 83	9 49 14.8	3 16 24.9	3 16 22.0	0 0 2.9
0.5860	0.114 787 69	0.342 946 28	9 50 15.3	3 16 45.1	3 16 42.1	0 0 2.9
0.5865	0.114 984 76	0.343 530 23	9 51 15.7	3 17 5.2	3 17 2.3	0 0 3.0
0.5870	0.115 182 01	0.344 114 66	9 52 16.2	3 17 25.4	3 17 22.4	0 0 3.0
0.5875	0.115 379 43	0.344 699 58	9 53 16.8	3 17 45.6	3 17 42.6	0 0 3.0
0.5880	0.115 577 03	0.345 285 00	9 54 17.4	3 18 5.8	3 18 2.8	0 0 3.0
0.5885	0.115 774 80	0.345 870 90	9 55 18.1	3 18 26.0	3 18 23.0	0 0 3.0
0.5890	0.115 972 74	0.346 457 29	9 56 18.8	3 18 46.3	3 18 43.2	0 0 3.0
0.5895	0.116 170 86	0.347 044 18	9 57 19.6	3 19 6.5	3 19 3.5	0 0 3.1
0.5900	0.116 369 15	0.347 631 55	9 58 20.4	3 19 26.8	3 19 23.7	0 0 3.1
0.5905	0.116 567 61	0.348 219 42	9 59 21.3	3 19 47.1	3 19 44.0	0 0 3.1
0.5910	0.116 766 25	0.348 807 77	10 0 22.2	3 20 7.4	3 20 4.3	0 0 3.1
0.5915	0.116 965 06	0.349 396 61	10 1 23.2	3 20 27.7	3 20 24.6	0 0 3.1
0.5920	0.117 164 05	0.349 985 95	10 2 24.2	3 20 48.1	3 20 44.9	0 0 3.1
0.5925	0.117 363 21	0.350 575 77	10 3 25.3	3 21 8.4	3 21 5.3	0 0 3.2
0.5930	0.117 562 55	0.351 166 08	10 4 26.4	3 21 28.8	3 21 25.6	0 0 3.2
0.5935	0.117 762 06	0.351 756 89	10 5 27.6	3 21 49.2	3 21 46.0	0 0 3.2
0.5940	0.117 961 74	0.352 348 18	10 6 28.8	3 22 9.6	3 22 6.4	0 0 3.2
0.5945	0.118 161 60	0.352 939 96	10 7 30.1	3 22 30.0	3 22 26.8	0 0 3.2
0.5950	0.118 361 63	0.353 532 23	10 8 31.4	3 22 50.5	3 22 47.3	0 0 3.2
0.5955	0.118 561 83	0.354 124 99	10 9 32.8	3 23 10.9	3 23 7.7	0 0 3.2
0.5960	0.118 762 21	0.354 718 24	10 10 34.3	3 23 31.4	3 23 28.2	0 0 3.3
0.5965	0.118 962 77	0.355 311 98	10 11 35.8	3 23 51.9	3 23 48.6	0 0 3.3
0.5970	0.119 163 49	0.355 906 21	10 12 37.3	3 24 12.4	3 24 9.1	0 0 3.3
0.5975	0.119 364 40	0.356 500 93	10 13 38.9	3 24 33.0	3 24 29.7	0 0 3.3
0.5980	0.119 565 47	0.357 096 14	10 14 40.6	3 24 53.5	3 24 50.2	0 0 3.3
0.5985	0.119 766 73	0.357 691 84	10 15 42.3	3 25 14.1	3 25 10.7	0 0 3.3
0.5990	0.119 968 15	0.358 288 02	10 16 44.0	3 25 34.7	3 25 31.3	0 0 3.4
0.5995	0.120 169 75	0.358 884 70	10 17 45.8	3 25 55.3	3 25 51.9	0 0 3.4
0.6000	0.120 371 53	0.359 481 87	10 18 47.7	3 26 15.9	3 26 12.5	0 0 3.4

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.6005	0.360 600 25	0.359 429 77	0.021 621 82	0.180 104 93	0.005 411 74	0.240 810 80
0.6010	0.361 201 00	0.360 024 66	0.021 693 75	0.180 404 33	0.005 429 76	0.241 213 36
0.6015	0.361 802 25	0.360 620 04	0.021 765 87	0.180 703 97	0.005 447 83	0.241 616 26
0.6020	0.362 404 00	0.361 215 88	0.021 838 16	0.181 003 86	0.005 465 95	0.242 019 51
0.6025	0.363 006 25	0.361 812 21	0.021 910 63	0.181 304 00	0.005 484 11	0.242 423 09
0.6030	0.363 609 00	0.362 409 01	0.021 983 28	0.181 604 38	0.005 502 31	0.242 827 02
0.6035	0.364 212 25	0.363 006 28	0.022 056 11	0.181 905 01	0.005 520 57	0.243 231 29
0.6040	0.364 816 00	0.363 604 03	0.022 129 12	0.182 205 88	0.005 538 86	0.243 635 90
0.6045	0.365 420 25	0.364 202 25	0.022 202 32	0.182 507 00	0.005 557 20	0.244 040 86
0.6050	0.366 025 00	0.364 800 95	0.022 275 69	0.182 808 37	0.005 575 59	0.244 446 15
0.6055	0.366 630 25	0.365 400 13	0.022 349 24	0.183 109 98	0.005 594 02	0.244 851 79
0.6060	0.367 236 00	0.365 999 77	0.022 422 97	0.183 411 83	0.005 612 50	0.245 257 77
0.6065	0.367 842 25	0.366 599 90	0.022 496 89	0.183 713 94	0.005 631 02	0.245 664 10
0.6070	0.368 449 00	0.367 200 50	0.022 570 99	0.184 016 29	0.005 649 59	0.246 070 76
0.6075	0.369 056 25	0.367 801 57	0.022 645 27	0.184 318 88	0.005 668 21	0.246 477 77
0.6080	0.369 664 00	0.368 403 12	0.022 719 73	0.184 621 72	0.005 686 87	0.246 885 12
0.6085	0.370 272 25	0.369 005 14	0.022 794 37	0.184 924 81	0.005 705 58	0.247 292 81
0.6090	0.370 881 00	0.369 607 64	0.022 869 20	0.185 228 14	0.005 724 33	0.247 700 85
0.6095	0.371 490 25	0.370 210 61	0.022 944 21	0.185 531 71	0.005 743 13	0.248 109 22
0.6100	0.372 100 00	0.370 814 05	0.023 019 41	0.185 835 54	0.005 761 97	0.248 517 94
0.6105	0.372 710 25	0.371 417 97	0.023 094 79	0.186 139 61	0.005 780 87	0.248 927 01
0.6110	0.373 321 00	0.372 022 37	0.023 170 35	0.186 443 92	0.005 799 80	0.249 336 41
0.6115	0.373 932 25	0.372 627 23	0.023 246 10	0.186 748 48	0.005 818 79	0.249 746 16
0.6120	0.374 544 00	0.373 232 58	0.023 322 03	0.187 053 29	0.005 837 82	0.250 156 25
0.6125	0.375 156 25	0.373 838 39	0.023 398 15	0.187 358 34	0.005 856 90	0.250 566 68
0.6130	0.375 769 00	0.374 444 68	0.023 474 45	0.187 663 64	0.005 876 02	0.250 977 46
0.6135	0.376 382 25	0.375 051 44	0.023 550 94	0.187 969 18	0.005 895 19	0.251 388 57
0.6140	0.376 996 00	0.375 658 68	0.023 627 61	0.188 274 97	0.005 914 41	0.251 800 03
0.6145	0.377 610 25	0.376 266 39	0.023 704 47	0.188 581 00	0.005 933 67	0.252 211 84
0.6150	0.378 225 00	0.376 874 57	0.023 781 52	0.188 887 28	0.005 952 98	0.252 623 98
0.6155	0.378 840 25	0.377 483 23	0.023 858 76	0.189 193 80	0.005 972 34	0.253 036 47
0.6160	0.379 456 00	0.378 092 36	0.023 936 18	0.189 500 57	0.005 991 75	0.253 449 30
0.6165	0.380 072 25	0.378 701 96	0.024 013 79	0.189 807 59	0.006 011 20	0.253 862 48
0.6170	0.380 689 00	0.379 312 04	0.024 091 58	0.190 114 85	0.006 030 70	0.254 276 00
0.6175	0.381 306 25	0.379 922 59	0.024 169 57	0.190 422 36	0.006 050 24	0.254 689 86
0.6180	0.381 924 00	0.380 533 61	0.024 247 74	0.190 730 11	0.006 069 84	0.255 104 06
0.6185	0.382 542 25	0.381 145 10	0.024 326 10	0.191 038 11	0.006 089 48	0.255 518 60
0.6190	0.383 161 00	0.381 757 07	0.024 404 65	0.191 346 35	0.006 109 17	0.255 933 49
0.6195	0.383 780 25	0.382 369 51	0.024 483 39	0.191 654 84	0.006 128 91	0.256 348 73
0.6200	0.384 400 00	0.382 982 42	0.024 562 32	0.191 963 58	0.006 148 69	0.256 764 30
0.6205	0.385 020 25	0.383 595 81	0.024 641 44	0.192 272 55	0.006 168 52	0.257 180 22
0.6210	0.385 641 00	0.384 209 66	0.024 720 75	0.192 581 78	0.006 188 40	0.257 596 48
0.6215	0.386 262 25	0.384 823 99	0.024 800 25	0.192 891 25	0.006 208 33	0.258 013 09
0.6220	0.386 884 00	0.385 438 79	0.024 879 94	0.193 200 97	0.006 228 31	0.258 430 03
0.6225	0.387 506 25	0.386 054 07	0.024 959 82	0.193 510 93	0.006 248 33	0.258 847 33
0.6230	0.388 129 00	0.386 669 81	0.025 039 89	0.193 821 13	0.006 268 40	0.259 264 96
0.6235	0.388 752 25	0.387 286 03	0.025 120 16	0.194 131 58	0.006 288 52	0.259 682 94
0.6240	0.389 376 00	0.387 902 72	0.025 200 61	0.194 442 28	0.006 308 69	0.260 101 26
0.6245	0.390 000 25	0.388 519 88	0.025 281 26	0.194 753 22	0.006 328 91	0.260 519 92
0.6250	0.390 625 00	0.389 137 51	0.025 362 10	0.195 064 41	0.006 349 17	0.260 938 93
0.6255	0.391 250 25	0.389 755 62	0.025 443 14	0.195 375 84	0.006 369 49	0.261 358 28
0.6260	0.391 876 00	0.390 374 19	0.025 524 37	0.195 687 52	0.006 389 85	0.261 777 98
0.6265	0.392 502 25	0.390 993 24	0.025 605 79	0.195 999 44	0.006 410 26	0.262 198 02
0.6270	0.393 129 00	0.391 612 76	0.025 687 40	0.196 311 61	0.006 430 72	0.262 618 40
0.6275	0.393 756 25	0.392 232 75	0.025 769 21	0.196 624 03	0.006 451 23	0.263 039 12
0.6280	0.394 384 00	0.392 853 21	0.025 851 21	0.196 936 68	0.006 471 79	0.263 460 19
0.6285	0.395 012 25	0.393 474 14	0.025 933 41	0.197 249 59	0.006 492 39	0.263 881 61
0.6290	0.395 641 00	0.394 095 54	0.026 015 80	0.197 562 74	0.006 513 05	0.264 303 36
0.6295	0.396 270 25	0.394 717 42	0.026 098 39	0.197 876 13	0.006 533 76	0.264 725 46
0.6300	0.396 900 00	0.395 339 76	0.026 181 17	0.198 189 77	0.006 554 51	0.265 147 91
0.6305	0.397 530 25	0.395 962 57	0.026 264 15	0.198 503 65	0.006 575 31	0.265 570 69
0.6310	0.398 161 00	0.396 585 86	0.026 347 33	0.198 817 78	0.006 596 17	0.265 993 83
0.6315	0.398 792 25	0.397 209 62	0.026 430 70	0.199 132 16	0.006 617 07	0.266 417 30
0.6320	0.399 424 00	0.397 833 84	0.026 514 27	0.199 446 78	0.006 638 02	0.266 841 12
0.6325	0.400 056 25	0.398 458 54	0.026 598 03	0.199 761 64	0.006 659 02	0.267 265 28
0.6330	0.400 689 00	0.399 083 70	0.026 681 99	0.200 076 75	0.006 680 07	0.267 689 79
0.6335	0.401 322 25	0.399 709 34	0.026 766 15	0.200 392 11	0.006 701 17	0.268 114 64
0.6340	0.401 956 00	0.400 335 45	0.026 850 51	0.200 707 71	0.006 722 32	0.268 539 83
0.6345	0.402 590 25	0.400 962 02	0.026 935 07	0.201 023 55	0.006 743 52	0.268 965 37
0.6350	0.403 225 00	0.401 589 07	0.027 019 82	0.201 339 64	0.006 764 77	0.269 391 26
0.6355	0.403 860 25	0.402 216 58	0.027 104 78	0.201 655 97	0.006 786 07	0.269 817 48
0.6360	0.404 496 00	0.402 844 57	0.027 189 93	0.201 972 55	0.006 807 42	0.270 244 05
0.6365	0.405 132 25	0.403 473 02	0.027 275 28	0.202 289 38	0.006 828 83	0.270 670 97
0.6370	0.405 769 00	0.404 101 95	0.027 360 84	0.202 606 45	0.006 850 28	0.271 098 23
0.6375	0.406 406 25	0.404 731 34	0.027 446 59	0.202 923 76	0.006 871 78	0.271 525 83
0.6380	0.407 044 00	0.405 361 20	0.027 532 54	0.203 241 32	0.006 893 33	0.271 953 78
0.6385	0.407 682 25	0.405 991 54	0.027 618 70	0.203 559 12	0.006 914 93	0.272 382 07
0.6390	0.408 321 00	0.406 622 34	0.027 705 05	0.203 877 17	0.006 936 59	0.272 810 71
0.6395	0.408 960 25	0.407 253 61	0.027 791 61	0.204 195 46	0.006 958 29	0.273 239 69
0.6400	0.409 600 00	0.407 885 35	0.027 878 37	0.204 514 00	0.006 980 04	0.273 669 02

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	¢	C
			DEG MNT SEC	DEG MNT SEC	DEG MNT SEC	DEG MNT SEC
0.6005	0.120 573 47	0.360 079 52	10 19 49.6	3 26 36.5	3 26 33.1	0 0 3.4
0.6010	0.120 775 60	0.360 677 67	10 20 51.5	3 26 57.2	3 26 53.7	0 0 3.4
0.6015	0.120 977 90	0.361 276 30	10 21 53.5	3 27 17.8	3 27 14.4	0 0 3.4
0.6020	0.121 180 37	0.361 875 42	10 22 55.6	3 27 38.5	3 27 35.1	0 0 3.5
0.6025	0.121 383 02	0.362 475 03	10 23 57.7	3 27 59.2	3 27 55.8	0 0 3.5
0.6030	0.121 585 84	0.363 075 13	10 24 59.9	3 28 20.0	3 28 16.5	0 0 3.5
0.6035	0.121 788 83	0.363 675 72	10 26 2.1	3 28 40.7	3 28 37.2	0 0 3.5
0.6040	0.121 992 01	0.364 276 80	10 27 4.4	3 29 1.5	3 28 57.9	0 0 3.5
0.6045	0.122 195 35	0.364 878 37	10 28 6.7	3 29 22.2	3 29 18.7	0 0 3.6
0.6050	0.122 398 87	0.365 480 42	10 29 9.0	3 29 43.0	3 29 39.4	0 0 3.6
0.6055	0.122 602 57	0.366 082 97	10 30 11.5	3 30 3.8	3 30 0.2	0 0 3.6
0.6060	0.122 806 44	0.366 686 00	10 31 13.9	3 30 24.6	3 30 21.0	0 0 3.6
0.6065	0.123 010 48	0.367 289 53	10 32 16.5	3 30 45.5	3 30 41.9	0 0 3.6
0.6070	0.123 214 70	0.367 893 54	10 33 19.0	3 31 6.3	3 31 2.7	0 0 3.6
0.6075	0.123 419 09	0.368 498 04	10 34 21.7	3 31 27.2	3 31 23.6	0 0 3.7
0.6080	0.123 623 66	0.369 103 03	10 35 24.3	3 31 48.1	3 31 44.4	0 0 3.7
0.6085	0.123 828 41	0.369 708 50	10 36 27.1	3 32 9.0	3 32 5.3	0 0 3.7
0.6090	0.124 033 33	0.370 314 47	10 37 29.8	3 32 29.9	3 32 26.2	0 0 3.7
0.6095	0.124 238 42	0.370 920 92	10 38 32.7	3 32 50.9	3 32 47.2	0 0 3.7
0.6100	0.124 443 69	0.371 527 87	10 39 35.6	3 33 11.9	3 33 8.1	0 0 3.8
0.6105	0.124 649 13	0.372 135 30	10 40 38.5	3 33 32.8	3 33 29.1	0 0 3.8
0.6110	0.124 854 75	0.372 743 22	10 41 41.5	3 33 53.8	3 33 50.0	0 0 3.8
0.6115	0.125 060 55	0.373 351 63	10 42 44.5	3 34 14.8	3 34 11.0	0 0 3.8
0.6120	0.125 266 51	0.373 960 52	10 43 47.6	3 34 35.9	3 34 32.0	0 0 3.8
0.6125	0.125 472 66	0.374 569 91	10 44 50.8	3 34 56.9	3 34 53.1	0 0 3.8
0.6130	0.125 678 98	0.375 179 78	10 45 54.0	3 35 18.0	3 35 14.1	0 0 3.9
0.6135	0.125 885 47	0.375 790 14	10 46 57.2	3 35 39.1	3 35 35.2	0 0 3.9
0.6140	0.126 092 14	0.376 400 99	10 48 0.5	3 36 0.2	3 35 56.3	0 0 3.9
0.6145	0.126 298 99	0.377 012 33	10 49 3.9	3 36 21.3	3 36 17.4	0 0 3.9
0.6150	0.126 506 01	0.377 624 16	10 50 7.3	3 36 42.4	3 36 38.5	0 0 3.9
0.6155	0.126 713 20	0.378 236 47	10 51 10.7	3 37 3.6	3 36 59.6	0 0 4.0
0.6160	0.126 920 57	0.378 849 27	10 52 14.2	3 37 24.7	3 37 20.8	0 0 4.0
0.6165	0.127 128 12	0.379 462 56	10 53 17.8	3 37 45.9	3 37 41.9	0 0 4.0
0.6170	0.127 335 84	0.380 076 34	10 54 21.4	3 38 7.1	3 38 3.1	0 0 4.0
0.6175	0.127 543 74	0.380 690 61	10 55 25.0	3 38 28.3	3 38 24.3	0 0 4.0
0.6180	0.127 751 81	0.381 305 36	10 56 28.7	3 38 49.6	3 38 45.5	0 0 4.1
0.6185	0.127 960 06	0.381 920 60	10 57 32.5	3 39 10.8	3 39 6.8	0 0 4.1
0.6190	0.128 168 48	0.382 536 33	10 58 36.3	3 39 32.1	3 39 28.0	0 0 4.1
0.6195	0.128 377 08	0.383 152 55	10 59 40.2	3 39 53.4	3 39 49.3	0 0 4.1
0.6200	0.128 585 85	0.383 769 26	11 0 44.1	3 40 14.7	3 40 10.6	0 0 4.1
0.6205	0.128 794 80	0.384 386 45	11 1 48.1	3 40 36.0	3 40 31.9	0 0 4.2
0.6210	0.129 003 93	0.385 004 13	11 2 52.1	3 40 57.4	3 40 53.2	0 0 4.2
0.6215	0.129 213 23	0.385 622 30	11 3 56.2	3 41 18.7	3 41 14.5	0 0 4.2
0.6220	0.129 422 70	0.386 240 95	11 5 0.3	3 41 40.1	3 41 35.9	0 0 4.2
0.6225	0.129 632 36	0.386 860 10	11 6 4.5	3 42 1.5	3 41 57.2	0 0 4.2
0.6230	0.129 842 18	0.387 479 73	11 7 8.7	3 42 22.9	3 42 18.6	0 0 4.3
0.6235	0.130 052 19	0.388 099 85	11 8 13.0	3 42 44.3	3 42 40.0	0 0 4.3
0.6240	0.130 262 37	0.388 720 45	11 9 17.3	3 43 5.8	3 43 1.5	0 0 4.3
0.6245	0.130 472 72	0.389 341 55	11 10 21.7	3 43 27.2	3 43 22.9	0 0 4.3
0.6250	0.130 683 25	0.389 963 13	11 11 26.1	3 43 48.7	3 43 44.4	0 0 4.3
0.6255	0.130 893 96	0.390 585 20	11 12 30.6	3 44 10.2	3 44 5.8	0 0 4.4
0.6260	0.131 104 84	0.391 207 75	11 13 35.1	3 44 31.7	3 44 27.3	0 0 4.4
0.6265	0.131 315 90	0.391 830 79	11 14 39.7	3 44 53.2	3 44 48.8	0 0 4.4
0.6270	0.131 527 14	0.392 454 32	11 15 44.3	3 45 14.8	3 45 10.4	0 0 4.4
0.6275	0.131 738 55	0.393 078 34	11 16 49.0	3 45 36.3	3 45 31.9	0 0 4.4
0.6280	0.131 950 13	0.393 702 84	11 17 53.8	3 45 57.9	3 45 53.5	0 0 4.5
0.6285	0.132 161 90	0.394 327 83	11 18 58.6	3 46 19.5	3 46 15.0	0 0 4.5
0.6290	0.132 373 83	0.394 953 31	11 20 3.4	3 46 41.1	3 46 36.6	0 0 4.5
0.6295	0.132 585 95	0.395 579 28	11 21 8.3	3 47 2.8	3 46 58.2	0 0 4.5
0.6300	0.132 798 24	0.396 205 73	11 22 13.3	3 47 24.4	3 47 19.9	0 0 4.6
0.6305	0.133 010 71	0.396 832 67	11 23 18.2	3 47 46.1	3 47 41.5	0 0 4.6
0.6310	0.133 223 35	0.397 460 09	11 24 23.3	3 48 7.8	3 48 3.2	0 0 4.6
0.6315	0.133 436 17	0.398 088 01	11 25 28.4	3 48 29.5	3 48 24.8	0 0 4.6
0.6320	0.133 649 17	0.398 716 40	11 26 33.6	3 48 51.2	3 48 46.5	0 0 4.6
0.6325	0.133 862 34	0.399 345 29	11 27 38.8	3 49 12.9	3 49 8.3	0 0 4.7
0.6330	0.134 075 69	0.399 974 66	11 28 44.0	3 49 34.7	3 49 30.0	0 0 4.7
0.6335	0.134 289 21	0.400 604 52	11 29 49.3	3 49 56.4	3 49 51.7	0 0 4.7
0.6340	0.134 502 91	0.401 234 87	11 30 54.7	3 50 18.2	3 50 13.5	0 0 4.7
0.6345	0.134 716 79	0.401 865 70	11 32 0.1	3 50 40.0	3 50 35.3	0 0 4.8
0.6350	0.134 930 84	0.402 497 02	11 33 5.6	3 51 1.9	3 50 57.1	0 0 4.8
0.6355	0.135 145 07	0.403 128 83	11 34 11.1	3 51 23.7	3 51 18.9	0 0 4.8
0.6360	0.135 359 48	0.403 761 12	11 35 16.6	3 51 45.5	3 51 40.7	0 0 4.8
0.6365	0.135 574 06	0.404 393 90	11 36 22.3	3 52 7.4	3 52 2.6	0 0 4.8
0.6370	0.135 788 82	0.405 027 16	11 37 27.9	3 52 29.3	3 52 24.4	0 0 4.9
0.6375	0.136 003 76	0.405 660 91	11 38 33.7	3 52 51.2	3 52 46.3	0 0 4.9
0.6380	0.136 218 87	0.406 295 15	11 39 39.4	3 53 13.1	3 53 8.2	0 0 4.9
0.6385	0.136 434 16	0.406 929 87	11 40 45.3	3 53 35.1	3 53 30.1	0 0 4.9
0.6390	0.136 649 63	0.407 565 08	11 41 51.1	3 53 57.0	3 53 52.1	0 0 5.0
0.6395	0.136 865 27	0.408 200 78	11 42 57.1	3 54 19.0	3 54 14.0	0 0 5.0
0.6400	0.137 081 09	0.408 836 96	11 44 3.0	3 54 41.0	3 54 36.0	0 0 5.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.6405	0.410 240 25	0.408 517 55	0.027 965 33	0.204 832 79	0.007 001 85	0.274 098 69
0.6410	0.410 881 00	0.409 150 23	0.028 052 49	0.205 151 81	0.007 023 71	0.274 528 70
0.6415	0.411 522 25	0.409 783 37	0.028 139 85	0.205 471 08	0.007 045 61	0.274 959 06
0.6420	0.412 164 00	0.410 416 59	0.028 227 42	0.205 790 60	0.007 067 57	0.275 389 76
0.6425	0.412 806 25	0.411 051 07	0.028 315 19	0.206 110 36	0.007 089 58	0.275 820 81
0.6430	0.413 449 00	0.411 685 62	0.028 403 16	0.206 430 37	0.007 111 64	0.276 252 21
0.6435	0.414 092 25	0.412 320 63	0.028 491 34	0.206 750 62	0.007 133 75	0.276 683 94
0.6440	0.414 736 00	0.412 956 12	0.028 579 72	0.207 071 12	0.007 155 92	0.277 116 03
0.6445	0.415 380 25	0.413 592 07	0.028 668 31	0.207 391 86	0.007 178 13	0.277 548 45
0.6450	0.416 025 00	0.414 228 50	0.028 757 10	0.207 712 84	0.007 200 40	0.277 981 22
0.6455	0.416 670 25	0.414 865 38	0.028 846 10	0.208 034 07	0.007 222 72	0.278 414 34
0.6460	0.417 316 00	0.415 502 74	0.028 935 30	0.208 355 55	0.007 245 09	0.278 847 80
0.6465	0.417 962 25	0.416 140 57	0.029 024 71	0.208 677 27	0.007 267 51	0.279 281 61
0.6470	0.418 609 00	0.416 778 86	0.029 114 32	0.208 999 23	0.007 289 98	0.279 715 76
0.6475	0.419 256 25	0.417 417 62	0.029 204 14	0.209 321 44	0.007 312 51	0.280 150 26
0.6480	0.419 904 00	0.418 056 84	0.029 294 17	0.209 643 89	0.007 335 09	0.280 585 10
0.6485	0.420 552 25	0.418 696 54	0.029 384 40	0.209 966 59	0.007 357 72	0.281 020 28
0.6490	0.421 201 00	0.419 336 70	0.029 474 84	0.210 289 53	0.007 380 40	0.281 455 81
0.6495	0.421 850 25	0.419 977 32	0.029 565 49	0.210 612 71	0.007 403 13	0.281 891 69
0.6500	0.422 500 00	0.420 618 42	0.029 656 34	0.210 936 14	0.007 425 92	0.282 327 91
0.6505	0.423 150 25	0.421 259 98	0.029 747 40	0.211 259 82	0.007 448 76	0.282 764 48
0.6510	0.423 801 00	0.421 902 01	0.029 838 68	0.211 583 74	0.007 471 65	0.283 201 39
0.6515	0.424 452 25	0.422 544 50	0.029 930 16	0.211 907 90	0.007 494 59	0.283 638 65
0.6520	0.425 104 00	0.423 187 46	0.030 021 85	0.212 232 31	0.007 517 59	0.284 076 25
0.6525	0.425 756 25	0.423 830 89	0.030 113 75	0.212 556 96	0.007 540 64	0.284 514 20
0.6530	0.426 409 00	0.424 474 78	0.030 205 85	0.212 881 86	0.007 563 74	0.284 952 49
0.6535	0.427 062 25	0.425 119 14	0.030 298 17	0.213 207 00	0.007 586 89	0.285 391 13
0.6540	0.427 716 00	0.425 763 97	0.030 390 70	0.213 532 39	0.007 610 10	0.285 830 11
0.6545	0.428 370 25	0.426 409 26	0.030 483 44	0.213 858 02	0.007 633 36	0.286 269 44
0.6550	0.429 025 00	0.427 055 02	0.030 576 39	0.214 183 89	0.007 656 68	0.286 709 12
0.6555	0.429 680 25	0.427 701 24	0.030 669 55	0.214 510 01	0.007 680 04	0.287 149 14
0.6560	0.430 336 00	0.428 347 93	0.030 762 93	0.214 836 37	0.007 703 47	0.287 589 50
0.6565	0.430 992 25	0.428 995 08	0.030 856 51	0.215 162 98	0.007 726 94	0.288 030 21
0.6570	0.431 649 00	0.429 642 70	0.030 950 31	0.215 489 83	0.007 750 47	0.288 471 27
0.6575	0.432 306 25	0.430 290 79	0.031 044 32	0.215 816 92	0.007 774 05	0.288 912 67
0.6580	0.432 964 00	0.430 939 34	0.031 138 54	0.216 144 26	0.007 797 68	0.289 354 42
0.6585	0.433 622 25	0.431 588 35	0.031 232 98	0.216 471 85	0.007 821 37	0.289 796 52
0.6590	0.434 281 00	0.432 237 83	0.031 327 63	0.216 799 67	0.007 845 11	0.290 238 96
0.6595	0.434 940 25	0.432 887 77	0.031 422 49	0.217 127 75	0.007 868 91	0.290 681 74
0.6600	0.435 600 00	0.433 538 18	0.031 517 57	0.217 456 06	0.007 892 76	0.291 124 87
0.6605	0.436 260 25	0.434 189 06	0.031 612 86	0.217 784 62	0.007 916 66	0.291 568 35
0.6610	0.436 921 00	0.434 840 40	0.031 708 36	0.218 113 43	0.007 940 62	0.292 012 18
0.6615	0.437 582 25	0.435 492 20	0.031 804 08	0.218 442 47	0.007 964 63	0.292 456 35
0.6620	0.438 244 00	0.436 144 47	0.031 900 02	0.218 771 77	0.007 988 70	0.292 900 86
0.6625	0.438 906 25	0.436 797 20	0.031 996 17	0.219 101 30	0.008 012 82	0.293 345 72
0.6630	0.439 569 00	0.437 450 40	0.032 092 54	0.219 431 08	0.008 037 00	0.293 790 93
0.6635	0.440 232 25	0.438 104 06	0.032 189 12	0.219 761 11	0.008 061 23	0.294 236 49
0.6640	0.440 896 00	0.438 758 18	0.032 285 93	0.220 091 38	0.008 085 51	0.294 682 39
0.6645	0.441 560 25	0.439 412 77	0.032 382 94	0.220 421 89	0.008 109 85	0.295 128 63
0.6650	0.442 225 00	0.440 067 82	0.032 480 18	0.220 752 64	0.008 134 24	0.295 575 23
0.6655	0.442 890 25	0.440 723 33	0.032 577 63	0.221 083 64	0.008 158 69	0.296 022 17
0.6660	0.443 556 00	0.441 379 31	0.032 675 30	0.221 414 89	0.008 183 20	0.296 469 45
0.6665	0.444 222 25	0.442 035 75	0.032 773 19	0.221 746 38	0.008 207 75	0.296 917 08
0.6670	0.444 889 00	0.442 692 66	0.032 871 30	0.222 078 11	0.008 232 37	0.297 365 06
0.6675	0.445 556 25	0.443 350 03	0.032 969 62	0.222 410 08	0.008 257 04	0.297 813 39
0.6680	0.446 224 00	0.444 007 86	0.033 068 17	0.222 742 30	0.008 281 76	0.298 262 06
0.6685	0.446 892 25	0.444 666 15	0.033 166 93	0.223 074 77	0.008 306 54	0.298 711 08
0.6690	0.447 561 00	0.445 324 91	0.033 265 91	0.223 407 47	0.008 331 37	0.299 160 44
0.6695	0.448 230 25	0.445 984 13	0.033 365 12	0.223 740 42	0.008 356 26	0.299 610 15
0.6700	0.448 900 00	0.446 643 81	0.033 464 54	0.224 073 62	0.008 381 21	0.300 060 21
0.6705	0.449 570 25	0.447 303 95	0.033 564 19	0.224 407 06	0.008 406 21	0.300 510 62
0.6710	0.450 241 00	0.447 964 56	0.033 664 05	0.224 740 74	0.008 431 27	0.300 961 37
0.6715	0.450 912 25	0.448 625 63	0.033 764 14	0.225 074 66	0.008 456 38	0.301 412 47
0.6720	0.451 584 00	0.449 287 16	0.033 864 45	0.225 408 83	0.008 481 55	0.301 863 91
0.6725	0.452 256 25	0.449 949 15	0.033 964 98	0.225 743 24	0.008 506 77	0.302 315 70
0.6730	0.452 929 00	0.450 611 61	0.034 065 73	0.226 077 90	0.008 532 06	0.302 767 84
0.6735	0.453 602 25	0.451 274 53	0.034 166 71	0.226 412 80	0.008 557 39	0.303 220 33
0.6740	0.454 276 00	0.451 937 91	0.034 267 91	0.226 747 95	0.008 582 79	0.303 673 16
0.6745	0.454 950 25	0.452 601 75	0.034 369 33	0.227 083 33	0.008 608 24	0.304 126 34
0.6750	0.455 625 00	0.453 266 05	0.034 470 98	0.227 418 96	0.008 633 74	0.304 579 87
0.6755	0.456 300 25	0.453 930 81	0.034 572 84	0.227 754 84	0.008 659 30	0.305 033 74
0.6760	0.456 976 00	0.454 596 04	0.034 674 94	0.228 090 96	0.008 684 92	0.305 487 96
0.6765	0.457 652 25	0.455 261 72	0.034 777 26	0.228 427 32	0.008 710 60	0.305 942 53
0.6770	0.458 329 00	0.455 927 87	0.034 879 80	0.228 763 92	0.008 736 33	0.306 397 45
0.6775	0.459 006 25	0.456 594 48	0.034 982 57	0.229 100 77	0.008 762 12	0.306 852 71
0.6780	0.459 684 00	0.457 261 54	0.035 085 56	0.229 437 86	0.008 787 96	0.307 308 32
0.6785	0.460 362 25	0.457 929 07	0.035 188 78	0.229 775 20	0.008 813 87	0.307 764 28
0.6790	0.461 041 00	0.458 597 06	0.035 292 23	0.230 112 78	0.008 839 83	0.308 220 58
0.6795	0.461 720 25	0.459 265 51	0.035 395 90	0.230 450 60	0.008 865 84	0.308 677 24
0.6800	0.462 400 00	0.459 934 42	0.035 499 80	0.230 788 66	0.008 891 92	0.309 134 24

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
				DEG MNT SEC		
0.6405	0.137 297 09	0.409 473 63	11 45 9.1	3 55 3.0	3 54 58.0	0 0 5.0
0.6410	0.137 513 26	0.410 110 78	11 46 15.1	3 55 25.0	3 55 20.0	0 0 5.1
0.6415	0.137 729 61	0.410 748 42	11 47 21.3	3 55 47.1	3 55 42.0	0 0 5.1
0.6420	0.137 946 14	0.411 386 55	11 48 27.5	3 56 9.2	3 56 4.1	0 0 5.1
0.6425	0.138 162 85	0.412 025 16	11 49 33.7	3 56 31.2	3 56 26.1	0 0 5.1
0.6430	0.138 379 73	0.412 664 25	11 50 40.0	3 56 53.3	3 56 48.2	0 0 5.1
0.6435	0.138 596 78	0.413 303 84	11 51 46.3	3 57 15.4	3 57 10.3	0 0 5.2
0.6440	0.138 814 02	0.413 943 91	11 52 52.7	3 57 37.6	3 57 32.4	0 0 5.2
0.6445	0.139 031 43	0.414 584 46	11 53 59.2	3 57 59.7	3 57 54.5	0 0 5.2
0.6450	0.139 249 02	0.415 225 50	11 55 5.7	3 58 21.9	3 58 16.6	0 0 5.2
0.6455	0.139 466 79	0.415 867 03	11 56 12.2	3 58 44.1	3 58 38.8	0 0 5.3
0.6460	0.139 684 73	0.416 509 04	11 57 18.8	3 59 6.3	3 59 1.0	0 0 5.3
0.6465	0.139 902 85	0.417 151 54	11 58 25.5	3 59 28.5	3 59 23.2	0 0 5.3
0.6470	0.140 121 15	0.417 794 52	11 59 32.2	3 59 50.7	3 59 45.4	0 0 5.3
0.6475	0.140 339 63	0.418 437 99	12 0 38.9	4 0 13.0	4 0 7.6	0 0 5.4
0.6480	0.140 558 28	0.419 081 94	12 1 45.7	4 0 35.2	4 0 29.8	0 0 5.4
0.6485	0.140 777 11	0.419 726 38	12 2 52.6	4 0 57.5	4 0 52.1	0 0 5.4
0.6490	0.140 996 11	0.420 371 30	12 3 59.5	4 1 19.8	4 1 14.4	0 0 5.4
0.6495	0.141 215 30	0.421 016 71	12 5 6.4	4 1 42.1	4 1 36.7	0 0 5.5
0.6500	0.141 434 66	0.421 662 61	12 6 13.4	4 2 4.5	4 1 59.0	0 0 5.5
0.6505	0.141 654 20	0.422 308 99	12 7 20.5	4 2 26.8	4 2 21.3	0 0 5.5
0.6510	0.141 873 92	0.422 955 85	12 8 27.6	4 2 49.2	4 2 43.7	0 0 5.5
0.6515	0.142 093 81	0.423 603 20	12 9 34.8	4 3 11.6	4 3 6.0	0 0 5.6
0.6520	0.142 313 88	0.424 251 03	12 10 42.0	4 3 34.0	4 3 28.4	0 0 5.6
0.6525	0.142 534 13	0.424 899 35	12 11 49.3	4 3 56.4	4 3 50.8	0 0 5.6
0.6530	0.142 754 56	0.425 548 16	12 12 56.6	4 4 18.9	4 4 13.2	0 0 5.6
0.6535	0.142 975 16	0.426 197 45	12 14 4.0	4 4 41.3	4 4 35.6	0 0 5.7
0.6540	0.143 195 95	0.426 847 22	12 15 11.4	4 5 3.8	4 4 58.1	0 0 5.7
0.6545	0.143 416 91	0.427 497 48	12 16 18.9	4 5 26.3	4 5 20.6	0 0 5.7
0.6550	0.143 638 04	0.428 148 23	12 17 26.4	4 5 48.8	4 5 43.0	0 0 5.8
0.6555	0.143 859 36	0.428 799 45	12 18 34.0	4 6 11.3	4 6 5.5	0 0 5.8
0.6560	0.144 080 85	0.429 451 17	12 19 41.6	4 6 33.9	4 6 28.1	0 0 5.8
0.6565	0.144 302 52	0.430 103 36	12 20 49.3	4 6 56.4	4 6 50.6	0 0 5.8
0.6570	0.144 524 37	0.430 756 05	12 21 57.0	4 7 19.0	4 7 13.1	0 0 5.9
0.6575	0.144 746 40	0.431 409 21	12 23 4.8	4 7 41.6	4 7 35.7	0 0 5.9
0.6580	0.144 968 61	0.432 062 87	12 24 12.6	4 8 4.2	4 7 58.3	0 0 5.9
0.6585	0.145 190 99	0.432 717 00	12 25 20.5	4 8 26.8	4 8 20.9	0 0 5.9
0.6590	0.145 413 55	0.433 371 62	12 26 28.4	4 8 49.5	4 8 43.5	0 0 6.0
0.6595	0.145 636 29	0.434 026 73	12 27 36.4	4 9 12.1	4 9 6.2	0 0 6.0
0.6600	0.145 859 21	0.434 682 31	12 28 44.5	4 9 34.8	4 9 28.8	0 0 6.0
0.6605	0.146 082 30	0.435 338 39	12 29 52.6	4 9 57.5	4 9 51.5	0 0 6.0
0.6610	0.146 305 57	0.435 994 94	12 31 0.7	4 10 20.2	4 10 14.2	0 0 6.1
0.6615	0.146 529 03	0.436 651 99	12 32 8.9	4 10 43.0	4 10 36.9	0 0 6.1
0.6620	0.146 752 66	0.437 309 51	12 33 17.2	4 11 5.7	4 10 59.6	0 0 6.1
0.6625	0.146 976 46	0.437 967 52	12 34 25.5	4 11 28.5	4 11 22.3	0 0 6.2
0.6630	0.147 200 45	0.438 626 01	12 35 33.8	4 11 51.3	4 11 45.1	0 0 6.2
0.6635	0.147 424 61	0.439 284 99	12 36 42.2	4 12 14.1	4 12 7.9	0 0 6.2
0.6640	0.147 648 96	0.439 944 45	12 37 50.7	4 12 36.9	4 12 30.6	0 0 6.2
0.6645	0.147 873 48	0.440 604 40	12 38 59.2	4 12 59.7	4 12 53.5	0 0 6.3
0.6650	0.148 098 18	0.441 264 83	12 40 7.7	4 13 22.6	4 13 16.3	0 0 6.3
0.6655	0.148 323 06	0.441 925 74	12 41 16.3	4 13 45.4	4 13 39.1	0 0 6.3
0.6660	0.148 548 12	0.442 587 13	12 42 25.0	4 14 8.3	4 14 2.0	0 0 6.4
0.6665	0.148 773 35	0.443 249 01	12 43 33.7	4 14 31.2	4 14 24.9	0 0 6.4
0.6670	0.148 998 76	0.443 911 38	12 44 42.5	4 14 54.2	4 14 47.7	0 0 6.4
0.6675	0.149 224 36	0.444 574 22	12 45 51.3	4 15 17.1	4 15 10.7	0 0 6.4
0.6680	0.149 450 13	0.445 237 55	12 47 0.2	4 15 40.1	4 15 33.6	0 0 6.5
0.6685	0.149 676 08	0.445 901 37	12 48 9.1	4 16 3.0	4 15 56.5	0 0 6.5
0.6690	0.149 902 21	0.446 565 67	12 49 18.0	4 16 26.0	4 16 19.5	0 0 6.5
0.6695	0.150 128 52	0.447 230 45	12 50 27.1	4 16 49.0	4 16 42.5	0 0 6.6
0.6700	0.150 355 00	0.447 895 71	12 51 36.1	4 17 12.0	4 17 5.5	0 0 6.6
0.6705	0.150 581 67	0.448 561 46	12 52 45.3	4 17 35.1	4 17 28.5	0 0 6.6
0.6710	0.150 808 51	0.449 227 69	12 53 54.4	4 17 58.1	4 17 51.5	0 0 6.6
0.6715	0.151 035 54	0.449 894 40	12 55 3.7	4 18 21.2	4 18 14.5	0 0 6.7
0.6720	0.151 262 74	0.450 561 60	12 56 12.9	4 18 44.3	4 18 37.6	0 0 6.7
0.6725	0.151 490 12	0.451 229 28	12 57 22.3	4 19 7.4	4 19 0.7	0 0 6.7
0.6730	0.151 717 68	0.451 897 44	12 58 31.7	4 19 30.6	4 19 23.8	0 0 6.8
0.6735	0.151 945 42	0.452 566 09	12 59 41.1	4 19 53.7	4 19 46.9	0 0 6.8
0.6740	0.152 173 34	0.453 235 21	13 0 50.6	4 20 16.9	4 20 10.0	0 0 6.8
0.6745	0.152 401 43	0.453 904 83	13 2 0.1	4 20 40.0	4 20 33.2	0 0 6.9
0.6750	0.152 629 71	0.454 574 92	13 3 9.7	4 21 3.2	4 20 56.3	0 0 6.9
0.6755	0.152 858 17	0.455 245 50	13 4 19.3	4 21 26.4	4 21 19.5	0 0 6.9
0.6760	0.153 086 80	0.455 916 56	13 5 29.0	4 21 49.7	4 21 42.7	0 0 7.0
0.6765	0.153 315 62	0.456 588 10	13 6 38.8	4 22 12.9	4 22 5.9	0 0 7.0
0.6770	0.153 544 61	0.457 260 12	13 7 48.6	4 22 36.2	4 22 29.2	0 0 7.0
0.6775	0.153 773 78	0.457 932 63	13 8 58.4	4 22 59.5	4 22 52.4	0 0 7.0
0.6780	0.154 003 14	0.458 605 62	13 10 8.3	4 23 22.8	4 23 15.7	0 0 7.1
0.6785	0.154 232 67	0.459 279 09	13 11 18.3	4 23 46.1	4 23 39.0	0 0 7.1
0.6790	0.154 462 38	0.459 953 05	13 12 28.3	4 24 9.4	4 24 2.3	0 0 7.1
0.6795	0.154 692 27	0.460 627 49	13 13 38.3	4 24 32.8	4 24 25.6	0 0 7.2
0.6800	0.154 922 34	0.461 302 40	13 14 48.4	4 24 56.1	4 24 48.9	0 0 7.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.6805	0.463 080 25	0.460 603 79	0.035 603 92	0.231 126 97	0.008 918 05	0.309 591 58
0.6810	0.463 761 00	0.461 273 62	0.035 708 28	0.231 465 52	0.008 944 24	0.310 049 28
0.6815	0.464 442 25	0.461 943 91	0.035 812 86	0.231 804 32	0.008 970 48	0.310 507 32
0.6820	0.465 124 00	0.462 614 66	0.035 917 67	0.232 143 36	0.008 996 79	0.310 965 71
0.6825	0.465 806 25	0.463 285 87	0.036 022 70	0.232 482 64	0.009 023 15	0.311 424 45
0.6830	0.466 489 00	0.463 957 54	0.036 127 97	0.232 822 17	0.009 049 57	0.311 883 54
0.6835	0.467 172 25	0.464 629 67	0.036 233 47	0.233 161 93	0.009 076 05	0.312 342 97
0.6840	0.467 856 00	0.465 302 26	0.036 339 19	0.233 501 95	0.009 102 58	0.312 802 75
0.6845	0.468 540 25	0.465 975 31	0.036 445 15	0.233 842 20	0.009 129 17	0.313 262 88
0.6850	0.469 225 00	0.466 648 82	0.036 551 33	0.234 182 70	0.009 155 82	0.313 723 36
0.6855	0.469 910 25	0.467 322 78	0.036 657 74	0.234 523 44	0.009 182 53	0.314 184 19
0.6860	0.470 596 00	0.467 997 21	0.036 764 39	0.234 864 42	0.009 209 30	0.314 645 36
0.6865	0.471 282 25	0.468 672 09	0.036 871 27	0.235 205 65	0.009 236 13	0.315 106 88
0.6870	0.471 969 00	0.469 347 43	0.036 978 37	0.235 547 12	0.009 263 01	0.315 568 75
0.6875	0.472 656 25	0.470 023 24	0.037 085 71	0.235 888 84	0.009 289 95	0.316 030 97
0.6880	0.473 344 00	0.470 699 49	0.037 193 28	0.236 230 79	0.009 316 95	0.316 493 54
0.6885	0.474 032 25	0.471 376 21	0.037 301 09	0.236 572 99	0.009 344 01	0.316 956 45
0.6890	0.474 721 00	0.472 053 39	0.037 409 12	0.236 915 43	0.009 371 13	0.317 419 71
0.6895	0.475 410 25	0.472 731 02	0.037 517 39	0.237 258 12	0.009 398 31	0.317 883 32
0.6900	0.476 100 00	0.473 409 11	0.037 625 89	0.237 601 05	0.009 425 54	0.318 347 28
0.6905	0.476 790 25	0.474 087 66	0.037 734 63	0.237 944 22	0.009 452 84	0.318 811 59
0.6910	0.477 481 00	0.474 766 67	0.037 843 60	0.238 287 63	0.009 480 19	0.319 276 25
0.6915	0.478 172 25	0.475 446 14	0.037 952 80	0.238 631 29	0.009 507 60	0.319 741 25
0.6920	0.478 864 00	0.476 126 06	0.038 062 24	0.238 975 19	0.009 535 08	0.320 206 61
0.6925	0.479 556 25	0.476 806 44	0.038 171 92	0.239 319 34	0.009 562 61	0.320 672 31
0.6930	0.480 249 00	0.477 487 28	0.038 281 82	0.239 663 72	0.009 590 20	0.321 138 36
0.6935	0.480 942 25	0.478 168 57	0.038 391 97	0.240 008 35	0.009 617 85	0.321 604 76
0.6940	0.481 636 00	0.478 850 32	0.038 502 35	0.240 353 22	0.009 645 56	0.322 071 50
0.6945	0.482 330 25	0.479 532 53	0.038 612 96	0.240 698 34	0.009 673 33	0.322 538 60
0.6950	0.483 025 00	0.480 215 20	0.038 723 82	0.241 043 69	0.009 701 16	0.323 006 05
0.6955	0.483 720 25	0.480 898 32	0.038 834 91	0.241 389 29	0.009 729 04	0.323 473 84
0.6960	0.484 416 00	0.481 581 90	0.038 946 23	0.241 735 14	0.009 756 99	0.323 941 99
0.6965	0.485 112 25	0.482 265 93	0.039 057 80	0.242 081 22	0.009 785 00	0.324 410 48
0.6970	0.485 809 00	0.482 950 42	0.039 169 60	0.242 427 55	0.009 813 07	0.324 879 32
0.6975	0.486 506 25	0.483 635 37	0.039 281 64	0.242 774 12	0.009 841 20	0.325 348 51
0.6980	0.487 204 00	0.484 320 77	0.039 393 92	0.243 120 93	0.009 869 39	0.325 818 05
0.6985	0.487 902 25	0.485 006 63	0.039 506 43	0.243 467 99	0.009 897 64	0.326 287 94
0.6990	0.488 601 00	0.485 692 94	0.039 619 19	0.243 815 29	0.009 925 95	0.326 758 18
0.6995	0.489 300 25	0.486 379 71	0.039 732 19	0.244 162 83	0.009 954 32	0.327 228 76
0.7000	0.490 000 00	0.487 066 94	0.039 845 42	0.244 510 61	0.009 982 75	0.327 699 70
0.7005	0.490 700 25	0.487 754 62	0.039 958 90	0.244 858 64	0.010 011 24	0.328 170 98
0.7010	0.491 401 00	0.488 442 75	0.040 072 61	0.245 206 91	0.010 039 79	0.328 642 62
0.7015	0.492 102 25	0.489 131 34	0.040 186 57	0.245 555 42	0.010 068 40	0.329 114 60
0.7020	0.492 804 00	0.489 820 39	0.040 300 77	0.245 904 17	0.010 097 08	0.329 586 94
0.7025	0.493 506 25	0.490 509 89	0.040 415 21	0.246 253 17	0.010 125 81	0.330 059 62
0.7030	0.494 209 00	0.491 199 85	0.040 529 89	0.246 602 41	0.010 154 61	0.330 532 65
0.7035	0.494 912 25	0.491 890 26	0.040 644 81	0.246 951 89	0.010 183 47	0.331 006 04
0.7040	0.495 616 00	0.492 581 12	0.040 759 98	0.247 301 61	0.010 212 38	0.331 479 77
0.7045	0.496 320 25	0.493 272 44	0.040 875 39	0.247 651 58	0.010 241 36	0.331 953 85
0.7050	0.497 025 00	0.493 964 21	0.040 991 04	0.248 001 79	0.010 270 40	0.332 428 28
0.7055	0.497 730 25	0.494 656 44	0.041 106 94	0.248 352 24	0.010 299 51	0.332 903 06
0.7060	0.498 436 00	0.495 349 12	0.041 223 07	0.248 702 93	0.010 328 67	0.333 378 20
0.7065	0.499 142 25	0.496 042 26	0.041 339 46	0.249 053 86	0.010 357 90	0.333 853 68
0.7070	0.499 849 00	0.496 735 85	0.041 456 09	0.249 405 04	0.010 387 18	0.334 329 51
0.7075	0.500 556 25	0.497 429 89	0.041 572 96	0.249 756 46	0.010 416 53	0.334 805 69
0.7080	0.501 264 00	0.498 124 38	0.041 690 07	0.250 108 12	0.010 445 94	0.335 282 22
0.7085	0.501 972 25	0.498 819 33	0.041 807 44	0.250 460 03	0.010 475 42	0.335 759 10
0.7090	0.502 681 00	0.499 514 73	0.041 925 05	0.250 812 17	0.010 504 95	0.336 236 33
0.7095	0.503 390 25	0.500 210 59	0.042 042 90	0.251 164 56	0.010 534 55	0.336 713 92
0.7100	0.504 100 00	0.500 906 90	0.042 161 00	0.251 517 19	0.010 564 21	0.337 191 85
0.7105	0.504 810 25	0.501 603 66	0.042 279 35	0.251 870 06	0.010 593 93	0.337 670 13
0.7110	0.505 521 00	0.502 300 87	0.042 397 94	0.252 223 18	0.010 623 72	0.338 148 76
0.7115	0.506 232 25	0.502 998 54	0.042 516 79	0.252 576 53	0.010 653 56	0.338 627 74
0.7120	0.506 944 00	0.503 696 66	0.042 635 88	0.252 930 13	0.010 683 47	0.339 107 08
0.7125	0.507 656 25	0.504 395 23	0.042 755 21	0.253 283 97	0.010 713 44	0.339 586 76
0.7130	0.508 369 00	0.505 094 25	0.042 874 80	0.253 638 05	0.010 743 48	0.340 066 80
0.7135	0.509 082 25	0.505 793 72	0.042 994 63	0.253 992 38	0.010 773 58	0.340 547 18
0.7140	0.509 796 00	0.506 493 65	0.043 114 72	0.254 346 95	0.010 803 74	0.341 027 92
0.7145	0.510 510 25	0.507 194 03	0.043 235 05	0.254 701 75	0.010 833 96	0.341 509 00
0.7150	0.511 225 00	0.507 894 86	0.043 355 64	0.255 056 80	0.010 864 25	0.341 990 44
0.7155	0.511 940 25	0.508 596 14	0.043 476 47	0.255 412 10	0.010 894 60	0.342 472 23
0.7160	0.512 656 00	0.509 297 87	0.043 597 55	0.255 767 63	0.010 925 01	0.342 954 37
0.7165	0.513 372 25	0.510 000 06	0.043 718 89	0.256 123 41	0.010 955 49	0.343 436 86
0.7170	0.514 089 00	0.510 702 69	0.043 840 47	0.256 479 42	0.010 986 03	0.343 919 70
0.7175	0.514 806 25	0.511 405 78	0.043 962 31	0.256 835 68	0.011 016 63	0.344 402 89
0.7180	0.515 524 00	0.512 109 31	0.044 084 40	0.257 192 18	0.011 047 30	0.344 886 43
0.7185	0.516 242 25	0.512 813 30	0.044 206 74	0.257 548 93	0.011 078 03	0.345 370 32
0.7190	0.516 961 00	0.513 517 74	0.044 329 33	0.257 905 91	0.011 108 83	0.345 854 57
0.7195	0.517 680 25	0.514 222 63	0.044 452 18	0.258 263 14	0.011 139 69	0.346 339 16
0.7200	0.518 400 00	0.514 927 96	0.044 575 28	0.258 620 61	0.011 170 61	0.346 824 11

A/R= =LS/R= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
0.6805	0.155 152 59	0.461 977 81	13 15 58.6	4 25 19.5	4 25 12.3	0 0 7.2
0.6810	0.155 383 02	0.462 653 69	13 17 8.8	4 25 42.9	4 25 35.7	0 0 7.3
0.6815	0.155 613 63	0.463 330 06	13 18 19.0	4 26 6.3	4 25 59.0	0 0 7.3
0.6820	0.155 844 42	0.464 006 90	13 19 29.4	4 26 29.8	4 26 22.5	0 0 7.3
0.6825	0.156 075 39	0.464 684 23	13 20 39.7	4 26 53.2	4 26 45.9	0 0 7.4
0.6830	0.156 306 54	0.465 362 04	13 21 50.1	4 27 16.7	4 27 9.3	0 0 7.4
0.6835	0.156 537 87	0.466 040 34	13 23 0.6	4 27 40.2	4 27 32.8	0 0 7.4
0.6840	0.156 769 38	0.466 719 11	13 24 11.1	4 28 3.7	4 27 56.2	0 0 7.5
0.6845	0.157 001 06	0.467 398 37	13 25 21.7	4 28 27.2	4 28 19.7	0 0 7.5
0.6850	0.157 232 93	0.468 078 11	13 26 32.3	4 28 50.8	4 28 43.2	0 0 7.5
0.6855	0.157 464 98	0.468 758 33	13 27 43.0	4 29 14.3	4 29 6.8	0 0 7.6
0.6860	0.157 697 21	0.469 439 03	13 28 53.7	4 29 37.9	4 29 30.3	0 0 7.6
0.6865	0.157 929 62	0.470 120 22	13 30 4.5	4 30 1.5	4 29 53.9	0 0 7.6
0.6870	0.158 162 21	0.470 801 88	13 31 15.3	4 30 25.1	4 30 17.4	0 0 7.7
0.6875	0.158 394 98	0.471 484 03	13 32 26.2	4 30 48.7	4 30 41.0	0 0 7.7
0.6880	0.158 627 92	0.472 166 66	13 33 37.1	4 31 12.4	4 31 4.6	0 0 7.7
0.6885	0.158 861 05	0.472 849 77	13 34 48.1	4 31 36.0	4 31 28.3	0 0 7.8
0.6890	0.159 094 36	0.473 533 36	13 35 59.1	4 31 59.7	4 31 51.9	0 0 7.8
0.6895	0.159 327 85	0.474 217 43	13 37 10.2	4 32 23.4	4 32 15.6	0 0 7.8
0.6900	0.159 561 52	0.474 901 99	13 38 21.3	4 32 47.1	4 32 39.2	0 0 7.9
0.6905	0.159 795 37	0.475 587 02	13 39 32.5	4 33 10.8	4 33 2.9	0 0 7.9
0.6910	0.160 029 40	0.476 272 54	13 40 43.8	4 33 34.6	4 33 26.7	0 0 7.9
0.6915	0.160 263 62	0.476 958 54	13 41 55.1	4 33 58.4	4 33 50.4	0 0 8.0
0.6920	0.160 498 01	0.477 645 01	13 43 6.4	4 34 22.1	4 34 14.1	0 0 8.0
0.6925	0.160 732 58	0.478 331 97	13 44 17.8	4 34 45.9	4 34 37.9	0 0 8.0
0.6930	0.160 967 33	0.479 019 41	13 45 29.2	4 35 9.7	4 35 1.7	0 0 8.1
0.6935	0.161 202 27	0.479 707 33	13 46 40.7	4 35 33.6	4 35 25.5	0 0 8.1
0.6940	0.161 437 38	0.480 395 74	13 47 52.3	4 35 57.4	4 35 49.3	0 0 8.1
0.6945	0.161 672 68	0.481 084 62	13 49 3.9	4 36 21.3	4 36 13.1	0 0 8.2
0.6950	0.161 908 15	0.481 773 98	13 50 15.5	4 36 45.2	4 36 37.0	0 0 8.2
0.6955	0.162 143 81	0.482 463 82	13 51 27.2	4 37 9.1	4 37 0.8	0 0 8.2
0.6960	0.162 379 65	0.483 154 15	13 52 39.0	4 37 33.0	4 37 24.7	0 0 8.3
0.6965	0.162 615 67	0.483 844 95	13 53 50.8	4 37 56.9	4 37 48.6	0 0 8.3
0.6970	0.162 851 87	0.484 536 24	13 55 2.6	4 38 20.9	4 38 12.5	0 0 8.4
0.6975	0.163 088 25	0.485 228 00	13 56 14.6	4 38 44.9	4 38 36.5	0 0 8.4
0.6980	0.163 324 81	0.485 920 25	13 57 26.5	4 39 8.8	4 39 0.4	0 0 8.4
0.6985	0.163 561 55	0.486 612 97	13 58 38.5	4 39 32.8	4 39 24.4	0 0 8.5
0.6990	0.163 798 47	0.487 306 18	13 59 50.6	4 39 56.9	4 39 48.4	0 0 8.5
0.6995	0.164 035 58	0.487 999 87	14 1 2.7	4 40 20.9	4 40 12.4	0 0 8.5
0.7000	0.164 272 87	0.488 694 03	14 2 14.9	4 40 45.0	4 40 36.4	0 0 8.6
0.7005	0.164 510 33	0.489 388 68	14 3 27.1	4 41 9.0	4 41 0.4	0 0 8.6
0.7010	0.164 747 98	0.490 083 81	14 4 39.4	4 41 33.1	4 41 24.5	0 0 8.6
0.7015	0.164 985 81	0.490 779 41	14 5 51.7	4 41 57.2	4 41 48.5	0 0 8.7
0.7020	0.165 223 82	0.491 475 50	14 7 4.1	4 42 21.4	4 42 12.6	0 0 8.7
0.7025	0.165 462 01	0.492 172 07	14 8 16.5	4 42 45.5	4 42 36.7	0 0 8.8
0.7030	0.165 700 39	0.492 869 11	14 9 29.0	4 43 9.7	4 43 0.9	0 0 8.8
0.7035	0.165 938 94	0.493 566 64	14 10 41.5	4 43 33.8	4 43 25.0	0 0 8.8
0.7040	0.166 177 68	0.494 264 64	14 11 54.1	4 43 58.0	4 43 49.2	0 0 8.9
0.7045	0.166 416 60	0.494 963 13	14 13 6.7	4 44 22.2	4 44 13.3	0 0 8.9
0.7050	0.166 655 70	0.495 662 09	14 14 19.4	4 44 46.5	4 44 37.5	0 0 8.9
0.7055	0.166 894 98	0.496 361 54	14 15 32.1	4 45 10.7	4 45 1.7	0 0 9.0
0.7060	0.167 134 45	0.497 061 46	14 16 44.9	4 45 35.0	4 45 25.9	0 0 9.0
0.7065	0.167 374 09	0.497 761 86	14 17 57.7	4 45 59.2	4 45 50.2	0 0 9.1
0.7070	0.167 613 92	0.498 462 74	14 19 10.6	4 46 23.5	4 46 14.4	0 0 9.1
0.7075	0.167 853 93	0.499 164 11	14 20 23.6	4 46 47.9	4 46 38.7	0 0 9.1
0.7080	0.168 094 12	0.499 865 95	14 21 36.6	4 47 12.2	4 47 3.0	0 0 9.2
0.7085	0.168 334 49	0.500 568 27	14 22 49.6	4 47 36.5	4 47 27.3	0 0 9.2
0.7090	0.168 575 04	0.501 271 06	14 24 2.7	4 48 0.9	4 47 51.6	0 0 9.3
0.7095	0.168 815 78	0.501 974 34	14 25 15.8	4 48 25.3	4 48 16.0	0 0 9.3
0.7100	0.169 056 70	0.502 678 10	14 26 29.0	4 48 49.7	4 48 40.3	0 0 9.3
0.7105	0.169 297 80	0.503 382 33	14 27 42.3	4 49 14.1	4 49 4.7	0 0 9.4
0.7110	0.169 539 08	0.504 087 05	14 28 55.6	4 49 38.5	4 49 29.1	0 0 9.4
0.7115	0.169 780 55	0.504 792 24	14 30 8.9	4 50 3.0	4 49 53.5	0 0 9.5
0.7120	0.170 022 20	0.505 497 91	14 31 22.4	4 50 27.5	4 50 18.0	0 0 9.5
0.7125	0.170 264 03	0.506 204 06	14 32 35.8	4 50 51.9	4 50 42.4	0 0 9.5
0.7130	0.170 506 04	0.506 910 69	14 33 49.3	4 51 16.4	4 51 6.9	0 0 9.6
0.7135	0.170 748 23	0.507 617 80	14 35 2.9	4 51 41.0	4 51 31.3	0 0 9.6
0.7140	0.170 990 61	0.508 325 39	14 36 16.5	4 52 5.5	4 51 55.8	0 0 9.7
0.7145	0.171 233 17	0.509 033 45	14 37 30.1	4 52 30.0	4 52 20.4	0 0 9.7
0.7150	0.171 475 91	0.509 741 99	14 38 43.9	4 52 54.6	4 52 44.9	0 0 9.7
0.7155	0.171 718 83	0.510 451 01	14 39 57.6	4 53 19.2	4 53 9.4	0 0 9.8
0.7160	0.171 961 94	0.511 160 51	14 41 11.4	4 53 43.8	4 53 34.0	0 0 9.8
0.7165	0.172 205 23	0.511 870 49	14 42 25.3	4 54 8.4	4 53 58.6	0 0 9.9
0.7170	0.172 448 70	0.512 580 95	14 43 39.2	4 54 33.1	4 54 23.2	0 0 9.9
0.7175	0.172 692 36	0.513 291 88	14 44 53.2	4 54 57.7	4 54 47.8	0 0 9.9
0.7180	0.172 936 19	0.514 003 29	14 46 7.2	4 55 22.4	4 55 12.4	0 0 10.0
0.7185	0.173 180 21	0.514 715 18	14 47 21.3	4 55 47.1	4 55 37.1	0 0 10.0
0.7190	0.173 424 42	0.515 427 55	14 48 35.4	4 56 11.8	4 56 1.7	0 0 10.1
0.7195	0.173 668 80	0.516 140 39	14 49 49.6	4 56 36.5	4 56 26.4	0 0 10.1
0.7200	0.173 913 37	0.516 853 72	14 51 3.8	4 57 1.3	4 56 51.1	0 0 10.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.7205	0.519 120 25	0.515 633 75	0.044 698 63	0.258 978 32	0.011 201 60	0.347 309 41
0.7210	0.519 841 00	0.516 339 99	0.044 822 24	0.259 336 27	0.011 232 65	0.347 795 06
0.7215	0.520 562 25	0.517 046 68	0.044 946 10	0.259 694 46	0.011 263 76	0.348 281 06
0.7220	0.521 284 00	0.517 753 82	0.045 070 21	0.260 052 90	0.011 294 94	0.348 767 41
0.7225	0.522 006 25	0.518 461 40	0.045 194 58	0.260 411 57	0.011 326 19	0.349 254 11
0.7230	0.522 729 00	0.519 169 44	0.045 319 21	0.260 770 49	0.011 357 50	0.349 741 17
0.7235	0.523 452 25	0.519 877 93	0.045 444 09	0.261 129 65	0.011 388 87	0.350 228 58
0.7240	0.524 176 00	0.520 586 86	0.045 569 22	0.261 489 05	0.011 420 31	0.350 716 33
0.7245	0.524 900 25	0.521 296 24	0.045 694 61	0.261 848 69	0.011 451 81	0.351 204 44
0.7250	0.525 625 00	0.522 006 08	0.045 820 26	0.262 208 57	0.011 483 38	0.351 692 91
0.7255	0.526 350 25	0.522 716 36	0.045 946 17	0.262 568 70	0.011 515 01	0.352 181 72
0.7260	0.527 076 00	0.523 427 09	0.046 072 33	0.262 929 07	0.011 546 71	0.352 670 89
0.7265	0.527 802 25	0.524 138 27	0.046 198 75	0.263 289 67	0.011 578 47	0.353 160 40
0.7270	0.528 529 00	0.524 849 89	0.046 325 43	0.263 650 52	0.011 610 30	0.353 650 27
0.7275	0.529 256 25	0.525 561 97	0.046 452 36	0.264 011 61	0.011 642 19	0.354 140 49
0.7280	0.529 984 00	0.526 274 49	0.046 579 56	0.264 372 94	0.011 674 15	0.354 631 07
0.7285	0.530 712 25	0.526 987 46	0.046 707 01	0.264 734 52	0.011 706 18	0.355 121 99
0.7290	0.531 441 00	0.527 700 88	0.046 834 72	0.265 096 33	0.011 738 27	0.355 613 27
0.7295	0.532 170 25	0.528 414 75	0.046 962 69	0.265 458 39	0.011 770 42	0.356 104 90
0.7300	0.532 900 00	0.529 129 06	0.047 090 93	0.265 820 68	0.011 802 64	0.356 596 88
0.7305	0.533 630 25	0.529 843 82	0.047 219 42	0.266 183 22	0.011 834 93	0.357 089 22
0.7310	0.534 361 00	0.530 559 03	0.047 348 17	0.266 546 00	0.011 867 28	0.357 581 90
0.7315	0.535 092 25	0.531 274 68	0.047 477 18	0.266 909 02	0.011 899 70	0.358 074 94
0.7320	0.535 824 00	0.531 990 78	0.047 606 46	0.267 272 28	0.011 932 19	0.358 568 33
0.7325	0.536 556 25	0.532 707 33	0.047 735 99	0.267 635 78	0.011 964 74	0.359 062 08
0.7330	0.537 289 00	0.533 424 33	0.047 865 79	0.267 999 53	0.011 997 36	0.359 556 18
0.7335	0.538 022 25	0.534 141 77	0.047 995 85	0.268 363 51	0.012 030 04	0.360 050 62
0.7340	0.538 756 00	0.534 859 66	0.048 126 17	0.268 727 74	0.012 062 79	0.360 545 43
0.7345	0.539 490 25	0.535 577 99	0.048 256 76	0.269 092 20	0.012 095 61	0.361 040 58
0.7350	0.540 225 00	0.536 296 77	0.048 387 61	0.269 456 91	0.012 128 49	0.361 536 09
0.7355	0.540 960 25	0.537 015 99	0.048 518 72	0.269 821 86	0.012 161 44	0.362 031 95
0.7360	0.541 696 00	0.537 735 67	0.048 650 10	0.270 187 05	0.012 194 46	0.362 528 16
0.7365	0.542 432 25	0.538 455 78	0.048 781 74	0.270 552 48	0.012 227 54	0.363 024 73
0.7370	0.543 169 00	0.539 176 34	0.048 913 64	0.270 918 15	0.012 260 69	0.363 521 65
0.7375	0.543 906 25	0.539 897 35	0.049 045 81	0.271 284 06	0.012 293 91	0.364 018 92
0.7380	0.544 644 00	0.540 618 80	0.049 178 25	0.271 650 21	0.012 327 19	0.364 516 55
0.7385	0.545 382 25	0.541 340 70	0.049 310 95	0.272 016 60	0.012 360 55	0.365 014 53
0.7390	0.546 121 00	0.542 063 04	0.049 443 91	0.272 383 24	0.012 393 97	0.365 512 86
0.7395	0.546 860 25	0.542 785 83	0.049 577 15	0.272 750 11	0.012 427 45	0.366 011 54
0.7400	0.547 600 00	0.543 509 06	0.049 710 65	0.273 117 23	0.012 461 01	0.366 510 58
0.7405	0.548 340 25	0.544 232 74	0.049 844 41	0.273 484 59	0.012 494 63	0.367 009 97
0.7410	0.549 081 00	0.544 956 86	0.049 978 45	0.273 852 18	0.012 528 32	0.367 509 72
0.7415	0.549 822 25	0.545 681 42	0.050 112 75	0.274 220 02	0.012 562 08	0.368 009 82
0.7420	0.550 564 00	0.546 406 43	0.050 247 32	0.274 588 10	0.012 595 90	0.368 510 27
0.7425	0.551 306 25	0.547 131 88	0.050 382 16	0.274 956 42	0.012 629 80	0.369 011 08
0.7430	0.552 049 00	0.547 857 77	0.050 517 26	0.275 324 98	0.012 663 76	0.369 512 24
0.7435	0.552 792 25	0.548 584 11	0.050 652 64	0.275 693 78	0.012 697 79	0.370 013 75
0.7440	0.553 536 00	0.549 310 90	0.050 788 29	0.276 062 82	0.012 731 88	0.370 515 62
0.7445	0.554 280 25	0.550 038 12	0.050 924 20	0.276 432 10	0.012 766 05	0.371 017 84
0.7450	0.555 025 00	0.550 765 79	0.051 060 39	0.276 801 62	0.012 800 29	0.371 520 41
0.7455	0.555 770 25	0.551 493 90	0.051 196 84	0.277 171 38	0.012 834 59	0.372 023 34
0.7460	0.556 516 00	0.552 222 45	0.051 333 57	0.277 541 38	0.012 868 96	0.372 526 63
0.7465	0.557 262 25	0.552 951 45	0.051 470 57	0.277 911 62	0.012 903 40	0.373 030 26
0.7470	0.558 009 00	0.553 680 89	0.051 607 83	0.278 282 11	0.012 937 91	0.373 534 25
0.7475	0.558 756 25	0.554 410 77	0.051 745 38	0.278 652 83	0.012 972 49	0.374 038 60
0.7480	0.559 504 00	0.555 141 09	0.051 883 19	0.279 023 79	0.013 007 13	0.374 543 30
0.7485	0.560 252 25	0.555 871 86	0.052 021 27	0.279 395 00	0.013 041 85	0.375 048 35
0.7490	0.561 001 00	0.556 603 06	0.052 159 63	0.279 766 44	0.013 076 63	0.375 553 76
0.7495	0.561 750 25	0.557 334 71	0.052 298 26	0.280 138 13	0.013 111 49	0.376 059 52
0.7500	0.562 500 00	0.558 066 80	0.052 437 17	0.280 510 05	0.013 146 41	0.376 565 64
0.7505	0.563 250 25	0.558 799 33	0.052 576 35	0.280 882 21	0.013 181 40	0.377 072 11
0.7510	0.564 001 00	0.559 532 31	0.052 715 80	0.281 254 62	0.013 216 47	0.377 578 94
0.7515	0.564 752 25	0.560 265 72	0.052 855 53	0.281 627 26	0.013 251 60	0.378 086 12
0.7520	0.565 504 00	0.560 999 57	0.052 995 53	0.282 000 15	0.013 286 80	0.378 593 66
0.7525	0.566 256 25	0.561 733 87	0.053 135 81	0.282 373 27	0.013 322 07	0.379 101 55
0.7530	0.567 009 00	0.562 468 60	0.053 276 36	0.282 746 64	0.013 357 41	0.379 609 79
0.7535	0.567 762 25	0.563 203 78	0.053 417 19	0.283 120 24	0.013 392 82	0.380 118 39
0.7540	0.568 516 00	0.563 939 39	0.053 558 30	0.283 494 09	0.013 428 30	0.380 627 35
0.7545	0.569 270 25	0.564 675 45	0.053 699 68	0.283 868 17	0.013 463 86	0.381 136 66
0.7550	0.570 025 00	0.565 411 95	0.053 841 34	0.284 242 50	0.013 499 48	0.381 646 32
0.7555	0.570 780 25	0.566 148 88	0.053 983 28	0.284 617 06	0.013 535 17	0.382 156 34
0.7560	0.571 536 00	0.566 886 26	0.054 125 49	0.284 991 87	0.013 570 93	0.382 666 72
0.7565	0.572 292 25	0.567 624 07	0.054 267 98	0.285 366 91	0.013 606 76	0.383 177 45
0.7570	0.573 049 00	0.568 362 33	0.054 410 75	0.285 742 20	0.013 642 67	0.383 688 53
0.7575	0.573 806 25	0.569 101 02	0.054 553 80	0.286 117 72	0.013 678 64	0.384 199 97
0.7580	0.574 564 00	0.569 840 15	0.054 697 13	0.286 493 49	0.013 714 69	0.384 711 77
0.7585	0.575 322 25	0.570 579 72	0.054 840 74	0.286 869 49	0.013 750 80	0.385 223 92
0.7590	0.576 081 00	0.571 319 73	0.054 984 63	0.287 245 73	0.013 786 99	0.385 736 43
0.7595	0.576 840 25	0.572 060 18	0.055 128 80	0.287 622 22	0.013 823 24	0.386 249 29
0.7600	0.577 600 00	0.572 801 07	0.055 273 24	0.287 998 94	0.013 859 57	0.386 762 51

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
0.7205	0.174 158 13	0.517 567 52	14 52 18.1	4 57 26.0	4 57 15.8	0 0 10.2
0.7210	0.174 403 06	0.518 281 79	14 53 32.5	4 57 50.8	4 57 40.6	0 0 10.2
0.7215	0.174 648 18	0.518 996 55	14 54 46.8	4 58 15.6	4 58 5.3	0 0 10.3
0.7220	0.174 893 48	0.519 711 78	14 56 1.3	4 58 40.4	4 58 30.1	0 0 10.3
0.7225	0.175 138 97	0.520 427 49	14 57 15.8	4 59 5.3	4 58 54.9	0 0 10.4
0.7230	0.175 384 63	0.521 143 68	14 58 30.3	4 59 30.1	4 59 19.7	0 0 10.4
0.7235	0.175 630 48	0.521 860 35	14 59 44.9	4 59 55.0	4 59 44.5	0 0 10.5
0.7240	0.175 876 52	0.522 577 49	15 0 59.5	5 0 19.8	5 0 9.3	0 0 10.5
0.7245	0.176 122 74	0.523 295 11	15 2 14.2	5 0 44.7	5 0 34.2	0 0 10.5
0.7250	0.176 369 14	0.524 013 21	15 3 29.0	5 1 9.7	5 0 59.1	0 0 10.6
0.7255	0.176 615 72	0.524 731 78	15 4 43.8	5 1 34.6	5 1 24.0	0 0 10.6
0.7260	0.176 862 49	0.525 450 83	15 5 58.6	5 1 59.5	5 1 48.9	0 0 10.7
0.7265	0.177 109 44	0.526 170 36	15 7 13.5	5 2 24.5	5 2 13.8	0 0 10.7
0.7270	0.177 356 58	0.526 890 36	15 8 28.5	5 2 49.5	5 2 38.7	0 0 10.8
0.7275	0.177 603 90	0.527 610 85	15 9 43.5	5 3 14.5	5 3 3.7	0 0 10.8
0.7280	0.177 851 40	0.528 331 80	15 10 58.5	5 3 39.5	5 3 28.7	0 0 10.8
0.7285	0.178 099 09	0.529 053 24	15 12 13.6	5 4 4.5	5 3 53.6	0 0 10.9
0.7290	0.178 346 96	0.529 775 15	15 13 28.8	5 4 29.6	5 4 18.7	0 0 10.9
0.7295	0.178 595 01	0.530 497 54	15 14 44.0	5 4 54.7	5 4 43.7	0 0 11.0
0.7300	0.178 843 25	0.531 220 40	15 15 59.3	5 5 19.8	5 5 8.7	0 0 11.0
0.7305	0.179 091 67	0.531 943 74	15 17 14.6	5 5 44.9	5 5 33.8	0 0 11.1
0.7310	0.179 340 28	0.532 667 56	15 18 29.9	5 6 10.0	5 5 58.9	0 0 11.1
0.7315	0.179 589 07	0.533 391 85	15 19 45.3	5 6 35.1	5 6 24.0	0 0 11.2
0.7320	0.179 838 04	0.534 116 62	15 21 0.8	5 7 0.3	5 6 49.1	0 0 11.2
0.7325	0.180 087 20	0.534 841 87	15 22 16.3	5 7 25.4	5 7 14.2	0 0 11.3
0.7330	0.180 336 54	0.535 567 59	15 23 31.9	5 7 50.6	5 7 39.3	0 0 11.3
0.7335	0.180 586 07	0.536 293 79	15 24 47.5	5 8 15.8	5 8 4.5	0 0 11.4
0.7340	0.180 835 78	0.537 020 46	15 26 3.2	5 8 41.1	5 8 29.7	0 0 11.4
0.7345	0.181 085 67	0.537 747 61	15 27 18.9	5 9 6.3	5 8 54.9	0 0 11.4
0.7350	0.181 335 75	0.538 475 24	15 28 34.7	5 9 31.6	5 9 20.1	0 0 11.5
0.7355	0.181 586 02	0.539 203 34	15 29 50.5	5 9 56.8	5 9 45.3	0 0 11.5
0.7360	0.181 836 47	0.539 931 92	15 31 6.4	5 10 22.1	5 10 10.6	0 0 11.6
0.7365	0.182 087 10	0.540 660 97	15 32 22.3	5 10 47.4	5 10 35.8	0 0 11.6
0.7370	0.182 337 92	0.541 390 50	15 33 38.3	5 11 12.8	5 11 1.1	0 0 11.7
0.7375	0.182 588 92	0.542 120 50	15 34 54.4	5 11 38.1	5 11 26.4	0 0 11.7
0.7380	0.182 840 11	0.542 850 98	15 36 10.4	5 12 3.5	5 11 51.7	0 0 11.8
0.7385	0.183 091 48	0.543 581 94	15 37 26.6	5 12 28.9	5 12 17.0	0 0 11.8
0.7390	0.183 343 04	0.544 313 37	15 38 42.8	5 12 54.3	5 12 42.4	0 0 11.9
0.7395	0.183 594 78	0.545 045 27	15 39 59.0	5 13 19.7	5 13 7.8	0 0 11.9
0.7400	0.183 846 70	0.545 777 65	15 41 15.3	5 13 45.1	5 13 33.1	0 0 12.0
0.7405	0.184 098 81	0.546 510 51	15 42 31.6	5 14 10.5	5 13 58.5	0 0 12.0
0.7410	0.184 351 11	0.547 243 84	15 43 48.0	5 14 36.0	5 14 23.9	0 0 12.1
0.7415	0.184 603 59	0.547 977 65	15 45 4.5	5 15 1.5	5 14 49.4	0 0 12.1
0.7420	0.184 856 26	0.548 711 93	15 46 21.0	5 15 27.0	5 15 14.8	0 0 12.2
0.7425	0.185 109 11	0.549 446 68	15 47 37.5	5 15 52.5	5 15 40.3	0 0 12.2
0.7430	0.185 362 15	0.550 181 91	15 48 54.1	5 16 18.0	5 16 5.8	0 0 12.3
0.7435	0.185 615 37	0.550 917 62	15 50 10.8	5 16 43.6	5 16 31.3	0 0 12.3
0.7440	0.185 868 78	0.551 653 80	15 51 27.5	5 17 9.2	5 16 56.8	0 0 12.4
0.7445	0.186 122 37	0.552 390 45	15 52 44.3	5 17 34.8	5 17 22.3	0 0 12.4
0.7450	0.186 376 15	0.553 127 58	15 54 1.1	5 18 0.4	5 17 47.9	0 0 12.5
0.7455	0.186 630 11	0.553 865 18	15 55 17.9	5 18 26.0	5 18 13.5	0 0 12.5
0.7460	0.186 884 26	0.554 603 26	15 56 34.8	5 18 51.6	5 18 39.0	0 0 12.6
0.7465	0.187 138 59	0.555 341 81	15 57 51.8	5 19 17.3	5 19 4.7	0 0 12.6
0.7470	0.187 393 11	0.556 080 83	15 59 8.8	5 19 42.9	5 19 30.3	0 0 12.7
0.7475	0.187 647 82	0.556 820 33	16 0 25.9	5 20 8.6	5 19 55.9	0 0 12.7
0.7480	0.187 902 71	0.557 560 31	16 1 43.0	5 20 34.3	5 20 21.6	0 0 12.8
0.7485	0.188 157 79	0.558 300 76	16 3 0.2	5 21 0.1	5 20 47.2	0 0 12.8
0.7490	0.188 413 05	0.559 041 68	16 4 17.4	5 21 25.8	5 21 12.9	0 0 12.9
0.7495	0.188 668 50	0.559 783 07	16 5 34.7	5 21 51.6	5 21 38.6	0 0 12.9
0.7500	0.188 924 13	0.560 524 94	16 6 52.0	5 22 17.3	5 22 4.4	0 0 13.0
0.7505	0.189 179 95	0.561 267 29	16 8 9.4	5 22 43.1	5 22 30.1	0 0 13.0
0.7510	0.189 435 96	0.562 010 10	16 9 26.8	5 23 8.9	5 22 55.8	0 0 13.1
0.7515	0.189 692 15	0.562 753 39	16 10 44.3	5 23 34.8	5 23 21.6	0 0 13.1
0.7520	0.189 948 53	0.563 497 16	16 12 1.8	5 24 0.6	5 23 47.4	0 0 13.2
0.7525	0.190 205 10	0.564 241 40	16 13 19.4	5 24 26.5	5 24 13.2	0 0 13.2
0.7530	0.190 461 85	0.564 986 11	16 14 37.0	5 24 52.3	5 24 39.0	0 0 13.3
0.7535	0.190 718 79	0.565 731 29	16 15 54.7	5 25 18.2	5 25 4.9	0 0 13.3
0.7540	0.190 975 91	0.566 476 95	16 17 12.4	5 25 44.1	5 25 30.7	0 0 13.4
0.7545	0.191 233 22	0.567 223 08	16 18 30.2	5 26 10.1	5 25 56.6	0 0 13.4
0.7550	0.191 490 72	0.567 969 68	16 19 48.0	5 26 36.0	5 26 22.5	0 0 13.5
0.7555	0.191 748 40	0.568 716 76	16 21 5.9	5 27 2.0	5 26 48.4	0 0 13.6
0.7560	0.192 006 27	0.569 464 31	16 22 23.9	5 27 28.0	5 27 14.4	0 0 13.6
0.7565	0.192 264 33	0.570 212 33	16 23 41.9	5 27 54.0	5 27 40.3	0 0 13.7
0.7570	0.192 522 57	0.570 960 83	16 24 59.9	5 28 20.0	5 28 6.3	0 0 13.7
0.7575	0.192 781 00	0.571 709 79	16 26 18.0	5 28 46.0	5 28 32.2	0 0 13.8
0.7580	0.193 039 62	0.572 459 24	16 27 36.2	5 29 12.1	5 28 58.2	0 0 13.8
0.7585	0.193 298 42	0.573 209 15	16 28 54.4	5 29 38.1	5 29 24.2	0 0 13.9
0.7590	0.193 557 41	0.573 959 53	16 30 12.6	5 30 4.2	5 29 50.3	0 0 13.9
0.7595	0.193 816 59	0.574 710 39	16 31 30.9	5 30 30.3	5 30 16.3	0 0 14.0
0.7600	0.194 075 95	0.575 461 72	16 32 49.3	5 30 56.4	5 30 42.4	0 0 14.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.7605	0.578 360 25	0.573 542 39	0.055 417 97	0.288 375 90	0.013 895 97	0.387 276 09
0.7610	0.579 121 00	0.574 284 16	0.055 562 98	0.288 753 11	0.013 932 44	0.387 790 02
0.7615	0.579 882 25	0.575 026 36	0.055 708 28	0.289 130 55	0.013 968 99	0.388 304 30
0.7620	0.580 644 00	0.575 768 99	0.055 853 85	0.289 508 23	0.014 005 60	0.388 818 95
0.7625	0.581 406 25	0.576 512 07	0.055 999 71	0.289 886 15	0.014 042 28	0.389 333 94
0.7630	0.582 169 00	0.577 255 58	0.056 145 84	0.290 264 31	0.014 079 04	0.389 849 30
0.7635	0.582 932 25	0.577 999 53	0.056 292 27	0.290 642 71	0.014 115 87	0.390 365 01
0.7640	0.583 696 00	0.578 743 92	0.056 438 97	0.291 021 35	0.014 152 77	0.390 881 07
0.7645	0.584 460 25	0.579 488 74	0.056 585 96	0.291 400 23	0.014 189 74	0.391 397 50
0.7650	0.585 225 00	0.580 234 01	0.056 733 23	0.291 779 35	0.014 226 79	0.391 914 28
0.7655	0.585 990 25	0.580 979 70	0.056 880 79	0.292 158 70	0.014 263 90	0.392 431 41
0.7660	0.586 756 00	0.581 725 84	0.057 028 63	0.292 538 30	0.014 301 09	0.392 948 90
0.7665	0.587 522 25	0.582 472 41	0.057 176 76	0.292 918 14	0.014 338 35	0.393 466 75
0.7670	0.588 289 00	0.583 219 41	0.057 325 17	0.293 298 21	0.014 375 69	0.393 984 95
0.7675	0.589 056 25	0.583 966 86	0.057 473 86	0.293 678 53	0.014 413 09	0.394 503 52
0.7680	0.589 824 00	0.584 714 73	0.057 622 85	0.294 059 08	0.014 450 57	0.395 022 43
0.7685	0.590 592 25	0.585 463 05	0.057 772 12	0.294 439 88	0.014 488 12	0.395 541 71
0.7690	0.591 361 00	0.586 211 79	0.057 921 67	0.294 820 91	0.014 525 75	0.396 061 34
0.7695	0.592 130 25	0.586 960 98	0.058 071 52	0.295 202 18	0.014 563 44	0.396 581 33
0.7700	0.592 900 00	0.587 710 60	0.058 221 65	0.295 583 69	0.014 601 21	0.397 101 67
0.7705	0.593 670 25	0.588 460 65	0.058 372 07	0.295 965 44	0.014 639 06	0.397 622 37
0.7710	0.594 441 00	0.589 211 14	0.058 522 78	0.296 347 43	0.014 676 97	0.398 143 43
0.7715	0.595 212 25	0.589 962 06	0.058 673 77	0.296 729 66	0.014 714 96	0.398 664 85
0.7720	0.595 984 00	0.590 713 42	0.058 825 06	0.297 112 12	0.014 753 02	0.399 186 62
0.7725	0.596 756 25	0.591 465 21	0.058 976 63	0.297 494 83	0.014 791 16	0.399 708 75
0.7730	0.597 529 00	0.592 217 44	0.059 128 49	0.297 877 77	0.014 829 37	0.400 231 24
0.7735	0.598 302 25	0.592 970 10	0.059 280 65	0.298 260 96	0.014 867 65	0.400 754 08
0.7740	0.599 076 00	0.593 723 19	0.059 433 09	0.298 644 38	0.014 906 01	0.401 277 28
0.7745	0.599 850 25	0.594 476 72	0.059 585 83	0.299 028 04	0.014 944 44	0.401 800 84
0.7750	0.600 625 00	0.595 230 68	0.059 738 85	0.299 411 94	0.014 982 94	0.402 324 76
0.7755	0.601 400 25	0.595 985 07	0.059 892 17	0.299 796 08	0.015 021 52	0.402 849 04
0.7760	0.602 176 00	0.596 739 90	0.060 045 78	0.300 180 46	0.015 060 17	0.403 373 67
0.7765	0.602 952 25	0.597 495 16	0.060 199 68	0.300 565 08	0.015 098 90	0.403 898 66
0.7770	0.603 729 00	0.598 250 85	0.060 353 87	0.300 949 93	0.015 137 70	0.404 424 00
0.7775	0.604 506 25	0.599 006 97	0.060 508 35	0.301 335 03	0.015 176 58	0.404 949 71
0.7780	0.605 284 00	0.599 763 53	0.060 663 13	0.301 720 36	0.015 215 52	0.405 475 77
0.7785	0.606 062 25	0.600 520 52	0.060 818 21	0.302 105 93	0.015 254 55	0.406 002 20
0.7790	0.606 841 00	0.601 277 94	0.060 973 57	0.302 491 74	0.015 293 65	0.406 528 97
0.7795	0.607 620 25	0.602 035 79	0.061 129 23	0.302 877 79	0.015 332 82	0.407 056 11
0.7800	0.608 400 00	0.602 794 08	0.061 285 19	0.303 264 08	0.015 372 07	0.407 583 61
0.7805	0.609 180 25	0.603 552 79	0.061 441 44	0.303 650 60	0.015 411 39	0.408 111 46
0.7810	0.609 961 00	0.604 311 94	0.061 597 98	0.304 037 37	0.015 450 79	0.408 639 67
0.7815	0.610 742 25	0.605 071 52	0.061 754 82	0.304 424 37	0.015 490 26	0.409 168 24
0.7820	0.611 524 00	0.605 831 53	0.061 911 96	0.304 811 61	0.015 529 81	0.409 697 17
0.7825	0.612 306 25	0.606 591 97	0.062 069 39	0.305 199 09	0.015 569 43	0.410 226 46
0.7830	0.613 089 00	0.607 352 84	0.062 227 12	0.305 586 81	0.015 609 13	0.410 756 11
0.7835	0.613 872 25	0.608 114 14	0.062 385 15	0.305 974 76	0.015 648 91	0.411 286 11
0.7840	0.614 656 00	0.608 875 87	0.062 543 47	0.306 362 96	0.015 688 76	0.411 816 47
0.7845	0.615 440 25	0.609 638 04	0.062 702 09	0.306 751 39	0.015 728 68	0.412 347 20
0.7850	0.616 225 00	0.610 400 63	0.062 861 01	0.307 140 06	0.015 768 68	0.412 878 28
0.7855	0.617 010 25	0.611 163 65	0.063 020 23	0.307 528 97	0.015 808 76	0.413 409 72
0.7860	0.617 796 00	0.611 927 10	0.063 179 75	0.307 918 12	0.015 848 91	0.413 941 52
0.7865	0.618 582 25	0.612 690 98	0.063 339 56	0.308 307 50	0.015 889 14	0.414 473 67
0.7870	0.619 369 00	0.613 455 29	0.063 499 68	0.308 697 13	0.015 929 44	0.415 006 19
0.7875	0.620 156 25	0.614 220 03	0.063 660 09	0.309 086 99	0.015 969 83	0.415 539 07
0.7880	0.620 944 00	0.614 985 19	0.063 820 81	0.309 477 09	0.016 010 28	0.416 072 30
0.7885	0.621 732 25	0.615 750 79	0.063 981 82	0.309 867 43	0.016 050 82	0.416 605 90
0.7890	0.622 521 00	0.616 516 82	0.064 143 14	0.310 258 00	0.016 091 43	0.417 139 85
0.7895	0.623 310 25	0.617 283 27	0.064 304 76	0.310 648 82	0.016 132 11	0.417 674 16
0.7900	0.624 100 00	0.618 050 15	0.064 466 68	0.311 039 87	0.016 172 88	0.418 208 84
0.7905	0.624 890 25	0.618 817 46	0.064 628 90	0.311 431 16	0.016 213 72	0.418 743 87
0.7910	0.625 681 00	0.619 585 19	0.064 791 42	0.311 822 69	0.016 254 63	0.419 279 26
0.7915	0.626 472 25	0.620 353 36	0.064 954 25	0.312 214 45	0.016 295 63	0.419 815 01
0.7920	0.627 264 00	0.621 121 95	0.065 117 38	0.312 606 46	0.016 336 70	0.420 351 12
0.7925	0.628 056 25	0.621 890 97	0.065 280 81	0.312 998 70	0.016 377 85	0.420 887 60
0.7930	0.628 849 00	0.622 660 41	0.065 444 55	0.313 391 18	0.016 419 07	0.421 424 43
0.7935	0.629 642 25	0.623 430 29	0.065 608 59	0.313 783 90	0.016 460 37	0.421 961 62
0.7940	0.630 436 00	0.624 200 59	0.065 772 94	0.314 176 85	0.016 501 75	0.422 499 17
0.7945	0.631 230 25	0.624 971 31	0.065 937 59	0.314 570 04	0.016 543 21	0.423 037 08
0.7950	0.632 025 00	0.625 742 47	0.066 102 54	0.314 963 47	0.016 584 75	0.423 575 35
0.7955	0.632 820 25	0.626 514 04	0.066 267 81	0.315 357 14	0.016 626 36	0.424 113 98
0.7960	0.633 616 00	0.627 286 05	0.066 433 37	0.315 751 04	0.016 668 05	0.424 652 98
0.7965	0.634 412 25	0.628 058 48	0.066 599 25	0.316 145 19	0.016 709 82	0.425 192 33
0.7970	0.635 209 00	0.628 831 33	0.066 765 43	0.316 539 57	0.016 751 67	0.425 732 04
0.7975	0.636 006 25	0.629 604 62	0.066 931 91	0.316 934 19	0.016 793 59	0.426 272 11
0.7980	0.636 804 00	0.630 378 32	0.067 098 71	0.317 329 04	0.016 835 59	0.426 812 55
0.7985	0.637 602 25	0.631 152 45	0.067 265 81	0.317 724 13	0.016 877 67	0.427 353 34
0.7990	0.638 401 00	0.631 927 01	0.067 433 22	0.318 119 46	0.016 919 83	0.427 894 50
0.7995	0.639 200 25	0.632 701 99	0.067 600 94	0.318 515 03	0.016 962 07	0.428 436 02
0.8000	0.640 000 00	0.633 477 40	0.067 768 97	0.318 910 83	0.017 004 39	0.428 977 89

A/R= =LS/A= =VLS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
			DEG MNT SEC			
0.7605	0.194 335 50	0.576 213 53	16 34 7.7	5 31 22.6	5 31 8.5	0 0 14.1
0.7610	0.194 595 24	0.576 965 80	16 35 26.1	5 31 48.7	5 31 34.6	0 0 14.2
0.7615	0.194 855 17	0.577 718 55	16 36 44.6	5 32 14.9	5 32 0.7	0 0 14.2
0.7620	0.195 115 28	0.578 471 77	16 38 3.2	5 32 41.1	5 32 26.8	0 0 14.3
0.7625	0.195 375 58	0.579 225 46	16 39 21.8	5 33 7.3	5 32 52.9	0 0 14.3
0.7630	0.195 636 07	0.579 979 62	16 40 40.5	5 33 33.5	5 33 19.1	0 0 14.4
0.7635	0.195 896 74	0.580 734 26	16 41 59.2	5 33 59.7	5 33 45.3	0 0 14.4
0.7640	0.196 157 61	0.581 489 37	16 43 18.0	5 34 26.0	5 34 11.5	0 0 14.5
0.7645	0.196 418 66	0.582 244 95	16 44 36.8	5 34 52.3	5 34 37.7	0 0 14.6
0.7650	0.196 679 89	0.583 001 00	16 45 55.7	5 35 18.6	5 35 3.9	0 0 14.6
0.7655	0.196 941 32	0.583 757 52	16 47 14.6	5 35 44.9	5 35 30.2	0 0 14.7
0.7660	0.197 202 93	0.584 514 51	16 48 33.6	5 36 11.2	5 35 56.5	0 0 14.7
0.7665	0.197 464 73	0.585 271 98	16 49 52.6	5 36 37.5	5 36 22.7	0 0 14.8
0.7670	0.197 726 72	0.586 029 91	16 51 11.7	5 37 3.9	5 36 49.0	0 0 14.8
0.7675	0.197 988 89	0.586 788 32	16 52 30.8	5 37 30.3	5 37 15.4	0 0 14.9
0.7680	0.198 251 26	0.587 547 20	16 53 50.0	5 37 56.7	5 37 41.7	0 0 15.0
0.7685	0.198 513 81	0.588 306 55	16 55 9.2	5 38 23.1	5 38 8.0	0 0 15.0
0.7690	0.198 776 55	0.589 066 37	16 56 28.5	5 38 49.5	5 38 34.4	0 0 15.1
0.7695	0.199 039 48	0.589 826 66	16 57 47.8	5 39 15.9	5 39 0.8	0 0 15.1
0.7700	0.199 302 59	0.590 587 43	16 59 7.2	5 39 42.4	5 39 27.2	0 0 15.2
0.7705	0.199 565 90	0.591 348 66	17 0 26.6	5 40 8.9	5 39 53.6	0 0 15.3
0.7710	0.199 829 39	0.592 110 36	17 1 46.1	5 40 35.4	5 40 20.1	0 0 15.3
0.7715	0.200 093 07	0.592 872 54	17 3 5.7	5 41 1.9	5 40 46.5	0 0 15.4
0.7720	0.200 356 94	0.593 635 18	17 4 25.3	5 41 28.4	5 41 13.0	0 0 15.4
0.7725	0.200 620 99	0.594 398 30	17 5 44.9	5 41 55.0	5 41 39.5	0 0 15.5
0.7730	0.200 885 24	0.595 161 89	17 7 4.6	5 42 21.5	5 42 6.0	0 0 15.6
0.7735	0.201 149 67	0.595 925 94	17 8 24.3	5 42 48.1	5 42 32.5	0 0 15.6
0.7740	0.201 414 30	0.596 690 47	17 9 44.1	5 43 14.7	5 42 59.0	0 0 15.7
0.7745	0.201 679 11	0.597 455 47	17 11 4.0	5 43 41.3	5 43 25.6	0 0 15.7
0.7750	0.201 944 11	0.598 220 94	17 12 23.9	5 44 8.0	5 43 52.2	0 0 15.8
0.7755	0.202 209 30	0.598 986 88	17 13 43.9	5 44 34.6	5 44 18.8	0 0 15.9
0.7760	0.202 474 68	0.599 753 28	17 15 3.9	5 45 1.3	5 44 45.4	0 0 15.9
0.7765	0.202 740 24	0.600 520 16	17 16 23.9	5 45 28.0	5 45 12.0	0 0 16.0
0.7770	0.203 006 00	0.601 287 51	17 17 44.0	5 45 54.7	5 45 38.6	0 0 16.0
0.7775	0.203 271 94	0.602 055 33	17 19 4.2	5 46 21.4	5 46 5.3	0 0 16.1
0.7780	0.203 538 08	0.602 823 61	17 20 24.4	5 46 48.1	5 46 32.0	0 0 16.2
0.7785	0.203 804 40	0.603 592 37	17 21 44.7	5 47 14.9	5 46 58.7	0 0 16.2
0.7790	0.204 070 91	0.604 361 60	17 23 5.0	5 47 41.7	5 47 25.4	0 0 16.3
0.7795	0.204 337 61	0.605 131 29	17 24 25.3	5 48 8.4	5 47 52.1	0 0 16.4
0.7800	0.204 604 50	0.605 901 46	17 25 45.8	5 48 35.3	5 48 18.8	0 0 16.4
0.7805	0.204 871 58	0.606 672 09	17 27 6.2	5 49 2.1	5 48 45.6	0 0 16.5
0.7810	0.205 138 85	0.607 443 19	17 28 26.7	5 49 28.9	5 49 12.4	0 0 16.5
0.7815	0.205 406 31	0.608 214 77	17 29 47.3	5 49 55.8	5 49 39.2	0 0 16.6
0.7820	0.205 673 96	0.608 986 81	17 31 7.9	5 50 22.6	5 50 6.0	0 0 16.7
0.7825	0.205 941 79	0.609 759 32	17 32 28.6	5 50 49.5	5 50 32.8	0 0 16.7
0.7830	0.206 209 82	0.610 532 30	17 33 49.3	5 51 16.4	5 50 59.6	0 0 16.8
0.7835	0.206 478 04	0.611 305 75	17 35 10.1	5 51 43.4	5 51 26.5	0 0 16.9
0.7840	0.206 746 44	0.612 079 66	17 36 31.0	5 52 10.3	5 51 53.4	0 0 16.9
0.7845	0.207 015 04	0.612 854 05	17 37 51.8	5 52 37.3	5 52 20.3	0 0 17.0
0.7850	0.207 283 83	0.613 628 90	17 39 12.8	5 53 4.3	5 52 47.2	0 0 17.1
0.7855	0.207 552 80	0.614 404 23	17 40 33.7	5 53 31.2	5 53 14.1	0 0 17.1
0.7860	0.207 821 97	0.615 180 02	17 41 54.8	5 53 58.3	5 53 41.1	0 0 17.2
0.7865	0.208 091 33	0.615 956 28	17 43 15.9	5 54 25.3	5 54 8.0	0 0 17.3
0.7870	0.208 360 87	0.616 733 01	17 44 37.0	5 54 52.3	5 54 35.0	0 0 17.3
0.7875	0.208 630 61	0.617 510 20	17 45 58.2	5 55 19.4	5 55 2.0	0 0 17.4
0.7880	0.208 900 54	0.618 287 87	17 47 19.4	5 55 46.5	5 55 29.0	0 0 17.5
0.7885	0.209 170 65	0.619 066 00	17 48 40.7	5 56 13.6	5 55 56.1	0 0 17.5
0.7890	0.209 440 96	0.619 844 60	17 50 2.1	5 56 40.7	5 56 23.1	0 0 17.6
0.7895	0.209 711 46	0.620 623 67	17 51 23.5	5 57 7.8	5 56 50.2	0 0 17.7
0.7900	0.209 982 15	0.621 403 20	17 52 44.9	5 57 35.0	5 57 17.2	0 0 17.7
0.7905	0.210 253 03	0.622 183 20	17 54 6.4	5 58 2.1	5 57 44.3	0 0 17.8
0.7910	0.210 524 10	0.622 963 68	17 55 28.0	5 58 29.3	5 58 11.5	0 0 17.9
0.7915	0.210 795 36	0.623 744 61	17 56 49.6	5 58 56.5	5 58 38.6	0 0 17.9
0.7920	0.211 066 81	0.624 526 02	17 58 11.2	5 59 23.7	5 59 5.7	0 0 18.0
0.7925	0.211 338 45	0.625 307 89	17 59 33.0	5 59 51.0	5 59 32.9	0 0 18.1
0.7930	0.211 610 28	0.626 090 23	18 0 54.7	6 0 18.2	6 0 0.1	0 0 18.1
0.7935	0.211 882 31	0.626 873 04	18 2 16.5	6 0 45.5	6 0 27.3	0 0 18.2
0.7940	0.212 154 52	0.627 656 32	18 3 38.4	6 1 12.8	6 0 54.5	0 0 18.3
0.7945	0.212 426 93	0.628 440 06	18 5 0.3	6 1 40.1	6 1 21.8	0 0 18.3
0.7950	0.212 699 53	0.629 224 27	18 6 22.3	6 2 7.4	6 1 49.0	0 0 18.4
0.7955	0.212 972 31	0.630 008 94	18 7 44.3	6 2 34.8	6 2 16.3	0 0 18.5
0.7960	0.213 245 29	0.630 794 09	18 9 6.3	6 3 2.1	6 2 43.6	0 0 18.6
0.7965	0.213 518 46	0.631 579 70	18 10 28.5	6 3 29.5	6 3 10.9	0 0 18.6
0.7970	0.213 791 83	0.632 365 77	18 11 50.6	6 3 56.9	6 3 38.2	0 0 18.7
0.7975	0.214 065 38	0.633 152 31	18 13 12.9	6 4 24.3	6 4 5.5	0 0 18.8
0.7980	0.214 339 13	0.633 939 32	18 14 35.1	6 4 51.7	6 4 32.9	0 0 18.8
0.7985	0.214 613 06	0.634 726 80	18 15 57.5	6 5 19.2	6 5 0.2	0 0 18.9
0.7990	0.214 887 19	0.635 514 74	18 17 19.8	6 5 46.6	6 5 27.6	0 0 19.0
0.7995	0.215 161 51	0.636 303 15	18 18 42.3	6 6 14.1	6 5 55.0	0 0 19.0
0.8000	0.215 436 02	0.637 092 02	18 20 4.7	6 6 41.6	6 6 22.5	0 0 19.1

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.8005	0.640 800 25	0.634 253 23	0.067 937 31	0.319 306 88	0.017 046 78	0.429 520 13
0.8010	0.641 601 00	0.635 029 48	0.068 105 95	0.319 703 16	0.017 089 26	0.430 062 73
0.8015	0.642 402 25	0.635 806 16	0.068 274 91	0.320 099 67	0.017 131 81	0.430 605 69
0.8020	0.643 204 00	0.636 583 26	0.068 444 17	0.320 496 43	0.017 174 44	0.431 149 01
0.8025	0.644 006 25	0.637 360 78	0.068 613 75	0.320 893 42	0.017 217 15	0.431 692 69
0.8030	0.644 809 00	0.638 138 73	0.068 783 64	0.321 290 65	0.017 259 94	0.432 236 74
0.8035	0.645 612 25	0.638 917 10	0.068 953 84	0.321 688 11	0.017 302 81	0.432 781 14
0.8040	0.646 416 00	0.639 695 90	0.069 124 35	0.322 085 81	0.017 345 76	0.433 325 91
0.8045	0.647 220 25	0.640 475 11	0.069 295 17	0.322 483 75	0.017 388 78	0.433 871 04
0.8050	0.648 025 00	0.641 254 75	0.069 466 31	0.322 881 93	0.017 431 89	0.434 416 53
0.8055	0.648 830 25	0.642 034 82	0.069 637 76	0.323 280 34	0.017 475 08	0.434 962 38
0.8060	0.649 636 00	0.642 815 30	0.069 809 52	0.323 678 99	0.017 518 34	0.435 508 59
0.8065	0.650 442 25	0.643 596 21	0.069 981 59	0.324 077 88	0.017 561 69	0.436 055 17
0.8070	0.651 249 00	0.644 377 54	0.070 153 98	0.324 477 00	0.017 605 12	0.436 602 11
0.8075	0.652 056 25	0.645 159 29	0.070 326 69	0.324 876 37	0.017 648 62	0.437 149 41
0.8080	0.652 864 00	0.645 941 46	0.070 499 70	0.325 275 96	0.017 692 21	0.437 697 07
0.8085	0.653 672 25	0.646 724 05	0.070 673 04	0.325 675 80	0.017 735 87	0.438 245 09
0.8090	0.654 481 00	0.647 507 06	0.070 846 68	0.326 075 87	0.017 779 62	0.438 793 48
0.8095	0.655 290 25	0.648 290 50	0.071 020 65	0.326 476 18	0.017 823 45	0.439 342 22
0.8100	0.656 100 00	0.649 074 35	0.071 194 93	0.326 876 72	0.017 867 35	0.439 891 33
0.8105	0.656 910 25	0.649 858 63	0.071 369 52	0.327 277 50	0.017 911 34	0.440 440 81
0.8110	0.657 721 00	0.650 643 32	0.071 544 43	0.327 678 52	0.017 955 41	0.440 990 64
0.8115	0.658 532 25	0.651 428 44	0.071 719 66	0.328 079 78	0.017 999 56	0.441 540 84
0.8120	0.659 344 00	0.652 213 98	0.071 895 21	0.328 481 27	0.018 043 79	0.442 091 40
0.8125	0.660 156 25	0.652 999 93	0.072 071 08	0.328 883 00	0.018 088 10	0.442 642 32
0.8130	0.660 969 00	0.653 786 31	0.072 247 26	0.329 284 96	0.018 132 49	0.443 193 61
0.8135	0.661 782 25	0.654 573 10	0.072 423 76	0.329 687 16	0.018 176 97	0.443 745 26
0.8140	0.662 596 00	0.655 360 32	0.072 600 58	0.330 089 60	0.018 221 52	0.444 297 27
0.8145	0.663 410 25	0.656 147 95	0.072 777 72	0.330 492 27	0.018 266 16	0.444 849 64
0.8150	0.664 225 00	0.656 936 00	0.072 955 18	0.330 895 18	0.018 310 87	0.445 402 38
0.8155	0.665 040 25	0.657 724 47	0.073 132 96	0.331 298 33	0.018 355 67	0.445 955 48
0.8160	0.665 856 00	0.658 513 36	0.073 311 06	0.331 701 71	0.018 400 55	0.446 508 94
0.8165	0.666 672 25	0.659 302 66	0.073 489 48	0.332 105 33	0.018 445 51	0.447 062 77
0.8170	0.667 489 00	0.660 092 39	0.073 668 22	0.332 509 18	0.018 490 56	0.447 616 96
0.8175	0.668 306 25	0.660 882 53	0.073 847 28	0.332 913 28	0.018 535 68	0.448 171 52
0.8180	0.669 124 00	0.661 673 09	0.074 026 67	0.333 317 60	0.018 580 89	0.448 726 43
0.8185	0.669 942 25	0.662 464 07	0.074 206 38	0.333 722 17	0.018 626 18	0.449 281 71
0.8190	0.670 761 00	0.663 255 46	0.074 386 41	0.334 126 97	0.018 671 55	0.449 837 36
0.8195	0.671 580 25	0.664 047 27	0.074 566 76	0.334 532 00	0.018 717 01	0.450 393 37
0.8200	0.672 400 00	0.664 839 50	0.074 747 44	0.334 937 28	0.018 762 54	0.450 949 74
0.8205	0.673 220 25	0.665 632 14	0.074 928 43	0.335 342 78	0.018 808 16	0.451 506 48
0.8210	0.674 041 00	0.666 425 21	0.075 109 76	0.335 748 53	0.018 853 86	0.452 063 58
0.8215	0.674 862 25	0.667 218 68	0.075 291 41	0.336 154 51	0.018 899 65	0.452 621 04
0.8220	0.675 684 00	0.668 012 58	0.075 473 38	0.336 560 72	0.018 945 51	0.453 178 87
0.8225	0.676 506 25	0.668 806 88	0.075 655 68	0.336 967 17	0.018 991 46	0.453 737 06
0.8230	0.677 329 00	0.669 601 61	0.075 838 30	0.337 373 86	0.019 037 50	0.454 295 62
0.8235	0.678 152 25	0.670 396 75	0.076 021 25	0.337 780 78	0.019 083 61	0.454 854 54
0.8240	0.678 976 00	0.671 192 30	0.076 204 52	0.338 187 94	0.019 129 81	0.455 413 83
0.8245	0.679 800 25	0.671 988 27	0.076 388 13	0.338 595 34	0.019 176 09	0.455 973 48
0.8250	0.680 625 00	0.672 784 66	0.076 572 05	0.339 002 97	0.019 222 46	0.456 533 49
0.8255	0.681 450 25	0.673 581 45	0.076 756 31	0.339 410 84	0.019 268 91	0.457 093 87
0.8260	0.682 276 00	0.674 378 67	0.076 940 89	0.339 818 94	0.019 315 44	0.457 654 62
0.8265	0.683 102 25	0.675 176 29	0.077 125 81	0.340 227 27	0.019 362 06	0.458 215 73
0.8270	0.683 929 00	0.675 974 34	0.077 311 05	0.340 635 85	0.019 408 76	0.458 777 20
0.8275	0.684 756 25	0.676 772 79	0.077 496 61	0.341 044 66	0.019 455 54	0.459 339 04
0.8280	0.685 584 00	0.677 571 66	0.077 682 51	0.341 453 70	0.019 502 41	0.459 901 25
0.8285	0.686 412 25	0.678 370 94	0.077 868 74	0.341 862 98	0.019 549 36	0.460 463 82
0.8290	0.687 241 00	0.679 170 64	0.078 055 30	0.342 272 49	0.019 596 40	0.461 026 75
0.8295	0.688 070 25	0.679 970 74	0.078 242 18	0.342 682 24	0.019 643 52	0.461 590 05
0.8300	0.688 900 00	0.680 771 26	0.078 429 40	0.343 092 23	0.019 690 72	0.462 153 72
0.8305	0.689 730 25	0.681 572 20	0.078 616 95	0.343 502 45	0.019 738 01	0.462 717 75
0.8310	0.690 561 00	0.682 373 54	0.078 804 83	0.343 912 91	0.019 785 38	0.463 282 14
0.8315	0.691 392 25	0.683 175 30	0.078 993 04	0.344 323 60	0.019 832 84	0.463 846 91
0.8320	0.692 224 00	0.683 977 47	0.079 181 59	0.344 734 52	0.019 880 38	0.464 412 04
0.8325	0.693 056 25	0.684 780 05	0.079 370 46	0.345 145 69	0.019 928 01	0.464 977 53
0.8330	0.693 889 00	0.685 583 04	0.079 559 67	0.345 557 08	0.019 975 72	0.465 543 39
0.8335	0.694 722 25	0.686 386 44	0.079 749 22	0.345 968 71	0.020 023 52	0.466 109 62
0.8340	0.695 556 00	0.687 190 26	0.079 939 09	0.346 380 58	0.020 071 40	0.466 676 21
0.8345	0.696 390 25	0.687 994 48	0.080 129 30	0.346 792 68	0.020 119 37	0.467 243 17
0.8350	0.697 225 00	0.688 799 12	0.080 319 84	0.347 205 02	0.020 167 42	0.467 810 49
0.8355	0.698 060 25	0.689 604 17	0.080 510 72	0.347 617 59	0.020 215 56	0.468 378 18
0.8360	0.698 896 00	0.690 409 62	0.080 701 94	0.348 030 40	0.020 263 79	0.468 946 24
0.8365	0.699 732 25	0.691 215 49	0.080 893 49	0.348 443 44	0.020 312 10	0.469 514 66
0.8370	0.700 569 00	0.692 021 76	0.081 085 37	0.348 856 72	0.020 360 49	0.470 083 45
0.8375	0.701 406 25	0.692 828 45	0.081 277 59	0.349 270 23	0.020 408 97	0.470 652 61
0.8380	0.702 244 00	0.693 635 54	0.081 470 15	0.349 683 98	0.020 457 54	0.471 222 13
0.8385	0.703 082 25	0.694 443 05	0.081 663 04	0.350 097 96	0.020 506 19	0.471 792 02
0.8390	0.703 921 00	0.695 250 96	0.081 856 27	0.350 512 17	0.020 554 93	0.472 362 28
0.8395	0.704 760 25	0.696 059 28	0.082 049 84	0.350 926 62	0.020 603 76	0.472 932 90
0.8400	0.705 600 00	0.696 868 01	0.082 243 75	0.351 341 31	0.020 652 67	0.473 503 89

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
				DEG MNT SEC		
0.8005	0.215 710 73	0.637 881 36	18 21 27.3	6 7 9.1	6 6 49.9	0 0 19.2
0.8010	0.215 985 62	0.638 671 17	18 22 49.9	6 7 36.6	6 7 17.4	0 0 19.3
0.8015	0.216 260 71	0.639 461 44	18 24 12.5	6 8 4.2	6 7 44.8	0 0 19.3
0.8020	0.216 535 95	0.640 252 18	18 25 35.2	6 8 31.7	6 8 12.3	0 0 19.4
0.8025	0.216 811 46	0.641 043 38	18 26 57.9	6 8 59.3	6 8 39.8	0 0 19.5
0.8030	0.217 087 12	0.641 835 05	18 28 20.7	6 9 26.9	6 9 7.3	0 0 19.6
0.8035	0.217 362 98	0.642 627 18	18 29 43.5	6 9 54.5	6 9 34.9	0 0 19.6
0.8040	0.217 639 03	0.643 419 78	18 31 6.4	6 10 22.1	6 10 2.4	0 0 19.7
0.8045	0.217 915 27	0.644 212 85	18 32 29.4	6 10 49.8	6 10 30.0	0 0 19.8
0.8050	0.218 191 70	0.645 006 38	18 33 52.4	6 11 17.5	6 10 57.6	0 0 19.8
0.8055	0.218 468 33	0.645 800 37	18 35 15.4	6 11 45.1	6 11 25.2	0 0 19.9
0.8060	0.218 745 15	0.646 594 83	18 36 38.5	6 12 12.8	6 11 52.8	0 0 20.0
0.8065	0.219 022 16	0.647 389 76	18 38 1.7	6 12 40.6	6 12 20.5	0 0 20.1
0.8070	0.219 299 36	0.648 185 15	18 39 24.9	6 13 8.3	6 12 48.1	0 0 20.1
0.8075	0.219 576 76	0.648 981 01	18 40 48.1	6 13 36.0	6 13 15.8	0 0 20.2
0.8080	0.219 854 35	0.649 777 33	18 42 11.4	6 14 3.8	6 13 43.5	0 0 20.3
0.8085	0.220 132 13	0.650 574 11	18 43 34.8	6 14 31.6	6 14 11.2	0 0 20.4
0.8090	0.220 410 10	0.651 371 36	18 44 58.2	6 14 59.4	6 14 38.9	0 0 20.4
0.8095	0.220 688 27	0.652 169 07	18 46 21.7	6 15 27.2	6 15 6.7	0 0 20.5
0.8100	0.220 966 63	0.652 967 25	18 47 45.2	6 15 55.1	6 15 34.5	0 0 20.6
0.8105	0.221 245 19	0.653 765 90	18 49 8.7	6 16 22.9	6 16 2.2	0 0 20.7
0.8110	0.221 523 94	0.654 565 00	18 50 32.3	6 16 50.8	6 16 30.0	0 0 20.8
0.8115	0.221 802 88	0.655 364 57	18 51 56.0	6 17 18.7	6 16 57.8	0 0 20.8
0.8120	0.222 082 01	0.656 164 61	18 53 19.7	6 17 46.6	6 17 25.7	0 0 20.9
0.8125	0.222 361 34	0.656 965 11	18 54 43.5	6 18 14.5	6 17 53.5	0 0 21.0
0.8130	0.222 640 86	0.657 766 07	18 56 7.3	6 18 42.4	6 18 21.4	0 0 21.1
0.8135	0.222 920 57	0.658 567 50	18 57 31.2	6 19 10.4	6 18 49.3	0 0 21.1
0.8140	0.223 200 48	0.659 369 39	18 58 55.1	6 19 38.4	6 19 17.2	0 0 21.2
0.8145	0.223 480 58	0.660 171 74	19 0 19.1	6 20 6.4	6 19 45.1	0 0 21.3
0.8150	0.223 760 88	0.660 974 56	19 1 43.1	6 20 34.4	6 20 13.0	0 0 21.4
0.8155	0.224 041 37	0.661 777 84	19 3 7.2	6 21 2.4	6 20 40.9	0 0 21.5
0.8160	0.224 322 05	0.662 581 58	19 4 31.3	6 21 30.4	6 21 8.9	0 0 21.5
0.8165	0.224 602 93	0.663 385 79	19 5 55.5	6 21 58.5	6 21 36.9	0 0 21.6
0.8170	0.224 884 00	0.664 190 46	19 7 19.7	6 22 26.6	6 22 4.9	0 0 21.7
0.8175	0.225 165 27	0.664 995 59	19 8 44.0	6 22 54.7	6 22 32.9	0 0 21.8
0.8180	0.225 446 73	0.665 801 19	19 10 8.4	6 23 22.8	6 23 0.9	0 0 21.9
0.8185	0.225 728 38	0.666 607 25	19 11 32.8	6 23 50.9	6 23 29.0	0 0 21.9
0.8190	0.226 010 23	0.667 413 77	19 12 57.2	6 24 19.1	6 23 57.0	0 0 22.0
0.8195	0.226 292 27	0.668 220 76	19 14 21.7	6 24 47.2	6 24 25.1	0 0 22.1
0.8200	0.226 574 51	0.669 028 21	19 15 46.2	6 25 15.4	6 24 53.2	0 0 22.2
0.8205	0.226 856 94	0.669 836 12	19 17 10.8	6 25 43.6	6 25 21.3	0 0 22.3
0.8210	0.227 139 57	0.670 644 49	19 18 35.5	6 26 11.8	6 25 49.5	0 0 22.3
0.8215	0.227 422 39	0.671 453 32	19 20 0.2	6 26 40.1	6 26 17.6	0 0 22.4
0.8220	0.227 705 41	0.672 262 62	19 21 24.9	6 27 8.3	6 26 45.8	0 0 22.5
0.8225	0.227 988 62	0.673 072 38	19 22 49.7	6 27 36.6	6 27 14.0	0 0 22.6
0.8230	0.228 272 02	0.673 882 60	19 24 14.6	6 28 4.9	6 27 42.2	0 0 22.7
0.8235	0.228 555 62	0.674 693 29	19 25 39.5	6 28 33.2	6 28 10.4	0 0 22.8
0.8240	0.228 839 42	0.675 504 43	19 27 4.4	6 29 1.5	6 28 38.6	0 0 22.8
0.8245	0.229 123 41	0.676 316 04	19 28 29.4	6 29 29.8	6 29 6.9	0 0 22.9
0.8250	0.229 407 60	0.677 128 11	19 29 54.5	6 29 58.2	6 29 35.2	0 0 23.0
0.8255	0.229 691 98	0.677 940 64	19 31 19.6	6 30 26.5	6 30 3.4	0 0 23.1
0.8260	0.229 976 55	0.678 753 63	19 32 44.8	6 30 54.9	6 30 31.7	0 0 23.2
0.8265	0.230 261 32	0.679 567 08	19 34 10.0	6 31 23.3	6 31 0.1	0 0 23.3
0.8270	0.230 546 29	0.680 381 00	19 35 35.2	6 31 51.7	6 31 28.4	0 0 23.3
0.8275	0.230 831 45	0.681 195 37	19 37 0.6	6 32 20.2	6 31 56.8	0 0 23.4
0.8280	0.231 116 81	0.682 010 21	19 38 25.9	6 32 48.6	6 32 25.1	0 0 23.5
0.8285	0.231 402 37	0.682 825 51	19 39 51.3	6 33 17.1	6 32 53.5	0 0 23.6
0.8290	0.231 688 12	0.683 641 27	19 41 16.8	6 33 45.6	6 33 21.9	0 0 23.7
0.8295	0.231 974 06	0.684 457 49	19 42 42.3	6 34 14.1	6 33 50.3	0 0 23.8
0.8300	0.232 260 21	0.685 274 17	19 44 7.9	6 34 42.6	6 34 18.8	0 0 23.9
0.8305	0.232 546 54	0.686 091 31	19 45 33.5	6 35 11.2	6 34 47.2	0 0 23.9
0.8310	0.232 833 08	0.686 908 91	19 46 59.2	6 35 39.7	6 35 15.7	0 0 24.0
0.8315	0.233 119 81	0.687 726 97	19 48 24.9	6 36 8.3	6 35 44.2	0 0 24.1
0.8320	0.233 406 73	0.688 545 50	19 49 50.7	6 36 36.9	6 36 12.7	0 0 24.2
0.8325	0.233 693 86	0.689 364 48	19 51 16.6	6 37 5.5	6 36 41.2	0 0 24.3
0.8330	0.233 981 17	0.690 183 92	19 52 42.4	6 37 34.1	6 37 9.8	0 0 24.4
0.8335	0.234 268 69	0.691 003 83	19 54 8.4	6 38 2.8	6 37 38.3	0 0 24.5
0.8340	0.234 556 40	0.691 824 19	19 55 34.4	6 38 31.5	6 38 6.9	0 0 24.6
0.8345	0.234 844 31	0.692 645 01	19 57 0.4	6 39 0.1	6 38 35.5	0 0 24.6
0.8350	0.235 132 41	0.693 466 30	19 58 26.5	6 39 28.8	6 39 4.1	0 0 24.7
0.8355	0.235 420 71	0.694 288 04	19 59 52.6	6 39 57.5	6 39 32.7	0 0 24.8
0.8360	0.235 709 21	0.695 110 24	20 1 18.8	6 40 26.3	6 40 1.4	0 0 24.9
0.8365	0.235 997 91	0.695 932 90	20 2 45.1	6 40 55.0	6 40 30.0	0 0 25.0
0.8370	0.236 286 80	0.696 756 03	20 4 11.4	6 41 23.8	6 40 58.7	0 0 25.1
0.8375	0.236 575 89	0.697 579 61	20 5 37.7	6 41 52.6	6 41 27.4	0 0 25.2
0.8380	0.236 865 18	0.698 403 65	20 7 4.1	6 42 21.4	6 41 56.1	0 0 25.3
0.8385	0.237 154 66	0.699 228 15	20 8 30.6	6 42 50.2	6 42 24.8	0 0 25.4
0.8390	0.237 444 34	0.700 053 10	20 9 57.1	6 43 19.0	6 42 53.6	0 0 25.5
0.8395	0.237 734 22	0.700 878 52	20 11 23.6	6 43 47.9	6 43 22.3	0 0 25.5
0.8400	0.238 024 29	0.701 704 40	20 12 50.2	6 44 16.7	6 43 51.1	0 0 25.6

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.8405	0.706 440 25	0.697 677 15	0.082 437 99	0.351 756 23	0.020 701 67	0.474 075 25
0.8410	0.707 281 00	0.698 486 70	0.082 632 58	0.352 171 38	0.020 750 75	0.474 646 98
0.8415	0.708 122 25	0.699 296 65	0.082 827 50	0.352 586 77	0.020 799 92	0.475 219 07
0.8420	0.708 964 00	0.700 107 01	0.083 022 76	0.353 002 39	0.020 849 18	0.475 791 53
0.8425	0.709 806 25	0.700 917 78	0.083 218 36	0.353 418 25	0.020 898 52	0.476 364 36
0.8430	0.710 649 00	0.701 728 96	0.083 414 31	0.353 834 34	0.020 947 95	0.476 937 55
0.8435	0.711 492 25	0.702 540 54	0.083 610 59	0.354 250 67	0.020 997 47	0.477 511 11
0.8440	0.712 336 00	0.703 352 53	0.083 807 21	0.354 667 23	0.021 047 08	0.478 085 04
0.8445	0.713 180 25	0.704 164 93	0.084 004 18	0.355 084 03	0.021 096 77	0.478 659 34
0.8450	0.714 025 00	0.704 977 73	0.084 201 48	0.355 501 06	0.021 146 55	0.479 234 01
0.8455	0.714 870 25	0.705 790 94	0.084 399 13	0.355 918 32	0.021 196 42	0.479 809 04
0.8460	0.715 716 00	0.706 604 55	0.084 597 12	0.356 335 82	0.021 246 37	0.480 384 44
0.8465	0.716 562 25	0.707 418 57	0.084 795 46	0.356 753 55	0.021 296 41	0.480 960 21
0.8470	0.717 409 00	0.708 233 00	0.084 994 13	0.357 171 52	0.021 346 54	0.481 536 35
0.8475	0.718 256 25	0.709 047 83	0.085 193 15	0.357 589 72	0.021 396 76	0.482 112 86
0.8480	0.719 104 00	0.709 863 07	0.085 392 52	0.358 008 15	0.021 447 07	0.482 689 73
0.8485	0.719 952 25	0.710 678 71	0.085 592 22	0.358 426 82	0.021 497 46	0.483 266 98
0.8490	0.720 801 00	0.711 494 75	0.085 792 28	0.358 845 72	0.021 547 94	0.483 844 59
0.8495	0.721 650 25	0.712 311 20	0.085 992 67	0.359 264 86	0.021 598 51	0.484 422 57
0.8500	0.722 500 00	0.713 128 06	0.086 193 42	0.359 684 23	0.021 649 17	0.485 000 92
0.8505	0.723 350 25	0.713 945 31	0.086 394 51	0.360 103 83	0.021 699 91	0.485 579 64
0.8510	0.724 201 00	0.714 762 98	0.086 595 94	0.360 523 67	0.021 750 75	0.486 158 73
0.8515	0.725 052 25	0.715 581 04	0.086 797 72	0.360 943 74	0.021 801 67	0.486 738 18
0.8520	0.725 904 00	0.716 399 51	0.086 999 85	0.361 364 05	0.021 852 68	0.487 318 01
0.8525	0.726 756 25	0.717 218 38	0.087 202 32	0.361 784 59	0.021 903 78	0.487 898 20
0.8530	0.727 609 00	0.718 037 65	0.087 405 15	0.362 205 36	0.021 954 97	0.488 478 77
0.8535	0.728 462 25	0.718 857 33	0.087 608 32	0.362 626 37	0.022 006 25	0.489 059 70
0.8540	0.729 316 00	0.719 677 41	0.087 811 84	0.363 047 61	0.022 057 62	0.489 641 00
0.8545	0.730 170 25	0.720 497 89	0.088 015 70	0.363 469 08	0.022 109 08	0.490 222 68
0.8550	0.731 025 00	0.721 318 77	0.088 219 92	0.363 890 79	0.022 160 62	0.490 804 72
0.8555	0.731 880 25	0.722 140 06	0.088 424 49	0.364 312 73	0.022 212 26	0.491 387 13
0.8560	0.732 736 00	0.722 961 74	0.088 629 40	0.364 734 90	0.022 263 98	0.491 969 91
0.8565	0.733 592 25	0.723 783 83	0.088 834 67	0.365 157 31	0.022 315 80	0.492 553 06
0.8570	0.734 449 00	0.724 606 32	0.089 040 28	0.365 579 95	0.022 367 70	0.493 136 58
0.8575	0.735 306 25	0.725 429 21	0.089 246 25	0.366 002 82	0.022 419 69	0.493 720 47
0.8580	0.736 164 00	0.726 252 49	0.089 452 57	0.366 425 93	0.022 471 78	0.494 304 73
0.8585	0.737 022 25	0.727 076 18	0.089 659 24	0.366 849 27	0.022 523 95	0.494 889 37
0.8590	0.737 881 00	0.727 900 27	0.089 866 26	0.367 272 84	0.022 576 22	0.495 474 37
0.8595	0.738 740 25	0.728 724 76	0.090 073 64	0.367 696 65	0.022 628 57	0.496 059 74
0.8600	0.739 600 00	0.729 549 65	0.090 281 36	0.368 120 69	0.022 681 01	0.496 645 48
0.8605	0.740 460 25	0.730 374 94	0.090 489 44	0.368 544 97	0.022 733 55	0.497 231 60
0.8610	0.741 321 00	0.731 200 63	0.090 697 88	0.368 969 47	0.022 786 17	0.497 818 08
0.8615	0.742 182 25	0.732 026 71	0.090 906 66	0.369 394 21	0.022 838 89	0.498 404 94
0.8620	0.743 044 00	0.732 853 20	0.091 115 81	0.369 819 18	0.022 891 69	0.498 992 16
0.8625	0.743 906 25	0.733 680 08	0.091 325 30	0.370 244 39	0.022 944 59	0.499 579 76
0.8630	0.744 769 00	0.734 507 36	0.091 535 15	0.370 669 83	0.022 997 58	0.500 167 73
0.8635	0.745 632 25	0.735 335 04	0.091 745 36	0.371 095 50	0.023 050 66	0.500 756 07
0.8640	0.746 496 00	0.736 163 12	0.091 955 92	0.371 521 40	0.023 103 83	0.501 344 78
0.8645	0.747 360 25	0.736 991 60	0.092 166 84	0.371 947 54	0.023 157 09	0.501 933 86
0.8650	0.748 225 00	0.737 820 47	0.092 378 12	0.372 373 91	0.023 210 44	0.502 523 31
0.8655	0.749 090 25	0.738 649 74	0.092 589 75	0.372 800 51	0.023 263 88	0.503 113 13
0.8660	0.749 956 00	0.739 479 40	0.092 801 74	0.373 227 35	0.023 317 42	0.503 703 33
0.8665	0.750 822 25	0.740 309 47	0.093 014 08	0.373 654 41	0.023 371 04	0.504 293 90
0.8670	0.751 689 00	0.741 139 93	0.093 226 79	0.374 081 71	0.023 424 76	0.504 884 84
0.8675	0.752 556 25	0.741 970 78	0.093 439 85	0.374 509 25	0.023 478 57	0.505 476 15
0.8680	0.753 424 00	0.742 802 03	0.093 653 27	0.374 937 01	0.023 532 47	0.506 067 83
0.8685	0.754 292 25	0.743 633 68	0.093 867 05	0.375 365 01	0.023 586 47	0.506 659 89
0.8690	0.755 161 00	0.744 465 72	0.094 081 19	0.375 793 24	0.023 640 55	0.507 252 31
0.8695	0.756 030 25	0.745 298 16	0.094 295 69	0.376 221 70	0.023 694 73	0.507 845 11
0.8700	0.756 900 00	0.746 130 99	0.094 510 55	0.376 650 40	0.023 749 00	0.508 438 29
0.8705	0.757 770 25	0.746 964 22	0.094 725 78	0.377 079 32	0.023 803 36	0.509 031 83
0.8710	0.758 641 00	0.747 797 84	0.094 941 36	0.377 508 48	0.023 857 82	0.509 625 75
0.8715	0.759 512 25	0.748 631 85	0.095 157 30	0.377 937 87	0.023 912 37	0.510 220 04
0.8720	0.760 384 00	0.749 466 26	0.095 373 61	0.378 367 50	0.023 967 01	0.510 814 70
0.8725	0.761 256 25	0.750 301 07	0.095 590 27	0.378 797 35	0.024 021 74	0.511 409 74
0.8730	0.762 129 00	0.751 136 26	0.095 807 30	0.379 227 44	0.024 076 57	0.512 005 14
0.8735	0.763 002 25	0.751 971 85	0.096 024 69	0.379 657 76	0.024 131 49	0.512 600 92
0.8740	0.763 876 00	0.752 807 84	0.096 242 45	0.380 088 31	0.024 186 50	0.513 197 08
0.8745	0.764 750 25	0.753 644 21	0.096 460 57	0.380 519 10	0.024 241 60	0.513 793 61
0.8750	0.765 625 00	0.754 480 98	0.096 679 05	0.380 950 11	0.024 296 80	0.514 390 51
0.8755	0.766 500 25	0.755 318 14	0.096 897 90	0.381 381 36	0.024 352 09	0.514 987 78
0.8760	0.767 376 00	0.756 155 70	0.097 117 11	0.381 812 84	0.024 407 48	0.515 585 43
0.8765	0.768 252 25	0.756 993 64	0.097 336 69	0.382 244 55	0.024 462 96	0.516 183 45
0.8770	0.769 129 00	0.757 831 98	0.097 556 63	0.382 676 50	0.024 518 53	0.516 781 84
0.8775	0.770 006 25	0.758 670 70	0.097 776 94	0.383 108 67	0.024 574 20	0.517 380 61
0.8780	0.770 884 00	0.759 509 82	0.097 997 61	0.383 541 08	0.024 629 96	0.517 979 75
0.8785	0.771 762 25	0.760 349 33	0.098 218 65	0.383 973 72	0.024 685 81	0.518 579 27
0.8790	0.772 641 00	0.761 189 23	0.098 440 06	0.384 406 59	0.024 741 76	0.519 179 16
0.8795	0.773 520 25	0.762 029 52	0.098 661 84	0.384 839 69	0.024 797 80	0.519 779 43
0.8800	0.774 400 00	0.762 870 20	0.098 883 98	0.385 273 02	0.024 853 94	0.520 380 06

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
			DEG MNT SEC			
0.8405	0.238 314 57	0.702 530 73	20 14 16.9	6 44 45.6	6 44 19.9	0 0 25.7
0.8410	0.238 605 04	0.703 357 53	20 15 43.6	6 45 14.5	6 44 48.7	0 0 25.8
0.8415	0.238 895 70	0.704 184 78	20 17 10.3	6 45 43.4	6 45 17.5	0 0 25.9
0.8420	0.239 186 57	0.705 012 49	20 18 37.2	6 46 12.4	6 45 46.4	0 0 26.0
0.8425	0.239 477 63	0.705 840 66	20 20 4.0	6 46 41.3	6 46 15.2	0 0 26.1
0.8430	0.239 768 90	0.706 669 28	20 21 30.9	6 47 10.3	6 46 44.1	0 0 26.2
0.8435	0.240 060 35	0.707 498 37	20 22 57.9	6 47 39.3	6 47 13.0	0 0 26.3
0.8440	0.240 352 01	0.708 327 91	20 24 24.9	6 48 8.3	6 47 41.9	0 0 26.4
0.8445	0.240 643 87	0.709 157 91	20 25 52.0	6 48 37.3	6 48 10.9	0 0 26.5
0.8450	0.240 935 92	0.709 988 37	20 27 19.1	6 49 6.4	6 48 39.8	0 0 26.6
0.8455	0.241 228 17	0.710 819 29	20 28 46.3	6 49 35.4	6 49 8.8	0 0 26.7
0.8460	0.241 520 62	0.711 650 66	20 30 13.5	6 50 4.5	6 49 37.7	0 0 26.8
0.8465	0.241 813 27	0.712 482 50	20 31 40.8	6 50 33.6	6 50 6.7	0 0 26.9
0.8470	0.242 106 12	0.713 314 79	20 33 8.1	6 51 2.7	6 50 35.8	0 0 26.9
0.8475	0.242 399 16	0.714 147 53	20 34 35.5	6 51 31.8	6 51 4.8	0 0 27.0
0.8480	0.242 692 41	0.714 980 74	20 36 2.9	6 52 1.0	6 51 33.8	0 0 27.1
0.8485	0.242 985 85	0.715 814 40	20 37 30.4	6 52 30.1	6 52 2.9	0 0 27.2
0.8490	0.243 279 49	0.716 648 52	20 38 57.9	6 52 59.3	6 52 32.0	0 0 27.3
0.8495	0.243 573 33	0.717 483 09	20 40 25.5	6 53 28.5	6 53 1.1	0 0 27.4
0.8500	0.243 867 37	0.718 318 13	20 41 53.2	6 53 57.7	6 53 30.2	0 0 27.5
0.8505	0.244 161 61	0.719 153 62	20 43 20.8	6 54 26.9	6 53 59.3	0 0 27.6
0.8510	0.244 456 05	0.719 989 56	20 44 48.6	6 54 56.2	6 54 28.5	0 0 27.7
0.8515	0.244 750 69	0.720 825 96	20 46 16.4	6 55 25.5	6 54 57.6	0 0 27.8
0.8520	0.245 045 52	0.721 662 82	20 47 44.2	6 55 54.7	6 55 26.8	0 0 27.9
0.8525	0.245 340 56	0.722 500 14	20 49 12.1	6 56 24.0	6 55 56.0	0 0 28.0
0.8530	0.245 635 79	0.723 337 91	20 50 40.1	6 56 53.4	6 56 25.2	0 0 28.1
0.8535	0.245 931 23	0.724 176 14	20 52 8.1	6 57 22.7	6 56 54.5	0 0 28.2
0.8540	0.246 226 86	0.725 014 82	20 53 36.1	6 57 52.0	6 57 23.7	0 0 28.3
0.8545	0.246 522 69	0.725 853 96	20 55 4.2	6 58 21.4	6 57 53.0	0 0 28.4
0.8550	0.246 818 73	0.726 693 56	20 56 32.4	6 58 50.8	6 58 22.3	0 0 28.5
0.8555	0.247 114 96	0.727 533 61	20 58 0.6	6 59 20.2	6 58 51.6	0 0 28.6
0.8560	0.247 411 39	0.728 374 11	20 59 28.8	6 59 49.6	6 59 20.9	0 0 28.7
0.8565	0.247 708 03	0.729 215 08	21 0 57.1	7 0 19.0	6 59 50.2	0 0 28.8
0.8570	0.248 004 86	0.730 056 50	21 2 25.5	7 0 48.5	7 0 19.6	0 0 28.9
0.8575	0.248 301 89	0.730 898 37	21 3 53.9	7 1 18.0	7 0 48.9	0 0 29.0
0.8580	0.248 599 13	0.731 740 70	21 5 22.4	7 1 47.5	7 1 18.3	0 0 29.1
0.8585	0.248 896 56	0.732 583 48	21 6 50.9	7 2 17.0	7 1 47.7	0 0 29.2
0.8590	0.249 194 19	0.733 426 72	21 8 19.4	7 2 46.5	7 2 17.2	0 0 29.3
0.8595	0.249 492 03	0.734 270 41	21 9 48.1	7 3 16.0	7 2 46.6	0 0 29.4
0.8600	0.249 790 06	0.735 114 56	21 11 16.7	7 3 45.6	7 3 16.0	0 0 29.5
0.8605	0.250 088 30	0.735 959 16	21 12 45.4	7 4 15.1	7 3 45.5	0 0 29.6
0.8610	0.250 386 74	0.736 804 22	21 14 14.2	7 4 44.7	7 4 15.0	0 0 29.7
0.8615	0.250 685 37	0.737 649 73	21 15 43.0	7 5 14.3	7 4 44.5	0 0 29.8
0.8620	0.250 984 21	0.738 495 70	21 17 11.9	7 5 44.0	7 5 14.0	0 0 29.9
0.8625	0.251 283 25	0.739 342 12	21 18 40.8	7 6 13.6	7 5 43.6	0 0 30.1
0.8630	0.251 582 49	0.740 189 00	21 20 9.8	7 6 43.3	7 6 13.1	0 0 30.2
0.8635	0.251 881 93	0.741 036 33	21 21 38.8	7 7 12.9	7 6 42.7	0 0 30.3
0.8640	0.252 181 58	0.741 884 11	21 23 7.9	7 7 42.6	7 7 12.3	0 0 30.4
0.8645	0.252 481 42	0.742 732 35	21 24 37.1	7 8 12.4	7 7 41.9	0 0 30.5
0.8650	0.252 781 47	0.743 581 04	21 26 6.2	7 8 42.1	7 8 11.5	0 0 30.6
0.8655	0.253 081 71	0.744 430 18	21 27 35.5	7 9 11.8	7 8 41.1	0 0 30.7
0.8660	0.253 382 16	0.745 279 78	21 29 4.8	7 9 41.6	7 9 10.8	0 0 30.8
0.8665	0.253 682 81	0.746 129 83	21 30 34.1	7 10 11.4	7 9 40.5	0 0 30.9
0.8670	0.253 983 66	0.746 980 34	21 32 3.5	7 10 41.2	7 10 10.2	0 0 31.0
0.8675	0.254 284 72	0.747 831 29	21 33 32.9	7 11 11.0	7 10 39.9	0 0 31.1
0.8680	0.254 585 97	0.748 682 71	21 35 2.4	7 11 40.8	7 11 9.6	0 0 31.2
0.8685	0.254 887 43	0.749 534 57	21 36 32.0	7 12 10.7	7 11 39.3	0 0 31.3
0.8690	0.255 189 09	0.750 386 89	21 38 1.6	7 12 40.5	7 12 9.1	0 0 31.4
0.8695	0.255 490 95	0.751 239 66	21 39 31.2	7 13 10.4	7 12 38.9	0 0 31.5
0.8700	0.255 793 01	0.752 092 88	21 41 0.9	7 13 40.3	7 13 8.6	0 0 31.7
0.8705	0.256 095 28	0.752 946 55	21 42 30.7	7 14 10.2	7 13 38.5	0 0 31.8
0.8710	0.256 397 75	0.753 800 68	21 44 0.5	7 14 40.2	7 14 8.3	0 0 31.9
0.8715	0.256 700 42	0.754 655 26	21 45 30.3	7 15 10.1	7 14 38.1	0 0 32.0
0.8720	0.257 003 29	0.755 510 29	21 47 0.2	7 15 40.1	7 15 8.0	0 0 32.1
0.8725	0.257 306 37	0.756 365 78	21 48 30.2	7 16 10.1	7 15 37.9	0 0 32.2
0.8730	0.257 609 65	0.757 221 71	21 50 0.2	7 16 40.1	7 16 7.7	0 0 32.3
0.8735	0.257 913 13	0.758 078 10	21 51 30.3	7 17 10.1	7 16 37.7	0 0 32.4
0.8740	0.258 216 82	0.758 934 94	21 53 0.4	7 17 40.1	7 17 7.6	0 0 32.5
0.8745	0.258 520 70	0.759 792 24	21 54 30.5	7 18 10.2	7 17 37.5	0 0 32.7
0.8750	0.258 824 80	0.760 649 98	21 56 0.7	7 18 40.2	7 18 7.5	0 0 32.8
0.8755	0.259 129 09	0.761 508 17	21 57 31.0	7 19 10.3	7 18 37.5	0 0 32.9
0.8760	0.259 433 59	0.762 366 82	21 59 1.3	7 19 40.4	7 19 7.4	0 0 33.0
0.8765	0.259 738 29	0.763 225 92	22 0 31.7	7 20 10.6	7 19 37.5	0 0 33.1
0.8770	0.260 043 19	0.764 085 47	22 2 2.1	7 20 40.7	7 20 7.5	0 0 33.2
0.8775	0.260 348 30	0.764 945 47	22 3 32.6	7 21 10.9	7 20 37.5	0 0 33.3
0.8780	0.260 653 61	0.765 805 92	22 5 3.1	7 21 41.0	7 21 7.6	0 0 33.5
0.8785	0.260 959 13	0.766 666 82	22 6 33.7	7 22 11.2	7 21 37.7	0 0 33.6
0.8790	0.261 264 85	0.767 528 17	22 8 4.3	7 22 41.4	7 22 7.8	0 0 33.7
0.8795	0.261 570 77	0.768 389 97	22 9 35.0	7 23 11.7	7 22 37.9	0 0 33.8
0.8800	0.261 876 90	0.769 252 23	22 11 5.7	7 23 41.9	7 23 8.0	0 0 33.9

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.8805	0.775 280 25	0.763 711 28	0.099 106 49	0.385 706 59	0.024 910 17	0.520 981 08
0.8810	0.776 161 00	0.764 552 74	0.099 329 37	0.386 140 38	0.024 966 50	0.521 582 47
0.8815	0.777 042 25	0.765 394 59	0.099 552 62	0.386 574 41	0.025 022 92	0.522 184 23
0.8820	0.777 924 00	0.766 236 82	0.099 776 23	0.387 008 67	0.025 079 43	0.522 786 36
0.8825	0.778 806 25	0.767 079 45	0.100 000 22	0.387 443 16	0.025 136 04	0.523 388 88
0.8830	0.779 689 00	0.767 922 47	0.100 224 58	0.387 877 88	0.025 192 75	0.523 991 76
0.8835	0.780 572 25	0.768 765 87	0.100 449 31	0.388 312 83	0.025 249 55	0.524 595 02
0.8840	0.781 456 00	0.769 609 67	0.100 674 40	0.388 748 02	0.025 306 44	0.525 198 66
0.8845	0.782 340 25	0.770 453 85	0.100 899 87	0.389 183 43	0.025 363 43	0.525 802 67
0.8850	0.783 225 00	0.771 298 42	0.101 125 71	0.389 619 08	0.025 420 52	0.526 407 06
0.8855	0.784 110 25	0.772 143 37	0.101 351 92	0.390 054 96	0.025 477 70	0.527 011 82
0.8860	0.784 996 00	0.772 988 71	0.101 578 51	0.390 491 06	0.025 534 97	0.527 616 96
0.8865	0.785 882 25	0.773 834 44	0.101 805 47	0.390 927 40	0.025 592 35	0.528 222 47
0.8870	0.786 769 00	0.774 680 56	0.102 032 80	0.391 363 97	0.025 649 81	0.528 828 36
0.8875	0.787 656 25	0.775 527 06	0.102 260 50	0.391 800 78	0.025 707 38	0.529 434 62
0.8880	0.788 544 00	0.776 373 95	0.102 488 58	0.392 237 81	0.025 765 04	0.530 041 26
0.8885	0.789 432 25	0.777 221 23	0.102 717 03	0.392 675 07	0.025 822 79	0.530 648 28
0.8890	0.790 321 00	0.778 068 89	0.102 945 85	0.393 112 56	0.025 880 64	0.531 255 67
0.8895	0.791 210 25	0.778 916 94	0.103 175 05	0.393 550 29	0.025 938 59	0.531 863 44
0.8900	0.792 100 00	0.779 765 37	0.103 404 63	0.393 988 24	0.025 996 64	0.532 471 58
0.8905	0.792 990 25	0.780 614 18	0.103 634 58	0.394 426 43	0.026 054 78	0.533 080 10
0.8910	0.793 881 00	0.781 463 38	0.103 864 91	0.394 864 85	0.026 113 01	0.533 689 00
0.8915	0.794 772 25	0.782 312 97	0.104 095 61	0.395 303 49	0.026 171 35	0.534 298 27
0.8920	0.795 664 00	0.783 162 94	0.104 326 69	0.395 742 37	0.026 229 78	0.534 907 92
0.8925	0.796 556 25	0.784 013 29	0.104 558 15	0.396 181 48	0.026 288 31	0.535 517 95
0.8930	0.797 449 00	0.784 864 03	0.104 789 98	0.396 620 82	0.026 346 93	0.536 128 36
0.8935	0.798 342 25	0.785 715 15	0.105 022 20	0.397 060 39	0.026 405 65	0.536 739 14
0.8940	0.799 236 00	0.786 566 65	0.105 254 79	0.397 500 18	0.026 464 47	0.537 350 29
0.8945	0.800 130 25	0.787 418 54	0.105 487 76	0.397 940 21	0.026 523 39	0.537 961 83
0.8950	0.801 025 00	0.788 270 81	0.105 721 10	0.398 380 47	0.026 582 40	0.538 573 74
0.8955	0.801 920 25	0.789 123 46	0.105 954 83	0.398 820 96	0.026 641 51	0.539 186 03
0.8960	0.802 816 00	0.789 976 49	0.106 188 94	0.399 261 68	0.026 700 72	0.539 798 70
0.8965	0.803 712 25	0.790 829 91	0.106 423 43	0.399 702 63	0.026 760 03	0.540 411 74
0.8970	0.804 609 00	0.791 683 71	0.106 658 30	0.400 143 81	0.026 819 43	0.541 025 16
0.8975	0.805 506 25	0.792 537 88	0.106 893 54	0.400 585 22	0.026 878 93	0.541 638 96
0.8980	0.806 404 00	0.793 392 44	0.107 129 17	0.401 026 86	0.026 938 53	0.542 253 14
0.8985	0.807 302 25	0.794 247 38	0.107 365 19	0.401 468 73	0.026 998 23	0.542 867 70
0.8990	0.808 201 00	0.795 102 70	0.107 601 58	0.401 910 83	0.027 058 02	0.543 482 63
0.8995	0.809 100 25	0.795 958 40	0.107 838 36	0.402 353 16	0.027 117 92	0.544 097 94
0.9000	0.810 000 00	0.796 814 48	0.108 075 51	0.402 795 72	0.027 177 91	0.544 713 63
0.9005	0.810 900 25	0.797 670 95	0.108 313 06	0.403 238 51	0.027 238 00	0.545 329 70
0.9010	0.811 801 00	0.798 527 79	0.108 550 98	0.403 681 53	0.027 298 19	0.545 946 15
0.9015	0.812 702 25	0.799 385 00	0.108 789 29	0.404 124 78	0.027 358 48	0.546 562 98
0.9020	0.813 604 00	0.800 242 60	0.109 027 99	0.404 568 26	0.027 418 87	0.547 180 18
0.9025	0.814 506 25	0.801 100 58	0.109 267 06	0.405 011 97	0.027 479 36	0.547 797 76
0.9030	0.815 409 00	0.801 958 94	0.109 506 53	0.405 455 91	0.027 539 94	0.548 415 73
0.9035	0.816 312 25	0.802 817 67	0.109 746 38	0.405 900 07	0.027 600 62	0.549 034 07
0.9040	0.817 216 00	0.803 676 78	0.109 986 61	0.406 344 47	0.027 661 41	0.549 652 79
0.9045	0.818 120 25	0.804 536 27	0.110 227 23	0.406 789 10	0.027 722 29	0.550 271 89
0.9050	0.819 025 00	0.805 396 14	0.110 468 24	0.407 233 95	0.027 783 27	0.550 891 37
0.9055	0.819 930 25	0.806 256 38	0.110 709 63	0.407 679 04	0.027 844 36	0.551 511 22
0.9060	0.820 836 00	0.807 117 00	0.110 951 41	0.408 124 35	0.027 905 54	0.552 131 46
0.9065	0.821 742 25	0.807 978 00	0.111 193 58	0.408 569 90	0.027 966 82	0.552 752 08
0.9070	0.822 649 00	0.808 839 37	0.111 436 14	0.409 015 67	0.028 028 20	0.553 373 08
0.9075	0.823 556 25	0.809 701 12	0.111 679 09	0.409 461 67	0.028 089 68	0.553 994 45
0.9080	0.824 464 00	0.810 563 25	0.111 922 42	0.409 907 90	0.028 151 26	0.554 616 21
0.9085	0.825 372 25	0.811 425 75	0.112 166 14	0.410 354 36	0.028 212 94	0.555 238 35
0.9090	0.826 281 00	0.812 288 62	0.112 410 26	0.410 801 05	0.028 274 73	0.555 860 87
0.9095	0.827 190 25	0.813 151 88	0.112 654 76	0.411 247 97	0.028 336 61	0.556 483 76
0.9100	0.828 100 00	0.814 015 50	0.112 899 65	0.411 695 11	0.028 398 59	0.557 107 04
0.9105	0.829 010 25	0.814 879 50	0.113 144 94	0.412 142 49	0.028 460 67	0.557 730 70
0.9110	0.829 921 00	0.815 743 88	0.113 390 61	0.412 590 09	0.028 522 86	0.558 354 74
0.9115	0.830 832 25	0.816 608 63	0.113 636 68	0.413 037 93	0.028 585 14	0.558 979 16
0.9120	0.831 744 00	0.817 473 75	0.113 883 14	0.413 485 99	0.028 647 53	0.559 603 96
0.9125	0.832 656 25	0.818 339 24	0.114 129 99	0.413 934 28	0.028 710 01	0.560 229 14
0.9130	0.833 569 00	0.819 205 11	0.114 377 23	0.414 382 80	0.028 772 60	0.560 854 71
0.9135	0.834 482 25	0.820 071 35	0.114 624 87	0.414 831 55	0.028 835 29	0.561 480 65
0.9140	0.835 396 00	0.820 937 97	0.114 872 89	0.415 280 52	0.028 898 08	0.562 106 97
0.9145	0.836 310 25	0.821 804 95	0.115 121 32	0.415 729 73	0.028 960 97	0.562 733 68
0.9150	0.837 225 00	0.822 672 31	0.115 370 14	0.416 179 16	0.029 023 96	0.563 360 77
0.9155	0.838 140 25	0.823 540 04	0.115 619 35	0.416 628 82	0.029 087 06	0.563 988 24
0.9160	0.839 056 00	0.824 408 14	0.115 868 95	0.417 078 72	0.029 150 26	0.564 616 09
0.9165	0.839 972 25	0.825 276 62	0.116 118 96	0.417 528 83	0.029 213 55	0.565 244 33
0.9170	0.840 889 00	0.826 145 46	0.116 369 35	0.417 979 18	0.029 276 95	0.565 872 94
0.9175	0.841 806 25	0.827 014 68	0.116 620 15	0.418 429 76	0.029 340 46	0.566 501 94
0.9180	0.842 724 00	0.827 884 26	0.116 871 34	0.418 880 56	0.029 404 06	0.567 131 32
0.9185	0.843 642 25	0.828 754 22	0.117 122 92	0.419 331 59	0.029 467 77	0.567 761 08
0.9190	0.844 561 00	0.829 624 54	0.117 374 91	0.419 782 85	0.029 531 58	0.568 391 22
0.9195	0.845 480 25	0.830 495 23	0.117 627 29	0.420 234 34	0.029 595 49	0.569 021 75
0.9200	0.846 400 00	0.831 366 30	0.117 880 07	0.420 686 05	0.029 659 50	0.569 652 66

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
0.8805	0.262 183 23	0.770 114 93	22 12 36.5	7 24 12.2	7 23 38.1	0 0 34.0
0.8810	0.262 489 76	0.770 578 09	22 14 7.3	7 24 42.4	7 24 8.3	0 0 34.1
0.8815	0.262 796 50	0.771 841 69	22 15 38.2	7 25 12.7	7 24 38.5	0 0 34.3
0.8820	0.263 103 45	0.772 705 74	22 17 9.2	7 25 43.1	7 25 8.7	0 0 34.4
0.8825	0.263 410 59	0.773 570 25	22 18 40.2	7 26 13.4	7 25 38.9	0 0 34.5
0.8830	0.263 717 95	0.774 435 20	22 20 11.2	7 26 43.7	7 26 9.1	0 0 34.6
0.8835	0.264 025 50	0.775 300 61	22 21 42.3	7 27 14.1	7 26 39.4	0 0 34.7
0.8840	0.264 333 27	0.776 166 46	22 23 13.4	7 27 44.5	7 27 9.6	0 0 34.8
0.8845	0.264 641 23	0.777 032 76	22 24 44.6	7 28 14.9	7 27 39.9	0 0 35.0
0.8850	0.264 949 40	0.777 899 51	22 26 15.9	7 28 45.3	7 28 10.2	0 0 35.1
0.8855	0.265 257 78	0.778 766 72	22 27 47.2	7 29 15.7	7 28 40.5	0 0 35.2
0.8860	0.265 566 36	0.779 634 37	22 29 18.5	7 29 46.2	7 29 10.8	0 0 35.3
0.8865	0.265 875 15	0.780 502 47	22 30 49.9	7 30 16.6	7 29 41.2	0 0 35.4
0.8870	0.266 184 14	0.781 371 01	22 32 21.4	7 30 47.1	7 30 11.6	0 0 35.6
0.8875	0.266 493 34	0.782 240 01	22 33 52.9	7 31 17.6	7 30 41.9	0 0 35.7
0.8880	0.266 802 74	0.783 109 46	22 35 24.4	7 31 48.1	7 31 12.3	0 0 35.8
0.8885	0.267 112 35	0.783 979 35	22 36 56.0	7 32 18.7	7 31 42.8	0 0 35.9
0.8890	0.267 422 16	0.784 849 70	22 38 27.7	7 32 49.2	7 32 13.2	0 0 36.1
0.8895	0.267 732 18	0.785 720 49	22 39 59.4	7 33 19.8	7 32 43.6	0 0 36.2
0.8900	0.268 042 41	0.786 591 73	22 41 31.2	7 33 50.4	7 33 14.1	0 0 36.3
0.8905	0.268 352 84	0.787 463 41	22 43 3.0	7 34 21.0	7 33 44.6	0 0 36.4
0.8910	0.268 663 48	0.788 335 55	22 44 34.9	7 34 51.6	7 34 15.1	0 0 36.5
0.8915	0.268 974 32	0.789 208 13	22 46 6.8	7 35 22.3	7 34 45.6	0 0 36.7
0.8920	0.269 285 37	0.790 081 16	22 47 38.7	7 35 52.9	7 35 16.1	0 0 36.8
0.8925	0.269 596 63	0.790 954 64	22 49 10.8	7 36 23.6	7 35 46.7	0 0 36.9
0.8930	0.269 908 09	0.791 828 57	22 50 42.8	7 36 54.3	7 36 17.2	0 0 37.0
0.8935	0.270 219 76	0.792 702 94	22 52 15.0	7 37 25.0	7 36 47.8	0 0 37.2
0.8940	0.270 531 63	0.793 577 77	22 53 47.1	7 37 55.7	7 37 18.4	0 0 37.3
0.8945	0.270 843 71	0.794 453 03	22 55 19.4	7 38 26.5	7 37 49.0	0 0 37.4
0.8950	0.271 156 00	0.795 328 75	22 56 51.6	7 38 57.2	7 38 19.7	0 0 37.5
0.8955	0.271 468 50	0.796 204 91	22 58 24.0	7 39 28.0	7 38 50.3	0 0 37.7
0.8960	0.271 781 20	0.797 081 52	22 59 56.3	7 39 58.8	7 39 21.0	0 0 37.8
0.8965	0.272 094 11	0.797 958 58	23 1 28.8	7 40 29.6	7 39 51.7	0 0 37.9
0.8970	0.272 407 22	0.798 836 08	23 3 1.3	7 41 0.4	7 40 22.4	0 0 38.0
0.8975	0.272 720 55	0.799 714 03	23 4 33.8	7 41 31.3	7 40 53.1	0 0 38.2
0.8980	0.273 034 08	0.800 592 42	23 6 6.4	7 42 2.1	7 41 23.8	0 0 38.3
0.8985	0.273 347 82	0.801 471 26	23 7 39.0	7 42 33.0	7 41 54.6	0 0 38.4
0.8990	0.273 661 76	0.802 350 55	23 9 11.7	7 43 3.9	7 42 25.3	0 0 38.6
0.8995	0.273 975 92	0.803 230 29	23 10 44.5	7 43 34.8	7 42 56.1	0 0 38.7
0.9000	0.274 290 28	0.804 110 47	23 12 17.2	7 44 5.7	7 43 26.9	0 0 38.8
0.9005	0.274 604 85	0.804 991 09	23 13 50.1	7 44 36.7	7 43 57.7	0 0 39.0
0.9010	0.274 919 62	0.805 872 16	23 15 23.0	7 45 7.7	7 44 28.6	0 0 39.1
0.9015	0.275 234 61	0.806 753 68	23 16 55.9	7 45 38.6	7 44 59.4	0 0 39.2
0.9020	0.275 549 80	0.807 635 64	23 18 28.9	7 46 9.6	7 45 30.3	0 0 39.3
0.9025	0.275 865 20	0.808 518 05	23 20 2.0	7 46 40.7	7 46 1.2	0 0 39.5
0.9030	0.276 180 81	0.809 400 90	23 21 35.1	7 47 11.7	7 46 32.1	0 0 39.6
0.9035	0.276 496 63	0.810 284 20	23 23 8.2	7 47 42.7	7 47 3.0	0 0 39.7
0.9040	0.276 812 65	0.811 167 94	23 24 41.4	7 48 13.8	7 47 33.9	0 0 39.9
0.9045	0.277 128 89	0.812 052 12	23 26 14.7	7 48 44.9	7 48 4.9	0 0 40.0
0.9050	0.277 445 33	0.812 936 76	23 27 48.0	7 49 16.0	7 48 35.9	0 0 40.1
0.9055	0.277 761 98	0.813 821 83	23 29 21.4	7 49 47.1	7 49 6.9	0 0 40.3
0.9060	0.278 078 84	0.814 707 35	23 30 54.8	7 50 18.3	7 49 37.9	0 0 40.4
0.9065	0.278 395 91	0.815 593 32	23 32 28.3	7 50 49.4	7 50 8.9	0 0 40.5
0.9070	0.278 713 19	0.816 479 73	23 34 1.8	7 51 20.6	7 50 39.9	0 0 40.7
0.9075	0.279 030 68	0.817 366 58	23 35 35.3	7 51 51.8	7 51 11.0	0 0 40.8
0.9080	0.279 348 37	0.818 253 88	23 37 9.0	7 52 23.0	7 51 42.0	0 0 40.9
0.9085	0.279 666 28	0.819 141 62	23 38 42.6	7 52 54.2	7 52 13.1	0 0 41.1
0.9090	0.279 984 39	0.820 029 80	23 40 16.3	7 53 25.4	7 52 44.2	0 0 41.2
0.9095	0.280 302 72	0.820 918 43	23 41 50.1	7 53 56.7	7 53 15.4	0 0 41.4
0.9100	0.280 621 25	0.821 807 50	23 43 23.9	7 54 28.0	7 53 46.5	0 0 41.5
0.9105	0.280 940 00	0.822 697 02	23 44 57.8	7 54 59.3	7 54 17.6	0 0 41.6
0.9110	0.281 258 95	0.823 586 97	23 46 31.7	7 55 30.6	7 54 48.8	0 0 41.8
0.9115	0.281 578 12	0.824 477 38	23 48 5.7	7 56 1.9	7 55 20.0	0 0 41.9
0.9120	0.281 897 49	0.825 368 22	23 49 39.8	7 56 33.3	7 55 51.2	0 0 42.0
0.9125	0.282 217 08	0.826 259 51	23 51 13.8	7 57 4.6	7 56 22.4	0 0 42.2
0.9130	0.282 536 87	0.827 151 24	23 52 48.0	7 57 36.0	7 56 53.7	0 0 42.3
0.9135	0.282 856 88	0.828 043 41	23 54 22.2	7 58 7.4	7 57 24.9	0 0 42.5
0.9140	0.283 177 09	0.828 936 02	23 55 56.4	7 58 38.8	7 57 56.2	0 0 42.6
0.9145	0.283 497 52	0.829 829 08	23 57 30.7	7 59 10.2	7 58 27.5	0 0 42.7
0.9150	0.283 818 15	0.830 722 58	23 59 5.0	7 59 41.7	7 58 58.8	0 0 42.9
0.9155	0.284 139 00	0.831 616 52	24 0 39.4	8 0 13.1	7 59 30.1	0 0 43.0
0.9160	0.284 460 06	0.832 510 90	24 2 13.9	8 0 44.6	8 0 1.5	0 0 43.2
0.9165	0.284 781 33	0.833 405 73	24 3 48.4	8 1 16.1	8 0 32.8	0 0 43.3
0.9170	0.285 102 81	0.834 300 99	24 5 22.9	8 1 47.6	8 1 4.2	0 0 43.4
0.9175	0.285 424 50	0.835 196 70	24 6 57.5	8 2 19.2	8 1 35.6	0 0 43.6
0.9180	0.285 746 40	0.836 092 85	24 8 32.2	8 2 50.7	8 2 7.0	0 0 43.7
0.9185	0.286 068 52	0.836 989 44	24 10 6.9	8 3 22.3	8 2 38.4	0 0 43.9
0.9190	0.286 390 84	0.837 886 48	24 11 41.6	8 3 53.9	8 3 9.8	0 0 44.0
0.9195	0.286 713 38	0.838 783 95	24 13 16.4	8 4 25.5	8 3 41.3	0 0 44.2
0.9200	0.287 036 13	0.839 681 86	24 14 51.3	8 4 57.1	8 4 12.8	0 0 44.3

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.9205	0.847 320 25	0.832 237 73	0.118 133 24	0.421 138 00	0.029 723 62	0.570 283 95
0.9210	0.848 241 00	0.833 109 53	0.118 386 82	0.421 590 17	0.029 787 84	0.570 915 63
0.9215	0.849 162 25	0.833 981 70	0.118 640 80	0.422 042 57	0.029 852 16	0.571 547 69
0.9220	0.850 084 00	0.834 854 24	0.118 895 17	0.422 495 19	0.029 916 58	0.572 180 13
0.9225	0.851 006 25	0.835 727 14	0.119 149 94	0.422 948 05	0.029 981 11	0.572 812 95
0.9230	0.851 929 00	0.836 600 42	0.119 405 12	0.423 401 13	0.030 045 74	0.573 446 16
0.9235	0.852 852 25	0.837 474 06	0.119 660 69	0.423 854 44	0.030 110 48	0.574 079 75
0.9240	0.853 776 00	0.838 348 07	0.119 916 67	0.424 307 98	0.030 175 32	0.574 713 73
0.9245	0.854 700 25	0.839 222 44	0.120 173 05	0.424 761 74	0.030 240 26	0.575 348 08
0.9250	0.855 625 00	0.840 097 18	0.120 429 83	0.425 215 74	0.030 305 30	0.575 982 83
0.9255	0.856 550 25	0.840 972 29	0.120 687 01	0.425 669 96	0.030 370 45	0.576 617 95
0.9260	0.857 476 00	0.841 847 76	0.120 944 59	0.426 124 41	0.030 435 71	0.577 253 46
0.9265	0.858 402 25	0.842 723 60	0.121 202 58	0.426 579 08	0.030 501 06	0.577 889 36
0.9270	0.859 329 00	0.843 599 80	0.121 460 97	0.427 033 98	0.030 566 52	0.578 525 64
0.9275	0.860 256 25	0.844 476 37	0.121 719 76	0.427 489 11	0.030 632 09	0.579 162 30
0.9280	0.861 184 00	0.845 353 31	0.121 978 96	0.427 944 47	0.030 697 76	0.579 799 35
0.9285	0.862 112 25	0.846 230 60	0.122 238 56	0.428 400 05	0.030 763 53	0.580 436 78
0.9290	0.863 041 00	0.847 108 27	0.122 498 56	0.428 855 86	0.030 829 41	0.581 074 59
0.9295	0.863 970 25	0.847 986 29	0.122 758 97	0.429 311 90	0.030 895 39	0.581 712 79
0.9300	0.864 900 00	0.848 864 68	0.123 019 79	0.429 768 17	0.030 961 48	0.582 351 38
0.9305	0.865 830 25	0.849 743 44	0.123 281 01	0.430 224 66	0.031 027 67	0.582 990 35
0.9310	0.866 761 00	0.850 622 55	0.123 542 64	0.430 681 38	0.031 093 97	0.583 629 71
0.9315	0.867 692 25	0.851 502 03	0.123 804 68	0.431 138 33	0.031 160 37	0.584 269 45
0.9320	0.868 624 00	0.852 381 87	0.124 067 12	0.431 595 50	0.031 226 88	0.584 909 58
0.9325	0.869 556 25	0.853 262 08	0.124 329 97	0.432 052 90	0.031 293 49	0.585 550 09
0.9330	0.870 489 00	0.854 142 64	0.124 593 23	0.432 510 53	0.031 360 21	0.586 190 99
0.9335	0.871 422 25	0.855 023 57	0.124 856 89	0.432 968 38	0.031 427 03	0.586 832 27
0.9340	0.872 356 00	0.855 904 86	0.125 120 97	0.433 426 46	0.031 493 96	0.587 473 94
0.9345	0.873 290 25	0.856 786 51	0.125 385 45	0.433 884 77	0.031 560 99	0.588 116 00
0.9350	0.874 225 00	0.857 668 52	0.125 650 34	0.434 343 30	0.031 628 13	0.588 758 44
0.9355	0.875 160 25	0.858 550 89	0.125 915 65	0.434 802 06	0.031 695 38	0.589 401 27
0.9360	0.876 096 00	0.859 433 62	0.126 181 36	0.435 261 04	0.031 762 73	0.590 044 48
0.9365	0.877 032 25	0.860 316 71	0.126 447 48	0.435 720 26	0.031 830 19	0.590 688 08
0.9370	0.877 969 00	0.861 200 17	0.126 714 01	0.436 179 69	0.031 897 75	0.591 332 07
0.9375	0.878 906 25	0.862 083 98	0.126 980 96	0.436 639 36	0.031 965 42	0.591 976 45
0.9380	0.879 844 00	0.862 968 14	0.127 248 31	0.437 099 25	0.032 033 20	0.592 621 21
0.9385	0.880 782 25	0.863 852 67	0.127 516 08	0.437 559 37	0.032 101 08	0.593 266 35
0.9390	0.881 721 00	0.864 737 56	0.127 784 26	0.438 019 71	0.032 169 07	0.593 911 89
0.9395	0.882 660 25	0.865 622 80	0.128 052 86	0.438 480 28	0.032 237 17	0.594 557 81
0.9400	0.883 600 00	0.866 508 40	0.128 321 86	0.438 941 08	0.032 305 37	0.595 204 12
0.9405	0.884 540 25	0.867 394 36	0.128 591 28	0.439 402 10	0.032 373 68	0.595 850 82
0.9410	0.885 481 00	0.868 280 68	0.128 861 12	0.439 863 35	0.032 442 10	0.596 497 90
0.9415	0.886 422 25	0.869 167 36	0.129 131 36	0.440 324 82	0.032 510 62	0.597 145 38
0.9420	0.887 364 00	0.870 054 39	0.129 402 03	0.440 786 52	0.032 579 25	0.597 793 24
0.9425	0.888 306 25	0.870 941 77	0.129 673 10	0.441 248 44	0.032 647 99	0.598 441 48
0.9430	0.889 249 00	0.871 829 52	0.129 944 60	0.441 710 60	0.032 716 83	0.599 090 12
0.9435	0.890 192 25	0.872 717 61	0.130 216 50	0.442 172 97	0.032 785 79	0.599 739 14
0.9440	0.891 136 00	0.873 606 07	0.130 488 83	0.442 635 57	0.032 854 85	0.600 388 56
0.9445	0.892 080 25	0.874 494 88	0.130 761 57	0.443 098 40	0.032 924 02	0.601 038 36
0.9450	0.893 025 00	0.875 384 04	0.131 034 73	0.443 561 46	0.032 993 29	0.601 688 55
0.9455	0.893 970 25	0.876 273 56	0.131 308 30	0.444 024 74	0.033 062 68	0.602 339 13
0.9460	0.894 916 00	0.877 163 43	0.131 582 30	0.444 488 24	0.033 132 17	0.602 990 09
0.9465	0.895 862 25	0.878 053 66	0.131 856 71	0.444 951 97	0.033 201 77	0.603 641 45
0.9470	0.896 809 00	0.878 944 24	0.132 131 54	0.445 415 92	0.033 271 48	0.604 293 19
0.9475	0.897 756 25	0.879 835 18	0.132 406 79	0.445 880 10	0.033 341 30	0.604 945 33
0.9480	0.898 704 00	0.880 726 46	0.132 682 45	0.446 344 51	0.033 411 22	0.605 597 85
0.9485	0.899 652 25	0.881 618 10	0.132 958 54	0.446 809 14	0.033 481 26	0.606 250 76
0.9490	0.900 601 00	0.882 510 10	0.133 235 05	0.447 274 00	0.033 551 40	0.606 904 07
0.9495	0.901 550 25	0.883 402 44	0.133 511 98	0.447 739 08	0.033 621 65	0.607 557 76
0.9500	0.902 500 00	0.884 295 14	0.133 789 32	0.448 204 38	0.033 692 02	0.608 211 84
0.9505	0.903 450 25	0.885 188 18	0.134 067 09	0.448 669 91	0.033 762 49	0.608 866 31
0.9510	0.904 401 00	0.886 081 58	0.134 345 28	0.449 135 67	0.033 833 06	0.609 521 17
0.9515	0.905 352 25	0.886 975 33	0.134 623 90	0.449 601 65	0.033 903 75	0.610 176 43
0.9520	0.906 304 00	0.887 869 43	0.134 902 93	0.450 067 86	0.033 974 55	0.610 832 07
0.9525	0.907 256 25	0.888 763 89	0.135 182 39	0.450 534 29	0.034 045 46	0.611 488 10
0.9530	0.908 209 00	0.889 658 69	0.135 462 27	0.451 000 94	0.034 116 47	0.612 144 52
0.9535	0.909 162 25	0.890 553 84	0.135 742 57	0.451 467 82	0.034 187 60	0.612 801 34
0.9540	0.910 116 00	0.891 449 34	0.136 023 30	0.451 934 93	0.034 258 84	0.613 458 54
0.9545	0.911 070 25	0.892 345 19	0.136 304 45	0.452 402 26	0.034 330 18	0.614 116 14
0.9550	0.912 025 00	0.893 241 39	0.136 586 03	0.452 869 81	0.034 401 64	0.614 774 13
0.9555	0.912 980 25	0.894 137 93	0.136 868 03	0.453 337 59	0.034 473 20	0.615 432 50
0.9560	0.913 936 00	0.895 034 83	0.137 150 45	0.453 805 59	0.034 544 88	0.616 091 27
0.9565	0.914 892 25	0.895 932 07	0.137 433 31	0.454 273 82	0.034 616 67	0.616 750 43
0.9570	0.915 849 00	0.896 829 66	0.137 716 58	0.454 742 27	0.034 688 56	0.617 409 99
0.9575	0.916 806 25	0.897 727 60	0.138 000 29	0.455 210 94	0.034 760 57	0.618 069 93
0.9580	0.917 764 00	0.898 625 88	0.138 284 42	0.455 679 84	0.034 832 69	0.618 730 27
0.9585	0.918 722 25	0.899 524 52	0.138 568 98	0.456 148 96	0.034 904 92	0.619 390 99
0.9590	0.919 681 00	0.900 423 49	0.138 853 96	0.456 618 31	0.034 977 26	0.620 052 11
0.9595	0.920 640 25	0.901 322 82	0.139 139 38	0.457 087 88	0.035 049 71	0.620 713 62
0.9600	0.921 600 00	0.902 222 49	0.139 425 22	0.457 557 68	0.035 122 27	0.621 375 53

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
0.9205	0.287 359 09	0.840 580 22	24 16 26.2	8 5 28.7	8 4 44.3	0 0 44.5
0.9210	0.287 682 26	0.841 479 01	24 18 1.1	8 6 0.4	8 5 15.8	0 0 44.6
0.9215	0.288 005 64	0.842 378 25	24 19 36.1	8 6 32.0	8 5 47.3	0 0 44.7
0.9220	0.288 329 24	0.843 277 93	24 21 11.2	8 7 3.7	8 6 18.8	0 0 44.9
0.9225	0.288 653 05	0.844 178 04	24 22 46.3	8 7 35.4	8 6 50.4	0 0 45.0
0.9230	0.288 977 07	0.845 078 60	24 24 21.5	8 8 7.2	8 7 22.0	0 0 45.2
0.9235	0.289 301 30	0.845 979 60	24 25 56.7	8 8 38.9	8 7 53.6	0 0 45.3
0.9240	0.289 625 75	0.846 881 04	24 27 32.0	8 9 10.7	8 8 25.2	0 0 45.5
0.9245	0.289 950 40	0.847 782 91	24 29 7.3	8 9 42.4	8 8 56.8	0 0 45.6
0.9250	0.290 275 27	0.848 685 23	24 30 42.7	8 10 14.2	8 9 28.4	0 0 45.8
0.9255	0.290 600 36	0.849 587 98	24 32 18.1	8 10 46.0	8 10 0.1	0 0 45.9
0.9260	0.290 925 65	0.850 491 18	24 33 53.6	8 11 17.9	8 10 31.8	0 0 46.1
0.9265	0.291 251 16	0.851 394 81	24 35 29.1	8 11 49.7	8 11 3.5	0 0 46.2
0.9270	0.291 576 89	0.852 298 89	24 37 4.7	8 12 21.6	8 11 35.2	0 0 46.4
0.9275	0.291 902 82	0.853 203 40	24 38 40.3	8 12 53.4	8 12 6.9	0 0 46.5
0.9280	0.292 228 97	0.854 108 35	24 40 16.0	8 13 25.3	8 12 38.6	0 0 46.7
0.9285	0.292 555 33	0.855 013 74	24 41 51.7	8 13 57.2	8 13 10.4	0 0 46.8
0.9290	0.292 881 91	0.855 919 57	24 43 27.5	8 14 29.2	8 13 42.2	0 0 47.0
0.9295	0.293 208 70	0.856 825 84	24 45 3.3	8 15 1.1	8 14 14.0	0 0 47.1
0.9300	0.293 535 70	0.857 732 55	24 46 39.2	8 15 33.1	8 14 45.8	0 0 47.3
0.9305	0.293 862 92	0.858 639 69	24 48 15.2	8 16 5.1	8 15 17.6	0 0 47.4
0.9310	0.294 190 35	0.859 547 27	24 49 51.1	8 16 37.0	8 15 49.5	0 0 47.6
0.9315	0.294 518 00	0.860 455 29	24 51 27.2	8 17 9.1	8 16 21.3	0 0 47.7
0.9320	0.294 845 86	0.861 363 75	24 53 3.3	8 17 41.1	8 16 53.2	0 0 47.9
0.9325	0.295 173 93	0.862 272 65	24 54 39.4	8 18 13.1	8 17 25.1	0 0 48.1
0.9330	0.295 502 22	0.863 181 98	24 56 15.6	8 18 45.2	8 17 57.0	0 0 48.2
0.9335	0.295 830 72	0.864 091 75	24 57 51.9	8 19 17.3	8 18 28.9	0 0 48.4
0.9340	0.296 159 44	0.865 001 96	24 59 28.2	8 19 49.4	8 19 0.9	0 0 48.5
0.9345	0.296 488 37	0.865 912 60	25 1 4.5	8 20 21.5	8 19 32.8	0 0 48.7
0.9350	0.296 817 52	0.866 823 68	25 2 40.9	8 20 53.6	8 20 4.8	0 0 48.8
0.9355	0.297 146 88	0.867 735 20	25 4 17.4	8 21 25.8	8 20 36.8	0 0 49.0
0.9360	0.297 476 46	0.868 647 16	25 5 53.9	8 21 58.0	8 21 8.8	0 0 49.2
0.9365	0.297 806 25	0.869 559 55	25 7 30.4	8 22 30.1	8 21 40.8	0 0 49.3
0.9370	0.298 136 26	0.870 472 38	25 9 7.1	8 23 2.4	8 22 12.9	0 0 49.5
0.9375	0.298 466 48	0.871 385 65	25 10 43.7	8 23 34.6	8 22 44.9	0 0 49.6
0.9380	0.298 796 92	0.872 299 35	25 12 20.4	8 24 6.8	8 23 17.0	0 0 49.8
0.9385	0.299 127 58	0.873 213 48	25 13 57.2	8 24 39.1	8 23 49.1	0 0 49.9
0.9390	0.299 458 45	0.874 128 06	25 15 34.0	8 25 11.3	8 24 21.2	0 0 50.1
0.9395	0.299 789 53	0.875 043 07	25 17 10.9	8 25 43.6	8 24 53.4	0 0 50.3
0.9400	0.300 120 83	0.875 958 51	25 18 47.8	8 26 15.9	8 25 25.5	0 0 50.4
0.9405	0.300 452 35	0.876 874 39	25 20 24.8	8 26 48.3	8 25 57.7	0 0 50.6
0.9410	0.300 784 08	0.877 790 71	25 22 1.8	8 27 20.6	8 26 29.8	0 0 50.8
0.9415	0.301 116 03	0.878 707 46	25 23 38.9	8 27 53.0	8 27 2.0	0 0 50.9
0.9420	0.301 448 20	0.879 624 65	25 25 16.0	8 28 25.3	8 27 34.2	0 0 51.1
0.9425	0.301 780 58	0.880 542 27	25 26 53.2	8 28 57.7	8 28 6.5	0 0 51.2
0.9430	0.302 113 18	0.881 460 32	25 28 30.4	8 29 30.1	8 28 38.7	0 0 51.4
0.9435	0.302 446 00	0.882 378 81	25 30 7.7	8 30 2.6	8 29 11.0	0 0 51.6
0.9440	0.302 779 03	0.883 297 74	25 31 45.0	8 30 35.0	8 29 43.3	0 0 51.7
0.9445	0.303 112 28	0.884 217 10	25 33 22.4	8 31 7.5	8 30 15.6	0 0 51.9
0.9450	0.303 445 75	0.885 136 89	25 34 59.8	8 31 39.9	8 30 47.9	0 0 52.1
0.9455	0.303 779 44	0.886 057 12	25 36 37.3	8 32 12.4	8 31 20.2	0 0 52.2
0.9460	0.304 113 34	0.886 977 78	25 38 14.8	8 32 44.9	8 31 52.5	0 0 52.4
0.9465	0.304 447 46	0.887 898 88	25 39 52.4	8 33 17.5	8 32 24.9	0 0 52.6
0.9470	0.304 781 79	0.888 820 41	25 41 30.1	8 33 50.0	8 32 57.3	0 0 52.7
0.9475	0.305 116 35	0.889 742 38	25 43 7.8	8 34 22.6	8 33 29.7	0 0 52.9
0.9480	0.305 451 12	0.890 664 77	25 44 45.5	8 34 55.2	8 34 2.1	0 0 53.1
0.9485	0.305 786 11	0.891 587 60	25 46 23.3	8 35 27.8	8 34 34.5	0 0 53.2
0.9490	0.306 121 32	0.892 510 87	25 48 1.1	8 36 0.4	8 35 7.0	0 0 53.4
0.9495	0.306 456 74	0.893 434 56	25 49 39.0	8 36 33.0	8 35 39.4	0 0 53.6
0.9500	0.306 792 39	0.894 358 69	25 51 17.0	8 37 5.7	8 36 11.9	0 0 53.7
0.9505	0.307 128 25	0.895 283 26	25 52 55.0	8 37 38.3	8 36 44.4	0 0 53.9
0.9510	0.307 464 33	0.896 208 25	25 54 33.0	8 38 11.0	8 37 16.9	0 0 54.1
0.9515	0.307 800 63	0.897 133 68	25 56 11.2	8 38 43.7	8 37 49.5	0 0 54.3
0.9520	0.308 137 15	0.898 059 54	25 57 49.3	8 39 16.4	8 38 22.0	0 0 54.4
0.9525	0.308 473 89	0.898 985 83	25 59 27.5	8 39 49.2	8 38 54.6	0 0 54.6
0.9530	0.308 810 84	0.899 912 55	26 1 5.8	8 40 21.9	8 39 27.1	0 0 54.8
0.9535	0.309 148 02	0.900 839 71	26 2 44.1	8 40 54.7	8 39 59.7	0 0 55.0
0.9540	0.309 485 41	0.901 767 30	26 4 22.5	8 41 27.5	8 40 32.4	0 0 55.1
0.9545	0.309 823 03	0.902 695 32	26 6 0.9	8 42 0.3	8 41 5.0	0 0 55.3
0.9550	0.310 160 86	0.903 623 77	26 7 39.3	8 42 33.1	8 41 37.6	0 0 55.5
0.9555	0.310 498 91	0.904 552 65	26 9 17.8	8 43 5.9	8 42 10.3	0 0 55.6
0.9560	0.310 837 18	0.905 481 97	26 10 56.4	8 43 38.8	8 42 43.0	0 0 55.8
0.9565	0.311 175 67	0.906 411 71	26 12 35.0	8 44 11.7	8 43 15.7	0 0 56.0
0.9570	0.311 514 39	0.907 341 89	26 14 13.7	8 44 44.6	8 43 48.4	0 0 56.2
0.9575	0.311 853 32	0.908 272 49	26 15 52.4	8 45 17.5	8 44 21.1	0 0 56.4
0.9580	0.312 192 47	0.909 203 53	26 17 31.2	8 45 50.4	8 44 53.9	0 0 56.5
0.9585	0.312 531 84	0.910 135 00	26 19 10.0	8 46 23.3	8 45 26.6	0 0 56.7
0.9590	0.312 871 43	0.911 066 90	26 20 48.9	8 46 56.3	8 45 59.4	0 0 56.9
0.9595	0.313 211 25	0.911 999 22	26 22 27.8	8 47 29.3	8 46 32.2	0 0 57.1
0.9600	0.313 551 28	0.912 931 98	26 24 6.8	8 48 2.3	8 47 5.0	0 0 57.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
0.9605	0.922 560 25	0.903 122 50	0.139 711 49	0.458 027 70	0.035 194 94	0.622 037 83
0.9610	0.923 521 00	0.904 022 86	0.139 998 19	0.458 497 94	0.035 267 73	0.622 700 52
0.9615	0.924 482 25	0.904 923 57	0.140 285 32	0.458 968 41	0.035 340 62	0.623 363 60
0.9620	0.925 444 00	0.905 824 61	0.140 572 88	0.459 439 10	0.035 413 63	0.624 027 07
0.9625	0.926 406 25	0.906 726 01	0.140 860 87	0.459 910 01	0.035 486 75	0.624 690 94
0.9630	0.927 369 00	0.907 627 74	0.141 149 29	0.460 381 15	0.035 559 98	0.625 355 20
0.9635	0.928 332 25	0.908 529 83	0.141 438 14	0.460 852 51	0.035 633 32	0.626 019 86
0.9640	0.929 296 00	0.909 432 25	0.141 727 42	0.461 324 10	0.035 706 78	0.626 684 91
0.9645	0.930 260 25	0.910 335 02	0.142 017 14	0.461 795 91	0.035 780 34	0.627 350 35
0.9650	0.931 225 00	0.911 238 12	0.142 307 28	0.462 267 94	0.035 854 02	0.628 016 18
0.9655	0.932 190 25	0.912 141 58	0.142 597 86	0.462 740 20	0.035 927 81	0.628 682 41
0.9660	0.933 156 00	0.913 045 37	0.142 888 87	0.463 212 68	0.036 001 71	0.629 349 03
0.9665	0.934 122 25	0.913 949 50	0.143 180 32	0.463 685 38	0.036 075 73	0.630 016 05
0.9670	0.935 089 00	0.914 853 98	0.143 472 20	0.464 158 30	0.036 149 86	0.630 683 46
0.9675	0.936 056 25	0.915 758 80	0.143 764 51	0.464 631 45	0.036 224 10	0.631 351 27
0.9680	0.937 024 00	0.916 663 96	0.144 057 26	0.465 104 83	0.036 298 45	0.632 019 47
0.9685	0.937 992 25	0.917 569 45	0.144 350 44	0.465 578 42	0.036 372 92	0.632 688 06
0.9690	0.938 961 00	0.918 475 29	0.144 644 05	0.466 052 24	0.036 447 50	0.633 357 05
0.9695	0.939 930 25	0.919 381 47	0.144 938 11	0.466 526 28	0.036 522 19	0.634 026 44
0.9700	0.940 900 00	0.920 287 99	0.145 232 60	0.467 000 54	0.036 596 99	0.634 696 22
0.9705	0.941 870 25	0.921 194 84	0.145 527 52	0.467 475 03	0.036 671 91	0.635 366 39
0.9710	0.942 841 00	0.922 102 04	0.145 822 88	0.467 949 74	0.036 746 95	0.636 036 96
0.9715	0.943 812 25	0.923 009 57	0.146 118 68	0.468 424 67	0.036 822 09	0.636 707 93
0.9720	0.944 784 00	0.923 917 45	0.146 414 92	0.468 899 83	0.036 897 35	0.637 379 29
0.9725	0.945 756 25	0.924 825 65	0.146 711 59	0.469 375 20	0.036 972 72	0.638 051 04
0.9730	0.946 729 00	0.925 734 20	0.147 008 70	0.469 850 80	0.037 048 21	0.638 723 20
0.9735	0.947 702 25	0.926 643 09	0.147 306 25	0.470 326 63	0.037 123 81	0.639 395 74
0.9740	0.948 676 00	0.927 552 31	0.147 604 24	0.470 802 67	0.037 199 53	0.640 068 69
0.9745	0.949 650 25	0.928 461 86	0.147 902 67	0.471 278 94	0.037 275 36	0.640 742 03
0.9750	0.950 625 00	0.929 371 76	0.148 201 54	0.471 755 43	0.037 351 30	0.641 415 77
0.9755	0.951 600 25	0.930 281 99	0.148 500 85	0.472 232 14	0.037 427 36	0.642 089 90
0.9760	0.952 576 00	0.931 192 55	0.148 800 60	0.472 709 07	0.037 503 53	0.642 764 43
0.9765	0.953 552 25	0.932 103 45	0.149 100 79	0.473 186 23	0.037 579 82	0.643 439 36
0.9770	0.954 529 00	0.933 014 69	0.149 401 42	0.473 663 61	0.037 656 22	0.644 114 68
0.9775	0.955 506 25	0.933 926 26	0.149 702 49	0.474 141 21	0.037 732 74	0.644 790 40
0.9780	0.956 484 00	0.934 838 16	0.150 004 01	0.474 619 03	0.037 809 37	0.645 466 52
0.9785	0.957 462 25	0.935 750 40	0.150 305 97	0.475 097 08	0.037 886 11	0.646 143 04
0.9790	0.958 441 00	0.936 662 97	0.150 608 37	0.475 575 34	0.037 962 98	0.646 819 95
0.9795	0.959 420 25	0.937 575 87	0.150 911 21	0.476 053 83	0.038 039 95	0.647 497 26
0.9800	0.960 400 00	0.938 489 11	0.151 214 50	0.476 532 54	0.038 117 05	0.648 174 97
0.9805	0.961 380 25	0.939 402 68	0.151 518 23	0.477 011 47	0.038 194 25	0.648 853 07
0.9810	0.962 361 00	0.940 316 58	0.151 822 40	0.477 490 63	0.038 271 58	0.649 531 58
0.9815	0.963 342 25	0.941 230 81	0.152 127 02	0.477 970 00	0.038 349 02	0.650 210 48
0.9820	0.964 324 00	0.942 145 38	0.152 432 09	0.478 449 60	0.038 426 57	0.650 889 78
0.9825	0.965 306 25	0.943 060 27	0.152 737 60	0.478 929 42	0.038 504 24	0.651 569 48
0.9830	0.966 289 00	0.943 975 50	0.153 043 55	0.479 409 46	0.038 582 03	0.652 249 58
0.9835	0.967 272 25	0.944 891 06	0.153 349 96	0.479 889 72	0.038 659 93	0.652 930 08
0.9840	0.968 256 00	0.945 806 95	0.153 656 81	0.480 370 20	0.038 737 95	0.653 610 97
0.9845	0.969 240 25	0.946 723 16	0.153 964 10	0.480 850 90	0.038 816 09	0.654 292 27
0.9850	0.970 225 00	0.947 639 71	0.154 271 85	0.481 331 83	0.038 894 34	0.654 973 96
0.9855	0.971 210 25	0.948 556 59	0.154 580 04	0.481 812 98	0.038 972 71	0.655 656 06
0.9860	0.972 196 00	0.949 473 79	0.154 888 68	0.482 294 34	0.039 051 20	0.656 338 55
0.9865	0.973 182 25	0.950 391 33	0.155 197 76	0.482 775 93	0.039 129 80	0.657 021 44
0.9870	0.974 169 00	0.951 309 19	0.155 507 30	0.483 257 74	0.039 208 52	0.657 704 73
0.9875	0.975 156 25	0.952 227 38	0.155 817 29	0.483 739 77	0.039 287 35	0.658 388 43
0.9880	0.976 144 00	0.953 145 90	0.156 127 72	0.484 222 02	0.039 366 31	0.659 072 52
0.9885	0.977 132 25	0.954 064 74	0.156 438 61	0.484 704 49	0.039 445 38	0.659 757 01
0.9890	0.978 121 00	0.954 983 91	0.156 749 94	0.485 187 18	0.039 524 57	0.660 441 90
0.9895	0.979 110 25	0.955 903 41	0.157 061 73	0.485 670 10	0.039 603 87	0.661 127 20
0.9900	0.980 100 00	0.956 823 24	0.157 373 97	0.486 153 23	0.039 683 29	0.661 812 89
0.9905	0.981 090 25	0.957 743 39	0.157 686 66	0.486 636 59	0.039 762 83	0.662 498 99
0.9910	0.982 081 00	0.958 663 86	0.157 999 80	0.487 120 16	0.039 842 49	0.663 185 48
0.9915	0.983 072 25	0.959 584 66	0.158 313 39	0.487 603 96	0.039 922 27	0.663 872 38
0.9920	0.984 064 00	0.960 505 79	0.158 627 44	0.488 087 97	0.040 002 16	0.664 559 68
0.9925	0.985 056 25	0.961 427 24	0.158 941 94	0.488 572 21	0.040 082 18	0.665 247 38
0.9930	0.986 049 00	0.962 349 01	0.159 256 89	0.489 056 66	0.040 162 31	0.665 935 48
0.9935	0.987 042 25	0.963 271 11	0.159 572 30	0.489 541 34	0.040 242 56	0.666 623 98
0.9940	0.988 036 00	0.964 193 53	0.159 888 16	0.490 026 24	0.040 322 92	0.667 312 89
0.9945	0.989 030 25	0.965 116 27	0.160 204 47	0.490 511 35	0.040 403 41	0.668 002 19
0.9950	0.990 025 00	0.966 039 34	0.160 521 24	0.490 996 69	0.040 484 01	0.668 691 90
0.9955	0.991 020 25	0.966 962 73	0.160 838 47	0.491 482 25	0.040 564 74	0.669 382 01
0.9960	0.992 016 00	0.967 886 44	0.161 156 15	0.491 968 02	0.040 645 58	0.670 072 52
0.9965	0.993 012 25	0.968 810 48	0.161 474 29	0.492 454 02	0.040 726 54	0.670 763 44
0.9970	0.994 009 00	0.969 734 83	0.161 792 88	0.492 940 24	0.040 807 62	0.671 454 76
0.9975	0.995 006 25	0.970 659 51	0.162 111 93	0.493 426 67	0.040 888 82	0.672 146 48
0.9980	0.996 004 00	0.971 584 50	0.162 431 44	0.493 913 33	0.040 970 14	0.672 838 60
0.9985	0.997 002 25	0.972 509 82	0.162 751 40	0.494 400 21	0.041 051 58	0.673 531 13
0.9990	0.998 001 00	0.973 435 46	0.163 071 83	0.494 887 30	0.041 133 13	0.674 224 06
0.9995	0.999 000 25	0.974 361 41	0.163 392 71	0.495 374 62	0.041 214 81	0.674 917 40
1.0000	1.000 000 00	0.975 287 69	0.163 714 05	0.495 862 15	0.041 296 61	0.675 611 13

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
			DEG MNT SEC	DEG MNT SEC	DEG MNT SEC	DEG MNT SEC
0.9605	0.313 891 53	0.913 865 17	26 25 45.9	8 48 35.3	8 47 37.9	0 0 57.4
0.9610	0.314 232 01	0.914 758 79	26 27 24.9	8 49 8.3	8 48 10.7	0 0 57.6
0.9615	0.314 572 70	0.915 732 84	26 29 4.1	8 49 41.4	8 48 43.6	0 0 57.8
0.9620	0.314 913 62	0.916 667 31	26 30 43.3	8 50 14.4	8 49 16.5	0 0 58.0
0.9625	0.315 254 76	0.917 602 22	26 32 22.5	8 50 47.5	8 49 49.4	0 0 58.1
0.9630	0.315 596 12	0.918 537 56	26 34 1.8	8 51 20.6	8 50 22.3	0 0 58.3
0.9635	0.315 937 70	0.919 473 32	26 35 41.1	8 51 53.7	8 50 55.2	0 0 58.5
0.9640	0.316 279 50	0.920 409 52	26 37 20.5	8 52 26.8	8 51 28.1	0 0 58.7
0.9645	0.316 621 52	0.921 346 14	26 38 60.0	8 52 60.0	8 52 1.1	0 0 58.9
0.9650	0.316 963 77	0.922 283 19	26 40 39.5	8 53 33.2	8 52 34.1	0 0 59.1
0.9655	0.317 306 24	0.923 220 67	26 42 19.0	8 54 6.3	8 53 7.1	0 0 59.2
0.9660	0.317 648 93	0.924 158 58	26 43 58.6	8 54 39.5	8 53 40.1	0 0 59.4
0.9665	0.317 991 84	0.925 096 91	26 45 38.3	8 55 12.8	8 54 13.1	0 0 59.6
0.9670	0.318 334 97	0.926 035 68	26 47 18.0	8 55 46.0	8 54 46.2	0 0 59.8
0.9675	0.318 678 33	0.926 974 87	26 48 57.7	8 56 19.2	8 55 19.3	0 0 60.0
0.9680	0.319 021 91	0.927 914 49	26 50 37.5	8 56 52.5	8 55 52.3	0 1 0.2
0.9685	0.319 365 71	0.928 854 54	26 52 17.4	8 57 25.8	8 56 25.4	0 1 0.4
0.9690	0.319 709 73	0.929 795 01	26 53 57.3	8 57 59.1	8 56 58.5	0 1 0.6
0.9695	0.320 053 98	0.930 735 92	26 55 37.3	8 58 32.4	8 57 31.7	0 1 0.7
0.9700	0.320 398 45	0.931 677 24	26 57 17.3	8 59 5.8	8 58 4.8	0 1 0.9
0.9705	0.320 743 14	0.932 619 00	26 58 57.3	8 59 39.1	8 58 38.0	0 1 1.1
0.9710	0.321 088 06	0.933 561 18	27 0 37.5	9 0 12.5	8 59 11.2	0 1 1.3
0.9715	0.321 433 20	0.934 503 79	27 2 17.6	9 0 45.9	8 59 44.4	0 1 1.5
0.9720	0.321 778 56	0.935 446 83	27 3 57.8	9 1 19.3	9 0 17.6	0 1 1.7
0.9725	0.322 124 15	0.936 390 29	27 5 38.1	9 1 52.7	9 0 50.8	0 1 1.9
0.9730	0.322 469 96	0.937 334 18	27 7 18.4	9 2 26.1	9 1 24.1	0 1 2.1
0.9735	0.322 816 00	0.938 278 50	27 8 58.8	9 2 59.6	9 1 57.3	0 1 2.3
0.9740	0.323 162 26	0.939 223 24	27 10 39.2	9 3 33.1	9 2 30.6	0 1 2.5
0.9745	0.323 508 74	0.940 168 41	27 12 19.7	9 4 6.6	9 3 3.9	0 1 2.7
0.9750	0.323 855 45	0.941 114 00	27 14 0.2	9 4 40.1	9 3 37.2	0 1 2.8
0.9755	0.324 202 38	0.942 060 02	27 15 40.8	9 5 13.6	9 4 10.6	0 1 3.0
0.9760	0.324 549 53	0.943 006 46	27 17 21.5	9 5 47.2	9 4 43.9	0 1 3.2
0.9765	0.324 896 91	0.943 953 33	27 19 2.1	9 6 20.7	9 5 17.3	0 1 3.4
0.9770	0.325 244 52	0.944 900 62	27 20 42.9	9 6 54.3	9 5 50.7	0 1 3.6
0.9775	0.325 592 35	0.945 848 34	27 22 23.7	9 7 27.9	9 6 24.1	0 1 3.8
0.9780	0.325 940 41	0.946 796 49	27 24 4.5	9 8 1.5	9 6 57.5	0 1 4.0
0.9785	0.326 288 69	0.947 745 05	27 25 45.4	9 8 35.1	9 7 30.9	0 1 4.2
0.9790	0.326 637 19	0.948 694 05	27 27 26.3	9 9 8.8	9 8 4.4	0 1 4.4
0.9795	0.326 985 92	0.949 643 46	27 29 7.3	9 9 42.4	9 8 37.8	0 1 4.6
0.9800	0.327 334 88	0.950 593 30	27 30 48.4	9 10 16.1	9 9 11.3	0 1 4.8
0.9805	0.327 684 06	0.951 543 57	27 32 29.5	9 10 49.8	9 9 44.8	0 1 5.0
0.9810	0.328 033 47	0.952 494 26	27 34 10.6	9 11 23.5	9 10 18.3	0 1 5.2
0.9815	0.328 383 11	0.953 445 37	27 35 51.8	9 11 57.3	9 10 51.9	0 1 5.4
0.9820	0.328 732 97	0.954 396 91	27 37 33.1	9 12 31.0	9 11 25.4	0 1 5.6
0.9825	0.329 083 05	0.955 348 87	27 39 14.4	9 13 4.8	9 11 59.0	0 1 5.8
0.9830	0.329 433 36	0.956 301 25	27 40 55.7	9 13 38.6	9 12 32.6	0 1 6.0
0.9835	0.329 783 90	0.957 254 05	27 42 37.1	9 14 12.4	9 13 6.2	0 1 6.2
0.9840	0.330 134 67	0.958 207 28	27 44 18.6	9 14 46.2	9 13 39.8	0 1 6.4
0.9845	0.330 485 66	0.959 160 93	27 46 0.1	9 15 20.0	9 14 13.4	0 1 6.6
0.9850	0.330 836 88	0.960 115 01	27 47 41.6	9 15 53.9	9 14 47.0	0 1 6.8
0.9855	0.331 188 33	0.961 069 50	27 49 23.2	9 16 27.7	9 15 20.7	0 1 7.0
0.9860	0.331 540 00	0.962 024 42	27 51 4.9	9 17 1.6	9 15 54.4	0 1 7.2
0.9865	0.331 891 90	0.962 979 76	27 52 46.6	9 17 35.5	9 16 28.1	0 1 7.4
0.9870	0.332 244 03	0.963 935 52	27 54 28.4	9 18 9.5	9 17 1.8	0 1 7.7
0.9875	0.332 596 39	0.964 891 71	27 56 10.2	9 18 43.4	9 17 35.5	0 1 7.9
0.9880	0.332 948 97	0.965 848 31	27 57 52.1	9 19 17.4	9 18 9.3	0 1 8.1
0.9885	0.333 301 78	0.966 805 34	27 59 34.0	9 19 51.3	9 18 43.1	0 1 8.3
0.9890	0.333 654 82	0.967 762 79	28 1 16.0	9 20 25.3	9 19 16.8	0 1 8.5
0.9895	0.334 008 09	0.968 720 66	28 2 58.0	9 20 59.3	9 19 50.6	0 1 8.7
0.9900	0.334 361 58	0.969 678 95	28 4 40.1	9 21 33.4	9 20 24.5	0 1 8.9
0.9905	0.334 715 31	0.970 637 66	28 6 22.2	9 22 7.4	9 20 58.3	0 1 9.1
0.9910	0.335 069 26	0.971 596 80	28 8 4.4	9 22 41.5	9 21 32.1	0 1 9.3
0.9915	0.335 423 44	0.972 556 35	28 9 46.6	9 23 15.5	9 22 6.0	0 1 9.5
0.9920	0.335 777 85	0.973 516 32	28 11 28.9	9 23 49.6	9 22 39.9	0 1 9.7
0.9925	0.336 132 49	0.974 476 72	28 13 11.2	9 24 23.7	9 23 13.8	0 1 10.0
0.9930	0.336 487 35	0.975 437 53	28 14 53.6	9 24 57.9	9 23 47.7	0 1 10.2
0.9935	0.336 842 45	0.976 398 76	28 16 36.0	9 25 32.0	9 24 21.6	0 1 10.4
0.9940	0.337 197 78	0.977 360 42	28 18 18.5	9 26 6.2	9 24 55.6	0 1 10.6
0.9945	0.337 553 33	0.978 322 49	28 20 1.1	9 26 40.4	9 25 29.5	0 1 10.8
0.9950	0.337 909 11	0.979 284 98	28 21 43.7	9 27 14.6	9 26 3.5	0 1 11.0
0.9955	0.338 265 13	0.980 247 90	28 23 26.3	9 27 48.8	9 26 37.5	0 1 11.2
0.9960	0.338 621 37	0.981 211 23	28 25 9.0	9 28 23.0	9 27 11.5	0 1 11.5
0.9965	0.338 977 85	0.982 174 98	28 26 51.7	9 28 57.2	9 27 45.6	0 1 11.7
0.9970	0.339 334 55	0.983 139 14	28 28 34.5	9 29 31.5	9 28 19.6	0 1 11.9
0.9975	0.339 691 48	0.984 103 73	28 30 17.4	9 30 5.8	9 28 53.7	0 1 12.1
0.9980	0.340 048 65	0.985 068 74	28 32 0.3	9 30 40.1	9 29 27.8	0 1 12.3
0.9985	0.340 406 04	0.986 034 16	28 33 43.2	9 31 14.4	9 30 1.9	0 1 12.5
0.9990	0.340 763 67	0.987 000 00	28 35 26.2	9 31 48.7	9 30 36.0	0 1 12.8
0.9995	0.341 121 53	0.987 966 26	28 37 9.3	9 32 23.1	9 31 10.1	0 1 13.0
1.0000	0.341 479 61	0.988 932 94	28 38 52.4	9 32 57.5	9 31 44.3	0 1 13.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.0005	1.001 000 25	0.976 214 28	0.164 035 85	0.496 349 90	0.041 378 53	0.676 305 28
1.0010	1.002 001 00	0.977 141 20	0.164 358 11	0.496 837 88	0.041 460 56	0.676 999 82
1.0015	1.003 002 25	0.978 068 43	0.164 680 82	0.497 326 07	0.041 542 72	0.677 694 77
1.0020	1.004 004 00	0.978 995 98	0.165 004 00	0.497 814 48	0.041 625 00	0.678 390 13
1.0025	1.005 006 25	0.979 923 84	0.165 327 64	0.498 303 11	0.041 707 39	0.679 085 88
1.0030	1.006 009 00	0.980 852 03	0.165 651 74	0.498 791 96	0.041 789 91	0.679 782 05
1.0035	1.007 012 25	0.981 780 53	0.165 976 31	0.499 281 03	0.041 872 55	0.680 478 61
1.0040	1.008 016 00	0.982 709 35	0.166 301 33	0.499 770 32	0.041 955 31	0.681 175 59
1.0045	1.009 020 25	0.983 638 48	0.166 626 82	0.500 259 82	0.042 038 19	0.681 872 96
1.0050	1.010 025 00	0.984 567 93	0.166 952 76	0.500 749 55	0.042 121 19	0.682 570 75
1.0055	1.011 030 25	0.985 497 69	0.167 279 18	0.501 239 49	0.042 204 31	0.683 268 93
1.0060	1.012 036 00	0.986 427 77	0.167 606 05	0.501 729 65	0.042 287 55	0.683 967 53
1.0065	1.013 042 25	0.987 358 17	0.167 933 39	0.502 220 04	0.042 370 92	0.684 666 52
1.0070	1.014 049 00	0.988 288 88	0.168 261 19	0.502 710 64	0.042 454 40	0.685 365 93
1.0075	1.015 056 25	0.989 219 90	0.168 589 46	0.503 201 46	0.042 538 01	0.686 065 74
1.0080	1.016 064 00	0.990 151 23	0.168 918 19	0.503 692 49	0.042 621 74	0.686 765 96
1.0085	1.017 072 25	0.991 082 88	0.169 247 39	0.504 183 75	0.042 705 59	0.687 466 58
1.0090	1.018 081 00	0.992 014 85	0.169 577 05	0.504 675 22	0.042 789 56	0.688 167 61
1.0095	1.019 090 25	0.992 947 12	0.169 907 18	0.505 166 91	0.042 873 65	0.688 869 04
1.0100	1.020 100 00	0.993 879 71	0.170 237 77	0.505 658 83	0.042 957 87	0.689 570 88
1.0105	1.021 110 25	0.994 812 61	0.170 568 83	0.506 150 95	0.043 042 20	0.690 273 13
1.0110	1.022 121 00	0.995 745 82	0.170 900 36	0.506 643 30	0.043 126 66	0.690 975 79
1.0115	1.023 132 25	0.996 679 34	0.171 232 35	0.507 135 87	0.043 211 25	0.691 678 85
1.0120	1.024 144 00	0.997 613 17	0.171 564 82	0.507 628 65	0.043 295 95	0.692 382 32
1.0125	1.025 156 25	0.998 547 32	0.171 897 75	0.508 121 65	0.043 380 78	0.693 086 20
1.0130	1.026 169 00	0.999 481 77	0.172 231 15	0.508 614 87	0.043 465 73	0.693 790 49
1.0135	1.027 182 25	1.000 416 53	0.172 565 02	0.509 108 30	0.043 550 80	0.694 495 18
1.0140	1.028 196 00	1.001 351 60	0.172 899 36	0.509 601 96	0.043 635 99	0.695 200 28
1.0145	1.029 210 25	1.002 286 98	0.173 234 17	0.510 095 83	0.043 721 31	0.695 905 79
1.0150	1.030 225 00	1.003 222 67	0.173 569 44	0.510 589 92	0.043 806 75	0.696 611 71
1.0155	1.031 240 25	1.004 158 67	0.173 905 19	0.511 084 23	0.043 892 31	0.697 318 03
1.0160	1.032 256 00	1.005 094 98	0.174 241 41	0.511 578 75	0.043 978 00	0.698 024 77
1.0165	1.033 272 25	1.006 031 59	0.174 578 10	0.512 073 49	0.044 063 81	0.698 731 91
1.0170	1.034 289 00	1.006 968 51	0.174 915 26	0.512 568 45	0.044 149 75	0.699 439 46
1.0175	1.035 306 25	1.007 905 74	0.175 252 90	0.513 063 63	0.044 235 80	0.700 147 43
1.0180	1.036 324 00	1.008 843 27	0.175 591 00	0.513 559 02	0.044 321 98	0.700 855 80
1.0185	1.037 342 25	1.009 781 11	0.175 929 58	0.514 054 64	0.044 408 29	0.701 564 58
1.0190	1.038 361 00	1.010 719 26	0.176 268 64	0.514 550 46	0.044 494 72	0.702 273 77
1.0195	1.039 380 25	1.011 657 71	0.176 608 16	0.515 046 51	0.044 581 27	0.702 983 36
1.0200	1.040 400 00	1.012 596 46	0.176 948 16	0.515 542 77	0.044 667 95	0.703 693 37
1.0205	1.041 420 25	1.013 535 52	0.177 288 64	0.516 039 25	0.044 754 75	0.704 403 79
1.0210	1.042 441 00	1.014 474 89	0.177 629 58	0.516 535 95	0.044 841 68	0.705 114 62
1.0215	1.043 462 25	1.015 414 56	0.177 971 01	0.517 032 86	0.044 928 73	0.705 825 86
1.0220	1.044 484 00	1.016 354 53	0.178 312 91	0.517 529 99	0.045 015 90	0.706 537 51
1.0225	1.045 506 25	1.017 294 80	0.178 655 28	0.518 027 34	0.045 103 20	0.707 249 57
1.0230	1.046 529 00	1.018 235 38	0.178 998 13	0.518 524 90	0.045 190 62	0.707 962 04
1.0235	1.047 552 25	1.019 176 26	0.179 341 46	0.519 022 68	0.045 278 17	0.708 674 93
1.0240	1.048 576 00	1.020 117 44	0.179 685 26	0.519 520 67	0.045 365 85	0.709 388 22
1.0245	1.049 600 25	1.021 058 92	0.180 029 54	0.520 018 89	0.045 453 65	0.710 101 93
1.0250	1.050 625 00	1.022 000 71	0.180 374 30	0.520 517 32	0.045 541 57	0.710 816 04
1.0255	1.051 650 25	1.022 942 80	0.180 719 54	0.521 015 96	0.045 629 62	0.711 530 57
1.0260	1.052 676 00	1.023 885 18	0.181 065 25	0.521 514 82	0.045 717 80	0.712 245 51
1.0265	1.053 702 25	1.024 827 87	0.181 411 45	0.522 013 90	0.045 806 10	0.712 960 86
1.0270	1.054 729 00	1.025 770 85	0.181 758 12	0.522 513 19	0.045 894 53	0.713 676 63
1.0275	1.055 756 25	1.026 714 14	0.182 105 27	0.523 012 70	0.045 983 08	0.714 392 80
1.0280	1.056 784 00	1.027 657 72	0.182 452 91	0.523 512 43	0.046 071 76	0.715 109 39
1.0285	1.057 812 25	1.028 601 61	0.182 801 02	0.524 012 37	0.046 160 56	0.715 826 40
1.0290	1.058 841 00	1.029 545 79	0.183 149 61	0.524 512 53	0.046 249 49	0.716 543 81
1.0295	1.059 870 25	1.030 490 27	0.183 498 69	0.525 012 90	0.046 338 55	0.717 261 64
1.0300	1.060 900 00	1.031 435 04	0.183 848 24	0.525 513 49	0.046 427 73	0.717 979 88
1.0305	1.061 930 25	1.032 380 12	0.184 198 28	0.526 014 29	0.046 517 04	0.718 698 53
1.0310	1.062 961 00	1.033 325 49	0.184 548 80	0.526 515 31	0.046 606 48	0.719 417 60
1.0315	1.063 992 25	1.034 271 15	0.184 899 80	0.527 016 55	0.046 696 04	0.720 137 08
1.0320	1.065 024 00	1.035 217 11	0.185 251 28	0.527 518 00	0.046 785 73	0.720 856 98
1.0325	1.066 056 25	1.036 163 37	0.185 603 25	0.528 019 67	0.046 875 55	0.721 577 29
1.0330	1.067 089 00	1.037 109 93	0.185 955 70	0.528 521 55	0.046 965 50	0.722 298 01
1.0335	1.068 122 25	1.038 056 77	0.186 308 64	0.529 023 64	0.047 055 57	0.723 019 15
1.0340	1.069 156 00	1.039 003 92	0.186 662 06	0.529 525 96	0.047 145 76	0.723 740 70
1.0345	1.070 190 25	1.039 951 35	0.187 015 96	0.530 028 48	0.047 236 09	0.724 462 67
1.0350	1.071 225 00	1.040 899 08	0.187 370 35	0.530 531 23	0.047 326 54	0.725 185 05
1.0355	1.072 260 25	1.041 847 11	0.187 725 23	0.531 034 18	0.047 417 12	0.725 907 85
1.0360	1.073 296 00	1.042 795 42	0.188 080 59	0.531 537 36	0.047 507 83	0.726 631 06
1.0365	1.074 332 25	1.043 744 03	0.188 436 44	0.532 040 74	0.047 598 67	0.727 354 69
1.0370	1.075 369 00	1.044 692 94	0.188 792 77	0.532 544 34	0.047 689 63	0.728 078 73
1.0375	1.076 406 25	1.045 642 13	0.189 149 59	0.533 048 16	0.047 780 73	0.728 803 19
1.0380	1.077 444 00	1.046 591 61	0.189 506 90	0.533 552 19	0.047 871 95	0.729 528 06
1.0385	1.078 482 25	1.047 541 39	0.189 864 70	0.534 056 44	0.047 963 30	0.730 253 35
1.0390	1.079 521 00	1.048 491 45	0.190 222 98	0.534 560 90	0.048 054 77	0.730 979 06
1.0395	1.080 560 25	1.049 441 81	0.190 581 75	0.535 065 57	0.048 146 38	0.731 705 18
1.0400	1.081 600 00	1.050 392 46	0.190 941 01	0.535 570 46	0.048 238 11	0.732 431 73

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
			DEG MNT SEC			
1.0005	0.341 837 93	0.989 900 04	28 40 35.6	9 33 31.9	9 32 18.4	0 1 13.4
1.0010	0.342 196 48	0.990 867 55	28 42 18.8	9 34 6.3	9 32 52.6	0 1 13.6
1.0015	0.342 555 26	0.991 835 48	28 44 2.0	9 34 40.7	9 33 26.8	0 1 13.9
1.0020	0.342 914 27	0.992 803 83	28 45 45.3	9 35 15.1	9 34 1.0	0 1 14.1
1.0025	0.343 273 52	0.993 772 59	28 47 28.7	9 35 49.6	9 34 35.3	0 1 14.3
1.0030	0.343 632 99	0.994 741 78	28 49 12.1	9 36 24.0	9 35 9.5	0 1 14.5
1.0035	0.343 992 70	0.995 711 37	28 50 55.6	9 36 58.5	9 35 43.8	0 1 14.8
1.0040	0.344 352 64	0.996 681 39	28 52 39.1	9 37 33.0	9 36 18.1	0 1 15.0
1.0045	0.344 712 81	0.997 651 82	28 54 22.7	9 38 7.6	9 36 52.4	0 1 15.2
1.0050	0.345 073 21	0.998 622 67	28 56 6.3	9 38 42.1	9 37 26.7	0 1 15.4
1.0055	0.345 433 85	0.999 593 93	28 57 50.0	9 39 16.7	9 38 1.0	0 1 15.7
1.0060	0.345 794 72	1.000 565 61	28 59 33.7	9 39 51.2	9 38 35.3	0 1 15.9
1.0065	0.346 155 82	1.001 537 70	29 1 17.5	9 40 25.8	9 39 9.7	0 1 16.1
1.0070	0.346 517 16	1.002 510 21	29 3 1.3	9 41 0.4	9 39 44.1	0 1 16.3
1.0075	0.346 878 72	1.003 483 14	29 4 45.2	9 41 35.1	9 40 18.5	0 1 16.6
1.0080	0.347 240 52	1.004 456 48	29 6 29.1	9 42 9.7	9 40 52.9	0 1 16.8
1.0085	0.347 602 56	1.005 430 24	29 8 13.1	9 42 44.4	9 41 27.3	0 1 17.0
1.0090	0.347 964 83	1.006 404 41	29 9 57.1	9 43 19.0	9 42 1.8	0 1 17.3
1.0095	0.348 327 33	1.007 378 99	29 11 41.2	9 43 53.7	9 42 36.3	0 1 17.5
1.0100	0.348 690 06	1.008 353 99	29 13 25.4	9 44 28.5	9 43 10.7	0 1 17.7
1.0105	0.349 053 03	1.009 329 41	29 15 9.6	9 45 3.2	9 43 45.2	0 1 18.0
1.0110	0.349 416 23	1.010 305 23	29 16 53.8	9 45 37.9	9 44 19.7	0 1 18.2
1.0115	0.349 779 67	1.011 281 48	29 18 38.1	9 46 12.7	9 44 54.3	0 1 18.4
1.0120	0.350 143 34	1.012 258 13	29 20 22.4	9 46 47.5	9 45 28.8	0 1 18.7
1.0125	0.350 507 25	1.013 235 20	29 22 6.8	9 47 22.3	9 46 3.4	0 1 18.9
1.0130	0.350 871 39	1.014 212 69	29 23 51.3	9 47 57.1	9 46 38.0	0 1 19.1
1.0135	0.351 235 76	1.015 190 58	29 25 35.8	9 48 31.9	9 47 12.6	0 1 19.4
1.0140	0.351 600 37	1.016 168 89	29 27 20.3	9 49 6.8	9 47 47.2	0 1 19.6
1.0145	0.351 965 21	1.017 147 62	29 29 4.9	9 49 41.6	9 48 21.8	0 1 19.8
1.0150	0.352 330 29	1.018 126 75	29 30 49.6	9 50 16.5	9 48 56.5	0 1 20.1
1.0155	0.352 695 61	1.019 106 30	29 32 34.3	9 50 51.4	9 49 31.1	0 1 20.3
1.0160	0.353 061 16	1.020 086 26	29 34 19.0	9 51 26.3	9 50 5.8	0 1 20.5
1.0165	0.353 426 95	1.021 066 64	29 36 3.9	9 52 1.3	9 50 40.5	0 1 20.8
1.0170	0.353 792 97	1.022 047 42	29 37 48.7	9 52 36.2	9 51 15.2	0 1 21.0
1.0175	0.354 159 23	1.023 028 62	29 39 33.6	9 53 11.2	9 51 49.9	0 1 21.3
1.0180	0.354 525 72	1.024 010 23	29 41 18.6	9 53 46.2	9 52 24.7	0 1 21.5
1.0185	0.354 892 45	1.024 992 25	29 43 3.6	9 54 21.2	9 52 59.5	0 1 21.7
1.0190	0.355 259 42	1.025 974 68	29 44 48.7	9 54 56.2	9 53 34.2	0 1 22.0
1.0195	0.355 626 62	1.026 957 53	29 46 33.8	9 55 31.3	9 54 9.0	0 1 22.2
1.0200	0.355 994 06	1.027 940 78	29 48 19.0	9 56 6.3	9 54 43.8	0 1 22.5
1.0205	0.356 361 74	1.028 924 45	29 50 4.2	9 56 41.4	9 55 18.7	0 1 22.7
1.0210	0.356 729 65	1.029 908 52	29 51 49.4	9 57 16.5	9 55 53.5	0 1 23.0
1.0215	0.357 097 80	1.030 893 01	29 53 34.8	9 57 51.6	9 56 28.4	0 1 23.2
1.0220	0.357 466 19	1.031 877 91	29 55 20.1	9 58 26.7	9 57 3.3	0 1 23.5
1.0225	0.357 834 81	1.032 863 22	29 57 5.6	9 59 1.9	9 57 38.2	0 1 23.7
1.0230	0.358 203 68	1.033 848 93	29 58 51.1	9 59 37.0	9 58 13.1	0 1 23.9
1.0235	0.358 572 78	1.034 835 06	30 0 36.6	10 0 12.2	9 58 48.0	0 1 24.2
1.0240	0.358 942 12	1.035 821 60	30 2 22.2	10 0 47.4	9 59 22.9	0 1 24.4
1.0245	0.359 311 69	1.036 808 55	30 4 7.8	10 1 22.6	9 59 57.9	0 1 24.7
1.0250	0.359 681 51	1.037 795 90	30 5 53.5	10 1 57.8	10 0 32.9	0 1 24.9
1.0255	0.360 051 56	1.038 783 67	30 7 39.2	10 2 33.1	10 1 7.9	0 1 25.2
1.0260	0.360 421 85	1.039 771 85	30 9 25.0	10 3 8.3	10 1 42.9	0 1 25.4
1.0265	0.360 792 38	1.040 760 43	30 11 10.8	10 3 43.6	10 2 17.9	0 1 25.7
1.0270	0.361 163 15	1.041 749 42	30 12 56.7	10 4 18.9	10 2 53.0	0 1 25.9
1.0275	0.361 534 16	1.042 738 82	30 14 42.7	10 4 54.2	10 3 28.0	0 1 26.2
1.0280	0.361 905 40	1.043 728 63	30 16 28.7	10 5 29.6	10 4 3.1	0 1 26.5
1.0285	0.362 276 89	1.044 718 85	30 18 14.7	10 6 4.9	10 4 38.2	0 1 26.7
1.0290	0.362 648 61	1.045 709 48	30 20 0.8	10 6 40.3	10 5 13.3	0 1 27.0
1.0295	0.363 020 58	1.046 700 51	30 21 47.0	10 7 15.7	10 5 48.4	0 1 27.2
1.0300	0.363 392 78	1.047 691 95	30 23 33.2	10 7 51.1	10 6 23.6	0 1 27.5
1.0305	0.363 765 23	1.048 683 80	30 25 19.4	10 8 26.5	10 6 58.7	0 1 27.7
1.0310	0.364 137 91	1.049 676 05	30 27 5.7	10 9 1.9	10 7 33.9	0 1 28.0
1.0315	0.364 510 84	1.050 668 72	30 28 52.1	10 9 37.4	10 8 9.1	0 1 28.2
1.0320	0.364 884 00	1.051 661 79	30 30 38.5	10 10 12.8	10 8 44.3	0 1 28.5
1.0325	0.365 257 41	1.052 655 26	30 32 24.9	10 10 48.3	10 9 19.6	0 1 28.8
1.0330	0.365 631 05	1.053 649 15	30 34 11.5	10 11 23.8	10 9 54.8	0 1 29.0
1.0335	0.366 004 94	1.054 643 44	30 35 58.0	10 11 59.3	10 10 30.1	0 1 29.3
1.0340	0.366 379 07	1.055 638 13	30 37 44.6	10 12 34.9	10 11 5.3	0 1 29.5
1.0345	0.366 753 43	1.056 633 23	30 39 31.3	10 13 10.4	10 11 40.6	0 1 29.8
1.0350	0.367 128 04	1.057 628 74	30 41 18.0	10 13 46.0	10 12 15.9	0 1 30.1
1.0355	0.367 502 90	1.058 624 65	30 43 4.8	10 14 21.6	10 12 51.3	0 1 30.3
1.0360	0.367 877 99	1.059 620 97	30 44 51.6	10 14 57.2	10 13 26.6	0 1 30.6
1.0365	0.368 253 32	1.060 617 70	30 46 38.5	10 15 32.8	10 14 2.0	0 1 30.9
1.0370	0.368 628 90	1.061 614 83	30 48 25.4	10 16 8.5	10 14 37.3	0 1 31.1
1.0375	0.369 004 72	1.062 612 36	30 50 12.4	10 16 44.1	10 15 12.7	0 1 31.4
1.0380	0.369 380 78	1.063 610 30	30 51 59.4	10 17 19.8	10 15 48.1	0 1 31.6
1.0385	0.369 757 08	1.064 608 64	30 53 46.5	10 17 55.5	10 16 23.6	0 1 31.9
1.0390	0.370 133 63	1.065 607 39	30 55 33.6	10 18 31.2	10 16 59.0	0 1 32.2
1.0395	0.370 510 42	1.066 606 54	30 57 20.8	10 19 6.9	10 17 34.5	0 1 32.4
1.0400	0.370 887 45	1.067 606 10	30 59 8.0	10 19 42.7	10 18 10.0	0 1 32.7

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.0405	1.082 640 25	1.051 343 39	0.191 300 77	0.536 075 57	0.048 329 98	0.733 158 68
1.0410	1.083 681 00	1.052 294 62	0.191 661 01	0.536 580 88	0.048 421 97	0.733 886 06
1.0415	1.084 722 25	1.053 246 13	0.192 021 74	0.537 086 42	0.048 514 09	0.734 613 85
1.0420	1.085 764 00	1.054 197 93	0.192 382 96	0.537 592 16	0.048 606 34	0.735 342 05
1.0425	1.086 806 25	1.055 150 02	0.192 744 67	0.538 098 12	0.048 698 72	0.736 070 68
1.0430	1.087 849 00	1.056 102 40	0.193 106 87	0.538 604 30	0.048 791 23	0.736 799 72
1.0435	1.088 892 25	1.057 055 06	0.193 469 56	0.539 110 68	0.048 883 86	0.737 529 18
1.0440	1.089 936 00	1.058 008 01	0.193 832 75	0.539 617 29	0.048 976 63	0.738 259 06
1.0445	1.090 980 25	1.058 961 25	0.194 196 43	0.540 124 10	0.049 069 53	0.738 989 36
1.0450	1.092 025 00	1.059 914 77	0.194 560 60	0.540 631 13	0.049 162 55	0.739 720 08
1.0455	1.093 070 25	1.060 868 58	0.194 925 26	0.541 138 37	0.049 255 71	0.740 451 21
1.0460	1.094 116 00	1.061 822 67	0.195 290 42	0.541 645 83	0.049 348 99	0.741 182 76
1.0465	1.095 162 25	1.062 777 05	0.195 656 07	0.542 153 50	0.049 442 41	0.741 914 74
1.0470	1.096 209 00	1.063 731 72	0.196 022 21	0.542 661 38	0.049 535 96	0.742 647 13
1.0475	1.097 256 25	1.064 686 66	0.196 388 85	0.543 169 48	0.049 629 63	0.743 379 94
1.0480	1.098 304 00	1.065 641 89	0.196 755 99	0.543 677 79	0.049 723 44	0.744 113 17
1.0485	1.099 352 25	1.066 597 41	0.197 123 62	0.544 186 32	0.049 817 38	0.744 846 81
1.0490	1.100 401 00	1.067 553 20	0.197 491 74	0.544 695 05	0.049 911 45	0.745 580 88
1.0495	1.101 450 25	1.068 509 28	0.197 860 36	0.545 204 00	0.050 005 64	0.746 315 37
1.0500	1.102 500 00	1.069 465 64	0.198 229 48	0.545 713 17	0.050 099 97	0.747 050 28
1.0505	1.103 550 25	1.070 422 28	0.198 599 09	0.546 222 54	0.050 194 43	0.747 785 61
1.0510	1.104 601 00	1.071 379 21	0.198 969 20	0.546 732 13	0.050 289 03	0.748 521 36
1.0515	1.105 652 25	1.072 336 41	0.199 339 81	0.547 241 93	0.050 383 75	0.749 257 53
1.0520	1.106 704 00	1.073 293 89	0.199 710 91	0.547 751 95	0.050 478 60	0.749 994 12
1.0525	1.107 756 25	1.074 251 66	0.200 082 52	0.548 262 17	0.050 573 59	0.750 731 13
1.0530	1.108 809 00	1.075 209 70	0.200 454 62	0.548 772 61	0.050 668 70	0.751 468 57
1.0535	1.109 862 25	1.076 168 03	0.200 827 22	0.549 283 26	0.050 763 95	0.752 206 42
1.0540	1.110 916 00	1.077 126 63	0.201 200 32	0.549 794 13	0.050 859 33	0.752 944 70
1.0545	1.111 970 25	1.078 085 51	0.201 573 92	0.550 305 21	0.050 954 85	0.753 683 40
1.0550	1.113 025 00	1.079 044 67	0.201 948 02	0.550 816 50	0.051 050 49	0.754 422 52
1.0555	1.114 080 25	1.080 004 10	0.202 322 62	0.551 328 00	0.051 146 27	0.755 162 06
1.0560	1.115 136 00	1.080 963 82	0.202 697 72	0.551 839 71	0.051 242 17	0.755 902 02
1.0565	1.116 192 25	1.081 923 81	0.203 073 33	0.552 351 64	0.051 338 21	0.756 642 41
1.0570	1.117 249 00	1.082 884 07	0.203 449 43	0.552 863 78	0.051 434 39	0.757 383 22
1.0575	1.118 306 25	1.083 844 61	0.203 826 04	0.553 376 13	0.051 530 69	0.758 124 45
1.0580	1.119 364 00	1.084 805 43	0.204 203 14	0.553 888 69	0.051 627 13	0.758 866 11
1.0585	1.120 422 25	1.085 766 52	0.204 580 76	0.554 401 46	0.051 723 70	0.759 608 19
1.0590	1.121 481 00	1.086 727 89	0.204 958 87	0.554 914 45	0.051 820 40	0.760 3 0 69
1.0595	1.122 540 25	1.087 689 53	0.205 337 49	0.555 427 64	0.051 917 24	0.761 093 62
1.0600	1.123 600 00	1.088 651 45	0.205 716 61	0.555 941 05	0.052 014 21	0.761 836 97
1.0605	1.124 660 25	1.089 613 64	0.206 096 23	0.556 454 67	0.052 111 31	0.762 580 74
1.0610	1.125 721 00	1.090 576 10	0.206 476 36	0.556 968 51	0.052 208 55	0.763 324 94
1.0615	1.126 782 25	1.091 538 84	0.206 856 99	0.557 482 55	0.052 305 92	0.764 069 56
1.0620	1.127 844 00	1.092 501 84	0.207 238 13	0.557 996 80	0.052 403 42	0.764 814 61
1.0625	1.128 906 25	1.093 465 12	0.207 619 78	0.558 511 27	0.052 501 06	0.765 560 08
1.0630	1.129 969 00	1.094 428 67	0.208 001 93	0.559 025 95	0.052 598 83	0.766 305 98
1.0635	1.131 032 25	1.095 392 49	0.208 384 59	0.559 540 84	0.052 696 73	0.767 052 30
1.0640	1.132 096 00	1.096 356 59	0.208 767 75	0.560 055 94	0.052 794 77	0.767 799 05
1.0645	1.133 160 25	1.097 320 95	0.209 151 42	0.560 571 25	0.052 892 94	0.768 546 22
1.0650	1.134 225 00	1.098 285 58	0.209 535 60	0.561 086 77	0.052 991 25	0.769 293 82
1.0655	1.135 290 25	1.099 250 48	0.209 920 28	0.561 602 50	0.053 089 69	0.770 041 84
1.0660	1.136 356 00	1.100 215 65	0.210 305 48	0.562 118 44	0.053 188 27	0.770 790 29
1.0665	1.137 422 25	1.101 181 09	0.210 691 18	0.562 634 60	0.053 286 97	0.771 539 17
1.0670	1.138 489 00	1.102 146 80	0.211 077 39	0.563 150 96	0.053 385 82	0.772 288 47
1.0675	1.139 556 25	1.103 112 78	0.211 464 11	0.563 667 54	0.053 484 80	0.773 038 20
1.0680	1.140 624 00	1.104 079 02	0.211 851 34	0.564 184 32	0.053 583 91	0.773 788 36
1.0685	1.141 692 25	1.105 045 53	0.212 239 08	0.564 701 32	0.053 683 16	0.774 538 94
1.0690	1.142 761 00	1.106 012 31	0.212 627 33	0.565 218 53	0.053 782 54	0.775 289 95
1.0695	1.143 830 25	1.106 979 35	0.213 016 09	0.565 735 94	0.053 882 06	0.776 041 39
1.0700	1.144 900 00	1.107 946 65	0.213 405 37	0.566 253 57	0.053 981 72	0.776 793 26
1.0705	1.145 970 25	1.108 914 23	0.213 795 15	0.566 771 41	0.054 081 51	0.777 545 55
1.0710	1.147 041 00	1.109 882 07	0.214 185 45	0.567 289 45	0.054 181 43	0.778 298 27
1.0715	1.148 112 25	1.110 850 17	0.214 576 25	0.567 807 71	0.054 281 49	0.779 051 42
1.0720	1.149 184 00	1.111 818 53	0.214 967 57	0.568 326 18	0.054 381 69	0.779 805 00
1.0725	1.150 256 25	1.112 787 16	0.215 359 41	0.568 844 86	0.054 482 02	0.780 559 01
1.0730	1.151 329 00	1.113 756 06	0.215 751 75	0.569 363 74	0.054 582 49	0.781 313 44
1.0735	1.152 402 25	1.114 725 21	0.216 144 61	0.569 882 84	0.054 683 10	0.782 068 31
1.0740	1.153 476 00	1.115 694 63	0.216 537 99	0.570 402 15	0.054 783 84	0.782 823 60
1.0745	1.154 550 25	1.116 664 31	0.216 931 88	0.570 921 66	0.054 884 72	0.783 579 33
1.0750	1.155 625 00	1.117 634 25	0.217 326 28	0.571 441 39	0.054 985 73	0.784 335 48
1.0755	1.156 700 25	1.118 604 45	0.217 721 20	0.571 961 32	0.055 086 88	0.785 092 06
1.0760	1.157 776 00	1.119 574 92	0.218 116 63	0.572 481 46	0.055 188 17	0.785 849 07
1.0765	1.158 852 25	1.120 545 64	0.218 512 58	0.573 001 82	0.055 289 59	0.786 606 52
1.0770	1.159 929 00	1.121 516 62	0.218 909 05	0.573 522 38	0.055 391 15	0.787 364 39
1.0775	1.161 006 25	1.122 487 86	0.219 306 03	0.574 043 15	0.055 492 85	0.788 122 69
1.0780	1.162 084 00	1.123 459 37	0.219 703 53	0.574 564 13	0.055 594 68	0.788 881 43
1.0785	1.163 162 25	1.124 431 13	0.220 101 55	0.575 085 32	0.055 696 66	0.789 640 59
1.0790	1.164 241 00	1.125 403 14	0.220 500 08	0.575 606 72	0.055 798 76	0.790 400 19
1.0795	1.165 320 25	1.126 375 42	0.220 899 13	0.576 128 33	0.055 901 01	0.791 160 21
1.0800	1.166 400 00	1.127 347 95	0.221 298 70	0.576 650 14	0.056 003 40	0.791 920 67

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
			DEG MNT SEC			
1.0405	0.371 264 72	1.068 606 06	31 0 55.3	10 20 18.4	10 18 45.4	0 1 33.0
1.0410	0.371 642 24	1.069 606 42	31 2 42.6	10 20 54.2	10 19 21.0	0 1 33.3
1.0415	0.372 020 00	1.070 607 19	31 4 30.0	10 21 30.0	10 19 56.5	0 1 33.5
1.0420	0.372 398 00	1.071 608 36	31 6 17.5	10 22 5.8	10 20 32.0	0 1 33.8
1.0425	0.372 776 25	1.072 609 94	31 8 4.9	10 22 41.6	10 21 7.6	0 1 34.1
1.0430	0.373 154 74	1.073 611 91	31 9 52.5	10 23 17.5	10 21 43.2	0 1 34.3
1.0435	0.373 533 48	1.074 614 29	31 11 40.1	10 23 53.4	10 22 18.7	0 1 34.6
1.0440	0.373 912 46	1.075 617 07	31 13 27.7	10 24 29.2	10 22 54.4	0 1 34.9
1.0445	0.374 291 68	1.076 620 26	31 15 15.4	10 25 5.1	10 23 30.0	0 1 35.2
1.0450	0.374 671 15	1.077 623 84	31 17 3.2	10 25 41.1	10 24 5.6	0 1 35.4
1.0455	0.375 050 86	1.078 627 83	31 18 51.0	10 26 17.0	10 24 41.3	0 1 35.7
1.0460	0.375 430 82	1.079 632 22	31 20 38.8	10 26 52.9	10 25 16.9	0 1 36.0
1.0465	0.375 811 02	1.080 637 02	31 22 26.7	10 27 28.9	10 25 52.6	0 1 36.3
1.0470	0.376 191 47	1.081 642 21	31 24 14.7	10 28 4.9	10 26 28.3	0 1 36.5
1.0475	0.376 572 16	1.082 647 81	31 26 2.7	10 28 40.9	10 27 4.1	0 1 36.8
1.0480	0.376 953 10	1.083 653 80	31 27 50.7	10 29 16.9	10 27 39.8	0 1 37.1
1.0485	0.377 334 28	1.084 660 20	31 29 38.8	10 29 52.9	10 28 15.6	0 1 37.4
1.0490	0.377 715 71	1.085 667 00	31 31 27.0	10 30 29.0	10 28 51.3	0 1 37.7
1.0495	0.378 097 39	1.086 674 19	31 33 15.2	10 31 5.1	10 29 27.1	0 1 37.9
1.0500	0.378 479 31	1.087 681 78	31 35 3.5	10 31 41.2	10 30 2.9	0 1 38.2
1.0505	0.378 861 48	1.088 689 79	31 36 51.8	10 32 17.3	10 30 38.8	0 1 38.5
1.0510	0.379 243 89	1.089 698 19	31 38 40.2	10 32 53.4	10 31 14.6	0 1 38.8
1.0515	0.379 626 56	1.090 706 99	31 40 28.6	10 33 29.5	10 31 50.5	0 1 39.1
1.0520	0.380 009 46	1.091 716 19	31 42 17.0	10 34 5.7	10 32 26.3	0 1 39.4
1.0525	0.380 392 62	1.092 725 79	31 44 5.6	10 34 41.9	10 33 2.2	0 1 39.6
1.0530	0.380 776 02	1.093 735 78	31 45 54.1	10 35 18.0	10 33 38.1	0 1 39.9
1.0535	0.381 159 67	1.094 746 18	31 47 42.8	10 35 54.3	10 34 14.0	0 1 40.2
1.0540	0.381 543 57	1.095 756 97	31 49 31.4	10 36 30.5	10 34 50.0	0 1 40.5
1.0545	0.381 927 71	1.096 768 17	31 51 20.2	10 37 6.7	10 35 25.9	0 1 40.8
1.0550	0.382 312 10	1.097 779 76	31 53 8.9	10 37 43.0	10 36 1.9	0 1 41.1
1.0555	0.382 696 74	1.098 791 75	31 54 57.8	10 38 19.3	10 36 37.9	0 1 41.4
1.0560	0.383 081 63	1.099 804 14	31 56 46.7	10 38 55.6	10 37 13.9	0 1 41.7
1.0565	0.383 466 77	1.100 816 92	31 58 35.6	10 39 31.9	10 37 49.9	0 1 41.9
1.0570	0.383 852 15	1.101 830 11	32 0 24.6	10 40 8.2	10 38 26.0	0 1 42.2
1.0575	0.384 237 78	1.102 843 69	32 2 13.6	10 40 44.5	10 39 2.0	0 1 42.5
1.0580	0.384 623 67	1.103 857 67	32 4 2.7	10 41 20.9	10 39 38.1	0 1 42.8
1.0585	0.385 009 80	1.104 872 04	32 5 51.8	10 41 57.3	10 40 14.2	0 1 43.1
1.0590	0.385 396 18	1.105 886 82	32 7 41.0	10 42 33.7	10 40 50.3	0 1 43.4
1.0595	0.385 782 81	1.106 901 99	32 9 30.3	10 43 10.1	10 41 26.4	0 1 43.7
1.0600	0.386 169 69	1.107 917 55	32 11 19.6	10 43 46.5	10 42 2.5	0 1 44.0
1.0605	0.386 556 82	1.108 933 51	32 13 8.9	10 44 23.0	10 42 38.7	0 1 44.3
1.0610	0.386 944 19	1.109 949 87	32 14 58.3	10 44 59.4	10 43 14.8	0 1 44.6
1.0615	0.387 331 82	1.110 966 63	32 16 47.8	10 45 35.9	10 43 51.0	0 1 44.9
1.0620	0.387 719 70	1.111 983 78	32 18 37.3	10 46 12.4	10 44 27.2	0 1 45.2
1.0625	0.388 107 83	1.113 001 32	32 20 26.8	10 46 48.9	10 45 3.4	0 1 45.5
1.0630	0.388 496 21	1.114 019 27	32 22 16.4	10 47 25.5	10 45 39.7	0 1 45.8
1.0635	0.388 884 84	1.115 037 60	32 24 6.1	10 48 2.0	10 46 15.9	0 1 46.1
1.0640	0.389 273 72	1.116 056 33	32 25 55.8	10 48 38.6	10 46 52.2	0 1 46.4
1.0645	0.389 662 85	1.117 075 46	32 27 45.5	10 49 15.2	10 47 28.5	0 1 46.7
1.0650	0.390 052 24	1.118 094 98	32 29 35.3	10 49 51.8	10 48 4.8	0 1 47.0
1.0655	0.390 441 87	1.119 114 90	32 31 25.2	10 50 28.4	10 48 41.1	0 1 47.3
1.0660	0.390 831 76	1.120 135 21	32 33 15.1	10 51 5.0	10 49 17.4	0 1 47.6
1.0665	0.391 221 90	1.121 155 91	32 35 5.1	10 51 41.7	10 49 53.8	0 1 47.9
1.0670	0.391 612 29	1.122 177 01	32 36 55.1	10 52 18.4	10 50 30.2	0 1 48.2
1.0675	0.392 002 93	1.123 198 50	32 38 45.2	10 52 55.1	10 51 6.5	0 1 48.5
1.0680	0.392 393 82	1.124 220 38	32 40 35.3	10 53 31.8	10 51 42.9	0 1 48.8
1.0685	0.392 784 97	1.125 242 66	32 42 25.5	10 54 8.5	10 52 19.4	0 1 49.1
1.0690	0.393 176 37	1.126 265 33	32 44 15.7	10 54 45.2	10 52 55.8	0 1 49.4
1.0695	0.393 568 02	1.127 288 40	32 46 6.0	10 55 22.0	10 53 32.2	0 1 49.8
1.0700	0.393 959 93	1.128 311 85	32 47 56.3	10 55 58.8	10 54 8.7	0 1 50.1
1.0705	0.394 352 08	1.129 335 70	32 49 46.7	10 56 35.6	10 54 45.2	0 1 50.4
1.0710	0.394 744 50	1.130 359 94	32 51 37.1	10 57 12.4	10 55 21.7	0 1 50.7
1.0715	0.395 137 16	1.131 384 58	32 53 27.6	10 57 49.2	10 55 58.2	0 1 51.0
1.0720	0.395 530 08	1.132 409 60	32 55 18.1	10 58 26.0	10 56 34.7	0 1 51.3
1.0725	0.395 923 25	1.133 435 02	32 57 8.7	10 59 2.9	10 57 11.3	0 1 51.6
1.0730	0.396 316 68	1.134 460 83	32 58 59.3	10 59 39.8	10 57 47.8	0 1 51.9
1.0735	0.396 710 36	1.135 487 03	33 0 50.0	11 0 16.7	10 58 24.4	0 1 52.3
1.0740	0.397 104 30	1.136 513 62	33 2 40.8	11 0 53.6	10 59 1.0	0 1 52.6
1.0745	0.397 498 49	1.137 540 60	33 4 31.5	11 1 30.5	10 59 37.6	0 1 52.9
1.0750	0.397 892 93	1.138 567 97	33 6 22.4	11 2 7.5	11 0 14.3	0 1 53.2
1.0755	0.398 287 63	1.139 595 74	33 8 13.3	11 2 44.4	11 0 50.9	0 1 53.5
1.0760	0.398 682 59	1.140 623 89	33 10 4.2	11 3 21.4	11 1 27.6	0 1 53.8
1.0765	0.399 077 80	1.141 652 43	33 11 55.2	11 3 58.4	11 2 4.2	0 1 54.2
1.0770	0.399 473 26	1.142 681 37	33 13 46.3	11 4 35.4	11 2 40.9	0 1 54.5
1.0775	0.399 868 98	1.143 710 69	33 15 37.4	11 5 12.5	11 3 17.7	0 1 54.8
1.0780	0.400 264 96	1.144 740 40	33 17 28.5	11 5 49.5	11 3 54.4	0 1 55.1
1.0785	0.400 661 19	1.145 770 50	33 19 19.7	11 6 26.6	11 4 31.1	0 1 55.4
1.0790	0.401 057 68	1.146 800 99	33 21 11.0	11 7 3.7	11 5 7.9	0 1 55.8
1.0795	0.401 454 43	1.147 831 87	33 23 2.3	11 7 40.8	11 5 44.7	0 1 56.1
1.0800	0.401 851 43	1.148 863 14	33 24 53.6	11 8 17.9	11 6 21.5	0 1 56.4

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.0805	1.167 480 25	1.128 320 74	0.221 698 79	0.577 172 17	0.056 105 92	0.792 681 57
1.0810	1.168 561 00	1.129 293 79	0.222 099 40	0.577 694 40	0.056 208 58	0.793 442 89
1.0815	1.169 642 25	1.130 267 09	0.222 500 53	0.578 216 84	0.056 311 38	0.794 204 64
1.0820	1.170 724 00	1.131 240 64	0.222 902 18	0.578 739 49	0.056 414 31	0.794 966 83
1.0825	1.171 806 25	1.132 214 46	0.223 304 34	0.579 262 35	0.056 517 38	0.795 729 45
1.0830	1.172 889 00	1.133 188 52	0.223 707 03	0.579 785 42	0.056 620 60	0.796 492 50
1.0835	1.173 972 25	1.134 162 84	0.224 110 24	0.580 308 69	0.056 723 95	0.797 255 99
1.0840	1.175 056 00	1.135 137 42	0.224 513 97	0.580 832 18	0.056 827 44	0.798 019 91
1.0845	1.176 140 25	1.136 112 25	0.224 918 22	0.581 355 87	0.056 931 06	0.798 784 26
1.0850	1.177 225 00	1.137 087 33	0.225 323 00	0.581 879 77	0.057 034 83	0.799 549 05
1.0855	1.178 310 25	1.138 062 66	0.225 728 30	0.582 403 88	0.057 138 73	0.800 314 27
1.0860	1.179 396 00	1.139 038 24	0.226 134 12	0.582 928 19	0.057 242 78	0.801 079 92
1.0865	1.180 482 25	1.140 014 08	0.226 540 46	0.583 452 71	0.057 346 96	0.801 846 01
1.0870	1.181 569 00	1.140 990 17	0.226 947 32	0.583 977 44	0.057 451 28	0.802 612 53
1.0875	1.182 656 25	1.141 966 51	0.227 354 71	0.584 502 38	0.057 555 74	0.803 379 49
1.0880	1.183 744 00	1.142 943 10	0.227 762 63	0.585 027 53	0.057 660 34	0.804 146 88
1.0885	1.184 832 25	1.143 919 94	0.228 171 07	0.585 552 88	0.057 765 08	0.804 914 70
1.0890	1.185 921 00	1.144 897 02	0.228 580 03	0.586 078 44	0.057 869 96	0.805 682 97
1.0895	1.187 010 25	1.145 874 36	0.228 989 52	0.586 604 21	0.057 974 98	0.806 451 66
1.0900	1.188 100 00	1.146 851 95	0.229 399 53	0.587 130 19	0.058 080 14	0.807 220 80
1.0905	1.189 190 25	1.147 829 78	0.229 810 08	0.587 656 37	0.058 185 44	0.807 990 36
1.0910	1.190 281 00	1.148 807 86	0.230 221 14	0.588 182 76	0.058 290 88	0.808 760 37
1.0915	1.191 372 25	1.149 786 19	0.230 632 74	0.588 709 35	0.058 396 46	0.809 530 81
1.0920	1.192 464 00	1.150 764 77	0.231 044 86	0.589 236 16	0.058 502 18	0.810 301 69
1.0925	1.193 556 25	1.151 743 59	0.231 457 50	0.589 763 17	0.058 608 04	0.811 073 00
1.0930	1.194 649 00	1.152 722 66	0.231 870 68	0.590 290 39	0.058 714 04	0.811 844 75
1.0935	1.195 742 25	1.153 701 97	0.232 284 38	0.590 817 81	0.058 820 18	0.812 616 94
1.0940	1.196 836 00	1.154 681 53	0.232 698 62	0.591 345 44	0.058 926 46	0.813 389 57
1.0945	1.197 930 25	1.155 661 33	0.233 113 38	0.591 873 28	0.059 032 89	0.814 162 63
1.0950	1.199 025 00	1.156 641 38	0.233 528 67	0.592 401 32	0.059 139 45	0.814 936 13
1.0955	1.200 120 25	1.157 621 67	0.233 944 49	0.592 929 57	0.059 246 15	0.815 710 07
1.0960	1.201 216 00	1.158 602 20	0.234 360 84	0.593 458 03	0.059 353 00	0.816 484 44
1.0965	1.202 312 25	1.159 582 98	0.234 777 72	0.593 986 69	0.059 459 99	0.817 259 26
1.0970	1.203 409 00	1.160 563 99	0.235 195 13	0.594 515 56	0.059 567 12	0.818 034 51
1.0975	1.204 506 25	1.161 545 26	0.235 613 07	0.595 044 63	0.059 674 39	0.818 810 21
1.0980	1.205 604 00	1.162 526 76	0.236 031 55	0.595 573 91	0.059 781 80	0.819 586 34
1.0985	1.206 702 25	1.163 508 50	0.236 450 55	0.596 103 40	0.059 889 35	0.820 362 91
1.0990	1.207 801 00	1.164 490 48	0.236 870 09	0.596 633 09	0.059 997 05	0.821 139 92
1.0995	1.208 900 25	1.165 472 71	0.237 290 16	0.597 162 99	0.060 104 88	0.821 917 37
1.1000	1.210 000 00	1.166 455 17	0.237 710 77	0.597 693 10	0.060 212 86	0.822 695 26
1.1005	1.211 100 25	1.167 437 87	0.238 131 90	0.598 223 40	0.060 320 98	0.823 473 59
1.1010	1.212 201 00	1.168 420 82	0.238 553 57	0.598 753 92	0.060 429 25	0.824 252 36
1.1015	1.213 302 25	1.169 403 99	0.238 975 77	0.599 284 64	0.060 537 65	0.825 031 57
1.1020	1.214 404 00	1.170 387 41	0.239 398 51	0.599 815 57	0.060 646 20	0.825 811 22
1.1025	1.215 506 25	1.171 371 07	0.239 821 78	0.600 346 70	0.060 754 89	0.826 591 31
1.1030	1.216 609 00	1.172 354 96	0.240 245 59	0.600 878 04	0.060 863 73	0.827 371 84
1.1035	1.217 712 25	1.173 339 09	0.240 669 94	0.601 409 58	0.060 972 71	0.828 152 82
1.1040	1.218 816 00	1.174 323 45	0.241 094 81	0.601 941 32	0.061 081 83	0.828 934 23
1.1045	1.219 920 25	1.175 308 05	0.241 520 23	0.602 473 28	0.061 191 09	0.829 716 09
1.1050	1.221 025 00	1.176 292 89	0.241 946 18	0.603 005 43	0.061 300 49	0.830 498 39
1.1055	1.222 130 25	1.177 277 96	0.242 372 67	0.603 537 79	0.061 410 04	0.831 281 13
1.1060	1.223 236 00	1.178 263 26	0.242 799 69	0.604 070 36	0.061 519 74	0.832 064 32
1.1065	1.224 342 25	1.179 248 80	0.243 227 25	0.604 603 13	0.061 629 57	0.832 847 95
1.1070	1.225 449 00	1.180 234 57	0.243 655 35	0.605 136 11	0.061 739 55	0.833 632 02
1.1075	1.226 556 25	1.181 220 57	0.244 083 99	0.605 669 29	0.061 849 68	0.834 416 53
1.1080	1.227 664 00	1.182 206 81	0.244 513 17	0.606 202 67	0.061 959 95	0.835 201 49
1.1085	1.228 772 25	1.183 193 28	0.244 942 88	0.606 736 26	0.062 070 36	0.835 986 89
1.1090	1.229 881 00	1.184 179 98	0.245 373 14	0.607 270 05	0.062 180 91	0.836 772 73
1.1095	1.230 990 25	1.185 166 91	0.245 803 93	0.607 804 05	0.062 291 61	0.837 559 02
1.1100	1.232 100 00	1.186 154 07	0.246 235 27	0.608 338 25	0.062 402 46	0.838 345 75
1.1105	1.233 210 25	1.187 141 46	0.246 667 14	0.608 872 66	0.062 513 45	0.839 132 93
1.1110	1.234 321 00	1.188 129 08	0.247 099 56	0.609 407 27	0.062 624 58	0.839 920 55
1.1115	1.235 432 25	1.189 116 93	0.247 532 51	0.609 942 08	0.062 735 86	0.840 708 62
1.1120	1.236 544 00	1.190 105 01	0.247 966 01	0.610 477 10	0.062 847 28	0.841 497 13
1.1125	1.237 656 25	1.191 093 32	0.248 400 05	0.611 012 32	0.062 958 85	0.842 286 08
1.1130	1.238 769 00	1.192 081 85	0.248 834 63	0.611 547 74	0.063 070 56	0.843 075 49
1.1135	1.239 882 25	1.193 070 62	0.249 269 76	0.612 083 37	0.063 182 42	0.843 865 34
1.1140	1.240 996 00	1.194 059 60	0.249 705 42	0.612 619 20	0.063 294 43	0.844 655 63
1.1145	1.242 110 25	1.195 048 82	0.250 141 63	0.613 155 24	0.063 406 57	0.845 446 37
1.1150	1.243 225 00	1.196 038 26	0.250 578 39	0.613 691 48	0.063 518 87	0.846 237 56
1.1155	1.244 340 25	1.197 027 93	0.251 015 69	0.614 227 92	0.063 631 31	0.847 029 19
1.1160	1.245 456 00	1.198 017 82	0.251 453 53	0.614 764 56	0.063 743 89	0.847 821 27
1.1165	1.246 572 25	1.199 007 94	0.251 891 91	0.615 301 41	0.063 856 62	0.848 613 80
1.1170	1.247 689 00	1.199 998 28	0.252 330 84	0.615 838 46	0.063 969 50	0.849 406 77
1.1175	1.248 806 25	1.200 988 84	0.252 770 32	0.616 375 72	0.064 082 53	0.850 200 20
1.1180	1.249 924 00	1.201 979 63	0.253 210 34	0.616 913 17	0.064 195 69	0.850 994 07
1.1185	1.251 042 25	1.202 970 64	0.253 650 91	0.617 450 83	0.064 309 01	0.851 788 39
1.1190	1.252 161 00	1.203 961 87	0.254 092 02	0.617 988 70	0.064 422 47	0.852 583 15
1.1195	1.253 280 25	1.204 953 33	0.254 533 68	0.618 526 76	0.064 536 08	0.853 378 37
1.1200	1.254 400 00	1.205 945 00	0.254 975 89	0.619 065 03	0.064 649 84	0.854 174 03

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
			DEG MNT SEC			
1.0805	0.402 248 69	1.149 894 80	33 26 45.0	11 8 55.0	11 6 58.3	0 1 56.7
1.0810	0.402 646 21	1.150 926 84	33 28 36.5	11 9 32.2	11 7 35.1	0 1 57.1
1.0815	0.403 043 98	1.151 959 28	33 30 28.0	11 10 9.3	11 8 11.9	0 1 57.4
1.0820	0.403 442 01	1.152 992 10	33 32 19.6	11 10 46.5	11 8 48.8	0 1 57.7
1.0825	0.403 840 30	1.154 025 30	33 34 11.2	11 11 23.7	11 9 25.7	0 1 58.1
1.0830	0.404 238 85	1.155 058 90	33 36 2.9	11 12 1.0	11 10 2.6	0 1 58.4
1.0835	0.404 637 65	1.156 092 88	33 37 54.6	11 12 38.2	11 10 39.5	0 1 58.7
1.0840	0.405 036 71	1.157 127 25	33 39 46.3	11 13 15.4	11 11 16.4	0 1 59.0
1.0845	0.405 436 03	1.158 162 01	33 41 38.7	11 13 52.7	11 11 53.4	0 1 59.4
1.0850	0.405 835 61	1.159 197 15	33 43 30.0	11 14 30.0	11 12 30.3	0 1 59.7
1.0855	0.406 235 45	1.160 232 68	33 45 22.0	11 15 7.3	11 13 7.3	0 2 0.0
1.0860	0.406 635 55	1.161 268 60	33 47 13.9	11 15 44.6	11 13 44.3	0 2 0.4
1.0865	0.407 035 90	1.162 304 90	33 49 6.0	11 16 22.0	11 14 21.3	0 2 0.7
1.0870	0.407 436 52	1.163 341 59	33 50 58.1	11 16 59.4	11 14 58.3	0 2 1.0
1.0875	0.407 837 39	1.164 378 66	33 52 50.2	11 17 35.7	11 15 35.3	0 2 1.4
1.0880	0.408 238 53	1.165 416 12	33 54 42.4	11 18 14.1	11 16 12.4	0 2 1.7
1.0885	0.408 639 92	1.166 453 97	33 56 34.6	11 18 51.5	11 16 49.5	0 2 2.1
1.0890	0.409 041 57	1.167 492 20	33 58 26.9	11 19 29.0	11 17 26.6	0 2 2.4
1.0895	0.409 443 49	1.168 530 81	34 0 19.2	11 20 6.4	11 18 3.7	0 2 2.7
1.0900	0.409 845 66	1.169 569 81	34 2 11.6	11 20 43.9	11 18 40.8	0 2 3.1
1.0905	0.410 248 10	1.170 609 19	34 4 4.0	11 21 21.3	11 19 17.9	0 2 3.4
1.0910	0.410 650 79	1.171 648 96	34 5 56.5	11 21 58.8	11 19 55.1	0 2 3.8
1.0915	0.411 053 75	1.172 689 11	34 7 49.1	11 22 36.4	11 20 32.3	0 2 4.1
1.0920	0.411 456 96	1.173 729 64	34 9 41.7	11 23 13.9	11 21 9.5	0 2 4.4
1.0925	0.411 860 44	1.174 770 56	34 11 34.3	11 23 51.4	11 21 46.7	0 2 4.8
1.0930	0.412 264 18	1.175 811 86	34 13 27.0	11 24 29.0	11 22 23.9	0 2 5.1
1.0935	0.412 668 19	1.176 853 55	34 15 19.8	11 25 6.6	11 23 1.1	0 2 5.5
1.0940	0.413 072 45	1.177 895 61	34 17 12.6	11 25 44.2	11 23 38.4	0 2 5.8
1.0945	0.413 476 98	1.178 938 06	34 19 5.4	11 26 21.8	11 24 15.6	0 2 6.2
1.0950	0.413 881 76	1.179 980 89	34 20 58.3	11 26 59.4	11 24 52.9	0 2 6.5
1.0955	0.414 286 82	1.181 024 11	34 22 51.3	11 27 37.1	11 25 30.2	0 2 6.9
1.0960	0.414 692 13	1.182 067 71	34 24 44.3	11 28 14.8	11 26 7.5	0 2 7.2
1.0965	0.415 097 71	1.183 111 68	34 26 37.4	11 28 52.5	11 26 44.9	0 2 7.6
1.0970	0.415 503 55	1.184 156 04	34 28 30.5	11 29 30.2	11 27 22.2	0 2 7.9
1.0975	0.415 909 65	1.185 200 79	34 30 23.6	11 30 7.9	11 27 59.6	0 2 8.3
1.0980	0.416 316 01	1.186 245 91	34 32 16.8	11 30 45.6	11 28 37.0	0 2 8.6
1.0985	0.416 722 65	1.187 291 41	34 34 10.1	11 31 23.4	11 29 14.4	0 2 9.0
1.0990	0.417 129 54	1.188 337 30	34 36 3.4	11 32 1.1	11 29 51.8	0 2 9.3
1.0995	0.417 536 70	1.189 383 56	34 37 56.8	11 32 38.9	11 30 29.2	0 2 9.7
1.1000	0.417 944 12	1.190 430 21	34 39 50.2	11 33 16.7	11 31 6.7	0 2 10.0
1.1005	0.418 351 81	1.191 477 23	34 41 43.7	11 33 54.6	11 31 44.2	0 2 10.4
1.1010	0.418 759 76	1.192 524 64	34 43 37.2	11 34 32.4	11 32 21.6	0 2 10.8
1.1015	0.419 167 97	1.193 572 42	34 45 30.8	11 35 10.3	11 32 59.1	0 2 11.1
1.1020	0.419 576 46	1.194 620 59	34 47 24.4	11 35 48.1	11 33 36.7	0 2 11.5
1.1025	0.419 985 20	1.195 669 13	34 49 18.1	11 36 26.0	11 34 14.2	0 2 11.8
1.1030	0.420 394 21	1.196 718 05	34 51 11.8	11 37 3.9	11 34 51.7	0 2 12.2
1.1035	0.420 803 49	1.197 767 35	34 53 5.6	11 37 41.9	11 35 29.3	0 2 12.6
1.1040	0.421 213 04	1.198 817 03	34 54 59.4	11 38 19.8	11 36 6.9	0 2 12.9
1.1045	0.421 622 84	1.199 867 09	34 56 53.3	11 38 57.8	11 36 44.5	0 2 13.3
1.1050	0.422 032 92	1.200 917 53	34 58 47.2	11 39 35.7	11 37 22.1	0 2 13.7
1.1055	0.422 443 26	1.201 968 34	35 0 41.2	11 40 13.7	11 37 59.7	0 2 14.0
1.1060	0.422 853 87	1.203 019 53	35 2 35.3	11 40 51.8	11 38 37.4	0 2 14.4
1.1065	0.423 264 75	1.204 071 10	35 4 29.4	11 41 29.8	11 39 15.0	0 2 14.8
1.1070	0.423 675 89	1.205 123 05	35 6 23.5	11 42 7.8	11 39 52.7	0 2 15.1
1.1075	0.424 087 30	1.206 175 38	35 8 17.7	11 42 45.9	11 40 30.4	0 2 15.5
1.1080	0.424 498 98	1.207 228 08	35 10 11.9	11 43 24.0	11 41 8.1	0 2 15.9
1.1085	0.424 910 93	1.208 281 15	35 12 6.2	11 44 2.1	11 41 45.8	0 2 16.2
1.1090	0.425 323 14	1.209 334 61	35 14 0.6	11 44 40.2	11 42 23.6	0 2 16.6
1.1095	0.425 735 62	1.210 388 44	35 15 55.0	11 45 18.3	11 43 1.4	0 2 17.0
1.1100	0.426 148 37	1.211 442 65	35 17 49.4	11 45 56.5	11 43 39.1	0 2 17.3
1.1105	0.426 561 35	1.212 497 23	35 19 43.9	11 46 34.6	11 44 16.9	0 2 17.7
1.1110	0.426 974 68	1.213 552 19	35 21 38.5	11 47 12.8	11 44 54.7	0 2 18.1
1.1115	0.427 388 23	1.214 607 52	35 23 33.1	11 47 51.0	11 45 32.6	0 2 18.5
1.1120	0.427 802 06	1.215 663 23	35 25 27.8	11 48 29.3	11 46 10.4	0 2 18.8
1.1125	0.428 216 15	1.216 719 31	35 27 22.5	11 49 7.5	11 46 48.3	0 2 19.2
1.1130	0.428 630 52	1.217 775 77	35 29 17.2	11 49 45.7	11 47 26.1	0 2 19.6
1.1135	0.429 045 15	1.218 832 60	35 31 12.0	11 50 24.0	11 48 4.0	0 2 20.0
1.1140	0.429 460 05	1.219 889 81	35 33 6.9	11 51 2.3	11 48 41.9	0 2 20.4
1.1145	0.429 875 23	1.220 947 39	35 35 1.8	11 51 40.6	11 49 19.9	0 2 20.7
1.1150	0.430 290 67	1.222 005 34	35 36 56.8	11 52 18.9	11 49 57.8	0 2 21.1
1.1155	0.430 706 39	1.223 063 67	35 38 51.8	11 52 57.3	11 50 35.8	0 2 21.5
1.1160	0.431 122 37	1.224 122 37	35 40 46.9	11 53 35.6	11 51 13.7	0 2 21.9
1.1165	0.431 538 63	1.225 181 44	35 42 42.0	11 54 14.0	11 51 51.7	0 2 22.3
1.1170	0.431 955 16	1.226 240 89	35 44 37.2	11 54 52.4	11 52 29.7	0 2 22.7
1.1175	0.432 371 96	1.227 300 71	35 46 32.4	11 55 30.8	11 53 7.7	0 2 23.0
1.1180	0.432 789 03	1.228 360 90	35 48 27.7	11 56 9.2	11 53 45.8	0 2 23.4
1.1185	0.433 206 37	1.229 421 47	35 50 23.0	11 56 47.7	11 54 23.8	0 2 23.8
1.1190	0.433 623 98	1.230 482 40	35 52 18.4	11 57 26.1	11 55 1.9	0 2 24.2
1.1195	0.434 041 87	1.231 543 71	35 54 13.8	11 58 4.6	11 55 40.0	0 2 24.6
1.1200	0.434 460 03	1.232 605 39	35 56 9.3	11 58 43.1	11 56 18.1	0 2 25.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.1205	1.255 520 25	1.206 936 CC	0.255 418 65	0.619 603 50	0.064 763 74	0.854 970 15
1.1210	1.256 641 00	1.207 529 C1	0.255 861 95	0.620 142 17	0.064 877 79	0.855 766 71
1.1215	1.257 762 25	1.208 921 35	0.256 305 80	0.620 681 04	0.064 991 98	0.856 563 72
1.1220	1.258 884 00	1.209 913 91	0.256 750 20	0.621 220 12	0.065 106 33	0.857 361 18
1.1225	1.260 006 25	1.210 906 68	0.257 195 15	0.621 759 40	0.065 220 82	0.858 159 10
1.1230	1.261 129 00	1.211 899 67	0.257 640 64	0.622 298 88	0.065 335 45	0.858 957 46
1.1235	1.262 252 25	1.212 892 88	0.258 086 69	0.622 838 56	0.065 450 24	0.859 756 27
1.1240	1.263 376 00	1.213 886 31	0.258 533 29	0.623 378 44	0.065 565 17	0.860 555 53
1.1245	1.264 500 25	1.214 879 96	0.258 980 43	0.623 918 53	0.065 680 25	0.861 355 25
1.1250	1.265 625 00	1.215 873 82	0.259 428 13	0.624 458 82	0.065 795 48	0.862 155 41
1.1255	1.266 750 25	1.216 867 90	0.259 876 38	0.624 999 31	0.065 910 85	0.862 956 03
1.1260	1.267 876 00	1.217 862 19	0.260 325 18	0.625 540 00	0.066 026 37	0.863 757 09
1.1265	1.269 002 25	1.218 856 70	0.260 774 53	0.626 080 89	0.066 142 05	0.864 558 61
1.1270	1.270 129 00	1.219 851 42	0.261 224 43	0.626 621 98	0.066 257 87	0.865 360 59
1.1275	1.271 256 25	1.220 846 36	0.261 674 89	0.627 163 28	0.066 373 83	0.866 163 01
1.1280	1.272 384 00	1.221 841 51	0.262 125 89	0.627 704 77	0.066 489 95	0.866 965 89
1.1285	1.273 512 25	1.222 836 88	0.262 577 45	0.628 246 47	0.066 606 21	0.867 769 21
1.1290	1.274 641 00	1.223 832 45	0.263 029 57	0.628 788 37	0.066 722 63	0.868 573 00
1.1295	1.275 770 25	1.224 828 24	0.263 482 23	0.629 330 47	0.066 839 19	0.869 377 23
1.1300	1.276 900 00	1.225 824 24	0.263 935 45	0.629 872 77	0.066 955 90	0.870 181 92
1.1305	1.278 030 25	1.226 820 45	0.264 389 23	0.630 415 27	0.067 072 76	0.870 987 06
1.1310	1.279 161 00	1.227 816 88	0.264 843 56	0.630 957 97	0.067 189 77	0.871 792 66
1.1315	1.280 292 25	1.228 813 51	0.265 298 45	0.631 500 87	0.067 306 93	0.872 598 71
1.1320	1.281 424 00	1.229 810 35	0.265 753 89	0.632 043 97	0.067 424 24	0.873 405 21
1.1325	1.282 556 25	1.230 807 41	0.266 209 88	0.632 587 27	0.067 541 69	0.874 212 17
1.1330	1.283 689 00	1.231 804 67	0.266 666 43	0.633 130 78	0.067 659 30	0.875 019 59
1.1335	1.284 822 25	1.232 802 14	0.267 123 54	0.633 674 48	0.067 777 06	0.875 827 46
1.1340	1.285 956 00	1.233 799 82	0.267 581 21	0.634 218 38	0.067 894 96	0.876 635 78
1.1345	1.287 090 25	1.234 797 70	0.268 039 43	0.634 762 49	0.068 013 02	0.877 444 56
1.1350	1.288 225 00	1.235 795 79	0.268 498 21	0.635 306 79	0.068 131 23	0.878 253 80
1.1355	1.289 360 25	1.236 794 C9	0.268 957 55	0.635 851 29	0.068 249 58	0.879 063 49
1.1360	1.290 496 00	1.237 792 59	0.269 417 44	0.636 396 00	0.068 368 09	0.879 873 64
1.1365	1.291 632 25	1.238 791 30	0.269 877 90	0.636 940 90	0.068 486 75	0.880 684 25
1.1370	1.292 769 00	1.239 790 22	0.270 338 91	0.637 486 00	0.068 605 55	0.881 495 31
1.1375	1.293 906 25	1.240 789 34	0.270 800 48	0.638 031 31	0.068 724 51	0.882 306 83
1.1380	1.295 044 00	1.241 788 66	0.271 262 61	0.638 576 81	0.068 843 62	0.883 118 81
1.1385	1.296 182 25	1.242 788 19	0.271 725 31	0.639 122 51	0.068 962 88	0.883 931 24
1.1390	1.297 321 00	1.243 787 92	0.272 188 56	0.639 668 41	0.069 082 29	0.884 744 13
1.1395	1.298 460 25	1.244 787 85	0.272 652 37	0.640 214 51	0.069 201 85	0.885 557 48
1.1400	1.299 600 00	1.245 787 98	0.273 116 74	0.640 760 81	0.069 321 56	0.886 371 29
1.1405	1.300 740 25	1.246 788 32	0.273 581 68	0.641 307 30	0.069 441 43	0.887 185 56
1.1410	1.301 881 00	1.247 788 86	0.274 047 17	0.641 854 00	0.069 561 44	0.888 000 28
1.1415	1.303 022 25	1.248 789 59	0.274 513 23	0.642 400 90	0.069 681 61	0.888 815 47
1.1420	1.304 164 00	1.249 790 53	0.274 979 85	0.642 947 99	0.069 801 93	0.889 631 11
1.1425	1.305 306 25	1.250 791 67	0.275 447 03	0.643 495 28	0.069 922 40	0.890 447 22
1.1430	1.306 449 00	1.251 793 CO	0.275 914 78	0.644 042 78	0.070 043 02	0.891 263 78
1.1435	1.307 592 25	1.252 794 54	0.276 383 09	0.644 590 47	0.070 163 79	0.892 080 80
1.1440	1.308 736 00	1.253 796 27	0.276 851 96	0.645 138 35	0.070 284 72	0.892 898 29
1.1445	1.309 880 25	1.254 798 20	0.277 321 39	0.645 686 44	0.070 405 79	0.893 716 23
1.1450	1.311 025 00	1.255 800 33	0.277 791 39	0.646 234 73	0.070 527 02	0.894 534 64
1.1455	1.312 170 25	1.256 802 65	0.278 261 96	0.646 783 21	0.070 648 41	0.895 353 51
1.1460	1.313 316 00	1.257 805 17	0.278 733 09	0.647 331 89	0.070 769 94	0.896 172 83
1.1465	1.314 462 25	1.258 807 89	0.279 204 78	0.647 880 77	0.070 891 63	0.896 992 62
1.1470	1.315 609 00	1.259 810 80	0.279 677 05	0.648 429 85	0.071 013 47	0.897 812 87
1.1475	1.316 756 25	1.260 813 90	0.280 149 87	0.648 979 12	0.071 135 46	0.898 633 59
1.1480	1.317 904 00	1.261 817 20	0.280 623 27	0.649 528 60	0.071 257 61	0.899 454 76
1.1485	1.319 052 25	1.262 820 69	0.281 097 23	0.650 078 27	0.071 379 91	0.900 276 40
1.1490	1.320 201 00	1.263 824 38	0.281 571 75	0.650 628 14	0.071 502 36	0.901 098 50
1.1495	1.321 350 25	1.264 828 26	0.282 046 85	0.651 178 20	0.071 624 97	0.901 921 07
1.1500	1.322 500 00	1.265 832 33	0.282 522 51	0.651 728 47	0.071 747 73	0.902 744 09
1.1505	1.323 650 25	1.266 836 59	0.282 998 74	0.652 278 93	0.071 870 64	0.903 567 58
1.1510	1.324 801 00	1.267 841 C4	0.283 475 54	0.652 829 58	0.071 993 71	0.904 391 54
1.1515	1.325 952 25	1.268 845 69	0.283 952 90	0.653 380 44	0.072 116 93	0.905 215 96
1.1520	1.327 104 00	1.269 850 52	0.284 430 84	0.653 931 49	0.072 240 30	0.906 040 84
1.1525	1.328 256 25	1.270 855 55	0.284 909 34	0.654 482 74	0.072 363 83	0.906 866 19
1.1530	1.329 409 00	1.271 860 76	0.285 388 42	0.655 034 19	0.072 487 51	0.907 692 00
1.1535	1.330 562 25	1.272 866 16	0.285 868 06	0.655 585 83	0.072 611 35	0.908 518 28
1.1540	1.331 716 00	1.273 871 75	0.286 348 28	0.656 137 67	0.072 735 34	0.909 345 03
1.1545	1.332 870 25	1.274 877 52	0.286 829 C6	0.656 689 70	0.072 859 48	0.910 172 23
1.1550	1.334 025 00	1.275 883 49	0.287 310 42	0.657 241 94	0.072 983 78	0.910 999 91
1.1555	1.335 180 25	1.276 889 64	0.287 792 35	0.657 794 36	0.073 108 23	0.911 828 05
1.1560	1.336 336 00	1.277 895 97	0.288 274 85	0.658 346 99	0.073 232 84	0.912 656 66
1.1565	1.337 492 25	1.278 902 50	0.288 757 92	0.658 899 81	0.073 357 61	0.913 485 73
1.1570	1.338 649 00	1.279 909 20	0.289 241 56	0.659 452 83	0.073 482 53	0.914 315 28
1.1575	1.339 806 25	1.280 916 C9	0.289 725 78	0.660 006 04	0.073 607 60	0.915 145 28
1.1580	1.340 964 00	1.281 923 17	0.290 210 57	0.660 559 45	0.073 732 83	0.915 975 76
1.1585	1.342 122 25	1.282 930 43	0.290 695 93	0.661 113 06	0.073 858 21	0.916 806 70
1.1590	1.343 281 00	1.283 937 87	0.291 181 87	0.661 666 86	0.073 983 75	0.917 638 12
1.1595	1.344 440 25	1.284 945 49	0.291 668 38	0.662 220 85	0.074 109 45	0.918 470 00
1.1600	1.345 600 00	1.285 953 30	0.292 155 47	0.662 775 05	0.074 235 30	0.919 302 35

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.1205	0.434 878 46	1.233 667 44	35 58 4.8	11 59 21.6	11 56 56.2	0 2 25.4
1.1210	0.435 297 17	1.234 729 86	36 0 0.4	12 0 0.1	11 57 34.4	0 2 25.8
1.1215	0.435 716 15	1.235 792 66	36 1 56.0	12 0 38.7	11 58 12.5	0 2 26.2
1.1220	0.436 135 40	1.236 855 82	36 3 51.7	12 1 17.2	11 58 50.7	0 2 26.6
1.1225	0.436 554 92	1.237 919 36	36 5 47.5	12 1 55.8	11 59 28.9	0 2 27.0
1.1230	0.436 974 72	1.238 983 26	36 7 43.3	12 2 34.4	12 0 7.1	0 2 27.4
1.1235	0.437 394 80	1.240 047 53	36 9 39.1	12 3 13.0	12 0 45.3	0 2 27.7
1.1240	0.437 815 14	1.241 112 18	36 11 35.0	12 3 51.7	12 1 23.5	0 2 28.1
1.1245	0.438 235 77	1.242 177 19	36 13 30.9	12 4 30.3	12 2 1.8	0 2 28.5
1.1250	0.438 656 66	1.243 242 57	36 15 26.9	12 5 9.0	12 2 40.0	0 2 28.9
1.1255	0.439 077 83	1.244 308 33	36 17 23.0	12 5 47.7	12 3 18.3	0 2 29.3
1.1260	0.439 499 28	1.245 374 45	36 19 19.1	12 6 26.4	12 3 56.6	0 2 29.7
1.1265	0.439 921 00	1.246 440 94	36 21 15.3	12 7 5.1	12 4 34.9	0 2 30.1
1.1270	0.440 343 00	1.247 507 79	36 23 11.5	12 7 43.8	12 5 13.3	0 2 30.5
1.1275	0.440 765 27	1.248 575 02	36 25 7.7	12 8 22.6	12 5 51.6	0 2 31.0
1.1280	0.441 187 82	1.249 642 61	36 27 4.0	12 9 1.3	12 6 30.0	0 2 31.4
1.1285	0.441 610 65	1.250 710 58	36 29 0.4	12 9 40.1	12 7 8.4	0 2 31.8
1.1290	0.442 033 75	1.251 778 90	36 30 56.8	12 10 18.9	12 7 46.8	0 2 32.2
1.1295	0.442 457 13	1.252 847 60	36 32 53.3	12 10 57.8	12 8 25.2	0 2 32.6
1.1300	0.442 880 78	1.253 916 66	36 34 49.8	12 11 36.6	12 9 3.6	0 2 33.0
1.1305	0.443 304 71	1.254 986 09	36 36 46.3	12 12 15.4	12 9 42.0	0 2 33.4
1.1310	0.443 728 92	1.256 055 89	36 38 42.9	12 12 54.3	12 10 20.5	0 2 33.8
1.1315	0.444 153 41	1.257 126 05	36 40 39.6	12 13 33.2	12 10 59.0	0 2 34.2
1.1320	0.444 578 17	1.258 196 58	36 42 36.3	12 14 12.1	12 11 37.5	0 2 34.6
1.1325	0.445 003 21	1.259 267 47	36 44 33.1	12 14 51.0	12 12 16.0	0 2 35.0
1.1330	0.445 428 54	1.260 338 73	36 46 29.9	12 15 30.0	12 12 54.5	0 2 35.5
1.1335	0.445 854 13	1.261 410 36	36 48 26.8	12 16 8.9	12 13 33.1	0 2 35.9
1.1340	0.446 280 01	1.262 482 35	36 50 23.7	12 16 47.9	12 14 11.6	0 2 36.3
1.1345	0.446 706 17	1.263 554 71	36 52 20.7	12 17 26.9	12 14 50.2	0 2 36.7
1.1350	0.447 132 60	1.264 627 43	36 54 17.7	12 18 5.9	12 15 28.8	0 2 37.1
1.1355	0.447 559 32	1.265 700 51	36 56 14.8	12 18 44.9	12 16 7.4	0 2 37.5
1.1360	0.447 986 31	1.266 773 96	36 58 12.0	12 19 24.0	12 16 46.0	0 2 38.0
1.1365	0.448 413 59	1.267 847 77	37 0 9.1	12 20 3.0	12 17 24.7	0 2 38.4
1.1370	0.448 841 14	1.268 921 95	37 2 6.4	12 20 42.1	12 18 3.3	0 2 38.8
1.1375	0.449 268 97	1.269 996 49	37 4 3.7	12 21 21.2	12 18 42.0	0 2 39.2
1.1380	0.449 697 09	1.271 071 39	37 6 1.0	12 22 0.3	12 19 20.7	0 2 39.6
1.1385	0.450 125 48	1.272 146 66	37 7 58.4	12 22 39.5	12 19 59.4	0 2 40.1
1.1390	0.450 554 16	1.273 222 29	37 9 55.8	12 23 18.6	12 20 38.1	0 2 40.5
1.1395	0.450 983 12	1.274 298 28	37 11 53.3	12 23 57.8	12 21 16.9	0 2 40.9
1.1400	0.451 412 35	1.275 374 63	37 13 50.9	12 24 37.0	12 21 55.6	0 2 41.3
1.1405	0.451 841 87	1.276 451 35	37 15 48.5	12 25 16.2	12 22 34.4	0 2 41.8
1.1410	0.452 271 68	1.277 528 43	37 17 46.1	12 25 55.4	12 23 13.2	0 2 42.2
1.1415	0.452 701 76	1.278 605 87	37 19 43.8	12 26 34.6	12 23 52.0	0 2 42.6
1.1420	0.453 132 12	1.279 683 67	37 21 41.6	12 27 13.9	12 24 30.8	0 2 43.1
1.1425	0.453 562 77	1.280 761 83	37 23 39.4	12 27 53.1	12 25 9.6	0 2 43.5
1.1430	0.453 993 71	1.281 840 35	37 25 37.2	12 28 32.4	12 25 48.5	0 2 43.9
1.1435	0.454 424 92	1.282 919 24	37 27 35.1	12 29 11.7	12 26 27.3	0 2 44.4
1.1440	0.454 856 42	1.283 998 48	37 29 33.1	12 29 51.0	12 27 6.2	0 2 44.8
1.1445	0.455 288 20	1.285 078 08	37 31 31.1	12 30 30.4	12 27 45.1	0 2 45.2
1.1450	0.455 720 26	1.286 158 05	37 33 29.2	12 31 9.7	12 28 24.0	0 2 45.7
1.1455	0.456 152 61	1.287 238 37	37 35 27.3	12 31 49.1	12 29 3.0	0 2 46.1
1.1460	0.456 585 24	1.288 319 05	37 37 25.4	12 32 28.5	12 29 41.9	0 2 46.5
1.1465	0.457 018 16	1.289 400 10	37 39 23.7	12 33 7.9	12 30 20.9	0 2 47.0
1.1470	0.457 451 36	1.290 481 50	37 41 21.9	12 33 47.3	12 30 59.9	0 2 47.4
1.1475	0.457 884 85	1.291 563 26	37 43 20.2	12 34 26.7	12 31 38.9	0 2 47.9
1.1480	0.458 318 62	1.292 645 38	37 45 18.6	12 35 6.2	12 32 17.9	0 2 48.3
1.1485	0.458 752 67	1.293 727 85	37 47 17.0	12 35 45.7	12 32 56.9	0 2 48.8
1.1490	0.459 187 01	1.294 810 69	37 49 15.5	12 36 25.2	12 33 36.0	0 2 49.2
1.1495	0.459 621 64	1.295 893 88	37 51 14.0	12 37 4.7	12 34 15.0	0 2 49.6
1.1500	0.460 056 56	1.296 977 43	37 53 12.6	12 37 44.2	12 34 54.1	0 2 50.1
1.1505	0.460 491 75	1.298 061 34	37 55 11.2	12 38 23.7	12 35 33.2	0 2 50.5
1.1510	0.460 927 24	1.299 145 60	37 57 9.9	12 39 3.3	12 36 12.3	0 2 51.0
1.1515	0.461 363 01	1.300 230 22	37 59 8.6	12 39 42.9	12 36 51.4	0 2 51.4
1.1520	0.461 799 07	1.301 315 20	38 1 7.4	12 40 22.5	12 37 30.6	0 2 51.9
1.1525	0.462 235 42	1.302 400 53	38 3 6.3	12 41 2.1	12 38 9.7	0 2 52.3
1.1530	0.462 672 05	1.303 486 22	38 5 5.1	12 41 41.7	12 38 48.9	0 2 52.8
1.1535	0.463 108 98	1.304 572 27	38 7 4.1	12 42 21.4	12 39 28.1	0 2 53.2
1.1540	0.463 546 19	1.305 658 67	38 9 3.1	12 43 1.0	12 40 7.3	0 2 53.7
1.1545	0.463 983 68	1.306 745 43	38 11 2.1	12 43 40.7	12 40 46.6	0 2 54.2
1.1550	0.464 421 47	1.307 832 54	38 13 1.2	12 44 20.4	12 41 25.8	0 2 54.6
1.1555	0.464 859 55	1.308 920 01	38 15 0.3	12 45 0.1	12 42 5.0	0 2 55.1
1.1560	0.465 297 91	1.310 007 83	38 16 59.5	12 45 39.8	12 42 44.3	0 2 55.5
1.1565	0.465 736 56	1.311 096 00	38 18 58.8	12 46 19.6	12 43 23.6	0 2 56.0
1.1570	0.466 175 50	1.312 184 53	38 20 58.1	12 46 59.4	12 44 2.9	0 2 56.4
1.1575	0.466 614 74	1.313 273 42	38 22 57.4	12 47 39.1	12 44 42.2	0 2 56.9
1.1580	0.467 054 26	1.314 362 65	38 24 56.8	12 48 18.9	12 45 21.6	0 2 57.4
1.1585	0.467 494 07	1.315 452 24	38 26 56.3	12 48 58.8	12 46 0.9	0 2 57.8
1.1590	0.467 934 17	1.316 542 19	38 28 55.8	12 49 38.6	12 46 40.3	0 2 58.3
1.1595	0.468 374 56	1.317 632 48	38 30 55.4	12 50 18.5	12 47 19.7	0 2 58.8
1.1600	0.468 815 25	1.318 723 13	38 32 55.0	12 50 58.3	12 47 59.1	0 2 59.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.1605	1.346 760 25	1.286 961 28	0.292 643 13	0.663 329 43	0.074 361 31	0.920 135 16
1.1610	1.347 921 00	1.287 965 45	0.293 131 36	0.663 884 02	0.074 487 47	0.920 968 45
1.1615	1.349 082 25	1.288 C77 80	0.293 620 17	0.664 438 80	0.074 613 79	0.921 802 21
1.1620	1.350 244 00	1.289 986 33	0.294 109 56	0.664 993 77	0.074 740 26	0.922 636 43
1.1625	1.351 406 25	1.290 995 C4	0.294 599 52	0.665 548 94	0.074 866 90	0.923 471 13
1.1630	1.352 569 00	1.292 003 52	0.295 090 06	0.666 104 30	0.074 993 68	0.924 306 30
1.1635	1.353 732 25	1.293 012 59	0.295 581 17	0.666 659 86	0.075 120 63	0.925 141 93
1.1640	1.354 896 00	1.294 022 23	0.296 072 86	0.667 215 62	0.075 247 73	0.925 978 04
1.1645	1.356 060 25	1.295 031 65	0.296 565 13	0.667 771 57	0.075 374 99	0.926 814 62
1.1650	1.357 225 00	1.296 041 25	0.297 057 98	0.668 327 71	0.075 502 40	0.927 651 67
1.1655	1.358 390 25	1.297 051 C2	0.297 551 40	0.668 884 05	0.075 629 97	0.928 489 19
1.1660	1.359 556 00	1.298 060 97	0.298 045 41	0.669 440 58	0.075 757 70	0.929 327 18
1.1665	1.360 722 25	1.299 C71 C9	0.298 539 99	0.669 997 31	0.075 885 58	0.930 165 64
1.1670	1.361 889 00	1.300 081 39	0.299 035 15	0.670 554 23	0.076 013 63	0.931 004 58
1.1675	1.363 056 25	1.301 091 86	0.299 530 89	0.671 111 34	0.076 141 83	0.931 843 99
1.1680	1.364 224 00	1.302 102 51	0.300 027 21	0.671 668 65	0.076 270 18	0.932 683 87
1.1685	1.365 392 25	1.303 113 33	0.300 524 11	0.672 226 16	0.076 398 70	0.933 524 23
1.1690	1.366 561 00	1.304 124 32	0.301 021 59	0.672 783 86	0.076 527 37	0.934 365 06
1.1695	1.367 730 25	1.305 135 48	0.301 519 65	0.673 341 75	0.076 656 20	0.935 206 36
1.1700	1.368 900 00	1.306 146 82	0.302 018 29	0.673 899 83	0.076 785 19	0.936 048 14
1.1705	1.370 070 25	1.307 158 33	0.302 517 51	0.674 458 11	0.076 914 34	0.936 890 39
1.1710	1.371 241 00	1.308 170 C0	0.303 017 32	0.675 016 59	0.077 043 64	0.937 733 11
1.1715	1.372 412 25	1.309 181 85	0.303 517 71	0.675 575 25	0.077 173 11	0.938 576 31
1.1720	1.373 584 00	1.310 193 87	0.304 018 67	0.676 134 11	0.077 302 73	0.939 419 99
1.1725	1.374 756 25	1.311 206 C5	0.304 520 22	0.676 693 16	0.077 432 51	0.940 264 14
1.1730	1.375 929 00	1.312 218 40	0.305 022 36	0.677 252 41	0.077 562 45	0.941 108 77
1.1735	1.377 102 25	1.313 230 93	0.305 525 C8	0.677 811 85	0.077 692 54	0.941 953 87
1.1740	1.378 276 00	1.314 243 61	0.306 028 38	0.678 371 48	0.077 822 80	0.942 799 45
1.1745	1.379 450 25	1.315 256 47	0.306 532 26	0.678 931 31	0.077 953 22	0.943 645 50
1.1750	1.380 625 00	1.316 269 49	0.307 036 73	0.679 491 33	0.078 083 79	0.944 492 03
1.1755	1.381 800 25	1.317 282 68	0.307 541 78	0.680 051 54	0.078 214 52	0.945 339 04
1.1760	1.382 976 00	1.318 296 C3	0.308 047 42	0.680 611 94	0.078 345 42	0.946 186 53
1.1765	1.384 152 25	1.319 309 55	0.308 553 65	0.681 172 54	0.078 476 47	0.947 034 49
1.1770	1.385 329 00	1.320 323 23	0.309 060 45	0.681 733 33	0.078 607 68	0.947 882 93
1.1775	1.386 506 25	1.321 337 CA	0.309 567 85	0.682 294 31	0.078 739 05	0.948 731 85
1.1780	1.387 684 00	1.322 351 C9	0.310 075 83	0.682 855 48	0.078 870 58	0.949 581 25
1.1785	1.388 862 25	1.323 365 26	0.310 584 40	0.683 416 85	0.079 002 27	0.950 431 13
1.1790	1.390 041 00	1.324 379 59	0.311 093 55	0.683 978 40	0.079 134 13	0.951 281 48
1.1795	1.391 220 25	1.325 394 CA	0.311 603 29	0.684 540 15	0.079 266 14	0.952 132 32
1.1800	1.392 400 00	1.326 408 74	0.312 113 62	0.685 102 10	0.079 398 31	0.952 983 63
1.1805	1.393 580 25	1.327 423 55	0.312 624 54	0.685 664 23	0.079 530 64	0.953 835 42
1.1810	1.394 761 00	1.328 438 53	0.313 136 04	0.686 226 55	0.079 663 13	0.954 687 70
1.1815	1.395 942 25	1.329 453 66	0.313 648 14	0.686 789 07	0.079 795 78	0.955 540 45
1.1820	1.397 124 00	1.330 468 96	0.314 160 82	0.687 351 78	0.079 928 60	0.956 393 69
1.1825	1.398 306 25	1.331 484 41	0.314 674 09	0.687 914 68	0.080 061 57	0.957 247 41
1.1830	1.399 489 00	1.332 500 C2	0.315 187 95	0.688 477 77	0.080 194 71	0.958 101 60
1.1835	1.400 672 25	1.333 515 79	0.315 702 40	0.689 041 05	0.080 328 00	0.958 956 28
1.1840	1.401 856 00	1.334 531 71	0.316 217 44	0.689 604 53	0.080 461 46	0.959 811 44
1.1845	1.403 040 25	1.335 547 79	0.316 733 07	0.690 168 19	0.080 595 08	0.960 667 09
1.1850	1.404 225 00	1.336 564 C2	0.317 249 29	0.690 732 05	0.080 728 86	0.961 523 21
1.1855	1.405 410 25	1.337 580 42	0.317 766 10	0.691 296 09	0.080 862 80	0.962 379 82
1.1860	1.406 596 00	1.338 596 96	0.318 283 50	0.691 860 33	0.080 996 90	0.963 236 91
1.1865	1.407 782 25	1.339 613 66	0.318 801 50	0.692 424 76	0.081 131 17	0.964 094 49
1.1870	1.408 969 00	1.340 630 51	0.319 320 08	0.692 989 38	0.081 265 59	0.964 952 55
1.1875	1.410 156 25	1.341 647 51	0.319 839 26	0.693 554 19	0.081 400 18	0.965 811 09
1.1880	1.411 344 00	1.342 664 67	0.320 359 03	0.694 119 19	0.081 534 93	0.966 670 11
1.1885	1.412 532 25	1.343 681 98	0.320 879 39	0.694 684 38	0.081 669 84	0.967 529 62
1.1890	1.413 721 00	1.344 699 44	0.321 400 35	0.695 249 76	0.081 804 92	0.968 389 62
1.1895	1.414 910 25	1.345 717 C5	0.321 921 90	0.695 815 33	0.081 940 16	0.969 250 10
1.1900	1.416 100 00	1.346 734 81	0.322 444 C5	0.696 381 09	0.082 075 55	0.970 111 07
1.1905	1.417 290 25	1.347 752 72	0.322 966 78	0.696 947 04	0.082 211 12	0.970 972 52
1.1910	1.418 481 00	1.348 770 78	0.323 490 12	0.697 513 17	0.082 346 84	0.971 834 46
1.1915	1.419 672 25	1.349 788 99	0.324 014 04	0.698 079 50	0.082 482 73	0.972 696 88
1.1920	1.420 864 00	1.350 8C7 35	0.324 538 57	0.698 646 02	0.082 618 78	0.973 559 79
1.1925	1.422 056 25	1.351 825 85	0.325 063 68	0.699 212 73	0.082 754 99	0.974 423 19
1.1930	1.423 249 00	1.352 844 50	0.325 589 40	0.699 779 63	0.082 891 37	0.975 287 07
1.1935	1.424 442 25	1.353 863 30	0.326 115 71	0.700 346 72	0.083 027 91	0.976 151 44
1.1940	1.425 636 00	1.354 882 24	0.326 642 61	0.700 913 99	0.083 164 61	0.977 016 30
1.1945	1.426 830 25	1.355 901 32	0.327 170 12	0.701 481 46	0.083 301 48	0.977 881 65
1.1950	1.428 025 00	1.356 920 56	0.327 698 21	0.702 049 11	0.083 438 51	0.978 747 48
1.1955	1.429 220 25	1.357 939 93	0.328 226 91	0.702 616 96	0.083 575 70	0.979 613 81
1.1960	1.430 416 00	1.358 959 45	0.328 756 21	0.703 184 99	0.083 713 06	0.980 480 62
1.1965	1.431 612 25	1.359 979 11	0.329 286 10	0.703 753 21	0.083 850 58	0.981 347 92
1.1970	1.432 809 00	1.360 998 92	0.329 816 59	0.704 321 62	0.083 988 27	0.982 215 72
1.1975	1.434 006 25	1.362 018 87	0.330 347 68	0.704 890 22	0.084 126 12	0.983 084 00
1.1980	1.435 204 00	1.363 038 95	0.330 879 36	0.705 459 01	0.084 264 13	0.983 952 77
1.1985	1.436 402 25	1.364 C59 18	0.331 411 65	0.706 027 98	0.084 402 31	0.984 822 03
1.1990	1.437 601 00	1.365 C79 55	0.331 944 54	0.706 597 15	0.084 540 66	0.985 691 78
1.1995	1.438 800 25	1.366 100 C6	0.332 478 02	0.707 166 50	0.084 679 16	0.986 562 03
1.2000	1.440 000 00	1.367 120 71	0.333 012 11	0.707 736 04	0.084 817 84	0.987 432 76

A/R= =LS/A= =VLS7R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC	DEG MNT SEC	
1.1605	0.469 256 22	1.319 814 13	38 34 54.6	12 51 38.2	12 48 38.5	0 2 59.7
1.1610	0.469 697 49	1.320 905 49	38 36 54.3	12 52 18.1	12 49 17.9	0 3 0.2
1.1615	0.470 139 04	1.321 997 19	38 38 54.1	12 52 58.0	12 49 57.4	0 3 0.6
1.1620	0.470 580 89	1.323 089 25	38 40 53.9	12 53 38.0	12 50 36.9	0 3 1.1
1.1625	0.471 023 03	1.324 181 66	38 42 53.8	12 54 17.9	12 51 16.3	0 3 1.6
1.1630	0.471 465 47	1.325 274 42	38 44 53.7	12 54 57.9	12 51 55.8	0 3 2.0
1.1635	0.471 908 19	1.326 367 53	38 46 53.7	12 55 37.9	12 52 35.4	0 3 2.5
1.1640	0.472 351 21	1.327 460 99	38 48 53.7	12 56 17.9	12 53 14.9	0 3 3.0
1.1645	0.472 794 52	1.328 554 80	38 50 53.8	12 56 57.9	12 53 54.4	0 3 3.5
1.1650	0.473 238 13	1.329 648 96	38 52 53.9	12 57 38.0	12 54 34.0	0 3 3.9
1.1655	0.473 682 03	1.330 743 47	38 54 54.1	12 58 18.0	12 55 13.6	0 3 4.4
1.1660	0.474 126 22	1.331 838 33	38 56 54.3	12 58 58.1	12 55 53.2	0 3 4.9
1.1665	0.474 570 70	1.332 933 54	38 58 54.6	12 59 38.2	12 56 32.8	0 3 5.4
1.1670	0.475 015 49	1.334 029 10	39 0 54.9	13 0 18.3	12 57 12.4	0 3 5.9
1.1675	0.475 460 56	1.335 125 01	39 2 55.3	13 0 58.4	12 57 52.1	0 3 6.3
1.1680	0.475 905 93	1.336 221 27	39 4 55.7	13 1 38.6	12 58 31.7	0 3 6.8
1.1685	0.476 351 60	1.337 317 87	39 6 56.2	13 2 18.7	12 59 11.4	0 3 7.3
1.1690	0.476 797 56	1.338 414 82	39 8 56.7	13 2 58.9	12 59 51.1	0 3 7.8
1.1695	0.477 243 81	1.339 512 12	39 10 57.3	13 3 39.1	13 0 30.8	0 3 8.3
1.1700	0.477 690 36	1.340 609 77	39 12 57.9	13 4 19.3	13 1 10.5	0 3 8.8
1.1705	0.478 137 21	1.341 707 77	39 14 58.6	13 4 59.5	13 1 50.3	0 3 9.3
1.1710	0.478 584 35	1.342 806 11	39 16 59.4	13 5 39.8	13 2 30.0	0 3 9.8
1.1715	0.479 031 79	1.343 904 80	39 19 0.2	13 6 20.1	13 3 9.8	0 3 10.2
1.1720	0.479 479 53	1.345 003 84	39 21 1.0	13 7 0.3	13 3 49.6	0 3 10.7
1.1725	0.479 927 57	1.346 103 22	39 23 1.9	13 7 40.6	13 4 29.4	0 3 11.2
1.1730	0.480 375 90	1.347 202 95	39 25 2.9	13 8 21.0	13 5 9.2	0 3 11.7
1.1735	0.480 824 53	1.348 303 02	39 27 3.9	13 9 1.3	13 5 49.1	0 3 12.2
1.1740	0.481 273 45	1.349 403 44	39 29 4.9	13 9 41.6	13 6 28.9	0 3 12.7
1.1745	0.481 722 68	1.350 504 21	39 31 6.0	13 10 22.0	13 7 8.8	0 3 13.2
1.1750	0.482 172 20	1.351 605 32	39 33 7.2	13 11 2.4	13 7 48.7	0 3 13.7
1.1755	0.482 622 02	1.352 706 77	39 35 8.4	13 11 42.8	13 8 28.6	0 3 14.2
1.1760	0.483 072 15	1.353 808 57	39 37 9.6	13 12 23.2	13 9 8.5	0 3 14.7
1.1765	0.483 522 57	1.354 910 71	39 39 10.9	13 13 3.6	13 9 48.4	0 3 15.2
1.1770	0.483 973 29	1.356 013 20	39 41 12.3	13 13 44.1	13 10 28.4	0 3 15.7
1.1775	0.484 424 31	1.357 116 03	39 43 13.7	13 14 24.6	13 11 8.4	0 3 16.2
1.1780	0.484 875 62	1.358 219 21	39 45 15.2	13 15 5.1	13 11 48.3	0 3 16.7
1.1785	0.485 327 24	1.359 322 72	39 47 16.7	13 15 45.6	13 12 28.3	0 3 17.2
1.1790	0.485 779 16	1.360 426 59	39 49 18.3	13 16 26.1	13 13 8.4	0 3 17.7
1.1795	0.486 231 38	1.361 530 79	39 51 19.9	13 17 6.6	13 13 48.4	0 3 18.2
1.1800	0.486 683 91	1.362 635 33	39 53 21.6	13 17 47.2	13 14 28.4	0 3 18.7
1.1805	0.487 136 73	1.363 740 22	39 55 23.3	13 18 27.8	13 15 8.5	0 3 19.3
1.1810	0.487 589 85	1.364 845 45	39 57 25.1	13 19 8.4	13 15 48.6	0 3 19.8
1.1815	0.488 043 28	1.365 951 02	39 59 26.9	13 19 49.0	13 16 28.7	0 3 20.3
1.1820	0.488 497 01	1.367 056 94	40 1 28.8	13 20 29.6	13 17 8.8	0 3 20.8
1.1825	0.488 951 04	1.368 163 19	40 3 30.7	13 21 10.2	13 17 48.9	0 3 21.3
1.1830	0.489 405 37	1.369 269 79	40 5 32.7	13 21 50.9	13 18 29.1	0 3 21.8
1.1835	0.489 860 01	1.370 376 72	40 7 34.7	13 22 31.6	13 19 9.2	0 3 22.3
1.1840	0.490 314 94	1.371 484 00	40 9 36.8	13 23 12.3	13 19 49.4	0 3 22.9
1.1845	0.490 770 19	1.372 591 61	40 11 38.9	13 23 53.0	13 20 29.6	0 3 23.4
1.1850	0.491 225 73	1.373 699 57	40 13 41.1	13 24 33.7	13 21 9.8	0 3 23.9
1.1855	0.491 681 58	1.374 807 86	40 15 43.3	13 25 14.4	13 21 50.0	0 3 24.4
1.1860	0.492 137 74	1.375 916 50	40 17 45.6	13 25 55.2	13 22 30.3	0 3 24.9
1.1865	0.492 594 20	1.377 025 47	40 19 48.0	13 26 36.0	13 23 10.5	0 3 25.5
1.1870	0.493 050 96	1.378 134 78	40 21 50.4	13 27 16.8	13 23 50.8	0 3 26.0
1.1875	0.493 508 03	1.379 244 43	40 23 52.8	13 27 57.6	13 24 31.1	0 3 26.5
1.1880	0.493 965 40	1.380 354 42	40 25 55.3	13 28 38.4	13 25 11.4	0 3 27.0
1.1885	0.494 423 08	1.381 464 75	40 27 57.8	13 29 19.3	13 25 51.7	0 3 27.6
1.1890	0.494 881 06	1.382 575 41	40 30 0.4	13 30 0.1	13 26 32.1	0 3 28.1
1.1895	0.495 339 35	1.383 686 41	40 32 3.1	13 30 41.0	13 27 12.4	0 3 28.6
1.1900	0.495 797 95	1.384 797 75	40 34 5.8	13 31 21.9	13 27 52.8	0 3 29.2
1.1905	0.496 256 86	1.385 909 43	40 36 8.5	13 32 2.8	13 28 33.2	0 3 29.7
1.1910	0.496 716 07	1.387 021 44	40 38 11.4	13 32 43.8	13 29 13.6	0 3 30.2
1.1915	0.497 175 58	1.388 133 79	40 40 14.2	13 33 24.7	13 29 54.0	0 3 30.8
1.1920	0.497 635 41	1.389 246 47	40 42 17.1	13 34 5.7	13 30 34.4	0 3 31.3
1.1925	0.498 095 54	1.390 359 50	40 44 20.1	13 34 46.7	13 31 14.9	0 3 31.8
1.1930	0.498 555 98	1.391 472 85	40 46 23.1	13 35 27.7	13 31 55.3	0 3 32.4
1.1935	0.499 016 73	1.392 586 54	40 48 26.2	13 36 8.7	13 32 35.8	0 3 32.9
1.1940	0.499 477 79	1.393 700 57	40 50 29.3	13 36 49.8	13 33 16.3	0 3 33.4
1.1945	0.499 939 16	1.394 814 93	40 52 32.4	13 37 30.8	13 33 56.8	0 3 34.0
1.1950	0.500 400 83	1.395 929 62	40 54 35.6	13 38 11.9	13 34 37.4	0 3 34.5
1.1955	0.500 862 82	1.397 044 65	40 56 38.9	13 38 53.0	13 35 17.9	0 3 35.1
1.1960	0.501 325 11	1.398 160 02	40 58 42.2	13 39 34.1	13 35 58.5	0 3 35.6
1.1965	0.501 787 72	1.399 275 71	41 0 45.6	13 40 15.2	13 36 39.0	0 3 36.2
1.1970	0.502 250 63	1.400 391 75	41 2 49.0	13 40 56.3	13 37 19.6	0 3 36.7
1.1975	0.502 713 86	1.401 508 11	41 4 52.5	13 41 37.5	13 38 0.3	0 3 37.3
1.1980	0.503 177 39	1.402 624 81	41 6 56.0	13 42 18.7	13 38 40.9	0 3 37.8
1.1985	0.503 641 24	1.403 741 83	41 8 59.6	13 42 59.9	13 39 21.5	0 3 38.4
1.1990	0.504 105 40	1.404 859 20	41 11 3.2	13 43 41.1	13 40 2.2	0 3 38.9
1.1995	0.504 569 87	1.405 976 89	41 13 6.9	13 44 22.3	13 40 42.9	0 3 39.5
1.2000	0.505 034 65	1.407 094 91	41 15 10.7	13 45 3.6	13 41 23.5	0 3 40.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.2005	1.441 200 25	1.368 141 49	0.333 546 79	0.708 305 76	0.084 956 67	0.988 303 99
1.2010	1.442 401 00	1.369 162 42	0.334 082 08	0.708 875 68	0.085 095 68	0.989 175 71
1.2015	1.443 602 25	1.370 183 48	0.334 617 97	0.709 445 78	0.085 234 84	0.990 047 92
1.2020	1.444 804 00	1.371 204 68	0.335 154 46	0.710 016 07	0.085 374 18	0.990 920 63
1.2025	1.446 006 25	1.372 226 01	0.335 691 55	0.710 586 55	0.085 513 68	0.991 793 82
1.2030	1.447 209 00	1.373 247 48	0.336 229 24	0.711 157 22	0.085 653 34	0.992 667 51
1.2035	1.448 412 25	1.374 269 09	0.336 767 53	0.711 728 07	0.085 793 17	0.993 541 70
1.2040	1.449 616 00	1.375 290 83	0.337 306 43	0.712 299 11	0.085 933 16	0.994 416 37
1.2045	1.450 820 25	1.376 312 70	0.337 845 93	0.712 870 34	0.086 073 32	0.995 291 54
1.2050	1.452 025 00	1.377 334 71	0.338 386 03	0.713 441 75	0.086 213 65	0.996 167 21
1.2055	1.453 230 25	1.378 356 85	0.338 926 74	0.714 013 36	0.086 354 14	0.997 043 37
1.2060	1.454 436 00	1.379 379 13	0.339 468 05	0.714 585 14	0.086 494 80	0.997 920 03
1.2065	1.455 642 25	1.380 401 53	0.340 009 97	0.715 157 12	0.086 635 62	0.998 797 18
1.2070	1.456 849 00	1.381 424 07	0.340 552 48	0.715 729 28	0.086 776 61	0.999 674 82
1.2075	1.458 056 25	1.382 446 73	0.341 095 61	0.716 301 63	0.086 917 77	1.000 552 97
1.2080	1.459 264 00	1.383 469 53	0.341 639 34	0.716 874 16	0.087 059 09	1.001 431 60
1.2085	1.460 472 25	1.384 492 46	0.342 183 67	0.717 446 89	0.087 200 59	1.002 310 74
1.2090	1.461 681 00	1.385 515 51	0.342 728 61	0.718 019 79	0.087 342 24	1.003 190 37
1.2095	1.462 890 25	1.386 538 70	0.343 274 15	0.718 592 89	0.087 484 07	1.004 070 50
1.2100	1.464 100 00	1.387 562 01	0.343 820 30	0.719 166 17	0.087 626 06	1.004 951 13
1.2105	1.465 310 25	1.388 585 45	0.344 367 06	0.719 739 63	0.087 768 22	1.005 832 25
1.2110	1.466 521 00	1.389 609 01	0.344 914 42	0.720 313 28	0.087 910 54	1.006 713 88
1.2115	1.467 732 25	1.390 632 70	0.345 462 40	0.720 887 12	0.088 053 03	1.007 596 00
1.2120	1.468 944 00	1.391 656 52	0.346 010 97	0.721 461 14	0.088 195 69	1.008 478 62
1.2125	1.470 156 25	1.392 680 46	0.346 560 16	0.722 035 35	0.088 338 52	1.009 361 74
1.2130	1.471 369 00	1.393 704 53	0.347 109 95	0.722 609 75	0.088 481 52	1.010 245 36
1.2135	1.472 582 25	1.394 728 72	0.347 660 36	0.723 184 33	0.088 624 68	1.011 129 48
1.2140	1.473 796 00	1.395 753 03	0.348 211 37	0.723 759 09	0.088 768 01	1.012 014 09
1.2145	1.475 010 25	1.396 777 47	0.348 762 99	0.724 334 04	0.088 911 51	1.012 899 21
1.2150	1.476 225 00	1.397 802 03	0.349 315 22	0.724 909 17	0.089 055 18	1.013 784 83
1.2155	1.477 440 25	1.398 826 71	0.349 868 05	0.725 484 49	0.089 199 01	1.014 670 96
1.2160	1.478 656 00	1.399 851 51	0.350 421 50	0.726 060 00	0.089 343 01	1.015 557 58
1.2165	1.479 872 25	1.400 876 43	0.350 975 56	0.726 635 69	0.089 487 19	1.016 444 70
1.2170	1.481 089 00	1.401 901 47	0.351 530 23	0.727 211 56	0.089 631 53	1.017 332 33
1.2175	1.482 306 25	1.402 926 63	0.352 085 51	0.727 787 62	0.089 776 04	1.018 220 46
1.2180	1.483 524 00	1.403 951 91	0.352 641 40	0.728 363 86	0.089 920 71	1.019 109 09
1.2185	1.484 742 25	1.404 977 31	0.353 197 90	0.728 940 29	0.090 065 56	1.019 998 22
1.2190	1.485 961 00	1.406 002 82	0.353 755 01	0.729 516 90	0.090 210 58	1.020 887 86
1.2195	1.487 180 25	1.407 028 45	0.354 312 74	0.730 093 70	0.090 355 76	1.021 778 00
1.2200	1.488 400 00	1.408 054 20	0.354 871 07	0.730 670 68	0.090 501 12	1.022 668 65
1.2205	1.489 620 25	1.409 080 06	0.355 430 02	0.731 247 84	0.090 646 64	1.023 559 80
1.2210	1.490 841 00	1.410 106 04	0.355 989 58	0.731 825 19	0.090 792 33	1.024 451 45
1.2215	1.492 062 25	1.411 132 13	0.356 549 76	0.732 402 72	0.090 938 20	1.025 343 61
1.2220	1.493 284 00	1.412 158 34	0.357 110 55	0.732 980 43	0.091 084 23	1.026 236 28
1.2225	1.494 506 25	1.413 184 66	0.357 671 95	0.733 558 33	0.091 230 43	1.027 129 45
1.2230	1.495 729 00	1.414 211 10	0.358 233 96	0.734 136 41	0.091 376 80	1.028 023 12
1.2235	1.496 952 25	1.415 237 64	0.358 796 59	0.734 714 68	0.091 523 35	1.028 917 30
1.2240	1.498 176 00	1.416 264 30	0.359 359 84	0.735 293 12	0.091 670 06	1.029 811 99
1.2245	1.499 400 25	1.417 291 07	0.359 923 70	0.735 871 75	0.091 816 94	1.030 707 19
1.2250	1.500 625 00	1.418 317 95	0.360 488 17	0.736 450 57	0.091 963 99	1.031 602 89
1.2255	1.501 850 25	1.419 344 94	0.361 053 26	0.737 029 56	0.092 111 22	1.032 499 10
1.2260	1.503 076 00	1.420 372 04	0.361 618 97	0.737 608 74	0.092 258 61	1.033 395 82
1.2265	1.504 302 25	1.421 399 24	0.362 185 29	0.738 188 11	0.092 406 17	1.034 293 05
1.2270	1.505 529 00	1.422 426 56	0.362 752 22	0.738 767 65	0.092 553 91	1.035 190 79
1.2275	1.506 756 25	1.423 453 98	0.363 319 78	0.739 347 38	0.092 701 82	1.036 089 03
1.2280	1.507 984 00	1.424 481 51	0.363 887 95	0.739 927 29	0.092 849 89	1.036 987 78
1.2285	1.509 212 25	1.425 509 15	0.364 456 74	0.740 507 38	0.092 998 14	1.037 887 05
1.2290	1.510 441 00	1.426 536 89	0.365 026 14	0.741 087 65	0.093 146 56	1.038 786 82
1.2295	1.511 670 25	1.427 564 74	0.365 596 17	0.741 668 11	0.093 295 15	1.039 687 11
1.2300	1.512 900 00	1.428 592 69	0.366 166 81	0.742 248 75	0.093 443 92	1.040 587 90
1.2305	1.514 130 25	1.429 620 74	0.366 738 06	0.742 829 57	0.093 592 85	1.041 489 21
1.2310	1.515 361 00	1.430 648 90	0.367 309 94	0.743 410 57	0.093 741 96	1.042 391 02
1.2315	1.516 592 25	1.431 677 17	0.367 882 44	0.743 991 75	0.093 891 23	1.043 293 35
1.2320	1.517 824 00	1.432 705 53	0.368 455 55	0.744 573 12	0.094 040 68	1.044 196 19
1.2325	1.519 056 25	1.433 734 00	0.369 029 29	0.745 154 66	0.094 190 30	1.045 099 54
1.2330	1.520 289 00	1.434 762 57	0.369 603 64	0.745 736 39	0.094 340 10	1.046 003 41
1.2335	1.521 522 25	1.435 791 23	0.370 178 62	0.746 318 30	0.094 490 06	1.046 907 79
1.2340	1.522 756 00	1.436 820 00	0.370 754 21	0.746 900 39	0.094 640 20	1.047 812 68
1.2345	1.523 990 25	1.437 848 87	0.371 330 43	0.747 482 66	0.094 790 51	1.048 718 09
1.2350	1.525 225 00	1.438 877 83	0.371 907 26	0.748 065 11	0.094 941 00	1.049 624 01
1.2355	1.526 460 25	1.439 906 90	0.372 484 72	0.748 647 74	0.095 091 65	1.050 530 44
1.2360	1.527 696 00	1.440 936 06	0.373 062 80	0.749 230 55	0.095 242 48	1.051 437 39
1.2365	1.528 932 25	1.441 965 32	0.373 641 50	0.749 813 55	0.095 393 48	1.052 344 85
1.2370	1.530 169 00	1.442 994 67	0.374 220 82	0.750 396 72	0.095 544 66	1.053 252 83
1.2375	1.531 406 25	1.444 024 12	0.374 800 77	0.750 980 07	0.095 696 01	1.054 161 33
1.2380	1.532 644 00	1.445 053 67	0.375 381 33	0.751 563 61	0.095 847 53	1.055 070 34
1.2385	1.533 882 25	1.446 083 31	0.375 962 52	0.752 147 32	0.095 999 22	1.055 979 87
1.2390	1.535 121 00	1.447 113 04	0.376 544 34	0.752 731 22	0.096 151 09	1.056 889 91
1.2395	1.536 360 25	1.448 142 87	0.377 126 77	0.753 315 29	0.096 303 13	1.057 800 48
1.2400	1.537 600 00	1.449 172 79	0.377 709 83	0.753 899 54	0.096 455 35	1.058 711 56

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
			DEG MNT SEC			
1.2005	0.505 499 75	1.408 213 27	41 17 14.4	13 45 44.8	13 42 4.2	0 3 40.6
1.2010	0.505 965 15	1.409 331 96	41 19 18.3	13 46 26.1	13 42 45.0	0 3 41.1
1.2015	0.506 430 87	1.410 450 98	41 21 22.2	13 47 7.4	13 43 25.7	0 3 41.7
1.2020	0.506 896 90	1.411 570 32	41 23 26.1	13 47 48.7	13 44 6.5	0 3 42.2
1.2025	0.507 363 25	1.412 690 00	41 25 30.1	13 48 30.0	13 44 47.2	0 3 42.8
1.2030	0.507 829 91	1.413 810 01	41 27 34.1	13 49 11.4	13 45 28.0	0 3 43.4
1.2035	0.508 296 88	1.414 930 35	41 29 38.2	13 49 52.7	13 46 8.8	0 3 43.9
1.2040	0.508 764 17	1.416 051 02	41 31 42.4	13 50 34.1	13 46 49.6	0 3 44.5
1.2045	0.509 231 77	1.417 172 02	41 33 46.6	13 51 15.5	13 47 30.5	0 3 45.1
1.2050	0.509 699 69	1.418 293 35	41 35 50.8	13 51 56.9	13 48 11.3	0 3 45.6
1.2055	0.510 167 92	1.419 415 00	41 37 55.1	13 52 38.4	13 48 52.2	0 3 46.2
1.2060	0.510 636 47	1.420 536 99	41 39 59.5	13 53 19.8	13 49 33.1	0 3 46.8
1.2065	0.511 105 33	1.421 659 30	41 42 3.9	13 54 1.3	13 50 14.0	0 3 47.3
1.2070	0.511 574 51	1.422 781 94	41 44 8.3	13 54 42.8	13 50 54.9	0 3 47.9
1.2075	0.512 044 01	1.423 904 91	41 46 12.8	13 55 24.3	13 51 35.8	0 3 48.5
1.2080	0.512 513 82	1.425 028 20	41 48 17.4	13 56 5.8	13 52 16.8	0 3 49.0
1.2085	0.512 983 94	1.426 151 82	41 50 22.0	13 56 47.3	13 52 57.7	0 3 49.6
1.2090	0.513 454 39	1.427 275 77	41 52 26.7	13 57 28.9	13 53 38.7	0 3 50.2
1.2095	0.513 925 15	1.428 400 05	41 54 31.4	13 58 10.5	13 54 19.7	0 3 50.8
1.2100	0.514 396 23	1.429 524 65	41 56 36.2	13 58 52.1	13 55 0.7	0 3 51.3
1.2105	0.514 867 63	1.430 649 58	41 58 41.0	13 59 33.7	13 55 41.7	0 3 51.9
1.2110	0.515 339 35	1.431 774 83	42 0 45.8	14 0 15.3	13 56 22.8	0 3 52.5
1.2115	0.515 811 38	1.432 900 41	42 2 50.8	14 0 56.9	13 57 3.8	0 3 53.1
1.2120	0.516 283 74	1.434 026 31	42 4 55.7	14 1 38.6	13 57 44.9	0 3 53.7
1.2125	0.516 756 41	1.435 152 54	42 7 0.7	14 2 20.2	13 58 26.0	0 3 54.3
1.2130	0.517 229 40	1.436 279 09	42 9 5.8	14 3 1.9	13 59 7.1	0 3 54.8
1.2135	0.517 702 72	1.437 405 97	42 11 10.9	14 3 43.6	13 59 48.2	0 3 55.4
1.2140	0.518 176 35	1.438 533 17	42 13 16.1	14 4 25.4	14 0 29.4	0 3 56.0
1.2145	0.518 650 30	1.439 660 69	42 15 21.4	14 5 7.1	14 1 10.5	0 3 56.6
1.2150	0.519 124 57	1.440 788 54	42 17 26.6	14 5 48.9	14 1 51.7	0 3 57.2
1.2155	0.519 599 17	1.441 916 71	42 19 32.0	14 6 30.7	14 2 32.9	0 3 57.8
1.2160	0.520 074 08	1.443 045 21	42 21 37.3	14 7 12.4	14 3 14.1	0 3 58.4
1.2165	0.520 549 32	1.444 174 02	42 23 42.8	14 7 54.3	14 3 55.3	0 3 59.0
1.2170	0.521 024 88	1.445 303 16	42 25 48.3	14 8 36.1	14 4 36.5	0 3 59.6
1.2175	0.521 500 76	1.446 432 62	42 27 53.8	14 9 17.9	14 5 17.8	0 4 0.2
1.2180	0.521 976 96	1.447 562 41	42 29 59.4	14 9 59.8	14 5 59.0	0 4 0.8
1.2185	0.522 453 49	1.448 692 51	42 32 5.0	14 10 41.7	14 6 40.3	0 4 1.4
1.2190	0.522 930 34	1.449 822 93	42 34 10.7	14 11 23.6	14 7 21.6	0 4 2.0
1.2195	0.523 407 51	1.450 953 68	42 36 16.5	14 12 5.5	14 8 2.9	0 4 2.6
1.2200	0.523 885 01	1.452 084 74	42 38 22.3	14 12 47.4	14 8 44.3	0 4 3.2
1.2205	0.524 362 83	1.453 216 13	42 40 28.1	14 13 29.4	14 9 25.6	0 4 3.8
1.2210	0.524 840 97	1.454 347 84	42 42 34.0	14 14 11.3	14 10 7.0	0 4 4.4
1.2215	0.525 319 44	1.455 479 86	42 44 40.0	14 14 53.3	14 10 48.3	0 4 5.0
1.2220	0.525 798 24	1.456 612 21	42 46 46.0	14 15 35.3	14 11 29.7	0 4 5.6
1.2225	0.526 277 35	1.457 744 87	42 48 52.0	14 16 17.3	14 12 11.1	0 4 6.2
1.2230	0.526 756 80	1.458 877 86	42 50 58.1	14 16 59.4	14 12 52.6	0 4 6.8
1.2235	0.527 236 57	1.460 011 16	42 53 4.3	14 17 41.4	14 13 34.0	0 4 7.4
1.2240	0.527 716 67	1.461 144 78	42 55 10.5	14 18 23.5	14 14 15.5	0 4 8.0
1.2245	0.528 197 09	1.462 278 72	42 57 16.8	14 19 5.6	14 14 56.9	0 4 8.6
1.2250	0.528 677 84	1.463 412 97	42 59 23.1	14 19 47.7	14 15 38.4	0 4 9.3
1.2255	0.529 158 91	1.464 547 54	43 1 29.4	14 20 29.8	14 16 19.9	0 4 9.9
1.2260	0.529 640 32	1.465 682 43	43 3 35.8	14 21 11.9	14 17 1.5	0 4 10.5
1.2265	0.530 122 05	1.466 817 64	43 5 42.3	14 21 54.1	14 17 43.0	0 4 11.1
1.2270	0.530 604 11	1.467 953 16	43 7 48.8	14 22 36.3	14 18 24.5	0 4 11.7
1.2275	0.531 086 50	1.469 089 00	43 9 55.4	14 23 18.5	14 19 6.1	0 4 12.4
1.2280	0.531 569 21	1.470 225 16	43 12 2.0	14 24 0.7	14 19 47.7	0 4 13.0
1.2285	0.532 052 26	1.471 361 63	43 14 8.7	14 24 42.9	14 20 29.3	0 4 13.6
1.2290	0.532 535 63	1.472 498 41	43 16 15.4	14 25 25.1	14 21 10.9	0 4 14.2
1.2295	0.533 019 34	1.473 635 52	43 18 22.2	14 26 7.4	14 21 52.5	0 4 14.9
1.2300	0.533 503 37	1.474 772 93	43 20 29.0	14 26 49.7	14 22 34.2	0 4 15.5
1.2305	0.533 987 73	1.475 910 66	43 22 35.9	14 27 32.0	14 23 15.9	0 4 16.1
1.2310	0.534 472 43	1.477 048 71	43 24 42.8	14 28 14.3	14 23 57.5	0 4 16.7
1.2315	0.534 957 45	1.478 187 06	43 26 49.8	14 28 56.6	14 24 39.2	0 4 17.4
1.2320	0.535 442 81	1.479 325 74	43 28 56.8	14 29 38.9	14 25 20.9	0 4 18.0
1.2325	0.535 928 50	1.480 464 72	43 31 3.9	14 30 21.3	14 26 2.7	0 4 18.6
1.2330	0.536 414 52	1.481 604 02	43 33 11.1	14 31 3.7	14 26 44.4	0 4 19.3
1.2335	0.536 900 87	1.482 743 63	43 35 18.2	14 31 46.1	14 27 26.2	0 4 19.9
1.2340	0.537 387 55	1.483 883 55	43 37 25.5	14 32 28.5	14 28 7.9	0 4 20.6
1.2345	0.537 874 57	1.485 023 79	43 39 32.8	14 33 10.9	14 28 49.7	0 4 21.2
1.2350	0.538 361 92	1.486 164 34	43 41 40.1	14 33 53.4	14 29 31.5	0 4 21.8
1.2355	0.538 849 60	1.487 305 19	43 43 47.5	14 34 35.8	14 30 13.4	0 4 22.5
1.2360	0.539 337 62	1.488 446 36	43 45 55.0	14 35 18.3	14 30 55.2	0 4 23.1
1.2365	0.539 825 97	1.489 587 84	43 48 2.5	14 36 0.8	14 31 37.0	0 4 23.8
1.2370	0.540 314 65	1.490 729 64	43 50 10.0	14 36 43.3	14 32 18.9	0 4 24.4
1.2375	0.540 803 67	1.491 871 74	43 52 17.6	14 37 25.9	14 33 0.8	0 4 25.1
1.2380	0.541 293 03	1.493 014 15	43 54 25.3	14 38 8.4	14 33 42.7	0 4 25.7
1.2385	0.541 782 72	1.494 156 87	43 56 33.0	14 38 51.0	14 34 24.6	0 4 26.4
1.2390	0.542 272 74	1.495 299 90	43 58 40.7	14 39 33.6	14 35 6.6	0 4 27.0
1.2395	0.542 763 10	1.496 443 24	44 0 48.5	14 40 16.2	14 35 48.5	0 4 27.7
1.2400	0.543 253 80	1.497 586 89	44 2 56.4	14 40 58.8	14 36 30.5	0 4 28.3

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VL S/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.2405	1.538 840 25	1.450 202 80	0.378 293 52	0.754 483 98	0.096 607 74	1.059 623 15
1.2410	1.540 081 00	1.451 232 90	0.378 877 82	0.755 068 59	0.096 760 30	1.060 535 27
1.2415	1.541 322 25	1.452 263 10	0.379 462 76	0.755 653 38	0.096 913 04	1.061 447 90
1.2420	1.542 564 00	1.453 293 38	0.380 048 31	0.756 238 36	0.097 065 95	1.062 361 06
1.2425	1.543 806 25	1.454 323 76	0.380 634 50	0.756 823 51	0.097 219 03	1.063 274 73
1.2430	1.545 049 00	1.455 354 22	0.381 221 30	0.757 408 84	0.097 372 29	1.064 188 92
1.2435	1.546 292 25	1.456 384 77	0.381 808 74	0.757 994 35	0.097 525 73	1.065 103 64
1.2440	1.547 536 00	1.457 415 41	0.382 396 80	0.758 580 04	0.097 679 34	1.066 018 87
1.2445	1.548 780 25	1.458 446 14	0.382 985 48	0.759 165 90	0.097 833 12	1.066 934 62
1.2450	1.550 025 00	1.459 476 95	0.383 574 79	0.759 751 95	0.097 987 08	1.067 850 90
1.2455	1.551 270 25	1.460 507 85	0.384 164 73	0.760 338 17	0.098 141 21	1.068 767 69
1.2460	1.552 516 00	1.461 538 84	0.384 755 30	0.760 924 58	0.098 295 52	1.069 685 01
1.2465	1.553 762 25	1.462 569 91	0.385 346 49	0.761 511 16	0.098 450 01	1.070 602 85
1.2470	1.555 009 00	1.463 601 C6	0.385 938 31	0.762 097 92	0.098 604 67	1.071 521 21
1.2475	1.556 256 25	1.464 632 30	0.386 530 76	0.762 684 86	0.098 759 50	1.072 440 10
1.2480	1.557 504 00	1.465 663 62	0.387 123 83	0.763 271 97	0.098 914 51	1.073 359 51
1.2485	1.558 752 25	1.466 695 03	0.387 717 54	0.763 859 27	0.099 069 70	1.074 279 44
1.2490	1.560 001 00	1.467 726 51	0.388 311 87	0.764 446 74	0.099 225 06	1.075 199 90
1.2495	1.561 250 25	1.468 758 C8	0.388 906 83	0.765 034 39	0.099 380 59	1.076 120 88
1.2500	1.562 500 00	1.469 789 73	0.389 502 42	0.765 622 21	0.099 536 31	1.077 042 38
1.2505	1.563 750 25	1.470 821 45	0.390 098 64	0.766 210 22	0.099 692 20	1.077 964 42
1.2510	1.565 001 00	1.471 853 26	0.390 695 49	0.766 798 40	0.099 848 26	1.078 886 97
1.2515	1.566 252 25	1.472 885 14	0.391 292 97	0.767 386 76	0.100 004 50	1.079 810 05
1.2520	1.567 504 00	1.473 917 11	0.391 891 08	0.767 975 30	0.100 160 92	1.080 733 66
1.2525	1.568 756 25	1.474 949 15	0.392 489 82	0.768 564 01	0.100 317 51	1.081 657 80
1.2530	1.570 009 00	1.475 981 27	0.393 089 20	0.769 152 90	0.100 474 28	1.082 582 46
1.2535	1.571 262 25	1.477 013 46	0.393 689 20	0.769 741 97	0.100 631 23	1.083 507 65
1.2540	1.572 516 00	1.478 045 73	0.394 289 83	0.770 331 21	0.100 788 36	1.084 433 36
1.2545	1.573 770 25	1.479 078 07	0.394 891 10	0.770 920 63	0.100 945 66	1.085 359 61
1.2550	1.575 025 00	1.480 110 49	0.395 493 00	0.771 510 23	0.101 103 14	1.086 286 38
1.2555	1.576 280 25	1.481 142 98	0.396 095 53	0.772 100 00	0.101 260 79	1.087 213 68
1.2560	1.577 536 00	1.482 175 55	0.396 698 69	0.772 689 95	0.101 418 62	1.088 141 51
1.2565	1.578 792 25	1.483 208 19	0.397 302 48	0.773 280 08	0.101 576 64	1.089 069 87
1.2570	1.580 049 00	1.484 240 90	0.397 906 91	0.773 870 38	0.101 734 82	1.089 998 76
1.2575	1.581 306 25	1.485 273 68	0.398 511 97	0.774 460 86	0.101 893 19	1.090 928 18
1.2580	1.582 564 00	1.486 306 53	0.399 117 67	0.775 051 51	0.102 051 73	1.091 858 13
1.2585	1.583 822 25	1.487 339 45	0.399 723 99	0.775 642 34	0.102 210 45	1.092 788 61
1.2590	1.585 081 00	1.488 372 45	0.400 330 96	0.776 233 35	0.102 369 35	1.093 719 63
1.2595	1.586 340 25	1.489 405 51	0.400 938 55	0.776 824 53	0.102 528 43	1.094 651 17
1.2600	1.587 600 00	1.490 438 64	0.401 546 78	0.777 415 89	0.102 687 68	1.095 583 25
1.2605	1.588 860 25	1.491 471 83	0.402 155 65	0.778 007 42	0.102 847 11	1.096 515 86
1.2610	1.590 121 00	1.492 505 10	0.402 765 15	0.778 599 12	0.103 006 73	1.097 449 00
1.2615	1.591 382 25	1.493 538 43	0.403 375 29	0.779 191 01	0.103 166 52	1.098 382 68
1.2620	1.592 644 00	1.494 571 82	0.403 986 06	0.779 783 06	0.103 326 48	1.099 316 89
1.2625	1.593 906 25	1.495 605 28	0.404 597 47	0.780 375 29	0.103 486 63	1.100 251 63
1.2630	1.595 169 00	1.496 638 81	0.405 209 51	0.780 967 70	0.103 646 96	1.101 186 91
1.2635	1.596 432 25	1.497 672 39	0.405 822 19	0.781 560 28	0.103 807 46	1.102 122 72
1.2640	1.597 696 00	1.498 706 05	0.406 435 51	0.782 153 04	0.103 968 15	1.103 059 07
1.2645	1.598 960 25	1.499 739 76	0.407 049 46	0.782 745 97	0.104 129 01	1.103 995 95
1.2650	1.600 225 00	1.500 773 54	0.407 664 05	0.783 339 07	0.104 290 05	1.104 933 37
1.2655	1.601 490 25	1.501 807 37	0.408 279 28	0.783 932 35	0.104 451 27	1.105 871 33
1.2660	1.602 756 00	1.502 841 27	0.408 895 14	0.784 525 80	0.104 612 68	1.106 809 82
1.2665	1.604 022 25	1.503 875 23	0.409 511 65	0.785 119 43	0.104 774 26	1.107 748 85
1.2670	1.605 289 00	1.504 909 25	0.410 128 79	0.785 713 23	0.104 936 02	1.108 688 42
1.2675	1.606 556 25	1.505 943 33	0.410 746 57	0.786 307 20	0.105 097 96	1.109 628 52
1.2680	1.607 824 00	1.506 977 46	0.411 364 99	0.786 901 35	0.105 260 08	1.110 569 16
1.2685	1.609 092 25	1.508 011.65	0.411 984 05	0.787 495 67	0.105 422 38	1.111 510 34
1.2690	1.610 361 00	1.509 045 90	0.412 603 74	0.788 090 16	0.105 584 86	1.112 452 06
1.2695	1.611 630 25	1.510 080 21	0.413 224 08	0.788 684 83	0.105 747 52	1.113 394 32
1.2700	1.612 900 00	1.511 114 57	0.413 845 06	0.789 279 67	0.105 910 36	1.114 337 12
1.2705	1.614 170 25	1.512 148 98	0.414 466 67	0.789 874 68	0.106 073 38	1.115 280 46
1.2710	1.615 441 00	1.513 183 45	0.415 088 93	0.790 469 87	0.106 236 58	1.116 224 34
1.2715	1.616 712 25	1.514 217 98	0.415 711 83	0.791 065 23	0.106 399 97	1.117 168 77
1.2720	1.617 984 00	1.515 252 55	0.416 335 36	0.791 660 76	0.106 563 53	1.118 113 73
1.2725	1.619 256 25	1.516 287 18	0.416 959 54	0.792 256 47	0.106 727 27	1.119 059 23
1.2730	1.620 529 00	1.517 321 86	0.417 584 36	0.792 852 34	0.106 891 20	1.120 005 28
1.2735	1.621 802 25	1.518 356 60	0.418 209 82	0.793 448 39	0.107 055 30	1.120 951 87
1.2740	1.623 076 00	1.519 391 38	0.418 835 93	0.794 044 61	0.107 219 59	1.121 899 00
1.2745	1.624 350 25	1.520 426 21	0.419 462 67	0.794 641 01	0.107 384 06	1.122 846 68
1.2750	1.625 625 00	1.521 461 C9	0.420 090 06	0.795 237 57	0.107 548 71	1.123 794 90
1.2755	1.626 900 25	1.522 496 02	0.420 718 09	0.795 834 31	0.107 713 54	1.124 743 66
1.2760	1.628 176 00	1.523 531 00	0.421 346 76	0.796 431 22	0.107 878 56	1.125 692 97
1.2765	1.629 452 25	1.524 566 C3	0.421 976 08	0.797 028 30	0.108 043 75	1.126 642 82
1.2770	1.630 729 00	1.525 601 10	0.422 606 04	0.797 625 55	0.108 209 13	1.127 593 22
1.2775	1.632 006 25	1.526 636 22	0.423 236 64	0.798 222 98	0.108 374 69	1.128 544 16
1.2780	1.633 284 00	1.527 671 38	0.423 867 89	0.798 820 57	0.108 540 43	1.129 495 65
1.2785	1.634 562 25	1.528 706 59	0.424 499 78	0.799 418 34	0.108 706 35	1.130 447 69
1.2790	1.635 841 00	1.529 741 84	0.425 132 31	0.800 016 27	0.108 872 46	1.131 400 27
1.2795	1.637 120 25	1.530 777 14	0.425 765 49	0.800 614 38	0.109 038 75	1.132 353 40
1.2800	1.638 400 00	1.531 812 48	0.426 399 31	0.801 212 66	0.109 205 22	1.133 307 08

A/R= =LS/A= =VLS/R	ST/R	LC/P	θ	1/3 θ=ϕ+C	ϕ	C
			DEG MNT SEC			
1.2405	0.543 744 83	1.498 730 85	44 5 4.3	14 41 41.4	14 37 12.4	0 4 29.0
1.2410	0.544 236 21	1.499 875 11	44 7 12.3	14 42 24.1	14 37 54.4	0 4 29.6
1.2415	0.544 727 91	1.501 019 68	44 9 20.3	14 43 6.8	14 38 36.5	0 4 30.3
1.2420	0.545 219 96	1.502 164 56	44 11 28.3	14 43 49.4	14 39 18.5	0 4 31.0
1.2425	0.545 712 34	1.503 309 75	44 13 36.4	14 44 32.1	14 40 0.5	0 4 31.6
1.2430	0.546 205 06	1.504 455 25	44 15 44.6	14 45 14.9	14 40 42.6	0 4 32.3
1.2435	0.546 698 13	1.505 601 05	44 17 52.8	14 45 57.6	14 41 24.7	0 4 32.9
1.2440	0.547 191 52	1.506 747 16	44 20 1.1	14 46 40.4	14 42 6.8	0 4 33.6
1.2445	0.547 685 26	1.507 893 57	44 22 9.4	14 47 23.1	14 42 48.9	0 4 34.3
1.2450	0.548 179 34	1.509 040 29	44 24 17.8	14 48 5.9	14 43 31.0	0 4 34.9
1.2455	0.548 673 76	1.510 187 32	44 26 26.2	14 48 48.7	14 44 13.1	0 4 35.6
1.2460	0.549 168 52	1.511 334 65	44 28 34.7	14 49 31.6	14 44 55.3	0 4 36.3
1.2465	0.549 663 62	1.512 482 28	44 30 43.2	14 50 14.4	14 45 37.4	0 4 37.0
1.2470	0.550 159 06	1.513 630 22	44 32 51.8	14 50 57.3	14 46 19.6	0 4 37.6
1.2475	0.550 654 84	1.514 778 47	44 35 0.4	14 51 40.1	14 47 1.8	0 4 38.3
1.2480	0.551 150 96	1.515 927 02	44 37 9.1	14 52 23.0	14 47 44.1	0 4 39.0
1.2485	0.551 647 42	1.517 075 87	44 39 17.9	14 53 6.0	14 48 26.3	0 4 39.7
1.2490	0.552 144 23	1.518 225 02	44 41 26.7	14 53 48.9	14 49 8.5	0 4 40.3
1.2495	0.552 641 38	1.519 374 48	44 43 35.5	14 54 31.8	14 49 50.8	0 4 41.0
1.2500	0.553 138 87	1.520 524 24	44 45 44.4	14 55 14.8	14 50 33.1	0 4 41.7
1.2505	0.553 636 71	1.521 674 31	44 47 53.3	14 55 57.8	14 51 15.4	0 4 42.4
1.2510	0.554 134 89	1.522 824 67	44 50 2.3	14 56 40.8	14 51 57.7	0 4 43.1
1.2515	0.554 633 41	1.523 975 34	44 52 11.4	14 57 23.8	14 52 40.0	0 4 43.8
1.2520	0.555 132 28	1.525 126 31	44 54 20.5	14 58 6.8	14 53 22.4	0 4 44.5
1.2525	0.555 631 49	1.526 277 58	44 56 29.6	14 58 49.9	14 54 4.7	0 4 45.1
1.2530	0.556 131 04	1.527 429 15	44 58 38.8	14 59 32.9	14 54 47.1	0 4 45.8
1.2535	0.556 630 95	1.528 581 02	45 0 48.1	15 0 16.0	14 55 29.5	0 4 46.5
1.2540	0.557 131 19	1.529 733 19	45 2 57.4	15 0 59.1	14 56 11.9	0 4 47.2
1.2545	0.557 631 79	1.530 885 67	45 5 6.7	15 1 42.2	14 56 54.3	0 4 47.9
1.2550	0.558 132 73	1.532 038 44	45 7 16.1	15 2 25.4	14 57 36.8	0 4 48.6
1.2555	0.558 634 01	1.533 191 51	45 9 25.6	15 3 8.5	14 58 19.2	0 4 49.3
1.2560	0.559 135 65	1.534 344 88	45 11 35.1	15 3 51.7	14 59 1.7	0 4 50.0
1.2565	0.559 637 63	1.535 498 55	45 13 44.6	15 4 34.9	14 59 44.2	0 4 50.7
1.2570	0.560 139 96	1.536 652 52	45 15 54.3	15 5 18.1	15 0 26.7	0 4 51.4
1.2575	0.560 642 63	1.537 806 78	45 18 3.9	15 6 1.3	15 1 9.2	0 4 52.1
1.2580	0.561 145 66	1.538 961 34	45 20 13.6	15 6 44.5	15 1 51.7	0 4 52.8
1.2585	0.561 649 03	1.540 116 21	45 22 23.4	15 7 27.8	15 2 34.3	0 4 53.5
1.2590	0.562 152 76	1.541 271 36	45 24 33.2	15 8 11.1	15 3 16.8	0 4 54.2
1.2595	0.562 656 83	1.542 426 82	45 26 43.1	15 8 54.4	15 3 59.4	0 4 54.9
1.2600	0.563 161 25	1.543 582 57	45 28 53.0	15 9 37.7	15 4 42.0	0 4 55.6
1.2605	0.563 666 02	1.544 738 62	45 31 3.0	15 10 21.0	15 5 24.6	0 4 56.4
1.2610	0.564 171 15	1.545 894 96	45 33 13.0	15 11 4.3	15 6 7.3	0 4 57.1
1.2615	0.564 676 62	1.547 051 60	45 35 23.1	15 11 47.7	15 6 49.9	0 4 57.8
1.2620	0.565 182 45	1.548 208 53	45 37 33.2	15 12 31.1	15 7 32.6	0 4 58.5
1.2625	0.565 688 62	1.549 365 76	45 39 43.4	15 13 14.5	15 8 15.2	0 4 59.2
1.2630	0.566 195 15	1.550 523 29	45 41 53.6	15 13 57.9	15 8 57.9	0 4 59.9
1.2635	0.566 702 03	1.551 681 10	45 44 3.9	15 14 41.3	15 9 40.6	0 5 0.7
1.2640	0.567 209 27	1.552 839 22	45 46 14.2	15 15 24.7	15 10 23.4	0 5 1.4
1.2645	0.567 716 85	1.553 997 62	45 48 24.6	15 16 8.2	15 11 6.1	0 5 2.1
1.2650	0.568 224 79	1.555 156 32	45 50 35.0	15 16 51.7	15 11 48.9	0 5 2.8
1.2655	0.568 733 09	1.556 315 31	45 52 45.5	15 17 35.2	15 12 31.6	0 5 3.6
1.2660	0.569 241 73	1.557 474 60	45 54 56.1	15 18 18.7	15 13 14.4	0 5 4.3
1.2665	0.569 750 74	1.558 634 18	45 57 6.7	15 19 2.2	15 13 57.2	0 5 5.0
1.2670	0.570 260 09	1.559 794 05	45 59 17.3	15 19 45.8	15 14 40.0	0 5 5.7
1.2675	0.570 769 80	1.560 954 21	46 1 28.0	15 20 29.3	15 15 22.9	0 5 6.5
1.2680	0.571 279 87	1.562 114 66	46 3 38.8	15 21 12.9	15 16 5.7	0 5 7.2
1.2685	0.571 790 30	1.563 275 41	46 5 49.6	15 21 56.5	15 16 48.6	0 5 7.9
1.2690	0.572 301 08	1.564 436 44	46 8 0.4	15 22 40.1	15 17 31.4	0 5 8.7
1.2695	0.572 812 21	1.565 597 77	46 10 11.3	15 23 23.8	15 18 14.3	0 5 9.4
1.2700	0.573 323 70	1.566 759 38	46 12 22.3	15 24 7.4	15 18 57.3	0 5 10.2
1.2705	0.573 835 56	1.567 921 29	46 14 33.3	15 24 51.1	15 19 40.2	0 5 10.9
1.2710	0.574 347 76	1.569 083 48	46 16 44.3	15 25 34.8	15 20 23.1	0 5 11.6
1.2715	0.574 860 33	1.570 245 97	46 18 55.4	15 26 18.5	15 21 6.1	0 5 12.4
1.2720	0.575 373 25	1.571 408 74	46 21 6.6	15 27 2.2	15 21 49.1	0 5 13.1
1.2725	0.575 886 54	1.572 571 81	46 23 17.8	15 27 45.9	15 22 32.0	0 5 13.9
1.2730	0.576 400 18	1.573 735 16	46 25 29.1	15 28 29.7	15 23 15.1	0 5 14.6
1.2735	0.576 914 18	1.574 898 79	46 27 40.4	15 29 13.5	15 23 58.1	0 5 15.4
1.2740	0.577 428 55	1.576 062 72	46 29 51.7	15 29 57.2	15 24 41.1	0 5 16.1
1.2745	0.577 943 27	1.577 226 93	46 32 3.1	15 30 41.0	15 25 24.2	0 5 16.9
1.2750	0.578 458 35	1.578 391 43	46 34 14.6	15 31 24.9	15 26 7.2	0 5 17.6
1.2755	0.578 973 80	1.579 556 22	46 36 26.1	15 32 8.7	15 26 50.3	0 5 18.4
1.2760	0.579 489 60	1.580 721 29	46 38 37.7	15 32 52.6	15 27 33.4	0 5 19.2
1.2765	0.580 005 77	1.581 886 65	46 40 49.3	15 33 36.4	15 28 16.5	0 5 19.9
1.2770	0.580 522 30	1.583 052 30	46 43 1.0	15 34 20.3	15 28 59.7	0 5 20.7
1.2775	0.581 039 19	1.584 218 23	46 45 12.7	15 35 4.2	15 29 42.8	0 5 21.4
1.2780	0.581 556 44	1.585 384 45	46 47 24.5	15 35 48.2	15 30 26.0	0 5 22.2
1.2785	0.582 074 06	1.586 550 95	46 49 36.3	15 36 32.1	15 31 9.1	0 5 23.0
1.2790	0.582 592 04	1.587 717 73	46 51 48.2	15 37 16.1	15 31 52.3	0 5 23.7
1.2795	0.583 110 39	1.588 884 80	46 54 0.1	15 38 0.0	15 32 35.5	0 5 24.5
1.2800	0.583 629 10	1.590 052 15	46 56 12.1	15 38 44.0	15 33 18.8	0 5 25.3

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.2805	1.639 680 25	1.532 647 86	0.427 033 78	0.801 811 11	0.109 371 87	1.134 261 31
1.2810	1.640 961 00	1.533 883 28	0.427 668 90	0.802 409 73	0.109 538 71	1.135 216 09
1.2815	1.642 242 25	1.534 918 75	0.428 304 66	0.803 008 52	0.109 705 73	1.136 171 41
1.2820	1.643 524 00	1.535 954 25	0.428 941 06	0.803 607 48	0.109 872 93	1.137 127 28
1.2825	1.644 806 25	1.536 989 79	0.429 578 11	0.804 206 61	0.110 040 32	1.138 083 71
1.2830	1.646 089 00	1.538 025 37	0.430 215 81	0.804 805 91	0.110 207 88	1.139 040 68
1.2835	1.647 372 25	1.539 061 00	0.430 854 15	0.805 405 39	0.110 375 64	1.139 998 21
1.2840	1.648 656 00	1.540 096 65	0.431 493 14	0.806 005 03	0.110 543 57	1.140 956 28
1.2845	1.649 940 25	1.541 132 35	0.432 132 78	0.806 604 84	0.110 711 69	1.141 914 91
1.2850	1.651 225 00	1.542 168 08	0.432 773 06	0.807 204 82	0.110 879 99	1.142 874 09
1.2855	1.652 510 25	1.543 203 85	0.433 414 00	0.807 804 97	0.111 048 48	1.143 833 82
1.2860	1.653 796 00	1.544 239 65	0.434 055 58	0.808 405 29	0.111 217 15	1.144 794 10
1.2865	1.655 082 25	1.545 275 48	0.434 697 80	0.809 005 78	0.111 386 00	1.145 754 94
1.2870	1.656 369 00	1.546 311 35	0.435 340 68	0.809 606 44	0.111 555 04	1.146 716 33
1.2875	1.657 656 25	1.547 347 26	0.435 984 20	0.810 207 26	0.111 724 26	1.147 678 27
1.2880	1.658 944 00	1.548 383 19	0.436 628 38	0.810 808 26	0.111 893 67	1.148 640 77
1.2885	1.660 232 25	1.549 419 16	0.437 273 20	0.811 409 42	0.112 063 26	1.149 603 83
1.2890	1.661 521 00	1.550 455 16	0.437 918 67	0.812 010 76	0.112 233 04	1.150 567 44
1.2895	1.662 810 25	1.551 491 19	0.438 564 79	0.812 612 26	0.112 403 00	1.151 531 60
1.2900	1.664 100 00	1.552 527 24	0.439 211 56	0.813 213 93	0.112 573 14	1.152 496 32
1.2905	1.665 390 25	1.553 563 33	0.439 858 98	0.813 815 77	0.112 743 47	1.153 461 60
1.2910	1.666 681 00	1.554 599 45	0.440 507 04	0.814 417 78	0.112 913 98	1.154 427 43
1.2915	1.667 972 25	1.555 635 59	0.441 155 76	0.815 019 95	0.113 084 68	1.155 393 82
1.2920	1.669 264 00	1.556 671 76	0.441 805 13	0.815 622 29	0.113 255 57	1.156 360 77
1.2925	1.670 556 25	1.557 707 96	0.442 455 15	0.816 224 80	0.113 426 64	1.157 328 27
1.2930	1.671 849 00	1.558 744 18	0.443 105 83	0.816 827 48	0.113 597 89	1.158 296 34
1.2935	1.673 142 25	1.559 780 43	0.443 757 15	0.817 430 33	0.113 769 33	1.159 264 96
1.2940	1.674 436 00	1.560 816 70	0.444 409 12	0.818 033 34	0.113 940 96	1.160 234 15
1.2945	1.675 730 25	1.561 853 00	0.445 061 75	0.818 636 53	0.114 112 77	1.161 203 89
1.2950	1.677 025 00	1.562 889 32	0.445 715 03	0.819 239 87	0.114 284 77	1.162 174 19
1.2955	1.678 320 25	1.563 925 66	0.446 368 96	0.819 843 39	0.114 456 95	1.163 145 06
1.2960	1.679 616 00	1.564 962 03	0.447 023 54	0.820 447 07	0.114 629 32	1.164 116 48
1.2965	1.680 912 25	1.565 998 41	0.447 678 77	0.821 050 92	0.114 801 88	1.165 088 47
1.2970	1.682 209 00	1.567 034 82	0.448 334 66	0.821 654 94	0.114 974 62	1.166 061 02
1.2975	1.683 506 25	1.568 071 24	0.448 991 20	0.822 259 12	0.115 147 55	1.167 034 13
1.2980	1.684 804 00	1.569 107 69	0.449 648 40	0.822 863 47	0.115 320 66	1.168 007 80
1.2985	1.686 102 25	1.570 144 15	0.450 306 24	0.823 467 99	0.115 493 97	1.168 982 04
1.2990	1.687 401 00	1.571 180 63	0.450 964 74	0.824 072 67	0.115 667 45	1.169 956 84
1.2995	1.688 700 25	1.572 217 13	0.451 623 90	0.824 677 52	0.115 841 13	1.170 932 21
1.3000	1.690 000 00	1.573 253 64	0.452 283 71	0.825 282 53	0.116 014 99	1.171 908 14
1.3005	1.691 300 25	1.574 290 18	0.452 944 17	0.825 887 71	0.116 189 04	1.172 884 63
1.3010	1.692 601 00	1.575 326 72	0.453 605 29	0.826 493 06	0.116 363 28	1.173 861 69
1.3015	1.693 902 25	1.576 363 28	0.454 267 06	0.827 098 57	0.116 537 70	1.174 839 32
1.3020	1.695 204 00	1.577 399 86	0.454 929 49	0.827 704 25	0.116 712 31	1.175 817 51
1.3025	1.696 506 25	1.578 436 44	0.455 592 58	0.828 310 09	0.116 887 11	1.176 796 27
1.3030	1.697 809 00	1.579 473 04	0.456 256 31	0.828 916 10	0.117 062 09	1.177 775 59
1.3035	1.699 112 25	1.580 509 65	0.456 920 71	0.829 522 27	0.117 237 27	1.178 755 49
1.3040	1.700 416 00	1.581 546 28	0.457 585 76	0.830 128 61	0.117 412 63	1.179 735 95
1.3045	1.701 720 25	1.582 582 91	0.458 251 47	0.830 735 12	0.117 588 17	1.180 716 98
1.3050	1.703 025 00	1.583 619 55	0.458 917 83	0.831 341 78	0.117 763 91	1.181 698 58
1.3055	1.704 330 25	1.584 656 21	0.459 584 85	0.831 948 62	0.117 939 84	1.182 680 75
1.3060	1.705 636 00	1.585 692 87	0.460 252 53	0.832 555 62	0.118 115 95	1.183 663 49
1.3065	1.706 942 25	1.586 729 54	0.460 920 86	0.833 162 78	0.118 292 25	1.184 646 80
1.3070	1.708 249 00	1.587 766 21	0.461 589 85	0.833 770 10	0.118 468 74	1.185 630 68
1.3075	1.709 556 25	1.588 802 89	0.462 259 50	0.834 377 59	0.118 645 42	1.186 615 13
1.3080	1.710 864 00	1.589 839 58	0.462 929 81	0.834 985 25	0.118 822 28	1.187 600 15
1.3085	1.712 172 25	1.590 876 27	0.463 600 77	0.835 593 07	0.118 999 34	1.188 585 74
1.3090	1.713 481 00	1.591 912 97	0.464 272 40	0.836 201 05	0.119 176 58	1.189 571 91
1.3095	1.714 790 25	1.592 949 67	0.464 944 68	0.836 809 20	0.119 354 02	1.190 558 65
1.3100	1.716 100 00	1.593 986 38	0.465 617 62	0.837 417 51	0.119 531 64	1.191 545 96
1.3105	1.717 410 25	1.595 023 08	0.466 291 22	0.838 025 98	0.119 709 45	1.192 533 85
1.3110	1.718 721 00	1.596 059 79	0.466 965 48	0.838 634 62	0.119 887 45	1.193 522 31
1.3115	1.720 032 25	1.597 096 50	0.467 640 39	0.839 243 42	0.120 065 64	1.194 511 35
1.3120	1.721 344 00	1.598 133 21	0.468 315 97	0.839 852 38	0.120 244 02	1.195 500 96
1.3125	1.722 656 25	1.599 169 92	0.468 992 20	0.840 461 51	0.120 422 59	1.196 491 15
1.3130	1.723 969 00	1.600 206 63	0.469 669 10	0.841 070 80	0.120 601 35	1.197 481 91
1.3135	1.725 282 25	1.601 243 33	0.470 346 66	0.841 680 25	0.120 780 29	1.198 473 25
1.3140	1.726 596 00	1.602 280 04	0.471 024 87	0.842 289 86	0.120 959 43	1.199 465 17
1.3145	1.727 910 25	1.603 316 74	0.471 703 75	0.842 899 64	0.121 138 76	1.200 457 66
1.3150	1.729 225 00	1.604 353 44	0.472 383 29	0.843 509 58	0.121 318 28	1.201 450 74
1.3155	1.730 540 25	1.605 390 13	0.473 063 49	0.844 119 68	0.121 497 99	1.202 444 39
1.3160	1.731 856 00	1.606 426 82	0.473 744 35	0.844 729 94	0.121 677 89	1.203 438 62
1.3165	1.733 172 25	1.607 463 50	0.474 425 87	0.845 340 37	0.121 857 98	1.204 433 43
1.3170	1.734 489 00	1.608 500 17	0.475 108 05	0.845 950 96	0.122 038 26	1.205 428 82
1.3175	1.735 806 25	1.609 536 84	0.475 790 90	0.846 561 70	0.122 218 73	1.206 424 79
1.3180	1.737 124 00	1.610 573 50	0.476 474 40	0.847 172 62	0.122 399 39	1.207 421 34
1.3185	1.738 442 25	1.611 610 15	0.477 158 57	0.847 783 69	0.122 580 24	1.208 418 47
1.3190	1.739 761 00	1.612 646 80	0.477 843 40	0.848 394 92	0.122 761 28	1.209 416 18
1.3195	1.741 080 25	1.613 683 43	0.478 528 90	0.849 006 32	0.122 942 52	1.210 414 48
1.3200	1.742 400 00	1.614 720 05	0.479 215 05	0.849 617 87	0.123 123 94	1.211 413 35

A/R= =LS/A= =VLS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
			DEG MNT SEC			
1.2805	0.584 148 17	1.591 219 79	46 58 24.2	15 39 28.1	15 34 2.0	0 5 26.0
1.2810	0.584 667 61	1.592 387 71	47 0 36.3	15 40 12.1	15 34 45.3	0 5 26.8
1.2815	0.585 187 42	1.593 555 91	47 2 48.4	15 40 56.1	15 35 28.5	0 5 27.6
1.2820	0.585 707 55	1.594 724 39	47 5 0.6	15 41 40.2	15 36 11.8	0 5 28.4
1.2825	0.586 228 13	1.595 893 16	47 7 12.8	15 42 24.3	15 36 55.1	0 5 29.1
1.2830	0.586 749 03	1.597 062 21	47 9 25.1	15 43 8.4	15 37 38.4	0 5 29.9
1.2835	0.587 270 30	1.598 231 54	47 11 37.5	15 43 52.5	15 38 21.8	0 5 30.7
1.2840	0.587 791 94	1.599 401 15	47 13 49.9	15 44 36.6	15 39 5.1	0 5 31.5
1.2845	0.588 313 95	1.600 571 04	47 16 2.3	15 45 20.8	15 39 48.5	0 5 32.3
1.2850	0.588 836 32	1.601 741 21	47 18 14.8	15 46 4.9	15 40 31.9	0 5 33.1
1.2855	0.589 359 07	1.602 911 66	47 20 27.4	15 46 49.1	15 41 15.3	0 5 33.8
1.2860	0.589 882 18	1.604 082 40	47 22 40.0	15 47 33.3	15 41 58.7	0 5 34.6
1.2865	0.590 405 66	1.605 253 41	47 24 52.6	15 48 17.5	15 42 42.1	0 5 35.4
1.2870	0.590 929 51	1.606 424 70	47 27 5.3	15 49 1.8	15 43 25.6	0 5 36.2
1.2875	0.591 453 73	1.607 596 27	47 29 18.1	15 49 46.0	15 44 9.0	0 5 37.0
1.2880	0.591 978 33	1.608 768 11	47 31 30.9	15 50 30.3	15 44 52.5	0 5 37.8
1.2885	0.592 503 29	1.609 940 24	47 33 43.7	15 51 14.6	15 45 36.0	0 5 38.6
1.2890	0.593 028 62	1.611 112 64	47 35 56.7	15 51 58.9	15 46 19.5	0 5 39.4
1.2895	0.593 554 33	1.612 285 33	47 38 9.6	15 52 43.2	15 47 3.0	0 5 40.2
1.2900	0.594 080 41	1.613 458 28	47 40 22.6	15 53 27.5	15 47 46.5	0 5 41.0
1.2905	0.594 606 86	1.614 631 52	47 42 35.7	15 54 11.9	15 48 30.1	0 5 41.8
1.2910	0.595 133 68	1.615 805 03	47 44 48.8	15 54 56.3	15 49 13.7	0 5 42.6
1.2915	0.595 660 88	1.616 978 82	47 47 2.0	15 55 40.7	15 49 57.3	0 5 43.4
1.2920	0.596 188 45	1.618 152 88	47 49 15.2	15 56 25.1	15 50 40.9	0 5 44.2
1.2925	0.596 716 39	1.619 327 22	47 51 28.5	15 57 9.5	15 51 24.5	0 5 45.0
1.2930	0.597 244 71	1.620 501 84	47 53 41.8	15 57 53.9	15 52 8.1	0 5 45.8
1.2935	0.597 773 41	1.621 676 72	47 55 55.2	15 58 38.4	15 52 51.7	0 5 46.7
1.2940	0.598 302 48	1.622 851 89	47 58 8.6	15 59 22.9	15 53 35.4	0 5 47.5
1.2945	0.598 831 92	1.624 027 32	48 0 22.1	16 0 7.4	15 54 19.1	0 5 48.3
1.2950	0.599 361 74	1.625 203 04	48 2 35.6	16 0 51.9	15 55 2.8	0 5 49.1
1.2955	0.599 891 94	1.626 379 02	48 4 49.2	16 1 36.4	15 55 46.5	0 5 49.9
1.2960	0.600 422 51	1.627 555 28	48 7 2.8	16 2 20.9	15 56 30.2	0 5 50.7
1.2965	0.600 953 46	1.628 731 81	48 9 16.5	16 3 5.5	15 57 13.9	0 5 51.6
1.2970	0.601 484 79	1.629 908 61	48 11 30.3	16 3 50.1	15 57 57.7	0 5 52.4
1.2975	0.602 016 50	1.631 085 69	48 13 44.0	16 4 34.7	15 58 41.5	0 5 53.2
1.2980	0.602 548 58	1.632 263 03	48 15 57.9	16 5 19.3	15 59 25.3	0 5 54.0
1.2985	0.603 081 05	1.633 440 65	48 18 11.8	16 6 3.9	16 0 9.1	0 5 54.9
1.2990	0.603 613 89	1.634 618 54	48 20 25.7	16 6 48.6	16 0 52.9	0 5 55.7
1.2995	0.604 147 11	1.635 796 70	48 22 39.7	16 7 33.2	16 1 36.7	0 5 56.5
1.3000	0.604 680 72	1.636 975 13	48 24 53.8	16 8 17.9	16 2 20.6	0 5 57.4
1.3005	0.605 214 70	1.638 153 83	48 27 7.9	16 9 2.6	16 3 4.4	0 5 58.2
1.3010	0.605 749 06	1.639 332 80	48 29 22.0	16 9 47.3	16 3 48.3	0 5 59.0
1.3015	0.606 283 81	1.640 512 04	48 31 36.2	16 10 32.1	16 4 32.2	0 5 59.9
1.3020	0.606 818 94	1.641 691 55	48 33 50.5	16 11 16.8	16 5 16.1	0 6 0.7
1.3025	0.607 354 45	1.642 871 33	48 36 4.8	16 12 1.6	16 6 0.0	0 6 1.6
1.3030	0.607 890 34	1.644 051 37	48 38 19.1	16 12 46.4	16 6 44.0	0 6 2.4
1.3035	0.608 426 61	1.645 231 69	48 40 33.5	16 13 31.2	16 7 27.9	0 6 3.2
1.3040	0.608 963 27	1.646 412 27	48 42 48.0	16 14 16.0	16 8 11.9	0 6 4.1
1.3045	0.609 500 31	1.647 593 12	48 45 2.5	16 15 0.8	16 8 55.9	0 6 4.9
1.3050	0.610 037 74	1.648 774 23	48 47 17.1	16 15 45.7	16 9 39.9	0 6 5.8
1.3055	0.610 575 55	1.649 955 61	48 49 31.7	16 16 30.6	16 10 23.9	0 6 6.6
1.3060	0.611 113 75	1.651 137 26	48 51 46.3	16 17 15.4	16 11 8.0	0 6 7.5
1.3065	0.611 652 33	1.652 319 18	48 54 1.1	16 18 0.4	16 11 52.0	0 6 8.3
1.3070	0.612 191 30	1.653 501 36	48 56 15.8	16 18 45.3	16 12 36.1	0 6 9.2
1.3075	0.612 730 65	1.654 683 80	48 58 30.6	16 19 30.2	16 13 20.2	0 6 10.1
1.3080	0.613 270 39	1.655 866 51	49 0 45.5	16 20 15.2	16 14 4.3	0 6 10.9
1.3085	0.613 810 52	1.657 049 49	49 3 0.4	16 21 0.1	16 14 48.4	0 6 11.8
1.3090	0.614 351 03	1.658 232 72	49 5 15.4	16 21 45.1	16 15 32.5	0 6 12.6
1.3095	0.614 891 93	1.659 416 23	49 7 30.4	16 22 30.1	16 16 16.6	0 6 13.5
1.3100	0.615 433 22	1.660 599 99	49 9 45.5	16 23 15.2	16 17 0.8	0 6 14.4
1.3105	0.615 974 90	1.661 784 02	49 12 0.6	16 24 0.2	16 17 45.0	0 6 15.2
1.3110	0.616 516 97	1.662 968 31	49 14 15.8	16 24 45.3	16 18 29.2	0 6 16.1
1.3115	0.617 059 43	1.664 152 87	49 16 31.1	16 25 30.4	16 19 13.4	0 6 17.0
1.3120	0.617 602 28	1.665 337 68	49 18 46.3	16 26 15.4	16 19 57.6	0 6 17.9
1.3125	0.618 145 52	1.666 522 76	49 21 1.7	16 27 0.6	16 20 41.8	0 6 18.7
1.3130	0.618 689 15	1.667 708 10	49 23 17.1	16 27 45.7	16 21 26.1	0 6 19.6
1.3135	0.619 233 17	1.668 893 70	49 25 32.5	16 28 30.8	16 22 10.3	0 6 20.5
1.3140	0.619 777 58	1.670 079 56	49 27 48.0	16 29 16.0	16 22 54.6	0 6 21.4
1.3145	0.620 322 39	1.671 265 69	49 30 3.5	16 30 1.2	16 23 38.9	0 6 22.3
1.3150	0.620 867 58	1.672 452 07	49 32 19.1	16 30 46.4	16 24 23.2	0 6 23.1
1.3155	0.621 413 17	1.673 638 71	49 34 34.8	16 31 31.6	16 25 7.6	0 6 24.0
1.3160	0.621 959 16	1.674 825 61	49 36 50.5	16 32 16.8	16 25 51.9	0 6 24.9
1.3165	0.622 505 54	1.676 012 77	49 39 6.2	16 33 2.1	16 26 36.3	0 6 25.8
1.3170	0.623 052 31	1.677 200 19	49 41 22.0	16 33 47.3	16 27 20.6	0 6 26.7
1.3175	0.623 599 48	1.678 387 86	49 43 37.9	16 34 32.6	16 28 5.0	0 6 27.6
1.3180	0.624 147 04	1.679 575 80	49 45 53.8	16 35 17.9	16 28 49.4	0 6 28.5
1.3185	0.624 695 00	1.680 763 99	49 48 9.7	16 36 3.2	16 29 33.9	0 6 29.4
1.3190	0.625 243 35	1.681 952 44	49 50 25.7	16 36 48.6	16 30 18.3	0 6 30.3
1.3195	0.625 792 10	1.683 141 14	49 52 41.8	16 37 33.9	16 31 2.8	0 6 31.2
1.3200	0.626 341 25	1.684 330 11	49 54 57.9	16 38 19.3	16 31 47.2	0 6 32.1

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.3205	1.743 720 25	1.615 756 66	0.479 901 87	0.850 229 59	0.123 305 56	1.212 412 81
1.3210	1.745 041 00	1.616 793 26	0.480 589 36	0.850 841 47	0.123 487 37	1.213 412 86
1.3215	1.746 362 25	1.617 829 85	0.481 277 50	0.851 453 50	0.123 669 37	1.214 413 49
1.3220	1.747 684 00	1.618 866 42	0.481 966 31	0.852 065 70	0.123 851 56	1.215 414 70
1.3225	1.749 006 25	1.619 902 98	0.482 655 79	0.852 678 06	0.124 033 94	1.216 416 50
1.3230	1.750 329 00	1.620 939 52	0.483 345 93	0.853 290 58	0.124 216 51	1.217 418 88
1.3235	1.751 652 25	1.621 976 05	0.484 036 73	0.853 903 26	0.124 399 28	1.218 421 85
1.3240	1.752 976 00	1.623 012 56	0.484 728 19	0.854 516 10	0.124 582 24	1.219 425 41
1.3245	1.754 300 25	1.624 049 05	0.485 420 33	0.855 129 10	0.124 765 39	1.220 429 55
1.3250	1.755 625 00	1.625 085 53	0.486 113 12	0.855 742 26	0.124 948 73	1.221 434 28
1.3255	1.756 950 25	1.626 121 99	0.486 806 58	0.856 355 58	0.125 132 27	1.222 439 60
1.3260	1.758 276 00	1.627 158 43	0.487 500 71	0.856 969 06	0.125 315 99	1.223 445 50
1.3265	1.759 602 25	1.628 194 85	0.488 195 50	0.857 582 70	0.125 499 91	1.224 452 00
1.3270	1.760 929 00	1.629 231 25	0.488 890 96	0.858 196 50	0.125 684 03	1.225 459 08
1.3275	1.762 256 25	1.630 267 63	0.489 587 08	0.858 810 46	0.125 868 33	1.226 466 76
1.3280	1.763 584 00	1.631 303 99	0.490 283 87	0.859 424 57	0.126 052 83	1.227 475 02
1.3285	1.764 912 25	1.632 340 32	0.490 981 33	0.860 038 85	0.126 237 52	1.228 483 88
1.3290	1.766 241 00	1.633 376 64	0.491 679 45	0.860 653 28	0.126 422 41	1.229 493 32
1.3295	1.767 570 25	1.634 412 92	0.492 378 24	0.861 267 87	0.126 607 48	1.230 503 36
1.3300	1.768 900 00	1.635 449 19	0.493 077 70	0.861 882 63	0.126 792 76	1.231 513 99
1.3305	1.770 230 25	1.636 485 43	0.493 777 82	0.862 497 54	0.126 978 22	1.232 525 21
1.3310	1.771 561 00	1.637 521 64	0.494 478 61	0.863 112 60	0.127 163 88	1.233 537 03
1.3315	1.772 892 25	1.638 557 82	0.495 180 07	0.863 727 83	0.127 349 73	1.234 549 44
1.3320	1.774 224 00	1.639 593 98	0.495 882 19	0.864 343 21	0.127 535 77	1.235 562 44
1.3325	1.775 556 25	1.640 630 11	0.496 584 99	0.864 958 76	0.127 722 01	1.236 576 04
1.3330	1.776 889 00	1.641 666 21	0.497 288 45	0.865 574 46	0.127 908 45	1.237 590 23
1.3335	1.778 222 25	1.642 702 29	0.497 992 58	0.866 190 31	0.128 095 07	1.238 605 02
1.3340	1.779 556 00	1.643 738 33	0.498 697 37	0.866 806 33	0.128 281 89	1.239 620 40
1.3345	1.780 890 25	1.644 774 34	0.499 402 84	0.867 422 50	0.128 468 91	1.240 636 38
1.3350	1.782 225 00	1.645 810 32	0.500 108 97	0.868 038 83	0.128 656 12	1.241 652 96
1.3355	1.783 560 25	1.646 846 27	0.500 815 78	0.868 655 32	0.128 843 52	1.242 670 14
1.3360	1.784 896 00	1.647 882 18	0.501 523 25	0.869 271 96	0.129 031 12	1.243 687 91
1.3365	1.786 232 25	1.648 918 06	0.502 231 39	0.869 888 76	0.129 218 91	1.244 706 29
1.3370	1.787 569 00	1.649 953 91	0.502 940 20	0.870 505 72	0.129 406 90	1.245 725 26
1.3375	1.788 906 25	1.650 989 72	0.503 649 69	0.871 122 83	0.129 595 08	1.246 744 83
1.3380	1.790 244 00	1.652 025 49	0.504 359 84	0.871 740 11	0.129 783 46	1.247 765 00
1.3385	1.791 582 25	1.653 061 23	0.505 070 66	0.872 357 53	0.129 972 04	1.248 785 77
1.3390	1.792 921 00	1.654 096 93	0.505 782 15	0.872 975 12	0.130 160 80	1.249 807 14
1.3395	1.794 260 25	1.655 132 60	0.506 494 31	0.873 592 85	0.130 349 77	1.250 829 12
1.3400	1.795 600 00	1.656 168 22	0.507 207 14	0.874 210 75	0.130 538 93	1.251 851 69
1.3405	1.796 940 25	1.657 203 81	0.507 920 65	0.874 828 80	0.130 728 28	1.252 874 87
1.3410	1.798 281 00	1.658 239 35	0.508 634 82	0.875 447 01	0.130 917 83	1.253 898 65
1.3415	1.799 622 25	1.659 274 86	0.509 349 67	0.876 065 37	0.131 107 57	1.254 923 04
1.3420	1.800 964 00	1.660 310 32	0.510 065 18	0.876 683 89	0.131 297 52	1.255 948 03
1.3425	1.802 306 25	1.661 345 74	0.510 781 37	0.877 302 56	0.131 487 65	1.256 973 62
1.3430	1.803 649 00	1.662 381 12	0.511 498 23	0.877 921 39	0.131 677 99	1.257 999 82
1.3435	1.804 992 25	1.663 416 46	0.512 215 76	0.878 540 37	0.131 868 52	1.259 026 62
1.3440	1.806 336 00	1.664 451 75	0.512 933 97	0.879 159 51	0.132 059 24	1.260 054 04
1.3445	1.807 680 25	1.665 486 99	0.513 652 84	0.879 778 80	0.132 250 16	1.261 082 05
1.3450	1.809 025 00	1.666 522 19	0.514 372 39	0.880 398 25	0.132 441 28	1.262 110 68
1.3455	1.810 370 25	1.667 557 34	0.515 092 61	0.881 017 85	0.132 632 60	1.263 139 91
1.3460	1.811 716 00	1.668 592 45	0.515 813 51	0.881 637 61	0.132 824 11	1.264 169 75
1.3465	1.813 062 25	1.669 627 51	0.516 535 07	0.882 257 52	0.133 015 82	1.265 200 20
1.3470	1.814 409 00	1.670 662 52	0.517 257 31	0.882 877 59	0.133 207 72	1.266 231 26
1.3475	1.815 756 25	1.671 697 48	0.517 980 23	0.883 497 81	0.133 399 82	1.267 262 92
1.3480	1.817 104 00	1.672 732 39	0.518 703 81	0.884 118 18	0.133 592 12	1.268 295 20
1.3485	1.818 452 25	1.673 767 25	0.519 428 07	0.884 738 70	0.133 784 62	1.269 328 09
1.3490	1.819 801 00	1.674 802 05	0.520 153 01	0.885 359 38	0.133 977 31	1.270 361 59
1.3495	1.821 150 25	1.675 836 81	0.520 878 62	0.885 980 22	0.134 170 20	1.271 395 70
1.3500	1.822 500 00	1.676 871 51	0.521 604 90	0.886 601 21	0.134 363 29	1.272 430 43
1.3505	1.823 850 25	1.677 906 16	0.522 331 86	0.887 222 35	0.134 556 58	1.273 465 76
1.3510	1.825 201 00	1.678 940 75	0.523 059 49	0.887 843 64	0.134 750 06	1.274 501 71
1.3515	1.826 552 25	1.679 975 29	0.523 787 79	0.888 465 08	0.134 943 74	1.275 538 28
1.3520	1.827 904 00	1.681 009 77	0.524 516 77	0.889 086 68	0.135 137 62	1.276 575 46
1.3525	1.829 256 25	1.682 044 20	0.525 246 43	0.889 708 44	0.135 331 70	1.277 613 25
1.3530	1.830 609 00	1.683 078 57	0.525 976 76	0.890 330 34	0.135 525 97	1.278 651 66
1.3535	1.831 962 25	1.684 112 88	0.526 707 77	0.890 952 40	0.135 720 45	1.279 690 68
1.3540	1.833 316 00	1.685 147 13	0.527 439 45	0.891 574 60	0.135 915 12	1.280 730 32
1.3545	1.834 670 25	1.686 181 33	0.528 171 81	0.892 196 97	0.136 109 99	1.281 770 58
1.3550	1.836 025 00	1.687 215 46	0.528 904 84	0.892 819 48	0.136 305 06	1.282 811 46
1.3555	1.837 380 25	1.688 249 53	0.529 638 55	0.893 442 14	0.136 500 32	1.283 852 95
1.3560	1.838 736 00	1.689 283 54	0.530 372 93	0.894 064 96	0.136 695 79	1.284 895 07
1.3565	1.840 092 25	1.690 317 49	0.531 107 99	0.894 687 93	0.136 891 45	1.285 937 80
1.3570	1.841 449 00	1.691 351 37	0.531 843 73	0.895 311 05	0.137 087 32	1.286 981 15
1.3575	1.842 806 25	1.692 385 19	0.532 580 15	0.895 934 32	0.137 283 38	1.288 025 12
1.3580	1.844 164 00	1.693 418 95	0.533 317 24	0.896 557 74	0.137 479 64	1.289 069 71
1.3585	1.845 522 25	1.694 452 64	0.534 055 01	0.897 181 31	0.137 676 10	1.290 114 93
1.3590	1.846 881 00	1.695 486 27	0.534 793 45	0.897 805 04	0.137 872 76	1.291 160 76
1.3595	1.848 240 25	1.696 519 82	0.535 532 58	0.898 428 91	0.138 069 62	1.292 207 22
1.3600	1.849 600 00	1.697 553 32	0.536 272 38	0.899 052 94	0.138 266 68	1.293 254 30

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
			DEG MNT SEC			
1.3205	0.626 890 79	1.685 519 33	49 57 14.1	16 39 4.7	16 32 31.7	0 6 33.0
1.3210	0.627 440 74	1.686 708 80	49 59 30.3	16 39 50.1	16 33 16.2	0 6 33.9
1.3215	0.627 991 08	1.687 898 53	50 1 46.5	16 40 35.5	16 34 0.7	0 6 34.8
1.3220	0.628 541 82	1.689 088 51	50 4 2.9	16 41 21.0	16 34 45.3	0 6 35.7
1.3225	0.629 092 96	1.690 278 75	50 6 19.2	16 42 6.4	16 35 29.8	0 6 36.6
1.3230	0.629 644 49	1.691 469 25	50 8 35.6	16 42 51.9	16 36 14.4	0 6 37.5
1.3235	0.630 196 43	1.692 659 99	50 10 52.1	16 43 37.4	16 36 58.9	0 6 38.4
1.3240	0.630 748 77	1.693 850 99	50 13 8.6	16 44 22.9	16 37 43.5	0 6 39.3
1.3245	0.631 301 51	1.695 042 25	50 15 25.2	16 45 8.4	16 38 28.1	0 6 40.3
1.3250	0.631 854 65	1.696 233 76	50 17 41.8	16 45 53.9	16 39 12.8	0 6 41.2
1.3255	0.632 408 19	1.697 425 51	50 19 58.5	16 46 39.5	16 39 57.4	0 6 42.1
1.3260	0.632 962 14	1.698 617 53	50 22 15.2	16 47 25.1	16 40 42.0	0 6 43.0
1.3265	0.633 516 49	1.699 809 79	50 24 32.0	16 48 10.7	16 41 26.7	0 6 44.0
1.3270	0.634 071 24	1.701 002 31	50 26 48.8	16 48 56.3	16 42 11.4	0 6 44.9
1.3275	0.634 626 39	1.702 195 07	50 29 5.7	16 49 41.9	16 42 56.1	0 6 45.8
1.3280	0.635 181 95	1.703 388 09	50 31 22.7	16 50 27.6	16 43 40.8	0 6 46.7
1.3285	0.635 737 91	1.704 581 36	50 33 39.6	16 51 13.2	16 44 25.5	0 6 47.7
1.3290	0.636 294 28	1.705 774 87	50 35 56.7	16 51 58.9	16 45 10.3	0 6 48.6
1.3295	0.636 851 06	1.706 968 64	50 38 13.8	16 52 44.6	16 45 55.1	0 6 49.5
1.3300	0.637 408 24	1.708 162 66	50 40 30.9	16 53 30.3	16 46 39.8	0 6 50.5
1.3305	0.637 965 82	1.709 356 92	50 42 48.1	16 54 16.0	16 47 24.6	0 6 51.4
1.3310	0.638 523 81	1.710 551 43	50 45 5.3	16 55 1.8	16 48 9.4	0 6 52.4
1.3315	0.639 082 21	1.711 746 20	50 47 22.6	16 55 47.5	16 48 54.3	0 6 53.3
1.3320	0.639 641 02	1.712 941 21	50 49 40.0	16 56 33.3	16 49 39.1	0 6 54.2
1.3325	0.640 200 24	1.714 136 46	50 51 57.4	16 57 19.1	16 50 23.9	0 6 55.2
1.3330	0.640 759 86	1.715 331 97	50 54 14.8	16 58 4.9	16 51 8.8	0 6 56.1
1.3335	0.641 319 89	1.716 527 72	50 56 32.3	16 58 50.8	16 51 53.7	0 6 57.1
1.3340	0.641 880 34	1.717 723 71	50 58 49.9	16 59 36.6	16 52 38.6	0 6 58.0
1.3345	0.642 441 19	1.718 919 96	51 1 7.5	17 0 22.5	16 53 23.5	0 6 59.0
1.3350	0.643 002 45	1.720 116 45	51 3 25.1	17 1 8.4	16 54 8.4	0 6 59.9
1.3355	0.643 564 13	1.721 313 18	51 5 42.9	17 1 54.3	16 54 53.4	0 7 0.9
1.3360	0.644 126 21	1.722 510 16	51 8 0.6	17 2 40.2	16 55 38.3	0 7 1.9
1.3365	0.644 688 71	1.723 707 38	51 10 18.4	17 3 26.1	16 56 23.3	0 7 2.8
1.3370	0.645 251 62	1.724 904 85	51 12 36.3	17 4 12.1	16 57 8.3	0 7 3.8
1.3375	0.645 814 94	1.726 102 56	51 14 54.2	17 4 58.1	16 57 53.3	0 7 4.7
1.3380	0.646 378 68	1.727 300 52	51 17 12.2	17 5 44.1	16 58 38.3	0 7 5.7
1.3385	0.646 942 83	1.728 498 72	51 19 30.2	17 6 30.1	16 59 23.4	0 7 6.7
1.3390	0.647 507 39	1.729 697 16	51 21 48.3	17 7 16.1	17 0 8.4	0 7 7.6
1.3395	0.648 072 37	1.730 895 84	51 24 6.4	17 8 2.1	17 0 53.5	0 7 8.6
1.3400	0.648 637 76	1.732 094 76	51 26 24.5	17 8 48.2	17 1 38.6	0 7 9.6
1.3405	0.649 203 57	1.733 293 93	51 28 42.8	17 9 34.3	17 2 23.7	0 7 10.6
1.3410	0.649 769 79	1.734 493 34	51 31 1.0	17 10 20.3	17 3 8.8	0 7 11.5
1.3415	0.650 336 43	1.735 692 99	51 33 19.4	17 11 6.5	17 3 53.9	0 7 12.5
1.3420	0.650 903 49	1.736 892 87	51 35 37.7	17 11 52.6	17 4 39.1	0 7 13.5
1.3425	0.651 470 97	1.738 093 00	51 37 56.2	17 12 38.7	17 5 24.2	0 7 14.5
1.3430	0.652 038 86	1.739 293 37	51 40 14.7	17 13 24.9	17 6 9.4	0 7 15.5
1.3435	0.652 607 17	1.740 493 98	51 42 33.2	17 14 11.1	17 6 54.6	0 7 16.5
1.3440	0.653 175 91	1.741 694 83	51 44 51.8	17 14 57.3	17 7 39.8	0 7 17.5
1.3445	0.653 745 06	1.742 895 91	51 47 10.4	17 15 43.5	17 8 25.0	0 7 18.4
1.3450	0.654 314 63	1.744 097 24	51 49 29.1	17 16 29.7	17 9 10.3	0 7 19.4
1.3455	0.654 884 62	1.745 298 80	51 51 47.8	17 17 15.9	17 9 55.5	0 7 20.4
1.3460	0.655 455 03	1.746 500 60	51 54 6.6	17 18 2.2	17 10 40.8	0 7 21.4
1.3465	0.656 025 86	1.747 702 63	51 56 25.5	17 18 48.5	17 11 26.1	0 7 22.4
1.3470	0.656 597 12	1.748 904 91	51 58 44.4	17 19 34.8	17 12 11.4	0 7 23.4
1.3475	0.657 168 79	1.750 107 42	52 1 3.3	17 20 21.1	17 12 56.7	0 7 24.4
1.3480	0.657 740 89	1.751 310 16	52 3 22.3	17 21 7.4	17 13 42.0	0 7 25.4
1.3485	0.658 313 42	1.752 513 14	52 5 41.4	17 21 53.8	17 14 27.4	0 7 26.4
1.3490	0.658 886 36	1.753 716 36	52 8 0.5	17 22 40.2	17 15 12.7	0 7 27.4
1.3495	0.659 459 73	1.754 919 81	52 10 19.6	17 23 26.5	17 15 58.1	0 7 28.5
1.3500	0.660 033 53	1.756 123 50	52 12 38.8	17 24 12.9	17 16 43.5	0 7 29.5
1.3505	0.660 607 75	1.757 327 42	52 14 58.1	17 24 59.4	17 17 28.9	0 7 30.5
1.3510	0.661 182 40	1.758 531 57	52 17 17.4	17 25 45.8	17 18 14.3	0 7 31.5
1.3515	0.661 757 47	1.759 735 96	52 19 36.7	17 26 32.2	17 18 59.7	0 7 32.5
1.3520	0.662 332 97	1.760 940 58	52 21 56.1	17 27 18.7	17 19 45.2	0 7 33.5
1.3525	0.662 908 90	1.762 145 43	52 24 15.6	17 28 5.2	17 20 30.6	0 7 34.5
1.3530	0.663 485 25	1.763 350 51	52 26 35.1	17 28 51.7	17 21 16.1	0 7 35.6
1.3535	0.664 062 03	1.764 555 83	52 28 54.7	17 29 38.2	17 22 1.6	0 7 36.6
1.3540	0.664 639 25	1.765 761 38	52 31 14.3	17 30 24.8	17 22 47.1	0 7 37.6
1.3545	0.665 216 89	1.766 967 15	52 33 34.0	17 31 11.3	17 23 32.7	0 7 38.7
1.3550	0.665 794 96	1.768 173 16	52 35 53.7	17 31 57.9	17 24 18.2	0 7 39.7
1.3555	0.666 373 46	1.769 379 40	52 38 13.4	17 32 44.5	17 25 3.8	0 7 40.7
1.3560	0.666 952 39	1.770 585 87	52 40 33.3	17 33 31.1	17 25 49.3	0 7 41.8
1.3565	0.667 531 75	1.771 792 57	52 42 53.1	17 34 17.7	17 26 34.9	0 7 42.8
1.3570	0.668 111 54	1.772 999 50	52 45 13.1	17 35 4.4	17 27 20.5	0 7 43.8
1.3575	0.668 691 77	1.774 206 66	52 47 33.0	17 35 51.0	17 28 6.1	0 7 44.9
1.3580	0.669 272 43	1.775 414 04	52 49 53.1	17 36 37.7	17 28 51.8	0 7 45.9
1.3585	0.669 853 52	1.776 621 66	52 52 13.1	17 37 24.4	17 29 37.4	0 7 47.0
1.3590	0.670 435 05	1.777 829 50	52 54 33.3	17 38 11.1	17 30 23.1	0 7 48.0
1.3595	0.671 017 01	1.779 037 56	52 56 53.5	17 38 57.8	17 31 8.8	0 7 49.0
1.3600	0.671 599 40	1.780 245 86	52 59 13.7	17 39 44.6	17 31 54.5	0 7 50.1

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.3605	1.850 960 25	1.698 586 74	0.537 012 85	0.899 677 11	0.138 463 94	1.294 307 01
1.3610	1.852 321 00	1.699 620 09	0.537 754 01	0.900 301 44	0.138 661 40	1.295 350 33
1.3615	1.853 682 25	1.700 653 37	0.538 495 84	0.900 925 91	0.138 859 06	1.296 399 29
1.3620	1.855 044 00	1.701 686 59	0.539 238 36	0.901 550 54	0.139 056 92	1.297 448 87
1.3625	1.856 406 25	1.702 719 73	0.539 981 55	0.902 175 32	0.139 254 97	1.298 499 07
1.3630	1.857 769 00	1.703 752 80	0.540 725 41	0.902 800 24	0.139 453 23	1.299 549 90
1.3635	1.859 132 25	1.704 785 80	0.541 469 96	0.903 425 32	0.139 651 69	1.300 601 36
1.3640	1.860 496 00	1.705 818 72	0.542 215 19	0.904 050 54	0.139 850 35	1.301 653 44
1.3645	1.861 860 25	1.706 851 57	0.542 961 09	0.904 675 92	0.140 049 21	1.302 706 15
1.3650	1.863 225 00	1.707 884 35	0.543 707 68	0.905 301 44	0.140 248 27	1.303 759 49
1.3655	1.864 590 25	1.708 917 05	0.544 454 94	0.905 927 12	0.140 447 53	1.304 813 46
1.3660	1.865 956 00	1.709 949 67	0.545 202 88	0.906 552 94	0.140 646 99	1.305 868 06
1.3665	1.867 322 25	1.710 982 22	0.545 951 50	0.907 178 91	0.140 846 65	1.306 923 29
1.3670	1.868 689 00	1.712 014 69	0.546 700 80	0.907 805 03	0.141 046 52	1.307 979 15
1.3675	1.870 056 25	1.713 047 08	0.547 450 78	0.908 431 30	0.141 246 58	1.309 035 64
1.3680	1.871 424 00	1.714 079 39	0.548 201 44	0.909 057 71	0.141 446 85	1.310 092 76
1.3685	1.872 792 25	1.715 111 62	0.548 952 79	0.909 684 28	0.141 647 31	1.311 150 52
1.3690	1.874 161 00	1.716 143 77	0.549 704 81	0.910 310 99	0.141 847 98	1.312 208 91
1.3695	1.875 530 25	1.717 175 84	0.550 457 51	0.910 937 85	0.142 048 85	1.313 267 93
1.3700	1.876 900 00	1.718 207 82	0.551 210 89	0.911 564 86	0.142 249 92	1.314 327 58
1.3705	1.878 270 25	1.719 239 73	0.551 964 95	0.912 192 02	0.142 451 19	1.315 387 87
1.3710	1.879 641 00	1.720 271 54	0.552 719 70	0.912 819 32	0.142 652 67	1.316 448 80
1.3715	1.881 012 25	1.721 303 28	0.553 475 12	0.913 446 78	0.142 854 34	1.317 510 36
1.3720	1.882 384 00	1.722 334 93	0.554 231 23	0.914 074 38	0.143 056 22	1.318 572 56
1.3725	1.883 756 25	1.723 366 49	0.554 988 01	0.914 702 12	0.143 258 30	1.319 635 39
1.3730	1.885 129 00	1.724 397 97	0.555 745 48	0.915 330 02	0.143 460 59	1.320 698 86
1.3735	1.886 502 25	1.725 429 36	0.556 503 63	0.915 958 06	0.143 663 07	1.321 762 97
1.3740	1.887 876 00	1.726 460 66	0.557 262 46	0.916 586 24	0.143 865 76	1.322 827 72
1.3745	1.889 250 25	1.727 491 88	0.558 021 97	0.917 214 58	0.144 068 65	1.323 893 10
1.3750	1.890 625 00	1.728 523 00	0.558 782 17	0.917 843 06	0.144 271 74	1.324 959 13
1.3755	1.892 000 25	1.729 554 03	0.559 543 05	0.918 471 69	0.144 475 03	1.326 025 80
1.3760	1.893 376 00	1.730 584 97	0.560 304 61	0.919 100 46	0.144 678 53	1.327 093 10
1.3765	1.894 752 25	1.731 615 82	0.561 066 85	0.919 729 38	0.144 882 23	1.328 161 05
1.3770	1.896 129 00	1.732 646 58	0.561 829 77	0.920 358 44	0.145 086 14	1.329 229 64
1.3775	1.897 506 25	1.733 677 24	0.562 593 38	0.920 987 65	0.145 290 24	1.330 298 88
1.3780	1.898 884 00	1.734 707 81	0.563 357 67	0.921 617 01	0.145 494 55	1.331 368 75
1.3785	1.900 262 25	1.735 738 29	0.564 122 64	0.922 246 51	0.145 699 07	1.332 439 27
1.3790	1.901 641 00	1.736 768 66	0.564 888 30	0.922 876 16	0.145 903 78	1.333 510 44
1.3795	1.903 020 25	1.737 798 95	0.565 654 63	0.923 505 95	0.146 108 70	1.334 582 25
1.3800	1.904 400 00	1.738 829 13	0.566 421 66	0.924 135 89	0.146 313 83	1.335 654 70
1.3805	1.905 780 25	1.739 859 22	0.567 189 36	0.924 765 98	0.146 519 15	1.336 727 80
1.3810	1.907 161 00	1.740 889 21	0.567 957 75	0.925 396 20	0.146 724 68	1.337 801 55
1.3815	1.908 542 25	1.741 919 10	0.568 726 82	0.926 026 58	0.146 930 42	1.338 875 94
1.3820	1.909 924 00	1.742 948 88	0.569 496 58	0.926 657 09	0.147 136 36	1.339 950 98
1.3825	1.911 306 25	1.743 978 57	0.570 267 02	0.927 287 75	0.147 342 50	1.341 026 67
1.3830	1.912 689 00	1.745 008 16	0.571 038 14	0.927 918 56	0.147 548 85	1.342 103 01
1.3835	1.914 072 25	1.746 037 64	0.571 809 95	0.928 549 51	0.147 755 40	1.343 180 00
1.3840	1.915 456 00	1.747 067 02	0.572 582 45	0.929 180 60	0.147 962 15	1.344 257 64
1.3845	1.916 840 25	1.748 096 30	0.573 355 62	0.929 811 84	0.148 169 11	1.345 335 93
1.3850	1.918 225 00	1.749 125 47	0.574 129 49	0.930 443 22	0.148 376 28	1.346 414 87
1.3855	1.919 610 25	1.750 154 54	0.574 904 03	0.931 074 75	0.148 583 65	1.347 494 47
1.3860	1.920 996 00	1.751 183 50	0.575 679 26	0.931 706 42	0.148 791 22	1.348 574 71
1.3865	1.922 382 25	1.752 212 35	0.576 455 18	0.932 338 23	0.148 999 00	1.349 655 61
1.3870	1.923 769 00	1.753 241 09	0.577 231 78	0.932 970 18	0.149 206 98	1.350 737 17
1.3875	1.925 156 25	1.754 269 73	0.578 009 07	0.933 602 28	0.149 415 17	1.351 819 37
1.3880	1.926 544 00	1.755 298 26	0.578 787 04	0.934 234 52	0.149 623 57	1.352 902 23
1.3885	1.927 932 25	1.756 326 68	0.579 565 70	0.934 866 91	0.149 832 17	1.353 985 75
1.3890	1.929 321 00	1.757 354 98	0.580 345 04	0.935 499 43	0.150 040 97	1.355 069 93
1.3895	1.930 710 25	1.758 383 18	0.581 125 07	0.936 132 10	0.150 249 98	1.356 154 76
1.3900	1.932 100 00	1.759 411 26	0.581 905 79	0.936 764 91	0.150 459 20	1.357 240 24
1.3905	1.933 490 25	1.760 439 23	0.582 687 19	0.937 397 86	0.150 668 62	1.358 326 39
1.3910	1.934 881 00	1.761 467 09	0.583 469 27	0.938 030 96	0.150 878 25	1.359 413 19
1.3915	1.936 272 25	1.762 494 83	0.584 252 05	0.938 664 19	0.151 088 08	1.360 500 66
1.3920	1.937 664 00	1.763 522 45	0.585 035 51	0.939 297 57	0.151 298 12	1.361 588 78
1.3925	1.939 056 25	1.764 549 96	0.585 819 65	0.939 931 09	0.151 508 36	1.362 677 56
1.3930	1.940 449 00	1.765 577 36	0.586 604 48	0.940 564 75	0.151 718 81	1.363 767 01
1.3935	1.941 842 25	1.766 604 63	0.587 390 00	0.941 198 56	0.151 929 47	1.364 857 12
1.3940	1.943 236 00	1.767 631 79	0.588 176 21	0.941 832 50	0.152 140 34	1.365 947 88
1.3945	1.944 630 25	1.768 658 83	0.588 963 10	0.942 466 59	0.152 351 41	1.367 039 31
1.3950	1.946 025 00	1.769 685 74	0.589 750 68	0.943 100 81	0.152 562 68	1.368 131 41
1.3955	1.947 420 25	1.770 712 54	0.590 538 95	0.943 735 18	0.152 774 17	1.369 224 17
1.3960	1.948 816 00	1.771 739 22	0.591 327 90	0.944 369 68	0.152 985 86	1.370 317 59
1.3965	1.950 212 25	1.772 765 77	0.592 117 54	0.945 004 33	0.153 197 75	1.371 411 68
1.3970	1.951 609 00	1.773 792 20	0.592 907 87	0.945 639 12	0.153 409 86	1.372 506 44
1.3975	1.953 006 25	1.774 818 50	0.593 698 89	0.946 274 05	0.153 622 17	1.373 601 86
1.3980	1.954 404 00	1.775 844 69	0.594 490 59	0.946 909 11	0.153 834 69	1.374 697 95
1.3985	1.955 802 25	1.776 870 74	0.595 282 98	0.947 544 32	0.154 047 41	1.375 794 70
1.3990	1.957 201 00	1.777 896 67	0.596 076 06	0.948 179 67	0.154 260 35	1.376 892 13
1.3995	1.958 600 25	1.778 922 48	0.596 869 83	0.948 815 16	0.154 473 49	1.377 990 22
1.4000	1.960 000 00	1.779 948 15	0.597 664 29	0.949 450 78	0.154 686 83	1.379 088 99

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.3605	0.672 182 23	1.781 454 38	53 1 34.0	17 40 31.3	17 32 40.2	0 7 51.2
1.3610	0.672 765 50	1.782 663 13	53 3 54.3	17 41 18.1	17 33 25.9	0 7 52.2
1.3615	0.673 349 20	1.783 872 10	53 6 14.7	17 42 4.9	17 34 11.6	0 7 53.3
1.3620	0.673 933 34	1.785 081 30	53 8 35.1	17 42 51.7	17 34 57.4	0 7 54.3
1.3625	0.674 517 91	1.786 290 72	53 10 55.6	17 43 38.5	17 35 43.2	0 7 55.4
1.3630	0.675 102 92	1.787 500 37	53 13 16.2	17 44 25.4	17 36 28.9	0 7 56.4
1.3635	0.675 688 38	1.788 710 24	53 15 36.8	17 45 12.3	17 37 14.7	0 7 57.5
1.3640	0.676 274 27	1.789 920 34	53 17 57.4	17 45 59.1	17 38 0.6	0 7 58.6
1.3645	0.676 860 60	1.791 130 66	53 20 18.1	17 46 46.0	17 38 46.4	0 7 59.6
1.3650	0.677 447 37	1.792 341 20	53 22 38.9	17 47 33.0	17 39 32.2	0 8 0.7
1.3655	0.678 034 58	1.793 551 97	53 24 59.7	17 48 19.9	17 40 18.1	0 8 1.8
1.3660	0.678 622 23	1.794 762 95	53 27 20.5	17 49 6.8	17 41 4.0	0 8 2.9
1.3665	0.679 210 32	1.795 974 16	53 29 41.4	17 49 53.8	17 41 49.9	0 8 3.9
1.3670	0.679 798 85	1.797 185 59	53 32 2.4	17 50 40.8	17 42 35.8	0 8 5.0
1.3675	0.680 387 83	1.798 397 24	53 34 23.4	17 51 27.8	17 43 21.7	0 8 6.1
1.3680	0.680 977 25	1.799 609 12	53 36 44.5	17 52 14.8	17 44 7.6	0 8 7.2
1.3685	0.681 567 11	1.800 821 21	53 39 5.6	17 53 1.9	17 44 53.6	0 8 8.3
1.3690	0.682 157 42	1.802 033 52	53 41 26.7	17 53 48.9	17 45 39.6	0 8 9.4
1.3695	0.682 748 17	1.803 246 05	53 43 47.9	17 54 36.0	17 46 25.5	0 8 10.4
1.3700	0.683 339 37	1.804 458 80	53 46 9.2	17 55 23.1	17 47 11.5	0 8 11.5
1.3705	0.683 931 01	1.805 671 77	53 48 30.5	17 56 10.2	17 47 57.5	0 8 12.6
1.3710	0.684 523 10	1.806 884 96	53 50 51.9	17 56 57.3	17 48 43.6	0 8 13.7
1.3715	0.685 115 63	1.808 098 36	53 53 13.3	17 57 44.4	17 49 29.6	0 8 14.8
1.3720	0.685 708 62	1.809 311 99	53 55 34.8	17 58 31.6	17 50 15.7	0 8 15.9
1.3725	0.686 302 05	1.810 525 83	53 57 56.3	17 59 18.8	17 51 1.8	0 8 17.0
1.3730	0.686 895 92	1.811 739 88	54 0 17.9	18 0 6.0	17 51 47.8	0 8 18.1
1.3735	0.687 490 25	1.812 954 16	54 2 39.5	18 0 53.2	17 52 33.9	0 8 19.2
1.3740	0.688 085 03	1.814 168 64	54 5 1.2	18 1 40.4	17 53 20.1	0 8 20.3
1.3745	0.688 680 25	1.815 383 35	54 7 22.9	18 2 27.6	17 54 6.2	0 8 21.4
1.3750	0.689 275 93	1.816 598 27	54 9 44.7	18 3 14.9	17 54 52.3	0 8 22.6
1.3755	0.689 872 06	1.817 813 40	54 12 6.5	18 4 2.2	17 55 38.5	0 8 23.7
1.3760	0.690 468 64	1.819 028 75	54 14 28.4	18 4 49.5	17 56 24.7	0 8 24.8
1.3765	0.691 065 67	1.820 244 31	54 16 50.4	18 5 36.8	17 57 10.9	0 8 25.9
1.3770	0.691 663 15	1.821 460 09	54 19 12.3	18 6 24.1	17 57 57.1	0 8 27.0
1.3775	0.692 261 08	1.822 676 08	54 21 34.4	18 7 11.5	17 58 43.3	0 8 28.1
1.3780	0.692 859 46	1.823 892 28	54 23 56.5	18 7 58.8	17 59 29.6	0 8 29.3
1.3785	0.693 458 32	1.825 108 69	54 26 18.6	18 8 46.2	18 0 15.8	0 8 30.4
1.3790	0.694 057 62	1.826 325 32	54 28 40.8	18 9 33.6	18 1 2.1	0 8 31.5
1.3795	0.694 657 38	1.827 542 16	54 31 3.1	18 10 21.0	18 1 48.4	0 8 32.7
1.3800	0.695 257 59	1.828 759 21	54 33 25.3	18 11 8.4	18 2 34.7	0 8 33.8
1.3805	0.695 858 26	1.829 976 47	54 35 47.7	18 11 55.9	18 3 21.0	0 8 34.9
1.3810	0.696 459 38	1.831 193 94	54 38 10.1	18 12 43.4	18 4 7.3	0 8 36.1
1.3815	0.697 060 96	1.832 411 62	54 40 32.5	18 13 30.8	18 4 53.7	0 8 37.2
1.3820	0.697 663 00	1.833 629 51	54 42 55.1	18 14 18.4	18 5 40.0	0 8 38.3
1.3825	0.698 265 50	1.834 847 60	54 45 17.6	18 15 5.9	18 6 26.4	0 8 39.5
1.3830	0.698 868 45	1.836 065 91	54 47 40.2	18 15 53.4	18 7 12.8	0 8 40.6
1.3835	0.699 471 87	1.837 284 43	54 50 2.9	18 16 41.0	18 7 59.2	0 8 41.8
1.3840	0.700 075 75	1.838 503 15	54 52 25.6	18 17 28.5	18 8 45.6	0 8 42.9
1.3845	0.700 680 09	1.839 722 08	54 54 48.3	18 18 16.1	18 9 32.0	0 8 44.1
1.3850	0.701 284 89	1.840 941 22	54 57 11.2	18 19 3.7	18 10 18.5	0 8 45.2
1.3855	0.701 890 15	1.842 160 57	54 59 34.0	18 19 51.3	18 11 5.0	0 8 46.4
1.3860	0.702 495 87	1.843 380 12	55 1 56.9	18 20 39.0	18 11 51.4	0 8 47.5
1.3865	0.703 102 06	1.844 599 87	55 4 19.9	18 21 26.6	18 12 37.9	0 8 48.7
1.3870	0.703 708 71	1.845 819 84	55 6 42.9	18 22 14.3	18 13 24.4	0 8 49.9
1.3875	0.704 315 82	1.847 040 00	55 9 6.0	18 23 2.0	18 14 11.0	0 8 51.0
1.3880	0.704 923 40	1.848 260 38	55 11 29.1	18 23 49.7	18 14 57.5	0 8 52.2
1.3885	0.705 531 44	1.849 480 95	55 13 52.3	18 24 37.4	18 15 44.1	0 8 53.4
1.3890	0.706 139 96	1.850 701 73	55 16 15.5	18 25 25.2	18 16 30.6	0 8 54.5
1.3895	0.706 748 93	1.851 922 72	55 18 38.8	18 26 12.9	18 17 17.2	0 8 55.7
1.3900	0.707 358 38	1.853 143 90	55 21 2.1	18 27 0.7	18 18 3.8	0 8 56.9
1.3905	0.707 968 29	1.854 365 29	55 23 25.5	18 27 48.5	18 18 50.4	0 8 58.1
1.3910	0.708 578 67	1.855 586 89	55 25 48.9	18 28 36.3	18 19 37.1	0 8 59.2
1.3915	0.709 189 51	1.856 808 68	55 28 12.4	18 29 24.1	18 20 23.7	0 9 0.4
1.3920	0.709 800 83	1.858 030 67	55 30 35.9	18 30 12.0	18 21 10.4	0 9 1.6
1.3925	0.710 412 62	1.859 252 87	55 32 59.5	18 30 59.8	18 21 57.0	0 9 2.9
1.3930	0.711 024 88	1.860 475 27	55 35 23.2	18 31 47.7	18 22 43.7	0 9 4.0
1.3935	0.711 637 61	1.861 697 87	55 37 46.9	18 32 35.6	18 23 30.4	0 9 5.2
1.3940	0.712 250 81	1.862 920 66	55 40 10.6	18 33 23.5	18 24 17.2	0 9 6.4
1.3945	0.712 864 48	1.864 143 66	55 42 34.4	18 34 11.5	18 25 3.9	0 9 7.6
1.3950	0.713 478 63	1.865 366 85	55 44 58.2	18 34 59.4	18 25 50.7	0 9 8.8
1.3955	0.714 093 24	1.866 590 25	55 47 22.1	18 35 47.4	18 26 37.4	0 9 10.0
1.3960	0.714 708 34	1.867 813 84	55 49 46.1	18 36 35.4	18 27 24.2	0 9 11.2
1.3965	0.715 323 90	1.869 037 63	55 52 10.1	18 37 23.4	18 28 11.0	0 9 12.4
1.3970	0.715 939 95	1.870 261 62	55 54 34.1	18 38 11.4	18 28 57.8	0 9 13.6
1.3975	0.716 556 47	1.871 485 80	55 56 58.2	18 38 59.4	18 29 44.6	0 9 14.8
1.3980	0.717 173 46	1.872 710 18	55 59 22.4	18 39 47.5	18 30 31.5	0 9 16.0
1.3985	0.717 790 93	1.873 934 76	56 1 46.6	18 40 35.5	18 31 18.3	0 9 17.2
1.3990	0.718 408 88	1.875 159 53	56 4 10.8	18 41 23.6	18 32 5.2	0 9 18.4
1.3995	0.719 027 31	1.876 384 49	56 6 35.2	18 42 11.7	18 32 52.1	0 9 19.6
1.4000	0.719 646 21	1.877 609 66	56 8 59.5	18 42 59.8	18 33 39.0	0 9 20.9

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.4005	1.961 400 25	1.780 973 70	0.598 459 43	0.950 086 55	0.154 900 39	1.380 188 42
1.4010	1.962 801 00	1.781 999 12	0.599 255 26	0.950 722 45	0.155 114 15	1.381 288 53
1.4015	1.964 202 25	1.783 024 41	0.600 051 78	0.951 358 49	0.155 328 12	1.382 389 30
1.4020	1.965 604 00	1.784 049 56	0.600 848 99	0.951 994 68	0.155 542 30	1.383 490 75
1.4025	1.967 006 25	1.785 074 59	0.601 646 89	0.952 631 00	0.155 756 69	1.384 592 87
1.4030	1.968 409 00	1.786 099 48	0.602 445 48	0.953 267 46	0.155 971 28	1.385 695 67
1.4035	1.969 812 25	1.787 124 24	0.603 244 75	0.953 904 06	0.156 186 09	1.386 799 14
1.4040	1.971 216 00	1.788 148 87	0.604 044 72	0.954 540 79	0.156 401 10	1.387 903 28
1.4045	1.972 620 25	1.789 173 36	0.604 845 37	0.955 177 67	0.156 616 32	1.389 008 10
1.4050	1.974 025 00	1.790 197 72	0.605 646 71	0.955 814 68	0.156 831 75	1.390 113 60
1.4055	1.975 430 25	1.791 221 94	0.606 448 74	0.956 451 83	0.157 047 38	1.391 219 77
1.4060	1.976 836 00	1.792 246 02	0.607 251 46	0.957 089 12	0.157 263 23	1.392 326 62
1.4065	1.978 242 25	1.793 269 97	0.608 054 87	0.957 726 54	0.157 479 28	1.393 434 15
1.4070	1.979 649 00	1.794 293 77	0.608 858 97	0.958 364 10	0.157 695 55	1.394 542 35
1.4075	1.981 056 25	1.795 317 44	0.609 663 76	0.959 001 80	0.157 912 02	1.395 651 24
1.4080	1.982 464 00	1.796 340 97	0.610 469 24	0.959 639 64	0.158 128 70	1.396 760 80
1.4085	1.983 872 25	1.797 364 36	0.611 275 41	0.960 277 61	0.158 345 59	1.397 871 05
1.4090	1.985 281 00	1.798 387 60	0.612 082 27	0.960 915 72	0.158 562 69	1.398 981 98
1.4095	1.986 690 25	1.799 410 70	0.612 889 82	0.961 553 97	0.158 780 00	1.400 093 59
1.4100	1.988 100 00	1.800 433 66	0.613 698 05	0.962 192 35	0.158 997 52	1.401 205 88
1.4105	1.989 510 25	1.801 456 48	0.614 506 98	0.962 830 87	0.159 215 25	1.402 318 85
1.4110	1.990 921 00	1.802 479 15	0.615 316 60	0.963 469 53	0.159 433 18	1.403 432 51
1.4115	1.992 332 25	1.803 501 68	0.616 126 91	0.964 108 32	0.159 651 33	1.404 546 86
1.4120	1.993 744 00	1.804 524 05	0.616 937 91	0.964 747 25	0.159 869 69	1.405 661 89
1.4125	1.995 156 25	1.805 546 29	0.617 749 60	0.965 386 31	0.160 088 26	1.406 777 60
1.4130	1.996 569 00	1.806 568 37	0.618 561 98	0.966 025 51	0.160 307 03	1.407 894 00
1.4135	1.997 982 25	1.807 590 31	0.619 375 05	0.966 664 85	0.160 526 02	1.409 011 09
1.4140	1.999 396 00	1.808 612 09	0.620 188 81	0.967 304 32	0.160 745 22	1.410 128 87
1.4145	2.000 810 25	1.809 633 73	0.621 003 27	0.967 943 92	0.160 964 63	1.411 247 33
1.4150	2.002 225 00	1.810 655 21	0.621 818 41	0.968 583 66	0.161 184 25	1.412 366 48
1.4155	2.003 640 25	1.811 676 54	0.622 634 25	0.969 223 54	0.161 404 08	1.413 486 33
1.4160	2.005 056 00	1.812 697 72	0.623 450 77	0.969 863 55	0.161 624 12	1.414 606 86
1.4165	2.006 472 25	1.813 718 75	0.624 267 99	0.970 503 69	0.161 844 37	1.415 728 09
1.4170	2.007 889 00	1.814 739 62	0.625 085 90	0.971 143 97	0.162 064 83	1.416 850 00
1.4175	2.009 306 25	1.815 760 34	0.625 904 50	0.971 784 38	0.162 285 50	1.417 972 61
1.4180	2.010 724 00	1.816 780 90	0.626 723 79	0.972 424 93	0.162 506 38	1.419 095 91
1.4185	2.012 142 25	1.817 801 31	0.627 543 77	0.973 065 61	0.162 727 48	1.420 219 91
1.4190	2.013 561 00	1.818 821 56	0.628 364 45	0.973 706 42	0.162 948 78	1.421 344 60
1.4195	2.014 980 25	1.819 841 65	0.629 185 81	0.974 347 37	0.163 170 30	1.422 469 99
1.4200	2.016 400 00	1.820 861 58	0.630 007 87	0.974 988 45	0.163 392 03	1.423 596 07
1.4205	2.017 820 25	1.821 881 35	0.630 830 62	0.975 629 67	0.163 613 97	1.424 722 85
1.4210	2.019 241 00	1.822 900 96	0.631 654 06	0.976 271 02	0.163 836 12	1.425 850 32
1.4215	2.020 662 25	1.823 920 41	0.632 478 20	0.976 912 50	0.164 058 48	1.426 978 50
1.4220	2.022 084 00	1.824 939 70	0.633 303 02	0.977 554 11	0.164 281 05	1.428 107 37
1.4225	2.023 506 25	1.825 958 82	0.634 128 54	0.978 195 86	0.164 503 84	1.429 236 94
1.4230	2.024 929 00	1.826 977 78	0.634 954 75	0.978 837 74	0.164 726 84	1.430 367 21
1.4235	2.026 352 25	1.827 996 58	0.635 781 65	0.979 479 75	0.164 950 05	1.431 498 18
1.4240	2.027 776 00	1.829 015 21	0.636 609 24	0.980 121 90	0.165 173 47	1.432 629 86
1.4245	2.029 200 25	1.830 033 67	0.637 437 53	0.980 764 17	0.165 397 11	1.433 762 23
1.4250	2.030 625 00	1.831 051 97	0.638 266 51	0.981 406 58	0.165 620 95	1.434 895 31
1.4255	2.032 050 25	1.832 070 10	0.639 096 18	0.982 049 12	0.165 845 01	1.436 029 09
1.4260	2.033 476 00	1.833 088 06	0.639 926 55	0.982 691 79	0.166 069 29	1.437 163 58
1.4265	2.034 902 25	1.834 105 86	0.640 757 60	0.983 334 60	0.166 293 77	1.438 298 77
1.4270	2.036 329 00	1.835 123 48	0.641 589 35	0.983 977 53	0.166 518 47	1.439 434 67
1.4275	2.037 756 25	1.836 140 93	0.642 421 80	0.984 620 60	0.166 743 38	1.440 571 27
1.4280	2.039 184 00	1.837 158 21	0.643 254 93	0.985 263 79	0.166 968 50	1.441 708 58
1.4285	2.040 612 25	1.838 175 32	0.644 088 76	0.985 907 12	0.167 193 84	1.442 846 60
1.4290	2.042 041 00	1.839 192 25	0.644 923 28	0.986 550 58	0.167 419 38	1.443 985 32
1.4295	2.043 470 25	1.840 209 01	0.645 758 50	0.987 194 17	0.167 645 15	1.445 124 75
1.4300	2.044 900 00	1.841 225 60	0.646 594 40	0.987 837 89	0.167 871 12	1.446 264 90
1.4305	2.046 330 25	1.842 242 01	0.647 431 00	0.988 481 74	0.168 097 31	1.447 405 75
1.4310	2.047 761 00	1.843 258 24	0.648 268 30	0.989 125 72	0.168 323 71	1.448 547 32
1.4315	2.049 192 25	1.844 274 30	0.649 106 29	0.989 769 83	0.168 550 33	1.449 689 60
1.4320	2.050 624 00	1.845 290 18	0.649 944 97	0.990 414 07	0.168 777 16	1.450 832 59
1.4325	2.052 056 25	1.846 305 88	0.650 784 34	0.991 058 44	0.169 004 20	1.451 976 29
1.4330	2.053 489 00	1.847 321 40	0.651 624 41	0.991 702 94	0.169 231 46	1.453 120 71
1.4335	2.054 922 25	1.848 336 74	0.652 465 17	0.992 347 57	0.169 458 93	1.454 265 84
1.4340	2.056 356 00	1.849 351 90	0.653 306 62	0.992 992 33	0.169 686 61	1.455 411 69
1.4345	2.057 790 25	1.850 366 87	0.654 148 77	0.993 637 22	0.169 914 51	1.456 558 25
1.4350	2.059 225 00	1.851 381 67	0.654 991 61	0.994 282 23	0.170 142 62	1.457 705 53
1.4355	2.060 660 25	1.852 396 28	0.655 835 15	0.994 927 38	0.170 370 95	1.458 853 53
1.4360	2.062 096 00	1.853 410 70	0.656 679 38	0.995 572 65	0.170 599 49	1.460 002 25
1.4365	2.063 532 25	1.854 424 94	0.657 524 30	0.996 218 05	0.170 828 25	1.461 151 68
1.4370	2.064 969 00	1.855 438 99	0.658 369 92	0.996 863 58	0.171 057 22	1.462 301 84
1.4375	2.066 406 25	1.856 452 86	0.659 216 23	0.997 509 24	0.171 286 40	1.463 452 71
1.4380	2.067 844 00	1.857 466 54	0.660 063 24	0.998 155 03	0.171 515 80	1.464 604 31
1.4385	2.069 282 25	1.858 480 03	0.660 910 94	0.998 800 94	0.171 745 42	1.465 756 63
1.4390	2.070 721 00	1.859 493 33	0.661 759 33	0.999 446 99	0.171 975 25	1.466 909 67
1.4395	2.072 160 25	1.860 506 44	0.662 608 42	1.000 093 16	0.172 205 29	1.468 063 43
1.4400	2.073 600 00	1.861 519 36	0.663 458 20	1.000 739 45	0.172 435 55	1.469 217 92

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.4005	0.720 265 60	1.878 835 01	56 11 23.9	18 43 48.0	18 34 25.9	0 9 22.1
1.4010	0.720 885 46	1.880 060 56	56 13 48.4	18 44 36.1	18 35 12.8	0 9 23.3
1.4015	0.721 505 81	1.881 286 31	56 16 12.9	18 45 24.3	18 35 59.8	0 9 24.5
1.4020	0.722 126 63	1.882 512 25	56 18 37.5	18 46 12.5	18 36 46.7	0 9 25.8
1.4025	0.722 747 94	1.883 738 38	56 21 2.1	18 47 0.7	18 37 33.7	0 9 27.0
1.4030	0.723 369 73	1.884 964 70	56 23 26.8	18 47 48.9	18 38 20.7	0 9 28.2
1.4035	0.723 992 00	1.886 191 21	56 25 51.5	18 48 37.2	18 39 7.7	0 9 29.5
1.4040	0.724 614 76	1.887 417 92	56 28 16.2	18 49 25.4	18 39 54.7	0 9 30.7
1.4045	0.725 238 00	1.888 644 81	56 30 41.1	18 50 13.7	18 40 41.8	0 9 31.9
1.4050	0.725 861 72	1.889 871 90	56 33 5.9	18 51 2.0	18 41 28.8	0 9 33.2
1.4055	0.726 485 93	1.891 099 18	56 35 30.9	18 51 50.3	18 42 15.9	0 9 34.4
1.4060	0.727 110 63	1.892 326 65	56 37 55.8	18 52 38.6	18 43 2.9	0 9 35.7
1.4065	0.727 735 81	1.893 554 30	56 40 20.9	18 53 27.0	18 43 50.0	0 9 36.9
1.4070	0.728 361 48	1.894 782 15	56 42 46.0	18 54 15.3	18 44 37.1	0 9 38.2
1.4075	0.728 987 64	1.896 010 18	56 45 11.1	18 55 3.7	18 45 24.3	0 9 39.4
1.4080	0.729 614 28	1.897 238 41	56 47 36.3	18 55 52.1	18 46 11.4	0 9 40.7
1.4085	0.730 241 42	1.898 466 82	56 50 1.5	18 56 40.5	18 46 58.6	0 9 41.9
1.4090	0.730 869 04	1.899 695 41	56 52 26.8	18 57 28.9	18 47 45.7	0 9 43.2
1.4095	0.731 497 15	1.900 924 20	56 54 52.1	18 58 17.4	18 48 32.9	0 9 44.5
1.4100	0.732 125 76	1.902 153 17	56 57 17.5	18 59 5.8	18 49 20.1	0 9 45.7
1.4105	0.732 754 85	1.903 382 33	56 59 43.0	18 59 54.3	18 50 7.3	0 9 47.0
1.4110	0.733 384 44	1.904 611 67	57 2 8.5	19 0 42.8	18 50 54.6	0 9 48.3
1.4115	0.734 014 52	1.905 841 20	57 4 34.0	19 1 31.3	18 51 41.8	0 9 49.5
1.4120	0.734 645 09	1.907 070 91	57 6 59.6	19 2 19.9	18 52 29.1	0 9 50.8
1.4125	0.735 276 16	1.908 300 80	57 9 25.3	19 3 8.4	18 53 16.3	0 9 52.1
1.4130	0.735 907 72	1.909 530 89	57 11 51.0	19 3 57.0	18 54 3.6	0 9 53.4
1.4135	0.736 539 78	1.910 761 15	57 14 16.7	19 4 45.6	18 54 50.9	0 9 54.7
1.4140	0.737 172 33	1.911 991 60	57 16 42.5	19 5 34.2	18 55 38.2	0 9 55.9
1.4145	0.737 805 38	1.913 222 23	57 19 8.4	19 6 22.8	18 56 25.6	0 9 57.2
1.4150	0.738 438 93	1.914 453 04	57 21 34.3	19 7 11.4	18 57 12.9	0 9 58.5
1.4155	0.739 072 97	1.915 684 03	57 24 0.2	19 8 0.1	18 58 0.3	0 9 59.8
1.4160	0.739 707 51	1.916 915 21	57 26 26.2	19 8 48.7	18 58 47.7	0 10 1.1
1.4165	0.740 342 55	1.918 146 56	57 28 52.3	19 9 37.4	18 59 35.0	0 10 2.4
1.4170	0.740 978 09	1.919 378 10	57 31 18.4	19 10 26.1	19 0 22.4	0 10 3.7
1.4175	0.741 614 13	1.920 609 81	57 33 44.6	19 11 14.9	19 1 9.9	0 10 5.0
1.4180	0.742 250 67	1.921 841 71	57 36 10.8	19 12 3.6	19 1 57.3	0 10 6.3
1.4185	0.742 887 71	1.923 073 79	57 38 37.1	19 12 52.4	19 2 44.8	0 10 7.6
1.4190	0.743 525 26	1.924 306 04	57 41 3.4	19 13 41.1	19 3 32.2	0 10 8.9
1.4195	0.744 163 30	1.925 538 47	57 43 29.8	19 14 29.9	19 4 19.7	0 10 10.2
1.4200	0.744 801 85	1.926 771 08	57 45 56.2	19 15 18.7	19 5 7.2	0 10 11.5
1.4205	0.745 440 91	1.928 003 87	57 48 22.7	19 16 7.6	19 5 54.7	0 10 12.8
1.4210	0.746 080 47	1.929 236 83	57 50 49.2	19 16 56.4	19 6 42.2	0 10 14.2
1.4215	0.746 720 53	1.930 469 98	57 53 15.8	19 17 45.3	19 7 29.8	0 10 15.5
1.4220	0.747 361 10	1.931 703 29	57 55 42.4	19 18 34.1	19 8 17.3	0 10 16.8
1.4225	0.748 002 17	1.932 936 79	57 58 9.1	19 19 23.0	19 9 4.9	0 10 18.1
1.4230	0.748 643 76	1.934 170 45	58 0 35.8	19 20 11.9	19 9 52.5	0 10 19.5
1.4235	0.749 285 85	1.935 404 30	58 3 2.6	19 21 0.9	19 10 40.1	0 10 20.8
1.4240	0.749 928 45	1.936 638 32	58 5 29.4	19 21 49.8	19 11 27.7	0 10 22.1
1.4245	0.750 571 56	1.937 872 51	58 7 56.3	19 22 38.8	19 12 15.3	0 10 23.4
1.4250	0.751 215 17	1.939 106 87	58 10 23.2	19 23 27.7	19 13 3.0	0 10 24.8
1.4255	0.751 859 30	1.940 341 41	58 12 50.2	19 24 16.7	19 13 50.6	0 10 26.1
1.4260	0.752 503 94	1.941 576 12	58 15 17.3	19 25 5.8	19 14 38.3	0 10 27.5
1.4265	0.753 149 09	1.942 811 01	58 17 44.4	19 25 54.8	19 15 26.0	0 10 28.8
1.4270	0.753 794 76	1.944 046 06	58 20 11.5	19 26 43.8	19 16 13.7	0 10 30.2
1.4275	0.754 440 93	1.945 281 29	58 22 38.7	19 27 32.9	19 17 1.4	0 10 31.5
1.4280	0.755 087 62	1.946 516 68	58 25 5.9	19 28 22.0	19 17 49.1	0 10 32.9
1.4285	0.755 734 83	1.947 752 25	58 27 33.2	19 29 11.1	19 18 36.9	0 10 34.2
1.4290	0.756 382 55	1.948 987 99	58 30 0.6	19 30 0.2	19 19 24.6	0 10 35.6
1.4295	0.757 030 78	1.950 223 90	58 32 28.0	19 30 49.3	19 20 12.4	0 10 36.9
1.4300	0.757 679 54	1.951 459 98	58 34 55.5	19 31 38.5	19 21 0.2	0 10 38.3
1.4305	0.758 328 80	1.952 696 22	58 37 23.0	19 32 27.7	19 21 48.0	0 10 39.6
1.4310	0.758 978 59	1.953 932 63	58 39 50.5	19 33 16.8	19 22 35.8	0 10 41.0
1.4315	0.759 628 90	1.955 169 22	58 42 18.1	19 34 6.0	19 23 23.7	0 10 42.4
1.4320	0.760 279 72	1.956 405 97	58 44 45.8	19 34 55.3	19 24 11.5	0 10 43.8
1.4325	0.760 931 06	1.957 642 88	58 47 13.5	19 35 44.5	19 24 59.4	0 10 45.1
1.4330	0.761 582 93	1.958 879 97	58 49 41.3	19 36 33.8	19 25 47.2	0 10 46.5
1.4335	0.762 235 31	1.960 117 21	58 52 9.1	19 37 23.0	19 26 35.1	0 10 47.9
1.4340	0.762 888 22	1.961 354 63	58 54 36.9	19 38 12.3	19 27 23.1	0 10 49.3
1.4345	0.763 541 65	1.962 592 21	58 57 4.9	19 39 1.6	19 28 11.0	0 10 50.6
1.4350	0.764 195 60	1.963 829 95	58 59 32.8	19 39 50.9	19 28 58.9	0 10 52.0
1.4355	0.764 850 08	1.965 067 86	59 2 0.8	19 40 40.3	19 29 46.9	0 10 53.4
1.4360	0.765 505 08	1.966 305 94	59 4 28.9	19 41 29.6	19 30 34.8	0 10 54.8
1.4365	0.766 160 60	1.967 544 17	59 6 57.0	19 42 19.0	19 31 22.8	0 10 56.2
1.4370	0.766 816 65	1.968 782 57	59 9 25.2	19 43 8.4	19 32 10.8	0 10 57.6
1.4375	0.767 473 23	1.970 021 13	59 11 53.4	19 43 57.8	19 32 58.8	0 10 59.0
1.4380	0.768 130 33	1.971 259 86	59 14 21.7	19 44 47.2	19 33 46.8	0 11 0.4
1.4385	0.768 787 97	1.972 498 74	59 16 50.1	19 45 36.7	19 34 34.9	0 11 1.8
1.4390	0.769 446 13	1.973 737 79	59 19 18.4	19 46 26.1	19 35 22.9	0 11 3.2
1.4395	0.770 104 82	1.974 977 00	59 21 46.9	19 47 15.6	19 36 11.0	0 11 4.6
1.4400	0.770 764 04	1.976 216 37	59 24 15.4	19 48 5.1	19 36 59.1	0 11 6.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.4405	2.075 040 25	1.862 532 09	0.664 308 68	1.001 385 88	0.172 666 03	1.470 373 14
1.4410	2.076 481 00	1.863 544 63	0.665 159 85	1.002 032 43	0.172 896 72	1.471 529 08
1.4415	2.077 922 25	1.864 556 97	0.666 011 71	1.002 679 11	0.173 127 63	1.472 685 74
1.4420	2.079 364 00	1.865 569 12	0.666 864 27	1.003 325 91	0.173 358 75	1.473 843 13
1.4425	2.080 806 25	1.866 581 07	0.667 717 52	1.003 972 85	0.173 590 08	1.475 001 25
1.4430	2.082 249 00	1.867 592 83	0.668 571 47	1.004 619 90	0.173 821 64	1.476 160 10
1.4435	2.083 692 25	1.868 604 39	0.669 426 11	1.005 267 09	0.174 053 40	1.477 319 68
1.4440	2.085 136 00	1.869 615 76	0.670 281 45	1.005 914 40	0.174 285 39	1.478 479 99
1.4445	2.086 580 25	1.870 626 92	0.671 137 48	1.006 561 84	0.174 517 59	1.479 641 03
1.4450	2.088 025 00	1.871 637 89	0.671 994 21	1.007 209 40	0.174 750 00	1.480 802 80
1.4455	2.089 470 25	1.872 648 65	0.672 851 63	1.007 857 09	0.174 982 64	1.481 965 30
1.4460	2.090 916 00	1.873 659 22	0.673 709 75	1.008 504 90	0.175 215 48	1.483 128 54
1.4465	2.092 362 25	1.874 669 58	0.674 568 56	1.009 152 84	0.175 448 55	1.484 292 51
1.4470	2.093 809 00	1.875 679 75	0.675 428 06	1.009 800 91	0.175 681 83	1.485 457 22
1.4475	2.095 256 25	1.876 689 71	0.676 288 26	1.010 449 09	0.175 915 33	1.486 622 66
1.4480	2.096 704 00	1.877 699 46	0.677 149 16	1.011 097 41	0.176 149 04	1.487 788 83
1.4485	2.098 152 25	1.878 709 01	0.678 010 74	1.011 745 85	0.176 382 97	1.488 955 74
1.4490	2.099 601 00	1.879 718 36	0.678 873 03	1.012 394 41	0.176 617 12	1.490 123 39
1.4495	2.101 050 25	1.880 727 49	0.679 736 01	1.013 043 10	0.176 851 48	1.491 291 78
1.4500	2.102 500 00	1.881 736 42	0.680 599 68	1.013 691 91	0.177 086 06	1.492 460 91
1.4505	2.103 950 25	1.882 745 15	0.681 464 05	1.014 340 85	0.177 320 86	1.493 630 78
1.4510	2.105 401 00	1.883 753 66	0.682 329 12	1.014 989 91	0.177 555 88	1.494 801 39
1.4515	2.106 852 25	1.884 761 97	0.683 194 88	1.015 639 09	0.177 791 11	1.495 972 74
1.4520	2.108 304 00	1.885 770 06	0.684 061 33	1.016 288 40	0.178 026 56	1.497 144 83
1.4525	2.109 756 25	1.886 777 94	0.684 928 48	1.016 937 83	0.178 262 23	1.498 317 66
1.4530	2.111 209 00	1.887 785 61	0.685 796 32	1.017 587 39	0.178 498 11	1.499 491 24
1.4535	2.112 662 25	1.888 793 07	0.686 664 86	1.018 237 07	0.178 734 21	1.500 665 57
1.4540	2.114 116 00	1.889 800 32	0.687 534 10	1.018 886 87	0.178 970 53	1.501 840 63
1.4545	2.115 570 25	1.890 807 35	0.688 404 03	1.019 536 79	0.179 207 07	1.503 016 45
1.4550	2.117 025 00	1.891 814 16	0.689 274 65	1.020 186 84	0.179 443 82	1.504 193 01
1.4555	2.118 480 25	1.892 820 76	0.690 145 98	1.020 837 01	0.179 680 80	1.505 370 32
1.4560	2.119 936 00	1.893 827 14	0.691 017 99	1.021 487 30	0.179 917 99	1.506 548 37
1.4565	2.121 392 25	1.894 833 30	0.691 890 70	1.022 137 71	0.180 155 40	1.507 727 18
1.4570	2.122 849 00	1.895 839 25	0.692 764 11	1.022 788 25	0.180 393 02	1.508 906 74
1.4575	2.124 306 25	1.896 844 97	0.693 638 21	1.023 438 91	0.180 630 87	1.510 087 04
1.4580	2.125 764 00	1.897 850 47	0.694 513 01	1.024 089 69	0.180 868 93	1.511 268 10
1.4585	2.127 222 25	1.898 855 76	0.695 388 50	1.024 740 59	0.181 107 22	1.512 449 91
1.4590	2.128 681 00	1.899 860 82	0.696 264 69	1.025 391 61	0.181 345 72	1.513 632 48
1.4595	2.130 140 25	1.900 865 66	0.697 141 57	1.026 042 75	0.181 584 44	1.514 815 79
1.4600	2.131 600 00	1.901 870 27	0.698 019 15	1.026 694 02	0.181 823 38	1.515 999 87
1.4605	2.133 060 25	1.902 874 66	0.698 897 42	1.027 345 41	0.182 062 53	1.517 184 69
1.4610	2.134 521 00	1.903 878 83	0.699 776 39	1.027 996 91	0.182 301 91	1.518 370 28
1.4615	2.135 982 25	1.904 882 76	0.700 656 06	1.028 648 54	0.182 541 50	1.519 556 62
1.4620	2.137 444 00	1.905 886 48	0.701 536 42	1.029 300 29	0.182 781 32	1.520 743 72
1.4625	2.138 906 25	1.906 889 96	0.702 417 47	1.029 952 16	0.183 021 35	1.521 931 58
1.4630	2.140 369 00	1.907 893 22	0.703 299 23	1.030 604 14	0.183 261 60	1.523 120 19
1.4635	2.141 832 25	1.908 896 24	0.704 181 67	1.031 256 25	0.183 502 07	1.524 309 57
1.4640	2.143 296 00	1.909 899 04	0.705 064 81	1.031 908 48	0.183 742 77	1.525 499 71
1.4645	2.144 760 25	1.910 901 60	0.705 948 65	1.032 560 83	0.183 983 68	1.526 690 61
1.4650	2.146 225 00	1.911 903 93	0.706 833 19	1.033 213 29	0.184 224 81	1.527 882 27
1.4655	2.147 690 25	1.912 906 03	0.707 718 41	1.033 865 88	0.184 466 16	1.529 074 70
1.4660	2.149 156 00	1.913 907 90	0.708 604 34	1.034 518 59	0.184 707 73	1.530 267 89
1.4665	2.150 622 25	1.914 909 53	0.709 490 96	1.035 171 41	0.184 949 52	1.531 461 84
1.4670	2.152 089 00	1.915 910 93	0.710 378 27	1.035 824 36	0.185 191 52	1.532 656 57
1.4675	2.153 556 25	1.916 912 09	0.711 266 28	1.036 477 42	0.185 433 75	1.533 852 06
1.4680	2.155 024 00	1.917 913 01	0.712 154 99	1.037 130 60	0.185 676 20	1.535 048 31
1.4685	2.156 492 25	1.918 913 70	0.713 044 39	1.037 783 90	0.185 918 87	1.536 245 34
1.4690	2.157 961 00	1.919 914 14	0.713 934 49	1.038 437 32	0.186 161 76	1.537 443 13
1.4695	2.159 430 25	1.920 914 35	0.714 825 28	1.039 090 85	0.186 404 87	1.538 641 69
1.4700	2.160 900 00	1.921 914 32	0.715 716 77	1.039 744 50	0.186 648 20	1.539 841 03
1.4705	2.162 370 25	1.922 914 05	0.716 608 95	1.040 398 28	0.186 891 76	1.541 041 13
1.4710	2.163 841 00	1.923 913 53	0.717 501 83	1.041 052 16	0.187 135 53	1.542 242 01
1.4715	2.165 312 25	1.924 912 77	0.718 395 41	1.041 706 17	0.187 379 52	1.543 443 67
1.4720	2.166 784 00	1.925 911 77	0.719 289 68	1.042 360 29	0.187 623 73	1.544 646 09
1.4725	2.168 256 25	1.926 910 52	0.720 184 64	1.043 014 53	0.187 868 17	1.545 849 29
1.4730	2.169 729 00	1.927 909 03	0.721 080 30	1.043 668 89	0.188 112 82	1.547 053 27
1.4735	2.171 202 25	1.928 907 29	0.721 976 66	1.044 323 37	0.188 357 70	1.548 258 02
1.4740	2.172 676 00	1.929 905 31	0.722 873 71	1.044 977 96	0.188 602 80	1.549 463 56
1.4745	2.174 150 25	1.930 903 08	0.723 771 46	1.045 632 66	0.188 848 12	1.550 669 87
1.4750	2.175 625 00	1.931 900 59	0.724 669 90	1.046 287 49	0.189 093 66	1.551 876 95
1.4755	2.177 100 25	1.932 897 86	0.725 569 04	1.046 942 43	0.189 339 42	1.553 084 82
1.4760	2.178 576 00	1.933 894 88	0.726 468 87	1.047 597 48	0.189 585 40	1.554 293 47
1.4765	2.180 052 25	1.934 891 65	0.727 369 40	1.048 252 65	0.189 831 61	1.555 502 91
1.4770	2.181 529 00	1.935 888 17	0.728 270 63	1.048 907 94	0.190 078 03	1.556 713 12
1.4775	2.183 006 25	1.936 884 43	0.729 172 55	1.049 563 34	0.190 324 68	1.557 924 12
1.4780	2.184 484 00	1.937 880 44	0.730 075 16	1.050 218 86	0.190 571 55	1.559 135 90
1.4785	2.185 962 25	1.938 876 19	0.730 978 47	1.050 874 49	0.190 818 64	1.560 348 47
1.4790	2.187 441 00	1.939 871 69	0.731 882 48	1.051 530 24	0.191 065 96	1.561 561 82
1.4795	2.188 920 25	1.940 866 94	0.732 787 18	1.052 186 10	0.191 313 49	1.562 775 96
1.4800	2.190 400 00	1.941 861 92	0.733 692 57	1.052 842 08	0.191 561 25	1.563 990 89

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.4405	0.771 423 79	1.977 455 89	59 26 43.9	19 48 54.6	19 37 47.2	0 11 7.4
1.4410	0.772 084 07	1.978 695 58	59 29 12.5	19 49 44.2	19 38 35.3	0 11 8.9
1.4415	0.772 744 85	1.979 935 43	59 31 41.1	19 50 33.7	19 39 23.4	0 11 10.3
1.4420	0.773 406 23	1.981 175 43	59 34 9.8	19 51 23.3	19 40 11.6	0 11 11.7
1.4425	0.774 068 11	1.982 415 60	59 36 38.5	19 52 12.8	19 40 59.7	0 11 13.1
1.4430	0.774 730 53	1.983 655 92	59 39 7.3	19 53 2.4	19 41 47.9	0 11 14.5
1.4435	0.775 393 48	1.984 896 39	59 41 36.2	19 53 52.1	19 42 36.1	0 11 16.0
1.4440	0.776 056 96	1.986 137 03	59 44 5.1	19 54 41.7	19 43 24.3	0 11 17.4
1.4445	0.776 720 98	1.987 377 82	59 46 34.0	19 55 31.3	19 44 12.5	0 11 18.8
1.4450	0.777 385 54	1.988 618 77	59 49 3.0	19 56 21.0	19 45 0.7	0 11 20.3
1.4455	0.778 050 64	1.989 859 87	59 51 32.1	19 57 10.7	19 45 49.0	0 11 21.7
1.4460	0.778 716 27	1.991 101 13	59 54 1.2	19 58 0.4	19 46 37.2	0 11 23.2
1.4465	0.779 382 44	1.992 342 54	59 56 30.3	19 58 50.1	19 47 25.5	0 11 24.6
1.4470	0.780 049 16	1.993 584 10	59 58 59.6	19 59 39.9	19 48 13.8	0 11 26.0
1.4475	0.780 716 41	1.994 825 82	60 1 28.8	20 0 29.6	19 49 2.1	0 11 27.5
1.4480	0.781 384 21	1.996 067 69	60 3 58.1	20 1 19.4	19 49 50.4	0 11 28.9
1.4485	0.782 052 54	1.997 309 72	60 6 27.5	20 2 9.2	19 50 38.8	0 11 30.4
1.4490	0.782 721 42	1.998 551 90	60 8 56.9	20 2 59.0	19 51 27.1	0 11 31.9
1.4495	0.783 390 84	1.999 794 23	60 11 26.4	20 3 48.8	19 52 15.5	0 11 33.3
1.4500	0.784 060 81	2.001 036 71	60 13 55.9	20 4 38.6	19 53 3.8	0 11 34.8
1.4505	0.784 731 32	2.002 279 34	60 16 25.4	20 5 28.5	19 53 52.2	0 11 36.2
1.4510	0.785 402 38	2.003 522 12	60 18 55.1	20 6 18.4	19 54 40.6	0 11 37.7
1.4515	0.786 073 98	2.004 765 05	60 21 24.7	20 7 8.2	19 55 29.1	0 11 39.2
1.4520	0.786 746 13	2.006 008 13	60 23 54.5	20 7 58.2	19 56 17.5	0 11 40.7
1.4525	0.787 418 83	2.007 251 36	60 26 24.2	20 8 48.1	19 57 5.9	0 11 42.1
1.4530	0.788 092 07	2.008 494 74	60 28 54.1	20 9 38.0	19 57 54.4	0 11 43.6
1.4535	0.788 765 87	2.009 738 27	60 31 23.9	20 10 28.0	19 58 42.9	0 11 45.1
1.4540	0.789 440 22	2.010 981 94	60 33 53.9	20 11 18.0	19 59 31.4	0 11 46.6
1.4545	0.790 115 11	2.012 225 76	60 36 23.8	20 12 7.9	20 0 19.9	0 11 48.1
1.4550	0.790 790 56	2.013 469 73	60 38 53.9	20 12 58.0	20 1 8.4	0 11 49.6
1.4555	0.791 466 56	2.014 713 85	60 41 24.0	20 13 48.0	20 1 56.9	0 11 51.0
1.4560	0.792 143 11	2.015 958 11	60 43 54.1	20 14 38.0	20 2 45.5	0 11 52.5
1.4565	0.792 820 21	2.017 202 51	60 46 24.3	20 15 28.1	20 3 34.1	0 11 54.0
1.4570	0.793 497 87	2.018 447 06	60 48 54.5	20 16 18.2	20 4 22.6	0 11 55.5
1.4575	0.794 176 09	2.019 691 76	60 51 24.8	20 17 8.3	20 5 11.2	0 11 57.0
1.4580	0.794 854 86	2.020 936 60	60 53 55.1	20 17 58.4	20 5 59.8	0 11 58.5
1.4585	0.795 534 19	2.022 181 58	60 56 25.5	20 18 48.5	20 6 48.5	0 12 0.0
1.4590	0.796 214 07	2.023 426 71	60 58 56.0	20 19 38.7	20 7 37.1	0 12 1.6
1.4595	0.796 894 51	2.024 671 98	61 1 26.5	20 20 28.8	20 8 25.8	0 12 3.1
1.4600	0.797 575 52	2.025 917 39	61 3 57.0	20 21 19.0	20 9 14.4	0 12 4.6
1.4605	0.798 257 08	2.027 162 94	61 6 27.6	20 22 9.2	20 10 3.1	0 12 6.1
1.4610	0.798 939 20	2.028 408 63	61 8 58.3	20 22 59.4	20 10 51.8	0 12 7.6
1.4615	0.799 621 88	2.029 654 47	61 11 29.0	20 23 49.7	20 11 40.5	0 12 9.1
1.4620	0.800 305 12	2.030 900 44	61 13 59.7	20 24 39.9	20 12 29.2	0 12 10.7
1.4625	0.800 988 93	2.032 146 56	61 16 30.5	20 25 30.2	20 13 18.0	0 12 12.2
1.4630	0.801 673 30	2.033 392 81	61 19 1.4	20 26 20.5	20 14 6.7	0 12 13.7
1.4635	0.802 358 23	2.034 639 20	61 21 32.3	20 27 10.8	20 14 55.5	0 12 15.3
1.4640	0.803 043 72	2.035 885 73	61 24 3.3	20 28 1.1	20 15 44.3	0 12 16.8
1.4645	0.803 729 80	2.037 132 40	61 26 34.3	20 28 51.4	20 16 33.1	0 12 18.3
1.4650	0.804 416 43	2.038 379 21	61 29 5.3	20 29 41.8	20 17 21.9	0 12 19.9
1.4655	0.805 103 63	2.039 626 15	61 31 36.5	20 30 32.2	20 18 10.7	0 12 21.4
1.4660	0.805 791 39	2.040 873 23	61 34 7.6	20 31 22.5	20 18 59.6	0 12 23.0
1.4665	0.806 479 73	2.042 120 45	61 36 38.8	20 32 12.9	20 19 48.4	0 12 24.5
1.4670	0.807 168 63	2.043 367 80	61 39 10.1	20 33 3.4	20 20 37.3	0 12 26.1
1.4675	0.807 858 10	2.044 615 29	61 41 41.4	20 33 53.8	20 21 26.2	0 12 27.6
1.4680	0.808 548 15	2.045 862 91	61 44 12.8	20 34 44.3	20 22 15.1	0 12 29.2
1.4685	0.809 238 77	2.047 110 67	61 46 44.2	20 35 34.7	20 23 4.0	0 12 30.8
1.4690	0.809 929 95	2.048 358 56	61 49 15.7	20 36 25.2	20 23 52.9	0 12 32.3
1.4695	0.810 621 72	2.049 606 58	61 51 47.2	20 37 15.7	20 24 41.8	0 12 33.9
1.4700	0.811 314 05	2.050 854 74	61 54 18.8	20 38 6.3	20 25 30.8	0 12 35.5
1.4705	0.812 006 97	2.052 103 02	61 56 50.4	20 38 56.8	20 26 19.8	0 12 37.0
1.4710	0.812 700 45	2.053 351 44	61 59 22.1	20 39 47.4	20 27 8.8	0 12 38.6
1.4715	0.813 394 52	2.054 600 00	62 1 53.9	20 40 38.0	20 27 57.8	0 12 40.2
1.4720	0.814 089 16	2.055 848 68	62 4 25.6	20 41 28.5	20 28 46.8	0 12 41.8
1.4725	0.814 784 38	2.057 097 49	62 6 57.5	20 42 19.2	20 29 35.8	0 12 43.4
1.4730	0.815 480 17	2.058 346 43	62 9 29.4	20 43 9.8	20 30 24.8	0 12 44.9
1.4735	0.816 176 55	2.059 595 51	62 12 1.3	20 44 0.4	20 31 13.9	0 12 46.5
1.4740	0.816 873 51	2.060 844 71	62 14 33.3	20 44 51.1	20 32 3.0	0 12 48.1
1.4745	0.817 571 05	2.062 094 04	62 17 5.3	20 45 41.8	20 32 52.1	0 12 49.7
1.4750	0.818 269 17	2.063 343 49	62 19 37.4	20 46 32.5	20 33 41.2	0 12 51.3
1.4755	0.818 967 87	2.064 593 08	62 22 9.6	20 47 23.2	20 34 30.3	0 12 52.9
1.4760	0.819 667 16	2.065 842 79	62 24 41.8	20 48 13.9	20 35 19.4	0 12 54.5
1.4765	0.820 367 03	2.067 092 63	62 27 14.0	20 49 4.7	20 36 8.5	0 12 56.1
1.4770	0.821 067 49	2.068 342 60	62 29 46.3	20 49 55.4	20 36 57.7	0 12 57.7
1.4775	0.821 768 53	2.069 592 69	62 32 18.7	20 50 46.2	20 37 46.9	0 12 59.4
1.4780	0.822 470 16	2.070 842 90	62 34 51.1	20 51 37.0	20 38 36.1	0 13 1.0
1.4785	0.823 172 38	2.072 093 25	62 37 23.5	20 52 27.8	20 39 25.3	0 13 2.6
1.4790	0.823 875 19	2.073 343 71	62 39 56.0	20 53 18.7	20 40 14.5	0 13 4.2
1.4795	0.824 578 58	2.074 594 30	62 42 28.6	20 54 9.5	20 41 3.7	0 13 5.8
1.4800	0.825 282 57	2.075 845 01	62 45 1.2	20 55 0.4	20 41 52.9	0 13 7.5

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.4805	2.191 880 25	1.942 856 65	0.734 598 67	1.053 498 17	0.191 809 23	1.565 206 60
1.4810	2.193 361 00	1.943 851 12	0.735 505 45	1.054 154 38	0.192 057 43	1.566 423 11
1.4815	2.194 842 25	1.944 845 33	0.736 412 93	1.054 810 70	0.192 305 86	1.567 640 40
1.4820	2.196 324 00	1.945 839 28	0.737 321 11	1.055 467 13	0.192 554 50	1.568 858 49
1.4825	2.197 806 25	1.946 832 97	0.738 229 98	1.056 123 68	0.192 803 38	1.570 077 37
1.4830	2.199 289 00	1.947 826 39	0.739 139 55	1.056 780 34	0.193 052 47	1.571 297 04
1.4835	2.200 772 25	1.948 819 56	0.740 049 81	1.057 437 12	0.193 301 78	1.572 517 51
1.4840	2.202 256 00	1.949 812 46	0.740 960 77	1.058 094 01	0.193 551 32	1.573 738 77
1.4845	2.203 740 25	1.950 805 09	0.741 872 42	1.058 751 01	0.193 801 08	1.574 960 83
1.4850	2.205 225 00	1.951 797 46	0.742 784 77	1.059 408 12	0.194 051 07	1.576 183 68
1.4855	2.206 710 25	1.952 789 56	0.743 697 81	1.060 065 35	0.194 301 28	1.577 407 33
1.4860	2.208 196 00	1.953 781 40	0.744 611 55	1.060 722 69	0.194 551 71	1.578 631 78
1.4865	2.209 682 25	1.954 772 96	0.745 525 98	1.061 380 14	0.194 802 36	1.579 857 02
1.4870	2.211 169 00	1.955 764 26	0.746 441 11	1.062 037 71	0.195 053 24	1.581 083 07
1.4875	2.212 656 25	1.956 755 29	0.747 356 93	1.062 695 38	0.195 304 34	1.582 309 92
1.4880	2.214 144 00	1.957 746 05	0.748 273 45	1.063 353 17	0.195 555 66	1.583 537 57
1.4885	2.215 632 25	1.958 736 54	0.749 190 66	1.064 011 07	0.195 807 21	1.584 766 02
1.4890	2.217 121 00	1.959 726 75	0.750 108 57	1.064 669 08	0.196 058 98	1.585 995 27
1.4895	2.218 610 25	1.960 716 69	0.751 027 17	1.065 327 21	0.196 310 98	1.587 225 33
1.4900	2.220 100 00	1.961 706 36	0.751 946 46	1.065 985 44	0.196 563 20	1.588 456 20
1.4905	2.221 590 25	1.962 695 75	0.752 866 45	1.066 643 79	0.196 815 64	1.589 687 87
1.4910	2.223 081 00	1.963 684 87	0.753 787 14	1.067 302 25	0.197 068 31	1.590 920 35
1.4915	2.224 572 25	1.964 673 71	0.754 708 52	1.067 960 81	0.197 321 20	1.592 153 63
1.4920	2.226 064 00	1.965 662 27	0.755 630 59	1.068 619 49	0.197 574 31	1.593 387 73
1.4925	2.227 556 25	1.966 650 56	0.756 553 36	1.069 278 28	0.197 827 65	1.594 622 63
1.4930	2.229 049 00	1.967 638 56	0.757 476 82	1.069 937 18	0.198 081 22	1.595 858 35
1.4935	2.230 542 25	1.968 626 29	0.758 400 98	1.070 596 19	0.198 335 00	1.597 094 87
1.4940	2.232 036 00	1.969 613 73	0.759 325 83	1.071 255 31	0.198 589 02	1.598 332 21
1.4945	2.233 530 25	1.970 600 90	0.760 251 38	1.071 914 54	0.198 843 25	1.599 570 37
1.4950	2.235 025 00	1.971 587 78	0.761 177 62	1.072 573 88	0.199 097 72	1.600 809 33
1.4955	2.236 520 25	1.972 574 38	0.762 104 55	1.073 233 33	0.199 352 40	1.602 049 11
1.4960	2.238 016 00	1.973 560 69	0.763 032 18	1.073 892 89	0.199 607 31	1.603 289 71
1.4965	2.239 512 25	1.974 546 72	0.763 960 51	1.074 552 55	0.199 862 45	1.604 531 13
1.4970	2.241 009 00	1.975 532 46	0.764 889 52	1.075 212 33	0.200 117 81	1.605 773 36
1.4975	2.242 506 25	1.976 517 91	0.765 819 23	1.075 872 22	0.200 373 40	1.607 016 41
1.4980	2.244 004 00	1.977 503 08	0.766 749 64	1.076 532 21	0.200 629 21	1.608 260 29
1.4985	2.245 502 25	1.978 487 96	0.767 680 74	1.077 192 31	0.200 885 25	1.609 504 98
1.4990	2.247 001 00	1.979 472 55	0.768 612 53	1.077 852 52	0.201 141 51	1.610 750 49
1.4995	2.248 500 25	1.980 456 85	0.769 545 01	1.078 512 84	0.201 398 00	1.611 996 83
1.5000	2.250 000 00	1.981 440 86	0.770 478 19	1.079 173 27	0.201 654 71	1.613 243 99
1.5005	2.251 500 25	1.982 424 58	0.771 412 07	1.079 833 80	0.201 911 65	1.614 491 97
1.5010	2.253 001 00	1.983 408 00	0.772 346 64	1.080 494 44	0.202 168 81	1.615 740 78
1.5015	2.254 502 25	1.984 391 13	0.773 281 90	1.081 155 19	0.202 426 21	1.616 990 42
1.5020	2.256 004 00	1.985 373 97	0.774 217 85	1.081 816 05	0.202 683 82	1.618 240 88
1.5025	2.257 506 25	1.986 356 51	0.775 154 50	1.082 477 01	0.202 941 66	1.619 492 18
1.5030	2.259 009 00	1.987 338 75	0.776 091 84	1.083 138 08	0.203 199 73	1.620 744 30
1.5035	2.260 512 25	1.988 320 70	0.777 029 87	1.083 799 26	0.203 458 02	1.621 997 25
1.5040	2.262 016 00	1.989 302 35	0.777 968 60	1.084 460 54	0.203 716 55	1.623 251 03
1.5045	2.263 520 25	1.990 283 70	0.778 908 02	1.085 121 93	0.203 975 29	1.624 505 64
1.5050	2.265 025 00	1.991 264 75	0.779 848 14	1.085 783 43	0.204 234 26	1.625 761 09
1.5055	2.266 530 25	1.992 245 50	0.780 788 94	1.086 445 03	0.204 493 46	1.627 017 37
1.5060	2.268 036 00	1.993 225 94	0.781 730 44	1.087 106 74	0.204 752 89	1.628 274 49
1.5065	2.269 542 25	1.994 206 09	0.782 672 64	1.087 768 56	0.205 012 54	1.629 532 44
1.5070	2.271 049 00	1.995 185 93	0.783 615 52	1.088 430 48	0.205 272 42	1.630 791 23
1.5075	2.272 556 25	1.996 165 47	0.784 559 10	1.089 092 50	0.205 532 52	1.632 050 85
1.5080	2.274 064 00	1.997 144 71	0.785 503 37	1.089 754 63	0.205 792 86	1.633 311 32
1.5085	2.275 572 25	1.998 123 64	0.786 448 33	1.090 416 87	0.206 053 41	1.634 572 62
1.5090	2.277 081 00	1.999 102 26	0.787 393 99	1.091 079 21	0.206 314 20	1.635 834 77
1.5095	2.278 590 25	2.000 080 57	0.788 340 34	1.091 741 65	0.206 575 21	1.637 097 75
1.5100	2.280 100 00	2.001 058 58	0.789 287 38	1.092 404 20	0.206 836 45	1.638 361 58
1.5105	2.281 610 25	2.002 036 28	0.790 235 12	1.093 066 86	0.207 097 92	1.639 626 25
1.5110	2.283 121 00	2.003 013 66	0.791 183 54	1.093 729 62	0.207 359 61	1.640 891 77
1.5115	2.284 632 25	2.003 990 74	0.792 132 66	1.094 392 48	0.207 621 54	1.642 158 13
1.5120	2.286 144 00	2.004 967 50	0.793 082 47	1.095 055 45	0.207 883 69	1.643 425 34
1.5125	2.287 656 25	2.005 943 95	0.794 032 97	1.095 718 52	0.208 146 06	1.644 693 40
1.5130	2.289 169 00	2.006 920 09	0.794 984 17	1.096 381 69	0.208 408 67	1.645 962 30
1.5135	2.290 682 25	2.007 895 92	0.795 936 05	1.097 044 97	0.208 671 50	1.647 232 05
1.5140	2.292 196 00	2.008 871 42	0.796 888 63	1.097 708 35	0.208 934 56	1.648 502 65
1.5145	2.293 710 25	2.009 846 62	0.797 841 90	1.098 371 83	0.209 197 84	1.649 774 11
1.5150	2.295 225 00	2.010 821 49	0.798 795 86	1.099 035 42	0.209 461 36	1.651 046 42
1.5155	2.296 740 25	2.011 796 05	0.799 750 51	1.099 699 10	0.209 725 10	1.652 319 58
1.5160	2.298 256 00	2.012 770 29	0.800 705 86	1.100 362 90	0.209 989 07	1.653 593 60
1.5165	2.299 772 25	2.013 744 21	0.801 661 89	1.101 026 79	0.210 253 27	1.654 868 47
1.5170	2.301 289 00	2.014 717 81	0.802 618 62	1.101 690 79	0.210 517 70	1.656 144 19
1.5175	2.302 806 25	2.015 691 08	0.803 576 04	1.102 354 88	0.210 782 35	1.657 420 78
1.5180	2.304 324 00	2.016 664 04	0.804 534 15	1.103 019 08	0.211 047 24	1.658 698 22
1.5185	2.305 842 25	2.017 636 67	0.805 492 95	1.103 683 38	0.211 312 35	1.659 976 52
1.5190	2.307 361 00	2.018 608 98	0.806 452 44	1.104 347 79	0.211 577 69	1.661 255 69
1.5195	2.308 880 25	2.019 580 96	0.807 412 62	1.105 012 29	0.211 843 26	1.662 535 71
1.5200	2.310 400 00	2.020 552 62	0.808 373 49	1.105 676 90	0.212 109 06	1.663 816 59

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
				DEG MNT SEC		
1.4805	0.825 987 14	2.077 095 85	62 47 33.9	20 55 51.3	20 42 42.2	0 13 9.1
1.4810	0.826 692 31	2.078 346 81	62 50 6.6	20 56 42.2	20 43 31.5	0 13 10.7
1.4815	0.827 398 07	2.079 597 89	62 52 39.4	20 57 33.1	20 44 20.8	0 13 12.4
1.4820	0.828 104 42	2.080 849 09	62 55 12.2	20 58 24.1	20 45 10.1	0 13 14.0
1.4825	0.828 811 37	2.082 100 41	62 57 45.0	20 59 15.0	20 45 59.4	0 13 15.6
1.4830	0.829 518 91	2.083 351 85	63 0 18.0	21 0 6.0	20 46 48.7	0 13 17.3
1.4835	0.830 227 05	2.084 603 41	63 2 50.9	21 0 57.0	20 47 38.1	0 13 18.9
1.4840	0.830 935 79	2.085 855 09	63 5 24.0	21 1 48.0	20 48 27.4	0 13 20.6
1.4845	0.831 645 12	2.087 106 89	63 7 57.0	21 2 39.0	20 49 16.8	0 13 22.2
1.4850	0.832 355 05	2.088 358 81	63 10 30.2	21 3 30.1	20 50 6.2	0 13 23.9
1.4855	0.833 065 58	2.089 610 85	63 13 3.3	21 4 21.1	20 50 55.6	0 13 25.5
1.4860	0.833 776 71	2.090 863 01	63 15 36.6	21 5 12.2	20 51 45.0	0 13 27.2
1.4865	0.834 488 44	2.092 115 28	63 18 9.8	21 6 3.3	20 52 34.4	0 13 28.9
1.4870	0.835 200 77	2.093 367 67	63 20 43.2	21 6 54.4	20 53 23.9	0 13 30.5
1.4875	0.835 913 71	2.094 620 17	63 23 16.6	21 7 45.5	20 54 13.3	0 13 32.2
1.4880	0.836 627 24	2.095 872 79	63 25 50.0	21 8 36.7	20 55 2.8	0 13 33.9
1.4885	0.837 341 39	2.097 125 53	63 28 23.5	21 9 27.8	20 55 52.3	0 13 35.6
1.4890	0.838 056 13	2.098 378 38	63 30 57.0	21 10 19.0	20 56 41.8	0 13 37.2
1.4895	0.838 771 48	2.099 631 34	63 33 30.6	21 11 10.2	20 57 31.3	0 13 38.9
1.4900	0.839 487 44	2.100 884 42	63 36 4.2	21 12 1.4	20 58 20.8	0 13 40.6
1.4905	0.840 204 01	2.102 137 61	63 38 37.9	21 12 52.6	20 59 10.4	0 13 42.3
1.4910	0.840 921 19	2.103 390 91	63 41 11.7	21 13 43.9	20 59 59.9	0 13 44.0
1.4915	0.841 638 97	2.104 644 33	63 43 45.5	21 14 35.2	21 0 49.5	0 13 45.7
1.4920	0.842 357 37	2.105 897 85	63 46 19.3	21 15 26.4	21 1 39.1	0 13 47.4
1.4925	0.843 076 37	2.107 151 49	63 48 53.2	21 16 17.7	21 2 28.7	0 13 49.1
1.4930	0.843 795 99	2.108 405 24	63 51 27.2	21 17 9.1	21 3 18.3	0 13 50.8
1.4935	0.844 516 22	2.109 659 10	63 54 1.2	21 18 0.4	21 4 7.9	0 13 52.5
1.4940	0.845 237 06	2.110 913 07	63 56 35.2	21 18 51.7	21 4 57.6	0 13 54.2
1.4945	0.845 958 52	2.112 167 15	63 59 9.3	21 19 43.1	21 5 47.2	0 13 55.9
1.4950	0.846 680 59	2.113 421 33	64 1 43.5	21 20 34.5	21 6 36.9	0 13 57.6
1.4955	0.847 403 28	2.114 675 63	64 4 17.7	21 21 25.9	21 7 26.6	0 13 59.3
1.4960	0.848 126 59	2.115 930 03	64 6 52.0	21 22 17.3	21 8 16.3	0 14 1.0
1.4965	0.848 850 51	2.117 184 54	64 9 26.3	21 23 8.8	21 9 6.0	0 14 2.8
1.4970	0.849 575 05	2.118 439 16	64 12 0.6	21 24 0.2	21 9 55.7	0 14 4.5
1.4975	0.850 300 22	2.119 693 88	64 14 35.1	21 24 51.7	21 10 45.5	0 14 6.2
1.4980	0.851 026 00	2.120 948 71	64 17 9.5	21 25 43.2	21 11 35.2	0 14 8.0
1.4985	0.851 752 40	2.122 203 65	64 19 44.0	21 26 34.7	21 12 25.0	0 14 9.7
1.4990	0.852 479 43	2.123 458 69	64 22 18.6	21 27 26.2	21 13 14.8	0 14 11.4
1.4995	0.853 207 08	2.124 713 83	64 24 53.2	21 28 17.7	21 14 4.6	0 14 13.2
1.5000	0.853 935 35	2.125 969 08	64 27 27.9	21 29 9.3	21 14 54.4	0 14 14.9
1.5005	0.854 664 25	2.127 224 43	64 30 2.6	21 30 0.9	21 15 44.2	0 14 16.7
1.5010	0.855 393 77	2.128 479 88	64 32 37.4	21 30 52.5	21 16 34.1	0 14 18.4
1.5015	0.856 123 92	2.129 735 44	64 35 12.2	21 31 44.1	21 17 23.9	0 14 20.2
1.5020	0.856 854 70	2.130 991 10	64 37 47.1	21 32 35.7	21 18 13.8	0 14 21.9
1.5025	0.857 586 11	2.132 246 86	64 40 22.0	21 33 27.3	21 19 3.7	0 14 23.7
1.5030	0.858 318 14	2.133 502 72	64 42 57.0	21 34 19.0	21 19 53.6	0 14 25.4
1.5035	0.859 050 81	2.134 758 68	64 45 32.1	21 35 10.7	21 20 43.5	0 14 27.2
1.5040	0.859 784 11	2.136 014 74	64 48 7.1	21 36 2.4	21 21 33.4	0 14 29.0
1.5045	0.860 518 04	2.137 270 90	64 50 42.3	21 36 54.1	21 22 23.3	0 14 30.7
1.5050	0.861 252 60	2.138 527 16	64 53 17.5	21 37 45.8	21 23 13.3	0 14 32.5
1.5055	0.861 987 79	2.139 783 51	64 55 52.7	21 38 37.6	21 24 3.3	0 14 34.3
1.5060	0.862 723 62	2.141 039 97	64 58 28.0	21 39 29.3	21 24 53.3	0 14 36.1
1.5065	0.863 460 09	2.142 296 52	65 1 3.3	21 40 21.1	21 25 43.3	0 14 37.9
1.5070	0.864 197 19	2.143 553 17	65 3 38.7	21 41 12.9	21 26 33.3	0 14 39.6
1.5075	0.864 934 93	2.144 809 92	65 6 14.2	21 42 4.7	21 27 23.3	0 14 41.4
1.5080	0.865 673 31	2.146 066 76	65 8 49.7	21 42 56.6	21 28 13.3	0 14 43.2
1.5085	0.866 412 33	2.147 323 69	65 11 25.2	21 43 48.4	21 29 3.4	0 14 45.0
1.5090	0.867 151 99	2.148 580 73	65 14 0.8	21 44 40.3	21 29 53.5	0 14 46.8
1.5095	0.867 892 29	2.149 837 85	65 16 36.5	21 45 32.2	21 30 43.5	0 14 48.6
1.5100	0.868 633 23	2.151 095 07	65 19 12.2	21 46 24.1	21 31 33.6	0 14 50.4
1.5105	0.869 374 81	2.152 352 38	65 21 47.9	21 47 16.0	21 32 23.7	0 14 52.2
1.5110	0.870 117 04	2.153 609 79	65 24 23.8	21 48 7.9	21 33 13.9	0 14 54.1
1.5115	0.870 859 91	2.154 867 29	65 26 59.6	21 48 59.9	21 34 4.0	0 14 55.9
1.5120	0.871 603 43	2.156 124 88	65 29 35.5	21 49 51.8	21 34 54.2	0 14 57.7
1.5125	0.872 347 59	2.157 382 56	65 32 11.5	21 50 43.8	21 35 44.3	0 14 59.5
1.5130	0.873 092 41	2.158 640 33	65 34 47.5	21 51 35.8	21 36 34.5	0 15 1.3
1.5135	0.873 837 87	2.159 898 19	65 37 23.6	21 52 27.9	21 37 24.7	0 15 3.2
1.5140	0.874 583 98	2.161 156 15	65 39 59.7	21 53 19.9	21 38 14.9	0 15 5.0
1.5145	0.875 330 74	2.162 414 19	65 42 35.9	21 54 12.0	21 39 5.1	0 15 6.8
1.5150	0.876 078 15	2.163 672 32	65 45 12.1	21 55 4.0	21 39 55.4	0 15 8.7
1.5155	0.876 826 22	2.164 930 54	65 47 48.3	21 55 56.1	21 40 45.6	0 15 10.5
1.5160	0.877 574 93	2.166 188 84	65 50 24.7	21 56 48.2	21 41 35.9	0 15 12.3
1.5165	0.878 324 31	2.167 447 24	65 53 1.0	21 57 40.3	21 42 26.1	0 15 14.2
1.5170	0.879 074 33	2.168 705 72	65 55 37.5	21 58 32.5	21 43 16.4	0 15 16.0
1.5175	0.879 825 02	2.169 964 28	65 58 13.9	21 59 24.6	21 44 6.7	0 15 17.9
1.5180	0.880 576 36	2.171 222 94	66 0 50.5	22 0 16.8	21 44 57.1	0 15 19.8
1.5185	0.881 328 35	2.172 481 67	66 3 27.1	22 1 9.0	21 45 47.4	0 15 21.6
1.5190	0.882 081 01	2.173 740 50	66 6 3.7	22 2 1.2	21 46 37.8	0 15 23.5
1.5195	0.882 834 33	2.174 999 40	66 8 40.4	22 2 53.5	21 47 28.1	0 15 25.3
1.5200	0.883 588 31	2.176 258 39	66 11 17.1	22 3 45.7	21 48 18.5	0 15 27.2

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.5205	2.311 920 25	2.021 523 95	0.809 335 06	1.106 341 60	0.212 375 09	1.665 098 34
1.5210	2.313 441 00	2.022 494 55	0.810 297 31	1.107 006 41	0.212 641 34	1.666 380 96
1.5215	2.314 962 25	2.023 465 63	0.811 260 25	1.107 671 32	0.212 907 83	1.667 664 44
1.5220	2.316 484 00	2.024 435 58	0.812 223 89	1.108 336 32	0.213 174 54	1.668 948 78
1.5225	2.318 006 25	2.025 405 99	0.813 188 21	1.109 001 43	0.213 441 48	1.670 233 99
1.5230	2.319 529 00	2.026 375 68	0.814 153 23	1.109 666 64	0.213 708 65	1.671 520 07
1.5235	2.321 052 25	2.027 345 03	0.815 118 93	1.110 331 95	0.213 976 05	1.672 807 02
1.5240	2.322 576 00	2.028 314 05	0.816 085 33	1.110 997 35	0.214 243 68	1.674 094 85
1.5245	2.324 100 25	2.029 282 74	0.817 052 41	1.111 662 86	0.214 511 54	1.675 383 54
1.5250	2.325 625 00	2.030 251 09	0.818 020 19	1.112 328 47	0.214 779 63	1.676 673 10
1.5255	2.327 150 25	2.031 219 11	0.818 988 65	1.112 994 17	0.215 047 95	1.677 963 54
1.5260	2.328 676 00	2.032 186 79	0.819 957 80	1.113 659 98	0.215 316 50	1.679 254 85
1.5265	2.330 202 25	2.033 154 13	0.820 927 65	1.114 325 88	0.215 585 27	1.680 547 04
1.5270	2.331 729 00	2.034 121 14	0.821 898 18	1.114 991 88	0.215 854 28	1.681 840 11
1.5275	2.333 256 25	2.035 087 81	0.822 869 40	1.115 657 98	0.216 123 52	1.683 134 05
1.5280	2.334 784 00	2.036 054 14	0.823 841 31	1.116 324 18	0.216 392 98	1.684 428 87
1.5285	2.336 312 25	2.037 020 12	0.824 813 91	1.116 990 48	0.216 662 68	1.685 724 58
1.5290	2.337 841 00	2.037 985 77	0.825 787 20	1.117 656 88	0.216 932 61	1.687 021 16
1.5295	2.339 370 25	2.038 951 07	0.826 761 18	1.118 323 37	0.217 202 76	1.688 318 62
1.5300	2.340 900 00	2.039 916 03	0.827 735 84	1.118 989 96	0.217 473 15	1.689 616 97
1.5305	2.342 430 25	2.040 880 65	0.828 711 20	1.119 656 65	0.217 743 77	1.690 916 20
1.5310	2.343 961 00	2.041 844 92	0.829 687 24	1.120 323 43	0.218 014 62	1.692 216 32
1.5315	2.345 492 25	2.042 808 84	0.830 663 97	1.120 990 31	0.218 285 69	1.693 517 32
1.5320	2.347 024 00	2.043 772 42	0.831 641 39	1.121 657 29	0.218 557 00	1.694 819 21
1.5325	2.348 556 25	2.044 735 65	0.832 619 50	1.122 324 37	0.218 828 54	1.696 121 99
1.5330	2.350 089 00	2.045 698 54	0.833 598 30	1.122 991 54	0.219 100 31	1.697 425 66
1.5335	2.351 622 25	2.046 661 07	0.834 577 78	1.123 658 81	0.219 372 31	1.698 730 21
1.5340	2.353 156 00	2.047 623 25	0.835 557 95	1.124 326 18	0.219 644 54	1.700 035 66
1.5345	2.354 690 25	2.048 585 08	0.836 538 81	1.124 993 64	0.219 917 00	1.701 342 01
1.5350	2.356 225 00	2.049 546 56	0.837 520 36	1.125 661 19	0.220 189 69	1.702 649 24
1.5355	2.357 760 25	2.050 507 69	0.838 502 59	1.126 328 85	0.220 462 62	1.703 957 37
1.5360	2.359 296 00	2.051 468 46	0.839 485 51	1.126 996 59	0.220 735 77	1.705 266 40
1.5365	2.360 832 25	2.052 428 88	0.840 469 12	1.127 664 44	0.221 009 16	1.706 576 32
1.5370	2.362 369 00	2.053 388 94	0.841 453 41	1.128 332 38	0.221 282 77	1.707 887 14
1.5375	2.363 906 25	2.054 348 65	0.842 438 39	1.129 000 41	0.221 556 62	1.709 198 86
1.5380	2.365 444 00	2.055 308 00	0.843 424 06	1.129 668 54	0.221 830 70	1.710 511 48
1.5385	2.366 982 25	2.056 266 99	0.844 410 42	1.130 336 76	0.222 105 01	1.711 825 00
1.5390	2.368 521 00	2.057 225 62	0.845 397 46	1.131 005 08	0.222 379 56	1.713 139 43
1.5395	2.370 060 25	2.058 183 90	0.846 385 19	1.131 673 49	0.222 654 33	1.714 454 75
1.5400	2.371 600 00	2.059 141 81	0.847 373 60	1.132 341 99	0.222 929 33	1.715 770 98
1.5405	2.373 140 25	2.060 099 36	0.848 362 70	1.133 010 59	0.223 204 57	1.717 088 12
1.5410	2.374 681 00	2.061 056 54	0.849 352 49	1.133 679 29	0.223 480 04	1.718 406 16
1.5415	2.376 222 25	2.062 013 37	0.850 342 96	1.134 348 07	0.223 755 74	1.719 725 12
1.5420	2.377 764 00	2.062 969 83	0.851 334 12	1.135 016 95	0.224 031 67	1.721 044 98
1.5425	2.379 306 25	2.063 925 92	0.852 325 96	1.135 685 93	0.224 307 84	1.722 365 75
1.5430	2.380 849 00	2.064 881 65	0.853 318 49	1.136 354 99	0.224 584 24	1.723 687 43
1.5435	2.382 392 25	2.065 837 01	0.854 311 70	1.137 024 15	0.224 860 86	1.725 010 02
1.5440	2.383 936 00	2.066 792 00	0.855 305 60	1.137 693 40	0.225 137 73	1.726 333 53
1.5445	2.385 480 25	2.067 746 62	0.856 300 19	1.138 362 75	0.225 414 82	1.727 657 95
1.5450	2.387 025 00	2.068 700 88	0.857 295 45	1.139 032 18	0.225 692 14	1.728 983 29
1.5455	2.388 570 25	2.069 654 76	0.858 291 41	1.139 701 71	0.225 969 70	1.730 309 54
1.5460	2.390 116 00	2.070 608 27	0.859 288 05	1.140 371 33	0.226 247 49	1.731 636 71
1.5465	2.391 662 25	2.071 561 41	0.860 285 37	1.141 041 05	0.226 525 52	1.732 964 80
1.5470	2.393 209 00	2.072 514 18	0.861 283 37	1.141 710 85	0.226 803 77	1.734 293 81
1.5475	2.394 756 25	2.073 466 57	0.862 282 06	1.142 380 74	0.227 082 26	1.735 623 75
1.5480	2.396 304 00	2.074 418 59	0.863 281 44	1.143 050 73	0.227 360 98	1.736 954 60
1.5485	2.397 852 25	2.075 370 23	0.864 281 50	1.143 720 81	0.227 639 94	1.738 286 38
1.5490	2.399 401 00	2.076 321 49	0.865 282 24	1.144 390 98	0.227 919 12	1.739 619 08
1.5495	2.400 950 25	2.077 272 38	0.866 283 66	1.145 061 24	0.228 198 54	1.740 952 71
1.5500	2.402 500 00	2.078 222 89	0.867 285 77	1.145 731 58	0.228 478 20	1.742 287 26
1.5505	2.404 050 25	2.079 173 02	0.868 288 57	1.146 402 02	0.228 758 08	1.743 622 75
1.5510	2.405 601 00	2.080 122 77	0.869 292 04	1.147 072 55	0.229 038 20	1.744 959 16
1.5515	2.407 152 25	2.081 072 13	0.870 296 20	1.147 743 17	0.229 318 55	1.746 296 50
1.5520	2.408 704 00	2.082 021 12	0.871 301 04	1.148 413 88	0.229 599 14	1.747 634 78
1.5525	2.410 256 25	2.082 969 72	0.872 306 56	1.149 084 68	0.229 879 96	1.748 973 98
1.5530	2.411 809 00	2.083 917 94	0.873 312 77	1.149 755 57	0.230 161 01	1.750 314 12
1.5535	2.413 362 25	2.084 865 77	0.874 319 65	1.150 426 55	0.230 442 30	1.751 655 20
1.5540	2.414 916 00	2.085 813 22	0.875 327 22	1.151 097 61	0.230 723 82	1.752 997 21
1.5545	2.416 470 25	2.086 760 28	0.876 335 48	1.151 768 77	0.231 005 57	1.754 340 16
1.5550	2.418 025 00	2.087 706 95	0.877 344 41	1.152 440 01	0.231 287 56	1.755 684 05
1.5555	2.419 580 25	2.088 653 24	0.878 354 03	1.153 111 35	0.231 569 78	1.757 028 88
1.5560	2.421 136 00	2.089 599 13	0.879 364 32	1.153 782 77	0.231 852 24	1.758 374 65
1.5565	2.422 692 25	2.090 544 64	0.880 375 30	1.154 454 28	0.232 134 93	1.759 721 36
1.5570	2.424 249 00	2.091 489 75	0.881 386 96	1.155 125 87	0.232 417 85	1.761 069 01
1.5575	2.425 806 25	2.092 434 48	0.882 399 30	1.155 797 56	0.232 701 01	1.762 417 61
1.5580	2.427 364 00	2.093 378 80	0.883 412 32	1.156 469 33	0.232 984 40	1.763 767 15
1.5585	2.428 922 25	2.094 322 74	0.884 426 02	1.157 141 19	0.233 268 02	1.765 117 64
1.5590	2.430 481 00	2.095 266 28	0.885 440 40	1.157 813 14	0.233 551 88	1.766 469 08
1.5595	2.432 040 25	2.096 209 43	0.886 455 46	1.158 485 17	0.233 835 98	1.767 821 47
1.5600	2.433 600 00	2.097 152 18	0.887 471 21	1.159 157 29	0.234 120 31	1.769 174 81

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
1.5205	0.884 342 95	2.177 517 47	66 13 53.9	22 4 38.0	21 49 8.9	0 15 29.1
1.5210	0.885 098 25	2.178 776 62	66 16 30.7	22 5 30.2	21 49 59.3	0 15 31.0
1.5215	0.885 854 21	2.180 035 86	66 19 7.6	22 6 22.5	21 50 49.7	0 15 32.8
1.5220	0.886 610 84	2.181 295 18	66 21 44.6	22 7 14.9	21 51 40.1	0 15 34.7
1.5225	0.887 368 14	2.182 554 58	66 24 21.6	22 8 7.2	21 52 30.6	0 15 36.6
1.5230	0.888 126 10	2.183 814 06	66 26 58.6	22 8 59.5	21 53 21.0	0 15 38.5
1.5235	0.888 884 73	2.185 073 63	66 29 35.7	22 9 51.9	21 54 11.5	0 15 40.4
1.5240	0.889 644 03	2.186 333 27	66 32 12.8	22 10 44.3	21 55 2.0	0 15 42.3
1.5245	0.890 404 00	2.187 592 99	66 34 50.0	22 11 36.7	21 55 52.5	0 15 44.2
1.5250	0.891 164 64	2.188 852 79	66 37 27.3	22 12 29.1	21 56 43.0	0 15 46.1
1.5255	0.891 925 95	2.190 112 66	66 40 4.6	22 13 21.5	21 57 33.5	0 15 48.0
1.5260	0.892 687 94	2.191 372 62	66 42 42.0	22 14 14.0	21 58 24.1	0 15 49.9
1.5265	0.893 450 59	2.192 632 65	66 45 19.4	22 15 6.5	21 59 14.6	0 15 51.8
1.5270	0.894 213 92	2.193 892 76	66 47 56.8	22 15 58.9	22 0 5.2	0 15 53.7
1.5275	0.894 977 93	2.195 152 94	66 50 34.3	22 16 51.4	22 0 55.8	0 15 55.6
1.5280	0.895 742 62	2.196 413 20	66 53 11.9	22 17 44.0	22 1 46.4	0 15 57.6
1.5285	0.896 507 98	2.197 673 54	66 55 49.5	22 18 36.5	22 2 37.0	0 15 59.5
1.5290	0.897 274 02	2.198 933 94	66 58 27.2	22 19 29.1	22 3 27.6	0 16 1.4
1.5295	0.898 040 73	2.200 194 43	67 1 4.9	22 20 21.6	22 4 18.3	0 16 3.3
1.5300	0.898 808 13	2.201 454 98	67 3 42.6	22 21 14.2	22 5 8.9	0 16 5.3
1.5305	0.899 576 21	2.202 715 61	67 6 20.5	22 22 6.8	22 5 59.6	0 16 7.2
1.5310	0.900 344 98	2.203 976 31	67 8 58.3	22 22 59.4	22 6 50.3	0 16 9.2
1.5315	0.901 114 42	2.205 237 09	67 11 36.3	22 23 52.1	22 7 41.0	0 16 11.1
1.5320	0.901 884 55	2.206 497 93	67 14 14.2	22 24 44.7	22 8 31.7	0 16 13.0
1.5325	0.902 655 37	2.207 758 85	67 16 52.2	22 25 37.4	22 9 22.4	0 16 15.0
1.5330	0.903 426 87	2.209 019 83	67 19 30.3	22 26 30.1	22 10 13.2	0 16 16.9
1.5335	0.904 199 07	2.210 280 89	67 22 8.5	22 27 22.8	22 11 3.9	0 16 18.9
1.5340	0.904 971 94	2.211 542 01	67 24 46.6	22 28 15.5	22 11 54.7	0 16 20.9
1.5345	0.905 745 51	2.212 803 21	67 27 24.9	22 29 8.3	22 12 45.5	0 16 22.8
1.5350	0.906 519 77	2.214 064 47	67 30 3.1	22 30 1.0	22 13 36.3	0 16 24.8
1.5355	0.907 294 72	2.215 325 80	67 32 41.5	22 30 53.8	22 14 27.1	0 16 26.8
1.5360	0.908 070 37	2.216 587 19	67 35 19.9	22 31 46.6	22 15 17.9	0 16 28.7
1.5365	0.908 846 70	2.217 848 65	67 37 58.3	22 32 39.4	22 16 8.7	0 16 30.7
1.5370	0.909 623 74	2.219 110 18	67 40 36.8	22 33 32.3	22 16 59.6	0 16 32.7
1.5375	0.910 401 46	2.220 371 78	67 43 15.3	22 34 25.1	22 17 50.4	0 16 34.7
1.5380	0.911 179 89	2.221 633 44	67 45 53.9	22 35 18.0	22 18 41.3	0 16 36.7
1.5385	0.911 959 01	2.222 895 16	67 48 32.6	22 36 10.9	22 19 32.2	0 16 38.7
1.5390	0.912 738 83	2.224 156 95	67 51 11.3	22 37 3.8	22 20 23.1	0 16 40.7
1.5395	0.913 519 35	2.225 418 80	67 53 50.0	22 37 56.7	22 21 14.0	0 16 42.7
1.5400	0.914 300 58	2.226 680 71	67 56 28.8	22 38 49.6	22 22 4.9	0 16 44.7
1.5405	0.915 082 50	2.227 942 69	67 59 7.7	22 39 42.6	22 22 55.9	0 16 46.7
1.5410	0.915 865 13	2.229 204 73	68 1 46.6	22 40 35.5	22 23 46.9	0 16 48.7
1.5415	0.916 648 46	2.230 466 83	68 4 25.5	22 41 28.5	22 24 37.8	0 16 50.7
1.5420	0.917 432 49	2.231 728 99	68 7 4.5	22 42 21.5	22 25 28.8	0 16 52.7
1.5425	0.918 217 24	2.232 991 21	68 9 43.6	22 43 14.5	22 26 19.8	0 16 54.7
1.5430	0.919 002 69	2.234 253 49	68 12 22.7	22 44 7.6	22 27 10.8	0 16 56.7
1.5435	0.919 788 85	2.235 515 83	68 15 1.8	22 45 0.6	22 28 1.9	0 16 58.8
1.5440	0.920 575 71	2.236 778 23	68 17 41.0	22 45 53.7	22 28 52.9	0 17 0.8
1.5445	0.921 363 29	2.238 040 68	68 20 20.3	22 46 46.8	22 29 43.9	0 17 2.8
1.5450	0.922 151 58	2.239 303 20	68 22 59.6	22 47 39.9	22 30 35.0	0 17 4.9
1.5455	0.922 940 58	2.240 565 77	68 25 39.0	22 48 33.0	22 31 26.1	0 17 6.9
1.5460	0.923 730 30	2.241 828 40	68 28 18.4	22 49 26.1	22 32 17.2	0 17 8.9
1.5465	0.924 520 73	2.243 091 08	68 30 57.9	22 50 19.3	22 33 8.3	0 17 11.0
1.5470	0.925 311 87	2.244 353 82	68 33 37.4	22 51 12.5	22 33 59.4	0 17 13.0
1.5475	0.926 103 74	2.245 616 61	68 36 17.0	22 52 5.7	22 34 50.6	0 17 15.1
1.5480	0.926 896 32	2.246 879 46	68 38 56.6	22 52 58.9	22 35 41.7	0 17 17.1
1.5485	0.927 689 62	2.248 142 37	68 41 36.3	22 53 52.1	22 36 32.9	0 17 19.2
1.5490	0.928 483 64	2.249 405 32	68 44 16.0	22 54 45.3	22 37 24.1	0 17 21.3
1.5495	0.929 278 38	2.250 668 33	68 46 55.8	22 55 38.6	22 38 15.3	0 17 23.3
1.5500	0.930 073 84	2.251 931 39	68 49 35.6	22 56 31.9	22 39 6.5	0 17 25.4
1.5505	0.930 870 03	2.253 194 50	68 52 15.5	22 57 25.2	22 39 57.7	0 17 27.5
1.5510	0.931 666 94	2.254 457 67	68 54 55.4	22 58 18.5	22 40 48.9	0 17 29.6
1.5515	0.932 464 58	2.255 720 88	68 57 35.4	22 59 11.8	22 41 40.2	0 17 31.6
1.5520	0.933 262 95	2.256 984 15	69 0 15.4	23 0 5.1	22 42 31.4	0 17 33.7
1.5525	0.934 062 04	2.258 247 46	69 2 55.5	23 0 58.5	22 43 22.7	0 17 35.8
1.5530	0.934 861 86	2.259 510 82	69 5 35.7	23 1 51.9	22 44 14.0	0 17 37.9
1.5535	0.935 662 41	2.260 774 24	69 8 15.8	23 2 45.3	22 45 5.3	0 17 40.0
1.5540	0.936 463 69	2.262 037 70	69 10 56.1	23 3 38.7	22 45 56.6	0 17 42.1
1.5545	0.937 265 71	2.263 301 20	69 13 36.4	23 4 32.1	22 46 47.9	0 17 44.2
1.5550	0.938 068 45	2.264 564 76	69 16 16.7	23 5 25.6	22 47 39.3	0 17 46.3
1.5555	0.938 871 93	2.265 828 36	69 18 57.1	23 6 19.0	22 48 30.6	0 17 48.4
1.5560	0.939 676 15	2.267 092 00	69 21 37.6	23 7 12.5	22 49 22.0	0 17 50.5
1.5565	0.940 481 11	2.268 355 69	69 24 18.1	23 8 6.0	22 50 13.4	0 17 52.6
1.5570	0.941 286 80	2.269 619 43	69 26 58.6	23 8 59.5	22 51 4.8	0 17 54.8
1.5575	0.942 093 23	2.270 883 21	69 29 39.2	23 9 53.1	22 51 56.2	0 17 56.9
1.5580	0.942 900 40	2.272 147 03	69 32 19.9	23 10 46.6	22 52 47.6	0 17 59.0
1.5585	0.943 708 31	2.273 410 90	69 35 0.6	23 11 40.2	22 53 39.1	0 18 1.1
1.5590	0.944 516 97	2.274 674 81	69 37 41.3	23 12 33.8	22 54 30.5	0 18 3.3
1.5595	0.945 326 37	2.275 938 76	69 40 22.2	23 13 27.4	22 55 22.0	0 18 5.4
1.5600	0.946 136 51	2.277 202 76	69 43 3.0	23 14 21.0	22 56 13.5	0 18 7.5

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.5605	2.435 160 25	2.098 094 53	0.888 487 63	1.159 829 50	0.234 404 87	1.770 529 10
1.5610	2.436 721 00	2.099 036 48	0.889 504 73	1.160 501 79	0.234 689 67	1.771 884 34
1.5615	2.438 282 25	2.099 978 03	0.890 522 51	1.161 174 17	0.234 974 70	1.773 240 53
1.5620	2.439 844 00	2.100 919 19	0.891 540 97	1.161 846 64	0.235 259 97	1.774 597 69
1.5625	2.441 406 25	2.101 859 94	0.892 560 11	1.162 519 19	0.235 545 47	1.775 955 79
1.5630	2.442 969 00	2.102 800 29	0.893 579 93	1.163 191 83	0.235 831 20	1.777 314 86
1.5635	2.444 532 25	2.103 740 24	0.894 600 43	1.163 864 55	0.236 117 18	1.778 674 88
1.5640	2.446 096 00	2.104 679 79	0.895 621 60	1.164 537 36	0.236 403 38	1.780 035 87
1.5645	2.447 660 25	2.105 618 93	0.896 643 46	1.165 210 26	0.236 689 82	1.781 397 81
1.5650	2.449 225 00	2.106 557 66	0.897 665 99	1.165 883 24	0.236 976 50	1.782 760 72
1.5655	2.450 790 25	2.107 495 99	0.898 689 20	1.166 556 30	0.237 263 41	1.784 124 59
1.5660	2.452 356 00	2.108 433 91	0.899 713 09	1.167 229 45	0.237 550 56	1.785 489 43
1.5665	2.453 922 25	2.109 371 43	0.900 737 66	1.167 902 68	0.237 837 94	1.786 855 23
1.5670	2.455 489 00	2.110 308 53	0.901 762 90	1.168 576 00	0.238 125 56	1.788 222 00
1.5675	2.457 056 25	2.111 245 23	0.902 788 82	1.169 249 40	0.238 413 41	1.789 589 74
1.5680	2.458 624 00	2.112 181 51	0.903 815 42	1.169 922 89	0.238 701 50	1.790 958 44
1.5685	2.460 192 25	2.113 117 38	0.904 842 70	1.170 596 46	0.238 989 83	1.792 328 12
1.5690	2.461 761 00	2.114 052 84	0.905 870 65	1.171 270 11	0.239 278 39	1.793 698 77
1.5695	2.463 330 25	2.114 987 89	0.906 899 28	1.171 943 84	0.239 567 18	1.795 070 40
1.5700	2.464 900 00	2.115 922 52	0.907 928 58	1.172 617 66	0.239 856 21	1.796 443 00
1.5705	2.466 470 25	2.116 856 73	0.908 958 57	1.173 291 57	0.240 145 48	1.797 816 57
1.5710	2.468 041 00	2.117 790 53	0.909 989 22	1.173 965 55	0.240 434 98	1.799 191 13
1.5715	2.469 612 25	2.118 723 92	0.911 020 56	1.174 639 62	0.240 724 72	1.800 566 66
1.5720	2.471 184 00	2.119 656 88	0.912 052 57	1.175 313 77	0.241 014 70	1.801 943 17
1.5725	2.472 756 25	2.120 589 43	0.913 085 25	1.175 988 00	0.241 304 91	1.803 320 66
1.5730	2.474 329 00	2.121 521 55	0.914 118 61	1.176 662 31	0.241 595 35	1.804 699 14
1.5735	2.475 902 25	2.122 453 26	0.915 152 64	1.177 336 71	0.241 886 04	1.806 078 59
1.5740	2.477 476 00	2.123 384 54	0.916 187 35	1.178 011 19	0.242 176 96	1.807 459 04
1.5745	2.479 050 25	2.124 315 40	0.917 222 74	1.178 685 75	0.242 468 11	1.808 840 47
1.5750	2.480 625 00	2.125 245 84	0.918 258 80	1.179 360 39	0.242 759 51	1.810 222 88
1.5755	2.482 200 25	2.126 175 85	0.919 295 53	1.180 035 11	0.243 051 14	1.811 606 29
1.5760	2.483 776 00	2.127 105 44	0.920 332 93	1.180 709 91	0.243 343 00	1.812 990 68
1.5765	2.485 352 25	2.128 034 60	0.921 371 01	1.181 384 80	0.243 635 10	1.814 376 07
1.5770	2.486 929 00	2.128 963 34	0.922 409 77	1.182 059 76	0.243 927 44	1.815 762 45
1.5775	2.488 506 25	2.129 891 64	0.923 449 20	1.182 734 80	0.244 220 02	1.817 149 82
1.5780	2.490 084 00	2.130 819 52	0.924 489 30	1.183 409 93	0.244 512 83	1.818 538 19
1.5785	2.491 662 25	2.131 746 97	0.925 530 07	1.184 085 13	0.244 805 88	1.819 927 55
1.5790	2.493 241 00	2.132 673 99	0.926 571 52	1.184 760 42	0.245 099 16	1.821 317 92
1.5795	2.494 820 25	2.133 600 57	0.927 613 63	1.185 435 78	0.245 392 69	1.822 709 28
1.5800	2.496 400 00	2.134 526 73	0.928 656 43	1.186 111 23	0.245 686 45	1.824 101 64
1.5805	2.497 980 25	2.135 452 45	0.929 699 89	1.186 786 75	0.245 980 45	1.825 495 00
1.5810	2.499 561 00	2.136 377 73	0.930 744 02	1.187 462 35	0.246 274 68	1.826 889 37
1.5815	2.501 142 25	2.137 302 58	0.931 788 83	1.188 138 03	0.246 569 15	1.828 284 74
1.5820	2.502 724 00	2.138 227 00	0.932 834 31	1.188 813 79	0.246 863 86	1.829 681 11
1.5825	2.504 306 25	2.139 150 98	0.933 880 46	1.189 489 63	0.247 158 81	1.831 078 49
1.5830	2.505 889 00	2.140 074 51	0.934 927 28	1.190 165 54	0.247 453 99	1.832 476 88
1.5835	2.507 472 25	2.140 997 62	0.935 974 77	1.190 841 54	0.247 749 41	1.833 876 28
1.5840	2.509 056 00	2.141 920 28	0.937 022 93	1.191 517 61	0.248 045 07	1.835 276 69
1.5845	2.510 640 25	2.142 842 50	0.938 071 76	1.192 193 76	0.248 340 97	1.836 678 12
1.5850	2.512 225 00	2.143 764 28	0.939 121 26	1.192 869 99	0.248 637 10	1.838 080 55
1.5855	2.513 810 25	2.144 685 61	0.940 171 43	1.193 546 29	0.248 933 47	1.839 484 00
1.5860	2.515 396 00	2.145 606 50	0.941 222 27	1.194 222 68	0.249 230 08	1.840 888 47
1.5865	2.516 982 25	2.146 526 95	0.942 273 78	1.194 899 13	0.249 526 93	1.842 293 96
1.5870	2.518 569 00	2.147 446 96	0.943 325 96	1.195 575 67	0.249 824 01	1.843 700 46
1.5875	2.520 156 25	2.148 366 51	0.944 378 81	1.196 252 28	0.250 121 34	1.845 107 98
1.5880	2.521 744 00	2.149 285 62	0.945 432 33	1.196 928 97	0.250 418 90	1.846 516 53
1.5885	2.523 332 25	2.150 204 29	0.946 486 51	1.197 605 74	0.250 716 70	1.847 926 10
1.5890	2.524 921 00	2.151 122 50	0.947 541 37	1.198 282 58	0.251 014 73	1.849 336 69
1.5895	2.526 510 25	2.152 040 26	0.948 596 89	1.198 959 50	0.251 313 01	1.850 748 31
1.5900	2.528 100 00	2.152 957 58	0.949 653 08	1.199 636 49	0.251 611 52	1.852 160 95
1.5905	2.529 690 25	2.153 874 44	0.950 709 94	1.200 313 56	0.251 910 28	1.853 574 62
1.5910	2.531 281 00	2.154 790 85	0.951 767 46	1.200 990 70	0.252 209 27	1.854 989 33
1.5915	2.532 872 25	2.155 706 80	0.952 825 65	1.201 667 92	0.252 508 50	1.856 405 06
1.5920	2.534 464 00	2.156 622 31	0.953 884 51	1.202 345 21	0.252 807 96	1.857 821 83
1.5925	2.536 056 25	2.157 537 35	0.954 944 03	1.203 022 58	0.253 107 67	1.859 239 63
1.5930	2.537 649 00	2.158 451 94	0.956 004 23	1.203 700 03	0.253 407 61	1.860 658 46
1.5935	2.539 242 25	2.159 366 08	0.957 065 08	1.204 377 54	0.253 707 80	1.862 078 33
1.5940	2.540 836 00	2.160 279 75	0.958 126 60	1.205 055 13	0.254 008 22	1.863 499 24
1.5945	2.542 430 25	2.161 192 97	0.959 188 79	1.205 732 80	0.254 308 88	1.864 921 19
1.5950	2.544 025 00	2.162 105 73	0.960 251 65	1.206 410 54	0.254 609 78	1.866 344 18
1.5955	2.545 620 25	2.163 018 02	0.961 315 17	1.207 088 35	0.254 910 92	1.867 768 21
1.5960	2.547 216 00	2.163 929 86	0.962 379 35	1.207 766 24	0.255 212 30	1.869 193 29
1.5965	2.548 812 25	2.164 841 23	0.963 444 20	1.208 444 20	0.255 513 91	1.870 619 41
1.5970	2.550 409 00	2.165 752 14	0.964 509 71	1.209 122 23	0.255 815 77	1.872 046 58
1.5975	2.552 006 25	2.166 662 58	0.965 575 89	1.209 800 34	0.256 117 87	1.873 474 79
1.5980	2.553 604 00	2.167 572 56	0.966 642 73	1.210 478 51	0.256 420 20	1.874 904 05
1.5985	2.555 202 25	2.168 482 07	0.967 710 23	1.211 156 76	0.256 722 77	1.876 334 37
1.5990	2.556 801 00	2.169 391 12	0.968 778 40	1.211 835 09	0.257 025 59	1.877 765 73
1.5995	2.558 400 25	2.170 299 70	0.969 847 23	1.212 513 48	0.257 328 64	1.879 198 15
1.6000	2.560 000 00	2.171 207 81	0.970 916 72	1.213 191 95	0.257 631 93	1.880 631 63

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.5605	0.946 947 40	2.278 466 79	69 45 43.9	23 15 14.6	22 57 4.9	0 18 9.7
1.5610	0.947 759 03	2.279 730 86	69 48 24.9	23 16 8.3	22 57 56.5	0 18 11.8
1.5615	0.948 571 42	2.280 994 98	69 51 5.9	23 17 2.0	22 58 48.0	0 18 14.0
1.5620	0.949 384 55	2.282 259 13	69 53 47.0	23 17 55.7	22 59 39.5	0 18 16.2
1.5625	0.950 198 43	2.283 523 32	69 56 28.1	23 18 49.4	23 0 31.1	0 18 18.3
1.5630	0.951 013 07	2.284 787 55	69 59 9.3	23 19 43.1	23 1 22.6	0 18 20.5
1.5635	0.951 828 46	2.286 051 82	70 1 50.5	23 20 36.8	23 2 14.2	0 18 22.6
1.5640	0.952 644 60	2.287 316 13	70 4 31.8	23 21 30.6	23 3 5.8	0 18 24.8
1.5645	0.953 461 49	2.288 580 47	70 7 13.1	23 22 24.4	23 3 57.4	0 18 27.0
1.5650	0.954 279 15	2.289 844 85	70 9 54.5	23 23 18.2	23 4 49.0	0 18 29.2
1.5655	0.955 097 56	2.291 109 26	70 12 35.9	23 24 12.0	23 5 40.6	0 18 31.3
1.5660	0.955 916 73	2.292 373 71	70 15 17.4	23 25 5.8	23 6 32.3	0 18 33.5
1.5665	0.956 736 65	2.293 638 19	70 17 58.9	23 25 59.6	23 7 23.9	0 18 35.7
1.5670	0.957 557 34	2.294 902 71	70 20 40.5	23 26 53.5	23 8 15.6	0 18 37.9
1.5675	0.958 378 79	2.296 167 25	70 23 22.1	23 27 47.4	23 9 7.3	0 18 40.1
1.5680	0.959 201 01	2.297 431 84	70 26 3.8	23 28 41.3	23 9 59.0	0 18 42.3
1.5685	0.960 023 99	2.298 696 45	70 28 45.5	23 29 35.2	23 10 50.7	0 18 44.5
1.5690	0.960 847 73	2.299 961 10	70 31 27.3	23 30 29.1	23 11 42.4	0 18 46.7
1.5695	0.961 672 24	2.301 225 77	70 34 9.2	23 31 23.1	23 12 34.1	0 18 48.9
1.5700	0.962 497 52	2.302 490 48	70 36 51.1	23 32 17.0	23 13 25.9	0 18 51.1
1.5705	0.963 323 57	2.303 755 22	70 39 33.0	23 33 11.0	23 14 17.6	0 18 53.4
1.5710	0.964 150 39	2.305 019 98	70 42 15.0	23 34 5.0	23 15 9.4	0 18 55.6
1.5715	0.964 977 98	2.306 284 78	70 44 57.0	23 34 59.0	23 16 1.2	0 18 57.8
1.5720	0.965 806 34	2.307 549 60	70 47 39.1	23 35 53.0	23 16 53.0	0 19 0.0
1.5725	0.966 635 48	2.308 814 46	70 50 21.3	23 36 47.1	23 17 44.8	0 19 2.3
1.5730	0.967 465 39	2.310 079 33	70 53 3.5	23 37 41.2	23 18 36.7	0 19 4.5
1.5735	0.968 296 08	2.311 344 24	70 55 45.7	23 38 35.2	23 19 28.5	0 19 6.7
1.5740	0.969 127 54	2.312 609 17	70 58 28.1	23 39 29.4	23 20 20.4	0 19 9.0
1.5745	0.969 959 79	2.313 874 13	71 1 10.4	23 40 23.5	23 21 12.2	0 19 11.2
1.5750	0.970 792 81	2.315 139 11	71 3 52.8	23 41 17.6	23 22 4.1	0 19 13.5
1.5755	0.971 626 62	2.316 404 12	71 6 35.3	23 42 11.8	23 22 56.0	0 19 15.7
1.5760	0.972 461 20	2.317 669 15	71 9 17.8	23 43 5.9	23 23 47.9	0 19 18.0
1.5765	0.973 296 57	2.318 934 20	71 12 0.4	23 44 0.1	23 24 39.9	0 19 20.3
1.5770	0.974 132 73	2.320 199 27	71 14 43.0	23 44 54.3	23 25 31.8	0 19 22.5
1.5775	0.974 969 67	2.321 464 37	71 17 25.6	23 45 48.5	23 26 23.7	0 19 24.8
1.5780	0.975 807 40	2.322 729 49	71 20 8.3	23 46 42.8	23 27 15.7	0 19 27.1
1.5785	0.976 645 92	2.323 994 63	71 22 51.1	23 47 37.0	23 28 7.7	0 19 29.4
1.5790	0.977 485 23	2.325 259 79	71 25 33.9	23 48 31.3	23 28 59.7	0 19 31.6
1.5795	0.978 325 33	2.326 524 98	71 28 16.8	23 49 25.6	23 29 51.7	0 19 33.9
1.5800	0.979 166 22	2.327 790 18	71 30 59.7	23 50 19.9	23 30 43.7	0 19 36.2
1.5805	0.980 007 91	2.329 055 40	71 33 42.7	23 51 14.2	23 31 35.7	0 19 38.5
1.5810	0.980 850 39	2.330 320 63	71 36 25.7	23 52 8.6	23 32 27.8	0 19 40.8
1.5815	0.981 693 67	2.331 585 89	71 39 8.8	23 53 2.9	23 33 19.8	0 19 43.1
1.5820	0.982 537 74	2.332 851 16	71 41 51.9	23 53 57.3	23 34 11.9	0 19 45.4
1.5825	0.983 382 61	2.334 116 45	71 44 35.1	23 54 51.7	23 35 4.0	0 19 47.7
1.5830	0.984 228 28	2.335 381 75	71 47 18.4	23 55 46.1	23 35 56.1	0 19 50.0
1.5835	0.985 074 76	2.336 647 07	71 50 1.6	23 56 40.5	23 36 48.2	0 19 52.3
1.5840	0.985 922 03	2.337 912 41	71 52 45.0	23 57 35.0	23 37 40.3	0 19 54.7
1.5845	0.986 770 11	2.339 177 76	71 55 28.4	23 58 29.5	23 38 32.5	0 19 57.0
1.5850	0.987 619 00	2.340 443 12	71 58 11.8	23 59 23.9	23 39 24.6	0 19 59.3
1.5855	0.988 468 69	2.341 708 50	72 0 55.3	24 0 18.4	23 40 16.8	0 20 1.6
1.5860	0.989 319 18	2.342 973 89	72 3 38.8	24 1 12.9	23 41 9.0	0 20 4.0
1.5865	0.990 170 49	2.344 239 29	72 6 22.4	24 2 7.5	23 42 1.2	0 20 6.3
1.5870	0.991 022 61	2.345 504 70	72 9 6.1	24 3 2.0	23 42 53.4	0 20 8.7
1.5875	0.991 875 53	2.346 770 12	72 11 49.8	24 3 56.6	23 43 45.6	0 20 11.0
1.5880	0.992 729 27	2.348 035 56	72 14 33.5	24 4 51.2	23 44 37.8	0 20 13.4
1.5885	0.993 583 83	2.349 301 00	72 17 17.3	24 5 45.8	23 45 30.1	0 20 15.7
1.5890	0.994 439 20	2.350 566 45	72 20 1.2	24 6 40.4	23 46 22.3	0 20 18.1
1.5895	0.995 295 38	2.351 831 92	72 22 45.1	24 7 35.0	23 47 14.6	0 20 20.4
1.5900	0.996 152 39	2.353 097 38	72 25 29.0	24 8 29.7	23 48 6.9	0 20 22.8
1.5905	0.997 010 21	2.354 362 86	72 28 13.0	24 9 24.3	23 48 59.2	0 20 25.2
1.5910	0.997 868 85	2.355 628 34	72 30 57.1	24 10 19.0	23 49 51.5	0 20 27.6
1.5915	0.998 728 32	2.356 893 83	72 33 41.2	24 11 13.7	23 50 43.8	0 20 29.9
1.5920	0.999 588 61	2.358 159 33	72 36 25.4	24 12 8.5	23 51 36.1	0 20 32.3
1.5925	1.000 449 72	2.359 424 83	72 39 9.6	24 13 3.2	23 52 28.5	0 20 34.7
1.5930	1.001 311 66	2.360 690 34	72 41 53.8	24 13 57.9	23 53 20.9	0 20 37.1
1.5935	1.002 174 42	2.361 955 85	72 44 38.2	24 14 52.7	23 54 13.2	0 20 39.5
1.5940	1.003 038 02	2.363 221 36	72 47 22.5	24 15 47.5	23 55 5.6	0 20 41.9
1.5945	1.003 902 44	2.364 486 88	72 50 6.9	24 16 42.3	23 55 58.0	0 20 44.3
1.5950	1.004 767 69	2.365 752 39	72 52 51.4	24 17 37.1	23 56 50.4	0 20 46.7
1.5955	1.005 633 78	2.367 017 91	72 55 35.9	24 18 32.0	23 57 42.9	0 20 49.1
1.5960	1.006 500 70	2.368 283 44	72 58 20.5	24 19 26.8	23 58 35.3	0 20 51.5
1.5965	1.007 368 45	2.369 548 96	73 1 5.1	24 20 21.7	23 59 27.8	0 20 53.9
1.5970	1.008 237 04	2.370 814 48	73 3 49.8	24 21 16.6	24 0 20.2	0 20 56.4
1.5975	1.009 106 47	2.372 080 00	73 6 34.5	24 22 11.5	24 1 12.7	0 20 58.8
1.5980	1.009 976 74	2.373 345 52	73 9 19.3	24 23 6.4	24 2 5.2	0 21 1.2
1.5985	1.010 847 85	2.374 611 04	73 12 4.1	24 24 1.4	24 2 57.7	0 21 3.6
1.5990	1.011 719 80	2.375 876 56	73 14 49.0	24 24 56.3	24 3 50.3	0 21 6.1
1.5995	1.012 592 59	2.377 142 07	73 17 34.0	24 25 51.3	24 4 42.8	0 21 8.5
1.6000	1.013 466 23	2.378 407 58	73 20 19.0	24 26 46.3	24 5 35.3	0 21 11.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.6005	2.561 600 25	2.172 115 45	0.971 986 88	1.213 870 49	0.257 935 46	1.882 066 16
1.6010	2.563 201 00	2.173 022 62	0.973 057 69	1.214 549 10	0.258 239 23	1.883 901 74
1.6015	2.564 802 25	2.173 929 31	0.974 129 17	1.215 227 78	0.258 543 24	1.884 938 39
1.6020	2.566 404 00	2.174 835 54	0.975 201 31	1.215 906 53	0.258 847 49	1.886 376 10
1.6025	2.568 006 25	2.175 741 29	0.976 274 12	1.216 585 35	0.259 151 98	1.887 814 87
1.6030	2.569 609 00	2.176 646 57	0.977 347 58	1.217 264 25	0.259 456 71	1.889 254 70
1.6035	2.571 212 25	2.177 551 37	0.978 421 71	1.217 943 21	0.259 761 68	1.890 695 60
1.6040	2.572 816 00	2.178 455 69	0.979 496 49	1.218 622 24	0.260 066 89	1.892 137 56
1.6045	2.574 420 25	2.179 359 54	0.980 571 94	1.219 301 35	0.260 372 34	1.893 580 59
1.6050	2.576 025 00	2.180 262 91	0.981 648 04	1.219 980 52	0.260 678 03	1.895 024 69
1.6055	2.577 630 25	2.181 165 80	0.982 724 81	1.220 659 77	0.260 983 96	1.896 469 86
1.6060	2.579 236 00	2.182 068 22	0.983 802 23	1.221 339 08	0.261 290 13	1.897 916 11
1.6065	2.580 842 25	2.182 970 15	0.984 880 32	1.222 018 47	0.261 596 54	1.899 363 42
1.6070	2.582 449 00	2.183 871 60	0.985 959 06	1.222 697 92	0.261 903 19	1.900 811 82
1.6075	2.584 056 25	2.184 772 56	0.987 038 47	1.223 377 44	0.262 210 08	1.902 261 28
1.6080	2.585 664 00	2.185 673 05	0.988 118 53	1.224 057 03	0.262 517 21	1.903 711 83
1.6085	2.587 272 25	2.186 573 05	0.989 199 25	1.224 736 69	0.262 824 58	1.905 163 46
1.6090	2.588 881 00	2.187 472 56	0.990 280 62	1.225 416 42	0.263 132 19	1.906 616 16
1.6095	2.590 490 25	2.188 371 59	0.991 362 66	1.226 096 21	0.263 440 04	1.908 069 95
1.6100	2.592 100 00	2.189 270 13	0.992 445 35	1.226 776 08	0.263 748 14	1.909 524 82
1.6105	2.593 710 25	2.190 168 18	0.993 528 70	1.227 456 01	0.264 056 47	1.910 980 78
1.6110	2.595 321 00	2.191 065 74	0.994 612 70	1.228 136 01	0.264 365 04	1.912 437 83
1.6115	2.596 932 25	2.191 962 82	0.995 697 37	1.228 816 07	0.264 673 86	1.913 895 96
1.6120	2.598 544 00	2.192 859 40	0.996 782 68	1.229 496 21	0.264 982 91	1.915 355 19
1.6125	2.600 156 25	2.193 755 49	0.997 868 66	1.230 176 41	0.265 292 21	1.916 815 50
1.6130	2.601 769 00	2.194 651 09	0.998 955 29	1.230 856 68	0.265 601 75	1.918 276 91
1.6135	2.603 382 25	2.195 546 19	1.000 042 57	1.231 537 01	0.265 911 52	1.919 739 41
1.6140	2.604 996 00	2.196 440 80	1.001 130 51	1.232 217 41	0.266 221 54	1.921 203 01
1.6145	2.606 610 25	2.197 334 92	1.002 219 11	1.232 897 88	0.266 531 80	1.922 667 70
1.6150	2.608 225 00	2.198 228 53	1.003 308 36	1.233 578 41	0.266 842 30	1.924 133 50
1.6155	2.609 840 25	2.199 121 65	1.004 398 26	1.234 259 01	0.267 153 05	1.925 600 39
1.6160	2.611 456 00	2.200 014 28	1.005 488 82	1.234 939 67	0.267 464 03	1.927 068 39
1.6165	2.613 072 25	2.200 906 40	1.006 580 03	1.235 620 40	0.267 775 26	1.928 537 49
1.6170	2.614 689 00	2.201 798 02	1.007 671 90	1.236 301 20	0.268 086 72	1.930 007 70
1.6175	2.616 306 25	2.202 689 15	1.008 764 41	1.236 982 06	0.268 398 43	1.931 479 01
1.6180	2.617 924 00	2.203 579 77	1.009 857 58	1.237 662 99	0.268 710 38	1.932 951 43
1.6185	2.619 542 25	2.204 469 89	1.010 951 41	1.238 343 98	0.269 022 57	1.934 424 96
1.6190	2.621 161 00	2.205 359 50	1.012 045 88	1.239 025 03	0.269 335 00	1.935 899 60
1.6195	2.622 780 25	2.206 248 61	1.013 141 01	1.239 706 15	0.269 647 67	1.937 375 35
1.6200	2.624 400 00	2.207 137 22	1.014 236 79	1.240 387 33	0.269 960 59	1.938 852 22
1.6205	2.626 020 25	2.208 025 31	1.015 333 21	1.241 068 58	0.270 273 75	1.940 330 20
1.6210	2.627 641 00	2.208 912 91	1.016 430 29	1.241 749 89	0.270 587 14	1.941 809 31
1.6215	2.629 262 25	2.209 799 99	1.017 528 02	1.242 431 27	0.270 900 79	1.943 289 53
1.6220	2.630 884 00	2.210 686 56	1.018 626 41	1.243 112 70	0.271 214 67	1.944 770 87
1.6225	2.632 506 25	2.211 572 62	1.019 725 44	1.243 794 20	0.271 528 79	1.946 253 33
1.6230	2.634 129 00	2.212 458 18	1.020 825 12	1.244 475 77	0.271 843 16	1.947 736 92
1.6235	2.635 752 25	2.213 343 22	1.021 925 45	1.245 157 39	0.272 157 77	1.949 221 63
1.6240	2.637 376 00	2.214 227 74	1.023 026 42	1.245 839 08	0.272 472 62	1.950 707 47
1.6245	2.639 000 25	2.215 111 76	1.024 128 05	1.246 520 84	0.272 787 71	1.952 194 44
1.6250	2.640 625 00	2.215 995 26	1.025 230 33	1.247 202 65	0.273 103 04	1.953 682 54
1.6255	2.642 250 25	2.216 878 24	1.026 333 25	1.247 884 52	0.273 418 62	1.955 171 76
1.6260	2.643 876 00	2.217 760 71	1.027 436 82	1.248 566 46	0.273 734 44	1.956 662 13
1.6265	2.645 502 25	2.218 642 66	1.028 541 04	1.249 248 46	0.274 050 50	1.958 153 62
1.6270	2.647 129 00	2.219 524 09	1.029 645 91	1.249 930 52	0.274 366 80	1.959 646 26
1.6275	2.648 756 25	2.220 405 00	1.030 751 42	1.250 612 64	0.274 683 35	1.961 140 03
1.6280	2.650 384 00	2.221 285 39	1.031 857 58	1.251 294 83	0.275 000 14	1.962 634 94
1.6285	2.652 012 25	2.222 165 26	1.032 964 38	1.251 977 07	0.275 317 17	1.964 131 00
1.6290	2.653 641 00	2.223 044 61	1.034 071 83	1.252 659 37	0.275 634 44	1.965 628 19
1.6295	2.655 270 25	2.223 923 43	1.035 179 93	1.253 341 74	0.275 951 96	1.967 126 53
1.6300	2.656 900 00	2.224 801 74	1.036 288 67	1.254 024 16	0.276 269 72	1.968 626 02
1.6305	2.658 530 25	2.225 679 51	1.037 398 06	1.254 706 65	0.276 587 72	1.970 126 65
1.6310	2.660 161 00	2.226 556 76	1.038 508 09	1.255 389 19	0.276 905 96	1.971 628 44
1.6315	2.661 792 25	2.227 433 49	1.039 618 76	1.256 071 79	0.277 224 45	1.973 131 37
1.6320	2.663 424 00	2.228 309 68	1.040 730 08	1.256 754 46	0.277 543 18	1.974 635 46
1.6325	2.665 056 25	2.229 185 35	1.041 842 04	1.257 437 18	0.277 862 15	1.976 140 70
1.6330	2.666 689 00	2.230 060 49	1.042 954 65	1.258 119 96	0.278 181 37	1.977 647 10
1.6335	2.668 322 25	2.230 935 10	1.044 067 89	1.258 802 80	0.278 500 82	1.979 154 66
1.6340	2.669 956 00	2.231 809 17	1.045 181 78	1.259 485 70	0.278 820 53	1.980 663 37
1.6345	2.671 590 25	2.232 682 72	1.046 296 32	1.260 168 66	0.279 140 47	1.982 173 25
1.6350	2.673 225 00	2.233 555 73	1.047 411 49	1.260 851 67	0.279 460 66	1.983 684. 29
1.6355	2.674 860 25	2.234 428 21	1.048 527 31	1.261 534 75	0.279 781 09	1.985 196 49
1.6360	2.676 496 00	2.235 300 15	1.049 643 76	1.262 217 88	0.280 101 76	1.986 709 86
1.6365	2.678 132 25	2.236 171 56	1.050 760 86	1.262 901 07	0.280 422 68	1.988 224 40
1.6370	2.679 769 00	2.237 042 43	1.051 878 60	1.263 584 31	0.280 743 84	1.989 740 11
1.6375	2.681 406 25	2.237 912 76	1.052 996 98	1.264 267 62	0.281 065 25	1.991 256 98
1.6380	2.683 044 00	2.238 782 55	1.054 115 99	1.264 950 98	0.281 386 89	1.992 775 03
1.6385	2.684 682 25	2.239 651 81	1.055 235 65	1.265 634 40	0.281 708 78	1.994 294 26
1.6390	2.686 321 00	2.240 520 52	1.056 355 95	1.266 317 87	0.282 030 92	1.995 814 66
1.6395	2.687 960 25	2.241 388 69	1.057 476 88	1.267 001 40	0.282 353 30	1.997 336 24
1.6400	2.689 600 00	2.242 256 32	1.058 598 45	1.267 684 99	0.282 675 92	1.998 859 00

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.6005	1.014 340 71	2.379 673 09	73 23 4.0	24 27 41.3	24 6 27.9	0 21 13.4
1.6010	1.015 216 04	2.380 938 59	73 25 49.1	24 28 36.4	24 7 20.5	0 21 15.9
1.6015	1.016 092 22	2.382 204 09	73 28 34.2	24 29 31.4	24 8 13.1	0 21 18.3
1.6020	1.016 969 25	2.383 469 58	73 31 19.4	24 30 26.5	24 9 5.7	0 21 20.8
1.6025	1.017 847 13	2.384 735 06	73 34 4.7	24 31 21.6	24 9 58.3	0 21 23.3
1.6030	1.018 725 86	2.386 000 54	73 36 50.0	24 32 16.7	24 10 50.9	0 21 25.7
1.6035	1.019 605 45	2.387 266 01	73 39 35.3	24 33 11.8	24 11 43.6	0 21 28.2
1.6040	1.020 485 89	2.388 531 47	73 42 20.7	24 34 6.9	24 12 36.2	0 21 30.7
1.6045	1.021 367 19	2.389 796 92	73 45 6.1	24 35 2.0	24 13 28.9	0 21 33.2
1.6050	1.022 249 34	2.391 062 37	73 47 51.6	24 35 57.2	24 14 21.6	0 21 35.7
1.6055	1.023 132 36	2.392 327 80	73 50 37.2	24 36 52.4	24 15 14.2	0 21 38.2
1.6060	1.024 016 24	2.393 593 23	73 53 22.8	24 37 47.6	24 16 7.0	0 21 40.6
1.6065	1.024 900 98	2.394 858 64	73 56 8.5	24 38 42.8	24 16 59.7	0 21 43.1
1.6070	1.025 786 58	2.396 124 04	73 58 54.2	24 39 38.1	24 17 52.4	0 21 45.6
1.6075	1.026 673 05	2.397 389 43	74 1 39.9	24 40 33.3	24 18 45.2	0 21 48.2
1.6080	1.027 560 39	2.398 654 81	74 4 25.7	24 41 28.6	24 19 37.9	0 21 50.7
1.6085	1.028 448 59	2.399 920 17	74 7 11.6	24 42 23.9	24 20 30.7	0 21 53.2
1.6090	1.029 337 66	2.401 185 52	74 9 57.5	24 43 19.2	24 21 23.5	0 21 55.7
1.6095	1.030 227 61	2.402 450 86	74 12 43.5	24 44 14.5	24 22 16.3	0 21 58.2
1.6100	1.031 118 42	2.403 716 18	74 15 29.5	24 45 9.8	24 23 9.1	0 22 0.8
1.6105	1.032 010 11	2.404 981 48	74 18 15.6	24 46 5.2	24 24 1.9	0 22 3.3
1.6110	1.032 902 68	2.406 246 77	74 21 1.7	24 47 0.6	24 24 54.7	0 22 5.8
1.6115	1.033 796 12	2.407 512 04	74 23 47.9	24 47 56.0	24 25 47.6	0 22 8.4
1.6120	1.034 690 44	2.408 777 30	74 26 34.1	24 48 51.4	24 26 40.5	0 22 10.9
1.6125	1.035 585 64	2.410 042 53	74 29 20.4	24 49 46.8	24 27 33.3	0 22 13.5
1.6130	1.036 481 72	2.411 307 75	74 32 6.7	24 50 42.2	24 28 26.2	0 22 16.0
1.6135	1.037 378 68	2.412 572 95	74 34 53.1	24 51 37.7	24 29 19.1	0 22 18.6
1.6140	1.038 276 53	2.413 838 13	74 37 39.5	24 52 33.2	24 30 12.0	0 22 21.1
1.6145	1.039 175 26	2.415 103 28	74 40 26.0	24 53 28.7	24 31 5.0	0 22 23.7
1.6150	1.040 074 88	2.416 368 42	74 43 12.5	24 54 24.2	24 31 57.9	0 22 26.3
1.6155	1.040 975 38	2.417 633 54	74 45 59.1	24 55 19.7	24 32 50.9	0 22 28.8
1.6160	1.041 876 78	2.418 898 63	74 48 45.7	24 56 15.2	24 33 43.8	0 22 31.4
1.6165	1.042 779 07	2.420 163 70	74 51 32.4	24 57 10.8	24 34 36.8	0 22 34.0
1.6170	1.043 682 25	2.421 428 75	74 54 19.2	24 58 6.4	24 35 29.8	0 22 36.6
1.6175	1.044 586 32	2.422 693 77	74 57 6.0	24 59 2.0	24 36 22.8	0 22 39.2
1.6180	1.045 491 29	2.423 958 77	74 59 52.8	24 59 57.6	24 37 15.8	0 22 41.8
1.6185	1.046 397 16	2.425 223 75	75 2 39.7	25 0 53.2	24 38 8.9	0 22 44.4
1.6190	1.047 303 92	2.426 488 70	75 5 26.6	25 1 48.9	24 39 1.9	0 22 47.0
1.6195	1.048 211 59	2.427 753 62	75 8 13.6	25 2 44.5	24 39 55.0	0 22 49.6
1.6200	1.049 120 15	2.429 018 52	75 11 0.7	25 3 40.2	24 40 48.0	0 22 52.2
1.6205	1.050 029 62	2.430 283 38	75 13 47.8	25 4 35.9	24 41 41.1	0 22 54.8
1.6210	1.050 940 00	2.431 548 22	75 16 34.9	25 5 31.6	24 42 34.2	0 22 57.4
1.6215	1.051 851 28	2.432 813 04	75 19 22.1	25 6 27.4	24 43 27.3	0 23 0.1
1.6220	1.052 763 46	2.434 077 82	75 22 9.4	25 7 23.1	24 44 20.4	0 23 2.7
1.6225	1.053 676 56	2.435 342 57	75 24 56.7	25 8 18.9	24 45 13.6	0 23 5.3
1.6230	1.054 590 57	2.436 607 29	75 27 44.1	25 9 14.7	24 46 6.7	0 23 8.0
1.6235	1.055 505 48	2.437 871 98	75 30 31.5	25 10 10.5	24 46 59.9	0 23 10.6
1.6240	1.056 421 32	2.439 136 64	75 33 18.9	25 11 6.3	24 47 53.1	0 23 13.3
1.6245	1.057 338 06	2.440 401 27	75 36 6.4	25 12 2.1	24 48 46.2	0 23 15.9
1.6250	1.058 255 73	2.441 665 87	75 38 54.0	25 12 58.0	24 49 39.4	0 23 18.6
1.6255	1.059 174 31	2.442 930 43	75 41 41.6	25 13 53.9	24 50 32.7	0 23 21.2
1.6260	1.060 093 81	2.444 194 95	75 44 29.3	25 14 49.8	24 51 25.9	0 23 23.9
1.6265	1.061 014 23	2.445 459 45	75 47 17.0	25 15 45.7	24 52 19.1	0 23 26.5
1.6270	1.061 935 58	2.446 723 90	75 50 4.8	25 16 41.6	24 53 12.4	0 23 29.2
1.6275	1.062 857 85	2.447 988 33	75 52 52.6	25 17 37.5	24 54 5.6	0 23 31.9
1.6280	1.063 781 04	2.449 252 71	75 55 40.5	25 18 33.5	24 54 58.9	0 23 34.6
1.6285	1.064 705 17	2.450 517 06	75 58 28.4	25 19 29.5	24 55 52.2	0 23 37.3
1.6290	1.065 630 22	2.451 781 37	76 1 16.4	25 20 25.5	24 56 45.5	0 23 40.0
1.6295	1.066 556 20	2.453 045 64	76 4 4.4	25 21 21.5	24 57 38.8	0 23 42.6
1.6300	1.067 483 12	2.454 309 88	76 6 52.5	25 22 17.5	24 58 32.1	0 23 45.3
1.6305	1.068 410 96	2.455 574 07	76 9 40.6	25 23 13.5	24 59 25.5	0 23 48.1
1.6310	1.069 339 75	2.456 838 22	76 12 28.8	25 24 9.6	25 0 18.8	0 23 50.8
1.6315	1.070 269 47	2.458 102 34	76 15 17.0	25 25 5.7	25 1 12.2	0 23 53.5
1.6320	1.071 200 12	2.459 366 41	76 18 5.3	25 26 1.8	25 2 5.6	0 23 56.2
1.6325	1.072 131 72	2.460 630 44	76 20 53.7	25 26 57.9	25 2 59.0	0 23 58.9
1.6330	1.073 064 26	2.461 894 43	76 23 42.0	25 27 54.0	25 3 52.4	0 24 1.6
1.6335	1.073 997 74	2.463 158 37	76 26 30.5	25 28 50.2	25 4 45.8	0 24 4.4
1.6340	1.074 932 17	2.464 422 28	76 29 19.0	25 29 46.3	25 5 39.2	0 24 7.1
1.6345	1.075 867 55	2.465 686 13	76 32 7.5	25 30 42.5	25 6 32.7	0 24 9.8
1.6350	1.076 803 87	2.466 949 95	76 34 56.1	25 31 38.7	25 7 26.1	0 24 12.6
1.6355	1.077 741 14	2.468 213 71	76 37 44.8	25 32 34.9	25 8 19.6	0 24 15.3
1.6360	1.078 679 36	2.469 477 43	76 40 33.5	25 33 31.2	25 9 13.1	0 24 18.1
1.6365	1.079 618 53	2.470 741 11	76 43 22.2	25 34 27.4	25 10 6.6	0 24 20.8
1.6370	1.080 558 66	2.472 004 73	76 46 11.0	25 35 23.7	25 11 0.1	0 24 23.6
1.6375	1.081 499 75	2.473 268 31	76 48 59.9	25 36 20.0	25 11 53.6	0 24 26.4
1.6380	1.082 441 79	2.474 531 84	76 51 48.8	25 37 16.3	25 12 47.1	0 24 29.1
1.6385	1.083 384 79	2.475 795 33	76 54 37.7	25 38 12.6	25 13 40.7	0 24 31.9
1.6390	1.084 328 75	2.477 058 76	76 57 26.7	25 39 8.9	25 14 34.2	0 24 34.7
1.6395	1.085 273 68	2.478 322 14	77 0 15.8	25 40 5.3	25 15 27.8	0 24 37.5
1.6400	1.086 219 56	2.479 585 47	77 3 4.9	25 41 1.6	25 16 21.4	0 24 40.3

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.6405	2.691 240 25	2.243 123 41	1.059 720 66	1.268 368 63	0.282 998 78	2.000 387 94
1.6410	2.692 881 00	2.243 589 55	1.060 843 51	1.269 052 33	0.283 321 89	2.001 908 06
1.6415	2.694 522 25	2.244 855 95	1.061 967 00	1.269 736 08	0.283 645 24	2.003 434 37
1.6420	2.696 164 00	2.245 721 40	1.063 091 12	1.270 419 89	0.283 968 84	2.004 961 86
1.6425	2.697 806 25	2.246 586 30	1.064 215 88	1.271 103 76	0.284 292 68	2.006 490 54
1.6430	2.699 449 00	2.247 450 66	1.065 341 28	1.271 787 68	0.284 616 77	2.008 020 41
1.6435	2.701 092 25	2.248 314 47	1.066 467 31	1.272 471 65	0.284 941 09	2.009 551 48
1.6440	2.702 736 00	2.249 177 73	1.067 593 97	1.273 155 68	0.285 265 67	2.011 083 73
1.6445	2.704 380 25	2.250 040 43	1.068 721 27	1.273 839 76	0.285 590 48	2.012 617 18
1.6450	2.706 025 00	2.250 902 59	1.069 849 21	1.274 523 90	0.285 915 54	2.014 151 83
1.6455	2.707 670 25	2.251 764 19	1.070 977 78	1.275 208 09	0.286 240 85	2.015 687 68
1.6460	2.709 316 00	2.252 625 24	1.072 106 99	1.275 892 34	0.286 566 39	2.017 224 72
1.6465	2.710 962 25	2.253 485 74	1.073 236 82	1.276 576 64	0.286 892 19	2.018 762 97
1.6470	2.712 609 00	2.254 345 68	1.074 367 30	1.277 260 99	0.287 218 22	2.020 302 43
1.6475	2.714 256 25	2.255 205 06	1.075 498 40	1.277 945 40	0.287 544 50	2.021 843 08
1.6480	2.715 904 00	2.256 063 89	1.076 630 14	1.278 629 86	0.287 871 03	2.023 384 95
1.6485	2.717 552 25	2.256 922 16	1.077 762 51	1.279 314 37	0.288 197 80	2.024 928 03
1.6490	2.719 201 00	2.257 779 87	1.078 895 51	1.279 998 93	0.288 524 81	2.026 472 31
1.6495	2.720 850 25	2.258 637 02	1.080 029 14	1.280 683 55	0.288 852 07	2.028 017 81
1.6500	2.722 500 00	2.259 493 60	1.081 163 40	1.281 368 22	0.289 179 58	2.029 564 52
1.6505	2.724 150 25	2.260 349 63	1.082 298 30	1.282 052 94	0.289 507 32	2.031 112 45
1.6510	2.725 801 00	2.261 205 10	1.083 433 82	1.282 737 71	0.289 835 31	2.032 661 60
1.6515	2.727 452 25	2.262 060 00	1.084 569 98	1.283 422 54	0.290 163 55	2.034 211 97
1.6520	2.729 104 00	2.262 914 33	1.085 706 76	1.284 107 41	0.290 492 03	2.035 763 55
1.6525	2.730 756 25	2.263 768 11	1.086 844 17	1.284 792 34	0.290 820 76	2.037 316 37
1.6530	2.732 409 00	2.264 621 31	1.087 982 21	1.285 477 32	0.291 149 73	2.038 870 40
1.6535	2.734 062 25	2.265 473 95	1.089 120 88	1.286 162 35	0.291 478 95	2.040 425 67
1.6540	2.735 716 00	2.266 326 02	1.090 260 18	1.286 847 43	0.291 808 41	2.041 982 16
1.6545	2.737 370 25	2.267 177 52	1.091 400 11	1.287 532 56	0.292 138 11	2.043 539 89
1.6550	2.739 025 00	2.268 028 45	1.092 540 66	1.288 217 73	0.292 468 06	2.045 098 84
1.6555	2.740 680 25	2.268 878 81	1.093 681 84	1.288 902 96	0.292 798 26	2.046 659 03
1.6560	2.742 336 00	2.269 728 59	1.094 823 64	1.289 588 24	0.293 128 70	2.048 220 46
1.6565	2.743 992 25	2.270 577 81	1.095 966 08	1.290 273 57	0.293 459 38	2.049 783 13
1.6570	2.745 649 00	2.271 426 45	1.097 109 13	1.290 958 95	0.293 790 31	2.051 347 03
1.6575	2.747 306 25	2.272 274 52	1.098 252 82	1.291 644 38	0.294 121 49	2.052 912 18
1.6580	2.748 964 00	2.273 122 01	1.099 397 12	1.292 329 86	0.294 452 91	2.054 478 57
1.6585	2.750 622 25	2.273 968 92	1.100 542 06	1.293 015 38	0.294 784 57	2.056 046 20
1.6590	2.752 281 00	2.274 815 26	1.101 687 61	1.293 700 96	0.295 116 49	2.057 615 09
1.6595	2.753 940 25	2.275 661 02	1.102 833 79	1.294 386 58	0.295 448 64	2.059 185 22
1.6600	2.755 600 00	2.276 506 19	1.103 980 59	1.295 072 25	0.295 781 04	2.060 756 60
1.6605	2.757 260 25	2.277 350 79	1.105 128 02	1.295 757 97	0.296 113 69	2.062 329 24
1.6610	2.758 921 00	2.278 194 81	1.106 276 07	1.296 443 73	0.296 446 58	2.063 903 13
1.6615	2.760 582 25	2.279 038 25	1.107 424 74	1.297 129 55	0.296 779 72	2.065 478 28
1.6620	2.762 244 00	2.279 881 10	1.108 574 03	1.297 815 41	0.297 113 10	2.067 054 68
1.6625	2.763 906 25	2.280 723 37	1.109 723 94	1.298 501 32	0.297 446 73	2.068 632 35
1.6630	2.765 569 00	2.281 565 05	1.110 874 48	1.299 187 27	0.297 780 61	2.070 211 28
1.6635	2.767 232 25	2.282 406 15	1.112 025 63	1.299 873 28	0.298 114 73	2.071 791 47
1.6640	2.768 896 00	2.283 246 66	1.113 177 41	1.300 559 32	0.298 449 09	2.073 372 93
1.6645	2.770 560 25	2.284 086 59	1.114 329 80	1.301 245 42	0.298 783 70	2.074 955 66
1.6650	2.772 225 00	2.284 925 92	1.115 482 81	1.301 931 56	0.299 118 56	2.076 539 66
1.6655	2.773 890 25	2.285 764 67	1.116 636 45	1.302 617 75	0.299 453 66	2.078 124 93
1.6660	2.775 556 00	2.286 602 82	1.117 790 70	1.303 303 98	0.299 789 01	2.079 711 47
1.6665	2.777 222 25	2.287 440 39	1.118 945 56	1.303 990 26	0.300 124 61	2.081 299 29
1.6670	2.778 889 00	2.288 277 36	1.120 101 05	1.304 676 58	0.300 460 45	2.082 888 39
1.6675	2.780 556 25	2.289 113 74	1.121 257 15	1.305 362 95	0.300 796 53	2.084 478 77
1.6680	2.782 224 00	2.289 949 52	1.122 413 87	1.306 049 36	0.301 132 86	2.086 070 42
1.6685	2.783 892 25	2.290 784 71	1.123 571 21	1.306 735 82	0.301 469 44	2.087 663 37
1.6690	2.785 561 00	2.291 619 30	1.124 729 16	1.307 422 32	0.301 806 27	2.089 257 59
1.6695	2.787 230 25	2.292 453 30	1.125 887 73	1.308 108 87	0.302 143 34	2.090 853 11
1.6700	2.788 900 00	2.293 286 70	1.127 046 91	1.308 795 46	0.302 480 65	2.092 449 91
1.6705	2.790 570 25	2.294 119 50	1.128 206 71	1.309 482 10	0.302 818 21	2.094 048 01
1.6710	2.792 241 00	2.294 951 70	1.129 367 12	1.310 168 77	0.303 156 02	2.095 647 40
1.6715	2.793 912 25	2.295 783 30	1.130 528 14	1.310 855 50	0.303 494 08	2.097 248 08
1.6720	2.795 584 00	2.296 614 30	1.131 689 78	1.311 542 26	0.303 832 38	2.098 850 06
1.6725	2.797 256 25	2.297 444 70	1.132 852 03	1.312 229 07	0.304 170 93	2.100 453 34
1.6730	2.798 929 00	2.298 274 49	1.134 014 89	1.312 915 92	0.304 509 72	2.102 057 93
1.6735	2.800 602 25	2.299 103 68	1.135 178 37	1.313 602 81	0.304 848 76	2.103 663 81
1.6740	2.802 276 00	2.299 932 26	1.136 342 45	1.314 289 75	0.305 188 05	2.105 271 00
1.6745	2.803 950 25	2.300 760 24	1.137 507 15	1.314 976 73	0.305 527 58	2.106 879 50
1.6750	2.805 625 00	2.301 587 61	1.138 672 46	1.315 663 75	0.305 867 36	2.108 489 31
1.6755	2.807 300 25	2.302 414 37	1.139 838 38	1.316 350 81	0.306 207 38	2.110 100 43
1.6760	2.808 976 00	2.303 240 53	1.141 004 91	1.317 037 91	0.306 547 65	2.111 712 86
1.6765	2.810 652 25	2.304 066 07	1.142 172 04	1.317 725 06	0.306 888 17	2.113 326 61
1.6770	2.812 329 00	2.304 891 01	1.143 339 79	1.318 412 24	0.307 228 94	2.114 941 67
1.6775	2.814 006 25	2.305 715 33	1.144 508 15	1.319 099 47	0.307 569 95	2.116 558 06
1.6780	2.815 684 00	2.306 539 04	1.145 677 11	1.319 786 74	0.307 911 21	2.118 175 76
1.6785	2.817 362 25	2.307 362 13	1.146 846 68	1.320 474 05	0.308 252 71	2.119 794 79
1.6790	2.819 041 00	2.308 184 61	1.148 016 86	1.321 161 40	0.308 594 46	2.121 415 15
1.6795	2.820 720 25	2.309 006 48	1.149 187 64	1.321 848 78	0.308 936 46	2.123 036 83
1.6800	2.822 400 00	2.309 827 73	1.150 359 03	1.322 536 21	0.309 278 71	2.124 659 84

A/R= =LS/A= =VLS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
1.6405	1.087 166 42	2.480 848 75	77 5 54.1	25 41 58.0	25 17 15.0	0 24 43.
1.6410	1.088 114 24	2.482 111 98	77 8 43.3	25 42 54.4	25 18 8.6	0 24 45.
1.6415	1.089 063 03	2.483 375 15	77 11 32.6	25 43 50.9	25 19 2.2	0 24 48.
1.6420	1.090 012 79	2.484 638 27	77 14 21.9	25 44 47.3	25 19 55.8	0 24 51.
1.6425	1.090 963 53	2.485 901 34	77 17 11.2	25 45 43.7	25 20 49.5	0 24 54.
1.6430	1.091 915 23	2.487 164 35	77 20 0.7	25 46 40.2	25 21 43.1	0 24 57.
1.6435	1.092 867 92	2.488 427 31	77 22 50.1	25 47 36.7	25 22 36.8	0 24 59.
1.6440	1.093 821 58	2.489 690 21	77 25 39.7	25 48 33.2	25 23 30.5	0 25 2.
1.6445	1.094 776 22	2.490 953 05	77 28 29.2	25 49 29.7	25 24 24.2	0 25 5.
1.6450	1.095 731 84	2.492 215 84	77 31 18.9	25 50 26.3	25 25 17.9	0 25 8.
1.6455	1.096 688 44	2.493 478 57	77 34 8.5	25 51 22.8	25 26 11.6	0 25 11.
1.6460	1.097 646 02	2.494 741 24	77 36 58.3	25 52 19.4	25 27 5.4	0 25 14.
1.6465	1.098 604 60	2.496 003 86	77 39 48.1	25 53 16.0	25 27 59.1	0 25 16.
1.6470	1.099 564 15	2.497 266 41	77 42 37.9	25 54 12.6	25 28 52.9	0 25 19.
1.6475	1.100 524 70	2.498 528 90	77 45 27.8	25 55 9.3	25 29 46.6	0 25 22.
1.6480	1.101 486 24	2.499 791 33	77 48 17.7	25 56 5.9	25 30 40.4	0 25 25.
1.6485	1.102 448 77	2.501 053 71	77 51 7.7	25 57 2.6	25 31 34.2	0 25 28.
1.6490	1.103 412 30	2.502 316 02	77 53 57.7	25 57 59.2	25 32 28.0	0 25 31.
1.6495	1.104 376 82	2.503 578 26	77 56 47.8	25 58 55.9	25 33 21.9	0 25 34.
1.6500	1.105 342 34	2.504 840 45	77 59 38.0	25 59 52.7	25 34 15.7	0 25 37.
1.6505	1.106 308 86	2.506 102 56	78 2 28.2	26 0 49.4	25 35 9.5	0 25 39.
1.6510	1.107 276 38	2.507 364 62	78 5 18.4	26 1 46.1	25 36 3.4	0 25 42.
1.6515	1.108 244 90	2.508 626 61	78 8 8.7	26 2 42.9	25 36 57.3	0 25 45.
1.6520	1.109 214 43	2.509 888 53	78 10 59.1	26 3 39.7	25 37 51.2	0 25 48.
1.6525	1.110 184 96	2.511 150 39	78 13 49.5	26 4 36.5	25 38 45.1	0 25 51.
1.6530	1.111 156 50	2.512 412 18	78 16 39.9	26 5 33.3	25 39 39.0	0 25 54.
1.6535	1.112 129 05	2.513 673 91	78 19 30.4	26 6 30.1	25 40 32.9	0 25 57.
1.6540	1.113 102 61	2.514 935 56	78 22 21.0	26 7 27.0	25 41 26.8	0 26 0.
1.6545	1.114 077 19	2.516 197 15	78 25 11.6	26 8 23.9	25 42 20.8	0 26 3.
1.6550	1.115 052 78	2.517 458 67	78 28 2.2	26 9 20.7	25 43 14.7	0 26 6.
1.6555	1.116 029 39	2.518 720 11	78 30 52.9	26 10 17.6	25 44 8.7	0 26 8.
1.6560	1.117 007 01	2.519 981 49	78 33 43.7	26 11 14.6	25 45 2.7	0 26 11.
1.6565	1.117 985 66	2.521 242 79	78 36 34.5	26 12 11.5	25 45 56.7	0 26 14.
1.6570	1.118 965 33	2.522 504 03	78 39 25.4	26 13 8.5	25 46 50.7	0 26 17.
1.6575	1.119 946 02	2.523 765 19	78 42 16.3	26 14 5.4	25 47 44.7	0 26 20.
1.6580	1.120 927 74	2.525 026 28	78 45 7.3	26 15 2.4	25 48 38.8	0 26 23.
1.6585	1.121 910 48	2.526 287 29	78 47 58.3	26 15 59.4	25 49 32.8	0 26 26.
1.6590	1.122 894 26	2.527 548 23	78 50 49.4	26 16 56.5	25 50 26.9	0 26 29.
1.6595	1.123 879 06	2.528 809 09	78 53 40.5	26 17 53.5	25 51 20.9	0 26 32.
1.6600	1.124 864 90	2.530 069 88	78 56 31.7	26 18 50.6	25 52 15.0	0 26 35.
1.6605	1.125 851 77	2.531 330 59	78 59 22.9	26 19 47.6	25 53 9.1	0 26 38.
1.6610	1.126 839 68	2.532 591 23	79 2 14.2	26 20 44.7	25 54 3.2	0 26 41.
1.6615	1.127 828 62	2.533 851 79	79 5 5.5	26 21 41.8	25 54 57.4	0 26 44.
1.6620	1.128 818 61	2.535 112 27	79 7 56.9	26 22 39.0	25 55 51.5	0 26 47.
1.6625	1.129 809 64	2.536 372 67	79 10 48.3	26 23 36.1	25 56 45.6	0 26 50.
1.6630	1.130 801 72	2.537 632 99	79 13 39.8	26 24 33.3	25 57 39.8	0 26 53.
1.6635	1.131 794 84	2.538 893 23	79 16 31.3	26 25 30.4	25 58 34.0	0 26 56.
1.6640	1.132 789 00	2.540 153 39	79 19 22.9	26 26 27.6	25 59 28.2	0 26 59.
1.6645	1.133 784 22	2.541 413 47	79 22 14.5	26 27 24.8	26 0 22.3	0 27 2.
1.6650	1.134 780 48	2.542 673 47	79 25 6.2	26 28 22.1	26 1 16.6	0 27 5.
1.6655	1.135 777 80	2.543 933 38	79 27 58.0	26 29 19.3	26 2 10.8	0 27 8.
1.6660	1.136 776 17	2.545 193 22	79 30 49.8	26 30 16.6	26 3 5.0	0 27 11.
1.6665	1.137 775 60	2.546 452 96	79 33 41.6	26 31 13.9	26 3 59.3	0 27 14.
1.6670	1.138 776 09	2.547 712 63	79 36 33.5	26 32 11.2	26 4 53.5	0 27 17.
1.6675	1.139 777 64	2.548 972 21	79 39 25.4	26 33 8.5	26 5 47.8	0 27 20.
1.6680	1.140 780 25	2.550 231 70	79 42 17.4	26 34 5.8	26 6 42.1	0 27 23.
1.6685	1.141 783 93	2.551 491 10	79 45 9.5	26 35 3.2	26 7 36.4	0 27 26.
1.6690	1.142 788 67	2.552 750 42	79 48 1.6	26 36 0.5	26 8 30.7	0 27 29.
1.6695	1.143 794 48	2.554 009 65	79 50 53.8	26 36 57.9	26 9 25.0	0 27 32.
1.6700	1.144 801 36	2.555 268 80	79 53 46.0	26 37 55.3	26 10 19.3	0 27 36.
1.6705	1.145 809 31	2.556 527 85	79 56 38.2	26 38 52.7	26 11 13.7	0 27 39.
1.6710	1.146 818 33	2.557 786 82	79 59 30.5	26 39 50.2	26 12 8.0	0 27 42.
1.6715	1.147 828 43	2.559 045 69	80 2 22.9	26 40 47.6	26 13 2.4	0 27 45.
1.6720	1.148 839 61	2.560 304 47	80 5 15.3	26 41 45.1	26 13 56.8	0 27 48.
1.6725	1.149 851 87	2.561 563 17	80 8 7.8	26 42 42.6	26 14 51.2	0 27 51.
1.6730	1.150 865 20	2.562 821 77	80 11 0.3	26 43 40.1	26 15 45.6	0 27 54.
1.6735	1.151 879 62	2.564 080 27	80 13 52.8	26 44 37.6	26 16 40.0	0 27 57.
1.6740	1.152 895 13	2.565 338 69	80 16 45.5	26 45 35.2	26 17 34.4	0 28 0.
1.6745	1.153 911 72	2.566 597 01	80 19 38.1	26 46 32.7	26 18 28.9	0 28 3.
1.6750	1.154 929 40	2.567 855 23	80 22 30.8	26 47 30.3	26 19 23.3	0 28 7.
1.6755	1.155 948 17	2.569 113 36	80 25 23.6	26 48 27.9	26 20 17.8	0 28 10.
1.6760	1.156 968 04	2.570 371 40	80 28 16.4	26 49 25.5	26 21 12.3	0 28 13.
1.6765	1.157 989 00	2.571 629 34	80 31 9.3	26 50 23.1	26 22 6.8	0 28 16.
1.6770	1.159 011 06	2.572 887 18	80 34 2.2	26 51 20.7	26 23 1.3	0 28 19.
1.6775	1.160 034 21	2.574 144 92	80 36 55.2	26 52 18.4	26 23 55.8	0 28 22.
1.6780	1.161 058 47	2.575 402 56	80 39 48.3	26 53 16.1	26 24 50.3	0 28 25.
1.6785	1.162 083 82	2.576 660 11	80 42 41.3	26 54 13.8	26 25 44.8	0 28 28.
1.6790	1.163 110 29	2.577 917 55	80 45 34.5	26 55 11.5	26 26 39.4	0 28 32.
1.6795	1.164 137 86	2.579 174 90	80 48 27.7	26 56 9.2	26 27 34.0	0 28 35.
1.6800	1.165 166 53	2.580 432 14	80 51 20.9	26 57 7.0	26 28 28.5	0 28 38.

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.6805	2.824 080 25	2.310 648 36	1.151 531 03	1.323 223 68	0.309 621 20	2.126 284 18
1.6810	2.825 761 00	2.311 468 38	1.152 703 63	1.323 911 19	0.309 963 94	2.127 909 86
1.6815	2.827 442 25	2.312 287 77	1.153 876 84	1.324 598 74	0.310 306 93	2.129 536 88
1.6820	2.829 124 00	2.313 106 55	1.155 050 65	1.325 286 32	0.310 650 16	2.131 165 23
1.6825	2.830 806 25	2.313 924 70	1.156 225 06	1.325 973 95	0.310 993 64	2.132 794 92
1.6830	2.832 489 00	2.314 742 23	1.157 400 08	1.326 661 61	0.311 337 37	2.134 425 95
1.6835	2.834 172 25	2.315 559 14	1.158 575 70	1.327 349 32	0.311 681 34	2.136 058 33
1.6840	2.835 856 00	2.316 375 43	1.159 751 93	1.328 037 06	0.312 025 56	2.137 692 05
1.6845	2.837 540 25	2.317 191 09	1.160 928 75	1.328 724 84	0.312 370 03	2.139 327 13
.6850	2.839 225 00	2.318 006 13	1.162 106 18	1.329 412 65	0.312 714 74	2.140 963 55
.6855	2.840 910 25	2.318 820 54	1.163 284 21	1.330 100.51	0.313 059 71	2.142 601 32
.6860	2.842 596 00	2.319 634 32	1.164 462 84	1.330 788 40	0.313 404 91	2.144 240 45
.6865	2.844 282 25	2.320 447 48	1.165 642 07	1.331 476 33	0.313 750 37	2.145 880 94
.6870	2.845 969 00	2.321 260 00	1.166 821 90	1.332 164 29	0.314 096 07	2.147 522 79
.6875	2.847 656 25	2.322 071 90	1.168 002 33	1.332 852 30	0.314 442 03	2.149 166 00
.6880	2.849 344 00	2.322 883 16	1.169 183 36	1.333 540 34	0.314 788 22	2.150 810 57
.6885	2.851 032 25	2.323 693 79	1.170 364 98	1.334 228 41	0.315 134 67	2.152 456 50
.6890	2.852 721 00	2.324 503 79	1.171 547 21	1.334 916 52	0.315 481 36	2.154 103 81
.6895	2.854 410 25	2.325 313 16	1.172 730 03	1.335 604 67	0.315 828 30	2.155 752 48
.6900	2.856 100 00	2.326 121 89	1.173 913 45	1.336 292 86	0.316 175 49	2.157 402 52
.6905	2.857 790 25	2.326 929 98	1.175 097 47	1.336 981 08	0.316 522 93	2.159 053 94
.6910	2.859 481 00	2.327 737 44	1.176 282 08	1.337 669 33	0.316 870 61	2.160 706 74
.6915	2.861 172 25	2.328 544 26	1.177 467 28	1.338 357 62	0.317 218 54	2.162 360 91
.6920	2.862 864 00	2.329 350 45	1.178 653 09	1.339 045 95	0.317 566 72	2.164 016 47
.6925	2.864 556 25	2.330 155 99	1.179 839 48	1.339 734 31	0.317 915 14	2.165 673 41
.6930	2.866 249 00	2.330 960 89	1.181 026 47	1.340 422 70	0.318 263 82	2.167 331 73
.6935	2.867 942 25	2.331 765 15	1.182 214 06	1.341 111 13	0.318 612 74	2.168 991 44
.6940	2.869 636 00	2.332 568 77	1.183 402 23	1.341 799 59	0.318 961 91	2.170 652 54
.6545	2.871 330 25	2.333 371 75	1.184 591 00	1.342 488 09	0.319 311 32	2.172 315 03
.6950	2.873 025 00	2.334 174 08	1.185 780 37	1.343 176 62	0.319 660 99	2.173 978 91
.6955	2.874 720 25	2.334 975 77	1.186 970 32	1.343 865 18	0.320 010 90	2.175 644 19
.6960	2.876 416 00	2.335 776 82	1.188 160 87	1.344 553 78	0.320 361 06	2.177 310 87
.6965	2.878 112 25	2.336 577 21	1.189 352 00	1.345 242 41	0.320 711 46	2.178 978 95
.6970	2.879 809 00	2.337 376 96	1.190 543 73	1.345 931 07	0.321 062 12	2.180 648 43
.6975	2.881 506 25	2.338 176 06	1.191 736 04	1.346 619 77	0.321 413 02	2.182 319 32
.6980	2.883 204 00	2.338 974 51	1.192 928 95	1.347 308 49	0.321 764 17	2.183 991 61
.6985	2.884 902 25	2.339 772 31	1.194 122 44	1.347 997 25	0.322 115 57	2.185 665 32
.6990	2.886 601 00	2.340 569 46	1.195 316 52	1.348 686 05	0.322 467 22	2.187 340 43
.6995	2.888 300 25	2.341 365 95	1.196 511 19	1.349 374 87	0.322 819 11	2.189 016 96
.7000	2.890 000 00	2.342 161 80	1.197 706 45	1.350 063 73	0.323 171 26	2.190 694 91
.7005	2.891 700 25	2.342 956 99	1.198 902 29	1.350 752 61	0.323 523 65	2.192 374 27
.7010	2.893 401 00	2.343 751 52	1.200 098 72	1.351 441 53	0.323 876 28	2.194 055 06
.7015	2.895 102 25	2.344 545 40	1.201 295 74	1.352 130 48	0.324 229 17	2.195 737 26
.7020	2.896 804 00	2.345 338 62	1.202 493 34	1.352 819 46	0.324 582 31	2.197 420 90
.7025	2.898 506 25	2.346 131 18	1.203 691 52	1.353 508 47	0.324 935 69	2.199 105 96
.7030	2.900 209 00	2.346 923 09	1.204 890 29	1.354 197 51	0.325 289 32	2.200 792 45
.7035	2.901 912 25	2.347 714 33	1.206 089 64	1.354 886 58	0.325 643 20	2.202 480 37
.7040	2.903 616.00	2.348 504 92	1.207 289 58	1.355 575 68	0.325 997 33	2.204 169 73
.7045	2.905 320 25	2.349 294 84	1.208 490 10	1.356 264 81	0.326 351 70	2.205 860 53
.7050	2.907 025 00	2.350 084 10	1.209 691 20	1.356 953 97	0.326 706 33	2.207 552 76
.7055	2.908 730 25	2.350 872 70	1.210 892 88	1.357 643 16	0.327 061 20	2.209 246 43
.7060	2.910 436 00	2.351 660 63	1.212 095 14	1.358 332 38	0.327 416 32	2.210 941 55
.7065	2.912 142 25	2.352 447 90	1.213 297 99	1.359 021 62	0.327 771 69	2.212 638 12
.7070	2.913 849 00	2.353 234 50	1.214 501 41	1.359 710 90	0.328 127 31	2.214 336 14
.7075	2.915 556 25	2.354 020 44	1.215 705 42	1.360 400 20	0.328 483 17	2.216 035 60
.7080	2.917 264 00	2.354 805 71	1.216 910 00	1.361 089 53	0.328 839 29	2.217 736 52
.7085	2.918 972 25	2.355 590 31	1.218 115 16	1.361 778 89	0.329 195 65	2.219 438 89
.7090	2.920 681 00	2.356 374 24	1.219 320 90	1.362 468 28	0.329 552 26	2.221 142 73
.7095	2.922 390 25	2.357 157 50	1.220 527 21	1.363 157 70	0.329 909 12	2.222 848 02
.7100	2.924 100 00	2.357 940 08	1.221 734 11	1.363 847 14	0.330 266 23	2.224 554 78
.7105	2.925 810 25	2.358 722 00	1.222 941 58	1.364 536 61	0.330 623 58	2.226 263 00
.7110	2.927 521 00	2.359 503 24	1.224 149 62	1.365 226 11	0.330 981 19	2.227 972 69
.7115	2.929 232 25	2.360 283 81	1.225 358 24	1.365 915 63	0.331 339 04	2.229 683 85
.7120	2.930 944 00	2.361 063 70	1.226 567 44	1.366 605 18	0.331 697 14	2.231 396 48
.7125	2.932 656 25	2.361 842 91	1.227 777 21	1.367 294 75	0.332 055 49	2.233 110 58
.7130	2.934 369 00	2.362 621 45	1.228 987 55	1.367 984 36	0.332 414 09	2.234 826 17
.7135	2.936 082 25	2.363 399 31	1.230 198 47	1.368 673 99	0.332 772 94	2.236 543 23
.7140	2.937 796 00	2.364 176 49	1.231 409 96	1.369 363 64	0.333 132 04	2.238 261 78
.7145	2.939 510 25	2.364 953 00	1.232 622 02	1.370 053 32	0.333 491 38	2.239 981 81
.7150	2.941 225 00	2.365 728 82	1.233 834 66	1.370 743 02	0.333 850 98	2.241 703 32
.7155	2.942 940 25	2.366 503 96	1.235 047 86	1.371 432 75	0.334 210 82	2.243 426 33
.7160	2.944 656 00	2.367 278 42	1.236 261 63	1.372 122 51	0.334 570 91	2.245 150 83
.7165	2.946 372 25	2.368 052 19	1.237 475 98	1.372 812 28	0.334 931 25	2.246 876 82
.7170	2.948 089 00	2.368 825 28	1.238 690 89	1.373 502 09	0.335 291 84	2.248 604 31
.7175	2.949 806 25	2.369 597 68	1.239 906 38	1.374 191 91	0.335 652 68	2.250 333 30
.7180	2.951 524 00	2.370 369 40	1.241 122 43	1.374 881 77	0.336 013 77	2.252 063 79
.7185	2.953 242 25	2.371 140 43	1.242 339 05	1.375 571 64	0.336 375 10	2.253 795 79
.7190	2.954 961 00	2.371 910 78	1.243 556 23	1.376 261 54	0.336 736 69	2.255 529 29
.7195	2.956 680 25	2.372 680 43	1.244 773 99	1.376 951 46	0.337 098 52	2.257 264 30
.7200	2.958 400 00	2.373 449 39	1.245 992 31	1.377 641 41	0.337 460 61	2.259 000 83

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.6805	1.166 196 32	2.581 689 28	80 54 14.2	26 58 4.7	26 29 23.1	0 28 41.6
1.6810	1.167 227 22	2.582 946 32	80 57 7.5	26 59 2.5	26 30 17.7	0 28 44.8
1.6815	1.168 259 24	2.584 203 26	81 0 0.9	27 0 0.3	26 31 12.3	0 28 48.0
1.6820	1.169 292 37	2.585 460 09	81 2 54.4	27 0 58.1	26 32 7.0	0 28 51.2
1.6825	1.170 326 62	2.586 716 82	81 5 47.9	27 1 56.0	26 33 1.6	0 28 54.4
1.6830	1.171 361 99	2.587 973 45	81 8 41.4	27 2 53.8	26 33 56.2	0 28 57.6
1.6835	1.172 398 48	2.589 229 96	81 11 35.0	27 3 51.7	26 34 50.9	0 29 0.8
1.6840	1.173 436 10	2.590 486 38	81 14 28.6	27 4 49.5	26 35 45.6	0 29 4.0
1.6845	1.174 474 85	2.591 742 68	81 17 22.3	27 5 47.4	26 36 40.3	0 29 7.2
1.6850	1.175 514 72	2.592 998 88	81 20 16.1	27 6 45.4	26 37 35.0	0 29 10.4
1.6855	1.176 555 72	2.594 254 97	81 23 9.9	27 7 43.3	26 38 29.7	0 29 13.6
1.6860	1.177 597 86	2.595 510 95	81 26 3.8	27 8 41.3	26 39 24.4	0 29 16.9
1.6865	1.178 641 13	2.596 766 82	81 28 57.7	27 9 39.2	26 40 19.1	0 29 20.1
1.6870	1.179 685 54	2.598 022 58	81 31 51.6	27 10 37.2	26 41 13.9	0 29 23.3
1.6875	1.180 731 08	2.599 278 23	81 34 45.6	27 11 35.2	26 42 8.6	0 29 26.6
1.6880	1.181 777 77	2.600 533 77	81 37 39.7	27 12 33.2	26 43 3.4	0 29 29.8
1.6885	1.182 825 60	2.601 789 20	81 40 33.8	27 13 31.3	26 43 58.2	0 29 33.1
1.6890	1.183 874 58	2.603 044 51	81 43 28.0	27 14 29.3	26 44 53.0	0 29 36.3
1.6895	1.184 924 70	2.604 299 72	81 46 22.2	27 15 27.4	26 45 47.8	0 29 39.6
1.6900	1.185 975 97	2.605 554 80	81 49 16.5	27 16 25.5	26 46 42.6	0 29 42.9
1.6905	1.187 028 40	2.606 809 77	81 52 10.8	27 17 23.6	26 47 37.4	0 29 46.2
1.6910	1.188 081 98	2.608 064 63	81 55 5.1	27 18 21.7	26 48 32.3	0 29 49.4
1.6915	1.189 136 71	2.609 319 37	81 57 59.6	27 19 19.9	26 49 27.1	0 29 52.7
1.6920	1.190 192 60	2.610 574 00	82 0 54.0	27 20 18.0	26 50 22.0	0 29 56.0
1.6925	1.191 249 65	2.611 828 51	82 3 48.6	27 21 16.2	26 51 16.9	0 29 59.3
1.6930	1.192 307 86	2.613 082 89	82 6 43.1	27 22 14.4	26 52 11.8	0 30 2.6
1.6935	1.193 367 24	2.614 337 17	82 9 37.8	27 23 12.6	26 53 6.7	0 30 5.9
1.6940	1.194 427 78	2.615 591 32	82 12 32.5	27 24 10.8	26 54 1.6	0 30 9.2
1.6945	1.195 489 49	2.616 845 35	82 15 27.2	27 25 9.1	26 54 56.5	0 30 12.6
1.6950	1.196 552 37	2.618 099 26	82 18 22.0	27 26 7.3	26 55 51.5	0 30 15.9
1.6955	1.197 616 42	2.619 353 05	82 21 16.8	27 27 5.6	26 56 46.4	0 30 19.2
1.6960	1.198 681 65	2.620 606 72	82 24 11.7	27 28 3.9	26 57 41.4	0 30 22.5
1.6965	1.199 748 05	2.621 860 26	82 27 6.6	27 29 2.2	26 58 36.3	0 30 25.9
1.6970	1.200 815 64	2.623 113 69	82 30 1.6	27 30 0.5	26 59 31.3	0 30 29.2
1.6975	1.201 884 40	2.624 366 99	82 32 56.7	27 30 58.9	27 0 26.3	0 30 32.6
1.6980	1.202 954 35	2.625 620 16	82 35 51.8	27 31 57.3	27 1 21.3	0 30 35.9
1.6985	1.204 025 48	2.626 873 21	82 38 46.9	27 32 55.6	27 2 16.4	0 30 39.3
1.6990	1.205 097 81	2.628 126 13	82 41 42.1	27 33 54.0	27 3 11.4	0 30 42.6
1.6995	1.206 171 32	2.629 378 93	82 44 37.3	27 34 52.4	27 4 6.4	0 30 46.0
1.7000	1.207 246 02	2.630 631 60	82 47 32.6	27 35 50.9	27 5 1.5	0 30 49.4
1.7005	1.208 321 92	2.631 884 14	82 50 28.0	27 36 49.3	27 5 56.6	0 30 52.8
1.7010	1.209 399 01	2.633 136 56	82 53 23.4	27 37 47.8	27 6 51.6	0 30 56.1
1.7015	1.210 477 31	2.634 388 84	82 56 18.9	27 38 46.3	27 7 46.7	0 30 59.6
1.7020	1.211 556 80	2.635 641 00	82 59 14.4	27 39 44.8	27 8 41.8	0 31 3.0
1.7025	1.212 637 50	2.636 893 02	83 2 9.9	27 40 43.3	27 9 37.0	0 31 6.4
1.7030	1.213 719 40	2.638 144 91	83 5 5.5	27 41 41.8	27 10 32.1	0 31 9.8
1.7035	1.214 802 51	2.639 396 68	83 8 1.2	27 42 40.4	27 11 27.2	0 31 13.1
1.7040	1.215 886 83	2.640 648 31	83 10 56.9	27 43 39.0	27 12 22.4	0 31 16.5
1.7045	1.216 972 36	2.641 899 80	83 13 52.7	27 44 37.6	27 13 17.5	0 31 20.0
1.7050	1.218 059 10	2.643 151 17	83 16 48.5	27 45 36.2	27 14 12.7	0 31 23.4
1.7055	1.219 147 07	2.644 402 39	83 19 44.3	27 46 34.8	27 15 7.9	0 31 26.8
1.7060	1.220 236 25	2.645 653 49	83 22 40.3	27 47 33.4	27 16 3.1	0 31 30.2
1.7065	1.221 326 65	2.646 904 44	83 25 36.2	27 48 32.1	27 16 58.3	0 31 33.6
1.7070	1.222 418 27	2.648 155 27	83 28 32.2	27 49 30.7	27 17 53.5	0 31 37.0
1.7075	1.223 511 13	2.649 405 95	83 31 28.3	27 50 29.4	27 18 48.8	0 31 40.4
1.7080	1.224 605 20	2.650 656 50	83 34 24.4	27 51 28.1	27 19 44.0	0 31 44.0
1.7085	1.225 700 51	2.651 906 91	83 37 20.6	27 52 26.9	27 20 39.3	0 31 47.4
1.7090	1.226 797 06	2.653 157 18	83 40 16.9	27 53 25.6	27 21 34.5	0 31 51.0
1.7095	1.227 894 83	2.654 407 30	83 43 13.1	27 54 24.4	27 22 29.8	0 31 54.4
1.7100	1.228 993 84	2.655 657 29	83 46 9.5	27 55 23.2	27 23 25.1	0 31 58.0
1.7105	1.230 094 10	2.656 907 14	83 49 5.8	27 56 21.9	27 24 20.4	0 32 1.4
1.7110	1.231 195 59	2.658 156 85	83 52 2.3	27 57 20.8	27 25 15.7	0 32 5.0
1.7115	1.232 298 33	2.659 406 41	83 54 58.8	27 58 19.6	27 26 11.1	0 32 8.4
1.7120	1.233 402 32	2.660 655 83	83 57 55.3	27 59 18.4	27 27 6.4	0 32 12.0
1.7125	1.234 507 55	2.661 905 11	84 0 51.9	28 0 17.3	27 28 1.8	0 32 15.4
1.7130	1.235 614 03	2.663 154 25	84 3 48.5	28 1 16.2	27 28 57.1	0 32 19.0
1.7135	1.236 721 77	2.664 403 23	84 6 45.2	28 2 15.1	27 29 52.5	0 32 22.4
1.7140	1.237 830 77	2.665 652 08	84 9 42.0	28 3 14.0	27 30 47.9	0 32 26.0
1.7145	1.238 941 02	2.666 900 77	84 12 38.8	28 4 12.9	27 31 43.3	0 32 29.4
1.7150	1.240 052 53	2.668 149 32	84 15 35.6	28 5 11.9	27 32 38.7	0 32 33.0
1.7155	1.241 165 31	2.669 397 72	84 18 32.5	28 6 10.8	27 33 34.1	0 32 36.4
1.7160	1.242 279 35	2.670 645 98	84 21 29.4	28 7 9.8	27 34 29.5	0 32 40.0
1.7165	1.243 394 66	2.671 894 08	84 24 26.5	28 8 8.8	27 35 25.0	0 32 43.4
1.7170	1.244 511 23	2.673 142 03	84 27 23.5	28 9 7.8	27 36 20.4	0 32 47.0
1.7175	1.245 629 08	2.674 389 84	84 30 20.6	28 10 6.9	27 37 15.9	0 32 51.4
1.7180	1.246 748 21	2.675 637 49	84 33 17.8	28 11 5.9	27 38 11.4	0 32 54.4
1.7185	1.247 868 61	2.676 884 99	84 36 15.0	28 12 5.0	27 39 6.9	0 32 58.0
1.7190	1.248 990 25	2.678 132 34	84 39 12.2	28 13 4.1	27 40 2.4	0 33 1.4
1.7195	1.250 113 26	2.679 379 54	84 42 9.5	28 14 3.2	27 40 57.9	0 33 5.0
1.7200	1.251 237 51	2.680 626 58	84 45 6.9	28 15 2.3	27 41 53.4	0 33 8.4

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.7205	2.960 120 25	2.374 217 67	1.247 211 19	1.378 331 37	0.337 822 94	2.260 738 86
1.7210	2.961 841 00	2.374 985 25	1.248 430 64	1.379 021 36	0.338 185 52	2.262 478 42
1.7215	2.963 562 25	2.375 752 14	1.249 650 65	1.379 711 38	0.338 548 35	2.264 219 49
1.7220	2.965 284 00	2.376 518 33	1.250 871 23	1.380 401 41	0.338 911 43	2.265 962 09
1.7225	2.967 006 25	2.377 283 84	1.252 092 37	1.381 091 47	0.339 274 75	2.267 706 21
1.7230	2.968 729 00	2.378 048 64	1.253 314 08	1.381 781 55	0.339 638 33	2.269 451 86
1.7235	2.970 452 25	2.378 812 75	1.254 536 34	1.382 471 65	0.340 002 16	2.271 199 04
1.7240	2.972 176 00	2.379 576 16	1.255 759 17	1.383 161 77	0.340 366 23	2.272 947 75
1.7245	2.973 900 25	2.380 338 88	1.256 982 56	1.383 851 91	0.340 730 55	2.274 697 99
1.7250	2.975 625 00	2.381 100 89	1.258 206 51	1.384 542 08	0.341 095 13	2.276 449 77
1.7255	2.977 350 25	2.381 862 21	1.259 431 02	1.385 232 26	0.341 459 95	2.278 203 09
1.7260	2.979 076 00	2.382 622 82	1.260 656 09	1.385 922 46	0.341 825 02	2.279 957 96
1.7265	2.980 802 25	2.383 382 74	1.261 881 72	1.386 612 69	0.342 190 34	2.281 714 37
1.7270	2.982 529 00	2.384 141 95	1.263 107 90	1.387 302 94	0.342 555 91	2.283 472 32
1.7275	2.984 256 25	2.384 900 45	1.264 334 64	1.387 993 20	0.342 921 73	2.285 231 83
1.7280	2.985 984 00	2.385 658 26	1.265 561 94	1.388 683 49	0.343 287 80	2.286 992 89
1.7285	2.987 712 25	2.386 415 35	1.266 789 80	1.389 373 79	0.343 654 11	2.288 755 50
1.7290	2.989 441 00	2.387 171 74	1.268 018 21	1.390 064 11	0.344 020 68	2.290 519 68
1.7295	2.991 170 25	2.387 927 43	1.269 247 18	1.390 754 46	0.344 387 50	2.292 285 41
1.7300	2.992 900 00	2.388 682 40	1.270 476 71	1.391 444 82	0.344 754 56	2.294 052 71
1.7305	2.994 630 25	2.389 436 67	1.271 706 78	1.392 135 20	0.345 121 88	2.295 821 57
1.7310	2.996 361 00	2.390 190 22	1.272 937 41	1.392 825 60	0.345 489 44	2.297 592 01
1.7315	2.998 092 25	2.390 943 07	1.274 168 60	1.393 516 01	0.345 857 25	2.299 364 01
1.7320	2.999 824 00	2.391 695 20	1.275 400 33	1.394 206 45	0.346 225 32	2.301 137 59
1.7325	3.001 556 25	2.392 446 63	1.276 632 62	1.394 896 90	0.346 593 63	2.302 912 74
1.7330	3.003 289 00	2.393 197 33	1.277 865 46	1.395 587 37	0.346 962 19	2.304 689 48
1.7335	3.005 022 25	2.393 947 33	1.279 098 85	1.396 277 85	0.347 331 00	2.306 467 79
1.7340	3.006 756 00	2.394 696 60	1.280 332 79	1.396 968 36	0.347 700 06	2.308 247 69
1.7345	3.008 490 25	2.395 445 16	1.281 567 28	1.397 658 88	0.348 069 37	2.310 029 18
1.7350	3.010 225 00	2.396 193 01	1.282 802 32	1.398 349 42	0.348 438 93	2.311 812 26
1.7355	3.011 960 25	2.396 940 14	1.284 037 91	1.399 039 97	0.348 808 74	2.313 596 93
1.7360	3.013 696 00	2.397 686 54	1.285 274 04	1.399 730 54	0.349 178 79	2.315 383 20
1.7365	3.015 432 25	2.398 432 23	1.286 510 73	1.400 421 13	0.349 549 10	2.317 171 06
1.7370	3.017 169 00	2.399 177 20	1.287 747 95	1.401 111 73	0.349 919 66	2.318 960 53
1.7375	3.018 906 25	2.399 921 44	1.288 985 73	1.401 802 34	0.350 290 46	2.320 751 60
1.7380	3.020 644 00	2.400 664 96	1.290 224 05	1.402 492 98	0.350 661 52	2.322 544 28
1.7385	3.022 382 25	2.401 407 76	1.291 462 91	1.403 183 62	0.351 032 83	2.324 338 56
1.7390	3.024 121 00	2.402 149 83	1.292 702 32	1.403 874 29	0.351 404 38	2.326 134 46
1.7395	3.025 860 25	2.402 891 18	1.293 942 27	1.404 564 96	0.351 776 19	2.327 931 97
1.7400	3.027 600 00	2.403 631 81	1.295 182 77	1.405 255 66	0.352 148 24	2.329 731 10
1.7405	3.029 340 25	2.404 371 70	1.296 423 81	1.405 946 36	0.352 520 54	2.331 531 85
1.7410	3.031 081 00	2.405 110 87	1.297 665 38	1.406 637 08	0.352 893 10	2.333 334 23
1.7415	3.032 822 25	2.405 849 30	1.298 907 50	1.407 327 82	0.353 265 90	2.335 138 23
1.7420	3.034 564 00	2.406 587 01	1.300 150 16	1.408 018 56	0.353 638 95	2.336 943 86
1.7425	3.036 306 25	2.407 323 99	1.301 393 36	1.408 709 32	0.354 012 26	2.338 751 12
1.7430	3.038 049 00	2.408 060 24	1.302 637 10	1.409 400 10	0.354 385 81	2.340 560 01
1.7435	3.039 792 25	2.408 795 75	1.303 881 38	1.410 090 88	0.354 759 61	2.342 370 55
1.7440	3.041 536 00	2.409 530 53	1.305 126 20	1.410 781 68	0.355 133 66	2.344 182 72
1.7445	3.043 280 25	2.410 264 57	1.306 371 55	1.411 472 50	0.355 507 96	2.345 996 54
1.7450	3.045 025 00	2.410 997 88	1.307 617 44	1.412 163 32	0.355 882 51	2.347 812 00
1.7455	3.046 770 25	2.411 730 46	1.308 863 87	1.412 854 16	0.356 257 31	2.349 629 11
1.7460	3.048 516 00	2.412 462 29	1.310 110 83	1.413 545 00	0.356 632 36	2.351 447 87
1.7465	3.050 262 25	2.413 193 39	1.311 358 33	1.414 235 86	0.357 007 66	2.353 268 29
1.7470	3.052 009 00	2.413 923 75	1.312 606 36	1.414 926 74	0.357 383 21	2.355 090 36
1.7475	3.053 756 25	2.414 653 37	1.313 854 93	1.415 617 62	0.357 759 01	2.356 914 10
1.7480	3.055 504 00	2.415 382 25	1.315 104 02	1.416 308 51	0.358 135 06	2.358 739 49
1.7485	3.057 252 25	2.416 110 38	1.316 353 65	1.416 999 42	0.358 511 36	2.360 566 56
1.7490	3.059 001 00	2.416 837 78	1.317 603 82	1.417 690 33	0.358 887 91	2.362 395 29
1.7495	3.060 750 25	2.417 564 43	1.318 854 51	1.418 381 26	0.359 264 71	2.364 225 69
1.7500	3.062 500 00	2.418 290 34	1.320 105 73	1.419 072 19	0.359 641 75	2.366 057 77
1.7505	3.064 250 25	2.419 015 50	1.321 357 49	1.419 763 14	0.360 019 05	2.367 891 53
1.7510	3.066 001 00	2.419 739 91	1.322 609 77	1.420 454 09	0.360 396 60	2.369 726 97
1.7515	3.067 752 25	2.420 463 58	1.323 862 58	1.421 145 05	0.360 774 40	2.371 564 09
1.7520	3.069 504 00	2.421 186 50	1.325 115 92	1.421 836 03	0.361 152 44	2.373 402 89
1.7525	3.071 256 25	2.421 908 67	1.326 369 79	1.422 527 01	0.361 530 74	2.375 243 39
1.7530	3.073 009 00	2.422 630 09	1.327 624 18	1.423 218 00	0.361 909 29	2.377 085 58
1.7535	3.074 762 25	2.423 350 76	1.328 879 10	1.423 909 00	0.362 288 09	2.378 929 47
1.7540	3.076 516 00	2.424 070 68	1.330 134 55	1.424 600 01	0.362 667 13	2.380 775 05
1.7545	3.078 270 25	2.424 789 85	1.331 390 52	1.425 291 02	0.363 046 43	2.382 622 34
1.7550	3.080 025 00	2.425 508 26	1.332 647 01	1.425 982 05	0.363 425 98	2.384 471 33
1.7555	3.081 780 25	2.426 225 92	1.333 904 03	1.426 673 08	0.363 805 77	2.386 322 02
1.7560	3.083 536 00	2.426 942 83	1.335 161 57	1.427 364 12	0.364 185 82	2.388 174 43
1.7565	3.085 292 25	2.427 658 98	1.336 419 63	1.428 055 17	0.364 566 11	2.390 028 55
1.7570	3.087 049 00	2.428 374 37	1.337 678 21	1.428 746 22	0.364 946 66	2.391 884 39
1.7575	3.088 806 25	2.429 089 00	1.338 937 32	1.429 437 28	0.365 327 46	2.393 741 95
1.7580	3.090 564 00	2.429 802 87	1.340 196 94	1.430 128 35	0.365 708 50	2.395 601 23
1.7585	3.092 322 25	2.430 515 99	1.341 457 09	1.430 819 42	0.366 089 80	2.397 462 24
1.7590	3.094 081 00	2.431 228 34	1.342 717 75	1.431 510 50	0.366 471 34	2.399 324 97
1.7595	3.095 840 25	2.431 939 94	1.343 978 93	1.432 201 59	0.366 853 14	2.401 189 44
1.7600	3.097 600 00	2.432 650 77	1.345 240 63	1.432 892 68	0.367 235 19	2.403 055 64

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
			DEG MNT SEC	DEG MNT SEC	DEG MNT SEC	
1.7205	1.252 363 04	2.681 873 47	84 48 4.3	28 16 1.4	27 42 49.0	0 33 12.
1.7210	1.253 489 87	2.683 120 20	84 51 1.8	28 17 0.6	27 43 44.5	0 33 16.
1.7215	1.254 617 98	2.684 366 77	84 53 59.3	28 17 59.8	27 44 40.1	0 33 19.
1.7220	1.255 747 40	2.685 613 19	84 56 56.9	28 18 59.0	27 45 35.6	0 33 23.
1.7225	1.256 878 10	2.686 859 46	84 59 54.5	28 19 58.2	27 46 31.2	0 33 26.
1.7230	1.258 010 11	2.688 105 56	85 2 52.2	28 20 57.4	27 47 26.8	0 33 30.
1.7235	1.259 143 42	2.689 351 51	85 5 49.9	28 21 56.6	27 48 22.4	0 33 34.
1.7240	1.260 278 03	2.690 597 30	85 8 47.7	28 22 55.9	27 49 18.1	0 33 37.
1.7245	1.261 413 95	2.691 842 92	85 11 45.5	28 23 55.2	27 50 13.7	0 33 41.
1.7250	1.262 551 18	2.693 088 39	85 14 43.4	28 24 54.5	27 51 9.3	0 33 45.
1.7255	1.263 689 72	2.694 333 70	85 17 41.3	28 25 53.8	27 52 5.0	0 33 48.
1.7260	1.264 829 57	2.695 578 84	85 20 39.3	28 26 53.1	27 53 0.6	0 33 52.
1.7265	1.265 970 74	2.696 823 82	85 23 37.3	28 27 52.4	27 53 56.3	0 33 56.
1.7270	1.267 113 23	2.698 068 64	85 26 35.4	28 28 51.8	27 54 52.0	0 33 59.
1.7275	1.268 257 04	2.699 313 30	85 29 33.5	28 29 51.2	27 55 47.7	0 34 3.
1.7280	1.269 402 18	2.700 557 78	85 32 31.7	28 30 50.6	27 56 43.4	0 34 7.
1.7285	1.270 548 64	2.701 802 11	85 35 29.9	28 31 50.0	27 57 39.1	0 34 10.
1.7290	1.271 696 43	2.703 046 27	85 38 28.2	28 32 49.4	27 58 34.9	0 34 14.
1.7295	1.272 845 56	2.704 290 26	85 41 26.6	28 33 48.9	27 59 30.6	0 34 18.
1.7300	1.273 996 01	2.705 534 08	85 44 25.0	28 34 48.3	28 0 26.4	0 34 22.
1.7305	1.275 147 81	2.706 777 74	85 47 23.4	28 35 47.8	28 1 22.1	0 34 25.
1.7310	1.276 300 94	2.708 021 23	85 50 21.9	28 36 47.3	28 2 17.9	0 34 29.
1.7315	1.277 455 42	2.709 264 55	85 53 20.5	28 37 46.8	28 3 13.7	0 34 33.
1.7320	1.278 611 24	2.710 507 69	85 56 19.1	28 38 46.4	28 4 9.5	0 34 36.
1.7325	1.279 768 41	2.711 750 67	85 59 17.7	28 39 45.9	28 5 5.3	0 34 40.
1.7330	1.280 926 92	2.712 993 48	86 2 16.4	28 40 45.5	28 6 1.1	0 34 44.
1.7335	1.282 086 79	2.714 236 11	86 5 15.2	28 41 45.1	28 6 57.0	0 34 48.
1.7340	1.283 248 02	2.715 478 57	86 8 14.0	28 42 44.7	28 7 52.8	0 34 51.
1.7345	1.284 410 60	2.716 720 86	86 11 12.8	28 43 44.3	28 8 48.7	0 34 55.
1.7350	1.285 574 54	2.717 962 98	86 14 11.7	28 44 43.9	28 9 44.6	0 34 59.
1.7355	1.286 739 85	2.719 204 91	86 17 10.7	28 45 43.6	28 10 40.4	0 35 3.
1.7360	1.287 906 52	2.720 446 68	86 20 9.7	28 46 43.2	28 11 36.3	0 35 6.
1.7365	1.289 074 56	2.721 688 26	86 23 8.8	28 47 42.9	28 12 32.2	0 35 10.
1.7370	1.290 243 97	2.722 929 67	86 26 7.9	28 48 42.6	28 13 28.2	0 35 14.
1.7375	1.291 414 76	2.724 170 91	86 29 7.1	28 49 42.4	28 14 24.1	0 35 18.
1.7380	1.292 586 92	2.725 411 96	86 32 6.3	28 50 42.1	28 15 20.0	0 35 22.
1.7385	1.293 760 46	2.726 652 84	86 35 5.5	28 51 41.8	28 16 16.0	0 35 25.
1.7390	1.294 935 38	2.727 893 53	86 38 4.9	28 52 41.6	28 17 11.9	0 35 29.
1.7395	1.296 111 68	2.729 134 05	86 41 4.2	28 53 41.4	28 18 7.9	0 35 33.
1.7400	1.297 289 37	2.730 374 38	86 44 3.7	28 54 41.2	28 19 3.9	0 35 37.
1.7405	1.298 468 45	2.731 614 53	86 47 3.1	28 55 41.0	28 19 59.9	0 35 41.
1.7410	1.299 648 93	2.732 854 50	86 50 2.7	28 56 40.9	28 20 55.9	0 35 45.
1.7415	1.300 830 80	2.734 094 29	86 53 2.2	28 57 40.7	28 21 51.9	0 35 48.
1.7420	1.302 014 06	2.735 333 89	86 56 1.9	28 58 40.6	28 22 47.9	0 35 52.
1.7425	1.303 198 73	2.736 573 31	86 59 1.6	28 59 40.5	28 23 44.0	0 35 56.
1.7430	1.304 384 80	2.737 812 54	87 2 1.3	29 0 40.4	28 24 40.0	0 36 0.
1.7435	1.305 572 28	2.739 051 59	87 5 1.1	29 1 40.4	28 25 36.1	0 36 4.
1.7440	1.306 761 16	2.740 290 45	87 8 0.9	29 2 40.3	28 26 32.1	0 36 8.
1.7445	1.307 951 46	2.741 529 13	87 11 0.8	29 3 40.3	28 27 28.2	0 36 12.
1.7450	1.309 143 17	2.742 767 61	87 14 0.7	29 4 40.2	28 28 24.3	0 36 15.
1.7455	1.310 336 30	2.744 005 91	87 17 0.7	29 5 40.2	28 29 20.4	0 36 19.
1.7460	1.311 530 84	2.745 244 02	87 20 0.8	29 6 40.3	28 30 16.6	0 36 23.
1.7465	1.312 726 81	2.746 481 93	87 23 0.9	29 7 40.3	28 31 12.7	0 36 27.
1.7470	1.313 924 21	2.747 719 66	87 26 1.0	29 8 40.3	28 32 8.8	0 36 31.
1.7475	1.315 123 03	2.748 957 19	87 29 1.2	29 9 40.4	28 33 5.0	0 36 35.
1.7480	1.316 323 29	2.750 194 54	87 32 1.5	29 10 40.5	28 34 1.1	0 36 39.
1.7485	1.317 524 97	2.751 431 69	87 35 1.8	29 11 40.6	28 34 57.3	0 36 43.
1.7490	1.318 728 10	2.752 668 64	87 38 2.1	29 12 40.7	28 35 53.5	0 36 47.
1.7495	1.319 932 66	2.753 905 41	87 41 2.5	29 13 40.8	28 36 49.7	0 36 51.
1.7500	1.321 138 67	2.755 141 97	87 44 3.0	29 14 41.0	28 37 45.9	0 36 55.
1.7505	1.322 346 12	2.756 378 35	87 47 3.5	29 15 41.2	28 38 42.1	0 36 59.
1.7510	1.323 555 02	2.757 614 52	87 50 4.1	29 16 41.4	28 39 38.3	0 37 3.
1.7515	1.324 765 37	2.758 850 50	87 53 4.7	29 17 41.6	28 40 34.6	0 37 7.
1.7520	1.325 977 18	2.760 086 28	87 56 5.3	29 18 41.8	28 41 30.8	0 37 10.
1.7525	1.327 190 44	2.761 321 86	87 59 6.0	29 19 42.0	28 42 27.1	0 37 14.
1.7530	1.328 405 16	2.762 557 25	88 2 6.8	29 20 42.3	28 43 23.4	0 37 18.
1.7535	1.329 621 34	2.763 792 43	88 5 7.6	29 21 42.5	28 44 19.7	0 37 22.
1.7540	1.330 838 99	2.765 027 41	88 8 8.5	29 22 42.8	28 45 15.9	0 37 26.
1.7545	1.332 058 11	2.766 262 19	88 11 9.4	29 23 43.1	28 46 12.3	0 37 30.
1.7550	1.333 278 70	2.767 496 77	88 14 10.4	29 24 43.5	28 47 8.6	0 37 34.
1.7555	1.334 500 76	2.768 731 15	88 17 11.4	29 25 43.8	28 48 4.9	0 37 38.
1.7560	1.335 724 30	2.769 965 33	88 20 12.5	29 26 44.2	28 49 1.2	0 37 42.
1.7565	1.336 949 32	2.771 199 29	88 23 13.6	29 27 44.5	28 49 57.6	0 37 46.
1.7570	1.338 175 82	2.772 433 06	88 26 14.8	29 28 44.9	28 50 53.9	0 37 51.
1.7575	1.339 403 81	2.773 666 62	88 29 16.0	29 29 45.3	28 51 50.3	0 37 55.
1.7580	1.340 633 28	2.774 899 97	88 32 17.3	29 30 45.8	28 52 46.7	0 37 59.
1.7585	1.341 864 25	2.776 133 12	88 35 18.6	29 31 46.2	28 53 43.1	0 38 3.
1.7590	1.343 096 72	2.777 366 06	88 38 20.0	29 32 46.7	28 54 39.5	0 38 7.
1.7595	1.344 330 68	2.778 598 79	88 41 21.4	29 33 47.1	28 55 35.9	0 38 11.
1.7600	1.345 566 14	2.779 831 31	88 44 22.9	29 34 47.6	28 56 32.3	0 38 15.

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.7605	3.099 360 25	2.433 360 84	1.346 502 85	1.433 583 77	0.367 617 48	2.404 923 58
1.7610	3.101 121 00	2.434 070 14	1.347 765 58	1.434 274 88	0.368 000 03	2.406 793 26
1.7615	3.102 882 25	2.434 778 68	1.349 028 83	1.434 965 98	0.368 382 82	2.408 664 69
1.7620	3.104 644 00	2.435 486 45	1.350 292 59	1.435 657 09	0.368 765 87	2.410 537 86
1.7625	3.106 406 25	2.436 193 45	1.351 556 87	1.436 348 21	0.369 149 16	2.412 412 79
1.7630	3.108 169 00	2.436 899 69	1.352 821 66	1.437 039 33	0.369 532 71	2.414 289 47
1.7635	3.109 932 25	2.437 605 16	1.354 086 96	1.437 730 46	0.369 916 50	2.416 167 90
1.7640	3.111 696 00	2.438 309 86	1.355 352 78	1.438 421 59	0.370 300 55	2.418 048 10
1.7645	3.113 460 25	2.439 013 79	1.356 619 11	1.439 112 72	0.370 684 84	2.419 930 05
1.7650	3.115 225 00	2.439 716 95	1.357 885 95	1.439 803 86	0.371 069 39	2.421 813 78
1.7655	3.116 990 25	2.440 419 34	1.359 153 29	1.440 494 99	0.371 454 19	2.423 699 27
1.7660	3.118 756 00	2.441 120 95	1.360 421 15	1.441 186 14	0.371 839 23	2.425 586 54
1.7665	3.120 522 25	2.441 821 79	1.361 689 52	1.441 877 28	0.372 224 53	2.427 475 58
1.7670	3.122 289 00	2.442 521 85	1.362 958 39	1.442 568 43	0.372 610 07	2.429 366 41
1.7675	3.124 056 25	2.443 221 14	1.364 227 78	1.443 259 58	0.372 995 87	2.431 259 01
1.7680	3.125 824 00	2.443 919 65	1.365 497 67	1.443 950 73	0.373 381 91	2.433 153 40
1.7685	3.127 592 25	2.444 617 39	1.366 768 06	1.444 641 89	0.373 768 21	2.435 049 58
1.7690	3.129 361 00	2.445 314 34	1.368 038 96	1.445 333 05	0.374 154 75	2.436 947 55
1.7695	3.131 130 25	2.446 010 52	1.369 310 37	1.446 024 20	0.374 541 55	2.438 847 32
1.7700	3.132 900 00	2.446 705 92	1.370 582 28	1.446 715 36	0.374 928 59	2.440 748 88
1.7705	3.134 670 25	2.447 400 53	1.371 854 69	1.447 406 52	0.375 315 89	2.442 652 25
1.7710	3.136 441 00	2.448 094 37	1.373 127 61	1.448 097 68	0.375 703 43	2.444 557 42
1.7715	3.138 212 25	2.448 787 42	1.374 401 03	1.448 788 85	0.376 091 23	2.446 464 40
1.7720	3.139 984 00	2.449 479 68	1.375 674 95	1.449 480 01	0.376 479 27	2.448 373 19
1.7725	3.141 756 25	2.450 171 17	1.376 949 37	1.450 171 17	0.376 867 57	2.450 283 80
1.7730	3.143 529 00	2.450 861 86	1.378 224 29	1.450 862 33	0.377 256 11	2.452 196 22
1.7735	3.145 302 25	2.451 551 78	1.379 499 70	1.451 553 50	0.377 644 91	2.454 110 47
1.7740	3.147 076 00	2.452 240 90	1.380 775 62	1.452 244 66	0.378 033 95	2.456 026 54
1.7745	3.148 850 25	2.452 929 23	1.382 052 04	1.452 935 82	0.378 423 25	2.457 944 44
1.7750	3.150 625 00	2.453 616 78	1.383 328 95	1.453 626 98	0.378 812 79	2.459 864 18
1.7755	3.152 400 25	2.454 303 54	1.384 606 36	1.454 318 14	0.379 202 59	2.461 785 74
1.7760	3.154 176 00	2.454 989 50	1.385 884 26	1.455 009 30	0.379 592 63	2.463 709 15
1.7765	3.155 952 25	2.455 674 68	1.387 162 66	1.455 700 45	0.379 982 93	2.465 634 40
1.7770	3.157 729 00	2.456 359 06	1.388 441 56	1.456 391 61	0.380 373 47	2.467 561 49
1.7775	3.159 506 25	2.457 042 65	1.389 720 95	1.457 082 76	0.380 764 27	2.469 490 43
1.7780	3.161 284 00	2.457 725 44	1.391 000 83	1.457 773 91	0.381 155 31	2.471 421 22
1.7785	3.163 062 25	2.458 407 44	1.392 281 20	1.458 465 06	0.381 546 61	2.473 353 87
1.7790	3.164 841 00	2.459 088 64	1.393 562 07	1.459 156 20	0.381 938 15	2.475 288 38
1.7795	3.166 620 25	2.459 769 05	1.394 843 42	1.459 847 34	0.382 329 95	2.477 224 75
1.7800	3.168 400 00	2.460 448 65	1.396 125 27	1.460 538 48	0.382 721 99	2.479 162 98
1.7805	3.170 180 25	2.461 127 46	1.397 407 60	1.461 229 62	0.383 114 29	2.481 103 09
1.7810	3.171 961 00	2.461 805 47	1.398 690 42	1.461 920 75	0.383 506 83	2.483 045 06
1.7815	3.173 742 25	2.462 482 68	1.399 973 73	1.462 611 88	0.383 899 63	2.484 988 91
1.7820	3.175 524 00	2.463 159 09	1.401 257 53	1.463 303 00	0.384 292 67	2.486 934 65
1.7825	3.177 306 25	2.463 834 69	1.402 541 82	1.463 994 12	0.384 685 97	2.488 882 26
1.7830	3.179 089 00	2.464 509 50	1.403 826 59	1.464 685 24	0.385 079 51	2.490 831 76
1.7835	3.180 872 25	2.465 183 49	1.405 111 84	1.465 376 35	0.385 473 31	2.492 783 16
1.7840	3.182 656 00	2.465 856 69	1.406 397 58	1.466 067 45	0.385 867 35	2.494 736 44
1.7845	3.184 440 25	2.466 529 07	1.407 683 81	1.466 758 55	0.386 261 65	2.496 691 62
1.7850	3.186 225 00	2.467 200 65	1.408 970 51	1.467 449 65	0.386 656 19	2.498 648 71
1.7855	3.188 010 25	2.467 871 43	1.410 257 70	1.468 140 74	0.387 050 99	2.500 607 69
1.7860	3.189 796 00	2.468 541 39	1.411 545 37	1.468 831 82	0.387 446 03	2.502 568 59
1.7865	3.191 582 25	2.469 210 55	1.412 833 52	1.469 522 90	0.387 841 33	2.504 531 39
1.7870	3.193 369 00	2.469 878 89	1.414 122 15	1.470 213 97	0.388 236 87	2.506 496 11
1.7875	3.195 156 25	2.470 546 43	1.415 411 26	1.470 905 04	0.388 632 66	2.508 462 75
1.7880	3.196 944 00	2.471 213 15	1.416 700 85	1.471 596 10	0.389 028 71	2.510 431 31
1.7885	3.198 732 25	2.471 879 06	1.417 990 91	1.472 287 15	0.389 425 00	2.512 401 80
1.7890	3.200 521 00	2.472 544 16	1.419 281 46	1.472 978 19	0.389 821 55	2.514 374 22
1.7895	3.202 310 25	2.473 208 44	1.420 572 48	1.473 669 23	0.390 218 34	2.516 348 57
1.7900	3.204 100 00	2.473 871 90	1.421 863 97	1.474 360 26	0.390 615 38	2.518 324 85
1.7905	3.205 890 25	2.474 534 55	1.423 155 94	1.475 051 28	0.391 012 68	2.520 303 08
1.7910	3.207 681 00	2.475 196 39	1.424 448 38	1.475 742 30	0.391 410 22	2.522 283 25
1.7915	3.209 472 25	2.475 857 40	1.425 741 30	1.476 433 30	0.391 808 01	2.524 265 36
1.7920	3.211 264 00	2.476 517 60	1.427 034 69	1.477 124 30	0.392 206 06	2.526 249 43
1.7925	3.213 056 25	2.477 176 97	1.428 328 55	1.477 815 29	0.392 604 35	2.528 235 45
1.7930	3.214 849 00	2.477 835 53	1.429 622 88	1.478 506 27	0.393 002 89	2.530 223 43
1.7935	3.216 642 25	2.478 493 26	1.430 917 68	1.479 197 24	0.393 401 69	2.532 213 38
1.7940	3.218 436 00	2.479 150 17	1.432 212 95	1.479 888 20	0.393 800 73	2.534 205 29
1.7945	3.220 230 25	2.479 806 26	1.433 508 69	1.480 579 15	0.394 200 02	2.536 199 17
1.7950	3.222 025 00	2.480 461 53	1.434 804 90	1.481 270 09	0.394 599 56	2.538 195 02
1.7955	3.223 820 25	2.481 115 97	1.436 101 57	1.481 961 02	0.394 999 36	2.540 192 85
1.7960	3.225 616 00	2.481 769 58	1.437 398 71	1.482 651 94	0.395 399 40	2.542 192 66
1.7965	3.227 412 25	2.482 422 37	1.438 696 32	1.483 342 85	0.395 799 69	2.544 194 45
1.7970	3.229 209 00	2.483 074 33	1.439 994 39	1.484 033 75	0.396 200 23	2.546 198 24
1.7975	3.231 006 25	2.483 725 46	1.441 292 93	1.484 724 64	0.396 601 02	2.548 204 01
1.7980	3.232 804 00	2.484 375 76	1.442 591 93	1.485 415 52	0.397 002 06	2.550 211 79
1.7985	3.234 602 25	2.485 025 23	1.443 891 39	1.486 106 38	0.397 403 35	2.552 221 56
1.7990	3.236 401 00	2.485 673 87	1.445 191 31	1.486 797 24	0.397 804 89	2.554 233 33
1.7995	3.238 200 25	2.486 321 68	1.446 491 70	1.487 488 08	0.398 206 68	2.556 247 12
1.8000	3.240 000 00	2.486 968 66	1.447 792 55	1.488 178 91	0.398 608 72	2.558 262 91

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.7605	1.346 803 10	2.781 063 67	88 47 24.5	29 35 48.2	28 57 28.8	0 38 19.4
1.7610	1.348 041 58	2.782 295 72	88 50 26.1	29 36 48.7	28 58 25.2	0 38 23.5
1.7615	1.349 281 56	2.783 527 62	88 53 27.7	29 37 49.2	28 59 21.7	0 38 27.5
1.7620	1.350 523 05	2.784 759 29	88 56 29.4	29 38 49.8	29 0 18.2	0 38 31.6
1.7625	1.351 766 06	2.785 990 76	88 59 31.1	29 39 50.4	29 1 14.6	0 38 35.7
1.7630	1.353 010 59	2.787 222 01	89 2 32.9	29 40 51.0	29 2 11.1	0 38 39.8
1.7635	1.354 256 65	2.788 453 05	89 5 34.8	29 41 51.6	29 3 7.6	0 38 44.0
1.7640	1.355 504 22	2.789 683 88	89 8 36.7	29 42 52.2	29 4 4.2	0 38 48.1
1.7645	1.356 753 33	2.790 914 49	89 11 38.6	29 43 52.9	29 5 0.7	0 38 52.2
1.7650	1.358 003 96	2.792 144 88	89 14 40.6	29 44 53.5	29 5 57.2	0 38 56.3
1.7655	1.359 256 13	2.793 375 06	89 17 42.7	29 45 54.2	29 6 53.8	0 39 0.5
1.7660	1.360 509 84	2.794 605 02	89 20 44.8	29 46 54.9	29 7 50.3	0 39 4.6
1.7665	1.361 765 09	2.795 834 76	89 23 47.0	29 47 55.7	29 8 46.9	0 39 8.8
1.7670	1.363 021 88	2.797 064 28	89 26 49.2	29 48 56.4	29 9 43.5	0 39 12.9
1.7675	1.364 280 22	2.798 293 58	89 29 51.4	29 49 57.1	29 10 40.1	0 39 17.1
1.7680	1.365 540 11	2.799 522 66	89 32 53.7	29 50 57.9	29 11 36.7	0 39 21.3
1.7685	1.366 801 55	2.800 751 53	89 35 56.1	29 51 58.7	29 12 33.3	0 39 25.4
1.7690	1.368 064 55	2.801 980 16	89 38 58.5	29 52 59.5	29 13 29.9	0 39 29.6
1.7695	1.369 329 10	2.803 208 58	89 42 1.0	29 54 0.3	29 14 26.5	0 39 33.8
1.7700	1.370 595 22	2.804 436 78	89 45 3.5	29 55 1.2	29 15 23.2	0 39 38.0
1.7705	1.371 862 91	2.805 664 75	89 48 6.1	29 56 2.0	29 16 19.8	0 39 42.2
1.7710	1.373 132 16	2.806 892 49	89 51 8.7	29 57 2.9	29 17 16.5	0 39 46.4
1.7715	1.374 402 99	2.808 120 01	89 54 11.4	29 58 3.8	29 18 13.2	0 39 50.6
1.7720	1.375 675 39	2.809 347 31	89 57 14.1	29 59 4.7	29 19 9.9	0 39 54.8
1.7725	1.376 949 37	2.810 574 37	90 0 16.9	30 0 5.6	29 20 6.6	0 39 59.1
1.7730	1.378 224 93	2.811 801 21	90 3 19.7	30 1 6.6	29 21 3.3	0 40 3.3
1.7735	1.379 502 08	2.813 027 82	90 6 22.6	30 2 7.5	29 21 60.0	0 40 7.5
1.7740	1.380 780 81	2.814 254 21	90 9 25.5	30 3 8.5	29 22 56.7	0 40 11.8
1.7745	1.382 061 14	2.815 480 36	90 12 28.5	30 4 9.5	29 23 53.5	0 40 16.0
1.7750	1.383 343 06	2.816 706 28	90 15 31.5	30 5 10.5	29 24 50.2	0 40 20.3
1.7755	1.384 626 58	2.817 931 98	90 18 34.6	30 6 11.5	29 25 47.0	0 40 24.6
1.7760	1.385 911 70	2.819 157 44	90 21 37.8	30 7 12.6	29 26 43.7	0 40 28.8
1.7765	1.387 198 42	2.820 382 67	90 24 40.9	30 8 13.6	29 27 40.5	0 40 33.1
1.7770	1.388 486 75	2.821 607 66	90 27 44.2	30 9 14.7	29 28 37.3	0 40 37.4
1.7775	1.389 776 69	2.822 832 42	90 30 47.5	30 10 15.8	29 29 34.1	0 40 41.7
1.7780	1.391 068 25	2.824 056 95	90 33 50.8	30 11 16.9	29 30 30.9	0 40 46.0
1.7785	1.392 361 42	2.825 281 24	90 36 54.2	30 12 18.1	29 31 27.8	0 40 50.3
1.7790	1.393 656 22	2.826 505 29	90 39 57.7	30 13 19.2	29 32 24.6	0 40 54.6
1.7795	1.394 952 64	2.827 729 11	90 43 1.2	30 14 20.4	29 33 21.4	0 40 58.9
1.7800	1.396 250 69	2.828 952 69	90 46 4.7	30 15 21.6	29 34 18.3	0 41 3.3
1.7805	1.397 550 37	2.830 176 04	90 49 8.3	30 16 22.8	29 35 15.2	0 41 7.6
1.7810	1.398 851 68	2.831 399 14	90 52 12.0	30 17 24.0	29 36 12.1	0 41 11.9
1.7815	1.400 154 63	2.832 622 00	90 55 15.7	30 18 25.2	29 37 8.9	0 41 16.3
1.7820	1.401 459 22	2.833 844 63	90 58 19.4	30 19 26.5	29 38 5.8	0 41 20.6
1.7825	1.402 765 46	2.835 067 01	91 1 23.2	30 20 27.7	29 39 2.8	0 41 25.0
1.7830	1.404 073 34	2.836 289 15	91 4 27.1	30 21 29.0	29 39 59.7	0 41 29.4
1.7835	1.405 382 88	2.837 511 05	91 7 31.0	30 22 30.3	29 40 56.6	0 41 33.7
1.7840	1.406 694 07	2.838 732 70	91 10 35.0	30 23 31.7	29 41 53.5	0 41 38.1
1.7845	1.408 006 92	2.839 954 11	91 13 39.0	30 24 33.0	29 42 50.5	0 41 42.5
1.7850	1.409 321 43	2.841 175 28	91 16 43.0	30 25 34.3	29 43 47.5	0 41 46.9
1.7855	1.410 637 60	2.842 396 20	91 19 47.2	30 26 35.7	29 44 44.4	0 41 51.3
1.7860	1.411 955 45	2.843 616 88	91 22 51.3	30 27 37.1	29 45 41.4	0 41 55.7
1.7865	1.413 274 96	2.844 837 30	91 25 55.5	30 28 38.5	29 46 38.4	0 42 0.1
1.7870	1.414 596 15	2.846 057 49	91 28 59.8	30 29 39.9	29 47 35.4	0 42 4.5
1.7875	1.415 919 03	2.847 277 42	91 32 4.1	30 30 41.4	29 48 32.4	0 42 8.9
1.7880	1.417 243 58	2.848 497 10	91 35 8.5	30 31 42.8	29 49 29.5	0 42 13.4
1.7885	1.418 569 82	2.849 716 53	91 38 12.9	30 32 44.3	29 50 26.5	0 42 17.8
1.7890	1.419 897 75	2.850 935 72	91 41 17.4	30 33 45.8	29 51 23.5	0 42 22.3
1.7895	1.421 227 37	2.852 154 65	91 44 22.0	30 34 47.3	29 52 20.6	0 42 26.7
1.7900	1.422 558 69	2.853 373 33	91 47 26.5	30 35 48.8	29 53 17.7	0 42 31.2
1.7905	1.423 891 70	2.854 591 75	91 50 31.2	30 36 50.4	29 54 14.7	0 42 35.6
1.7910	1.425 226 43	2.855 809 93	91 53 35.8	30 37 51.9	29 55 11.8	0 42 40.1
1.7915	1.426 562 85	2.857 027 85	91 56 40.6	30 38 53.5	29 56 8.9	0 42 44.6
1.7920	1.427 900 99	2.858 245 51	91 59 45.4	30 39 55.1	29 57 6.0	0 42 49.1
1.7925	1.429 240 85	2.859 462 92	92 2 50.2	30 40 56.7	29 58 3.2	0 42 53.6
1.7930	1.430 582 42	2.860 680 07	92 5 55.1	30 41 58.4	29 59 0.3	0 42 58.1
1.7935	1.431 925 72	2.861 896 97	92 9 0.0	30 43 0.0	29 59 57.4	0 43 2.6
1.7940	1.433 270 74	2.863 113 61	92 12 5.0	30 44 1.7	30 0 54.6	0 43 7.1
1.7945	1.434 617 48	2.864 329 99	92 15 10.1	30 45 3.4	30 1 51.7	0 43 11.6
1.7950	1.435 965 96	2.865 546 11	92 18 15.2	30 46 5.1	30 2 48.9	0 43 16.1
1.7955	1.437 316 18	2.866 761 97	92 21 20.3	30 47 6.8	30 3 46.1	0 43 20.7
1.7960	1.438 668 14	2.867 977 57	92 24 25.5	30 48 8.5	30 4 43.3	0 43 25.2
1.7965	1.440 021 84	2.869 192 90	92 27 30.8	30 49 10.3	30 5 40.5	0 43 29.8
1.7970	1.441 377 29	2.870 407 98	92 30 36.1	30 50 12.0	30 6 37.7	0 43 34.3
1.7975	1.442 734 48	2.871 622 79	92 33 41.4	30 51 13.8	30 7 34.9	0 43 38.9
1.7980	1.444 093 44	2.872 837 34	92 36 46.8	30 52 15.6	30 8 32.2	0 43 43.5
1.7985	1.445 454 15	2.874 051 63	92 39 52.3	30 53 17.4	30 9 29.4	0 43 48.0
1.7990	1.446 816 62	2.875 265 65	92 42 57.8	30 54 19.3	30 10 26.7	0 43 52.6
1.7995	1.448 180 86	2.876 479 40	92 46 3.4	30 55 21.1	30 11 23.9	0 43 57.2
1.8000	1.449 546 87	2.877 692 89	92 49 9.0	30 56 23.0	30 12 21.2	0 44 1.8

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.8005	3.241 800 25	2.487 614 80	1.449 093 85	1.488 869 73	0.399 011 01	2.560 280 72
1.8010	3.243 601 00	2.488 260 11	1.450 395 61	1.489 560 54	0.399 413 55	2.562 300 55
1.8015	3.245 402 25	2.488 904 58	1.451 697 84	1.490 251 33	0.399 816 34	2.564 322 40
1.8020	3.247 204 00	2.489 548 21	1.453 000 52	1.490 942 11	0.400 219 38	2.566 346 28
1.8025	3.249 006 25	2.490 191 01	1.454 303 65	1.491 632 88	0.400 622 67	2.568 372 19
1.8030	3.250 809 00	2.490 832 98	1.455 607 24	1.492 323 63	0.401 026 21	2.570 400 13
1.8035	3.252 612 25	2.491 474 10	1.456 911 29	1.493 014 37	0.401 429 99	2.572 430 12
1.8040	3.254 416 00	2.492 114 38	1.458 215 79	1.493 705 10	0.401 834 03	2.574 462 14
1.8045	3.256 220 25	2.492 753 82	1.459 520 74	1.494 395 81	0.402 238 32	2.576 496 21
1.8050	3.258 025 00	2.493 392 42	1.460 826 15	1.495 086 51	0.402 642 85	2.578 532 34
1.8055	3.259 830 25	2.494 030 18	1.462 132 01	1.495 777 19	0.403 047 64	2.580 570 51
1.8060	3.261 636 00	2.494 667 10	1.463 438 31	1.496 467 86	0.403 452 67	2.582 610 75
1.8065	3.263 442 25	2.495 303 17	1.464 745 07	1.497 158 51	0.403 857 96	2.584 653 05
1.8070	3.265 249 00	2.495 938 40	1.466 052 28	1.497 849 15	0.404 263 49	2.586 697 41
1.8075	3.267 056 25	2.496 572 78	1.467 359 94	1.498 539 77	0.404 669 28	2.588 743 84
1.8080	3.268 864 00	2.497 206 31	1.468 668 04	1.499 230 38	0.405 075 31	2.590 792 35
1.8085	3.270 672 25	2.497 839 00	1.469 976 60	1.499 920 97	0.405 481 59	2.592 842 94
1.8090	3.272 481 00	2.498 470 84	1.471 285 59	1.500 611 55	0.405 888 13	2.594 895 61
1.8095	3.274 290 25	2.499 101 83	1.472 595 04	1.501 302 10	0.406 294 91	2.596 950 36
1.8100	3.276 100 00	2.499 731 97	1.473 904 92	1.501 992 65	0.406 701 94	2.599 007 21
1.8105	3.277 910 25	2.500 361 26	1.475 215 26	1.502 683 17	0.407 109 22	2.601 066 15
1.8110	3.279 721 00	2.500 989 70	1.476 526 03	1.503 373 68	0.407 516 75	2.603 127 19
1.8115	3.281 532 25	2.501 617 28	1.477 837 25	1.504 064 17	0.407 924 53	2.605 190 34
1.8120	3.283 344 00	2.502 244 01	1.479 148 91	1.504 754 64	0.408 332 56	2.607 255 59
1.8125	3.285 156 25	2.502 869 89	1.480 461 01	1.505 445 10	0.408 740 84	2.609 322 95
1.8130	3.286 969 00	2.503 494 92	1.481 773 55	1.506 135 54	0.409 149 36	2.611 392 42
1.8135	3.288 782 25	2.504 119 08	1.483 086 52	1.506 825 96	0.409 558 14	2.613 464 02
1.8140	3.290 596 00	2.504 742 39	1.484 399 94	1.507 516 36	0.409 967 17	2.615 537 74
1.8145	3.292 410 25	2.505 364 85	1.485 713 79	1.508 206 74	0.410 376 44	2.617 613 58
1.8150	3.294 225 00	2.505 986 44	1.487 028 08	1.508 897 11	0.410 785 97	2.619 691 56
1.8155	3.296 040 25	2.506 607 17	1.488 342 81	1.509 587 45	0.411 195 74	2.621 771 68
1.8160	3.297 856 00	2.507 227 05	1.489 657 97	1.510 277 78	0.411 605 77	2.623 853 93
1.8165	3.299 672 25	2.507 846 06	1.490 973 57	1.510 968 08	0.412 016 04	2.625 938 33
1.8170	3.301 489 00	2.508 464 22	1.492 289 59	1.511 658 37	0.412 426 56	2.628 024 88
1.8175	3.303 306 25	2.509 081 50	1.493 606 05	1.512 348 63	0.412 837 33	2.630 113 58
1.8180	3.305 124 00	2.509 697 93	1.494 922 95	1.513 038 88	0.413 248 35	2.632 204 44
1.8185	3.306 942 25	2.510 313 49	1.496 240 27	1.513 729 11	0.413 659 62	2.634 297 46
1.8190	3.308 761 00	2.510 928 19	1.497 558 02	1.514 419 31	0.414 071 14	2.636 392 65
1.8195	3.310 580 25	2.511 542 02	1.498 876 21	1.515 109 50	0.414 482 91	2.638 490 01
1.8200	3.312 400 00	2.512 154 98	1.500 194 82	1.515 799 66	0.414 894 93	2.640 589 54
1.8205	3.314 220 25	2.512 767 08	1.501 513 86	1.516 489 80	0.415 307 19	2.642 691 25
1.8210	3.316 041 00	2.513 378 30	1.502 833 32	1.517 179 92	0.415 719 71	2.644 795 14
1.8215	3.317 862 25	2.513 988 66	1.504 153 21	1.517 870 02	0.416 132 47	2.646 901 22
1.8220	3.319 684 00	2.514 598 15	1.505 473 53	1.518 560 10	0.416 545 48	2.649 009 50
1.8225	3.321 506 25	2.515 206 77	1.506 794 27	1.519 250 15	0.416 958 75	2.651 119 96
1.8230	3.323 329 00	2.515 814 51	1.508 115 43	1.519 940 18	0.417 372 26	2.653 232 63
1.8235	3.325 152 25	2.516 421 38	1.509 437 02	1.520 630 19	0.417 786 02	2.655 347 51
1.8240	3.326 976 00	2.517 027 38	1.510 759 03	1.521 320 18	0.418 200 03	2.657 464 59
1.8245	3.328 800 25	2.517 632 50	1.512 081 45	1.522 010 14	0.418 614 28	2.659 583 89
1.8250	3.330 625 00	2.518 236 75	1.513 404 30	1.522 700 08	0.419 028 79	2.661 705 40
1.8255	3.332 450 25	2.518 840 12	1.514 727 57	1.523 390 00	0.419 443 55	2.663 829 14
1.8260	3.334 276 00	2.519 442 62	1.516 051 26	1.524 079 89	0.419 858 55	2.665 955 11
1.8265	3.336 102 25	2.520 044 23	1.517 375 36	1.524 769 76	0.420 273 80	2.668 083 31
1.8270	3.337 929 00	2.520 644 97	1.518 699 88	1.525 459 60	0.420 689 31	2.670 213 74
1.8275	3.339 756 25	2.521 244 83	1.520 024 82	1.526 149 42	0.421 105 06	2.672 346 41
1.8280	3.341 584 00	2.521 843 81	1.521 350 17	1.526 839 21	0.421 521 06	2.674 481 33
1.8285	3.343 412 25	2.522 441 91	1.522 675 93	1.527 528 98	0.421 937 31	2.676 618 50
1.8290	3.345 241 00	2.523 039 12	1.524 002 11	1.528 218 73	0.422 353 80	2.678 757 92
1.8295	3.347 070 25	2.523 635 46	1.525 328 70	1.528 908 45	0.422 770 55	2.680 899 61
1.8300	3.348 900 00	2.524 230 91	1.526 655 71	1.529 598 14	0.423 187 54	2.683 043 55
1.8305	3.350 730 25	2.524 825 47	1.527 983 12	1.530 287 81	0.423 604 79	2.685 189 77
1.8310	3.352 561 00	2.525 419 15	1.529 310 94	1.530 977 45	0.424 022 28	2.687 338 25
1.8315	3.354 392 25	2.526 011 94	1.530 639 18	1.531 667 07	0.424 440 02	2.689 489 01
1.8320	3.356 224 00	2.526 603 85	1.531 967 82	1.532 356 65	0.424 858 01	2.691 642 06
1.8325	3.358 056 25	2.527 194 87	1.533 296 86	1.533 046 22	0.425 276 25	2.693 797 39
1.8330	3.359 889 00	2.527 785 00	1.534 626 32	1.533 735 75	0.425 694 73	2.695 955 01
1.8335	3.361 722 25	2.528 374 24	1.535 956 18	1.534 425 26	0.426 113 47	2.698 114 93
1.8340	3.363 556 00	2.528 962 59	1.537 286 44	1.535 114 74	0.426 532 45	2.700 277 15
1.8345	3.365 390 25	2.529 550 05	1.538 617 11	1.535 804 19	0.426 951 68	2.702 441 67
1.8350	3.367 225 00	2.530 136 62	1.539 948 18	1.536 493 62	0.427 371 16	2.704 608 50
1.8355	3.369 060 25	2.530 722 29	1.541 279 65	1.537 183 01	0.427 790 89	2.706 777 65
1.8360	3.370 896 00	2.531 307 07	1.542 611 52	1.537 872 38	0.428 210 87	2.708 949 12
1.8365	3.372 732 25	2.531 890 96	1.543 943 80	1.538 561 72	0.428 631 09	2.711 122 91
1.8370	3.374 569 00	2.532 473 95	1.545 276 47	1.539 251 03	0.429 051 57	2.713 299 03
1.8375	3.376 406 25	2.533 056 05	1.546 609 54	1.539 940 31	0.429 472 29	2.715 477 48
1.8380	3.378 244 00	2.533 637 25	1.547 943 01	1.540 629 56	0.429 893 26	2.717 658 27
1.8385	3.380 082 25	2.534 217 55	1.549 276 88	1.541 318 79	0.430 314 48	2.719 841 41
1.8390	3.381 921 00	2.534 796 95	1.550 611 14	1.542 007 98	0.430 735 95	2.722 026 89
1.8395	3.383 760 25	2.535 375 45	1.551 945 80	1.542 697 14	0.431 157 66	2.724 214 72
1.8400	3.385 600 00	2.535 953 05	1.553 280 85	1.543 386 28	0.431 579 62	2.726 404 92

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
1.8005	1.450 914 65	2.878 906 11	92 52 14.7	30 57 24.9	30 13 18.5	0 44 6.4
1.8010	1.452 284 21	2.880 115 06	92 55 20.4	30 58 26.8	30 14 15.8	0 44 11.0
1.8015	1.453 655 55	2.881 331 74	92 58 26.1	30 59 28.7	30 15 13.1	0 44 15.6
1.8020	1.455 028 67	2.882 544 16	93 1 32.0	31 0 30.7	30 16 10.4	0 44 20.3
1.8025	1.456 403 59	2.883 756 30	93 4 37.8	31 1 32.6	30 17 7.7	0 44 24.9
1.8030	1.457 780 29	2.884 968 17	93 7 43.7	31 2 34.6	30 18 5.1	0 44 29.5
1.8035	1.459 158 79	2.886 179 77	93 10 49.7	31 3 36.6	30 19 2.4	0 44 34.2
1.8040	1.460 539 09	2.887 391 10	93 13 55.7	31 4 38.6	30 19 59.8	0 44 38.8
1.8045	1.461 921 20	2.888 602 16	93 17 1.8	31 5 40.6	30 20 57.1	0 44 43.5
1.8050	1.463 305 11	2.889 812 94	93 20 7.9	31 6 42.6	30 21 54.5	0 44 48.1
1.8055	1.464 690 83	2.891 023 44	93 23 14.1	31 7 44.7	30 22 51.9	0 44 52.8
1.8060	1.466 078 37	2.892 233 68	93 26 20.4	31 8 46.8	30 23 49.3	0 44 57.5
1.8065	1.467 467 73	2.893 443 63	93 29 26.6	31 9 48.9	30 24 46.7	0 45 2.2
1.8070	1.468 858 91	2.894 653 31	93 32 33.0	31 10 51.0	30 25 44.1	0 45 6.9
1.8075	1.470 251 92	2.895 862 71	93 35 39.4	31 11 53.1	30 26 41.5	0 45 11.6
1.8080	1.471 646 75	2.897 071 83	93 38 45.8	31 12 55.3	30 27 39.0	0 45 16.3
1.8085	1.473 043 43	2.898 280 67	93 41 52.3	31 13 57.4	30 28 36.4	0 45 21.0
1.8090	1.474 441 94	2.899 489 24	93 44 58.8	31 14 59.6	30 29 33.9	0 45 25.7
1.8095	1.475 842 29	2.900 697 52	93 48 5.4	31 16 1.8	30 30 31.3	0 45 30.5
1.8100	1.477 244 50	2.901 905 52	93 51 12.1	31 17 4.0	30 31 28.8	0 45 35.2
1.8105	1.478 648 55	2.903 113 24	93 54 18.8	31 18 6.3	30 32 26.3	0 45 39.9
1.8110	1.480 054 46	2.904 320 68	93 57 25.5	31 19 8.5	30 33 23.8	0 45 44.7
1.8115	1.481 462 22	2.905 527 83	94 0 32.3	31 20 10.8	30 34 21.3	0 45 49.5
1.8120	1.482 871 85	2.906 734 70	94 3 39.2	31 21 13.1	30 35 18.8	0 45 54.2
1.8125	1.484 283 34	2.907 941 28	94 6 46.1	31 22 15.4	30 36 16.4	0 45 59.0
1.8130	1.485 696 71	2.909 147 58	94 9 53.0	31 23 17.7	30 37 13.9	0 46 3.8
1.8135	1.487 111 95	2.910 353 59	94 13 0.0	31 24 20.0	30 38 11.4	0 46 8.6
1.8140	1.488 529 07	2.911 559 31	94 16 7.1	31 25 22.4	30 39 9.0	0 46 13.4
1.8145	1.489 948 07	2.912 764 75	94 19 14.2	31 26 24.7	30 40 6.6	0 46 18.2
1.8150	1.491 368 96	2.913 969 90	94 22 21.3	31 27 27.1	30 41 4.1	0 46 23.0
1.8155	1.492 791 74	2.915 174 75	94 25 28.6	31 28 29.5	30 42 1.7	0 46 27.8
1.8160	1.494 216 42	2.916 379 32	94 28 35.8	31 29 31.9	30 42 59.3	0 46 32.6
1.8165	1.495 642 99	2.917 583 60	94 31 43.1	31 30 34.4	30 43 56.9	0 46 37.4
1.8170	1.497 071 47	2.918 787 58	94 34 50.5	31 31 36.8	30 44 54.5	0 46 42.3
1.8175	1.498 501 86	2.919 991 27	94 37 57.9	31 32 39.3	30 45 52.2	0 46 47.1
1.8180	1.499 934 15	2.921 194 67	94 41 5.4	31 33 41.8	30 46 49.8	0 46 52.0
1.8185	1.501 368 37	2.922 397 78	94 44 12.9	31 34 44.3	30 47 47.5	0 46 56.8
1.8190	1.502 804 50	2.923 600 59	94 47 20.5	31 35 46.8	30 48 45.1	0 47 1.7
1.8195	1.504 242 56	2.924 803 10	94 50 28.1	31 36 49.4	30 49 42.8	0 47 6.6
1.8200	1.505 682 54	2.926 005 32	94 53 35.8	31 37 51.9	30 50 40.5	0 47 11.5
1.8205	1.507 124 46	2.927 207 24	94 56 43.5	31 38 54.5	30 51 38.1	0 47 16.4
1.8210	1.508 568 32	2.928 408 87	94 59 51.3	31 39 57.1	30 52 35.8	0 47 21.3
1.8215	1.510 014 12	2.929 610 19	95 2 59.1	31 40 59.7	30 53 33.5	0 47 26.2
1.8220	1.511 461 86	2.930 811 22	95 6 7.0	31 42 2.3	30 54 31.3	0 47 31.1
1.8225	1.512 911 55	2.932 011 94	95 9 14.9	31 43 5.0	30 55 29.0	0 47 36.0
1.8230	1.514 363 20	2.933 212 37	95 12 22.9	31 44 7.6	30 56 26.7	0 47 40.9
1.8235	1.515 816 80	2.934 412 49	95 15 30.9	31 45 10.3	30 57 24.5	0 47 45.9
1.8240	1.517 272 37	2.935 612 31	95 18 39.0	31 46 13.0	30 58 22.2	0 47 50.8
1.8245	1.518 729 90	2.936 811 83	95 21 47.2	31 47 15.7	30 59 20.0	0 47 55.7
1.8250	1.520 189 41	2.938 011 05	95 24 55.4	31 48 18.5	31 0 17.8	0 48 0.7
1.8255	1.521 650 89	2.939 209 96	95 28 3.6	31 49 21.2	31 1 15.5	0 48 5.7
1.8260	1.523 114 35	2.940 408 56	95 31 11.9	31 50 24.0	31 2 13.3	0 48 10.6
1.8265	1.524 579 80	2.941 606 86	95 34 20.2	31 51 26.7	31 3 11.1	0 48 15.6
1.8270	1.526 047 23	2.942 804 85	95 37 28.6	31 52 29.5	31 4 8.9	0 48 20.6
1.8275	1.527 516 66	2.944 002 54	95 40 37.1	31 53 32.4	31 5 6.8	0 48 25.6
1.8280	1.528 988 08	2.945 199 92	95 43 45.6	31 54 35.2	31 6 4.6	0 48 30.6
1.8285	1.530 461 51	2.946 396 98	95 46 54.1	31 55 38.0	31 7 2.4	0 48 35.6
1.8290	1.531 936 94	2.947 593 74	95 50 2.7	31 56 40.9	31 8 0.3	0 48 40.6
1.8295	1.533 414 38	2.948 790 19	95 53 11.4	31 57 43.8	31 8 58.2	0 48 45.6
1.8300	1.534 893 84	2.949 986 33	95 56 20.1	31 58 46.7	31 9 56.0	0 48 50.7
1.8305	1.536 375 32	2.951 182 15	95 59 28.9	31 59 49.6	31 10 53.9	0 48 55.7
1.8310	1.537 858 82	2.952 377 66	96 2 37.7	32 0 52.6	31 11 51.8	0 49 0.8
1.8315	1.539 344 35	2.953 572 86	96 5 46.5	32 1 55.5	31 12 49.7	0 49 5.8
1.8320	1.540 831 92	2.954 767 74	96 8 55.4	32 2 58.5	31 13 47.6	0 49 10.9
1.8325	1.542 321 52	2.955 962 31	96 12 4.4	32 4 1.5	31 14 45.5	0 49 15.9
1.8330	1.543 813 16	2.957 156 56	96 15 13.4	32 5 4.5	31 15 43.5	0 49 21.0
1.8335	1.545 306 85	2.958 350 50	96 18 22.5	32 6 7.5	31 16 41.4	0 49 26.1
1.8340	1.546 802 60	2.959 544 12	96 21 31.6	32 7 10.5	31 17 39.3	0 49 31.2
1.8345	1.548 300 40	2.960 737 42	96 24 40.8	32 8 13.6	31 18 37.3	0 49 36.3
1.8350	1.549 800 25	2.961 930 40	96 27 50.0	32 9 16.7	31 19 35.3	0 49 41.4
1.8355	1.551 302 18	2.963 123 06	96 30 59.3	32 10 19.8	31 20 33.2	0 49 46.5
1.8360	1.552 806 17	2.964 315 40	96 34 8.6	32 11 22.9	31 21 31.2	0 49 51.6
1.8365	1.554 312 24	2.965 507 43	96 37 18.0	32 12 26.0	31 22 29.2	0 49 56.8
1.8370	1.555 820 39	2.966 699 12	96 40 27.4	32 13 29.1	31 23 27.2	0 50 1.9
1.8375	1.557 330 62	2.967 890 50	96 43 36.9	32 14 32.3	31 24 25.2	0 50 7.1
1.8380	1.558 842 94	2.969 081 55	96 46 46.4	32 15 35.5	31 25 23.3	0 50 12.2
1.8385	1.560 357 35	2.970 272 28	96 49 56.0	32 16 38.7	31 26 21.3	0 50 17.4
1.8390	1.561 873 87	2.971 462 69	96 53 5.6	32 17 41.9	31 27 19.3	0 50 22.5
1.8395	1.563 392 48	2.972 652 76	96 56 15.3	32 18 45.1	31 28 17.4	0 50 27.7
1.8400	1.564 913 20	2.973 842 52	96 59 25.1	32 19 48.4	31 29 15.5	0 50 32.8

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

Δ/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
.8405	3.387 440 25	2.536 525 76	1.554 616 30	1.544 075 38	0.432 001 84	2.728 597 47
.8410	3.389 281 00	2.537 105 56	1.555 952 14	1.544 764 45	0.432 424 29	2.730 792 39
.8415	3.391 122 25	2.537 685 45	1.557 288 37	1.545 453 49	0.432 847 00	2.732 989 69
.8420	3.392 964 00	2.538 254 45	1.558 624 98	1.546 142 50	0.433 269 96	2.735 189 36
.8425	3.394 806 25	2.538 827 54	1.559 961 99	1.546 831 48	0.433 693 16	2.737 391 41
.8430	3.396 649 00	2.539 399 72	1.561 299 39	1.547 520 43	0.434 116 61	2.739 595 85
.8435	3.398 492 25	2.539 971 00	1.562 637 18	1.548 209 34	0.434 540 31	2.741 802 69
.8440	3.400 336 00	2.540 541 37	1.563 975 35	1.548 898 22	0.434 964 26	2.744 011 92
.8445	3.402 180 25	2.541 110 84	1.565 313 91	1.549 587 08	0.435 388 45	2.746 223 55
.8450	3.404 025 00	2.541 679 40	1.566 652 86	1.550 275 89	0.435 812 90	2.748 437 59
.8455	3.405 870 25	2.542 247 04	1.567 992 18	1.550 964 68	0.436 237 59	2.750 654 04
.8460	3.407 716 00	2.542 813 78	1.569 331 90	1.551 653 43	0.436 662 53	2.752 872 90
.8465	3.409 562 25	2.543 379 61	1.570 671 99	1.552 342 15	0.437 087 71	2.755 094 19
.8470	3.411 409 00	2.543 944 52	1.572 012 47	1.553 030 84	0.437 513 15	2.757 317 91
.8475	3.413 256 25	2.544 508 53	1.573 353 33	1.553 719 49	0.437 938 83	2.759 544 06
.8480	3.415 104 00	2.545 071 62	1.574 694 56	1.554 408 11	0.438 364 76	2.761 772 64
.8485	3.416 952 25	2.545 633 79	1.576 036 18	1.555 096 69	0.438 790 94	2.764 003 67
.8490	3.418 801 00	2.546 195 05	1.577 378 17	1.555 785 24	0.439 217 36	2.766 237 14
.8495	3.420 650 25	2.546 755 40	1.578 720 54	1.556 473 76	0.439 644 04	2.768 473 07
.8500	3.422 500 00	2.547 314 83	1.580 063 29	1.557 162 24	0.440 070 96	2.770 711 46
.8505	3.424 350 25	2.547 873 34	1.581 406 41	1.557 850 69	0.440 498 13	2.772 952 30
.8510	3.426 201 00	2.548 430 93	1.582 749 91	1.558 539 10	0.440 925 54	2.775 195 62
.8515	3.428 052 25	2.548 987 61	1.584 093 78	1.559 227 47	0.441 353 20	2.777 441 41
.8520	3.429 904 00	2.549 543 36	1.585 438 03	1.559 915 81	0.441 781 11	2.779 689 68
.8525	3.431 756 25	2.550 098 20	1.586 782 64	1.560 604 12	0.442 209 27	2.781 940 43
.8530	3.433 609 00	2.550 652 11	1.588 127 63	1.561 292 38	0.442 637 68	2.784 193 67
.8535	3.435 462 25	2.551 205 10	1.589 472 98	1.561 980 61	0.443 066 33	2.786 449 40
.8540	3.437 316 00	2.551 757 17	1.590 818 71	1.562 668 81	0.443 495 23	2.788 707 63
.8545	3.439 170 25	2.552 308 32	1.592 164 80	1.563 356 97	0.443 924 38	2.790 968 37
.8550	3.441 025 00	2.552 858 54	1.593 511 26	1.564 045 09	0.444 353 77	2.793 231 62
.8555	3.442 880 25	2.553 407 84	1.594 858 08	1.564 733 17	0.444 783 41	2.795 497 38
.8560	3.444 736 00	2.553 956 20	1.596 205 27	1.565 421 22	0.445 213 30	2.797 765 67
.8565	3.446 592 25	2.554 503 65	1.597 552 83	1.566 109 22	0.445 643 44	2.800 036 48
.8570	3.448 449 00	2.555 050 16	1.598 900 75	1.566 797 19	0.446 073 82	2.802 309 82
.8575	3.450 306 25	2.555 595 75	1.600 249 03	1.567 485 13	0.446 504 45	2.804 585 69
.8580	3.452 164 00	2.556 140 41	1.601 597 67	1.568 173 02	0.446 935 33	2.806 864 11
.8585	3.454 022 25	2.556 684 14	1.602 946 67	1.568 860 87	0.447 366 45	2.809 145 08
.8590	3.455 881 00	2.557 226 93	1.604 296 03	1.569 548 69	0.447 797 82	2.811 428 60
.8595	3.457 740 25	2.557 768 80	1.605 645 75	1.570 236 47	0.448 229 44	2.813 714 68
.8600	3.459 600 00	2.558 309 73	1.606 995 83	1.570 924 20	0.448 661 30	2.816 003 32
.8605	3.461 460 25	2.558 849 73	1.608 346 26	1.571 611 90	0.449 093 41	2.818 294 54
.8610	3.463 321 00	2.559 388 80	1.609 697 06	1.572 299 56	0.449 525 77	2.820 588 32
.8615	3.465 182 25	2.559 926 93	1.611 048 20	1.572 987 18	0.449 958 38	2.822 884 69
.8620	3.467 044 00	2.560 464 12	1.612 399 70	1.573 674 76	0.450 391 23	2.825 183 65
.8625	3.468 906 25	2.561 000 38	1.613 751 55	1.574 362 29	0.450 824 33	2.827 485 19
.8630	3.470 769 00	2.561 535 71	1.615 103 76	1.575 049 79	0.451 257 67	2.829 789 33
.8635	3.472 632 25	2.562 070 09	1.616 456 31	1.575 737 25	0.451 691 27	2.832 096 08
.8640	3.474 496 00	2.562 603 54	1.617 809 22	1.576 424 66	0.452 125 10	2.834 405 43
.8645	3.476 360 25	2.563 136 04	1.619 162 47	1.577 112 03	0.452 559 19	2.836 717 40
.8650	3.478 225 00	2.563 667 61	1.620 516 08	1.577 799 36	0.452 993 52	2.839 031 98
.8655	3.480 090 25	2.564 198 23	1.621 870 03	1.578 486 65	0.453 428 10	2.841 349 20
.8660	3.481 956 00	2.564 727 92	1.623 224 32	1.579 173 90	0.453 862 92	2.843 669 04
.8665	3.483 822 25	2.565 256 66	1.624 578 97	1.579 861 11	0.454 297 99	2.845 991 52
.8670	3.485 689 00	2.565 784 45	1.625 933 95	1.580 548 27	0.454 733 31	2.848 316 64
.8675	3.487 556 25	2.566 311 31	1.627 289 28	1.581 235 39	0.455 168 87	2.850 644 41
.8680	3.489 424 00	2.566 837 21	1.628 644 95	1.581 922 46	0.455 604 68	2.852 974 83
.8685	3.491 292 25	2.567 362 18	1.630 000 97	1.582 609 50	0.456 040 74	2.855 307 92
.8690	3.493 161 00	2.567 886 19	1.631 357 32	1.583 296 49	0.456 477 04	2.857 643 67
.8695	3.495 030 25	2.568 409 26	1.632 714 02	1.583 983 43	0.456 913 59	2.859 982 09
.8700	3.496 900 00	2.568 931 38	1.634 071 05	1.584 670 34	0.457 350 38	2.862 323 18
.8705	3.498 770 25	2.569 452 55	1.635 428 42	1.585 357 19	0.457 787 42	2.864 666 96
.8710	3.500 641 00	2.569 972 78	1.636 786 13	1.586 044 01	0.458 224 71	2.867 013 43
.8715	3.502 512 25	2.570 492 05	1.638 144 17	1.586 730 78	0.458 662 24	2.869 362 59
.8720	3.504 384 00	2.571 010 37	1.639 502 54	1.587 417 50	0.459 100 02	2.871 714 45
.8725	3.506 256 25	2.571 527 74	1.640 861 26	1.588 104 18	0.459 538 05	2.874 069 02
.8730	3.508 129 00	2.572 044 15	1.642 220 30	1.588 790 81	0.459 976 32	2.876 426 31
.8735	3.510 002 25	2.572 559 61	1.643 579 68	1.589 477 40	0.460 414 83	2.878 786 31
.8740	3.511 876 00	2.573 074 12	1.644 939 38	1.590 163 94	0.460 853 59	2.881 149 03
.8745	3.513 750 25	2.573 587 68	1.646 299 42	1.590 850 44	0.461 292 60	2.883 514 48
.8750	3.515 625 00	2.574 100 27	1.647 659 78	1.591 536 89	0.461 731 85	2.885 882 67
.8755	3.517 500 25	2.574 611 91	1.649 020 48	1.592 223 29	0.462 171 35	2.888 253 61
.8760	3.519 376 00	2.575 122 60	1.650 381 50	1.592 909 65	0.462 611 10	2.890 627 29
.8765	3.521 252 25	2.575 632 32	1.651 742 84	1.593 595 96	0.463 051 09	2.893 003 72
.8770	3.523 129 00	2.576 141 09	1.653 104 51	1.594 282 22	0.463 491 32	2.895 382 92
.8775	3.525 006 25	2.576 648 90	1.654 466 51	1.594 968 44	0.463 931 80	2.897 764 88
.8780	3.526 884 00	2.577 155 74	1.655 828 82	1.595 654 60	0.464 372 53	2.900 149 61
.8785	3.528 762 25	2.577 661 63	1.657 191 46	1.596 340 72	0.464 813 50	2.902 537 12
.8790	3.530 641 00	2.578 166 55	1.658 554 42	1.597 026 80	0.465 254 72	2.904 927 42
.8795	3.532 520 25	2.578 670 51	1.659 917 70	1.597 712 82	0.465 696 18	2.907 320 51
.8800	3.534 400 00	2.579 173 51	1.661 281 30	1.598 398 79	0.466 137 89	2.909 716 40

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	L/3 θ=φ+C	φ	C
				DEG MNT SEC		
1.8405	1.566 436 03	2.975 031 94	97 2 34.9	32 20 51.6	31 30 13.5	0 50 38.1
1.8410	1.567 960 98	2.976 221 04	97 5 44.7	32 21 54.9	31 31 11.6	0 50 43.3
1.8415	1.569 488 05	2.977 409 80	97 8 54.6	32 22 58.2	31 32 9.7	0 50 48.5
1.8420	1.571 017 25	2.978 598 24	97 12 4.5	32 24 1.5	31 33 7.8	0 50 53.7
1.8425	1.572 548 58	2.979 786 35	97 15 14.5	32 25 4.8	31 34 5.9	0 50 58.9
1.8430	1.574 082 04	2.980 974 13	97 18 24.6	32 26 8.2	31 35 4.0	0 51 4.2
1.8435	1.575 617 65	2.982 161 57	97 21 34.7	32 27 11.6	31 36 2.2	0 51 9.4
1.8440	1.577 155 40	2.983 348 65	97 24 44.8	32 28 14.9	31 37 0.3	0 51 14.6
1.8445	1.578 695 30	2.984 535 46	97 27 55.0	32 29 18.3	31 37 58.4	0 51 19.9
1.8450	1.580 237 36	2.985 721 91	97 31 5.3	32 30 21.8	31 38 56.6	0 51 25.2
1.8455	1.581 781 58	2.986 908 02	97 34 15.6	32 31 25.2	31 39 54.8	0 51 30.4
1.8460	1.583 327 96	2.988 093 80	97 37 25.9	32 32 28.6	31 40 52.9	0 51 35.7
1.8465	1.584 876 52	2.989 279 23	97 40 36.3	32 33 32.1	31 41 51.1	0 51 41.0
1.8470	1.586 427 24	2.990 464 34	97 43 46.8	32 34 35.6	31 42 49.3	0 51 46.3
1.8475	1.587 980 15	2.991 649 10	97 46 57.3	32 35 39.1	31 43 47.5	0 51 51.6
1.8480	1.589 535 25	2.992 833 52	97 50 7.9	32 36 42.6	31 44 45.7	0 51 56.9
1.8485	1.591 092 53	2.994 017 61	97 53 18.5	32 37 46.2	31 45 43.9	0 52 2.2
1.8490	1.592 652 01	2.995 201 35	97 56 29.2	32 38 49.7	31 46 42.2	0 52 7.5
1.8495	1.594 213 65	2.996 384 76	97 59 39.9	32 39 53.3	31 47 40.4	0 52 12.9
1.8500	1.595 777 57	2.997 567 82	98 2 50.6	32 40 56.9	31 48 38.7	0 52 18.2
1.8505	1.597 343 67	2.998 750 54	98 6 1.5	32 42 0.5	31 49 36.9	0 52 23.6
1.8510	1.598 911 98	2.999 932 92	98 9 12.3	32 43 4.1	31 50 35.2	0 52 28.9
1.8515	1.600 482 51	3.001 114 95	98 12 23.3	32 44 7.8	31 51 33.5	0 52 34.3
1.8520	1.602 055 26	3.002 296 64	98 15 34.2	32 45 11.4	31 52 31.8	0 52 39.7
1.8525	1.603 630 25	3.003 477 98	98 18 45.3	32 46 15.1	31 53 30.1	0 52 45.0
1.8530	1.605 207 47	3.004 658 97	98 21 56.3	32 47 18.8	31 54 28.4	0 52 50.4
1.8535	1.606 786 93	3.005 839 62	98 25 7.5	32 48 22.5	31 55 26.7	0 52 55.8
1.8540	1.608 368 64	3.007 019 92	98 28 18.7	32 49 26.2	31 56 25.0	0 53 1.2
1.8545	1.609 952 60	3.008 199 88	98 31 29.9	32 50 30.0	31 57 23.3	0 53 6.6
1.8550	1.611 538 81	3.009 379 48	98 34 41.2	32 51 33.7	31 58 21.7	0 53 12.1
1.8555	1.613 127 29	3.010 558 73	98 37 52.5	32 52 37.5	31 59 20.0	0 53 17.5
1.8560	1.614 718 03	3.011 737 63	98 41 3.9	32 53 41.3	32 0 18.4	0 53 22.9
1.8565	1.616 311 05	3.012 916 18	98 44 15.3	32 54 45.1	32 1 16.7	0 53 28.4
1.8570	1.617 906 34	3.014 094 38	98 47 26.8	32 55 48.9	32 2 15.1	0 53 33.8
1.8575	1.619 503 92	3.015 272 22	98 50 38.4	32 56 52.8	32 3 13.5	0 53 39.3
1.8580	1.621 103 78	3.016 449 71	98 53 50.0	32 57 56.7	32 4 11.9	0 53 44.8
1.8585	1.622 705 94	3.017 626 85	98 57 1.6	32 59 0.5	32 5 10.3	0 53 50.2
1.8590	1.624 310 39	3.018 803 63	99 0 13.3	33 0 4.4	32 6 8.7	0 53 55.7
1.8595	1.625 917 15	3.019 980 05	99 3 25.1	33 1 8.4	32 7 7.1	0 54 1.2
1.8600	1.627 526 22	3.021 156 12	99 6 36.9	33 2 12.3	32 8 5.6	0 54 6.7
1.8605	1.629 137 60	3.022 331 82	99 9 48.7	33 3 16.2	32 9 4.0	0 54 12.2
1.8610	1.630 751 30	3.023 507 17	99 13 0.6	33 4 20.2	32 10 2.5	0 54 17.7
1.8615	1.632 367 33	3.024 682 16	99 16 12.6	33 5 24.2	32 11 0.9	0 54 23.3
1.8620	1.633 985 69	3.025 856 79	99 19 24.6	33 6 28.2	32 11 59.4	0 54 28.8
1.8625	1.635 606 38	3.027 031 06	99 22 36.6	33 7 32.2	32 12 57.9	0 54 34.3
1.8630	1.637 229 41	3.028 204 97	99 25 48.7	33 8 36.2	32 13 56.4	0 54 39.9
1.8635	1.638 854 80	3.029 378 51	99 29 0.9	33 9 40.3	32 14 54.8	0 54 45.5
1.8640	1.640 482 53	3.030 551 69	99 32 13.1	33 10 44.4	32 15 53.3	0 54 51.0
1.8645	1.642 112 63	3.031 724 51	99 35 25.4	33 11 48.5	32 16 51.9	0 54 56.6
1.8650	1.643 745 08	3.032 896 96	99 38 37.7	33 12 52.6	32 17 50.4	0 55 2.2
1.8655	1.645 379 91	3.034 069 04	99 41 50.1	33 13 56.7	32 18 48.9	0 55 7.8
1.8660	1.647 017 11	3.035 240 76	99 45 2.5	33 15 0.8	32 19 47.5	0 55 13.4
1.8665	1.648 656 69	3.036 412 11	99 48 15.0	33 16 5.0	32 20 46.0	0 55 19.0
1.8670	1.650 298 66	3.037 583 10	99 51 27.5	33 17 9.2	32 21 44.6	0 55 24.6
1.8675	1.651 943 01	3.038 753 71	99 54 40.1	33 18 13.4	32 22 43.1	0 55 30.2
1.8680	1.653 589 77	3.039 923 96	99 57 52.7	33 19 17.6	32 23 41.7	0 55 35.9
1.8685	1.655 238 93	3.041 093 83	100 1 5.4	33 20 21.8	32 24 40.3	0 55 41.5
1.8690	1.656 890 49	3.042 263 34	100 4 18.1	33 21 26.0	32 25 38.9	0 55 47.2
1.8695	1.658 544 47	3.043 432 47	100 7 30.9	33 22 30.3	32 26 37.5	0 55 52.8
1.8700	1.660 200 87	3.044 601 23	100 10 43.7	33 23 34.6	32 27 36.1	0 55 58.5
1.8705	1.661 859 70	3.045 769 61	100 13 56.6	33 24 38.9	32 28 34.7	0 56 4.2
1.8710	1.663 520 96	3.046 937 62	100 17 9.5	33 25 43.2	32 29 33.3	0 56 9.8
1.8715	1.665 184 65	3.048 105 26	100 20 22.5	33 26 47.5	32 30 32.0	0 56 15.5
1.8720	1.666 850 79	3.049 272 52	100 23 35.5	33 27 51.8	32 31 30.6	0 56 21.2
1.8725	1.668 519 37	3.050 439 40	100 26 48.6	33 28 56.2	32 32 29.3	0 56 26.9
1.8730	1.670 190 41	3.051 605 91	100 30 1.8	33 30 0.6	32 33 27.9	0 56 32.7
1.8735	1.671 863 91	3.052 772 04	100 33 15.0	33 31 5.0	32 34 26.6	0 56 38.4
1.8740	1.673 539 88	3.053 937 79	100 36 28.2	33 32 9.4	32 35 25.3	0 56 44.1
1.8745	1.675 218 31	3.055 103 16	100 39 41.5	33 33 13.8	32 36 24.0	0 56 49.9
1.8750	1.676 899 22	3.056 268 15	100 42 54.9	33 34 18.3	32 37 22.7	0 56 55.6
1.8755	1.678 582 63	3.057 432 75	100 46 8.3	33 35 22.8	32 38 21.4	0 57 1.4
1.8760	1.680 268 52	3.058 596 98	100 49 21.7	33 36 27.2	32 39 20.1	0 57 7.1
1.8765	1.681 956 90	3.059 760 82	100 52 35.2	33 37 31.7	32 40 18.8	0 57 12.9
1.8770	1.683 647 79	3.060 924 28	100 55 48.8	33 38 36.3	32 41 17.5	0 57 18.7
1.8775	1.685 341 18	3.062 087 35	100 59 2.4	33 39 40.8	32 42 16.3	0 57 24.5
1.8780	1.687 037 09	3.063 250 04	101 2 16.0	33 40 45.3	32 43 15.0	0 57 30.3
1.8785	1.688 735 51	3.064 412 35	101 5 29.7	33 41 49.9	32 44 13.8	0 57 36.1
1.8790	1.690 436 46	3.065 574 26	101 8 43.5	33 42 54.5	32 45 12.6	0 57 41.9
1.8795	1.692 139 95	3.066 735 79	101 11 57.3	33 43 59.1	32 46 11.3	0 57 47.8
1.8800	1.693 845 97	3.067 896 93	101 15 11.2	33 45 3.7	32 47 10.1	0 57 53.6

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
1.8805	3.536 280 25	2.579 675 55	1.662 645 22	1.599 084 72	0.466 579 84	2.912 115 09
1.8810	3.538 161 00	2.580 176 61	1.664 009 45	1.599 770 60	0.467 022 04	2.914 516 59
1.8815	3.540 042 25	2.580 676 72	1.665 374 00	1.600 456 42	0.467 464 48	2.916 920 90
1.8820	3.541 924 00	2.581 175 85	1.666 738 87	1.601 142 20	0.467 907 17	2.919 328 04
1.8825	3.543 806 25	2.581 674 02	1.668 104 05	1.601 827 93	0.468 350 10	2.921 738 01
1.8830	3.545 689 00	2.582 171 22	1.669 469 54	1.602 513 61	0.468 793 28	2.924 150 81
1.8835	3.547 572 25	2.582 667 46	1.670 835 34	1.603 199 24	0.469 236 70	2.926 566 45
1.8840	3.549 456 00	2.583 162 72	1.672 201 46	1.603 884 82	0.469 680 37	2.928 984 94
1.8845	3.551 340 25	2.583 657 01	1.673 567 88	1.604 570 34	0.470 124 28	2.931 406 28
1.8850	3.553 225 00	2.584 150 33	1.674 934 62	1.605 255 82	0.470 568 44	2.933 830 49
1.8855	3.555 110 25	2.584 642 68	1.676 301 66	1.605 941 25	0.471 012 84	2.936 257 56
1.8860	3.556 996 00	2.585 134 06	1.677 669 01	1.606 626 62	0.471 457 49	2.938 687 50
1.8865	3.558 882 25	2.585 624 46	1.679 036 66	1.607 311 94	0.471 902 38	2.941 120 32
1.8870	3.560 769 00	2.586 113 89	1.680 404 62	1.607 997 21	0.472 347 52	2.943 556 03
1.8875	3.562 656 25	2.586 602 35	1.681 772 88	1.608 682 43	0.472 792 90	2.945 994 63
1.8880	3.564 544 00	2.587 089 83	1.683 141 45	1.609 367 60	0.473 238 52	2.948 436 14
1.8885	3.566 432 25	2.587 576 33	1.684 510 32	1.610 052 71	0.473 684 39	2.950 880 54
1.8890	3.568 321 00	2.588 061 86	1.685 879 49	1.610 737 77	0.474 130 51	2.953 327 86
1.8895	3.570 210 25	2.588 546 41	1.687 248 95	1.611 422 78	0.474 576 87	2.955 778 10
1.8900	3.572 100 00	2.589 029 98	1.688 618 72	1.612 107 74	0.475 023 47	2.958 231 26
.8905	3.573 990 25	2.589 512 57	1.689 988 79	1.612 792 64	0.475 470 31	2.960 687 36
.8910	3.575 881 00	2.589 994 18	1.691 359 15	1.613 477 49	0.475 917 41	2.963 146 39
.8915	3.577 772 25	2.590 474 81	1.692 729 80	1.614 162 28	0.476 364 74	2.965 608 37
.8920	3.579 664 00	2.590 954 46	1.694 100 76	1.614 847 02	0.476 812 32	2.968 073 30
.8925	3.581 556 25	2.591 433 13	1.695 472 00	1.615 531 71	0.477 260 14	2.970 541 19
.8930	3.583 449 00	2.591 910 81	1.696 843 54	1.616 216 34	0.477 708 21	2.973 012 05
.8935	3.585 342 25	2.592 387 52	1.698 215 37	1.616 900 92	0.478 156 52	2.975 485 88
.8940	3.587 236 00	2.592 863 23	1.699 587 49	1.617 585 44	0.478 605 07	2.977 962 69
.8945	3.589 130 25	2.593 337 96	1.700 959 90	1.618 269 90	0.479 053 87	2.980 442 48
.8950	3.591 025 00	2.593 811 71	1.702 332 60	1.618 954 32	0.479 502 92	2.982 925 27
.8955	3.592 920 25	2.594 284 47	1.703 705 58	1.619 638 67	0.479 952 20	2.985 411 05
.8960	3.594 816 00	2.594 756 24	1.705 078 85	1.620 322 97	0.480 401 73	2.987 899 84
.8965	3.596 712 25	2.595 227 02	1.706 452 41	1.621 007 21	0.480 851 51	2.990 391 65
.8970	3.598 609 00	2.595 696 81	1.707 826 25	1.621 691 40	0.481 301 52	2.992 886 47
.8975	3.600 506 25	2.596 165 62	1.709 200 38	1.622 375 53	0.481 751 78	2.995 384 33
.8980	3.602 404 00	2.596 633 43	1.710 574 78	1.623 059 60	0.482 202 29	2.997 885 21
.8985	3.604 302 25	2.597 100 26	1.711 949 47	1.623 743 62	0.482 653 03	3.000 389 14
.8990	3.606 201 00	2.597 566 09	1.713 324 44	1.624 427 58	0.483 104 02	3.002 896 12
.8995	3.608 100 25	2.598 030 93	1.714 699 68	1.625 111 48	0.483 555 26	3.005 406 15
.9000	3.610 000 00	2.598 494 77	1.716 075 21	1.625 795 32	0.484 006 74	3.007 919 24
.9005	3.611 900 25	2.598 957 63	1.717 451 01	1.626 479 11	0.484 458 46	3.010 435 40
.9010	3.613 801 00	2.599 419 48	1.718 827 09	1.627 162 84	0.484 910 42	3.012 954 64
.9015	3.615 702 25	2.599 880 35	1.720 203 44	1.627 846 50	0.485 362 63	3.015 476 96
.9020	3.617 604 00	2.600 340 21	1.721 580 06	1.628 530 11	0.485 815 08	3.018 002 37
.9025	3.619 506 25	2.600 799 08	1.722 956 96	1.629 213 67	0.486 267 77	3.020 530 88
.9030	3.621 409 00	2.601 256 96	1.724 334 13	1.629 897 16	0.486 720 70	3.023 062 50
.9035	3.623 312 25	2.601 713 83	1.725 711 57	1.630 580 59	0.487 173 88	3.025 597 23
.9040	3.625 216 00	2.602 169 70	1.727 089 28	1.631 263 96	0.487 627 30	3.028 135 07
.9045	3.627 120 25	2.602 624 58	1.728 467 26	1.631 947 28	0.488 080 97	3.030 676 05
.9050	3.629 025 00	2.603 078 45	1.729 845 51	1.632 630 53	0.488 534 87	3.033 220 15
.9055	3.630 930 25	2.603 531 33	1.731 224 02	1.633 313 72	0.488 989 02	3.035 767 40
.9060	3.632 836 00	2.603 983 20	1.732 602 80	1.633 996 85	0.489 443 41	3.038 317 80
.9065	3.634 742 25	2.604 434 07	1.733 981 84	1.634 679 92	0.489 898 05	3.040 871 35
.9070	3.636 649 00	2.604 883 93	1.735 361 15	1.635 362 93	0.490 352 92	3.043 428 07
.9075	3.638 556 25	2.605 332 80	1.736 740 71	1.636 045 88	0.490 808 04	3.045 987 96
.9080	3.640 464 00	2.605 780 65	1.738 120 54	1.636 728 77	0.491 263 40	3.048 551 02
.9085	3.642 372 25	2.606 227 51	1.739 500 63	1.637 411 60	0.491 719 01	3.051 117 27
.9090	3.644 281 00	2.606 673 35	1.740 880 97	1.638 094 36	0.492 174 85	3.053 686 72
.9095	3.646 190 25	2.607 118 19	1.742 261 58	1.638 777 06	0.492 630 94	3.056 259 36
.9100	3.648 100 00	2.607 562 02	1.743 642 44	1.639 459 70	0.493 087 27	3.058 835 22
.9105	3.650 010 25	2.608 004 85	1.745 023 56	1.640 142 28	0.493 543 84	3.061 414 28
.9110	3.651 921 00	2.608 446 66	1.746 404 93	1.640 824 79	0.494 000 66	3.063 996 58
.9115	3.653 832 25	2.608 887 47	1.747 786 55	1.641 507 24	0.494 457 71	3.066 582 10
.9120	3.655 744 00	2.609 327 26	1.749 168 43	1.642 189 63	0.494 915 01	3.069 170 86
.9125	3.657 656 25	2.609 766 04	1.750 550 55	1.642 871 95	0.495 372 55	3.071 762 87
.9130	3.659 569 00	2.610 203 82	1.751 932 93	1.643 554 21	0.495 830 33	3.074 358 13
.9135	3.661 482 25	2.610 640 58	1.753 315 56	1.644 236 41	0.496 288 35	3.076 956 65
.9140	3.663 396 00	2.611 076 32	1.754 698 43	1.644 918 54	0.496 746 62	3.079 558 44
.9145	3.665 310 25	2.611 511 05	1.756 081 55	1.645 600 61	0.497 205 12	3.082 163 51
.9150	3.667 225 00	2.611 944 77	1.757 464 92	1.646 282 61	0.497 663 87	3.084 771 86
.9155	3.669 140 25	2.612 377 48	1.758 848 53	1.646 964 55	0.498 122 86	3.087 383 51
.9160	3.671 056 00	2.612 809 16	1.760 232 39	1.647 646 42	0.498 582 09	3.089 998 46
.9165	3.672 972 25	2.613 239 83	1.761 616 49	1.648 328 23	0.499 041 56	3.092 616 71
.9170	3.674 889 00	2.613 669 49	1.763 000 83	1.649 009 97	0.499 501 27	3.095 238 28
.9175	3.676 806 25	2.614 098 12	1.764 385 40	1.649 691 64	0.499 961 23	3.097 863 18
.9180	3.678 724 00	2.614 525 74	1.765 770 22	1.650 373 25	0.500 421 42	3.100 491 41
.9185	3.680 642 25	2.614 952 33	1.767 155 28	1.651 054 79	0.500 881 86	3.103 122 98
.9190	3.682 561 00	2.615 377 91	1.768 540 57	1.651 736 27	0.501 342 54	3.105 757 89
.9195	3.684 480 25	2.615 802 47	1.769 926 10	1.652 417 68	0.501 803 45	3.108 396 16
.9200	3.686 400 00	2.616 226 00	1.771 311 87	1.653 099 02	0.502 264 61	3.111 037 80

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.8805	1.695 554 53	3.065 057 68	101 18 25.1	33 46 8.4	32 48 8.9	0 57 59
1.8810	1.697 265 65	3.070 218 C4	101 21 39.0	33 47 13.0	32 49 7.7	0 58 5
1.8815	1.698 979 32	3.071 378 01	101 24 53.1	33 48 17.7	32 50 6.5	0 58 11
1.8820	1.700 695 55	3.072 537 59	101 28 7.1	33 49 22.4	32 51 5.3	0 58 17
1.8825	1.702 414 35	3.073 696 78	101 31 21.3	33 50 27.1	32 52 4.2	0 58 22
1.8830	1.704 135 73	3.074 855 57	101 34 35.4	33 51 31.8	32 53 3.0	0 58 28
1.8835	1.705 859 68	3.076 013 97	101 37 49.7	33 52 36.6	32 54 1.8	0 58 34
1.8840	1.707 586 23	3.077 171 97	101 41 3.9	33 53 41.3	32 55 0.7	0 58 40
1.8845	1.709 315 36	3.078 329 58	101 44 18.3	33 54 46.1	32 55 59.6	0 58 46
1.8850	1.711 047 10	3.079 486 79	101 47 32.6	33 55 50.9	32 56 58.4	0 58 52
1.8855	1.712 781 44	3.080 643 61	101 50 47.1	33 56 55.7	32 57 57.3	0 58 58
1.8860	1.714 518 40	3.081 800 03	101 54 1.5	33 58 0.5	32 58 56.2	0 59 4
1.8865	1.716 257 97	3.082 956 05	101 57 16.1	33 59 5.4	32 59 55.1	0 59 10
1.8870	1.718 000 17	3.084 111 67	102 0 30.7	34 0 10.2	33 0 54.0	0 59 16
1.8875	1.719 745 00	3.085 266 89	102 3 45.3	34 1 15.1	33 1 52.9	0 59 22
1.8880	1.721 492 46	3.086 421 70	102 6 60.0	34 2 20.0	33 2 51.8	0 59 28
1.8885	1.723 242 57	3.087 576 12	102 10 14.7	34 3 24.9	33 3 50.8	0 59 34
1.8890	1.724 995 33	3.088 730 13	102 13 29.5	34 4 29.8	33 4 49.7	0 59 40
1.8895	1.726 750 75	3.089 883 74	102 16 44.4	34 5 34.8	33 5 48.6	0 59 46
1.8900	1.728 508 83	3.091 036 95	102 19 59.3	34 6 39.8	33 6 47.6	0 59 52
1.8905	1.730 269 58	3.092 189 75	102 23 14.2	34 7 44.7	33 7 46.6	0 59 58
1.8910	1.732 033 01	3.093 342 15	102 26 29.2	34 8 49.7	33 8 45.5	1 0 4
1.8915	1.733 799 12	3.094 494 14	102 29 44.2	34 9 54.7	33 9 44.5	1 0 10
1.8920	1.735 567 92	3.095 645 72	102 32 59.4	34 10 59.8	33 10 43.5	1 0 16
1.8925	1.737 339 41	3.096 796 89	102 36 14.5	34 12 4.8	33 11 42.5	1 0 22
1.8930	1.739 113 61	3.097 947 65	102 39 29.7	34 13 9.9	33 12 41.5	1 0 28
1.8935	1.740 890 52	3.099 098 01	102 42 45.0	34 14 15.0	33 13 40.5	1 0 34
1.8940	1.742 670 14	3.100 247 95	102 46 0.3	34 15 20.1	33 14 39.5	1 0 40
1.8945	1.744 452 49	3.101 397 49	102 49 15.6	34 16 25.2	33 15 38.5	1 0 46
1.8950	1.746 237 56	3.102 546 61	102 52 31.0	34 17 30.3	33 16 37.6	1 0 52
1.8955	1.748 025 38	3.103 695 31	102 55 46.5	34 18 35.5	33 17 36.6	1 0 58
1.8960	1.749 815 93	3.104 843 61	102 59 2.0	34 19 40.7	33 18 35.7	1 1 5
1.8965	1.751 609 23	3.105 991 49	103 2 17.6	34 20 45.9	33 19 34.7	1 1 11
1.8970	1.753 405 29	3.107 138 95	103 5 33.2	34 21 51.1	33 20 33.8	1 1 17
1.8975	1.755 204 12	3.108 286 00	103 8 48.9	34 22 56.3	33 21 32.9	1 1 23
1.8980	1.757 005 71	3.109 432 63	103 12 4.6	34 24 1.5	33 22 32.0	1 1 29
1.8985	1.758 810 08	3.110 578 84	103 15 20.4	34 25 6.8	33 23 31.1	1 1 35
1.8990	1.760 617 24	3.111 724 64	103 18 36.2	34 26 12.1	33 24 30.2	1 1 41
1.8995	1.762 427 18	3.112 870 01	103 21 52.0	34 27 17.3	33 25 29.3	1 1 48
1.9000	1.764 239 92	3.114 014 97	103 25 8.0	34 28 22.7	33 26 28.4	1 1 54
1.9005	1.766 055 47	3.115 159 50	103 28 24.0	34 29 28.0	33 27 27.5	1 2 0
1.9010	1.767 873 83	3.116 303 61	103 31 40.0	34 30 33.3	33 28 26.7	1 2 6
1.9015	1.769 695 01	3.117 447 30	103 34 56.1	34 31 38.7	33 29 25.8	1 2 12
1.9020	1.771 519 01	3.118 590 57	103 38 12.2	34 32 44.1	33 30 25.0	1 2 19
1.9025	1.773 345 84	3.119 733 41	103 41 28.4	34 33 49.5	33 31 24.1	1 2 25
1.9030	1.775 175 52	3.120 875 83	103 44 44.6	34 34 54.9	33 32 23.3	1 2 31
1.9035	1.777 008 04	3.122 017 82	103 48 0.9	34 36 0.3	33 33 22.5	1 2 37
1.9040	1.778 843 41	3.123 159 39	103 51 17.2	34 37 5.7	33 34 21.6	1 2 44
1.9045	1.780 681 65	3.124 300 53	103 54 33.6	34 38 11.2	33 35 20.8	1 2 50
1.9050	1.782 522 75	3.125 441 24	103 57 50.1	34 39 16.7	33 36 20.0	1 2 56
1.9055	1.784 366 73	3.126 581 52	104 1 6.6	34 40 22.2	33 37 19.2	1 3 3
1.9060	1.786 213 59	3.127 721 37	104 4 23.1	34 41 27.7	33 38 18.4	1 3 9
1.9065	1.788 063 35	3.128 860 79	104 7 39.7	34 42 33.2	33 39 17.7	1 3 15
1.9070	1.789 915 99	3.129 999 78	104 10 56.4	34 43 38.8	33 40 16.9	1 3 21
1.9075	1.791 771 55	3.131 138 34	104 14 13.0	34 44 44.3	33 41 16.1	1 3 28
1.9080	1.793 630 01	3.132 276 46	104 17 29.8	34 45 49.9	33 42 15.4	1 3 34
1.9085	1.795 491 39	3.133 414 15	104 20 46.6	34 46 55.5	33 43 14.6	1 3 40
1.9090	1.797 355 70	3.134 551 41	104 24 3.5	34 48 1.2	33 44 13.9	1 3 47
1.9095	1.799 222 94	3.135 688 23	104 27 20.4	34 49 6.8	33 45 13.2	1 3 53
1.9100	1.801 093 13	3.136 824 61	104 30 37.3	34 50 12.4	33 46 12.5	1 3 60
1.9105	1.802 966 26	3.137 960 56	104 33 54.3	34 51 18.1	33 47 11.7	1 4 6
1.9110	1.804 842 34	3.139 096 07	104 37 11.4	34 52 23.8	33 48 11.0	1 4 12
1.9115	1.806 721 39	3.140 231 14	104 40 28.5	34 53 29.5	33 49 10.3	1 4 19
1.9120	1.808 603 42	3.141 365 78	104 43 45.7	34 54 35.2	33 50 9.6	1 4 25
1.9125	1.810 488 42	3.142 499 97	104 47 2.9	34 55 41.0	33 51 9.0	1 4 31
1.9130	1.812 376 40	3.143 633 72	104 50 20.1	34 56 46.7	33 52 8.3	1 4 38
1.9135	1.814 267 38	3.144 767 03	104 53 37.5	34 57 52.5	33 53 7.6	1 4 44
1.9140	1.816 161 36	3.145 899 90	104 56 54.8	34 58 58.3	33 54 7.0	1 4 51
1.9145	1.818 058 35	3.147 032 32	105 0 12.3	35 0 4.1	33 55 6.3	1 4 57
1.9150	1.819 958 35	3.148 164 30	105 3 29.7	35 1 9.9	33 56 5.7	1 5 4
1.9155	1.821 861 38	3.149 295 83	105 6 47.3	35 2 15.8	33 57 5.0	1 5 10
1.9160	1.823 767 44	3.150 426 92	105 10 4.8	35 3 21.6	33 58 4.4	1 5 17
1.9165	1.825 676 54	3.151 557 56	105 13 22.5	35 4 27.5	33 59 3.8	1 5 23
1.9170	1.827 588 69	3.152 687 76	105 16 40.1	35 5 33.4	34 0 3.2	1 5 30
1.9175	1.829 503 89	3.153 817 50	105 19 57.9	35 6 39.3	34 1 2.6	1 5 36
1.9180	1.831 422 16	3.154 946 80	105 23 15.6	35 7 45.2	34 2 2.0	1 5 43
1.9185	1.833 343 49	3.156 075 65	105 26 33.5	35 8 51.2	34 3 1.4	1 5 49
1.9190	1.835 267 91	3.157 204 04	105 29 51.4	35 9 57.1	34 4 0.8	1 5 56
1.9195	1.837 195 41	3.158 331 99	105 33 9.3	35 11 3.1	34 5 0.2	1 6 2
1.9200	1.839 126 00	3.159 459 48	105 36 27.3	35 12 9.1	34 5 59.7	1 6 9

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= LS/A= √LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
.9205	3.688 320 25	2.616 648 51	1.772 697 86	1.653 780 30	0.502 726 01	3.113 682 81
.9210	3.690 241 00	2.617 070 00	1.774 084 09	1.654 461 51	0.503 187 65	3.116 331 20
.9215	3.692 162 25	2.617 490 47	1.775 470 56	1.655 142 65	0.503 649 53	3.118 982 98
.9220	3.694 084 00	2.617 909 91	1.776 857 25	1.655 823 72	0.504 111 65	3.121 638 15
.9225	3.696 006 25	2.618 328 33	1.778 244 17	1.656 504 72	0.504 574 02	3.124 296 73
.9230	3.697 929 00	2.618 745 72	1.779 631 32	1.657 185 66	0.505 036 62	3.126 958 72
.9235	3.699 852 25	2.619 162 08	1.781 018 69	1.657 866 52	0.505 499 46	3.129 624 13
.9240	3.701 776 00	2.619 577 42	1.782 406 30	1.658 547 32	0.505 962 54	3.132 292 98
.9245	3.703 700 25	2.619 991 73	1.783 794 12	1.659 228 05	0.506 425 87	3.134 965 26
.9250	3.705 625 00	2.620 405 01	1.785 182 17	1.659 908 71	0.506 889 43	3.137 640 98
.9255	3.707 550 25	2.620 817 27	1.786 570 44	1.660 589 30	0.507 353 24	3.140 320 17
.9260	3.709 476 00	2.621 228 49	1.787 958 94	1.661 269 82	0.507 817 28	3.143 002 81
.9265	3.711 402 25	2.621 638 69	1.789 347 65	1.661 950 27	0.508 281 56	3.145 688 93
.9270	3.713 329 00	2.622 047 85	1.790 736 58	1.662 630 65	0.508 746 09	3.148 378 52
.9275	3.715 256 25	2.622 455 98	1.792 125 74	1.663 310 96	0.509 210 85	3.151 071 61
.9280	3.717 184 00	2.622 863 08	1.793 515 10	1.663 991 20	0.509 675 85	3.153 768 19
.9285	3.719 112 25	2.623 269 14	1.794 904 69	1.664 671 37	0.510 141 10	3.156 468 27
.9290	3.721 041 00	2.623 674 17	1.796 294 48	1.665 351 46	0.510 606 58	3.159 171 87
.9295	3.722 970 25	2.624 078 17	1.797 684 50	1.666 031 49	0.511 072 30	3.161 879 00
.9300	3.724 900 00	2.624 481 13	1.799 074 72	1.666 711 44	0.511 538 26	3.164 589 65
.9305	3.726 830 25	2.624 883 06	1.800 465 15	1.667 391 32	0.512 004 46	3.167 303 84
.9310	3.728 761 00	2.625 283 95	1.801 855 80	1.668 071 13	0.512 470 91	3.170 021 59
.9315	3.730 692 25	2.625 683 81	1.803 246 65	1.668 750 87	0.512 937 59	3.172 742 89
.9320	3.732 624 00	2.626 082 62	1.804 637 71	1.669 430 53	0.513 404 50	3.175 467 75
.9325	3.734 556 25	2.626 480 40	1.806 028 98	1.670 110 12	0.513 871 66	3.178 196 19
.9330	3.736 489 00	2.626 877 14	1.807 420 45	1.670 789 64	0.514 339 06	3.180 928 21
.9335	3.738 422 25	2.627 272 84	1.808 812 13	1.671 469 09	0.514 806 70	3.183 663 83
.9340	3.740 356 00	2.627 667 49	1.810 204 01	1.672 148 46	0.515 274 57	3.186 403 05
.9345	3.742 290 25	2.628 061 11	1.811 596 09	1.672 827 76	0.515 742 69	3.189 145 87
.9350	3.744 225 00	2.628 453 69	1.812 988 38	1.673 506 98	0.516 211 04	3.191 892 32
.9355	3.746 160 25	2.628 845 22	1.814 380 86	1.674 186 13	0.516 679 63	3.194 642 39
.9360	3.748 096 00	2.629 235 71	1.815 773 54	1.674 865 21	0.517 148 46	3.197 396 11
.9365	3.750 032 25	2.629 625 16	1.817 166 42	1.675 544 21	0.517 617 53	3.200 153 46
.9370	3.751 969 00	2.630 013 56	1.818 559 50	1.676 223 13	0.518 086 84	3.202 914 48
.9375	3.753 906 25	2.630 400 92	1.819 952 77	1.676 901 99	0.518 556 38	3.205 679 15
.9380	3.755 844 00	2.630 787 23	1.821 346 23	1.677 580 76	0.519 026 17	3.208 447 50
.9385	3.757 782 25	2.631 172 50	1.822 739 89	1.678 259 46	0.519 496 19	3.211 219 53
.9390	3.759 721 00	2.631 556 72	1.824 133 74	1.678 938 09	0.519 966 45	3.213 995 26
.9395	3.761 660 25	2.631 939 89	1.825 527 78	1.679 616 63	0.520 436 95	3.216 774 68
.9400	3.763 600 00	2.632 322 02	1.826 922 00	1.680 295 10	0.520 907 69	3.219 557 82
.9405	3.765 540 25	2.632 703 09	1.828 316 42	1.680 973 50	0.521 378 66	3.222 344 67
.9410	3.767 481 00	2.633 083 12	1.829 711 02	1.681 651 82	0.521 849 88	3.225 135 25
.9415	3.769 422 25	2.633 462 09	1.831 105 81	1.682 330 06	0.522 321 33	3.227 929 57
.9420	3.771 364 00	2.633 840 02	1.832 500 78	1.683 008 22	0.522 793 02	3.230 727 64
.9425	3.773 306 25	2.634 216 89	1.833 895 94	1.683 686 31	0.523 264 94	3.233 529 46
.9430	3.775 249 00	2.634 592 71	1.835 291 28	1.684 364 32	0.523 737 11	3.236 335 05
.9435	3.777 192 25	2.634 967 48	1.836 686 80	1.685 042 25	0.524 209 51	3.239 144 42
.9440	3.779 136 00	2.635 341 20	1.838 082 50	1.685 720 11	0.524 682 15	3.241 957 57
.9445	3.781 080 25	2.635 713 86	1.839 478 38	1.686 397 88	0.525 155 02	3.244 774 52
.9450	3.783 025 00	2.636 085 47	1.840 874 44	1.687 075 58	0.525 628 14	3.247 595 27
.9455	3.784 970 25	2.636 456 02	1.842 270 67	1.687 753 19	0.526 101 49	3.250 419 83
.9460	3.786 916 00	2.636 825 52	1.843 667 08	1.688 430 73	0.526 575 08	3.253 248 22
.9465	3.788 862 25	2.637 193 96	1.845 063 66	1.689 108 19	0.527 048 90	3.256 080 44
.9470	3.790 809 00	2.637 561 34	1.846 460 41	1.689 785 57	0.527 522 97	3.258 916 51
.9475	3.792 756 25	2.637 927 67	1.847 857 34	1.690 462 87	0.527 997 27	3.261 756 42
.9480	3.794 704 00	2.638 292 93	1.849 254 44	1.691 140 09	0.528 471 80	3.264 600 20
.9485	3.796 652 25	2.638 657 14	1.850 651 70	1.691 817 23	0.528 946 57	3.267 447 85
.9490	3.798 601 00	2.639 020 29	1.852 049 14	1.692 494 29	0.529 421 58	3.270 299 39
.9495	3.800 550 25	2.639 382 38	1.853 446 74	1.693 171 27	0.529 896 83	3.273 154 81
.9500	3.802 500 00	2.639 743 40	1.854 844 50	1.693 848 17	0.530 372 31	3.276 014 14
.9505	3.804 450 25	2.640 103 37	1.856 242 43	1.694 524 99	0.530 848 03	3.278 877 38
.9510	3.806 401 00	2.640 462 28	1.857 640 53	1.695 201 72	0.531 323 99	3.281 744 54
.9515	3.808 352 25	2.640 820 12	1.859 038 78	1.695 878 37	0.531 800 18	3.284 615 63
.9520	3.810 304 00	2.641 176 89	1.860 437 20	1.696 554 95	0.532 276 61	3.287 490 67
.9525	3.812 256 25	2.641 532 61	1.861 835 78	1.697 231 44	0.532 753 27	3.290 369 65
.9530	3.814 209 00	2.641 887 26	1.863 234 51	1.697 907 84	0.533 230 17	3.293 252 60
.9535	3.816 162 25	2.642 240 84	1.864 633 41	1.698 584 17	0.533 707 31	3.296 139 53
.9540	3.818 116 00	2.642 593 36	1.866 032 46	1.699 260 41	0.534 184 68	3.299 030 43
.9545	3.820 070 25	2.642 944 81	1.867 431 66	1.699 936 57	0.534 662 29	3.301 925 33
.9550	3.822 025 00	2.643 295 20	1.868 831 02	1.700 612 65	0.535 140 14	3.304 824 23
.9555	3.823 980 25	2.643 644 52	1.870 230 53	1.701 288 64	0.535 618 22	3.307 727 14
.9560	3.825 936 00	2.643 992 77	1.871 630 19	1.701 964 55	0.536 096 53	3.310 634 08
.9565	3.827 892 25	2.644 339 95	1.873 030 00	1.702 640 38	0.536 575 08	3.313 545 05
.9570	3.829 849 00	2.644 686 06	1.874 429 96	1.703 316 12	0.537 053 87	3.316 460 07
.9575	3.831 806 25	2.645 031 10	1.875 830 07	1.703 991 77	0.537 532 89	3.319 379 14
.9580	3.833 764 00	2.645 375 07	1.877 230 32	1.704 667 35	0.538 012 15	3.322 302 28
.9585	3.835 722 25	2.645 717 97	1.878 630 72	1.705 342 83	0.538 491 64	3.325 229 49
.9590	3.837 681 00	2.646 059 80	1.880 031 27	1.706 018 24	0.538 971 37	3.328 160 79
.9595	3.839 640 25	2.646 400 56	1.881 431 95	1.706 693 55	0.539 451 33	3.331 096 19
.9600	3.841 600 00	2.646 740 24	1.882 832 78	1.707 368 79	0.539 931 52	3.334 035 69

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
1.9205	1.841 059 70	3.160 586 52	105 39 45.3	35 13 15.1	34 6 59.1	1 6 16
1.9210	1.842 996 50	3.161 713 11	105 43 3.4	35 14 21.1	34 7 58.5	1 6 22
1.9215	1.844 936 43	3.162 839 24	105 46 21.6	35 15 27.2	34 8 58.0	1 6 29
1.9220	1.846 879 48	3.163 964 91	105 49 39.8	35 16 33.3	34 9 57.5	1 6 35
1.9225	1.848 825 67	3.165 090 13	105 52 58.0	35 17 39.3	34 10 56.9	1 6 42
1.9230	1.850 775 00	3.166 214 90	105 56 16.3	35 18 45.4	34 11 56.4	1 6 49
1.9235	1.852 727 47	3.167 339 20	105 59 34.7	35 19 51.6	34 12 55.9	1 6 55
1.9240	1.854 683 11	3.168 463 05	106 2 53.1	35 20 57.7	34 13 55.4	1 7 2
1.9245	1.856 641 91	3.169 586 43	106 6 11.5	35 22 3.8	34 14 54.9	1 7 8
1.9250	1.858 603 89	3.170 709 36	106 9 30.0	35 23 10.0	34 15 54.4	1 7 15
1.9255	1.860 569 06	3.171 831 82	106 12 48.6	35 24 16.2	34 16 53.9	1 7 22
1.9260	1.862 537 41	3.172 953 82	106 16 7.2	35 25 22.4	34 17 53.5	1 7 28
1.9265	1.864 508 96	3.174 075 36	106 19 25.8	35 26 28.6	34 18 53.0	1 7 35
1.9270	1.866 483 72	3.175 196 44	106 22 44.5	35 27 34.8	34 19 52.5	1 7 42
1.9275	1.868 461 70	3.176 317 05	106 26 3.3	35 28 41.1	34 20 52.1	1 7 49
1.9280	1.870 442 91	3.177 437 20	106 29 22.1	35 29 47.4	34 21 51.6	1 7 55
1.9285	1.872 427 34	3.178 556 88	106 32 41.0	35 30 53.7	34 22 51.2	1 8 2
1.9290	1.874 415 02	3.179 676 09	106 35 59.9	35 31 60.0	34 23 50.8	1 8 9
1.9295	1.876 405 95	3.180 794 84	106 39 18.9	35 33 6.3	34 24 50.3	1 8 16
1.9300	1.878 400 13	3.181 913 11	106 42 37.9	35 34 12.6	34 25 49.9	1 8 22
1.9305	1.880 397 58	3.183 030 92	106 45 57.0	35 35 19.0	34 26 49.5	1 8 29
1.9310	1.882 398 31	3.184 148 26	106 49 16.1	35 36 25.4	34 27 49.1	1 8 36
1.9315	1.884 402 33	3.185 265 13	106 52 35.3	35 37 31.8	34 28 48.7	1 8 43
1.9320	1.886 409 63	3.186 381 52	106 55 54.5	35 38 38.2	34 29 48.3	1 8 49
1.9325	1.888 420 24	3.187 497 45	106 59 13.8	35 39 44.6	34 30 47.9	1 8 56
1.9330	1.890 434 16	3.188 612 89	107 2 33.1	35 40 51.0	34 31 47.6	1 9 3
1.9335	1.892 451 39	3.189 727 87	107 5 52.5	35 41 57.5	34 32 47.2	1 9 10
1.9340	1.894 471 95	3.190 842 37	107 9 11.9	35 43 4.0	34 33 46.8	1 9 17
1.9345	1.896 495 85	3.191 956 39	107 12 31.4	35 44 10.5	34 34 46.5	1 9 24
1.9350	1.898 523 10	3.193 069 94	107 15 50.9	35 45 17.0	34 35 46.2	1 9 30
1.9355	1.900 553 70	3.194 183 01	107 19 10.5	35 46 23.5	34 36 45.8	1 9 37
1.9360	1.902 587 66	3.195 295 60	107 22 30.1	35 47 30.0	34 37 45.5	1 9 44
1.9365	1.904 624 99	3.196 407 72	107 25 49.8	35 48 36.6	34 38 45.2	1 9 51
1.9370	1.906 665 70	3.197 519 35	107 29 9.6	35 49 43.2	34 39 44.9	1 9 58
1.9375	1.908 709 80	3.198 630 50	107 32 29.4	35 50 49.8	34 40 44.5	1 10 5
1.9380	1.910 757 30	3.199 741 17	107 35 49.2	35 51 56.4	34 41 44.2	1 10 12
1.9385	1.912 808 21	3.200 851 36	107 39 9.1	35 53 3.0	34 42 44.0	1 10 19
1.9390	1.914 862 54	3.201 961 06	107 42 29.1	35 54 9.7	34 43 43.7	1 10 26
1.9395	1.916 920 29	3.203 070 29	107 45 49.1	35 55 16.4	34 44 43.4	1 10 33
1.9400	1.918 981 47	3.204 179 02	107 49 9.1	35 56 23.0	34 45 43.1	1 10 39
1.9405	1.921 046 10	3.205 287 27	107 52 29.2	35 57 29.7	34 46 42.9	1 10 46
1.9410	1.923 114 18	3.206 395 04	107 55 49.4	35 58 36.5	34 47 42.6	1 10 53
1.9415	1.925 185 72	3.207 502 31	107 59 9.6	35 59 43.2	34 48 42.3	1 11 0
1.9420	1.927 260 74	3.208 609 10	108 2 29.8	36 0 49.9	34 49 42.1	1 11 7
1.9425	1.929 339 23	3.209 715 40	108 5 50.1	36 1 56.7	34 50 41.9	1 11 14
1.9430	1.931 421 22	3.210 821 21	108 9 10.5	36 3 3.5	34 51 41.6	1 11 21
1.9435	1.933 506 70	3.211 926 53	108 12 30.9	36 4 10.3	34 52 41.4	1 11 28
1.9440	1.935 595 70	3.213 031 36	108 15 51.4	36 5 17.1	34 53 41.2	1 11 35
1.9445	1.937 688 21	3.214 135 69	108 19 11.9	36 6 24.0	34 54 41.0	1 11 43
1.9450	1.939 784 25	3.215 239 54	108 22 32.5	36 7 30.8	34 55 40.8	1 11 50
1.9455	1.941 883 82	3.216 342 89	108 25 53.1	36 8 37.7	34 56 40.6	1 11 57
1.9460	1.943 986 94	3.217 445 74	108 29 13.7	36 9 44.6	34 57 40.4	1 12 4
1.9465	1.946 093 62	3.218 548 10	108 32 34.5	36 10 51.5	34 58 40.2	1 12 11
1.9470	1.948 203 86	3.219 649 96	108 35 55.2	36 11 58.4	34 59 40.1	1 12 18
1.9475	1.950 317 68	3.220 751 33	108 39 16.1	36 13 5.4	35 0 39.9	1 12 25
1.9480	1.952 435 09	3.221 852 19	108 42 36.9	36 14 12.3	35 1 39.7	1 12 32
1.9485	1.954 556 08	3.222 952 56	108 45 57.9	36 15 19.3	35 2 39.6	1 12 39
1.9490	1.956 680 68	3.224 052 43	108 49 18.8	36 16 26.3	35 3 39.4	1 12 46
1.9495	1.958 808 90	3.225 151 80	108 52 39.9	36 17 33.3	35 4 39.3	1 12 54
1.9500	1.960 940 74	3.226 250 67	108 56 1.0	36 18 40.3	35 5 39.2	1 13 1
1.9505	1.963 076 21	3.227 349 03	108 59 22.1	36 19 47.4	35 6 39.0	1 13 8
1.9510	1.965 215 33	3.228 446 90	109 2 43.3	36 20 54.4	35 7 38.9	1 13 15
1.9515	1.967 358 09	3.229 544 25	109 6 4.5	36 22 1.5	35 8 38.8	1 13 22
1.9520	1.969 504 53	3.230 641 11	109 9 25.8	36 23 8.6	35 9 38.7	1 13 29
1.9525	1.971 654 63	3.231 737 46	109 12 47.1	36 24 15.7	35 10 38.6	1 13 37
1.9530	1.973 808 42	3.232 833 30	109 16 8.5	36 25 22.8	35 11 38.5	1 13 44
1.9535	1.975 965 90	3.233 928 64	109 19 30.0	36 26 30.0	35 12 38.4	1 13 51
1.9540	1.978 127 08	3.235 023 46	109 22 51.5	36 27 37.2	35 13 38.4	1 13 58
1.9545	1.980 291 98	3.236 117 78	109 26 13.0	36 28 44.3	35 14 38.3	1 14 6
1.9550	1.982 460 60	3.237 211 59	109 29 34.6	36 29 51.5	35 15 38.2	1 14 13
1.9555	1.984 632 95	3.238 304 89	109 32 56.3	36 30 58.8	35 16 38.2	1 14 20
1.9560	1.986 809 05	3.239 397 68	109 36 18.0	36 32 6.0	35 17 38.1	1 14 27
1.9565	1.988 988 90	3.240 489 96	109 39 39.7	36 33 13.2	35 18 38.1	1 14 34
1.9570	1.991 172 52	3.241 581 72	109 43 1.5	36 34 20.5	35 19 38.0	1 14 42
1.9575	1.993 359 91	3.242 672 97	109 46 23.4	36 35 27.8	35 20 38.0	1 14 49
1.9580	1.995 551 08	3.243 763 70	109 49 45.3	36 36 35.1	35 21 38.0	1 14 57
1.9585	1.997 746 05	3.244 853 92	109 53 7.3	36 37 42.4	35 22 38.0	1 15 4
1.9590	1.999 944 83	3.245 943 63	109 56 29.3	36 38 49.8	35 23 38.0	1 15 11
1.9595	2.002 147 42	3.247 032 82	109 59 51.3	36 39 57.1	35 24 38.0	1 15 19
1.9600	2.004 353 84	3.248 121 48	110 3 13.4	36 41 4.5	35 25 38.0	1 15 26

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

L/R= S/A= LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
9605	3.843 560 25	2.647 078 85	1.884 233 75	1.708 043 93	0.540 411 96	3.336 979 32
9610	3.845 521 00	2.647 416 38	1.885 634 86	1.708 718 99	0.540 892 62	3.339 927 07
9615	3.847 482 25	2.647 752 84	1.887 036 10	1.709 393 97	0.541 373 52	3.342 878 96
9620	3.849 444 00	2.648 088 23	1.888 437 49	1.710 068 85	0.541 854 66	3.345 835 01
9625	3.851 406 25	2.648 422 53	1.889 839 00	1.710 743 65	0.542 336 03	3.348 795 22
9630	3.853 369 00	2.648 755 77	1.891 240 66	1.711 418 37	0.542 817 64	3.351 759 60
9635	3.855 332 25	2.649 087 92	1.892 642 44	1.712 092 99	0.543 299 47	3.354 728 16
9640	3.857 296 00	2.649 419 00	1.894 044 36	1.712 767 53	0.543 781 55	3.357 700 92
9645	3.859 260 25	2.649 749 00	1.895 446 41	1.713 441 99	0.544 263 86	3.360 677 88
9650	3.861 225 00	2.650 077 92	1.896 848 58	1.714 116 35	0.544 746 40	3.363 659 06
9655	3.863 190 25	2.650 405 76	1.898 250 89	1.714 790 63	0.545 229 17	3.366 644 47
9660	3.865 156 00	2.650 732 51	1.899 653 32	1.715 464 81	0.545 712 18	3.369 634 12
9665	3.867 122 25	2.651 058 19	1.901 055 88	1.716 138 91	0.546 195 43	3.372 628 02
9670	3.869 089 00	2.651 382 79	1.902 458 56	1.716 812 92	0.546 678 90	3.375 626 18
9675	3.871 056 25	2.651 706 31	1.903 861 36	1.717 486 85	0.547 162 61	3.378 628 61
9680	3.873 024 00	2.652 028 74	1.905 264 29	1.718 160 68	0.547 646 56	3.381 635 33
9685	3.874 992 25	2.652 350 09	1.906 667 34	1.718 834 42	0.548 130 74	3.384 646 34
9690	3.876 961 00	2.652 670 36	1.908 070 50	1.719 508 08	0.548 615 15	3.387 661 66
9695	3.878 930 25	2.652 989 54	1.909 473 79	1.720 181 64	0.549 099 79	3.390 681 30
9700	3.880 900 00	2.653 307 64	1.910 877 19	1.720 855 11	0.549 584 67	3.393 705 26
9705	3.882 870 25	2.653 624 65	1.912 280 71	1.721 528 50	0.550 069 78	3.396 733 57
9710	3.884 841 00	2.653 940 58	1.913 684 34	1.722 201 79	0.550 555 12	3.399 766 23
9715	3.886 812 25	2.654 255 42	1.915 088 08	1.722 874 99	0.551 040 70	3.402 803 26
9720	3.888 784 00	2.654 569 17	1.916 491 94	1.723 548 10	0.551 526 51	3.405 844 66
9725	3.890 756 25	2.654 881 84	1.917 895 91	1.724 221 12	0.552 012 55	3.408 890 45
9730	3.892 729 00	2.655 193 41	1.919 299 99	1.724 894 05	0.552 498 83	3.411 940 64
9735	3.894 702 25	2.655 503 90	1.920 704 17	1.725 566 89	0.552 985 34	3.414 995 24
9740	3.896 676 00	2.655 813 30	1.922 108 47	1.726 239 63	0.553 472 08	3.418 054 26
9745	3.898 650 25	2.656 121 61	1.923 512 86	1.726 912 28	0.553 959 05	3.421 117 72
9750	3.900 625 00	2.656 428 83	1.924 917 37	1.727 584 84	0.554 446 25	3.424 185 62
9755	3.902 600 25	2.656 734 96	1.926 321 97	1.728 257 31	0.554 933 69	3.427 257 98
9760	3.904 576 00	2.657 039 99	1.927 726 68	1.728 929 68	0.555 421 36	3.430 334 82
9765	3.906 552 25	2.657 343 94	1.929 131 49	1.729 601 97	0.555 909 26	3.433 416 14
9770	3.908 529 00	2.657 646 79	1.930 536 39	1.730 274 15	0.556 397 39	3.436 501 95
9775	3.910 506 25	2.657 948 55	1.931 941 40	1.730 946 25	0.556 885 76	3.439 592 27
9780	3.912 484 00	2.658 249 21	1.933 346 50	1.731 618 25	0.557 374 35	3.442 687 10
9785	3.914 462 25	2.658 548 78	1.934 751 70	1.732 290 16	0.557 863 18	3.445 786 47
9790	3.916 441 00	2.658 847 26	1.936 156 99	1.732 961 97	0.558 352 24	3.448 890 39
9795	3.918 420 25	2.659 144 64	1.937 562 38	1.733 633 69	0.558 841 53	3.451 998 86
9800	3.920 400 00	2.659 440 92	1.938 967 86	1.734 305 31	0.559 331 06	3.455 111 89
9805	3.922 380 25	2.659 736 11	1.940 373 42	1.734 976 84	0.559 820 81	3.458 229 51
9810	3.924 361 00	2.660 030 20	1.941 779 08	1.735 648 27	0.560 310 80	3.461 351 73
9815	3.926 342 25	2.660 323 19	1.943 184 83	1.736 319 61	0.560 801 01	3.464 478 54
9820	3.928 324 00	2.660 615 09	1.944 590 66	1.736 990 85	0.561 291 46	3.467 609 98
9825	3.930 306 25	2.660 905 88	1.945 996 57	1.737 662 00	0.561 782 14	3.470 746 05
9830	3.932 289 00	2.661 195 58	1.947 402 57	1.738 333 05	0.562 273 05	3.473 886 76
9835	3.934 272 25	2.661 484 18	1.948 808 66	1.739 004 01	0.562 764 19	3.477 032 12
9840	3.936 256 00	2.661 771 67	1.950 214 82	1.739 674 86	0.563 255 56	3.480 182 16
9845	3.938 240 25	2.662 058 07	1.951 621 07	1.740 345 62	0.563 747 16	3.483 336 88
9850	3.940 225 00	2.662 343 36	1.953 027 39	1.741 016 29	0.564 238 99	3.486 496 29
9855	3.942 210 25	2.662 627 55	1.954 433 80	1.741 686 86	0.564 731 05	3.489 660 41
9860	3.944 196 00	2.662 910 64	1.955 840 27	1.742 357 33	0.565 223 34	3.492 829 25
9865	3.946 182 25	2.663 192 63	1.957 246 83	1.743 027 70	0.565 715 86	3.496 002 83
9870	3.948 169 00	2.663 473 51	1.958 653 46	1.743 697 97	0.566 208 62	3.499 181 15
9875	3.950 156 25	2.663 753 29	1.960 060 16	1.744 368 15	0.566 701 60	3.502 364 23
9880	3.952 144 00	2.664 031 97	1.961 466 93	1.745 038 22	0.567 194 81	3.505 552 08
9885	3.954 132 25	2.664 309 54	1.962 873 77	1.745 708 20	0.567 688 25	3.508 744 72
9890	3.956 121 00	2.664 586 00	1.964 280 68	1.746 378 08	0.568 181 92	3.511 942 16
9895	3.958 110 25	2.664 861 36	1.965 687 66	1.747 047 86	0.568 675 82	3.515 144 41
9900	3.960 100 00	2.665 135 61	1.967 094 70	1.747 717 55	0.569 169 95	3.518 351 49
9905	3.962 090 25	2.665 408 75	1.968 501 81	1.748 387 13	0.569 664 31	3.521 563 40
9910	3.964 081 00	2.665 680 79	1.969 908 98	1.749 056 61	0.570 158 90	3.524 780 17
9915	3.966 072 25	2.665 951 71	1.971 316 21	1.749 725 99	0.570 653 72	3.528 001 81
9920	3.968 064 00	2.666 221 53	1.972 723 51	1.750 395 28	0.571 148 77	3.531 228 32
9925	3.970 056 25	2.666 490 24	1.974 130 86	1.751 064 46	0.571 644 04	3.534 459 73
9930	3.972 049 00	2.666 757 84	1.975 538 27	1.751 733 54	0.572 139 55	3.537 696 05
9935	3.974 042 25	2.667 024 33	1.976 945 74	1.752 402 52	0.572 635 28	3.540 937 28
9940	3.976 036 00	2.667 289 71	1.978 353 27	1.753 071 40	0.573 131 24	3.544 183 45
9945	3.978 030 25	2.667 553 98	1.979 760 85	1.753 740 18	0.573 627 43	3.547 434 57
9950	3.980 025 00	2.667 817 13	1.981 168 48	1.754 408 86	0.574 123 85	3.550 690 65
9955	3.982 020 25	2.668 079 17	1.982 576 16	1.755 077 43	0.574 620 50	3.553 951 71
9960	3.984 016 00	2.668 340 10	1.983 983 90	1.755 745 91	0.575 117 38	3.557 217 76
9965	3.986 012 25	2.668 599 92	1.985 391 68	1.756 414 28	0.575 614 48	3.560 488 81
9970	3.988 009 00	2.668 858 62	1.986 799 51	1.757 082 54	0.576 111 81	3.563 764 88
9975	3.990 006 25	2.669 116 21	1.988 207 39	1.757 750 71	0.576 609 37	3.567 045 98
9980	3.992 004 00	2.669 372 68	1.989 615 31	1.758 418 77	0.577 107 16	3.570 332 13
9985	3.994 002 25	2.669 628 04	1.991 023 28	1.759 086 73	0.577 605 18	3.573 623 34
9990	3.996 001 00	2.669 882 28	1.992 431 29	1.759 754 59	0.578 103 42	3.576 919 62
9995	3.998 000 25	2.670 135 41	1.993 839 34	1.760 422 34	0.578 601 89	3.580 221 00
10000	4.000 000 00	2.670 387 42	1.995 247 43	1.761 089 99	0.579 100 59	3.583 527 48

A/R= =L S/A= =√L S/R	ST/R	LC/P	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
1.9605	2.006 564 10	3.245 209 63	110 6 35.6	36 42 11.9	35 26 38.0	1 15 33.
1.9610	2.008 778 20	3.250 297 27	110 9 57.8	36 43 19.3	35 27 38.0	1 15 41.
1.9615	2.010 992 17	3.251 384 38	110 13 20.1	36 44 26.7	35 28 38.0	1 15 48.
1.9620	2.013 218 00	3.252 470 57	110 16 42.4	36 45 34.1	35 29 38.0	1 15 56.
1.9625	2.015 443 71	3.253 557 C4	110 20 4.8	36 46 41.6	35 30 38.1	1 16 3.
1.9630	2.017 673 32	3.254 642 58	110 23 27.2	36 47 49.1	35 31 38.1	1 16 11.
1.9635	2.019 906 82	3.255 727 60	110 26 49.7	36 48 56.6	35 32 38.2	1 16 18.
1.9640	2.022 144 24	3.256 812 10	110 30 12.2	36 50 4.1	35 33 38.2	1 16 25.
1.9645	2.024 385 59	3.257 896 C7	110 33 34.8	36 51 11.6	35 34 38.3	1 16 33.
1.9650	2.026 630 85	3.258 979 62	110 36 57.4	36 52 19.1	35 35 38.3	1 16 40.
1.9655	2.028 880 07	3.260 062 44	110 40 20.1	36 53 26.7	35 36 38.4	1 16 48.
1.9660	2.031 133 24	3.261 144 83	110 43 42.8	36 54 34.3	35 37 38.5	1 16 55.
1.9665	2.033 390 38	3.262 226 69	110 47 5.6	36 55 41.9	35 38 38.6	1 17 3.
1.9670	2.035 651 50	3.263 308 C3	110 50 28.4	36 56 49.5	35 39 38.7	1 17 10.
1.9675	2.037 916 61	3.264 388 83	110 53 51.3	36 57 57.1	35 40 38.8	1 17 18.
1.9680	2.040 185 72	3.265 469 10	110 57 14.3	36 59 4.8	35 41 38.9	1 17 25.
1.9685	2.042 458 84	3.266 548 84	111 0 37.3	37 0 12.4	35 42 39.0	1 17 33.
1.9690	2.044 735 99	3.267 628 C5	111 4 0.3	37 1 20.1	35 43 39.1	1 17 41.
1.9695	2.047 017 16	3.268 706 72	111 7 23.4	37 2 27.8	35 44 39.2	1 17 48.
1.9700	2.049 302 39	3.269 784 86	111 10 46.5	37 3 35.5	35 45 39.4	1 17 56.
1.9705	2.051 591 67	3.270 862 47	111 14 9.7	37 4 43.2	35 46 39.5	1 18 3.
1.9710	2.053 885 02	3.271 939 54	111 17 33.0	37 5 51.0	35 47 39.7	1 18 11.
1.9715	2.056 182 44	3.273 016 C7	111 20 56.3	37 6 58.8	35 48 39.8	1 18 19.
1.9720	2.058 483 96	3.274 C92 C7	111 24 19.6	37 8 6.5	35 49 40.0	1 18 26.
1.9725	2.060 789 58	3.275 167 52	111 27 43.0	37 9 14.3	35 50 40.1	1 18 34.
1.9730	2.063 099 32	3.276 242 44	111 31 6.5	37 10 22.2	35 51 40.3	1 18 41.
1.9735	2.065 413 18	3.277 316 81	111 34 30.0	37 11 30.0	35 52 40.5	1 18 49
1.9740	2.067 731 18	3.278 390 65	111 37 53.6	37 12 37.9	35 53 40.6	1 18 57
1.9745	2.070 053 33	3.279 463 94	111 41 17.2	37 13 45.7	35 54 40.8	1 19 4
1.9750	2.072 379 64	3.280 536 69	111 44 40.8	37 14 53.6	35 55 41.0	1 19 12
1.9755	2.074 710 12	3.281 6C8 90	111 48 4.5	37 16 1.5	35 56 41.2	1 19 20
1.9760	2.077 044 78	3.282 680 56	111 51 28.3	37 17 9.4	35 57 41.4	1 19 28
1.9765	2.079 383 65	3.283 751 68	111 54 52.1	37 18 17.4	35 58 41.6	1 19 35
1.9770	2.081 726 72	3.284 822 25	111 58 16.0	37 19 25.3	35 59 41.9	1 19 43
1.9775	2.084 074 01	3.285 892 28	112 1 39.9	37 20 33.3	36 0 42.1	1 19 51
1.9780	2.086 425 53	3.286 961 76	112 5 3.9	37 21 41.3	36 1 42.3	1 19 59
1.9785	2.088 781 30	3.288 03C 68	112 8 27.9	37 22 49.3	36 2 42.6	1 20 6
1.9790	2.091 141 33	3.289 C99 C6	112 11 52.0	37 23 57.3	36 3 42.8	1 20 14
1.9795	2.093 505 62	3.290 166 89	112 15 16.1	37 25 5.4	36 4 43.0	1 20 22
1.9800	2.095 874 20	3.291 234 17	112 18 40.3	37 26 13.4	36 5 43.3	1 20 30
1.9805	2.098 247 06	3.292 300 90	112 22 4.5	37 27 21.5	36 6 43.6	1 20 37
1.9810	2.100 624 24	3.293 367 C7	112 25 28.8	37 28 29.6	36 7 43.8	1 20 45
1.9815	2.103 005 73	3.294 432 69	112 28 53.1	37 29 37.7	36 8 44.1	1 20 53
1.9820	2.105 391 55	3.295 497 76	112 32 17.5	37 30 45.8	36 9 44.4	1 21 1
1.9825	2.107 781 71	3.296 562 27	112 35 41.9	37 31 54.0	36 10 44.7	1 21 9
1.9830	2.110 176 23	3.297 626 22	112 39 6.4	37 33 2.1	36 11 45.0	1 21 17
1.9835	2.112 575 12	3.298 689 62	112 42 31.0	37 34 10.3	36 12 45.2	1 21 25
1.9840	2.114 978 39	3.299 752 46	112 45 55.5	37 35 18.5	36 13 45.5	1 21 33
1.9845	2.117 386 05	3.300 814 74	112 49 20.2	37 36 26.7	36 14 45.9	1 21 40
1.9850	2.119 798 12	3.301 876 46	112 52 44.9	37 37 35.0	36 15 46.2	1 21 48
1.9855	2.122 214 60	3.302 937 62	112 56 9.6	37 38 43.2	36 16 46.5	1 21 56
1.9860	2.124 635 52	3.303 998 23	112 59 34.4	37 39 51.5	36 17 46.8	1 22 4
1.9865	2.127 060 88	3.305 058 26	113 2 59.3	37 40 59.8	36 18 47.1	1 22 12
1.9870	2.129 490 69	3.306 117 74	113 6 24.2	37 42 8.1	36 19 47.5	1 22 20
1.9875	2.131 924 98	3.307 176 65	113 9 49.1	37 43 16.4	36 20 47.8	1 22 28
1.9880	2.134 363 75	3.308 235 CO	113 13 14.1	37 44 24.7	36 21 48.2	1 22 36
1.9885	2.136 807 01	3.309 292 78	113 16 39.2	37 45 33.1	36 22 48.5	1 22 44
1.9890	2.139 254 79	3.310 350 00	113 20 4.3	37 46 41.4	36 23 48.9	1 22 52
1.9895	2.141 707 08	3.311 406 65	113 23 29.4	37 47 49.8	36 24 49.3	1 23 0
1.9900	2.144 163 91	3.312 462 73	113 26 54.6	37 48 58.2	36 25 49.6	1 23 8
1.9905	2.146 625 29	3.313 518 25	113 30 19.9	37 50 6.6	36 26 50.0	1 23 16
1.9910	2.149 091 24	3.314 573 19	113 33 45.2	37 51 15.1	36 27 50.4	1 23 24
1.9915	2.151 561 75	3.315 627 56	113 37 10.6	37 52 23.5	36 28 50.8	1 23 32
1.9920	2.154 036 86	3.316 681 37	113 40 36.0	37 53 32.0	36 29 51.2	1 23 40
1.9925	2.156 516 56	3.317 734 60	113 44 1.4	37 54 40.5	36 30 51.6	1 23 48
1.9930	2.159 000 89	3.318 787 26	113 47 27.0	37 55 49.0	36 31 52.0	1 23 57
1.9935	2.161 489 84	3.319 839 34	113 50 52.5	37 56 57.5	36 32 52.4	1 24 5
1.9940	2.163 983 43	3.320 890 85	113 54 18.1	37 58 6.0	36 33 52.8	1 24 13
1.9945	2.166 481 68	3.321 941 78	113 57 43.8	37 59 14.6	36 34 53.2	1 24 21
1.9950	2.168 984 6C	3.322 992 14	114 1 9.5	38 0 23.2	36 35 53.7	1 24 29
1.9955	2.171 492 20	3.324 041 92	114 4 35.3	38 1 31.8	36 36 54.1	1 24 37
1.9960	2.174 004 50	3.325 091 13	114 8 1.1	38 2 40.4	36 37 54.5	1 24 45
1.9965	2.176 521 52	3.326 139 75	114 11 27.0	38 3 49.0	36 38 55.0	1 24 54
1.9970	2.179 043 25	3.327 187 80	114 14 53.0	38 4 57.7	36 39 55.4	1 25 2
1.9975	2.181 569 73	3.328 235 26	114 18 18.9	38 6 6.3	36 40 55.9	1 25 10
1.9980	2.184 100 96	3.329 282 15	114 21 45.0	38 7 15.0	36 41 56.3	1 25 18
1.9985	2.186 636 96	3.330 328 45	114 25 11.1	38 8 23.7	36 42 56.8	1 25 26
1.9990	2.189 177 74	3.331 374 17	114 28 37.2	38 9 32.4	36 43 57.3	1 25 35
1.9995	2.191 723 31	3.332 419 3C	114 32 3.4	38 10 41.1	36 44 57.8	1 25 43
2.0000	2.194 273 70	3.333 463 85	114 35 29.6	38 11 49.9	36 45 58.2	1 25 51

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= S/A= L S/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
.0005	4.002 000 25	2.670 638 31	1.996 655 55	1.761 757 54	0.579 599 51	3.586 839 07
.0010	4.004 001 00	2.670 888 C8	1.998 063 72	1.762 424 98	0.580 098 67	3.590 155 80
.0015	4.006 002 25	2.671 136 74	1.999 471 92	1.763 092 31	0.580 598 05	3.593 477 68
.0020	4.008 004 00	2.671 384 27	2.000 880 16	1.763 759 54	0.581 097 65	3.596 804 72
.0025	4.010 006 25	2.671 630 69	2.002 288 43	1.764 426 67	0.581 597 49	3.600 136 93
.0030	4.012 009 00	2.671 875 99	2.003 696 73	1.765 093 69	0.582 097 55	3.603 474 34
.0035	4.014 012 25	2.672 120 17	2.005 105 06	1.765 760 61	0.582 597 84	3.606 816 96
.0040	4.016 016 00	2.672 363 22	2.006 513 42	1.766 427 42	0.583 098 35	3.610 164 79
.0045	4.018 020 25	2.672 605 16	2.007 921 81	1.767 094 12	0.583 599 09	3.613 517 86
.0050	4.020 025 00	2.672 845 97	2.009 330 22	1.767 760 72	0.584 100 06	3.616 876 19
.0055	4.022 030 25	2.673 085 66	2.010 738 66	1.768 427 21	0.584 601 25	3.620 239 78
.0060	4.024 036 00	2.673 324 23	2.012 147 13	1.769 093 60	0.585 102 67	3.623 608 65
.0065	4.026 042 25	2.673 561 67	2.013 555 61	1.769 759 88	0.585 604 31	3.626 982 82
.0070	4.028 049 00	2.673 798 00	2.014 964 12	1.770 426 05	0.586 106 19	3.630 362 30
.0075	4.030 056 25	2.674 033 19	2.016 372 65	1.771 092 12	0.586 608 28	3.633 747 10
.0080	4.032 064 00	2.674 267 27	2.017 781 19	1.771 758 07	0.587 110 61	3.637 137 25
.0085	4.034 072 25	2.674 500 21	2.019 189 76	1.772 423 92	0.587 613 15	3.640 532 74
.0090	4.036 081 00	2.674 732 03	2.020 598 34	1.773 089 66	0.588 115 93	3.643 933 64
.0095	4.038 090 25	2.674 962 73	2.022 006 93	1.773 755 30	0.588 618 93	3.647 339 91
.0100	4.040 100 00	2.675 192 30	2.023 415 54	1.774 420 82	0.589 122 15	3.650 751 59
.0105	4.042 110 25	2.675 420 74	2.024 824 15	1.775 086 24	0.589 625 60	3.654 168 69
.0110	4.044.121 00	2.675 648 06	2.026 232 78	1.775 751 55	0.590 129 28	3.657 591 22
.0115	4.046 132 25	2.675 874 25	2.027 641 42	1.776 416 75	0.590 633 18	3.661 019 20
.0120	4.048 144 00	2.676 099 30	2.029 050 07	1.777 081 84	0.591 137 30	3.664 452 65
.0125	4.050 156 25	2.676 323 23	2.030 458 72	1.777 746 82	0.591 641 65	3.667 891 59
.0130	4.052 169 00	2.676 546 04	2.031 867 37	1.778 411 69	0.592 146 22	3.671 336 02
.0135	4.054 182 25	2.676 767 71	2.033 276 03	1.779 076 45	0.592 651 02	3.674 785 97
.0140	4.056 196 00	2.676 988 25	2.034 684 70	1.779 741 10	0.593 156 05	3.678 241 46
.0145	4.058 210 25	2.677 207 66	2.036 093 36	1.780 405 64	0.593 661 29	3.681 702 49
.0150	4.060 225 00	2.677 425 94	2.037 502 02	1.781 070 07	0.594 166 77	3.685 169 08
.0155	4.062 240 25	2.677 643 08	2.038 910 68	1.781 734 38	0.594 672 46	3.688 641 26
.0160	4.064 256 00	2.677 859 10	2.040 319 34	1.782 398 59	0.595 178 38	3.692 119 03
.0165	4.066 272 25	2.678 073 98	2.041 728 00	1.783 062 69	0.595 684 52	3.695 602 42
.0170	4.068 289 00	2.678 287 73	2.043 136 64	1.783 726 67	0.596 190 89	3.699 091 44
.0175	4.070 306 25	2.678 500 35	2.044 545 28	1.784 390 54	0.596 697 48	3.702 586 10
.0180	4.072 324 00	2.678 711 84	2.045 953 91	1.785 054 31	0.597 204 30	3.706 086 42
.0185	4.074 342 25	2.678 922 18	2.047 362 54	1.785 717 95	0.597 711 33	3.709 592 43
.0190	4.076 361 00	2.679 131 40	2.048 771 15	1.786 381 49	0.598 218 60	3.713 104 13
.0195	4.078 380 25	2.679 339 48	2.050 179 74	1.787 044 91	0.598 726 08	3.716 621 55
.0200	4.080 400 00	2.679 546 42	2.051 588 33	1.787 708 23	0.599 233 79	3.720 144 70
.0205	4.082 420 25	2.679 752 23	2.052 996 89	1.788 371 42	0.599 741 72	3.723 673 59
.0210	4.084 441 00	2.679 956 90	2.054 405 44	1.789 034 51	0.600 249 87	3.727 208 25
.0215	4.086 462 25	2.680 160 44	2.055 813 98	1.789 697 48	0.600 758 25	3.730 748 70
.0220	4.088 484 00	2.680 362 84	2.057 222 49	1.790 360 34	0.601 266 85	3.734 294 94
.0225	4.090 506 25	2.680 564 10	2.058 630 98	1.791 023 08	0.601 775 67	3.737 846 99
.0230	4.092 529 00	2.680 764 22	2.060 039 45	1.791 685 71	0.602 284 71	3.741 404 88
.0235	4.094 552 25	2.680 963 20	2.061 447 90	1.792 348 22	0.602 793 98	3.744 968 62
.0240	4.096 576 00	2.681 161 05	2.062 856 32	1.793 010 62	0.603 303 46	3.748 538 24
.0245	4.098 600 25	2.681 357 75	2.064 264 71	1.793 672 91	0.603 813 17	3.752 113 73
.0250	4.100 625 00	2.681 553 32	2.065 673 08	1.794 335 08	0.604 323 11	3.755 695 13
.0255	4.102 650 25	2.681 747 74	2.067 081 41	1.794 997 13	0.604 833 26	3.759 282 45
.0260	4.104 676 00	2.681 941 03	2.068 489 72	1.795 659 07	0.605 343 63	3.762 875 71
.0265	4.106 702 25	2.682 133 17	2.069 897 99	1.796 320 89	0.605 854 23	3.766 474 93
.0270	4.108 729 00	2.682 324 17	2.071 306 23	1.796 982 60	0.606 365 05	3.770 080 12
.0275	4.110 756 25	2.682 514 03	2.072 714 44	1.797 644 19	0.606 876 09	3.773 691 31
.0280	4.112 784 00	2.682 702 75	2.074 122 60	1.798 305 67	0.607 387 35	3.777 308 51
.0285	4.114 812 25	2.682 890 33	2.075 530 74	1.798 967 02	0.607 898 83	3.780 931 73
.0290	4.116 841 00	2.683 076 76	2.076 938 83	1.799 628 26	0.608 410 54	3.784 561 01
.0295	4.118 870 25	2.683 262 05	2.078 346 88	1.800 289 39	0.608 922 46	3.788 196 35
.0300	4.120 900 00	2.683 446 19	2.079 754 89	1.800 950 39	0.609 434 60	3.791 837 77
.0305	4.122 930 25	2.683 629 19	2.081 162 85	1.801 611 28	0.609 946 97	3.795 485 30
.0310	4.124 961 00	2.683 811 05	2.082 570 78	1.802 272 05	0.610 459 55	3.799 138 95
.0315	4.126 992 25	2.683 991 76	2.083 978 65	1.802 932 71	0.610 972 36	3.802 798 73
.0320	4.129 024 00	2.684 171 32	2.085 386 48	1.803 593 24	0.611 485 39	3.806 464 68
.0325	4.131 056 25	2.684 349 74	2.086 794 26	1.804 253 66	0.611 998 63	3.810 136 80
.0330	4.133 089 00	2.684 527 01	2.088 201 99	1.804 913 96	0.612 512 10	3.813 815 12
.0335	4.135 122 25	2.684 703 14	2.089 609 66	1.805 574 13	0.613 025 79	3.817 499 66
.0340	4.137 156 00	2.684 878 12	2.091 017 29	1.806 234 19	0.613 539 69	3.821 190 43
.0345	4.139 190 25	2.685 051 95	2.092 424 86	1.806 894 13	0.614 053 82	3.824 887 45
.0350	4.141 225 00	2.685 224 63	2.093 832 37	1.807 553 95	0.614 568 16	3.828 590 75
.0355	4.143 260 25	2.685 396 17	2.095 239 83	1.808 213 66	0.615 082 73	3.832 300 33
.0360	4.145 296 00	2.685 566 55	2.096 647 23	1.808 873 24	0.615 597 51	3.836 016 23
.0365	4.147 332 25	2.685 735 79	2.098 054 56	1.809 532 70	0.616 112 52	3.839 738 46
.0370	4.149 369 00	2.685 903 88	2.099 461 84	1.810 192 04	0.616 627 74	3.843 467 04
.0375	4.151 406 25	2.686 070 82	2.100 869 05	1.810 851 26	0.617 143 18	3.847 201 98
.0380	4.153 444 00	2.686 236 61	2.102 276 20	1.811 510 35	0.617 658 84	3.850 943 32
.0385	4.155 482 25	2.686 401 24	2.103 683 28	1.812 169 33	0.618 174 72	3.854 691 06
.0390	4.157 521 00	2.686 564 73	2.105 090 30	1.812 828 19	0.618 690 82	3.858 445 24
.0395	4.159 560 25	2.686 727 06	2.106 497 24	1.813 486 92	0.619 207 13	3.862 205 86
.0400	4.161 600 00	2.686 888 25	2.107 904 12	1.814 145 53	0.619 723 67	3.865 972 95

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=Φ+C	Φ	C
				DEG MNT SEC		
2.0005	2.196 828 91	3.334 507 82	114 38 55.9	38 12 58.6	36 46 58.7	1 25 59
2.0010	2.199 388 95	3.335 551 20	114 42 22.2	38 14 7.4	36 47 59.2	1 26 8
2.0015	2.201 953 85	3.336 593 99	114 45 48.6	38 15 16.2	36 48 59.7	1 26 16
2.0020	2.204 523 62	3.337 636 19	114 49 15.1	38 16 25.0	36 50 0.2	1 26 24
2.0025	2.207 098 27	3.338 677 81	114 52 41.6	38 17 33.9	36 51 0.7	1 26 33
2.0030	2.209 677 82	3.339 718 83	114 56 8.1	38 18 42.7	36 52 1.2	1 26 41
2.0035	2.212 262 28	3.340 759 27	114 59 34.7	38 19 51.6	36 53 1.8	1 26 49
2.0040	2.214 851 66	3.341 799 11	115 3 1.4	38 21 0.5	36 54 2.3	1 26 58
2.0045	2.217 445 99	3.342 838 36	115 6 28.1	38 22 9.4	36 55 2.8	1 27 6
2.0050	2.220 045 27	3.343 877 C2	115 9 54.8	38 23 18.3	36 56 3.4	1 27 14
2.0055	2.222 649 52	3.344 915 08	115 13 21.6	38 24 27.2	36 57 3.9	1 27 23
2.0060	2.225 258 76	3.345 952 55	115 16 48.5	38 25 36.2	36 58 4.4	1 27 31
2.0065	2.227 873 00	3.346 989 43	115 20 15.4	38 26 45.1	36 59 5.0	1 27 40
2.0070	2.230 492 25	3.348 025 71	115 23 42.4	38 27 54.1	37 0 5.6	1 27 48
2.0075	2.233 116 53	3.349 061 39	115 27 9.4	38 29 3.1	37 1 6.1	1 27 57
2.0080	2.235 745 86	3.350 096 47	115 30 36.4	38 30 12.1	37 2 6.7	1 28 5
2.0085	2.238 380 25	3.351 130 95	115 34 3.6	38 31 21.2	37 3 7.3	1 28 13
2.0090	2.241 019 72	3.352 164 84	115 37 30.7	38 32 30.2	37 4 7.8	1 28 22
2.0095	2.243 664 28	3.353 198 12	115 40 58.0	38 33 39.3	37 5 8.4	1 28 30
2.0100	2.246 313 95	3.354 230 80	115 44 25.2	38 34 48.4	37 6 9.0	1 28 39
2.0105	2.248 968 74	3.355 262 88	115 47 52.5	38 35 57.5	37 7 9.6	1 28 47
2.0110	2.251 628 67	3.356 294 36	115 51 19.9	38 37 6.6	37 8 10.2	1 28 56
2.0115	2.254 293 75	3.357 325 23	115 54 47.3	38 38 15.8	37 9 10.8	1 29 5
2.0120	2.256 964 00	3.358 355 50	115 58 14.8	38 39 24.9	37 10 11.4	1 29 13
2.0125	2.259 639 44	3.359 385 16	116 1 42.3	38 40 34.1	37 11 12.0	1 29 22
2.0130	2.262 320 08	3.360 414 22	116 5 9.9	38 41 43.3	37 12 12.6	1 29 30
2.0135	2.265 005 94	3.361 442 66	116 8 37.6	38 42 52.5	37 13 13.3	1 29 39
2.0140	2.267 697 03	3.362 470 50	116 12 5.2	38 44 1.7	37 14 13.9	1 29 47
2.0145	2.270 393 37	3.363 497 74	116 15 33.0	38 45 11.0	37 15 14.5	1 29 56
2.0150	2.273 094 97	3.364 524 36	116 19 0.8	38 46 20.3	37 16 15.2	1 30 5
2.0155	2.275 801 86	3.365 550 37	116 22 28.6	38 47 29.5	37 17 15.8	1 30 13
2.0160	2.278 514 04	3.366 575 77	116 25 56.5	38 48 38.8	37 18 16.4	1 30 22
2.0165	2.281 231 54	3.367 600 55	116 29 24.4	38 49 48.1	37 19 17.1	1 30 31
2.0170	2.283 954 36	3.368 624 72	116 32 52.4	38 50 57.5	37 20 17.8	1 30 39
2.0175	2.286 682 54	3.369 648 28	116 36 20.5	38 52 6.8	37 21 18.4	1 30 48
2.0180	2.289 416 08	3.370 671 23	116 39 48.6	38 53 16.2	37 22 19.1	1 30 57
2.0185	2.292 154 99	3.371 693 55	116 43 16.7	38 54 25.6	37 23 19.8	1 31 5
2.0190	2.294 899 31	3.372 715 27	116 46 44.9	38 55 35.0	37 24 20.4	1 31 14
2.0195	2.297 649 03	3.373 736 36	116 50 13.2	38 56 44.4	37 25 21.1	1 31 23
2.0200	2.300 404 19	3.374 756 83	116 53 41.5	38 57 53.8	37 26 21.8	1 31 32
2.0205	2.303 164 79	3.375 776 69	116 57 9.8	38 59 3.3	37 27 22.5	1 31 40
2.0210	2.305 930 86	3.376 795 93	117 0 38.2	39 0 12.7	37 28 23.2	1 31 49
2.0215	2.308 702 40	3.377 814 54	117 4 6.7	39 1 22.2	37 29 23.9	1 31 58
2.0220	2.311 479 45	3.378 832 54	117 7 35.2	39 2 31.7	37 30 24.6	1 32 7
2.0225	2.314 262 01	3.379 849 91	117 11 3.7	39 3 41.2	37 31 25.3	1 32 15
2.0230	2.317 050 10	3.380 866 65	117 14 32.4	39 4 50.8	37 32 26.0	1 32 24
2.0235	2.319 843 74	3.381 882 78	117 18 1.0	39 6 0.3	37 33 26.7	1 32 33
2.0240	2.322 642 94	3.382 898 27	117 21 29.7	39 7 9.9	37 34 27.5	1 32 42
2.0245	2.325 447 73	3.383 913 15	117 24 58.5	39 8 19.5	37 35 28.2	1 32 51
2.0250	2.328 258 12	3.384 927 39	117 28 27.3	39 9 29.1	37 36 28.9	1 33 0
2.0255	2.331 074 13	3.385 941 01	117 31 56.2	39 10 38.7	37 37 29.7	1 33 9
2.0260	2.333 895 78	3.386 954 00	117 35 25.1	39 11 48.4	37 38 30.4	1 33 18
2.0265	2.336 723 08	3.387 966 36	117 38 54.1	39 12 58.0	37 39 31.1	1 33 26
2.0270	2.339 556 05	3.388 978 09	117 42 23.1	39 14 7.7	37 40 31.9	1 33 35
2.0275	2.342 394 71	3.389 989 18	117 45 52.2	39 15 17.4	37 41 32.7	1 33 44
2.0280	2.345 239 08	3.390 999 65	117 49 21.3	39 16 27.1	37 42 33.4	1 33 53
2.0285	2.348 089 17	3.392 009 48	117 52 50.5	39 17 36.8	37 43 34.2	1 34 2
2.0290	2.350 945 01	3.393 018 68	117 56 19.7	39 18 46.6	37 44 34.9	1 34 11
2.0295	2.353 806 61	3.394 027 25	117 59 49.0	39 19 56.3	37 45 35.7	1 34 20
2.0300	2.356 673 99	3.395 035 18	118 3 18.3	39 21 6.1	37 46 36.5	1 34 29
2.0305	2.359 547 17	3.396 042 47	118 6 47.7	39 22 15.9	37 47 37.3	1 34 38
2.0310	2.362 426 16	3.397 049 13	118 10 17.1	39 23 25.7	37 48 38.1	1 34 47
2.0315	2.365 310 99	3.398 055 15	118 13 46.6	39 24 35.5	37 49 38.9	1 34 56
2.0320	2.368 201 67	3.399 060 53	118 17 16.2	39 25 45.4	37 50 39.7	1 35 5
2.0325	2.371 098 22	3.400 065 27	118 20 45.8	39 26 55.3	37 51 40.5	1 35 14
2.0330	2.374 000 67	3.401 069 37	118 24 15.4	39 28 5.1	37 52 41.3	1 35 23
2.0335	2.376 909 02	3.402 072 82	118 27 45.1	39 29 15.0	37 53 42.1	1 35 33
2.0340	2.379 823 31	3.403 075 64	118 31 14.8	39 30 24.9	37 54 42.9	1 35 42
2.0345	2.382 743 54	3.404 077 81	118 34 44.6	39 31 34.9	37 55 43.7	1 35 51
2.0350	2.385 669 73	3.405 079 34	118 38 14.5	39 32 44.8	37 56 44.5	1 36 0
2.0355	2.388 601 91	3.406 080 23	118 41 44.4	39 33 54.8	37 57 45.4	1 36 9
2.0360	2.391 540 10	3.407 080 47	118 45 14.3	39 35 4.8	37 58 46.2	1 36 18
2.0365	2.394 484 31	3.408 080 06	118 48 44.3	39 36 14.8	37 59 47.0	1 36 27
2.0370	2.397 434 56	3.409 079 00	118 52 14.4	39 37 24.8	38 0 47.9	1 36 36
2.0375	2.400 390 87	3.410 077 30	118 55 44.5	39 38 34.8	38 1 48.7	1 36 46
2.0380	2.403 353 27	3.411 074 95	118 59 14.7	39 39 44.9	38 2 49.5	1 36 55
2.0385	2.406 321 77	3.412 071 95	119 2 44.9	39 40 55.0	38 3 50.4	1 37 4
2.0390	2.409 296 39	3.413 068 30	119 6 15.1	39 42 5.0	38 4 51.3	1 37 13
2.0395	2.412 277 15	3.414 063 99	119 9 45.4	39 43 15.1	38 5 52.1	1 37 23
2.0400	2.415 264 07	3.415 059 04	119 13 15.8	39 44 25.3	38 6 53.0	1 37 32

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= LS/A= VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
.0405	4.163 640 25	2.687 048 28	2.109 310 92	1.814 804 02	0.620 240 42	3.869 746 53
.0410	4.165 681 00	2.687 207 16	2.110 717 66	1.815 462 39	0.620 757 39	3.873 526 62
.0415	4.167 722 25	2.687 364 88	2.112 124 31	1.816 120 64	0.621 274 58	3.877 313 24
.0420	4.169 764 00	2.687 521 46	2.113 530 89	1.816 778 76	0.621 791 98	3.881 106 41
.0425	4.171 806 25	2.687 676 88	2.114 937 40	1.817 436 76	0.622 309 61	3.884 906 15
.0430	4.173 849 00	2.687 831 14	2.116 343 83	1.818 094 64	0.622 827 45	3.888 712 48
.0435	4.175 892 25	2.687 984 25	2.117 750 17	1.818 752 39	0.623 345 51	3.892 525 42
.0440	4.177 936 00	2.688 136 21	2.119 156 43	1.819 410 02	0.623 863 78	3.896 344 99
.0445	4.179 980 25	2.688 287 01	2.120 562 62	1.820 067 53	0.624 382 28	3.900 171 21
.0450	4.182 025 00	2.688 436 65	2.121 968 71	1.820 724 91	0.624 900 99	3.904 004 11
.0455	4.184 070 25	2.688 585 14	2.123 374 72	1.821 382 17	0.625 419 91	3.907 843 70
.0460	4.186 116 00	2.688 732 48	2.124 780 65	1.822 039 30	0.625 939 06	3.911 690 01
.0465	4.188 162 25	2.688 878 66	2.126 186 48	1.822 696 31	0.626 458 42	3.915 543 06
.0470	4.190 209 00	2.689 023 68	2.127 592 23	1.823 353 19	0.626 978 00	3.919 402 86
.0475	4.192 256 25	2.689 167 54	2.128 997 88	1.824 009 95	0.627 497 79	3.923 269 44
.0480	4.194 304 00	2.689 310 25	2.130 403 44	1.824 666 58	0.628 017 80	3.927 142 82
.0485	4.196 352 25	2.689 451 80	2.131 808 91	1.825 323 09	0.628 538 03	3.931 023 03
.0490	4.198 401 00	2.689 592 19	2.133 214 28	1.825 979 47	0.629 058 47	3.934 910 08
.0495	4.200 450 25	2.689 731 42	2.134 619 55	1.826 635 73	0.629 579 13	3.938 803 99
.0500	4.202 500 00	2.689 869 49	2.136 024 72	1.827 291 86	0.630 100 00	3.942 704 79
.0505	4.204 550 25	2.690 006 40	2.137 429 80	1.827 947 86	0.630 621 09	3.946 612 51
.0510	4.206 601 00	2.690 142 16	2.138 834 77	1.828 603 73	0.631 142 39	3.950 527 15
.0515	4.208 652 25	2.690 276 75	2.140 239 64	1.829 259 48	0.631 663 92	3.954 448 74
.0520	4.210 704 00	2.690 410 19	2.141 644 40	1.829 915 11	0.632 185 65	3.958 377 31
.0525	4.212 756 25	2.690 542 46	2.143 049 06	1.830 570 60	0.632 707 60	3.962 312 88
.0530	4.214 809 00	2.690 673 57	2.144 453 61	1.831 225 97	0.633 229 77	3.966 255 47
.0535	4.216 862 25	2.690 803 52	2.145 858 05	1.831 881 21	0.633 752 15	3.970 205 11
.0540	4.218 916 00	2.690 932 31	2.147 262 38	1.832 536 32	0.634 274 74	3.974 161 80
.0545	4.220 970 25	2.691 059 94	2.148 666 60	1.833 191 30	0.634 797 55	3.978 125 59
.0550	4.223 025 00	2.691 186 41	2.150 070 71	1.833 846 16	0.635 320 58	3.982 096 49
.0555	4.225 080 25	2.691 311 71	2.151 474 70	1.834 500 88	0.635 843 82	3.986 074 52
.0560	4.227 136 00	2.691 435 85	2.152 878 57	1.835 155 48	0.636 367 27	3.990 059 70
.0565	4.229 192 25	2.691 558 83	2.154 282 33	1.835 809 95	0.636 890 94	3.994 052 07
.0570	4.231 249 00	2.691 680 64	2.155 685 97	1.836 464 29	0.637 414 82	3.998 051 64
.0575	4.233 306 25	2.691 801 29	2.157 089 48	1.837 118 49	0.637 938 91	4.002 058 43
.0580	4.235 364 00	2.691 920 78	2.158 492 88	1.837 772 57	0.638 463 22	4.006 072 48
.0585	4.237 422 25	2.692 039 10	2.159 896 15	1.838 426 52	0.638 987 74	4.010 093 80
.0590	4.239 481 00	2.692 156 26	2.161 299 30	1.839 080 34	0.639 512 48	4.014 122 41
.0595	4.241 540 25	2.692 272 25	2.162 702 32	1.839 734 03	0.640 037 43	4.018 158 35
.0600	4.243 600 00	2.692 387 07	2.164 105 21	1.840 387 59	0.640 562 59	4.022 201 63
.0605	4.245 660 25	2.692 500 73	2.165 507 97	1.841 041 01	0.641 087 96	4.026 252 27
.0610	4.247 721 00	2.692 613 23	2.166 910 60	1.841 694 31	0.641 613 55	4.030 310 31
.0615	4.249 782 25	2.692 724 56	2.168 313 10	1.842 347 48	0.642 139 35	4.034 375 77
.0620	4.251 844 00	2.692 834 72	2.169 715 47	1.843 000 51	0.642 665 36	4.038 448 67
.0625	4.253 906 25	2.692 943 71	2.171 117 70	1.843 653 41	0.643 191 59	4.042 529 03
.0630	4.255 969 00	2.693 051 54	2.172 519 79	1.844 306 18	0.643 718 03	4.046 616 88
.0635	4.258 032 25	2.693 158 20	2.173 921 75	1.844 958 82	0.644 244 68	4.050 712 25
.0640	4.260 096 00	2.693 263 70	2.175 323 57	1.845 611 32	0.644 771 54	4.054 815 15
.0645	4.262 160 25	2.693 368 02	2.176 725 24	1.846 263 69	0.645 298 61	4.058 925 62
.0650	4.264 225 00	2.693 471 18	2.178 126 77	1.846 915 93	0.645 825 90	4.063 043 67
.0655	4.266 290 25	2.693 573 16	2.179 528 16	1.847 568 04	0.646 353 40	4.067 169 34
.0660	4.268 356 00	2.693 673 98	2.180 929 40	1.848 220 01	0.646 881 11	4.071 302 65
.0665	4.270 422 25	2.693 773 63	2.182 330 50	1.848 871 85	0.647 409 03	4.075 443 62
.0670	4.272 489 00	2.693 872 11	2.183 731 44	1.849 523 56	0.647 937 16	4.079 592 28
.0675	4.274 556 25	2.693 969 42	2.185 132 24	1.850 175 13	0.648 465 50	4.083 748 66
.0680	4.276 624 00	2.694 065 56	2.186 532 88	1.850 826 56	0.648 994 05	4.087 912 77
.0685	4.278 692 25	2.694 160 53	2.187 933 37	1.851 477 87	0.649 522 82	4.092 084 65
.0690	4.280 761 00	2.694 254 33	2.189 333 71	1.852 129 04	0.650 051 79	4.096 264 32
.0695	4.282 830 25	2.694 346 96	2.190 733 89	1.852 780 07	0.650 580 98	4.100 451 82
.0700	4.284 900 00	2.694 438 42	2.192 133 91	1.853 430 97	0.651 110 37	4.104 647 15
.0705	4.286 970 25	2.694 528 70	2.193 533 78	1.854 081 73	0.651 639 98	4.108 850 35
.0710	4.289 041 00	2.694 617 82	2.194 933 48	1.854 732 36	0.652 169 80	4.113 061 45
.0715	4.291 112 25	2.694 705 76	2.196 333 02	1.855 382 85	0.652 699 82	4.117 280 48
.0720	4.293 184 00	2.694 792 53	2.197 732 40	1.856 033 21	0.653 230 06	4.121 507 45
.0725	4.295 256 25	2.694 878 13	2.199 131 61	1.856 683 43	0.653 760 50	4.125 742 40
.0730	4.297 329 00	2.694 962 55	2.200 530 66	1.857 333 51	0.654 291 16	4.129 985 35
.0735	4.299 402 25	2.695 045 80	2.201 929 54	1.857 983 46	0.654 822 02	4.134 236 33
.0740	4.301 476 00	2.695 127 88	2.203 328 25	1.858 633 27	0.655 353 10	4.138 495 36
.0745	4.303 550 25	2.695 208 79	2.204 726 78	1.859 282 94	0.655 884 38	4.142 762 48
.0750	4.305 625 00	2.695 288 52	2.206 125 15	1.859 932 48	0.656 415 87	4.147 037 71
.0755	4.307 700 25	2.695 367 08	2.207 523 34	1.860 581 88	0.656 947 57	4.151 321 08
.0760	4.309 776 00	2.695 444 46	2.208 921 36	1.861 231 14	0.657 479 48	4.155 612 62
.0765	4.311 852 25	2.695 520 67	2.210 319 19	1.861 880 26	0.658 011 60	4.159 912 35
.0770	4.313 929 00	2.695 595 70	2.211 716 85	1.862 529 25	0.658 543 93	4.164 220 30
.0775	4.316 006 25	2.695 669 56	2.213 114 33	1.863 178 10	0.659 076 46	4.168 536 50
.0780	4.318 084 00	2.695 742 24	2.214 511 63	1.863 826 80	0.659 609 21	4.172 860 97
.0785	4.320 162 25	2.695 813 75	2.215 908 75	1.864 475 37	0.660 142 16	4.177 193 76
.0790	4.322 241 00	2.695 884 08	2.217 305 68	1.865 123 81	0.660 675 32	4.181 534 87
.0795	4.324 320 25	2.695 953 24	2.218 702 42	1.865 772 10	0.661 208 68	4.185 884 35
.0800	4.326 400 00	2.696 021 22	2.220 098 98	1.866 420 25	0.661 742 26	4.190 242 22

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
2.0405	2.418 257 17	3.416 053 43	119 16 46.2	39 45 35.4	38 7 53.8	1 37 41.6
2.0410	2.421 256 47	3.417 047 17	119 20 16.7	39 46 45.6	38 8 54.4	1 37 50.8
2.0415	2.424 261 99	3.418 040 25	119 23 47.2	39 47 55.7	38 9 55.6	1 38 0.1
2.0420	2.427 273 76	3.419 032 67	119 27 17.8	39 49 5.9	38 10 56.5	1 38 9.9
2.0425	2.430 291 78	3.420 024 44	119 30 48.4	39 50 16.1	38 11 57.4	1 38 18.8
2.0430	2.433 316 09	3.421 015 55	119 34 19.1	39 51 26.4	38 12 58.2	1 38 28.1
2.0435	2.436 346 69	3.422 006 01	119 37 49.8	39 52 36.6	38 13 59.1	1 38 37.5
2.0440	2.439 383 62	3.422 995 80	119 41 20.6	39 53 46.9	38 15 0.0	1 38 46.6
2.0445	2.442 426 89	3.423 984 94	119 44 51.4	39 54 57.1	38 16 0.9	1 38 56.2
2.0450	2.445 476 53	3.424 973 41	119 48 22.3	39 56 7.4	38 17 1.8	1 39 5.6
2.0455	2.448 532 55	3.425 961 22	119 51 53.2	39 57 17.7	38 18 2.7	1 39 15.0
2.0460	2.451 594 98	3.426 948 37	119 55 24.2	39 58 28.1	38 19 3.7	1 39 24.4
2.0465	2.454 663 83	3.427 934 86	119 58 55.2	39 59 38.4	38 20 4.6	1 39 33.8
2.0470	2.457 739 13	3.428 920 68	120 2 26.3	40 0 48.8	38 21 5.5	1 39 43.3
2.0475	2.460 820 89	3.429 905 84	120 5 57.5	40 1 59.2	38 22 6.4	1 39 52.8
2.0480	2.463 909 15	3.430 890 33	120 9 28.7	40 3 9.6	38 23 7.3	1 40 2.3
2.0485	2.467 003 92	3.431 874 15	120 12 59.9	40 4 20.0	38 24 8.3	1 40 11.8
2.0490	2.470 105 22	3.432 857 30	120 16 31.2	40 5 30.4	38 25 9.2	1 40 21.3
2.0495	2.473 213 07	3.433 839 79	120 20 2.5	40 6 40.8	38 26 10.1	1 40 30.8
2.0500	2.476 327 50	3.434 821 61	120 23 33.9	40 7 51.3	38 27 11.1	1 40 40.3
2.0505	2.479 448 53	3.435 802 76	120 27 5.4	40 9 1.8	38 28 12.0	1 40 49.8
2.0510	2.482 576 18	3.436 783 23	120 30 36.9	40 10 12.3	38 29 13.0	1 40 59.4
2.0515	2.485 710 47	3.437 763 04	120 34 8.4	40 11 22.8	38 30 13.9	1 41 8.9
2.0520	2.488 851 42	3.438 742 17	120 37 40.0	40 12 33.3	38 31 14.9	1 41 18.4
2.0525	2.491 999 05	3.439 720 63	120 41 11.7	40 13 43.9	38 32 15.9	1 41 28.0
2.0530	2.495 153 39	3.440 698 41	120 44 43.4	40 14 54.5	38 33 16.8	1 41 37.6
2.0535	2.498 314 47	3.441 675 52	120 48 15.1	40 16 5.0	38 34 17.8	1 41 47.1
2.0540	2.501 482 29	3.442 651 95	120 51 46.9	40 17 15.6	38 35 18.8	1 41 56.7
2.0545	2.504 656 89	3.443 627 70	120 55 18.8	40 18 26.3	38 36 19.7	1 42 6.4
2.0550	2.507 838 29	3.444 602 78	120 58 50.7	40 19 36.9	38 37 20.7	1 42 16.0
2.0555	2.511 026 50	3.445 577 18	121 2 22.7	40 20 47.6	38 38 21.7	1 42 25.6
2.0560	2.514 221 56	3.446 550 90	121 5 54.7	40 21 58.2	38 39 22.7	1 42 35.2
2.0565	2.517 423 48	3.447 523 93	121 9 26.8	40 23 8.9	38 40 23.7	1 42 45.0
2.0570	2.520 632 29	3.448 496 29	121 12 58.9	40 24 19.6	38 41 24.7	1 42 55.0
2.0575	2.523 848 02	3.449 467 96	121 16 31.0	40 25 30.3	38 42 25.7	1 43 4.9
2.0580	2.527 070 68	3.450 438 95	121 20 3.3	40 26 41.1	38 43 26.7	1 43 14.9
2.0585	2.530 300 29	3.451 409 26	121 23 35.5	40 27 51.8	38 44 27.7	1 43 24.9
2.0590	2.533 536 89	3.452 378 88	121 27 7.9	40 29 2.6	38 45 28.7	1 43 33.9
2.0595	2.536 780 49	3.453 347 82	121 30 40.2	40 30 13.4	38 46 29.7	1 43 43.9
2.0600	2.540 031 12	3.454 316 07	121 34 12.7	40 31 24.2	38 47 30.7	1 43 53.9
2.0605	2.543 288 81	3.455 283 63	121 37 45.1	40 32 35.0	38 48 31.7	1 44 3.9
2.0610	2.546 553 57	3.456 250 51	121 41 17.7	40 33 45.9	38 49 32.7	1 44 13.9
2.0615	2.549 825 42	3.457 216 69	121 44 50.3	40 34 56.8	38 50 33.8	1 44 23.9
2.0620	2.553 104 41	3.458 182 19	121 48 22.9	40 36 7.6	38 51 34.8	1 44 32.9
2.0625	2.556 390 54	3.459 146 99	121 51 55.6	40 37 18.5	38 52 35.8	1 44 42.9
2.0630	2.559 683 84	3.460 111 11	121 55 28.3	40 38 29.4	38 53 36.9	1 44 52.9
2.0635	2.562 984 35	3.461 074 53	121 59 1.1	40 39 40.4	38 54 37.9	1 45 2.9
2.0640	2.566 292 07	3.462 037 25	122 2 33.9	40 40 51.3	38 55 38.9	1 45 12.9
2.0645	2.569 607 04	3.462 999 29	122 6 6.8	40 42 2.3	38 56 40.0	1 45 22.9
2.0650	2.572 929 28	3.463 960 62	122 9 39.8	40 43 13.3	38 57 41.0	1 45 32.9
2.0655	2.576 258 81	3.464 921 27	122 13 12.8	40 44 24.3	38 58 42.1	1 45 42.9
2.0660	2.579 595 66	3.465 881 21	122 16 45.8	40 45 35.3	38 59 43.1	1 45 52.9
2.0665	2.582 939 87	3.466 840 46	122 20 18.9	40 46 46.3	39 0 44.2	1 46 2.9
2.0670	2.586 291 44	3.467 799 01	122 23 52.1	40 47 57.4	39 1 45.2	1 46 12.9
2.0675	2.589 650 40	3.468 756 86	122 27 25.3	40 49 8.4	39 2 46.3	1 46 22.9
2.0680	2.593 016 79	3.469 714 01	122 30 58.5	40 50 19.5	39 3 47.4	1 46 32.9
2.0685	2.596 390 63	3.470 670 46	122 34 31.8	40 51 30.6	39 4 48.4	1 46 42.9
2.0690	2.599 771 93	3.471 626 20	122 38 5.2	40 52 41.7	39 5 49.5	1 46 52.9
2.0695	2.603 160 74	3.472 581 25	122 41 38.6	40 53 52.9	39 6 50.6	1 47 2.9
2.0700	2.606 557 07	3.473 535 59	122 45 12.0	40 55 4.0	39 7 51.7	1 47 12.9
2.0705	2.609 960 95	3.474 489 22	122 48 45.5	40 56 15.2	39 8 52.8	1 47 22.9
2.0710	2.613 372 41	3.475 442 15	122 52 19.1	40 57 26.4	39 9 53.8	1 47 32.9
2.0715	2.616 791 46	3.476 394 38	122 55 52.7	40 58 37.6	39 10 54.9	1 47 42.9
2.0720	2.620 218 15	3.477 345 90	122 59 26.4	40 59 48.8	39 11 56.0	1 47 52.9
2.0725	2.623 652 49	3.478 296 71	123 3 0.1	41 1 0.0	39 12 57.1	1 48 2.9
2.0730	2.627 094 52	3.479 246 81	123 6 33.9	41 2 11.3	39 13 58.2	1 48 13.0
2.0735	2.630 544 25	3.480 196 20	123 10 7.7	41 3 22.6	39 14 59.3	1 48 23.0
2.0740	2.634 001 72	3.481 144 88	123 13 41.6	41 4 33.9	39 16 0.4	1 48 33.0
2.0745	2.637 466 94	3.482 092 85	123 17 15.5	41 5 45.2	39 17 1.5	1 48 43.0
2.0750	2.640 939 96	3.483 040 10	123 20 49.5	41 6 56.5	39 18 2.6	1 48 53.0
2.0755	2.644 420 80	3.483 986 65	123 24 23.5	41 8 7.8	39 19 3.7	1 49 4.0
2.0760	2.647 909 48	3.484 932 48	123 27 57.6	41 9 19.2	39 20 4.8	1 49 14.0
2.0765	2.651 406 03	3.485 877 60	123 31 31.7	41 10 30.6	39 21 6.0	1 49 24.0
2.0770	2.654 910 48	3.486 822 00	123 35 5.9	41 11 42.0	39 22 7.1	1 49 34.0
2.0775	2.658 422 85	3.487 765 68	123 38 40.1	41 12 53.4	39 23 8.2	1 49 45.0
2.0780	2.661 943 18	3.488 708 65	123 42 14.4	41 14 4.8	39 24 9.3	1 49 55.0
2.0785	2.665 471 50	3.489 650 89	123 45 48.7	41 15 16.2	39 25 10.4	1 50 5.0
2.0790	2.669 007 82	3.490 592 42	123 49 23.1	41 16 27.7	39 26 11.6	1 50 16.0
2.0795	2.672 552 18	3.491 533 23	123 52 57.5	41 17 39.2	39 27 12.7	1 50 26.0
2.0800	2.676 104 61	3.492 473 32	123 56 32.0	41 18 50.7	39 28 13.8	1 50 36.0

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= LS/A= VLS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
.0805	4.328 480 25	2.696 088 02	2.221 495 35	1.867 068 26	0.662 276 04	4.194 608 51
.0810	4.330 561 00	2.696 153 65	2.222 801 52	1.867 716 13	0.662 810 03	4.198 983 25
.0815	4.332 642 25	2.696 218 10	2.224 287 51	1.868 363 87	0.663 344 22	4.203 366 46
.0820	4.334 724 00	2.696 281 37	2.225 683 30	1.869 011 46	0.663 878 62	4.207 758 18
.0825	4.336 806 25	2.696 343 47	2.227 078 90	1.869 658 91	0.664 413 23	4.212 158 44
.0830	4.338 889 00	2.696 404 38	2.228 474 30	1.870 306 22	0.664 948 05	4.216 567 26
.0835	4.340 972 25	2.696 464 12	2.229 869 50	1.870 953 40	0.665 483 07	4.220 984 68
.0840	4.343 056 00	2.696 522 69	2.231 264 50	1.871 600 42	0.666 018 30	4.225 410 72
.0845	4.345 140 25	2.696 580 07	2.232 659 30	1.872 247 31	0.666 553 74	4.229 845 42
.0850	4.347 225 00	2.696 636 27	2.234 053 90	1.872 894 06	0.667 089 38	4.234 288 80
.0855	4.349 310 25	2.696 691 30	2.235 448 29	1.873 540 67	0.667 625 23	4.238 740 89
.0860	4.351 396 00	2.696 745 15	2.236 842 48	1.874 187 13	0.668 161 28	4.243 201 73
.0865	4.353 482 25	2.696 797 81	2.238 236 46	1.874 833 45	0.668 697 54	4.247 671 35
.0870	4.355 569 00	2.696 849 30	2.239 630 23	1.875 479 63	0.669 234 00	4.252 149 76
.0875	4.357 656 25	2.696 899 61	2.241 023 79	1.876 125 66	0.669 770 67	4.256 637 02
.0880	4.359 744 00	2.696 948 74	2.242 417 14	1.876 771 56	0.670 307 55	4.261 133 14
.0885	4.361 832 25	2.696 996 69	2.243 810 28	1.877 417 31	0.670 844 63	4.265 638 16
.0890	4.363 921 00	2.697 043 46	2.245 203 20	1.878 062 91	0.671 381 91	4.270 152 11
.0895	4.366 010 25	2.697 089 05	2.246 595 90	1.878 708 38	0.671 919 40	4.274 675 02
.0900	4.368 100 00	2.697 133 46	2.247 988 39	1.879 353 70	0.672 457 10	4.279 206 92
.0905	4.370 190 25	2.697 176 68	2.249 380 65	1.879 998 87	0.672 994 99	4.283 747 84
.0910	4.372 281 00	2.697 218 73	2.250 772 70	1.880 643 90	0.673 533 10	4.288 297 82
.0915	4.374 372 25	2.697 259 59	2.252 164 52	1.881 288 79	0.674 071 40	4.292 856 89
.0920	4.376 464 00	2.697 299 28	2.253 556 12	1.881 933 54	0.674 609 91	4.297 425 07
.0925	4.378 556 25	2.697 337 78	2.254 947 49	1.882 578 13	0.675 148 63	4.302 002 41
.0930	4.380 649 00	2.697 375 10	2.256 338 63	1.883 222 59	0.675 687 55	4.306 588 92
.0935	4.382 742 25	2.697 411 24	2.257 729 55	1.883 866 90	0.676 226 67	4.311 184 66
.0940	4.384 836 00	2.697 446 20	2.259 120 24	1.884 511 06	0.676 766 00	4.315 789 64
.0945	4.386 930 25	2.697 479 97	2.260 510 69	1.885 155 08	0.677 305 52	4.320 403 90
.0950	4.389 025 00	2.697 512 56	2.261 900 91	1.885 798 95	0.677 845 26	4.325 027 48
.0955	4.391 120 25	2.697 543 97	2.263 290 90	1.886 442 67	0.678 385 19	4.329 660 41
.0960	4.393 216 00	2.697 574 20	2.264 680 65	1.887 086 25	0.678 925 33	4.334 302 71
.0965	4.395 312 25	2.697 603 24	2.266 070 16	1.887 729 68	0.679 465 67	4.338 954 43
.0970	4.397 409 00	2.697 631 10	2.267 459 43	1.888 372 97	0.680 006 21	4.343 615 60
.0975	4.399 506 25	2.697 657 77	2.268 848 46	1.889 016 11	0.680 546 96	4.348 286 24
.0980	4.401 604 00	2.697 683 27	2.270 237 24	1.889 659 10	0.681 087 90	4.352 966 41
.0985	4.403 702 25	2.697 707 58	2.271 625 79	1.890 301 95	0.681 629 05	4.357 656 12
.0990	4.405 801 00	2.697 730 70	2.273 014 09	1.890 944 64	0.682 170 40	4.362 355 42
.0995	4.407 900 25	2.697 752 64	2.274 402 13	1.891 587 19	0.682 711 96	4.367 064 33
1.0000	4.410 000 00	2.697 773 40	2.275 789 94	1.892 229 60	0.683 253 71	4.371 782 90
1.0005	4.412 100 25	2.697 792 97	2.277 177 49	1.892 871 85	0.683 795 67	4.376 511 15
1.0010	4.414 201 00	2.697 811 36	2.278 564 78	1.893 513 95	0.684 337 82	4.381 249 13
1.0015	4.416 302 25	2.697 828 56	2.279 951 83	1.894 155 91	0.684 880 18	4.385 996 86
1.0020	4.418 404 00	2.697 844 58	2.281 338 62	1.894 797 72	0.685 422 74	4.390 754 39
1.0025	4.420 506 25	2.697 859 42	2.282 725 15	1.895 439 38	0.685 965 50	4.395 521 75
1.0030	4.422 609 00	2.697 873 06	2.284 111 43	1.896 080 89	0.686 508 46	4.400 298 96
1.0035	4.424 712 25	2.697 885 53	2.285 497 44	1.896 722 25	0.687 051 62	4.405 086 08
1.0040	4.426 816 00	2.697 896 80	2.286 883 19	1.897 363 46	0.687 594 98	4.409 883 14
1.0045	4.428 920 25	2.697 906 90	2.288 268 68	1.898 004 52	0.688 138 54	4.414 690 16
1.0050	4.431 025 00	2.697 915 80	2.289 653 91	1.898 645 43	0.688 682 30	4.419 507 20
1.0055	4.433 130 25	2.697 923 52	2.291 038 87	1.899 286 19	0.689 226 26	4.424 334 28
1.0060	4.435 236 00	2.697 930 06	2.292 423 56	1.899 926 80	0.689 770 42	4.429 171 44
1.0065	4.437 342 25	2.697 935 41	2.293 807 98	1.900 567 26	0.690 314 78	4.434 018 71
1.0070	4.439 449 00	2.697 939 57	2.295 192 14	1.901 207 57	0.690 859 34	4.438 876 15
1.0075	4.441 556 25	2.697 942 54	2.296 576 02	1.901 847 73	0.691 404 10	4.443 743 77
1.0080	4.443 664 00	2.697 944 33	2.297 959 62	1.902 487 74	0.691 949 06	4.448 621 63
1.0085	4.445 772 25	2.697 944 93	2.299 342 95	1.903 127 59	0.692 494 21	4.453 509 75
1.0090	4.447 881 00	2.697 944 35	2.300 726 00	1.903 767 29	0.693 039 57	4.458 408 18
1.0095	4.449 990 25	2.697 942 58	2.302 108 78	1.904 406 84	0.693 585 12	4.463 316 96
1.0100	4.452 100 00	2.697 939 62	2.303 491 27	1.905 046 24	0.694 130 87	4.468 236 11
1.0105	4.454 210 25	2.697 935 47	2.304 873 49	1.905 685 49	0.694 676 83	4.473 165 69
1.0110	4.456 321 00	2.697 930 14	2.306 255 42	1.906 324 58	0.695 222 97	4.478 105 72
1.0115	4.458 432 25	2.697 923 62	2.307 637 06	1.906 963 53	0.695 769 32	4.483 056 25
1.0120	4.460 544 00	2.697 915 91	2.309 018 42	1.907 602 32	0.696 315 86	4.488 017 32
1.0125	4.462 656 25	2.697 907 02	2.310 399 49	1.908 240 95	0.696 862 61	4.492 988 96
1.0130	4.464 769 00	2.697 896 93	2.311 780 27	1.908 879 43	0.697 409 54	4.497 971 22
1.0135	4.466 882 25	2.697 885 66	2.313 160 76	1.909 517 76	0.697 956 68	4.502 964 13
1.0140	4.468 996 00	2.697 873 20	2.314 540 95	1.910 155 94	0.698 504 01	4.507 967 74
1.0145	4.471 110 25	2.697 859 55	2.315 920 85	1.910 793 96	0.699 051 54	4.512 982 08
1.0150	4.473 225 00	2.697 844 72	2.317 300 46	1.911 431 82	0.699 599 27	4.518 007 20
1.0155	4.475 340 25	2.697 828 69	2.318 679 77	1.912 069 53	0.700 147 19	4.523 043 13
1.0160	4.477 456 00	2.697 811 48	2.320 058 77	1.912 707 09	0.700 695 31	4.528 089 91
1.0165	4.479 572 25	2.697 793 08	2.321 437 48	1.913 344 49	0.701 243 63	4.533 147 60
1.0170	4.481 689 00	2.697 773 49	2.322 815 89	1.913 981 74	0.701 792 14	4.538 216 22
1.0175	4.483 806 25	2.697 752 71	2.324 193 99	1.914 618 83	0.702 340 85	4.543 295 81
1.0180	4.485 924 00	2.697 730 75	2.325 571 79	1.915 255 77	0.702 889 76	4.548 386 43
1.0185	4.488 042 25	2.697 707 59	2.326 949 28	1.915 892 55	0.703 438 86	4.553 488 11
1.0190	4.490 161 00	2.697 683 25	2.328 326 46	1.916 529 18	0.703 988 15	4.558 600 90
1.0195	4.492 280 25	2.697 657 71	2.329 703 33	1.917 165 65	0.704 537 64	4.563 724 83
1.0200	4.494 400 00	2.697 630 99	2.331 079 88	1.917 801 96	0.705 087 33	4.568 859 94

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
				DEG MNT SEC		
2.0805	2.679 665 13	3.493 412 69	124 0 6.6	41 20 2.2	39 29 15.0	1 50 47.
2.0810	2.683 233 78	3.494 351 33	124 3 41.2	41 21 13.7	39 30 16.1	1 50 57.
2.0815	2.686 810 58	3.495 289 25	124 7 15.8	41 22 25.3	39 31 17.3	1 51 8.
2.0820	2.690 395 57	3.496 226 45	124 10 50.5	41 23 36.8	39 32 18.4	1 51 18.
2.0825	2.693 988 76	3.497 162 92	124 14 25.3	41 24 48.4	39 33 19.6	1 51 28.
2.0830	2.697 590 20	3.498 098 67	124 18 0.0	41 26 0.0	39 34 20.7	1 51 39.
2.0835	2.701 199 90	3.499 033 69	124 21 34.9	41 27 11.6	39 35 21.9	1 51 49.
2.0840	2.704 817 91	3.499 967 98	124 25 9.8	41 28 23.3	39 36 23.0	1 52 0.
2.0845	2.708 444 24	3.500 901 54	124 28 44.8	41 29 34.9	39 37 24.2	1 52 10.
2.0850	2.712 078 93	3.501 834 38	124 32 19.8	41 30 46.6	39 38 25.3	1 52 21.
2.0855	2.715 722 01	3.502 766 48	124 35 54.8	41 31 58.3	39 39 26.5	1 52 31.
2.0860	2.719 373 50	3.503 697 86	124 39 29.9	41 33 10.0	39 40 27.7	1 52 42.
2.0865	2.723 033 45	3.504 628 50	124 43 5.1	41 34 21.7	39 41 28.8	1 52 52.
2.0870	2.726 701 87	3.505 558 41	124 46 40.3	41 35 33.4	39 42 30.0	1 53 3.
2.0875	2.730 378 80	3.506 487 58	124 50 15.6	41 36 45.2	39 43 31.2	1 53 14.
2.0880	2.734 064 28	3.507 416 02	124 53 50.9	41 37 57.0	39 44 32.4	1 53 24.
2.0885	2.737 758 32	3.508 343 73	124 57 26.2	41 39 8.7	39 45 33.5	1 53 35.
2.0890	2.741 460 96	3.509 270 70	125 1 1.7	41 40 20.6	39 46 34.7	1 53 45.
2.0895	2.745 172 24	3.510 196 93	125 4 37.1	41 41 32.4	39 47 35.9	1 53 56.
2.0900	2.748 892 18	3.511 122 42	125 8 12.7	41 42 44.2	39 48 37.1	1 54 7.
2.0905	2.752 620 82	3.512 047 18	125 11 48.2	41 43 56.1	39 49 38.3	1 54 17.
2.0910	2.756 358 18	3.512 971 19	125 15 23.8	41 45 7.9	39 50 39.5	1 54 28.
2.0915	2.760 104 30	3.513 894 47	125 18 59.5	41 46 19.8	39 51 40.6	1 54 39.
2.0920	2.763 859 21	3.514 817 00	125 22 35.2	41 47 31.7	39 52 41.8	1 54 49.
2.0925	2.767 622 94	3.515 738 80	125 26 11.0	41 48 43.7	39 53 43.0	1 55 0.
2.0930	2.771 395 53	3.516 659 85	125 29 46.9	41 49 55.6	39 54 44.2	1 55 11.
2.0935	2.775 177 00	3.517 580 15	125 33 22.7	41 51 7.6	39 55 45.4	1 55 22.
2.0940	2.778 967 39	3.518 499 71	125 36 58.7	41 52 19.6	39 56 46.6	1 55 32.
2.0945	2.782 766 73	3.519 418 53	125 40 34.7	41 53 31.6	39 57 47.8	1 55 43.
2.0950	2.786 575 06	3.520 336 60	125 44 10.7	41 54 43.6	39 58 49.0	1 55 54.
2.0955	2.790 392 40	3.521 253 92	125 47 46.8	41 55 55.6	39 59 50.3	1 56 5.
2.0960	2.794 218 79	3.522 170 49	125 51 22.9	41 57 7.6	40 0 51.5	1 56 16.
2.0965	2.798 054 27	3.523 086 32	125 54 59.1	41 58 19.7	40 1 52.7	1 56 27.
2.0970	2.801 898 86	3.524 001 39	125 58 35.4	41 59 31.8	40 2 53.9	1 56 37.
2.0975	2.805 752 60	3.524 915 71	126 2 11.7	42 0 43.9	40 3 55.1	1 56 48.
2.0980	2.809 615 53	3.525 829 29	126 5 48.0	42 1 56.0	40 4 56.3	1 56 59.
2.0985	2.813 487 67	3.526 742 11	126 9 24.4	42 3 8.1	40 5 57.5	1 57 10.
2.0990	2.817 369 07	3.527 654 17	126 13 0.8	42 4 20.3	40 6 58.8	1 57 21.
2.0995	2.821 259 75	3.528 565 49	126 16 37.3	42 5 32.4	40 7 60.0	1 57 32.
2.1000	2.825 159 75	3.529 476 04	126 20 13.9	42 6 44.6	40 9 1.2	1 57 43.
2.1005	2.829 069 11	3.530 385 85	126 23 50.5	42 7 56.8	40 10 2.4	1 57 54.
2.1010	2.832 987 86	3.531 294 89	126 27 27.2	42 9 9.1	40 11 3.7	1 58 5.
2.1015	2.836 916 03	3.532 203 18	126 31 3.9	42 10 21.3	40 12 4.9	1 58 16.
2.1020	2.840 853 66	3.533 110 71	126 34 40.6	42 11 33.5	40 13 6.1	1 58 27.
2.1025	2.844 800 78	3.534 017 48	126 38 17.4	42 12 45.8	40 14 7.4	1 58 38.
2.1030	2.848 757 44	3.534 923 49	126 41 54.3	42 13 58.1	40 15 8.6	1 58 49.
2.1035	2.852 723 66	3.535 828 74	126 45 31.2	42 15 10.4	40 16 9.8	1 59 0.
2.1040	2.856 699 48	3.536 733 23	126 49 8.2	42 16 22.7	40 17 11.1	1 59 11.
2.1045	2.860 684 95	3.537 636 95	126 52 45.2	42 17 35.1	40 18 12.3	1 59 22.
2.1050	2.864 680 08	3.538 539 91	126 56 22.3	42 18 47.4	40 19 13.6	1 59 33.
2.1055	2.868 684 92	3.539 442 11	126 59 59.4	42 19 59.8	40 20 14.8	1 59 45.
2.1060	2.872 699 51	3.540 343 54	127 3 36.5	42 21 12.2	40 21 16.1	1 59 56.
2.1065	2.876 723 89	3.541 244 21	127 7 13.8	42 22 24.6	40 22 17.3	2 0 7.
2.1070	2.880 758 08	3.542 144 10	127 10 51.0	42 23 37.0	40 23 18.6	2 0 18.
2.1075	2.884 802 13	3.543 043 23	127 14 28.4	42 24 49.5	40 24 19.8	2 0 29.
2.1080	2.888 856 08	3.543 941 60	127 18 5.7	42 26 1.9	40 25 21.1	2 0 40.
2.1085	2.892 919 95	3.544 839 19	127 21 43.2	42 27 14.4	40 26 22.3	2 0 52.
2.1090	2.896 993 80	3.545 736 01	127 25 20.7	42 28 26.9	40 27 23.6	2 1 3.
2.1095	2.901 077 65	3.546 632 06	127 28 58.2	42 29 39.4	40 28 24.8	2 1 14.
2.1100	2.905 171 55	3.547 527 34	127 32 35.8	42 30 51.9	40 29 26.1	2 1 25.
2.1105	2.909 275 53	3.548 421 85	127 36 13.4	42 32 4.5	40 30 27.4	2 1 37.
2.1110	2.913 389 63	3.549 315 58	127 39 51.1	42 33 17.0	40 31 28.6	2 1 48.
2.1115	2.917 513 85	3.550 208 54	127 43 28.8	42 34 29.6	40 32 29.9	2 1 59.
2.1120	2.921 648 35	3.551 100 72	127 47 6.6	42 35 42.2	40 33 31.1	2 2 11.
2.1125	2.925 793 05	3.551 992 12	127 50 44.5	42 36 54.8	40 34 32.4	2 2 22.
2.1130	2.929 948 03	3.552 882 75	127 54 22.4	42 38 7.5	40 35 33.7	2 2 33.
2.1135	2.934 113 32	3.553 772 60	127 58 0.3	42 39 20.1	40 36 35.0	2 2 45.
2.1140	2.938 288 97	3.554 661 68	128 1 38.3	42 40 32.8	40 37 36.2	2 2 56.
2.1145	2.942 475 01	3.555 549 97	128 5 16.3	42 41 45.4	40 38 37.5	2 3 8.
2.1150	2.946 671 49	3.556 437 48	128 8 54.4	42 42 58.1	40 39 38.8	2 3 19.
2.1155	2.950 878 44	3.557 324 21	128 12 32.6	42 44 10.9	40 40 40.0	2 3 30.
2.1160	2.955 095 91	3.558 210 16	128 16 10.8	42 45 23.6	40 41 41.3	2 3 42.
2.1165	2.959 323 94	3.559 095 32	128 19 49.1	42 46 36.4	40 42 42.6	2 3 53.
2.1170	2.963 562 56	3.559 979 70	128 23 27.4	42 47 49.1	40 43 43.9	2 4 5.
2.1175	2.967 811 83	3.560 863 30	128 27 5.7	42 49 1.9	40 44 45.1	2 4 16.
2.1180	2.972 071 77	3.561 746 11	128 30 44.1	42 50 14.7	40 45 46.4	2 4 28.
2.1185	2.976 342 43	3.562 628 13	128 34 22.6	42 51 27.5	40 46 47.7	2 4 39.
2.1190	2.980 623 86	3.563 509 36	128 38 1.1	42 52 40.4	40 47 49.0	2 4 51.
2.1195	2.984 916 09	3.564 389 81	128 41 39.7	42 53 53.2	40 48 50.3	2 5 2.
2.1200	2.989 219 17	3.565 269 47	128 45 18.3	42 55 6.1	40 49 51.6	2 5 14.

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= LS/A= √LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
.1205	4.496 520 25	2.697 603 08	2.332 456 13	1.918 438 12	0.705 637 21	4.574 006 29
.1210	4.498 641 00	2.697 573 98	2.333 832 06	1.919 074 12	0.706 187 28	4.579 163 91
.1215	4.500 762 25	2.697 543 69	2.335 207 67	1.919 709 96	0.706 737 55	4.584 332 85
.1220	4.502 884 00	2.697 512 21	2.336 582 97	1.920 345 64	0.707 288 02	4.589 513 14
.1225	4.505 006 25	2.697 479 54	2.337 957 94	1.920 981 17	0.707 838 68	4.594 704 84
.1230	4.507 129 00	2.697 445 68	2.339 332 60	1.921 616 54	0.708 389 53	4.599 907 99
.1235	4.509 252 25	2.697 410 63	2.340 706 93	1.922 251 76	0.708 940 58	4.605 122 62
.1240	4.511 376 00	2.697 374 39	2.342 080 93	1.922 886 81	0.709 491 82	4.610 348 79
.1245	4.513 500 25	2.697 336 96	2.343 454 61	1.923 521 71	0.710 043 25	4.615 586 54
.1250	4.515 625 00	2.697 298 34	2.344 827 97	1.924 156 45	0.710 594 88	4.620 835 91
.1255	4.517 750 25	2.697 258 54	2.346 200 99	1.924 791 03	0.711 146 70	4.626 096 95
.1260	4.519 876 00	2.697 217 54	2.347 573 68	1.925 425 45	0.711 698 71	4.631 369 70
.1265	4.522 002 25	2.697 175 35	2.348 946 04	1.926 059 71	0.712 250 92	4.636 654 21
.1270	4.524 129 00	2.697 131 97	2.350 318 06	1.926 693 82	0.712 803 32	4.641 950 52
.1275	4.526 256 25	2.697 087 40	2.351 689 75	1.927 327 76	0.713 355 91	4.647 258 69
.1280	4.528 384 00	2.697 041 64	2.353 061 10	1.927 961 54	0.713 908 70	4.652 578 74
.1285	4.530 512 25	2.696 994 70	2.354 432 12	1.928 595 17	0.714 461 67	4.657 910 74
.1290	4.532 641 00	2.696 946 56	2.355 802 79	1.929 228 63	0.715 014 84	4.663 254 73
.1295	4.534 770 25	2.696 897 23	2.357 173 12	1.929 861 94	0.715 568 21	4.668 610 75
.1300	4.536 900 00	2.696 846 71	2.358 543 10	1.930 495 08	0.716 121 76	4.673 978 85
.1305	4.539 030 25	2.696 795 00	2.359 912 74	1.931 128 07	0.716 675 50	4.679 359 09
.1310	4.541 161 00	2.696 742 10	2.361 282 04	1.931 760 89	0.717 229 44	4.684 751 49
.1315	4.543 292 25	2.696 688 01	2.362 650 98	1.932 393 55	0.717 783 57	4.690 156 13
.1320	4.545 424 00	2.696 632 72	2.364 019 58	1.933 026 05	0.718 337 88	4.695 573 03
.1325	4.547 556 25	2.696 576 25	2.365 387 82	1.933 658 39	0.718 892 39	4.701 002 26
.1330	4.549 689 00	2.696 518 59	2.366 755 71	1.934 290 57	0.719 447 09	4.706 443 85
.1335	4.551 822 25	2.696 459 74	2.368 123 24	1.934 922 58	0.720 001 98	4.711 897 86
.1340	4.553 956 00	2.696 399 69	2.369 490 42	1.935 554 44	0.720 557 06	4.717 364 33
.1345	4.556 090 25	2.696 338 46	2.370 857 24	1.936 186 13	0.721 112 34	4.722 843 33
.1350	4.558 225 00	2.696 276 03	2.372 223 69	1.936 817 66	0.721 667 80	4.728 334 88
.1355	4.560 360 25	2.696 212 41	2.373 589 79	1.937 449 02	0.722 223 45	4.733 839 05
.1360	4.562 496 00	2.696 147 61	2.374 955 52	1.938 080 23	0.722 779 29	4.739 355 89
.1365	4.564 632 25	2.696 081 61	2.376 320 89	1.938 711 27	0.723 335 32	4.744 885 44
.1370	4.566 769 00	2.696 014 42	2.377 685 90	1.939 342 14	0.723 891 54	4.750 427 76
.1375	4.568 906 25	2.695 946 04	2.379 050 53	1.939 972 86	0.724 447 95	4.755 982 89
.1380	4.571 044 00	2.695 876 47	2.380 414 79	1.940 603 41	0.725 004 54	4.761 550 90
.1385	4.573 182 25	2.695 805 71	2.381 778 69	1.941 233 79	0.725 561 33	4.767 131 82
.1390	4.575 321 00	2.695 733 76	2.383 142 21	1.941 864 01	0.726 118 31	4.772 725 71
.1395	4.577 460 25	2.695 660 62	2.384 505 35	1.942 494 07	0.726 675 47	4.778 332 62
.1400	4.579 600 00	2.695 586 28	2.385 868 12	1.943 123 97	0.727 232 82	4.783 952 61
.1405	4.581 740 25	2.695 510 76	2.387 230 51	1.943 753 69	0.727 790 36	4.789 585 73
.1410	4.583 881 00	2.695 434 05	2.388 592 53	1.944 383 26	0.728 348 09	4.795 232 03
.1415	4.586 022 25	2.695 356 14	2.389 954 16	1.945 012 66	0.728 906 01	4.800 891 56
.1420	4.588 164 00	2.695 277 04	2.391 315 41	1.945 641 89	0.729 464 11	4.806 564 38
.1425	4.590 306 25	2.695 196 76	2.392 676 27	1.946 270 96	0.730 022 40	4.812 250 53
.1430	4.592 449 00	2.695 115 28	2.394 036 75	1.946 899 86	0.730 580 88	4.817 950 09
.1435	4.594 592 25	2.695 032 61	2.395 396 84	1.947 528 60	0.731 139 54	4.823 663 09
.1440	4.596 736 00	2.694 948 75	2.396 756 54	1.948 157 17	0.731 698 39	4.829 389 60
.1445	4.598 880 25	2.694 863 70	2.398 115 85	1.948 785 57	0.732 257 43	4.835 129 66
.1450	4.601 025 00	2.694 777 46	2.399 474 77	1.949 413 81	0.732 816 66	4.840 883 34
.1455	4.603 170 25	2.694 690 03	2.400 833 29	1.950 041 88	0.733 376 07	4.846 650 69
.1460	4.605 316 00	2.694 601 41	2.402 191 42	1.950 669 79	0.733 935 67	4.852 431 76
.1465	4.607 462 25	2.694 511 59	2.403 549 15	1.951 297 53	0.734 495 45	4.858 226 61
.1470	4.609 609 00	2.694 420 59	2.404 906 48	1.951 925 10	0.735 055 42	4.864 035 30
.1475	4.611 756 25	2.694 328 40	2.406 263 41	1.952 552 50	0.735 615 58	4.869 857 89
.1480	4.613 904 00	2.694 235 01	2.407 619 94	1.953 179 73	0.736 175 92	4.875 694 43
.1485	4.616 052 25	2.694 140 44	2.408 976 06	1.953 806 80	0.736 736 44	4.881 544 97
.1490	4.618 201 00	2.694 044 67	2.410 331 78	1.954 433 70	0.737 297 15	4.887 409 58
.1495	4.620 350 25	2.693 947 72	2.411 687 09	1.955 060 43	0.737 858 05	4.893 288 32
.1500	4.622 500 00	2.693 849 57	2.413 042 00	1.955 686 99	0.738 419 13	4.899 181 24
.1505	4.624 650 25	2.693 750 23	2.414 396 49	1.956 313 39	0.738 980 39	4.905 088 40
.1510	4.626 801 00	2.693 649 71	2.415 750 57	1.956 939 61	0.739 541 84	4.911 009 86
.1515	4.628 952 25	2.693 547 99	2.417 104 23	1.957 565 67	0.740 103 48	4.916 945 68
.1520	4.631 104 00	2.693 445 08	2.418 457 48	1.958 191 55	0.740 665 29	4.922 895 92
.1525	4.633 256 25	2.693 340 98	2.419 810 32	1.958 817 27	0.741 227 30	4.928 860 64
.1530	4.635 409 00	2.693 235 70	2.421 162 73	1.959 442 82	0.741 789 48	4.934 839 89
.1535	4.637 562 25	2.693 129 22	2.422 514 73	1.960 068 20	0.742 351 85	4.940 833 75
.1540	4.639 716 00	2.693 021 55	2.423 866 30	1.960 693 40	0.742 914 40	4.946 842 27
.1545	4.641 870 25	2.692 912 69	2.425 217 45	1.961 318 44	0.743 477 14	4.952 865 52
.1550	4.644 025 00	2.692 802 65	2.426 568 17	1.961 943 31	0.744 040 05	4.958 903 55
.1555	4.646 180 25	2.692 691 41	2.427 918 47	1.962 568 01	0.744 603 15	4.964 956 42
.1560	4.648 336 00	2.692 578 98	2.429 268 33	1.963 192 53	0.745 166 44	4.971 024 20
.1565	4.650 492 25	2.692 465 37	2.430 617 77	1.963 816 89	0.745 729 90	4.977 106 94
.1570	4.652 649 00	2.692 350 56	2.431 966 78	1.964 441 07	0.746 293 55	4.983 204 75
.1575	4.654 806 25	2.692 234 56	2.433 315 35	1.965 065 08	0.746 857 38	4.989 317 64
.1580	4.656 964 00	2.692 117 38	2.434 663 49	1.965 688 92	0.747 421 39	4.995 445 69
.1585	4.659 122 25	2.691 999 00	2.436 011 18	1.966 312 59	0.747 985 58	5.001 588 97
.1590	4.661 281 00	2.691 879 44	2.437 358 45	1.966 936 09	0.748 549 96	5.007 747 54
.1595	4.663 440 25	2.691 758 69	2.438 705 27	1.967 559 41	0.749 114 51	5.013 921 46
.1600	4.665 600 00	2.691 636 75	2.440 051 65	1.968 182 56	0.749 679 25	5.020 110 81

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=φ+C	φ	C
				DEG MNT SEC		
2.1205	2.993 533 13	3.566 148 34	128 48 56.9	42 56 19.0	40 50 52.8	2 5 26.1
2.1210	2.997 858 03	3.567 026 42	128 52 35.7	42 57 31.9	40 51 54.1	2 5 37.8
2.1215	3.002 193 90	3.567 903 70	128 56 14.4	42 58 44.8	40 52 55.4	2 5 49.4
2.1220	3.006 540 79	3.568 780 19	128 59 53.2	42 59 57.7	40 53 56.7	2 6 1.0
2.1225	3.010 898 74	3.569 655 89	129 3 32.1	43 1 10.7	40 54 58.0	2 6 12.7
2.1230	3.015 267 79	3.570 530 80	129 7 11.0	43 2 23.7	40 55 59.3	2 6 24.4
2.1235	3.019 647 95	3.571 404 91	129 10 50.0	43 3 36.7	40 57 0.6	2 6 36.1
2.1240	3.024 039 38	3.572 278 22	129 14 29.0	43 4 49.7	40 58 1.9	2 6 47.8
2.1245	3.028 442 00	3.573 150 74	129 18 8.1	43 6 2.7	40 59 3.2	2 6 59.5
2.1250	3.032 855 91	3.574 022 46	129 21 47.3	43 7 15.8	41 0 4.5	2 7 11.3
2.1255	3.037 281 14	3.574 893 38	129 25 26.4	43 8 28.8	41 1 5.7	2 7 23.1
2.1260	3.041 717 73	3.575 763 50	129 29 5.7	43 9 41.9	41 2 7.0	2 7 34.8
2.1265	3.046 165 74	3.576 632 82	129 32 45.0	43 10 55.0	41 3 8.3	2 7 46.6
2.1270	3.050 625 21	3.577 501 34	129 36 24.3	43 12 8.1	41 4 9.6	2 7 58.5
2.1275	3.055 096 19	3.578 369 06	129 40 3.7	43 13 21.2	41 5 10.9	2 8 10.3
2.1280	3.059 578 71	3.579 235 98	129 43 43.1	43 14 34.4	41 6 12.2	2 8 22.1
2.1285	3.064 072 83	3.580 102 09	129 47 22.6	43 15 47.5	41 7 13.5	2 8 34.0
2.1290	3.068 578 60	3.580 967 40	129 51 2.2	43 17 0.7	41 8 14.8	2 8 45.9
2.1295	3.073 096 05	3.581 831 90	129 54 41.8	43 18 13.9	41 9 16.1	2 8 57.8
2.1300	3.077 625 24	3.582 695 60	129 58 21.4	43 19 27.1	41 10 17.4	2 9 9.7
2.1305	3.082 166 21	3.583 558 49	130 2 1.1	43 20 40.4	41 11 18.7	2 9 21.6
2.1310	3.086 719 01	3.584 420 57	130 5 40.8	43 21 53.6	41 12 20.0	2 9 33.6
2.1315	3.091 283 68	3.585 281 84	130 9 20.6	43 23 6.9	41 13 21.3	2 9 45.5
2.1320	3.095 860 29	3.586 142 30	130 13 0.5	43 24 20.2	41 14 22.6	2 9 57.5
2.1325	3.100 448 86	3.587 001 95	130 16 40.4	43 25 33.5	41 15 23.9	2 10 9.5
2.1330	3.105 049 46	3.587 860 79	130 20 20.4	43 26 46.8	41 16 25.3	2 10 21.5
2.1335	3.109 662 12	3.588 718 82	130 24 0.4	43 28 0.1	41 17 26.6	2 10 33.6
2.1340	3.114 286 91	3.589 576 04	130 27 40.4	43 29 13.5	41 18 27.9	2 10 45.6
2.1345	3.118 923 86	3.590 432 44	130 31 20.5	43 30 26.8	41 19 29.2	2 10 57.7
2.1350	3.123 573 02	3.591 288 03	130 35 0.7	43 31 40.2	41 20 30.5	2 11 9.8
2.1355	3.128 234 46	3.592 142 80	130 38 40.9	43 32 53.6	41 21 31.8	2 11 21.9
2.1360	3.132 908 21	3.592 996 75	130 42 21.2	43 34 7.1	41 22 33.1	2 11 34.0
2.1365	3.137 594 32	3.593 849 89	130 46 1.5	43 35 20.5	41 23 34.4	2 11 46.1
2.1370	3.142 292 85	3.594 702 21	130 49 41.9	43 36 34.0	41 24 35.7	2 11 58.3
2.1375	3.147 003 85	3.595 553 71	130 53 22.3	43 37 47.4	41 25 37.0	2 12 10.4
2.1380	3.151 727 37	3.596 404 39	130 57 2.8	43 39 0.9	41 26 38.3	2 12 22.6
2.1385	3.156 463 46	3.597 254 25	131 0 43.3	43 40 14.4	41 27 39.6	2 12 34.8
2.1390	3.161 212 16	3.598 103 29	131 4 23.8	43 41 27.9	41 28 40.9	2 12 47.0
2.1395	3.165 973 54	3.598 951 51	131 8 4.5	43 42 41.5	41 29 42.2	2 12 59.2
2.1400	3.170 747 64	3.599 798 90	131 11 45.2	43 43 55.1	41 30 43.6	2 13 11.5
2.1405	3.175 534 52	3.600 645 47	131 15 25.9	43 45 8.6	41 31 44.9	2 13 23.8
2.1410	3.180 334 23	3.601 491 21	131 19 6.7	43 46 22.2	41 32 46.2	2 13 36.1
2.1415	3.185 146 82	3.602 336 13	131 22 47.5	43 47 35.8	41 33 47.5	2 13 48.4
2.1420	3.189 972 35	3.603 180 22	131 26 28.4	43 48 49.5	41 34 48.8	2 14 0.7
2.1425	3.194 810 86	3.604 023 49	131 30 9.3	43 50 3.1	41 35 50.1	2 14 13.0
2.1430	3.199 662 42	3.604 865 92	131 33 50.3	43 51 16.8	41 36 51.4	2 14 25.4
2.1435	3.204 527 07	3.605 707 53	131 37 31.3	43 52 30.4	41 37 52.7	2 14 37.7
2.1440	3.209 404 87	3.606 548 30	131 41 12.4	43 53 44.1	41 38 54.0	2 14 50.1
2.1445	3.214 295 88	3.607 388 25	131 44 53.6	43 54 57.9	41 39 55.3	2 15 2.5
2.1450	3.219 200 15	3.608 227 36	131 48 34.8	43 56 11.6	41 40 56.6	2 15 14.9
2.1455	3.224 117 73	3.609 065 65	131 52 16.0	43 57 25.3	41 41 58.0	2 15 27.4
2.1460	3.229 048 65	3.609 903 09	131 55 57.3	43 58 39.1	41 42 59.3	2 15 39.8
2.1465	3.233 993 07	3.610 739 71	131 59 38.7	43 59 52.9	41 44 0.6	2 15 52.3
2.1470	3.238 950 94	3.611 575 49	132 3 20.1	44 1 6.7	41 45 1.9	2 16 4.8
2.1475	3.243 922 34	3.612 410 43	132 7 1.5	44 2 20.5	41 46 3.2	2 16 17.3
2.1480	3.248 907 35	3.613 244 53	132 10 43.0	44 3 34.3	41 47 4.5	2 16 29.8
2.1485	3.253 906 00	3.614 077 80	132 14 24.6	44 4 48.2	41 48 5.8	2 16 42.4
2.1490	3.258 918 37	3.614 910 23	132 18 6.2	44 6 2.1	41 49 7.1	2 16 54.9
2.1495	3.263 944 50	3.615 741 82	132 21 47.8	44 7 15.9	41 50 8.4	2 17 7.5
2.1500	3.268 984 47	3.616 572 57	132 25 29.5	44 8 29.8	41 51 9.7	2 17 20.1
2.1505	3.274 038 31	3.617 402 48	132 29 11.3	44 9 43.8	41 52 11.0	2 17 32.7
2.1510	3.279 106 10	3.618 231 55	132 32 53.1	44 10 57.7	41 53 12.3	2 17 45.4
2.1515	3.284 187 90	3.619 059 77	132 36 35.0	44 12 11.7	41 54 13.7	2 17 58.0
2.1520	3.289 283 76	3.619 887 15	132 40 16.9	44 13 25.6	41 55 15.0	2 18 10.7
2.1525	3.294 393 74	3.620 713 69	132 43 58.9	44 14 39.6	41 56 16.3	2 18 23.4
2.1530	3.299 517 90	3.621 539 38	132 47 40.9	44 15 53.6	41 57 17.6	2 18 36.1
2.1535	3.304 656 30	3.622 364 23	132 51 22.9	44 17 7.6	41 58 18.9	2 18 48.8
2.1540	3.309 809 01	3.623 188 22	132 55 5.1	44 18 21.7	41 59 20.2	2 19 1.5
2.1545	3.314 976 08	3.624 011 37	132 58 47.2	44 19 35.7	42 0 21.5	2 19 14.3
2.1550	3.320 157 58	3.624 833 68	133 2 29.5	44 20 49.8	42 1 22.8	2 19 27.0
2.1555	3.325 353 57	3.625 655 13	133 6 11.7	44 22 3.9	42 2 24.1	2 19 39.8
2.1560	3.330 564 11	3.626 475 73	133 9 54.1	44 23 18.0	42 3 25.4	2 19 52.6
2.1565	3.335 789 26	3.627 295 48	133 13 36.4	44 24 32.1	42 4 26.7	2 20 5.4
2.1570	3.341 029 08	3.628 114 38	133 17 18.9	44 25 46.3	42 5 28.0	2 20 18.3
2.1575	3.346 283 65	3.628 932 42	133 21 1.4	44 27 0.5	42 6 29.3	2 20 31.2
2.1580	3.351 553 01	3.629 749 62	133 24 43.9	44 28 14.6	42 7 30.6	2 20 44.0
2.1585	3.356 837 25	3.630 565 95	133 28 26.5	44 29 28.8	42 8 31.9	2 20 56.9
2.1590	3.362 136 41	3.631 381 43	133 32 9.1	44 30 43.0	42 9 33.2	2 21 9.8
2.1595	3.367 450 57	3.632 196 06	133 35 51.8	44 31 57.3	42 10 34.5	2 21 22.8
2.1600	3.372 779 79	3.633 009 83	133 39 34.5	44 33 11.5	42 11 35.8	2 21 35.7

TABLE III-FUNCTIONS OF THE UNIT RADIUS SPIRAL
TABLE III-FONCTIONS D'UNE SPIRALE DE RAYON UNITAIRE

A/R= =LS/A= =√LS/R	LS/R	X/R	Y/R	Q/R	P/R	LT/R
2.1605	4.667 760 25	2.691 513 62	2.441 397 58	1.968 805 54	0.750 244 17	5.026 315 64
2.1610	4.669 921 00	2.691 385 30	2.442 743 07	1.969 428 35	0.750 809 27	5.032 536 03
2.1615	4.672 082 25	2.691 263 79	2.444 088 12	1.970 050 98	0.751 374 54	5.038 772 03
2.1620	4.674 244 00	2.691 137 09	2.445 432 71	1.970 673 44	0.751 940 00	5.045 023 73
2.1625	4.676 406 25	2.691 009 20	2.446 776 86	1.971 295 73	0.752 505 64	5.051 291 18
2.1630	4.678 569 00	2.690 880 13	2.448 120 55	1.971 917 84	0.753 071 46	5.057 574 44
2.1635	4.680 732 25	2.690 749 87	2.449 463 79	1.972 539 78	0.753 637 46	5.063 873 60
2.1640	4.682 896 00	2.690 618 41	2.450 806 57	1.973 161 55	0.754 203 64	5.070 188 72
2.1645	4.685 060 25	2.690 485 77	2.452 148 90	1.973 783 14	0.754 770 00	5.076 519 86
2.1650	4.687 225 00	2.690 351 95	2.453 490 77	1.974 404 56	0.755 336 53	5.082 867 10
2.1655	4.689 390 25	2.690 216 93	2.454 832 18	1.975 025 80	0.755 903 25	5.089 230 50
2.1660	4.691 556 00	2.690 080 73	2.456 173 13	1.975 646 87	0.756 470 14	5.095 610 14
2.1665	4.693 722 25	2.689 943 34	2.457 513 61	1.976 267 76	0.757 037 22	5.102 006 09
2.1670	4.695 889 00	2.689 804 76	2.458 853 63	1.976 888 48	0.757 604 47	5.108 418 41
2.1675	4.698 056 25	2.689 664 99	2.460 193 18	1.977 509 02	0.758 171 90	5.114 847 19
2.1680	4.700 224 00	2.689 524 04	2.461 532 26	1.978 129 39	0.758 739 51	5.121 292 48
2.1685	4.702 392 25	2.689 381 90	2.462 870 88	1.978 749 58	0.759 307 29	5.127 754 36
2.1690	4.704 561 00	2.689 238 57	2.464 209 02	1.979 369 60	0.759 875 25	5.134 232 91
2.1695	4.706 730 25	2.689 094 05	2.465 546 69	1.979 989 44	0.760 443 40	5.140 728 20
2.1700	4.708 900 00	2.688 948 35	2.466 883 88	1.980 609 10	0.761 011 71	5.147 240 30
2.1705	4.711 070 25	2.688 801 46	2.468 220 59	1.981 228 59	0.761 580 21	5.153 769 28
2.1710	4.713 241 00	2.688 653 38	2.469 556 83	1.981 847 90	0.762 148 88	5.160 315 22
2.1715	4.715 412 25	2.688 504 12	2.470 892 59	1.982 467 03	0.762 717 73	5.166 878 20
2.1720	4.717 584 00	2.688 353 67	2.472 227 87	1.983 085 99	0.763 286 76	5.173 458 29
2.1725	4.719 756 25	2.688 202 04	2.473 562 66	1.983 704 77	0.763 855 96	5.180 055 56
2.1730	4.721 929 00	2.688 049 22	2.474 896 97	1.984 323 37	0.764 425 33	5.186 670 09
2.1735	4.724 102 25	2.687 895 21	2.476 230 79	1.984 941 80	0.764 994 89	5.193 301 96
2.1740	4.726 276 00	2.687 740 01	2.477 564 12	1.985 560 04	0.765 564 62	5.199 951 24
2.1745	4.728 450 25	2.687 583 64	2.478 896 96	1.986 178 11	0.766 134 52	5.206 618 02
2.1750	4.730 625 00	2.687 426 07	2.480 229 31	1.986 796 00	0.766 704 60	5.213 302 37
2.1755	4.732 800 25	2.687 267 32	2.481 561 16	1.987 413 71	0.767 274 86	5.220 004 36
2.1760	4.734 976 00	2.687 107 39	2.482 892 53	1.988 031 25	0.767 845 29	5.226 724 08
2.1765	4.737 152 25	2.686 946 27	2.484 223 39	1.988 648 60	0.768 415 89	5.233 461 61
2.1770	4.739 329 00	2.686 783 96	2.485 553 75	1.989 265 78	0.768 986 67	5.240 217 03
2.1775	4.741 506 25	2.686 620 47	2.486 883 62	1.989 882 77	0.769 557 63	5.246 990 41
2.1780	4.743 684 00	2.686 455 80	2.488 212 98	1.990 499 59	0.770 128 76	5.253 781 84
2.1785	4.745 862 25	2.686 289 94	2.489 541 84	1.991 116 23	0.770 700 06	5.260 591 39
2.1790	4.748 041 00	2.686 122 90	2.490 870 20	1.991 732 69	0.771 271 54	5.267 419 16
2.1795	4.750 220 25	2.685 954 67	2.492 198 04	1.992 348 97	0.771 843 19	5.274 265 23
2.1800	4.752 400 00	2.685 785 26	2.493 525 38	1.992 965 06	0.772 415 01	5.281 129 66
2.1805	4.754 580 25	2.685 614 67	2.494 852 21	1.993 580 98	0.772 987 01	5.288 012 56
2.1810	4.756 761 00	2.685 442 89	2.496 178 53	1.994 196 72	0.773 559 17	5.294 914 00
2.1815	4.758 942 25	2.685 269 93	2.497 504 33	1.994 812 28	0.774 131 52	5.301 834 07
2.1820	4.761 124 00	2.685 095 79	2.498 829 62	1.995 427 65	0.774 704 03	5.308 772 85
2.1825	4.763 306 25	2.684 920 46	2.500 154 39	1.996 042 85	0.775 276 72	5.315 730 42
2.1830	4.765 489 00	2.684 743 95	2.501 478 64	1.996 657 86	0.775 849 58	5.322 706 88
2.1835	4.767 672 25	2.684 566 26	2.502 802 37	1.997 272 69	0.776 422 61	5.329 702 31
2.1840	4.769 856 00	2.684 387 38	2.504 125 58	1.997 887 34	0.776 995 81	5.336 716 80
2.1845	4.772 040 25	2.684 207 32	2.505 448 27	1.998 501 81	0.777 569 19	5.343 750 43
2.1850	4.774 225 00	2.684 026 09	2.506 770 42	1.999 116 10	0.778 142 73	5.350 803 29
2.1855	4.776 410 25	2.683 843 67	2.508 092 06	1.999 730 20	0.778 716 45	5.357 875 48
2.1860	4.778 596 00	2.683 660 06	2.509 413 16	2.000 344 13	0.779 290 34	5.364 967 07
2.1865	4.780 782 25	2.683 475 28	2.510 733 73	2.000 957 87	0.779 864 40	5.372 078 17
2.1870	4.782 969 00	2.683 289 31	2.512 053 77	2.001 571 42	0.780 438 63	5.379 208 85
2.1875	4.785 156 25	2.683 102 17	2.513 373 28	2.002 184 80	0.781 013 03	5.386 359 22
2.1880	4.787 344 00	2.682 913 84	2.514 692 25	2.002 797 99	0.781 587 60	5.393 529 35
2.1885	4.789 532 25	2.682 724 34	2.516 010 69	2.003 411 00	0.782 162 34	5.400 719 36
2.1890	4.791 721 00	2.682 533 65	2.517 328 58	2.004 023 82	0.782 737 25	5.407 929 31
2.1895	4.793 910 25	2.682 341 78	2.518 645 93	2.004 636 46	0.783 312 33	5.415 159 32
2.1900	4.796 100 00	2.682 148 73	2.519 962 74	2.005 248 92	0.783 887 58	5.422 409 48
2.1905	4.798 290 25	2.681 954 51	2.521 279 01	2.005 861 19	0.784 463 00	5.429 679 87
2.1910	4.800 481 00	2.681 759 10	2.522 594 73	2.006 473 28	0.785 038 59	5.436 970 59
2.1915	4.802 672 25	2.681 562 52	2.523 909 91	2.007 085 19	0.785 614 35	5.444 281 74
2.1920	4.804 864 00	2.681 364 75	2.525 224 53	2.007 696 91	0.786 190 27	5.451 613 42
2.1925	4.807 056 25	2.681 165 81	2.526 538 61	2.008 308 44	0.786 766 37	5.458 965 71
2.1930	4.809 249 00	2.680 965 69	2.527 852 13	2.008 919 79	0.787 342 63	5.466 338 73
2.1935	4.811 442 25	2.680 764 39	2.529 165 09	2.009 530 96	0.787 919 06	5.473 732 56
2.1940	4.813 636 00	2.680 561 91	2.530 477 51	2.010 141 94	0.788 495 66	5.481 147 31
2.1945	4.815 830 25	2.680 358 25	2.531 789 36	2.010 752 73	0.789 072 42	5.488 583 07
2.1950	4.818 025 00	2.680 153 42	2.533 100 65	2.011 363 34	0.789 649 36	5.496 039 95
2.1955	4.820 220 25	2.679 947 41	2.534 411 39	2.011 973 77	0.790 226 46	5.503 518 04
2.1960	4.822 416 00	2.679 740 22	2.535 721 56	2.012 584 00	0.790 803 72	5.511 017 44
2.1965	4.824 612 25	2.679 531 86	2.537 031 16	2.013 194 05	0.791 381 16	5.518 538 27
2.1970	4.826 809 00	2.679 322 32	2.538 340 20	2.013 803 92	0.791 958 76	5.526 080 61
2.1975	4.829 006 25	2.679 111 60	2.539 648 67	2.014 413 60	0.792 536 52	5.533 644 58
2.1980	4.831 204 00	2.678 899 71	2.540 956 57	2.015 023 09	0.793 114 46	5.541 230 27
2.1985	4.833 402 25	2.678 686 64	2.542 263 90	2.015 632 39	0.793 692 56	5.548 837 80
2.1990	4.835 601 00	2.678 472 40	2.543 570 66	2.016 241 51	0.794 270 82	5.556 467 26
2.1995	4.837 800 25	2.678 256 98	2.544 876 84	2.016 850 44	0.794 849 25	5.564 118 77
2.2000	4.840 000 00	2.678 040 38	2.546 182 45	2.017 459 18	0.795 427 85	5.571 792 42

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 25 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
25	1.0000	8.537	24.723	28 38 52.4	9 31 44.3	0 1 13.2

K =55.003 948 33"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 30 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
30	1.0000	10.244	29.668	28 38 52.4	9 31 44.3	0 1 13.2
35	0.8571	8.683	25.560	21 2 50.7	7 0 28.0	0 0 28.9

K =38.197 186 34"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 35 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
35	1.0000	11.952	34.613	28 38 52.4	9 31 44.3	0 1 13.2
40	0.8750	10.353	30.426	21 56 0.7	7 18 7.5	0 0 32.8
45	0.7778	9.154	27.112	17 19 48.7	5 46 20.1	0 0 16.1

K =28.063 238 95"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 40 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
40	1.0000	13.659	39.557	28 38 52.4	9 31 44.3	0 1 13.2
45	0.8889	12.031	35.310	22 38 7.3	7 32 6.4	0 0 36.0
50	0.8000	10.772	31.855	18 20 4.7	6 6 22.5	0 0 19.1
55	0.7273	9.762	29.001	15 9 9.4	5 2 52.3	0 0 10.8
60	0.6667	8.931	26.608	12 43 56.6	4 14 32.5	0 0 6.4

K =21.485 917 32"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 45 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
45	1.0000	15.367	44.502	28 38 52.4	9 31 44.3	0 1 13.2
50	0.9000	13.715	40.206	23 12 17.2	7 43 26.9	0 0 38.8
55	0.8182	12.405	36.635	19 10 39.0	6 23 11.1	0 0 21.9
60	0.7500	11.335	33.631	16 6 52.0	5 22 4.4	0 0 13.0
65	0.6923	10.442	31.074	13 43 50.3	4 34 28.8	0 0 8.0
70	0.6429	9.682	28.874	11 50 21.0	3 56 41.9	0 0 5.1
75	0.6000	9.028	26.961	10 18 47.7	3 26 12.5	0 0 3.4
80	0.5625	8.458	25.284	9 3 51.7	3 1 14.9	0 0 2.3

K =16.976 527 26"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 50 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
45	1.1111	55.556	53.476	11.124	27.429	2.819	37.804
50	1.0000	50.000	48.764	8.186	24.793	2.065	33.781
55	0.9091	45.455	44.685	6.185	22.599	1.556	30.579
60	0.8333	41.667	41.167	4.781	20.750	1.200	27.955
65	0.7692	38.462	38.126	3.769	19.175	0.945	25.760
70	0.7143	35.714	35.483	3.023	17.818	0.757	23.891
75	0.6667	33.333	33.169	2.460	16.639	0.616	22.280
80	0.6250	31.250	31.131	2.029	15.605	0.508	20.875
85	0.5882	29.412	29.324	1.693	14.691	0.424	19.639
90	0.5556	27.778	27.712	1.426	13.878	0.357	18.542
95	0.5263	26.316	26.265	1.213	13.149	0.304	17.562
100	0.5000	25.000	24.961	1.041	12.493	0.260	16.680

K =0.229 183 12'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 55 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
50	1.1000	60.500	58.323	11.886	29.885	3.011	41.135
55	1.0000	55.000	53.641	9.004	27.272	2.271	37.159
60	0.9167	50.417	49.534	6.972	25.061	1.754	33.927
65	0.8462	46.538	45.946	5.503	23.170	1.382	31.237
70	0.7857	43.214	42.804	4.416	21.539	1.108	28.955
75	0.7333	40.333	40.043	3.596	20.118	0.901	26.991
80	0.6875	37.813	37.602	2.967	18.871	0.743	25.282
85	0.6471	35.588	35.433	2.476	17.768	0.620	23.780
90	0.6111	33.611	33.494	2.087	16.786	0.522	22.448
95	0.5789	31.842	31.753	1.775	15.906	0.444	21.259
100	0.5500	30.250	30.181	1.523	15.113	0.381	20.191
105	0.5238	28.810	28.755	1.316	14.396	0.329	19.225
110	0.5000	27.500	27.457	1.145	13.743	0.286	18.348
115	0.4783	26.304	26.270	1.002	13.146	0.251	17.548
120	0.4583	25.208	25.181	0.882	12.600	0.221	16.815

K =0.189 407 54'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 60 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
55	1.0909	65.455	63.175	12.658	32.345	3.205	44.474
60	1.0000	60.000	58.517	9.823	29.752	2.478	40.537
65	0.9231	55.385	54.388	7.764	27.526	1.954	37.280
70	0.8571	51.429	50.739	6.237	25.599	1.567	34.531
75	0.8000	48.000	47.511	5.083	23.918	1.275	32.173
80	0.7500	45.000	44.645	4.195	22.441	1.052	30.125
85	0.7059	42.353	42.091	3.502	21.133	0.877	28.328
90	0.6667	40.000	39.803	2.953	19.967	0.739	26.736
95	0.6316	37.895	37.744	2.512	18.922	0.629	25.316
100	0.6000	36.000	35.884	2.155	17.981	0.539	24.041
105	0.5714	34.286	34.194	1.862	17.128	0.466	22.889
110	0.5455	32.727	32.655	1.620	16.352	0.405	21.844
115	0.5217	31.304	31.246	1.418	15.643	0.355	20.890
120	0.5000	30.000	29.953	1.249	14.992	0.312	20.016
125	0.4800	28.800	28.762	1.105	14.394	0.276	19.213
130	0.4615	27.692	27.661	0.982	13.841	0.246	18.473
140	0.4286	25.714	25.693	0.787	12.854	0.197	17.150

K =0.159 154 94'

A/R= =LS/A= =√LS/R	ST/R	LC/R	θ	1/3 θ=ϕ+C	ϕ	C
			DEG MNT SEC			
2.1605	3.378 124 13	3.633 822 74	133 43 17.3	44 34 25.8	42 12 37.1	2 21 48.7
2.1610	3.383 483 67	3.634 634 79	133 47 0.2	44 35 40.1	42 13 38.4	2 22 1.7
2.1615	3.388 858 46	3.635 445 58	133 50 43.1	44 36 54.4	42 14 39.7	2 22 14.7
2.1620	3.394 248 58	3.636 256 31	133 54 26.0	44 38 8.7	42 15 41.0	2 22 27.7
2.1625	3.399 654 09	3.637 065 78	133 58 9.0	44 39 23.0	42 16 42.3	2 22 40.7
2.1630	3.405 075 06	3.637 874 39	134 1 52.1	44 40 37.4	42 17 43.6	2 22 53.8
2.1635	3.410 511 56	3.638 682 14	134 5 35.2	44 41 51.7	42 18 44.9	2 23 6.9
2.1640	3.415 963 65	3.639 489 02	134 9 18.3	44 43 6.1	42 19 46.1	2 23 20.0
2.1645	3.421 431 41	3.640 295 03	134 13 1.5	44 44 20.5	42 20 47.4	2 23 33.1
2.1650	3.426 914 90	3.641 100 18	134 16 44.8	44 45 34.9	42 21 48.7	2 23 46.2
2.1655	3.432 414 19	3.641 904 47	134 20 28.1	44 46 49.4	42 22 50.0	2 23 59.4
2.1660	3.437 929 35	3.642 707 89	134 24 11.4	44 48 3.8	42 23 51.3	2 24 12.5
2.1665	3.443 460 45	3.643 510 44	134 27 54.9	44 49 18.3	42 24 52.6	2 24 25.7
2.1670	3.449 007 57	3.644 312 12	134 31 38.3	44 50 32.8	42 25 53.9	2 24 38.9
2.1675	3.454 570 76	3.645 112 93	134 35 21.8	44 51 47.3	42 26 55.2	2 24 52.1
2.1680	3.460 150 12	3.645 912 87	134 39 5.4	44 53 1.8	42 27 56.4	2 25 5.4
2.1685	3.465 745 70	3.646 711 93	134 42 49.0	44 54 16.3	42 28 57.7	2 25 18.6
2.1690	3.471 357 58	3.647 510 13	134 46 32.7	44 55 30.9	42 29 59.0	2 25 31.9
2.1695	3.476 985 83	3.648 307 45	134 50 16.4	44 56 45.5	42 31 0.3	2 25 45.2
2.1700	3.482 630 53	3.649 103 90	134 54 0.2	44 58 0.1	42 32 1.6	2 25 58.5
2.1705	3.488 291 74	3.649 899 48	134 57 44.0	44 59 14.7	42 33 2.8	2 26 11.8
2.1710	3.493 969 55	3.650 694 18	135 1 27.9	45 0 29.3	42 34 4.1	2 26 25.2
2.1715	3.499 664 02	3.651 488 00	135 5 11.8	45 1 43.9	42 35 5.4	2 26 38.6
2.1720	3.505 375 24	3.652 280 94	135 8 55.8	45 2 58.6	42 36 6.6	2 26 51.9
2.1725	3.511 103 27	3.653 073 01	135 12 39.8	45 4 13.3	42 37 7.9	2 27 5.3
2.1730	3.516 848 20	3.653 864 20	135 16 23.9	45 5 28.0	42 38 9.2	2 27 18.8
2.1735	3.522 610 10	3.654 654 50	135 20 8.0	45 6 42.7	42 39 10.5	2 27 32.2
2.1740	3.528 389 04	3.655 443 93	135 23 52.2	45 7 57.4	42 40 11.7	2 27 45.7
2.1745	3.534 185 10	3.656 232 48	135 27 36.4	45 9 12.1	42 41 13.0	2 27 59.2
2.1750	3.539 998 37	3.657 020 14	135 31 20.7	45 10 26.9	42 42 14.3	2 28 12.7
2.1755	3.545 828 92	3.657 806 92	135 35 5.1	45 11 41.7	42 43 15.5	2 28 26.2
2.1760	3.551 676 82	3.658 592 82	135 38 49.5	45 12 56.5	42 44 16.8	2 28 39.7
2.1765	3.557 542 16	3.659 377 83	135 42 33.9	45 14 11.3	42 45 18.0	2 28 53.3
2.1770	3.563 425 02	3.660 161 95	135 46 18.4	45 15 26.1	42 46 19.3	2 29 6.8
2.1775	3.569 325 47	3.660 945 19	135 50 2.9	45 16 41.0	42 47 20.6	2 29 20.4
2.1780	3.575 243 60	3.661 727 55	135 53 47.5	45 17 55.8	42 48 21.8	2 29 34.0
2.1785	3.581 179 49	3.662 509 01	135 57 32.2	45 19 10.7	42 49 23.1	2 29 47.7
2.1790	3.587 133 22	3.663 289 58	136 1 16.9	45 20 25.6	42 50 24.3	2 30 1.3
2.1795	3.593 104 87	3.664 069 27	136 5 1.6	45 21 40.5	42 51 25.6	2 30 15.0
2.1800	3.599 094 53	3.664 848 06	136 8 46.4	45 22 55.5	42 52 26.8	2 30 28.7
2.1805	3.605 102 27	3.665 625 96	136 12 31.3	45 24 10.4	42 53 28.1	2 30 42.4
2.1810	3.611 128 18	3.666 402 97	136 16 16.2	45 25 25.4	42 54 29.3	2 30 56.1
2.1815	3.617 172 35	3.667 179 09	136 20 1.2	45 26 40.4	42 55 30.5	2 31 9.8
2.1820	3.623 234 85	3.667 954 31	136 23 46.2	45 27 55.4	42 56 31.8	2 31 23.6
2.1825	3.629 315 78	3.668 728 64	136 27 31.2	45 29 10.4	42 57 33.0	2 31 37.4
2.1830	3.635 415 22	3.669 502 07	136 31 16.3	45 30 25.4	42 58 34.3	2 31 51.2
2.1835	3.641 533 26	3.670 274 61	136 35 1.5	45 31 40.5	42 59 35.5	2 32 5.0
2.1840	3.647 669 98	3.671 046 25	136 38 46.7	45 32 55.6	43 0 36.7	2 32 18.8
2.1845	3.653 825 47	3.671 816 98	136 42 32.0	45 34 10.7	43 1 38.0	2 32 32.7
2.1850	3.659 999 81	3.672 586 83	136 46 17.3	45 35 25.8	43 2 39.2	2 32 46.6
2.1855	3.666 193 11	3.673 355 77	136 50 2.7	45 36 40.9	43 3 40.4	2 33 0.5
2.1860	3.672 405 44	3.674 123 81	136 53 48.1	45 37 56.0	43 4 41.6	2 33 14.4
2.1865	3.678 636 89	3.674 890 94	136 57 33.6	45 39 11.2	43 5 42.9	2 33 28.3
2.1870	3.684 887 56	3.675 657 18	137 1 19.1	45 40 26.4	43 6 44.1	2 33 42.3
2.1875	3.691 157 53	3.676 422 51	137 5 4.7	45 41 41.6	43 7 45.3	2 33 56.2
2.1880	3.697 446 90	3.677 186 94	137 8 50.3	45 42 56.8	43 8 46.5	2 34 10.2
2.1885	3.703 755 76	3.677 950 47	137 12 36.0	45 44 12.0	43 9 47.7	2 34 24.2
2.1890	3.710 084 19	3.678 713 08	137 16 21.7	45 45 27.2	43 10 49.0	2 34 38.3
2.1895	3.716 432 30	3.679 474 80	137 20 7.5	45 46 42.5	43 11 50.2	2 34 52.3
2.1900	3.722 800 18	3.680 235 60	137 23 53.3	45 47 57.8	43 12 51.4	2 35 6.4
2.1905	3.729 187 91	3.680 995 50	137 27 39.2	45 49 13.1	43 13 52.6	2 35 20.5
2.1910	3.735 595 61	3.681 754 48	137 31 25.1	45 50 28.4	43 14 53.8	2 35 34.6
2.1915	3.742 023 35	3.682 512 56	137 35 11.1	45 51 43.7	43 15 55.0	2 35 48.7
2.1920	3.748 471 24	3.683 269 73	137 38 57.2	45 52 59.1	43 16 56.2	2 36 2.9
2.1925	3.754 939 37	3.684 025 98	137 42 43.3	45 54 14.4	43 17 57.4	2 36 17.0
2.1930	3.761 427 84	3.684 781 32	137 46 29.4	45 55 29.8	43 18 58.6	2 36 31.2
2.1935	3.767 936 74	3.685 535 75	137 50 15.6	45 56 45.2	43 19 59.8	2 36 45.4
2.1940	3.774 466 19	3.686 289 27	137 54 1.8	45 58 0.6	43 21 1.0	2 36 59.7
2.1945	3.781 016 26	3.687 041 87	137 57 48.1	45 59 16.0	43 22 2.1	2 37 13.9
2.1950	3.787 587 07	3.687 793 55	138 1 34.5	46 0 31.5	43 23 3.3	2 37 28.2
2.1955	3.794 178 72	3.688 544 32	138 5 20.9	46 1 47.0	43 24 4.5	2 37 42.5
2.1960	3.800 791 30	3.689 294 17	138 9 7.4	46 3 2.5	43 25 5.7	2 37 56.8
2.1965	3.807 424 92	3.690 043 10	138 12 53.9	46 4 18.0	43 26 6.9	2 38 11.1
2.1970	3.814 079 67	3.690 791 12	138 16 40.4	46 5 33.5	43 27 8.0	2 38 25.4
2.1975	3.820 755 67	3.691 538 21	138 20 27.0	46 6 49.0	43 28 9.2	2 38 39.8
2.1980	3.827 453 02	3.692 284 38	138 24 13.7	46 8 4.6	43 29 10.4	2 38 54.2
2.1985	3.834 171 81	3.693 029 63	138 28 0.4	46 9 20.1	43 30 11.6	2 39 8.6
2.1990	3.840 912 15	3.693 773 96	138 31 47.2	46 10 35.7	43 31 12.7	2 39 23.0
2.1995	3.847 674 16	3.694 517 37	138 35 34.0	46 11 51.3	43 32 13.9	2 39 37.4
2.2000	3.854 457 93	3.695 259 85	138 39 20.8	46 13 6.9	43 33 15.0	2 39 51.9

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 25 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
25	1.0000	25.000	24.382	4.093	12.397	1.032	16.890

K =0.916 732 47'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 30 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
30	1.0000	30.000	29.259	4.911	14.876	1.239	20.268
35	0.8571	25.714	25.369	3.118	12.800	0.783	17.266

K =0.636 619 77'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 35 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
35	1.0000	35.000	34.135	5.730	17.355	1.445	23.646
40	0.8750	30.625	30.179	3.867	15.238	0.972	20.576
45	0.7778	27.222	26.974	2.727	13.570	0.684	18.236

K =0.467 720 65'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 40 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
40	1.0000	40.000	39.012	6.549	19.834	1.652	27.024
45	0.8889	35.556	35.005	4.630	17.686	1.164	23.900
50	0.8000	32.000	31.674	3.388	15.946	0.850	21.449
55	0.7273	29.091	28.888	2.552	14.512	0.640	19.465
60	0.6667	26.667	26.535	1.968	13.311	0.493	17.824

K =0.358 098 62'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 45 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
45	1.0000	45.000	43.888	7.367	22.314	1.858	30.403
50	0.9000	40.500	39.841	5.404	20.140	1.359	27.236
55	0.8182	36.818	36.408	4.075	18.341	1.023	24.691
60	0.7500	33.750	33.484	3.146	16.831	0.789	22.594
65	0.6923	31.154	30.975	2.478	15.547	0.621	20.832
70	0.6429	28.929	28.805	1.986	14.444	0.497	19.329
75	0.6000	27.000	26.913	1.616	13.485	0.405	18.031
80	0.5625	25.313	25.249	1.332	12.646	0.333	16.897

K =0.282 942 12'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 50 M

R	A/R	ST	LC	θ	ϕ	C
M		M			DEG MNT SEC	
45	1.1111	19.218	54.620	35 22 4.0	11 45 3.1	0 2 18.2
50	1.0000	17.074	49.447	28 38 52.4	9 31 44.3	0 1 13.2
55	0.9091	15.402	45.111	23 40 33.4	7 52 49.9	0 0 41.2
60	0.8333	14.050	41.444	19 53 39.7	6 37 28.8	0 0 24.4
65	0.7692	12.928	38.312	16 57 5.1	5 38 46.6	0 0 15.1
70	0.7143	11.979	35.611	14 36 58.6	4 52 9.8	0 0 9.7
75	0.6667	11.164	33.260	12 43 56.6	4 14 32.5	0 0 6.4
80	0.6250	10.455	31.197	11 11 26.1	3 43 44.4	0 0 4.3
85	0.5882	9.832	29.373	9 54 46.0	3 18 12.3	0 0 3.0
90	0.5556	9.280	27.748	8 50 31.0	2 56 48.2	0 0 2.1
95	0.5263	8.788	26.293	7 56 8.5	2 38 41.3	0 0 1.5
100	0.5000	8.346	24.983	7 9 43.1	2 23 13.2	0 0 1.1

K =13.750 987 08"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 55 M

R	A/R	ST	LC	θ	ϕ	C
M		M			DEG MNT SEC	
50	1.1000	20.897	59.522	34 39 50.2	11 31 0.7	0 2 10.0
55	1.0000	18.781	54.391	28 38 52.4	9 31 44.3	0 1 13.2
60	0.9167	17.093	50.022	24 4 19.9	8 0 43.3	0 0 43.4
65	0.8462	15.705	46.274	20 30 40.4	6 49 46.7	0 0 26.8
70	0.7857	14.537	43.032	17 41 8.5	5 53 25.7	0 0 17.2
75	0.7333	13.538	40.204	15 24 22.3	5 7 56.1	0 0 11.3
80	0.6875	12.672	37.719	13 32 26.2	4 30 41.0	0 0 7.7
85	0.6471	11.912	35.519	11 59 40.0	3 59 48.0	0 0 5.3
90	0.6111	11.241	33.559	10 41 55.5	3 33 54.7	0 0 3.8
95	0.5789	10.643	31.802	9 36 7.9	3 11 59.9	0 0 2.7
100	0.5500	10.105	30.219	8 39 57.6	2 53 17.2	0 0 2.0
105	0.5238	9.620	28.785	7 51 37.1	2 37 10.9	0 0 1.5
110	0.5000	9.180	27.481	7 9 43.1	2 23 13.2	0 0 1.1
115	0.4783	8.779	26.289	6 33 9.8	2 11 2.4	0 0 0.9
120	0.4583	8.412	25.196	6 1 5.0	2 0 21.0	0 0 0.7

K =11.364 452 13"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 60 M

R	A/R	ST	LC	θ	ϕ	C
M		M			DEG MNT SEC	
55	1.0909	22.582	64.430	34 5 36.1	11 19 48.3	0 2 3.7
60	1.0000	20.489	59.336	28 38 52.4	9 31 44.3	0 1 13.2
65	0.9231	18.787	54.939	24 24 36.1	8 7 26.8	0 0 45.2
70	0.8571	17.366	51.121	21 2 50.7	7 0 28.0	0 0 28.9
75	0.8000	16.158	47.782	18 20 4.7	6 6 22.5	0 0 19.1
80	0.7500	15.114	44.842	16 6 52.0	5 22 4.4	0 0 13.0
85	0.7059	14.202	42.236	14 16 27.8	4 45 20.2	0 0 9.0
90	0.6667	13.396	39.912	12 43 56.6	4 14 32.5	0 0 6.4
95	0.6316	12.680	37.828	11 25 38.7	3 48 28.3	0 0 4.6
100	0.6000	12.037	35.948	10 18 47.7	3 26 12.5	0 0 3.4
105	0.5714	11.458	34.245	9 21 15.9	3 7 2.8	0 0 2.5
110	0.5455	10.932	32.695	8 31 24.0	2 50 26.1	0 0 1.9
115	0.5217	10.453	31.279	7 47 53.8	2 35 56.5	0 0 1.5
120	0.5000	10.015	29.979	7 9 43.1	2 23 13.2	0 0 1.1
125	0.4800	9.612	28.783	6 36 1.7	2 11 59.7	0 0 0.9
130	0.4615	9.241	27.678	6 6 9.0	2 2 2.3	0 0 0.7
140	0.4286	8.578	25.705	5 15 42.7	1 45 13.8	0 0 0.5

K = 9.549 296 59"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 65 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
60	1.0833	70.417	68.030	13.439	34.808	3.401	47.820
65	1.0000	65.000	63.394	10.641	32.231	2.684	43.915
70	0.9286	60.357	59.245	8.559	29.993	2.154	40.637
75	0.8667	56.333	55.544	6.981	28.035	1.754	37.837
80	0.8125	52.813	52.240	5.766	26.311	1.447	35.411
85	0.7647	49.706	49.283	4.815	24.782	1.207	33.287
90	0.7222	46.944	46.626	4.061	23.419	1.018	31.409
95	0.6842	44.474	44.231	3.456	22.196	0.866	29.735
100	0.6500	42.250	42.062	2.966	21.094	0.743	28.233
105	0.6190	40.238	40.091	2.563	20.094	0.642	26.877
110	0.5909	38.409	38.292	2.230	19.185	0.558	25.647
115	0.5652	36.739	36.645	1.953	18.354	0.489	24.526
120	0.5417	35.208	35.133	1.719	17.592	0.430	23.499
125	0.5200	33.800	33.738	1.521	16.890	0.381	22.555
130	0.5000	32.500	32.445	1.353	16.242	0.338	21.684
140	0.4643	30.179	30.144	1.083	15.083	0.271	20.131
150	0.4333	28.167	28.142	0.881	14.079	0.220	18.786
160	0.4063	26.406	26.388	0.726	13.200	0.182	17.610

K =0.135 611 31'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 70 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
65	1.0769	75.385	72.889	14.225	37.274	3.599	51.171
70	1.0000	70.000	68.270	11.460	34.710	2.891	47.293
75	0.9333	65.333	64.105	9.358	32.461	2.355	43.996
80	0.8750	61.250	60.358	7.734	30.476	1.944	41.151
85	0.8235	57.647	56.988	6.463	28.713	1.622	38.665
90	0.7778	54.444	53.948	5.453	27.139	1.368	36.472
95	0.7368	51.579	51.200	4.643	25.726	1.164	34.520
100	0.7000	49.000	48.707	3.985	24.451	0.998	32.770
105	0.6667	46.667	46.437	3.445	23.295	0.863	31.192
110	0.6364	44.545	44.363	2.998	22.242	0.751	29.761
115	0.6087	42.609	42.463	2.625	21.280	0.657	28.457
120	0.5833	40.833	40.715	2.311	20.397	0.578	27.264
125	0.5600	39.200	39.104	2.045	19.584	0.512	26.167
130	0.5385	37.692	37.613	1.819	18.833	0.455	25.156
140	0.5000	35.000	34.945	1.457	17.491	0.364	23.352
150	0.4667	32.667	32.628	1.185	16.327	0.296	21.791
160	0.4375	30.625	30.597	0.976	15.308	0.244	20.426
170	0.4118	28.824	28.803	0.814	14.408	0.204	19.223
180	0.3889	27.222	27.207	0.686	13.609	0.172	18.154
190	0.3684	25.789	25.778	0.583	12.893	0.146	17.197

K =0.116 930 16'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 75 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
70	1.0714	80.357	77.750	15.016	39.741	3.799	54.526
75	1.0000	75.000	73.147	12.279	37.190	3.097	50.671
80	0.9375	70.313	68.967	10.158	34.931	2.557	47.358
85	0.8824	66.176	65.181	8.494	32.922	2.135	44.473
90	0.8333	62.500	61.751	7.172	31.125	1.801	41.933
95	0.7895	59.211	58.638	6.108	29.510	1.532	39.676
100	0.7500	56.250	55.807	5.244	28.051	1.315	37.657
105	0.7143	53.571	53.224	4.534	26.728	1.136	35.837
110	0.6818	51.136	50.861	3.947	25.522	0.989	34.188
115	0.6522	48.913	48.692	3.456	24.420	0.865	32.686

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 65 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
60	1.0833	24.270	69.345	33 37 17.3	11 10 27.2	0 1 58.6
65	1.0000	22.196	64.281	28 38 52.4	9 31 44.3	0 1 13.2
70	0.9286	20.462	59.860	24 42 5.4	8 13 14.9	0 0 46.9
75	0.8667	19.034	55.981	21 31 3.9	7 9 50.4	0 0 30.9
80	0.8125	17.789	52.557	18 54 43.5	6 17 53.5	0 0 21.0
85	0.7647	16.705	49.517	16 45 9.3	5 34 48.5	0 0 14.6
90	0.7222	15.750	46.803	14 56 34.4	4 58 41.1	0 0 10.3
95	0.6842	14.902	44.365	13 24 40.8	4 28 6.1	0 0 7.5
100	0.6500	14.143	42.166	12 6 13.4	4 1 59.0	0 0 5.5
105	0.6190	13.460	40.172	10 58 42.4	3 39 30.0	0 0 4.1
110	0.5909	12.840	38.357	10 0 11.1	3 20 0.6	0 0 3.1
115	0.5652	12.276	36.697	9 9 7.8	3 3 0.2	0 0 2.4
120	0.5417	11.760	35.175	8 24 19.3	2 48 4.6	0 0 1.8
125	0.5200	11.286	33.773	7 44 47.0	2 34 54.2	0 0 1.4
130	0.5000	10.849	32.477	7 9 43.1	2 23 13.2	0 0 1.1
140	0.4643	10.071	30.163	6 10 31.3	2 3 29.7	0 0 0.7
150	0.4333	9.397	28.156	5 22 46.0	1 47 34.8	0 0 0.5
160	0.4063	8.808	26.398	4 43 40.9	1 34 33.3	0 0 0.3

K = 8.136 678 75M

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 70 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
65	1.0769	25.962	74.264	33 13 29.2	11 2 35.3	0 1 54.4
70	1.0000	23.904	69.225	28 38 52.4	9 31 44.3	0 1 13.2
75	0.9333	22.179	64.784	24 57 19.8	8 18 18.3	0 0 48.3
80	0.8750	20.706	60.852	21 56 0.7	7 18 7.5	0 0 32.8
85	0.8235	19.429	57.353	19 25 44.5	6 26 12.1	0 0 22.8
90	0.7778	18.308	54.223	17 19 48.7	5 46 20.1	0 0 16.1
95	0.7368	17.315	51.410	15 33 14.3	5 10 53.1	0 0 11.7
100	0.7000	16.427	48.869	14 2 14.9	4 40 36.4	0 0 8.6
105	0.6667	15.629	46.564	12 43 56.6	4 14 32.5	0 0 6.4
110	0.6364	14.907	44.464	11 36 4.4	3 51 56.6	0 0 4.8
115	0.6087	14.249	42.544	10 36 51.6	3 32 13.5	0 0 3.7
120	0.5833	13.649	40.781	9 44 53.7	3 14 55.0	0 0 2.9
125	0.5600	13.097	39.157	8 59 2.3	2 59 38.5	0 0 2.2
130	0.5385	12.589	37.657	8 18 22.3	2 46 5.7	0 0 1.8
140	0.5000	11.684	34.976	7 9 43.1	2 23 13.2	0 0 1.1
150	0.4667	10.901	32.649	6 14 19.9	2 4 45.9	0 0 0.8
160	0.4375	10.217	30.613	5 29 0.2	1 49 39.6	0 0 0.5
170	0.4118	9.614	28.814	4 51 26.1	1 37 8.4	0 0 0.4
180	0.3889	9.079	27.215	4 19 57.2	1 26 38.8	0 0 0.3
190	0.3684	8.600	25.784	3 53 18.6	1 17 46.0	0 0 0.2

K = 7.015 809 74M

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FUNCTIONS DE LA SPIRALE NORMALISEE

A = 75 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
70	1.0714	27.656	79.187	32 53 11.8	10 55 53.0	0 1 51.0
75	1.0000	25.611	74.170	28 38 52.4	9 31 44.3	0 1 13.2
80	0.9375	23.877	69.711	25 10 43.7	8 22 44.9	0 0 49.6
85	0.8824	22.382	65.732	22 18 13.4	7 25 30.0	0 0 34.5
90	0.8333	21.076	62.166	19 53 39.7	6 37 28.8	0 0 24.4
95	0.7895	19.921	58.955	17 51 19.2	5 56 48.7	0 0 17.7
100	0.7500	18.892	56.052	16 6 52.0	5 22 4.4	0 0 13.0
105	0.7143	17.969	53.417	14 36 58.6	4 52 9.8	0 0 9.7
110	0.6818	17.134	51.014	13 19 3.8	4 26 13.9	0 0 7.3
115	0.6522	16.375	48.815	12 11 5.4	4 3 36.2	0 0 5.6

120	0.6250	46.875	46.697	3.043	23.408	0.762	31.313
125	0.6000	45.000	44.854	2.694	22.476	0.674	30.051
130	0.5769	43.269	43.150	2.396	21.615	0.599	28.888
140	0.5357	40.179	40.096	1.919	20.076	0.480	26.815
150	0.5000	37.500	37.441	1.561	18.740	0.390	25.020
160	0.4688	35.156	35.114	1.286	17.571	0.322	23.452
170	0.4412	33.088	33.057	1.073	16.539	0.268	22.070
180	0.4167	31.250	31.226	0.904	15.621	0.226	20.842
190	0.3947	29.605	29.587	0.769	14.800	0.192	19.743
200	0.3750	28.125	28.111	0.659	14.060	0.165	18.755
210	0.3571	26.786	26.775	0.569	13.391	0.142	17.861
220	0.3409	25.568	25.560	0.495	12.783	0.124	17.048

K =0.101 859 16'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 80 M

R	A/R	LS	X	Y	Q	P	LT
M		M					
75	1.0667	85.333	82.613	15.811	42.211	3.999	57.884
80	1.0000	80.000	78.023	13.097	39.669	3.304	54.049
85	0.9412	75.294	73.830	10.961	37.402	2.760	50.722
90	0.8889	71.111	70.009	9.261	35.371	2.328	47.801
95	0.8421	67.368	66.526	7.891	33.544	1.982	45.212
100	0.8000	64.000	63.348	6.777	31.891	1.700	42.898
105	0.7619	60.952	60.441	5.862	30.391	1.470	40.816
110	0.7273	58.182	57.776	5.103	29.023	1.279	38.931
115	0.6957	55.652	55.327	4.470	27.772	1.120	37.216
120	0.6667	53.333	53.071	3.937	26.623	0.986	35.648
125	0.6400	51.200	50.986	3.485	25.564	0.873	34.209
130	0.6154	49.231	49.055	3.099	24.586	0.776	32.882
140	0.5714	45.714	45.593	2.483	22.837	0.621	30.519
150	0.5333	42.667	42.580	2.020	21.319	0.505	28.475
160	0.5000	40.000	39.938	1.665	19.990	0.416	26.689
170	0.4706	37.647	37.601	1.388	18.816	0.347	25.114
180	0.4444	35.556	35.521	1.170	17.772	0.293	23.716
190	0.4211	33.684	33.658	0.995	16.836	0.249	22.465
200	0.4000	32.000	31.980	0.853	15.997	0.213	21.340
210	0.3810	30.476	30.460	0.737	15.235	0.184	20.323
220	0.3636	29.091	29.078	0.641	14.543	0.160	19.398
230	0.3478	27.826	27.816	0.561	13.911	0.140	18.554
240	0.3333	26.667	26.658	0.494	13.332	0.123	17.781
250	0.3200	25.600	25.593	0.437	12.799	0.109	17.069

K =0.089 524 66'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 85 M

R	A/R	LS	X	Y	Q	P	LT
M		M					
80	1.0625	90.313	87.477	16.610	44.681	4.200	61.245
85	1.0000	85.000	82.899	13.916	42.148	3.510	57.427
90	0.9444	80.278	78.696	11.766	39.874	2.962	54.087
95	0.8947	76.053	74.843	10.032	37.824	2.522	51.134
100	0.8500	72.250	71.313	8.619	35.968	2.165	48.500
105	0.8095	68.810	68.074	7.458	34.282	1.872	46.134
110	0.7727	65.682	65.099	6.495	32.744	1.629	43.994
115	0.7391	62.826	62.359	5.690	31.335	1.426	42.049
120	0.7083	60.208	59.831	5.012	30.041	1.256	40.272
125	0.6800	57.800	57.492	4.437	28.849	1.111	38.642
130	0.6538	55.577	55.324	3.947	27.746	0.988	37.140
140	0.6071	51.607	51.432	3.163	25.774	0.792	34.466
150	0.5667	48.167	48.043	2.573	24.063	0.644	32.155
160	0.5313	45.156	45.066	2.121	22.563	0.531	30.136
170	0.5000	42.500	42.434	1.769	21.239	0.442	28.357
180	0.4722	40.139	40.089	1.490	20.061	0.373	26.777
190	0.4474	38.026	37.988	1.268	19.007	0.317	25.364
200	0.4250	36.125	36.096	1.087	18.058	0.272	24.094
210	0.4048	34.405	34.382	0.939	17.199	0.235	22.945
220	0.3864	32.841	32.823	0.817	16.417	0.204	21.900

90	100	110	120	130	V (KM/H)
300	380	475	600	700	R MIN (M)
160	190	220	250	280	A MIN (M)

E (M/M) ; A (M) FOR 2-LANE ; A (M) FOR 4-LANE — R (M)
E (M/M) ; A (M) POUR 2-VOIES ; A (M) POUR 4-VOIES

V - VITESSE DE BASE
R - RAYON DE COURBURE
A - PARAMETRE DE LA SPIRALE (VALEUR MINIMALE)
e - DEVERS
NC - BN - BOMBEMENT NORMAL
RC - DM - DEVERS MINIMUM

SOUS LA LIGNE PLEINE, LES SPIRALES SONT RECOMMANDEES, MAIS PEUVENT ETRE OMISES POUR DES CONDITIONS GEOMETRIQUES RESTREINTES.

- Les paramètres indiqués sont des valeurs minimales dictées par le dévers, les critères de confort et d'esthétique. (Le manuel de l'ARTC donne des valeurs arrondies)
- Autant que possible, des valeurs supérieures à celles indiquées devraient être choisies pour obtenir un rapport A:R rationnel
- La longueur de la spirale est calulée à partir de l'équation $L_s = A^2/R$. Ce rapport devrait aussi donner un nombre rationnel
- Les paramètres indiqués pour les routes à 4 voies, s'appliquent aux routes à 4 voies contiguës avec axe de rotation des changements de dévers à la ligne centrale et aux chaussées séparées avec cet axe au bord adjacent au terre-plein
- On doit apporter une attention particulière au drainage des chaussées larges avec dévers faible

NOTE: See page 247 for English version of the above text.

0.080	160	196															300
0.078	160	200															320
0.076	160	203															340
0.075	160	205															350
0.073	160	210	0.080	190	228												380
0.071	160	213	0.078	190	231												400
0.070	160	216	0.077	190	235												420
0.067	160	220	0.075	190	239												450
0.066	160	223	0.073	190	243	0.080	220	264									475
0.064	160	226	0.071	190	247	0.078	220	268									500
0.062	162	229	0.070	190	250	0.077	220	272									525
0.061	166	231	0.068	190	253	0.075	220	275									550
0.059	170	234	0.067	190	256	0.074	220	279									575
0.058	173	236	0.065	190	259	0.072	220	282	0.080	250	308						600
0.056	180	240	0.063	190	264	0.070	220	288	0.077	250	315						650
0.053	187	244	0.060	197	268	0.067	220	294	0.075	250	321	0.080	280	342			700
0.051	194	247	0.058	204	273	0.065	220	299	0.072	250	327	0.078	280	348			750
0.049	200	250	0.056	211	276	0.063	221	303	0.070	250	333	0.075	280	355			800
0.047	206	253	0.054	217	280	0.061	228	308	0.068	250	338	0.073	280	360			850
0.046	212	256	0.052	224	283	0.059	235	312	0.066	250	342	0.071	280	366			900
0.044	218	258	0.051	230	286	0.057	241	315	0.064	252	347	0.070	280	371			950
0.043	224	261	0.049	236	289	0.056	247	319	0.062	258	351	0.068	280	376			1000
0.041	229	263	0.048	242	292	0.054	253	322	0.061	265	355	0.066	280	380			1050
0.040	235	265	0.046	247	294	0.052	259	325	0.059	271	358	0.064	282	384			1100
0.039	240	267	0.045	253	297	0.051	265	328	0.058	277	362	0.063	288	388			1150
0.038	245	268	0.044	258	299	0.050	271	330	0.056	283	365	0.062	294	392			1200
0.036	250	270	0.042	264	301	0.048	276	333	0.055	289	368	0.060	300	396			1250
0.035	255	271	0.041	269	303	0.047	282	335	0.054	294	371	0.059	306	399			1300
0.034	265	274	0.039	279	306	0.045	292	340	0.051	306	376	0.056	318	405			1400
0.032	274	276	0.037	289	309	0.043	303	343	0.049	316	381	0.054	329	411			1500
0.030	283	283	0.036	298	312	0.041	313	347	0.047	327	385	0.052	340	416			1600
0.029	292	292	0.034	307	315	0.039	322	350	0.045	337	389	0.050	350	421			1700
0.028	300	300	0.033	316	317	0.038	332	353	0.043	346	392	0.048	361	425			1800
0.026	316	316	0.030	333	333	0.035	350	358	0.040	365	399	0.045	380	432			2000
0.024	332	332	0.028	350	350	0.033	367	367	0.038	383	404	0.042	399	439			2200
0.021	354	354	0.025	373	373	0.030	391	391	0.034	408	411	0.038	425	447			2500
RC	387	387	0.022	408	408	0.026	428	428	0.030	447	447	0.034	465	465			3000
NC			RC	441	441	0.023	462	462	0.026	483	483	0.030	503	503			3500
				471	471	0.020	494	494	0.024	516	516	0.027	537	537			4000
			NC			RC	524	524	0.021	548	548	0.024	570	570			4500
						NC	553	553	RC	577	577	0.022	601	601			5000
									NC	632	632	RC	658	658			6000
												NC	711	711			7000
																	8000
																	9000
NC			NC			NC			NC			NC					10 000

TABLE VI-STANDARD SPIRALS' PARAMETERS AND CONSTANTS
TABLE VI-PARAMETRES ET CONSTANTES D'UNE SPIRALE NORMALISEE

A	K		
M	DEG	MNT	SEC
25	0.015 278 87	0.916 732 47	55.003 948 33
30	0.010 610 33	0.636 619 77	38.197 186 34
35	0.007 795 34	0.467 720 65	28.063 238 95
40	0.005 968 31	0.358 098 62	21.485 917 32
45	0.004 715 70	0.282 942 12	16.976 527 26
50	0.003 819 72	0.229 183 12	13.750 987 08
55	0.003 156 79	0.189 407 54	11.364 452 13
60	0.002 652 58	0.159 154 94	9.549 296 59
65	0.002 260 19	0.135 611 31	8.136 678 75
70	0.001 948 84	0.116 930 16	7.015 809 74
75	0.001 697 65	0.101 859 16	6.111 549 81
80	0.001 492 08	0.089 524 66	5.371 479 33
85	0.001 321 70	0.079 302 12	4.758 127 02
90	0.001 178 93	0.070 735 53	4.244 131 82
95	0.001 058 09	0.063 485 63	3.809 137 70
100	0.000 954 93	0.057 295 78	3.437 746 77
110	0.000 789 20	0.047 351 88	2.841 113 03
120	0.000 663 15	0.039 788 74	2.387 324 15
125	0.000 611 15	0.036 669 30	2.200 157 93
130	0.000 565 05	0.033 902 83	2.034 169 69
140	0.000 487 21	0.029 232 54	1.753 952 43
150	0.000 424 41	0.025 464 79	1.527 887 45
160	0.000 373 02	0.022 381 16	1.342 869 83
170	0.000 330 43	0.019 825 53	1.189 531 75
175	0.000 311 81	0.018 708 83	1.122 529 56
180	0.000 294 73	0.017 683 88	1.061 032 95
190	0.000 264 52	0.015 871 41	0.952 284 42
200	0.000 238 73	0.014 323 94	0.859 436 69
210	0.000 216 54	0.012 992 24	0.779 534 42
220	0.000 197 30	0.011 837 97	0.710 278 26
225	0.000 188 63	0.011 317 68	0.679 061 09
230	0.000 180 52	0.010 830 96	0.649 857 61
240	0.000 165 79	0.009 947 18	0.596 831 04
250	0.000 152 79	0.009 167 32	0.550 039 48
260	0.000 141 26	0.008 475 71	0.508 542 42
270	0.000 130 99	0.007 859 50	0.471 570 20
275	0.000 126 27	0.007 576 30	0.454 578 09
280	0.000 121 80	0.007 308 14	0.438 488 11
290	0.000 113 55	0.006 812 82	0.408 768 94
300	0.000 106 10	0.006 366 20	0.381 971 86
325	0.000 090 41	0.005 424 45	0.325 467 15
350	0.000 077 95	0.004 677 21	0.280 632 39
375	0.000 067 91	0.004 074 37	0.244 461 99
400	0.000 059 68	0.003 580 99	0.214 859 17
425	0.000 052 87	0.003 172 08	0.190 325 08
450	0.000 047 16	0.002 829 42	0.169 765 27
475	0.000 042 32	0.002 539 43	0.152 365 51
500	0.000 038 20	0.002 291 83	0.137 509 87
550	0.000 031 57	0.001 894 08	0.113 644 52
600	0.000 026 53	0.001 591 55	0.095 492 97
650	0.000 022 60	0.001 356 11	0.081 366 79
700	0.000 019 49	0.001 169 30	0.070 158 10
750	0.000 016 98	0.001 018 59	0.061 115 50
800	0.000 014 92	0.000 895 25	0.053 714 79
900	0.000 011 79	0.000 707 36	0.042 441 32
1000	0.000 009 55	0.000 572 96	0.034 377 47
1100	0.000 007 89	0.000 473 52	0.028 411 13
1200	0.000 006 63	0.000 397 89	0.023 873 24
1300	0.000 005 65	0.000 339 03	0.020 341 70
1400	0.000 004 87	0.000 292 33	0.017 539 52
1500	0.000 004 24	0.000 254 65	0.015 278 87
1600	0.000 003 73	0.000 223 81	0.013 428 70
1700	0.000 003 30	0.000 198 26	0.011 895 32
1800	0.000 002 95	0.000 176 84	0.010 610 33

120	0.6250	15.682	46.796	11	11	26.1	3	43	44.4	0 0 4.3
125	0.6000	15.046	44.935	10	18	47.7	3	26	12.5	0 0 3.4
130	0.5769	14.461	43.216	9	32	6.6	3	10	39.5	0 0 2.7
140	0.5357	13.419	40.142	8	13	17.9	2	44	24.3	0 0 1.7
150	0.5000	12.519	37.474	7	9	43.1	2	23	13.2	0 0 1.1
160	0.4688	11.732	35.137	6	17	40.9	2	5	52.9	0 0 0.8
170	0.4412	11.039	33.074	5	34	33.3	1	51	30.6	0 0 0.5
180	0.4167	10.424	31.240	4	58	24.9	1	39	27.9	0 0 0.4
190	0.3947	9.874	29.597	4	27	49.8	1	29	16.3	0 0 0.3
200	0.3750	9.379	28.119	4	1	43.0	1	20	34.1	0 0 0.2
210	0.3571	8.932	26.781	3	39	14.6	1	13	4.7	0 0 0.2
220	0.3409	8.525	25.564	3	19	45.9	1	6	35.2	0 0 0.1

K = 6.111 549 81"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 80 M

R	A/R	ST	LC	θ			ϕ			C
M		M		DEG	MNT	SEC				
75	1.0667	29.351	84.112	32	35	41.8	10	50	5.9	0 1 48.0
80	1.0000	27.318	79.115	28	38	52.4	9	31	44.3	0 1 13.2
85	0.9412	25.577	74.640	25	22	36.0	8	26	41.2	0 0 50.8
90	0.8889	24.062	70.619	22	38	7.3	7	32	6.4	0 0 36.0
95	0.8421	22.729	66.993	20	18	55.4	6	45	52.5	0 0 26.0
100	0.8000	21.544	63.709	18	20	4.7	6	6	22.5	0 0 19.1
105	0.7619	20.482	60.724	16	37	48.2	5	32	21.8	0 0 14.3
110	0.7273	19.524	58.001	15	9	9.4	5	2	52.3	0 0 10.8
115	0.6957	18.655	55.507	13	51	49.1	4	37	8.1	0 0 8.3
120	0.6667	17.862	53.216	12	43	56.6	4	14	32.5	0 0 6.4
125	0.6400	17.135	51.105	11	44	3.0	3	54	36.0	0 0 5.0
130	0.6154	16.466	49.152	10	50	56.1	3	36	54.7	0 0 4.0
140	0.5714	15.277	45.660	9	21	15.9	3	7	2.8	0 0 2.5
150	0.5333	14.250	42.628	8	8	55.4	2	42	56.8	0 0 1.7
160	0.5000	13.353	39.972	7	9	43.1	2	23	13.2	0 0 1.1
170	0.4706	12.564	37.627	6	20	39.0	2	6	52.2	0 0 0.8
180	0.4444	11.863	35.540	5	39	31.8	1	53	10.1	0 0 0.6
190	0.4211	11.236	33.672	5	4	43.9	1	41	34.2	0 0 0.4
200	0.4000	10.673	31.991	4	35	1.2	1	31	40.1	0 0 0.3
210	0.3810	10.164	30.469	4	9	27.1	1	23	8.8	0 0 0.2
220	0.3636	9.701	29.085	3	47	17.3	1	15	45.6	0 0 0.2
230	0.3478	9.279	27.822	3	27	57.3	1	9	19.0	0 0 0.1
240	0.3333	8.892	26.663	3	10	59.2	1	3	39.6	0 0 0.1
250	0.3200	8.535	25.597	2	56	0.8	0	58	40.2	0 0 0.1

K = 5.371 479 33"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 85 M

R	A/R	ST	LC	θ			ϕ			C
M		M		DEG	MNT	SEC				
80	1.0625	31.049	89.040	32	20	26.8	10	45	3.4	0 1 45.5
85	1.0000	29.026	84.059	28	38	52.4	9	31	44.3	0 1 13.2
90	0.9444	27.277	79.570	25	33	11.6	8	30	12.0	0 0 51.9
95	0.8947	25.744	75.512	22	56	3.1	7	38	3.5	0 0 37.5
100	0.8500	24.387	71.832	20	41	53.2	6	53	30.2	0 0 27.5
105	0.8095	23.174	68.482	18	46	25.6	6	15	8.0	0 0 20.5
110	0.7727	22.082	65.422	17	6	21.1	5	41	51.5	0 0 15.5
115	0.7391	21.092	62.618	15	39	2.7	5	12	49.0	0 0 11.9
120	0.7083	20.191	60.040	14	22	25.3	4	47	19.2	0 0 9.2
125	0.6800	19.365	57.663	13	14	48.4	4	24	48.9	0 0 7.2
130	0.6538	18.607	55.464	12	14	50.6	4	4	51.2	0 0 5.7
140	0.6071	17.258	51.529	10	33	36.9	3	31	8.7	0 0 3.6
150	0.5667	16.095	48.112	9	11	57.0	3	3	56.6	0 0 2.4
160	0.5313	15.081	45.116	8	5	6.7	2	41	40.6	0 0 1.6
170	0.5000	14.188	42.470	7	9	43.1	2	23	13.2	0 0 1.1
180	0.4722	13.395	40.117	6	23	17.9	2	7	45.2	0 0 0.8
190	0.4474	12.688	38.009	5	44	0.8	1	54	39.7	0 0 0.6
200	0.4250	12.051	36.112	5	10	28.3	1	43	29.0	0 0 0.4
210	0.4048	11.476	34.395	4	41	36.4	1	33	51.8	0 0 0.3
220	0.3864	10.953	32.833	4	16	35.3	1	25	31.5	0 0 0.2

230	0.3696	31.413	31.398	0.715	15.704	0.179	20.947
240	0.3542	30.104	30.092	0.629	15.050	0.157	20.074
250	0.3400	28.900	28.890	0.557	14.448	0.139	19.270
280	0.3036	25.804	25.798	0.396	12.901	0.099	17.204

K =0.079 302 12'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 90 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
85	1.0588	95.294	92.343	17.410	47.152	4.402	64.608
90	1.0000	90.000	87.776	14.734	44.628	3.717	60.805
95	0.9474	85.263	83.562	12.572	42.347	3.166	57.453
100	0.9000	81.000	79.681	10.808	40.280	2.718	54.471
105	0.8571	77.143	76.108	9.355	38.399	2.350	51.797
110	0.8182	73.636	72.816	8.150	36.681	2.046	49.382
115	0.7826	70.435	69.777	7.142	35.108	1.791	47.189
120	0.7500	67.500	66.968	6.292	33.661	1.578	45.188
125	0.7200	64.800	64.366	5.572	32.328	1.396	43.353
130	0.6923	62.308	61.951	4.957	31.094	1.242	41.664
140	0.6429	57.857	57.611	3.973	28.887	0.995	38.658
150	0.6000	54.000	53.825	3.233	26.971	0.809	36.061
160	0.5625	50.625	50.498	2.665	25.291	0.667	33.794
170	0.5294	47.647	47.554	2.223	23.808	0.556	31.797
180	0.5000	45.000	44.930	1.873	22.488	0.468	30.025
190	0.4737	42.632	42.578	1.593	21.307	0.398	28.440
200	0.4500	40.500	40.459	1.366	20.243	0.342	27.015
210	0.4286	38.571	38.539	1.180	19.280	0.295	25.726
220	0.4091	36.818	36.792	1.026	18.405	0.257	24.554
230	0.3913	35.217	35.197	0.898	17.605	0.225	23.485
240	0.3750	33.750	33.733	0.791	16.872	0.198	22.506
250	0.3600	32.400	32.386	0.700	16.198	0.175	21.605
280	0.3214	28.929	28.921	0.498	14.463	0.125	19.288
300	0.3000	27.000	26.995	0.405	13.499	0.101	18.002
320	0.2813	25.313	25.309	0.334	12.656	0.083	16.876

K =0.070 735 53'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 95 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
85	1.1176	106.176	102.109	21.496	52.405	5.450	72.287
90	1.0556	100.278	97.210	18.213	49.625	4.604	67.972
95	1.0000	95.000	92.652	15.553	47.107	3.923	64.183
100	0.9500	90.250	88.430	13.379	44.820	3.369	60.821
105	0.9048	85.952	84.524	11.587	42.737	2.914	57.813
110	0.8636	82.045	80.912	10.098	40.833	2.537	55.101
115	0.8261	78.478	77.565	8.852	39.087	2.222	52.642
120	0.7917	75.208	74.473	7.801	37.481	1.957	50.399
125	0.7600	72.200	71.600	6.909	36.000	1.732	48.345
130	0.7308	69.423	68.930	6.148	34.629	1.541	46.456
140	0.6786	64.464	64.123	4.928	32.175	1.234	43.096
150	0.6333	60.167	59.925	4.011	30.043	1.004	40.196
160	0.5938	56.406	56.231	3.307	28.174	0.828	37.666
170	0.5588	53.088	52.959	2.758	26.523	0.690	35.437
180	0.5278	50.139	50.042	2.324	25.053	0.582	33.460
190	0.5000	47.500	47.426	1.977	23.738	0.495	31.693
200	0.4750	45.125	45.068	1.695	22.553	0.424	30.103
210	0.4524	42.976	42.931	1.465	21.481	0.366	28.667
220	0.4318	41.023	40.987	1.274	20.505	0.319	27.361
230	0.4130	39.239	39.211	1.115	19.615	0.279	26.169
240	0.3958	37.604	37.581	0.982	18.798	0.245	25.078
250	0.3800	36.100	36.081	0.868	18.047	0.217	24.073
280	0.3393	32.232	32.221	0.618	16.114	0.155	21.492
300	0.3167	30.083	30.076	0.503	15.040	0.126	20.058
320	0.2969	28.203	28.198	0.414	14.101	0.104	18.804
340	0.2794	26.544	26.540	0.345	13.271	0.086	17.697
350	0.2714	25.786	25.782	0.317	12.892	0.079	17.192

K =0.063 485 63'

230	0.3696	10.476	31.407	3 54 45.7	1 18 15.0	0	0	0.2
240	0.3542	10.038	30.099	3 35 36.3	1 11 52.0	0	0	0.1
250	0.3400	9.636	28.896	3 18 42.1	1 6 13.9	0	0	0.1
280	0.3036	8.603	25.801	2 38 24.2	0 52 48.0	0	0	0.1

K = 4.758 127 02"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 90 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
85	1.0588	32.747	93.970	32 7 2.5	10 40 37.5	0 1 43.3
90	1.0000	30.733	89.004	28 38 52.4	9 31 44.3	0 1 13.2
95	0.9474	28.978	84.502	25 42 42.0	8 33 21.2	0 0 52.9
100	0.9000	27.429	80.411	23 12 17.2	7 43 26.9	0 0 38.6
105	0.8571	26.049	76.681	21 2 50.7	7 0 28.0	0 0 26.9
110	0.8182	24.810	73.270	19 10 39.0	6 23 11.1	0 0 21.9
115	0.7826	23.690	70.142	17 32 46.2	5 50 38.6	0 0 16.8
120	0.7500	22.671	67.263	16 0 52.0	5 22 4.4	0 0 13.0
125	0.7200	21.739	64.607	14 51 3.8	4 56 51.1	0 0 10.2
130	0.6923	20.884	62.149	13 43 50.3	4 34 28.8	0 0 8.0
140	0.6429	19.364	57.747	11 50 21.0	3 56 41.9	0 0 5.1
150	0.6000	18.056	53.922	10 18 47.7	3 26 12.5	0 0 3.4
160	0.5625	16.915	50.569	9 3 51.7	3 1 14.4	0 0 2.3
170	0.5294	15.912	47.605	8 1 45.6	2 40 33.6	0 0 1.6
180	0.5000	15.022	44.969	7 9 43.1	2 23 13.2	0 0 1.1
190	0.4737	14.228	42.608	6 25 40.5	2 8 32.7	0 0 0.8
200	0.4500	13.513	40.482	5 48 4.3	1 56 0.8	0 0 0.6
210	0.4286	12.867	38.557	5 15 42.7	1 45 13.8	0 0 0.5
220	0.4091	12.281	36.807	4 47 39.8	1 35 52.9	0 0 0.3
230	0.3913	11.746	35.208	4 23 11.5	1 27 43.6	0 0 0.3
240	0.3750	11.255	33.743	4 1 43.0	1 20 34.1	0 0 0.2
250	0.3600	10.804	32.394	3 42 46.0	1 14 15.2	0 0 0.2
280	0.3214	9.645	28.925	2 57 35.3	0 59 11.7	0 0 0.1
300	0.3000	9.002	26.998	2 34 41.5	0 51 33.9	0 0 0.1
320	0.2813	8.439	25.311	2 15 57.9	0 45 19.3	0 0 0.0

K = 4.244 131 82"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 95 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
85	1.1176	36.762	104.347	35 47 6.3	11 53 10.9	0 2 23.2
90	1.0556	34.447	98.901	31 55 9.9	10 36 41.9	0 1 41.4
95	1.0000	32.441	93.949	28 38 52.4	9 31 44.3	0 1 13.2
100	0.9500	30.679	89.436	25 51 17.0	8 36 11.9	0 0 53.7
105	0.9048	29.116	85.314	23 27 3.6	7 48 21.1	0 0 40.1
110	0.8636	27.716	81.539	21 22 3.1	7 0 50.8	0 0 30.3
115	0.8261	26.453	78.073	19 32 59.6	6 30 36.7	0 0 23.2
120	0.7917	25.306	74.881	17 57 16.8	5 58 47.6	0 0 18.0
125	0.7600	24.259	71.933	16 32 49.3	5 30 42.4	0 0 14.0
130	0.7308	23.299	69.203	15 17 55.1	5 5 47.3	0 0 11.1
140	0.6786	21.597	64.313	13 11 28.3	4 23 42.3	0 0 7.1
150	0.6333	20.133	60.059	1 29 27.6	3 49 44.5	0 0 4.7
160	0.5938	18.858	56.328	0 5 58.2	3 21 56.2	0 0 3.2
170	0.5588	17.737	53.031	8 56 46.6	2 58 53.3	0 0 2.2
180	0.5278	16.744	50.096	7 58 47.5	2 39 34.2	0 0 1.6
190	0.5000	15.857	47.467	7 9 43.1	2 23 13.2	0 0 1.1
200	0.4750	15.060	45.099	6 27 49.2	2 9 15.6	0 0 0.8
210	0.4524	14.340	42.956	5 51 45.9	1 57 14.7	0 0 0.6
220	0.4318	13.686	41.007	5 20 30.8	1 46 49.8	0 0 0.5
230	0.4130	13.089	39.226	4 53 14.9	1 37 44.6	0 0 0.4
240	0.3958	12.542	37.594	4 29 14.2	1 29 46.1	0 0 0.3
250	0.3800	12.039	36.092	4 8 12.3	1 22 43.9	0 0 0.2
280	0.3393	10.747	32.227	3 17 52.1	1 5 57.2	0 0 0.1
300	0.3167	10.030	30.080	2 52 21.9	0 57 27.2	0 0 0.1
320	0.2969	9.403	28.201	2 31 29.6	0 50 29.8	0 0 0.0
340	0.2794	8.849	26.542	2 14 11.0	0 44 43.8	0 0 0.0
350	0.2714	8.596	25.784	2 6 38.1	0 42 12.7	0 0 0.0

K = 3.809 137 10"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 100 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
90	1.1111	111.111	106.951	22.248	54.857	5.638	75.609
95	1.0526	105.263	102.078	19.017	52.098	4.807	71.338
100	1.0000	100.000	97.529	16.371	49.586	4.130	67.561
105	0.9524	95.238	93.298	14.187	47.294	3.573	64.190
110	0.9091	90.909	89.369	12.370	45.197	3.111	61.157
115	0.8696	86.957	85.722	10.847	43.272	2.726	58.411
120	0.8333	83.333	82.334	9.562	41.500	2.401	55.910
125	0.8000	80.000	79.185	8.471	39.864	2.126	53.622
130	0.7692	76.923	76.252	7.539	38.350	1.891	51.519
140	0.7143	71.429	70.965	6.046	35.637	1.515	47.782
150	0.6667	66.667	66.338	4.921	33.279	1.232	44.560
160	0.6250	62.500	62.262	4.058	31.210	1.016	41.750
170	0.5882	58.824	58.648	3.385	29.382	0.847	39.277
180	0.5556	55.556	55.423	2.853	27.756	0.714	37.083
190	0.5263	52.632	52.531	2.427	26.299	0.607	35.123
200	0.5000	50.000	49.922	2.081	24.987	0.521	33.361
210	0.4762	47.619	47.558	1.798	23.799	0.450	31.767
220	0.4545	45.455	45.406	1.564	22.719	0.391	30.320
230	0.4348	43.478	43.439	1.369	21.733	0.342	28.999
240	0.4167	41.667	41.635	1.205	20.828	0.301	27.789
250	0.4000	40.000	39.974	1.066	19.996	0.267	26.676
280	0.3571	35.714	35.700	0.759	17.855	0.190	23.815
300	0.3333	33.333	33.323	0.617	16.665	0.154	22.226
320	0.3125	31.250	31.243	0.509	15.624	0.127	20.836
340	0.2941	29.412	29.406	0.424	14.705	0.106	19.610
350	0.2857	28.571	28.567	0.389	14.285	0.097	19.049
380	0.2632	26.316	26.313	0.304	13.157	0.076	17.545
400	0.2500	25.000	24.998	0.260	12.500	0.065	16.668

K =0.057 295 78'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 110 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
100	1.1000	121.000	116.646	23.771	59.769	6.021	82.270
105	1.0476	115.238	111.816	20.630	57.046	5.213	78.073
110	1.0000	110.000	107.282	18.009	54.545	4.543	74.317
115	0.9565	105.217	103.037	15.806	52.244	3.981	70.930
120	0.9167	100.833	99.068	13.944	50.121	3.508	67.854
125	0.8800	96.800	95.359	12.360	48.159	3.107	65.048
130	0.8462	93.077	91.891	11.006	46.340	2.764	62.473
140	0.7857	86.429	85.609	8.832	43.077	2.216	57.909
150	0.7333	80.667	80.085	7.193	40.236	1.803	53.983
160	0.6875	75.625	75.204	5.934	37.742	1.486	50.565
170	0.6471	71.176	70.865	4.951	35.536	1.240	47.560
180	0.6111	67.222	66.988	4.174	33.572	1.045	44.897
190	0.5789	63.684	63.506	3.550	31.812	0.889	42.519
200	0.5500	60.500	60.362	3.045	30.227	0.762	40.382
210	0.5238	57.619	57.511	2.631	28.791	0.658	38.451
220	0.5000	55.000	54.914	2.289	27.486	0.573	36.697
230	0.4783	52.609	52.540	2.004	26.293	0.501	35.097
240	0.4583	50.417	50.361	1.764	25.199	0.441	33.631
250	0.4400	48.400	48.355	1.561	24.192	0.390	32.283
280	0.3929	43.214	43.189	1.111	21.603	0.278	28.819
300	0.3667	40.333	40.315	0.903	20.164	0.226	26.895
320	0.3438	37.813	37.799	0.744	18.904	0.186	25.213
340	0.3235	35.588	35.578	0.621	17.792	0.155	23.729
350	0.3143	34.571	34.563	0.569	17.284	0.142	23.051
380	0.2895	31.842	31.837	0.445	15.920	0.111	21.230
400	0.2750	30.250	30.246	0.381	15.124	0.095	20.168
420	0.2619	28.810	28.806	0.329	14.404	0.082	19.208
450	0.2444	26.889	26.886	0.268	13.444	0.067	17.927
475	0.2316	25.474	25.472	0.228	12.737	0.057	16.983

K =0.047 351 88'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 100 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
90	1.1111	38.436	109.241	35 22 4.0	11 45 3.1	0 2 18.2
95	1.0526	36.147	103.834	31 44 34.1	10 33 11.7	0 1 39.7
100	1.0000	34.148	98.893	28 38 52.4	9 31 44.3	0 1 13.2
105	0.9524	32.381	94.370	25 59 4.1	8 38 46.8	0 0 54.6
110	0.9091	30.805	90.221	23 40 33.4	7 52 49.9	0 0 41.2
115	0.8696	29.386	86.405	21 39 42.9	7 12 42.7	0 0 31.6
120	0.8333	28.101	82.888	19 53 39.7	6 37 28.8	0 0 24.4
125	0.8000	26.930	79.637	18 20 4.7	6 6 22.5	0 0 19.1
130	0.7692	25.857	76.624	16 57 5.1	5 38 46.6	0 0 15.1
140	0.7143	23.958	71.222	14 36 58.6	4 52 9.8	0 0 9.7
150	0.6667	22.327	66.520	12 43 56.6	4 14 32.5	0 0 6.4
160	0.6250	20.909	62.394	11 11 26.1	3 43 44.4	0 0 4.3
170	0.5882	19.664	58.745	9 54 46.0	3 18 12.3	0 0 3.0
180	0.5556	18.561	55.497	8 50 31.0	2 56 48.2	0 0 2.1
190	0.5263	17.576	52.587	7 56 8.5	2 38 41.3	0 0 1.5
200	0.5000	16.692	49.965	7 9 43.1	2 23 13.2	0 0 1.1
210	0.4762	15.892	47.592	6 29 46.0	2 9 54.5	0 0 0.8
220	0.4545	15.167	45.433	5 55 8.3	1 58 22.1	0 0 0.6
230	0.4348	14.505	43.461	5 24 55.7	1 48 18.1	0 0 0.5
240	0.4167	13.899	41.653	4 58 24.9	1 39 27.9	0 0 0.4
250	0.4000	13.341	39.989	4 35 1.2	1 31 40.1	0 0 0.3
280	0.3571	11.909	35.708	3 39 14.6	1 13 4.7	0 0 0.2
300	0.3333	11.114	33.329	3 10 59.2	1 3 39.6	0 0 0.1
320	0.3125	10.419	31.247	2 47 51.5	0 55 57.1	0 0 0.1
340	0.2941	9.806	29.409	2 28 41.5	0 49 33.8	0 0 0.0
350	0.2857	9.525	28.569	2 20 19.0	0 46 46.3	0 0 0.0
380	0.2632	8.773	26.314	1 59 2.1	0 39 40.7	0 0 0.0
400	0.2500	8.334	24.999	1 47 25.8	0 35 48.6	0 0 0.0

K = 3.437 746 77"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 110 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
100	1.1000	41.794	119.043	34 39 50.2	11 31 6.7	0 2 10.0
105	1.0476	39.550	113.703	31 26 28.4	10 27 12.6	0 1 36.9
110	1.0000	37.563	108.783	28 38 52.4	9 31 44.3	0 1 13.2
115	0.9565	35.787	104.242	26 12 39.3	8 43 17.1	0 0 56.0
120	0.9167	34.187	100.044	24 4 19.9	8 0 43.3	0 0 43.4
125	0.8800	32.735	96.157	22 11 5.7	7 23 8.0	0 0 33.9
130	0.8462	31.409	92.548	20 30 40.4	6 49 46.7	0 0 26.8
140	0.7857	29.074	86.063	17 41 8.5	5 53 25.7	0 0 17.2
150	0.7333	27.075	80.408	15 24 22.3	5 7 56.1	0 0 11.3
160	0.6875	25.343	75.437	13 32 26.2	4 30 41.0	0 0 7.7
170	0.6471	23.825	71.038	11 59 40.0	3 59 48.0	0 0 5.3
180	0.6111	22.482	67.118	10 41 55.5	3 33 54.7	0 0 3.8
190	0.5789	21.285	63.605	9 36 7.9	3 11 59.9	0 0 2.7
200	0.5500	20.211	60.439	8 39 57.6	2 53 17.2	0 0 2.0
210	0.5238	19.241	57.571	7 51 37.1	2 37 10.9	0 0 1.5
220	0.5000	18.361	54.962	7 9 43.1	2 23 13.2	0 0 1.1
230	0.4783	17.558	52.578	6 33 9.8	2 11 2.4	0 0 0.9
240	0.4583	16.823	50.392	6 1 5.0	2 0 21.0	0 0 0.7
250	0.4400	16.148	48.380	5 32 46.4	1 50 54.9	0 0 0.5
280	0.3929	14.413	43.203	4 25 17.1	1 28 25.4	0 0 0.3
300	0.3667	13.450	40.325	3 51 5.6	1 17 1.7	0 0 0.2
320	0.3438	12.608	37.807	3 23 6.5	1 7 42.1	0 0 0.1
340	0.3235	11.866	35.584	2 59 55.0	0 59 58.3	0 0 0.1
350	0.3143	11.526	34.568	2 49 47.0	0 56 35.6	0 0 0.1
380	0.2895	10.616	31.840	2 24 2.0	0 48 0.6	0 0 0.0
400	0.2750	10.085	30.248	2 9 59.4	0 43 19.8	0 0 0.0
420	0.2619	9.604	28.808	1 57 54.3	0 39 18.1	0 0 0.0
450	0.2444	8.964	26.888	1 42 42.5	0 34 14.1	0 0 0.0
475	0.2316	8.492	25.473	1 32 10.9	0 30 43.6	0 0 0.0

K = 2.841 113 03"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 120 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
110	1.0909	130.909	126.349	25.316	64.690	6.410	88.948
115	1.0435	125.217	121.557	22.247	61.995	5.621	84.812
120	1.0000	120.000	117.035	19.646	59.503	4.956	81.073
125	0.9600	115.200	112.778	17.428	57.195	4.390	77.672
130	0.9231	110.769	108.776	15.528	55.051	3.907	74.561
140	0.8571	102.857	101.478	12.474	51.198	3.134	69.062
150	0.8000	96.000	95.022	10.165	47.837	2.551	64.347
160	0.7500	90.000	89.291	8.390	44.882	2.103	60.251
170	0.7059	84.706	84.182	7.003	42.265	1.755	56.655
180	0.6667	80.000	79.606	5.905	39.934	1.479	53.472
190	0.6316	75.789	75.489	5.024	37.845	1.258	50.632
200	0.6000	72.000	71.767	4.310	35.961	1.079	48.082
210	0.5714	68.571	68.389	3.725	34.255	0.932	45.778
220	0.5455	65.455	65.310	3.241	32.703	0.811	43.687
230	0.5217	62.609	62.493	2.837	31.285	0.710	41.780
240	0.5000	60.000	59.906	2.497	29.984	0.625	40.033
250	0.4800	57.600	57.524	2.210	28.787	0.553	38.427
280	0.4286	51.429	51.385	1.573	25.707	0.393	34.301
300	0.4000	48.000	47.969	1.279	23.995	0.320	32.011
320	0.3750	45.000	44.978	1.054	22.496	0.264	30.008
340	0.3529	42.353	42.337	0.879	21.174	0.220	28.241
350	0.3429	41.143	41.129	0.806	20.569	0.201	27.434
380	0.3158	37.895	37.885	0.630	18.946	0.157	25.266
400	0.3000	36.000	35.993	0.540	17.999	0.135	24.003
420	0.2857	34.286	34.280	0.466	17.142	0.117	22.859
450	0.2667	32.000	31.996	0.379	15.999	0.095	21.335
475	0.2526	30.316	30.313	0.322	15.157	0.081	20.212
500	0.2400	28.800	28.798	0.276	14.400	0.069	19.201
525	0.2286	27.429	27.427	0.239	13.714	0.060	18.286
550	0.2182	26.182	26.180	0.208	13.091	0.052	17.455
575	0.2087	25.043	25.042	0.182	12.522	0.045	16.696

K =0.039 788 74'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 125 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
115	1.0870	135.870	131.204	26.095	67.152	6.606	92.293
120	1.0417	130.208	126.428	23.057	64.471	5.825	88.183
125	1.0000	125.000	121.911	20.464	61.983	5.162	84.451
130	0.9615	120.192	117.649	18.240	59.671	4.595	81.044
140	0.8929	111.607	109.847	14.661	55.509	3.686	75.034
150	0.8333	104.167	102.918	11.953	51.875	3.001	69.888
160	0.7813	97.656	96.751	9.868	48.677	2.475	65.425
170	0.7353	91.912	91.242	8.239	45.844	2.065	61.511
180	0.6944	86.806	86.302	6.948	43.319	1.741	58.048
190	0.6579	82.237	81.853	5.913	41.054	1.481	54.960
200	0.6250	78.125	77.828	5.072	39.013	1.270	52.188
210	0.5952	74.405	74.172	4.384	37.163	1.097	49.685
220	0.5682	71.023	70.838	3.814	35.481	0.954	47.413
230	0.5435	67.935	67.787	3.339	33.943	0.835	45.342
240	0.5208	65.104	64.984	2.940	32.532	0.735	43.445
250	0.5000	62.500	62.402	2.601	31.234	0.651	41.701
280	0.4464	55.804	55.748	1.852	27.893	0.463	37.222
300	0.4167	52.083	52.044	1.506	26.035	0.377	34.736
320	0.3906	48.828	48.800	1.241	24.409	0.310	32.562
340	0.3676	45.956	45.935	1.035	22.974	0.259	30.645
350	0.3571	44.643	44.625	0.949	22.318	0.237	29.768
380	0.3289	41.118	41.106	0.741	20.557	0.185	27.416
400	0.3125	39.063	39.053	0.636	19.530	0.159	26.045
420	0.2976	37.202	37.195	0.549	18.600	0.137	24.804
450	0.2778	34.722	34.717	0.446	17.360	0.112	23.150
475	0.2632	32.895	32.891	0.380	16.447	0.095	21.931
500	0.2500	31.250	31.247	0.325	15.624	0.081	20.834
525	0.2381	29.762	29.760	0.281	14.881	0.070	19.842
550	0.2273	28.409	28.407	0.245	14.204	0.061	18.940
575	0.2174	27.174	27.172	0.214	13.587	0.054	18.116

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 120 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
110	1.0909	45.164	128.861	34 5 34.1	11 19 48.3	0 2 3.7
115	1.0435	42.954	123.574	31 11 35.4	10 22 17.2	0 1 34.6
120	1.0000	40.978	118.672	28 38 52.4	9 31 44.3	0 1 13.2
125	0.9600	39.194	114.116	26 24 6.8	8 47 5.0	0 0 57.2
130	0.9231	37.574	109.878	24 24 36.1	8 7 26.8	0 0 45.2
140	0.8571	34.733	102.242	21 2 50.7	7 0 20.0	0 0 28.9
150	0.8000	32.315	95.544	18 20 4.7	6 6 22.5	0 0 19.1
160	0.7500	30.228	89.684	16 6 52.0	5 22 4.4	0 0 13.0
170	0.7059	28.403	84.472	14 16 27.8	4 45 20.2	0 0 9.0
180	0.6667	26.793	79.825	12 43 56.6	4 14 32.5	0 0 6.4
190	0.6316	25.359	75.656	11 25 38.7	3 48 28.3	0 0 4.6
200	0.6000	24.074	71.896	10 18 47.7	3 26 12.5	0 0 3.4
210	0.5714	22.915	68.490	9 21 15.9	3 7 2.8	0 0 2.5
220	0.5455	21.864	65.390	8 31 24.0	2 50 26.1	0 0 1.9
230	0.5217	20.906	62.557	7 47 53.8	2 35 56.5	0 0 1.5
240	0.5000	20.030	59.958	7 9 43.1	2 23 13.2	0 0 1.1
250	0.4800	19.224	57.566	6 36 1.7	2 11 59.7	0 0 0.9
280	0.4286	17.157	51.409	5 15 42.7	1 45 13.8	0 0 0.5
300	0.4000	16.010	47.986	4 35 1.2	1 31 40.1	0 0 0.3
320	0.3750	15.007	44.990	4 1 43.0	1 20 34.1	0 0 0.2
340	0.3529	14.123	42.346	3 34 6.9	1 11 22.2	0 0 0.1
350	0.3429	13.719	41.137	3 22 3.3	1 7 21.0	0 0 0.1
380	0.3158	12.635	37.891	2 51 24.7	0 57 8.2	0 0 0.1
400	0.3000	12.002	35.997	2 34 41.9	0 51 33.9	0 0 0.1
420	0.2857	11.430	34.283	2 20 19.0	0 46 46.3	0 0 0.0
450	0.2667	10.668	31.998	2 2 13.9	0 40 44.6	0 0 0.0
475	0.2526	10.106	30.314	1 49 42.2	0 36 34.0	0 0 0.0
500	0.2400	9.601	28.799	1 39 0.4	0 33 0.1	0 0 0.0
525	0.2286	9.143	27.428	1 29 48.1	0 29 56.0	0 0 0.0
550	0.2182	8.728	26.181	1 21 49.4	0 27 16.5	0 0 0.0
575	0.2087	8.348	25.043	1 14 51.8	0 24 57.3	0 0 0.0

K = 2.387 324 15"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 125 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
115	1.0870	46.851	133.774	33 50 48.3	11 14 55.1	0 2 1.0
120	1.0417	44.658	128.513	31 5 5.8	10 20 8.3	0 1 33.6
125	1.0000	42.685	123.617	28 38 52.4	9 31 44.3	0 1 13.2
130	0.9615	40.898	119.055	26 29 11.7	8 48 46.1	0 0 57.8
140	0.8929	37.775	110.821	22 50 16.5	7 36 8.5	0 0 37.0
150	0.8333	35.126	103.610	19 53 39.7	6 37 28.8	0 0 24.4
160	0.7813	32.844	97.253	17 29 7.0	5 49 25.8	0 0 16.6
170	0.7353	30.852	91.614	15 29 19.3	5 9 34.9	0 0 11.5
180	0.6944	29.096	86.581	13 48 55.9	4 36 10.5	0 0 8.2
190	0.6579	27.535	82.066	12 23 58.3	4 7 53.5	0 0 5.9
200	0.6250	26.137	77.993	11 11 26.1	3 43 44.4	0 0 4.3
210	0.5952	24.876	74.301	10 9 0.7	3 22 57.0	0 0 3.2
220	0.5682	23.733	70.941	9 14 54.3	3 4 55.6	0 0 2.4
230	0.5435	22.692	67.869	8 27 42.1	2 49 12.1	0 0 1.9
240	0.5208	21.739	65.051	7 46 16.5	2 35 24.0	0 0 1.5
250	0.5000	20.864	62.457	7 9 43.1	2 23 13.2	0 0 1.1
280	0.4464	18.619	55.779	5 42 34.1	1 54 10.8	0 0 0.6
300	0.4167	17.374	52.066	4 58 24.9	1 39 27.9	0 0 0.4
320	0.3906	16.285	48.815	4 22 16.8	1 27 25.3	0 0 0.3
340	0.3676	15.325	45.947	3 52 19.8	1 17 26.4	0 0 0.2
350	0.3571	14.887	44.635	3 39 14.6	1 13 4.7	0 0 0.2
380	0.3289	13.710	41.113	3 5 59.6	1 1 59.8	0 0 0.1
400	0.3125	13.024	39.058	2 47 51.5	0 55 57.1	0 0 0.1
420	0.2976	12.403	37.199	2 32 15.2	0 50 45.0	0 0 0.1
450	0.2778	11.576	34.720	2 12 37.7	0 44 12.5	0 0 0.0
475	0.2632	10.966	32.893	1 59 2.1	0 39 40.7	0 0 0.0
500	0.2500	10.418	31.249	1 47 25.8	0 35 48.6	0 0 0.0
525	0.2381	9.921	29.761	1 37 26.5	0 32 28.8	0 0 0.0
550	0.2273	9.470	28.408	1 28 47.1	0 29 35.7	0 0 0.0
575	0.2174	9.058	27.173	1 21 13.9	0 27 4.6	0 0 0.0

600	0.2083	26.042	26.040	0.188	13.021	0.047	17.362

K =0.036 669 30'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 130 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
120	1.0833	140.833	136.061	26.877	69.616	6.803	95.640
125	1.0400	135.200	131.299	23.868	66.946	6.030	91.554
130	1.0000	130.000	126.787	21.283	64.462	5.369	87.829
140	0.9286	120.714	118.498	17.119	59.985	4.308	81.274
150	0.8667	112.667	111.888	13.963	56.070	3.508	75.674
160	0.8125	105.625	104.480	11.531	52.621	2.894	70.823
170	0.7647	99.412	98.565	9.630	49.565	2.415	66.574
180	0.7222	93.889	93.252	8.123	46.838	2.036	62.817
190	0.6842	88.947	88.461	6.913	44.393	1.732	59.469
200	0.6500	84.500	84.124	5.931	42.187	1.485	56.466
210	0.6190	80.476	80.181	5.127	40.189	1.283	53.754
220	0.5909	76.818	76.584	4.461	38.370	1.116	51.294
230	0.5652	73.478	73.291	3.905	36.708	0.977	49.051
240	0.5417	70.417	70.265	3.438	35.183	0.860	46.997
250	0.5200	67.600	67.477	3.043	33.779	0.761	45.110
280	0.4643	60.357	60.287	2.167	30.167	0.542	40.263
300	0.4333	56.333	56.284	1.762	28.158	0.441	37.573
320	0.4063	52.813	52.777	1.452	26.400	0.363	35.221
340	0.3824	49.706	49.679	1.211	24.849	0.303	33.147
350	0.3714	48.286	48.263	1.110	24.139	0.278	32.199
380	0.3421	44.474	44.458	0.867	22.234	0.217	29.654
400	0.3250	42.250	42.238	0.744	21.123	0.186	28.171
420	0.3095	40.238	40.229	0.642	20.118	0.161	26.829
450	0.2889	37.556	37.549	0.522	18.777	0.131	25.039
475	0.2737	35.579	35.574	0.444	17.789	0.111	23.721
500	0.2600	33.800	33.796	0.381	16.899	0.095	22.535
525	0.2476	32.190	32.187	0.329	16.095	0.082	21.461
550	0.2364	30.727	30.725	0.286	15.363	0.072	20.484
575	0.2261	29.391	29.389	0.250	14.695	0.063	19.595
600	0.2167	28.167	28.165	0.220	14.083	0.055	18.778
650	0.2000	26.000	25.999	0.173	13.000	0.043	17.334

K =0.033 902 83'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 140 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
125	1.1200	156.800	150.743	31.872	77.383	8.081	106.772
130	1.0769	150.769	145.778	28.450	74.547	7.199	102.342
140	1.0000	140.000	136.540	22.920	69.421	5.782	94.586
150	0.9333	130.667	128.209	18.715	64.922	4.711	87.993
160	0.8750	122.500	120.717	15.469	60.952	3.887	82.302
170	0.8235	115.294	113.975	12.925	57.427	3.245	77.331
180	0.7778	108.889	107.897	10.907	54.279	2.736	72.944
190	0.7368	103.158	102.400	9.286	51.453	2.328	69.039
200	0.7000	98.000	97.413	7.969	48.902	1.997	65.540
210	0.6667	93.333	92.873	6.889	46.590	1.725	62.384
220	0.6364	89.091	88.726	5.995	44.485	1.501	59.522
230	0.6087	85.217	84.925	5.249	42.560	1.314	56.914
240	0.5833	81.667	81.431	4.622	40.794	1.157	54.527
250	0.5600	78.400	78.207	4.091	39.168	1.024	52.334
280	0.5000	70.000	69.891	2.913	34.982	0.729	46.705
300	0.4667	65.333	65.256	2.369	32.654	0.593	43.583
320	0.4375	61.250	61.194	1.953	30.616	0.488	40.853
340	0.4118	57.647	57.606	1.628	28.817	0.407	38.446
350	0.4000	56.000	55.964	1.493	27.994	0.373	37.346
380	0.3684	51.579	51.555	1.166	25.786	0.292	34.394
400	0.3500	49.000	48.982	1.000	24.497	0.250	32.673
420	0.3333	46.667	46.652	0.864	23.331	0.216	31.116
450	0.3111	43.556	43.545	0.703	21.776	0.176	29.041
475	0.2947	41.263	41.255	0.597	20.630	0.149	27.511
500	0.2800	39.200	39.194	0.512	19.599	0.128	26.135

600	0.2083	8.681	26.041	1 14 36.2	0 24 52.1	0	0	0.0

K = 2.200 157 93"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 130 M

R	A/R	ST	LC	θ	ϕ			C		
M		M			DEG	MNT	SEC			
120	1.0833	48.541	138.690	33 37 17.3	11	10	27.2	0	1	58.6
125	1.0400	46.361	133.451	30 59 8.0	10	18	10.0	0	1	32.7
130	1.0000	44.392	128.561	28 38 52.4	9	31	44.3	0	1	13.2
140	0.9286	40.964	119.720	24 42 5.4	8	13	14.9	0	0	46.9
150	0.8667	38.067	111.962	21 31 3.9	7	4	50.4	0	0	30.9
160	0.8125	35.578	105.114	18 54 43.5	6	17	53.5	0	0	21.0
170	0.7647	33.409	99.035	16 45 9.3	5	34	48.5	0	0	14.6
180	0.7222	31.500	93.605	14 56 34.4	4	58	41.1	0	0	10.3
190	0.6842	29.805	88.731	13 24 40.8	4	28	6.1	0	0	7.5
200	0.6500	28.287	84.333	12 6 13.4	4	1	59.0	0	0	5.5
210	0.6190	26.920	80.345	10 58 42.4	3	39	30.0	0	0	4.1
220	0.5909	25.681	76.714	10 0 11.1	3	20	0.6	0	0	3.1
230	0.5652	24.552	73.395	9 9 7.8	3	3	0.2	0	0	2.4
240	0.5417	23.520	70.349	8 24 19.3	2	48	4.6	0	0	1.8
250	0.5200	22.573	67.545	7 44 47.0	2	34	54.2	0	0	1.4
280	0.4643	20.141	60.326	6 10 31.3	2	3	29.7	0	0	0.7
300	0.4333	18.794	56.311	5 22 46.0	1	47	34.8	0	0	0.5
320	0.4063	17.616	52.797	4 43 40.9	1	34	33.3	0	0	0.3
340	0.3824	16.577	49.694	4 11 17.3	1	23	45.5	0	0	0.2
350	0.3714	16.103	48.276	3 57 8.1	1	19	2.5	0	0	0.2
380	0.3421	14.829	44.467	3 21 10.2	1	7	3.3	0	0	0.1
400	0.3250	14.087	42.245	3 1 33.4	1	0	31.0	0	0	0.1
420	0.3095	13.416	40.234	2 44 40.6	0	54	53.5	0	0	0.1
450	0.2889	12.521	37.553	2 23 27.1	0	47	49.0	0	0	0.0
475	0.2737	11.861	35.577	2 8 44.9	0	42	54.9	0	0	0.0
500	0.2600	11.268	33.798	1 56 11.8	0	38	43.9	0	0	0.0
525	0.2476	10.731	32.189	1 45 23.6	0	35	7.8	0	0	0.0
550	0.2364	10.243	30.726	1 36 1.8	0	32	0.6	0	0	0.0
575	0.2261	9.798	29.390	1 27 51.6	0	29	17.2	0	0	0.0
600	0.2167	9.389	28.166	1 20 41.5	0	26	53.8	0	0	0.0
650	0.2000	8.667	26.000	1 8 45.3	0	22	55.1	0	0	0.0

K = 2.034 169 69"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 140 M

R	A/R	ST	LC	θ	ϕ			C		
M		M			DEG	MNT	SEC			
125	1.1200	54.308	154.076	35 56 9.3	11	56	18.1	0	2	25.0
130	1.0769	51.924	148.528	33 13 29.2	11	2	35.3	0	1	54.4
140	1.0000	47.807	138.451	28 38 52.4	9	31	44.3	0	1	13.2
150	0.9333	44.358	129.568	24 57 19.8	8	18	18.3	0	0	48.3
160	0.8750	41.412	121.704	21 56 0.7	7	18	7.5	0	0	32.8
170	0.8235	38.857	114.706	19 25 44.5	6	28	12.1	0	0	22.8
180	0.7778	36.616	108.447	17 19 48.7	5	46	20.1	0	0	16.1
190	0.7368	34.629	102.820	15 33 14.3	5	10	53.1	0	0	11.7
200	0.7000	32.855	97.739	14 2 14.9	4	40	36.4	0	0	8.6
210	0.6667	31.258	93.129	12 43 56.6	4	14	32.5	0	0	6.4
220	0.6364	29.813	88.929	11 36 4.4	3	51	56.6	0	0	4.8
230	0.6087	28.499	85.087	10 36 51.6	3	32	13.5	0	0	3.7
240	0.5833	27.297	81.562	9 44 53.7	3	14	55.0	0	0	2.9
250	0.5600	26.195	78.314	8 59 2.3	2	59	38.5	0	0	2.2
280	0.5000	23.368	69.951	7 9 43.1	2	23	13.2	0	0	1.1
300	0.4667	21.802	65.299	6 14 19.9	2	4	45.9	0	0	0.8
320	0.4375	20.434	61.225	5 29 0.2	1	49	39.6	0	0	0.5
340	0.4118	19.229	57.629	4 51 26.1	1	37	8.4	0	0	0.4
350	0.4000	18.678	55.984	4 35 1.2	1	31	40.1	0	0	0.3
380	0.3684	17.201	51.568	3 53 18.6	1	17	46.0	0	0	0.2
400	0.3500	16.339	48.992	3 30 33.7	1	10	11.1	0	0	0.1
420	0.3333	15.560	46.660	3 10 59.2	1	3	39.6	0	0	0.1
450	0.3111	14.522	43.551	2 46 22.2	0	55	27.3	0	0	0.1
475	0.2947	13.757	41.260	2 29 19.1	0	49	46.3	0	0	0.0
500	0.2800	13.069	39.197	2 14 45.6	0	44	55.2	0	0	0.0

525	0.2667	37.333	37.329	0.442	18.666	0.111	24.891
550	0.2545	35.636	35.633	0.385	17.818	0.096	23.759
575	0.2435	34.087	34.084	0.337	17.043	0.084	22.726
600	0.2333	32.667	32.664	0.296	16.333	0.074	21.779
650	0.2154	30.154	30.152	0.233	15.077	0.058	20.103
700	0.2000	28.000	27.999	0.187	14.000	0.047	18.667
750	0.1867	26.133	26.133	0.152	13.067	0.038	17.422

K =0.029 232 54'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 150 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
140	1.0714	160.714	155.500	30.033	79.483	7.597	109.052
150	1.0000	150.000	146.293	24.557	74.379	6.194	101.342
160	0.9375	140.625	137.933	20.317	69.862	5.114	94.716
170	0.8824	132.353	130.361	16.989	65.844	4.270	88.946
180	0.8333	125.000	123.501	14.343	62.250	3.601	83.866
190	0.7895	118.421	117.276	12.216	59.019	3.065	79.353
200	0.7500	112.500	111.613	10.487	56.102	2.629	75.313
210	0.7143	107.143	106.448	9.069	53.455	2.272	71.674
220	0.6818	102.273	101.722	7.893	51.044	1.977	68.376
230	0.6522	97.826	97.385	6.912	48.839	1.731	65.373
240	0.6250	93.750	93.393	6.087	46.815	1.524	62.625
250	0.6000	90.000	89.709	5.388	44.951	1.348	60.102
260	0.5357	80.357	80.192	3.838	40.151	0.960	53.629
300	0.5000	75.000	74.883	3.122	37.480	0.781	50.041
320	0.4688	70.313	70.228	2.573	35.142	0.643	46.905
340	0.4412	66.176	66.114	2.145	33.078	0.537	44.140
350	0.4286	64.286	64.232	1.967	32.134	0.492	42.876
380	0.3947	59.211	59.175	1.537	29.599	0.384	39.486
400	0.3750	56.250	56.222	1.318	28.120	0.330	37.510
420	0.3571	53.571	53.550	1.139	26.782	0.285	35.722
450	0.3333	50.000	49.985	0.926	24.997	0.231	33.339
475	0.3158	47.368	47.357	0.787	23.682	0.197	31.583
500	0.3000	45.000	44.991	0.675	22.498	0.169	30.003
525	0.2857	42.857	42.850	0.583	21.427	0.146	28.574
550	0.2727	40.909	40.903	0.507	20.454	0.127	27.275
575	0.2609	39.130	39.126	0.444	19.564	0.111	26.089
600	0.2500	37.500	37.496	0.391	18.749	0.098	25.001
650	0.2308	34.615	34.613	0.307	17.307	0.077	23.078
700	0.2143	32.143	32.141	0.246	16.071	0.061	21.429
750	0.2000	30.000	29.999	0.200	15.000	0.050	20.000
800	0.1875	28.125	28.124	0.165	14.062	0.041	18.750
850	0.1765	26.471	26.470	0.137	13.235	0.034	17.647
900	0.1667	25.000	25.000	0.116	12.500	0.029	16.667

K =0.025 464 79'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 160 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
150	1.0667	170.667	165.223	31.623	84.421	7.998	115.768
160	1.0000	160.000	154.046	26.194	79.338	6.607	108.098
170	0.9412	150.588	147.661	21.923	74.804	5.519	101.443
180	0.8889	142.222	140.018	18.521	70.743	4.656	95.602
190	0.8421	134.737	133.053	15.782	67.087	3.963	90.423
200	0.8000	128.000	126.695	13.594	63.782	3.401	85.796
210	0.7619	121.905	120.882	11.723	60.782	2.940	81.631
220	0.7273	116.364	115.552	10.207	58.046	2.558	77.862
230	0.6957	111.304	110.654	8.940	55.544	2.240	74.432
240	0.6667	106.667	106.141	7.873	53.246	1.972	71.296
250	0.6400	102.400	101.971	6.970	51.129	1.745	68.417
280	0.5714	91.429	91.185	4.966	45.674	1.243	61.038
300	0.5333	85.333	85.161	4.040	42.638	1.011	56.949
320	0.5000	80.000	79.875	3.330	39.979	0.833	53.377
340	0.4706	75.294	75.202	2.777	37.632	0.694	50.228
350	0.4571	73.143	73.063	2.546	36.558	0.637	48.790
380	0.4211	67.368	67.316	1.989	33.675	0.498	44.931
400	0.4000	64.000	63.959	1.706	31.993	0.427	42.681
420	0.3810	60.952	60.920	1.474	30.471	0.369	40.646
450	0.3556	56.889	56.866	1.198	28.441	0.300	37.934
475	0.3368	53.895	53.877	1.019	26.944	0.255	35.936
500	0.3200	51.200	51.187	0.874	25.598	0.218	34.138
525	0.3048	48.762	48.751	0.755	24.379	0.189	32.512
550	0.2909	46.545	46.537	0.656	23.271	0.164	31.033
575	0.2783	44.522	44.515	0.573	22.260	0.144	29.683

525	0.2667	12.446	37.331	2 2 13.9	0 40 44.6	0	0	0.0
550	0.2545	11.880	35.635	1 51 22.3	0 37 7.4	0	0	0.0
575	0.2435	11.363	34.086	1 41 53.9	0 33 57.9	0	0	0.0
600	0.2333	10.890	32.666	1 33 35.0	0 31 11.7	0	0	0.0
650	0.2154	10.052	30.153	1 19 44.4	0 26 34.8	0	0	0.0
700	0.2000	9.334	28.000	1 8 45.3	0 22 55.1	0	0	0.0
750	0.1867	8.711	26.133	0 59 53.6	0 19 57.9	0	0	0.0

K = 1.753 952 43"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 150 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
140	1.0714	55.311	158.373	32 53 11.8	10 55 53.0	0 1 51.0
150	1.0000	51.222	148.340	28 38 52.4	9 31 44.3	0 1 13.2
160	0.9375	47.755	139.422	25 10 43.7	8 22 44.9	0 0 49.6
170	0.8824	44.764	131.464	22 18 13.4	7 25 30.0	0 0 34.5
180	0.8333	42.151	124.331	19 53 39.7	6 37 28.8	0 0 24.4
190	0.7895	39.842	117.911	17 51 19.2	5 56 48.7	0 0 17.7
200	0.7500	37.785	112.105	16 6 52.0	5 22 4.4	0 0 13.0
210	0.7143	35.937	106.833	14 36 58.6	4 52 9.8	0 0 9.7
220	0.6818	34.267	102.027	13 19 3.8	4 26 13.9	0 0 7.3
230	0.6522	32.750	97.630	12 11 5.4	4 3 36.2	0 0 5.6
240	0.6250	31.364	93.591	11 11 26.1	3 43 44.4	0 0 4.3
250	0.6000	30.093	89.870	10 18 47.7	3 26 12.5	0 0 3.4
280	0.5357	26.838	80.284	8 13 17.9	2 44 24.3	0 0 1.7
300	0.5000	25.037	74.948	7 9 43.1	2 23 13.2	0 0 1.1
320	0.4688	23.464	70.275	6 17 40.9	2 5 52.9	0 0 0.8
340	0.4412	22.079	66.149	5 34 33.3	1 51 30.6	0 0 0.5
350	0.4286	21.446	64.262	5 15 42.7	1 45 13.8	0 0 0.5
380	0.3947	19.748	59.195	4 27 49.8	1 29 16.3	0 0 0.3
400	0.3750	18.759	56.238	4 1 43.0	1 20 34.1	0 0 0.2
420	0.3571	17.864	53.562	3 39 14.6	1 13 4.7	0 0 0.2
450	0.3333	16.672	49.993	3 10 59.2	1 3 39.6	0 0 0.1
475	0.3158	15.793	47.363	2 51 24.7	0 57 8.2	0 0 0.1
500	0.3000	15.003	44.996	2 34 41.9	0 51 33.9	0 0 0.1
525	0.2857	14.288	42.854	2 20 19.0	0 46 46.3	0 0 0.0
550	0.2727	13.638	40.907	2 7 51.0	0 42 37.0	0 0 0.0
575	0.2609	13.045	39.128	1 56 58.5	0 38 59.5	0 0 0.0
600	0.2500	12.501	37.498	1 47 25.8	0 35 48.6	0 0 0.0
650	0.2308	11.539	34.614	1 31 32.3	0 30 30.7	0 0 0.0
700	0.2143	10.715	32.142	1 18 55.7	0 26 18.6	0 0 0.0
750	0.2000	10.000	29.999	1 8 45.3	0 22 55.1	0 0 0.0
800	0.1875	9.375	28.125	1 0 25.7	0 20 8.6	0 0 0.0
850	0.1765	8.824	26.470	0 53 31.7	0 17 50.6	0 0 0.0
900	0.1667	8.333	25.000	0 47 44.8	0 15 54.9	0 0 0.0

K = 1.527 887 45"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 160 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
150	1.0667	58.703	168.224	32 35 41.8	10 50 5.9	0 1 48.0
160	1.0000	54.637	158.229	28 38 52.4	9 31 44.3	0 1 13.2
170	0.9412	51.153	149.279	25 22 36.0	8 26 41.2	0 0 50.8
180	0.8889	48.124	141.238	22 38 7.3	7 32 6.4	0 0 36.0
190	0.8421	45.457	133.985	20 18 55.4	6 45 52.5	0 0 26.0
200	0.8000	43.087	127.418	18 20 4.7	6 6 22.5	0 0 19.1
210	0.7619	40.964	121.449	16 37 48.2	5 32 21.8	0 0 14.3
220	0.7273	39.048	116.002	15 9 9.4	5 2 52.3	0 0 10.8
230	0.6957	37.310	111.015	13 51 49.1	4 37 8.1	0 0 8.3
240	0.6667	35.724	106.433	12 43 56.6	4 14 32.5	0 0 6.4
250	0.6400	34.270	102.209	11 44 3.0	3 54 36.0	0 0 5.0
280	0.5714	30.554	91.320	9 21 15.9	3 7 2.8	0 0 2.5
300	0.5333	28.499	85.257	8 8 55.4	2 42 56.8	0 0 1.7
320	0.5000	26.706	79.944	7 9 43.1	2 23 13.2	0 0 1.1
340	0.4706	25.127	75.253	6 20 39.0	2 6 52.2	0 0 0.8
350	0.4571	24.406	73.107	5 59 12.6	1 59 43.5	0 0 0.7
380	0.4211	22.473	67.345	5 4 43.9	1 41 34.2	0 0 0.4
400	0.4000	21.346	63.982	4 35 1.2	1 31 40.1	0 0 0.3
420	0.3810	20.328	60.938	4 9 27.1	1 23 8.8	0 0 0.2
450	0.3556	18.970	56.879	3 37 18.0	1 12 25.8	0 0 0.1
475	0.3368	17.970	53.887	3 15 1.7	1 5 0.5	0 0 0.1
500	0.3200	17.071	51.194	2 56 0.8	0 58 40.2	0 0 0.1
525	0.3048	16.257	48.757	2 39 38.9	0 53 12.9	0 0 0.1
550	0.2909	15.518	46.542	2 25 27.9	0 48 29.3	0 0 0.0
575	0.2783	14.843	44.515	2 13 5.5	0 44 21.8	0 0 0.0

600	0.2667	42.667	42.661	0.506	21.332	0.126	28.446
650	0.2462	39.385	39.381	0.398	19.692	0.099	26.258
700	0.2286	36.571	36.569	0.318	18.285	0.080	24.382
750	0.2133	34.133	34.132	0.259	17.066	0.065	22.756
800	0.2000	32.000	31.999	0.213	16.000	0.053	21.334
850	0.1882	30.118	30.117	0.178	15.059	0.044	20.079
900	0.1778	28.444	28.444	0.150	14.222	0.037	18.963
950	0.1684	26.947	26.947	0.127	13.474	0.032	17.965
1000	0.1600	25.600	25.600	0.109	12.800	0.027	17.067

K =0.022 381 16'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 170 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
160	1.0625	180.625	174.954	33.219	89.362	8.400	122.490
170	1.0000	170.000	165.799	27.831	84.297	7.020	114.854
180	0.9444	160.556	157.391	23.532	79.748	5.925	108.174
190	0.8947	152.105	149.686	20.064	75.648	5.045	102.268
200	0.8500	144.500	142.626	17.239	71.937	4.330	97.000
210	0.8095	137.619	136.145	14.916	68.564	3.743	92.267
220	0.7727	131.364	130.198	12.990	65.487	3.258	87.988
230	0.7391	125.652	124.718	11.380	62.670	2.853	84.098
240	0.7083	120.417	119.661	10.024	60.082	2.512	80.544
250	0.6800	115.600	114.984	8.875	57.697	2.223	77.284
280	0.6071	103.214	102.864	6.326	51.549	1.583	68.932
300	0.5667	96.333	96.085	5.146	48.125	1.288	64.309
320	0.5313	90.313	90.133	4.242	45.126	1.061	60.271
340	0.5000	85.000	84.867	3.538	42.478	0.885	56.713
350	0.4857	82.571	82.457	3.243	41.267	0.811	55.088
380	0.4474	76.053	75.977	2.535	38.014	0.634	50.728
400	0.4250	72.250	72.191	2.174	36.115	0.544	48.187
420	0.4048	68.810	68.763	1.876	34.397	0.470	45.889
450	0.3778	64.222	64.190	1.527	32.106	0.382	42.826
475	0.3579	60.842	60.817	1.298	30.417	0.325	40.570
500	0.3400	57.800	57.781	1.113	28.897	0.278	38.540
525	0.3238	55.048	55.032	0.962	27.521	0.240	36.704
550	0.3091	52.545	52.533	0.837	26.271	0.209	35.034
575	0.2957	50.261	50.251	0.732	25.129	0.183	33.511
600	0.2833	48.167	48.159	0.644	24.082	0.161	32.114
650	0.2615	44.462	44.456	0.507	22.230	0.127	29.643
700	0.2429	41.286	41.282	0.406	20.642	0.101	27.525
750	0.2267	38.533	38.531	0.330	19.266	0.082	25.690
800	0.2125	36.125	36.123	0.272	18.062	0.068	24.084
850	0.2000	34.000	33.999	0.227	17.000	0.057	22.667
900	0.1889	32.111	32.110	0.191	16.055	0.048	21.408
950	0.1789	30.421	30.420	0.162	15.210	0.041	20.281
1000	0.1700	28.900	28.899	0.139	14.450	0.035	19.267
1050	0.1619	27.524	27.523	0.120	13.762	0.030	18.349
1100	0.1545	26.273	26.272	0.105	13.136	0.026	17.515
1150	0.1478	25.130	25.130	0.092	12.565	0.023	16.754

K =0.019 825 53'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 175 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
160	1.0938	191.406	184.671	37.199	94.573	9.420	130.081
170	1.0294	180.147	175.155	31.184	89.237	7.875	121.913
180	0.9722	170.139	166.378	26.378	84.440	6.648	114.782
190	0.9211	161.184	158.308	22.499	80.111	5.661	108.487
200	0.8750	153.125	150.896	19.336	76.190	4.859	102.878
210	0.8333	145.833	144.085	16.734	72.625	4.202	97.843
220	0.7955	139.205	137.818	14.576	69.371	3.657	93.294
230	0.7609	133.152	132.041	12.771	66.391	3.202	89.161
240	0.7292	127.604	126.705	11.251	63.652	2.820	85.387
250	0.7000	122.500	121.767	9.961	61.128	2.496	81.925

600	0.2667	14.224	42.664	2	2	13.9	0	40	44.6	0	0	0.0
650	0.2462	13.129	39.383	1	44	9.0	0	34	43.0	0	0	0.0
700	0.2286	12.191	36.570	1	29	48.1	0	29	56.0	0	0	0.0
750	0.2133	11.378	34.133	1	18	13.7	0	26	4.5	0	0	0.0
800	0.2000	10.667	31.999	1	8	45.3	0	22	55.1	0	0	0.0
850	0.1882	10.040	30.117	1	0	54.2	0	20	18.1	0	0	0.0
900	0.1778	9.482	28.444	0	54	19.5	0	18	6.5	0	0	0.0
950	0.1684	8.983	26.947	0	48	45.4	0	16	15.1	0	0	0.0
1000	0.1600	8.533	25.600	0	44	0.2	0	14	40.1	0	0	0.0

K = 1.342 869 83M

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 170 M

R	A/R	ST	LC	θ			ϕ			C		
M		M					DEG	MNT	SEC			
160	1.0625	62.097	178.080	32	20	26.8	10	45	3.4	0	1	45.5
170	1.0000	58.052	168.119	28	38	52.4	9	31	44.3	0	1	13.2
180	0.9444	54.554	159.141	25	33	11.6	8	30	12.0	0	0	51.9
190	0.8947	51.488	151.025	22	56	3.1	7	38	3.5	0	0	37.5
200	0.8500	48.773	143.664	20	41	53.2	6	53	30.2	0	0	27.5
210	0.8095	46.347	136.963	18	46	25.6	6	15	8.0	0	0	20.5
220	0.7727	44.163	130.844	17	6	21.1	5	41	51.5	0	0	15.5
230	0.7391	42.184	125.236	15	39	2.7	5	12	49.0	0	0	11.9
240	0.7083	40.381	120.080	14	22	25.3	4	47	19.2	0	0	9.2
250	0.6800	38.731	115.326	13	14	48.4	4	24	48.9	0	0	7.2
280	0.6071	34.516	103.059	10	33	36.9	3	31	8.7	0	0	3.6
300	0.5667	32.190	96.223	9	11	57.0	3	3	56.6	0	0	2.4
320	0.5313	30.161	90.233	8	5	6.7	2	41	40.6	0	0	1.6
340	0.5000	28.376	84.941	7	9	43.1	2	23	13.2	0	0	1.1
350	0.4857	27.560	82.520	6	45	30.8	2	15	9.3	0	0	1.0
380	0.4474	25.375	76.019	5	44	0.8	1	54	39.7	0	0	0.6
400	0.4250	24.102	72.224	5	10	28.3	1	43	29.0	0	0	0.4
420	0.4048	22.951	68.789	4	41	36.4	1	33	51.8	0	0	0.3
450	0.3778	21.418	64.208	4	5	18.6	1	21	46.0	0	0	0.2
475	0.3579	20.289	60.831	3	40	10.1	1	13	23.2	0	0	0.2
500	0.3400	19.273	57.791	3	18	42.1	1	6	13.9	0	0	0.1
525	0.3238	18.354	55.041	3	0	13.7	1	0	4.5	0	0	0.1
550	0.3091	17.519	52.540	2	44	13.0	0	54	44.3	0	0	0.1
575	0.2957	16.757	50.257	2	30	14.8	0	50	4.9	0	0	0.0
600	0.2833	16.058	48.163	2	17	59.2	0	45	59.7	0	0	0.0
650	0.2615	14.822	44.455	1	57	34.5	0	39	11.5	0	0	0.0
700	0.2429	13.763	41.284	1	41	22.7	0	33	47.6	0	0	0.0
750	0.2267	12.845	38.532	1	28	18.7	0	29	26.2	0	0	0.0
800	0.2125	12.042	36.124	1	17	37.1	0	25	52.4	0	0	0.0
850	0.2000	11.334	33.995	1	8	45.3	0	22	55.1	0	0	0.0
900	0.1889	10.704	32.111	1	1	19.7	0	20	26.6	0	0	0.0
950	0.1789	10.141	30.421	0	55	2.5	0	18	20.8	0	0	0.0
1000	0.1700	9.634	28.900	0	49	40.5	0	16	33.5	0	0	0.0
1050	0.1619	9.175	27.524	0	45	3.4	0	15	1.1	0	0	0.0
1100	0.1545	8.758	26.273	0	41	3.2	0	13	41.1	0	0	0.0
1150	0.1478	8.377	25.130	0	37	33.7	0	12	31.2	0	0	0.0

K = 1.189 531 75M

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 175 M

R	A/R	ST	LC	θ			ϕ			C		
M		M					DEG	MNT	SEC			
160	1.0938	66.059	188.380	34	16	16.2	11	23	19.7	0	2	5.6
170	1.0294	61.702	177.909	30	21	28.2	10	5	42.2	0	1	27.2
180	0.9722	57.948	168.456	27	4	42.4	9	0	32.4	0	1	1.8
190	0.9211	54.666	159.899	24	18	11.1	8	5	19.1	0	0	44.6
200	0.8750	51.765	152.130	21	56	0.7	7	18	7.5	0	0	32.8
210	0.8333	49.176	145.053	19	53	39.7	6	37	28.8	0	0	24.4
220	0.7955	46.848	138.586	18	7	36.8	6	2	13.8	0	0	18.5
230	0.7609	44.741	132.657	16	35	5.7	5	31	27.7	0	0	14.1
240	0.7292	42.823	127.204	15	13	53.9	5	4	27.0	0	0	11.0
250	0.7000	41.068	122.174	14	2	14.9	4	40	36.4	0	0	8.6

280	0.6250	109.375	108.959	7.101	54.618	1.778	73.063
300	0.5833	102.083	101.788	5.777	50.992	1.446	68.159
320	0.5469	95.703	95.489	4.763	47.816	1.192	63.877
340	0.5147	90.074	89.916	3.972	45.010	0.994	60.104
350	0.5000	87.500	87.363	3.642	43.727	0.911	58.381
380	0.4605	80.592	80.502	2.846	40.281	0.712	53.760
400	0.4375	76.563	76.492	2.441	38.270	0.610	51.066
420	0.4167	72.917	72.862	2.109	36.449	0.527	48.630
450	0.3889	68.056	68.017	1.715	34.021	0.429	45.384
475	0.3684	64.474	64.444	1.458	32.232	0.365	42.993
500	0.3500	61.250	61.227	1.250	30.621	0.313	40.841
525	0.3333	58.333	58.315	1.080	29.164	0.270	38.895
550	0.3182	55.682	55.668	0.939	27.839	0.235	37.126
575	0.3043	53.261	53.245	0.822	26.629	0.206	35.511
600	0.2917	51.042	51.032	0.724	25.519	0.181	34.031
650	0.2692	47.115	47.109	0.569	23.557	0.142	31.412
700	0.2500	43.750	43.746	0.456	21.874	0.114	29.168
750	0.2333	40.833	40.830	0.371	20.416	0.093	27.223
800	0.2188	38.281	38.279	0.305	19.140	0.076	25.522
850	0.2059	36.029	36.028	0.255	18.014	0.064	24.020
900	0.1944	34.028	34.027	0.214	17.014	0.054	22.686
950	0.1842	32.237	32.236	0.182	16.118	0.046	21.492
1000	0.1750	30.625	30.624	0.156	15.312	0.039	20.417
1050	0.1667	29.167	29.166	0.135	14.583	0.034	19.445
1100	0.1591	27.841	27.840	0.117	13.920	0.029	18.561
1150	0.1522	26.630	26.630	0.103	13.315	0.026	17.754
1200	0.1458	25.521	25.521	0.090	12.760	0.023	17.014

K =0.018 708 83'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 180 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
170	1.0588	190.588	184.686	34.820	94.305	8.804	129.215
180	1.0000	180.000	175.552	29.469	89.255	7.433	121.610
190	0.9474	170.526	167.124	25.144	84.694	6.331	114.907
200	0.9000	162.000	159.363	21.615	80.559	5.436	108.943
210	0.8571	154.286	152.217	18.711	76.797	4.700	103.594
220	0.8182	147.273	145.631	16.300	73.362	4.091	98.764
230	0.7826	140.870	139.554	14.284	70.215	3.583	94.379
240	0.7500	135.000	133.936	12.585	67.322	3.155	90.376
250	0.7200	129.600	128.732	11.144	64.655	2.793	86.706
280	0.6429	115.714	115.221	7.946	57.775	1.989	77.316
300	0.6000	108.000	107.651	6.465	53.942	1.618	72.123
320	0.5625	101.250	100.997	5.330	50.583	1.334	67.589
340	0.5294	95.294	95.107	4.445	47.616	1.112	63.595
350	0.5143	92.571	92.410	4.076	46.259	1.020	61.771
380	0.4737	85.263	85.156	3.186	42.614	0.797	56.880
400	0.4500	81.000	80.917	2.732	40.486	0.683	54.029
420	0.4286	77.143	77.078	2.360	38.561	0.590	51.451
450	0.4000	72.000	71.954	1.919	35.992	0.480	48.016
475	0.3789	68.211	68.175	1.632	34.099	0.408	45.486
500	0.3600	64.800	64.773	1.399	32.395	0.350	43.210
525	0.3429	61.714	61.693	1.209	30.854	0.302	41.150
550	0.3273	58.909	58.892	1.051	29.452	0.263	39.279
575	0.3130	56.348	56.334	0.920	28.172	0.230	37.570
600	0.3000	54.000	53.989	0.810	26.998	0.202	36.004
650	0.2769	49.846	49.839	0.637	24.922	0.159	33.233
700	0.2571	46.286	46.281	0.510	23.142	0.128	30.859
750	0.2400	43.200	43.196	0.415	21.599	0.104	28.801
800	0.2250	40.500	40.497	0.342	20.250	0.085	27.001
850	0.2118	38.118	38.116	0.285	19.059	0.071	25.412
900	0.2000	36.000	35.999	0.240	18.000	0.060	24.001
950	0.1895	34.105	34.104	0.204	17.052	0.051	22.737
1000	0.1800	32.400	32.399	0.175	16.200	0.044	21.600
1050	0.1714	30.857	30.856	0.151	15.428	0.038	20.572
1100	0.1636	29.455	29.454	0.131	14.727	0.033	19.637
1150	0.1565	28.174	28.173	0.115	14.087	0.029	18.783
1200	0.1500	27.000	27.000	0.101	13.500	0.025	18.000
1250	0.1440	25.920	25.920	0.090	12.960	0.022	17.280

K =0.017 683 88'

280	0.6250	36.591	109.190	11	11	26.1	3	43	44.4	0 0 4.3
300	0.5833	34.122	101.952	9	44	53.7	3	14	55.0	0 0 2.9
320	0.5469	31.969	95.608	8	34	4.0	2	51	19.4	0 0 1.9
340	0.5147	30.075	90.003	7	35	22.1	2	31	46.0	0 0 1.4
350	0.5000	29.210	87.439	7	9	43.1	2	23	13.2	0 0 1.1
380	0.4605	26.893	80.552	6	4	32.8	2	1	30.2	0 0 0.7
400	0.4375	25.543	76.531	5	29	0.2	1	49	39.6	0 0 0.5
420	0.4167	24.323	72.892	4	58	24.9	1	39	27.9	0 0 0.4
450	0.3889	22.698	68.038	4	19	57.2	1	26	38.8	0 0 0.3
475	0.3684	21.501	64.460	3	53	18.6	1	17	46.0	0 0 0.2
500	0.3500	20.424	61.240	3	30	33.7	1	10	11.1	0 0 0.1
525	0.3333	19.450	58.325	3	10	59.2	1	3	39.6	0 0 0.1
550	0.3182	18.565	55.675	2	54	1.1	0	58	0.3	0 0 0.1
575	0.3043	17.757	53.256	2	39	12.9	0	53	4.2	0 0 0.1
600	0.2917	17.017	51.038	2	26	13.4	0	48	44.4	0 0 0.0
650	0.2692	15.707	47.113	2	4	35.6	0	41	31.8	0 0 0.0
700	0.2500	14.585	43.748	1	47	25.8	0	35	48.6	0 0 0.0
750	0.2333	13.612	40.832	1	33	35.0	0	31	11.7	0 0 0.0
800	0.2188	12.761	38.280	1	22	15.0	0	27	25.0	0 0 0.0
850	0.2059	12.010	36.029	1	12	51.5	0	24	17.2	0 0 0.0
900	0.1944	11.343	34.027	1	4	59.3	0	21	39.8	0 0 0.0
950	0.1842	10.746	32.236	0	58	19.6	0	19	26.5	0 0 0.0
1000	0.1750	10.209	30.625	0	52	38.4	0	17	32.8	0 0 0.0
1050	0.1667	9.722	29.166	0	47	44.8	0	15	54.9	0 0 0.0
1100	0.1591	9.280	27.841	0	43	30.3	0	14	30.1	0 0 0.0
1150	0.1522	8.877	26.630	0	39	48.2	0	13	16.1	0 0 0.0
1200	0.1458	8.507	25.521	0	36	33.4	0	12	11.1	0 0 0.0

K = 1.122 529 56"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 180 M

R	A/R	ST	LC	θ			ϕ			C
M		M		DEG	MNT	SEC	DEG	MNT	SEC	
170	1.0588	65.494	187.940	32	7	2.5	10	40	37.5	0 1 43.3
180	1.0000	61.466	178.008	28	38	52.4	9	31	44.3	0 1 13.2
190	0.9474	57.955	169.005	25	42	42.0	8	33	21.2	0 0 52.9
200	0.9000	54.858	160.822	23	12	17.2	7	43	26.9	0 0 38.8
210	0.8571	52.099	153.362	21	2	50.7	7	0	28.0	0 0 28.9
220	0.8182	49.621	146.541	19	10	39.0	6	23	11.1	0 0 21.9
230	0.7826	47.380	140.283	17	32	46.2	5	50	38.6	0 0 16.8
240	0.7500	45.342	134.526	16	6	52.0	5	22	4.4	0 0 13.0
250	0.7200	43.478	129.213	14	51	3.8	4	56	51.1	0 0 10.2
280	0.6429	38.729	115.495	11	50	21.0	3	56	41.9	0 0 5.1
300	0.6000	36.111	107.845	10	18	47.7	3	26	12.5	0 0 3.4
320	0.5625	33.831	101.137	9	3	51.7	3	1	14.9	0 0 2.3
340	0.5294	31.824	95.211	8	1	45.6	2	40	33.6	0 0 1.6
350	0.5143	30.909	92.495	7	34	37.5	2	31	31.1	0 0 1.3
380	0.4737	28.455	85.215	6	25	40.5	2	8	32.7	0 0 0.8
400	0.4500	27.026	80.963	5	48	4.3	1	56	0.8	0 0 0.6
420	0.4286	25.735	77.114	5	15	42.7	1	45	13.8	0 0 0.5
450	0.4000	24.015	71.980	4	35	1.2	1	31	40.1	0 0 0.3
475	0.3789	22.748	68.195	4	6	49.9	1	22	16.4	0 0 0.2
500	0.3600	21.609	64.788	3	42	46.0	1	14	15.2	0 0 0.2
525	0.3429	20.578	61.705	3	22	3.3	1	7	21.0	0 0 0.1
550	0.3273	19.642	58.902	3	4	6.2	1	1	22.0	0 0 0.1
575	0.3130	18.787	56.342	2	48	26.6	0	56	8.8	0 0 0.1
600	0.3000	18.003	53.995	2	34	41.9	0	51	33.9	0 0 0.1
650	0.2769	16.618	49.843	2	11	48.9	0	43	56.3	0 0 0.0
700	0.2571	15.430	46.283	1	53	39.4	0	37	53.1	0 0 0.0
750	0.2400	14.401	43.198	1	39	0.4	0	33	0.1	0 0 0.0
800	0.2250	13.501	40.499	1	27	1.1	0	29	0.3	0 0 0.0
850	0.2118	12.706	38.117	1	17	4.9	0	25	41.6	0 0 0.0
900	0.2000	12.000	35.999	1	8	45.3	0	22	55.1	0 0 0.0
950	0.1895	11.369	34.105	1	1	42.5	0	20	34.2	0 0 0.0
1000	0.1800	10.800	32.400	0	55	41.5	0	18	33.8	0 0 0.0
1050	0.1714	10.286	30.857	0	50	30.8	0	16	50.3	0 0 0.0
1100	0.1636	9.818	29.454	0	46	1.6	0	15	20.5	0 0 0.0
1150	0.1565	9.391	28.174	0	42	6.6	0	14	2.2	0 0 0.0
1200	0.1500	9.000	27.000	0	38	40.5	0	12	53.5	0 0 0.0
1250	0.1440	8.640	25.920	0	35	38.6	0	11	52.9	0 0 0.0

K = 1.061 032 95"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 190 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
170	1.1176	212.353	204.218	42.993	104.811	10.900	144.574
180	1.0556	200.556	194.420	36.426	99.249	9.208	135.944
190	1.0000	190.000	185.305	31.106	94.214	7.846	128.366
200	0.9500	180.500	176.859	26.758	89.641	6.738	121.642
210	0.9048	171.905	169.047	23.174	85.475	5.828	115.625
220	0.8636	164.091	161.823	20.197	81.667	5.074	110.202
230	0.8261	156.957	155.139	17.704	78.175	4.444	105.283
240	0.7917	150.417	148.946	15.602	74.963	3.914	100.798
250	0.7600	144.400	143.200	13.818	72.000	3.465	96.691
280	0.6786	128.929	128.247	9.857	64.351	2.469	86.192
300	0.6333	120.333	119.850	8.021	60.086	2.008	80.392
320	0.5938	112.813	112.462	6.614	56.348	1.655	75.331
340	0.5588	106.176	105.918	5.517	53.045	1.380	70.875
350	0.5429	103.143	102.919	5.058	51.534	1.266	68.840
380	0.5000	95.000	94.852	3.954	47.475	0.989	63.385
400	0.4750	90.250	90.135	3.391	45.106	0.848	60.207
420	0.4524	85.952	85.862	2.929	42.961	0.733	57.333
450	0.4222	80.222	80.159	2.382	40.100	0.596	53.504
475	0.4000	76.000	75.951	2.026	37.992	0.507	50.684
500	0.3800	72.200	72.162	1.737	36.094	0.434	48.146
525	0.3619	68.762	68.732	1.501	34.376	0.375	45.852
550	0.3455	65.636	65.613	1.305	32.814	0.326	43.766
575	0.3304	62.783	62.764	1.142	31.388	0.286	41.862
600	0.3167	60.167	60.152	1.005	30.081	0.251	40.116
650	0.2923	55.538	55.528	0.791	27.768	0.198	37.029
700	0.2714	51.571	51.564	0.633	25.785	0.158	34.383
750	0.2533	48.133	48.128	0.515	24.066	0.129	32.091
800	0.2375	45.125	45.121	0.424	22.562	0.106	30.085
850	0.2235	42.471	42.468	0.354	21.235	0.088	28.315
900	0.2111	40.111	40.109	0.298	20.055	0.074	26.741
950	0.2000	38.000	37.998	0.253	19.000	0.063	25.334
1000	0.1900	36.100	36.099	0.217	18.050	0.054	24.067
1050	0.1810	34.381	34.380	0.188	17.190	0.047	22.921
1100	0.1727	32.818	32.817	0.163	16.409	0.041	21.879
1150	0.1652	31.391	31.391	0.143	15.696	0.036	20.928
1200	0.1583	30.083	30.083	0.126	15.042	0.031	20.056
1250	0.1520	28.880	28.880	0.111	14.440	0.028	19.253
1300	0.1462	27.769	27.769	0.099	13.885	0.025	18.513
1400	0.1357	25.786	25.785	0.079	12.893	0.020	17.191

K =0.015 871 41'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 200 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
180	1.1111	222.222	213.903	44.495	109.715	11.277	151.217
190	1.0526	210.526	204.156	38.034	104.195	9.614	142.676
200	1.0000	200.000	195.058	32.743	99.172	8.259	135.122
210	0.9524	190.476	186.596	28.374	94.589	7.146	128.380
220	0.9091	181.818	178.738	24.740	90.394	6.223	122.314
230	0.8696	173.913	171.444	21.694	86.544	5.451	116.822
240	0.8333	166.667	164.668	19.125	83.000	4.802	111.821
250	0.8000	160.000	158.369	16.942	79.728	4.251	107.244
280	0.7143	142.857	141.930	12.091	71.274	3.030	95.565
300	0.6667	133.333	132.676	9.842	66.557	2.465	89.120
320	0.6250	125.000	124.524	8.116	62.421	2.032	83.500
340	0.5882	117.647	117.295	6.770	58.765	1.694	78.555
350	0.5714	114.286	113.981	6.206	57.092	1.553	76.297
380	0.5263	105.263	105.061	4.853	52.598	1.214	70.246
400	0.5000	100.000	99.844	4.162	49.974	1.041	66.721
420	0.4762	95.238	95.116	3.596	47.599	0.899	63.535
450	0.4444	88.889	88.802	2.924	44.430	0.731	59.290
475	0.4211	84.211	84.144	2.487	42.094	0.622	56.163
500	0.4000	80.000	79.949	2.132	39.991	0.533	53.351
525	0.3810	76.190	76.150	1.842	38.089	0.461	50.808
550	0.3636	72.727	72.695	1.602	36.358	0.401	48.496
575	0.3478	69.565	69.540	1.402	34.778	0.351	46.386
600	0.3333	66.667	66.646	1.234	33.330	0.309	44.452
650	0.3077	61.538	61.525	0.971	30.767	0.243	41.030
700	0.2857	57.143	57.133	0.777	28.570	0.194	38.099

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 190 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
170	1.1176	73.524	208.694	35 47 6.3	11 53 18.9	0 2 23.2
180	1.0556	68.893	197.803	31 55 9.9	10 36 41.9	0 1 41.4
190	1.0000	64.881	187.897	28 38 52.4	9 31 44.3	0 1 13.2
200	0.9500	61.358	178.872	25 51 17.0	8 36 11.9	0 0 53.7
210	0.9048	58.232	170.628	23 27 3.6	7 48 21.1	0 0 40.1
220	0.8636	55.432	163.079	21 22 3.1	7 6 50.8	0 0 30.3
230	0.8261	52.906	156.146	19 32 59.6	6 30 36.7	0 0 23.2
240	0.7917	50.613	149.761	17 57 16.8	5 58 47.6	0 0 18.0
250	0.7600	48.519	143.865	16 32 49.3	5 30 42.4	0 0 14.0
280	0.6786	43.194	128.625	13 11 28.3	4 23 42.3	0 0 7.1
300	0.6333	40.265	120.118	11 29 27.6	3 49 44.5	0 0 4.7
320	0.5938	37.716	112.657	10 5 58.2	3 21 56.2	0 0 3.2
340	0.5588	35.475	106.061	8 56 46.6	2 58 53.3	0 0 2.2
350	0.5429	34.452	103.043	8 26 32.5	2 48 49.0	0 0 1.9
380	0.5000	31.714	94.934	7 9 43.1	2 23 13.2	0 0 1.1
400	0.4750	30.120	90.199	6 27 49.2	2 9 15.6	0 0 0.8
420	0.4524	28.679	85.912	5 51 45.9	1 57 14.7	0 0 0.6
450	0.4222	26.761	80.194	5 6 25.6	1 42 8.1	0 0 0.4
475	0.4000	25.349	75.978	4 35 1.2	1 31 40.1	0 0 0.3
500	0.3800	24.079	72.183	4 8 12.3	1 22 43.9	0 0 0.2
525	0.3619	22.930	68.749	3 45 7.8	1 15 2.4	0 0 0.2
550	0.3455	21.886	65.626	3 25 7.7	1 8 22.4	0 0 0.1
575	0.3304	20.933	62.774	3 7 40.7	1 2 33.5	0 0 0.1
600	0.3167	20.060	60.160	2 52 21.9	0 57 27.2	0 0 0.1
650	0.2923	18.516	55.534	2 26 52.0	0 48 57.3	0 0 0.0
700	0.2714	17.193	51.568	2 6 38.1	0 42 12.7	0 0 0.0
750	0.2533	16.046	48.131	1 50 18.8	0 36 46.3	0 0 0.0
800	0.2375	15.043	45.123	1 36 57.3	0 32 19.1	0 0 0.0
850	0.2235	14.158	42.469	1 25 53.1	0 28 37.7	0 0 0.0
900	0.2111	13.371	40.110	1 16 36.4	0 25 32.1	0 0 0.0
950	0.2000	12.667	37.999	1 8 45.3	0 22 55.1	0 0 0.0
1000	0.1900	12.034	36.099	1 2 3.1	0 20 41.0	0 0 0.0
1050	0.1810	11.461	34.381	0 56 16.9	0 18 45.6	0 0 0.0
1100	0.1727	10.940	32.818	0 51 16.9	0 17 5.6	0 0 0.0
1150	0.1652	10.464	31.391	0 46 55.2	0 15 38.4	0 0 0.0
1200	0.1583	10.028	30.083	0 43 5.5	0 14 21.8	0 0 0.0
1250	0.1520	9.627	28.880	0 39 42.8	0 13 14.3	0 0 0.0
1300	0.1462	9.257	27.769	0 36 43.0	0 12 14.3	0 0 0.0
1400	0.1357	8.595	25.786	0 31 39.5	0 10 33.2	0 0 0.0

K = 0.952 284 42"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 200 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
180	1.1111	76.872	218.482	35 22 4.0	11 45 3.1	0 2 18.2
190	1.0526	72.294	207.668	31 44 34.1	10 33 11.7	0 1 39.7
200	1.0000	68.296	197.787	28 38 52.4	9 31 44.3	0 1 13.2
210	0.9524	64.763	188.741	25 59 4.1	8 38 46.8	0 0 54.6
220	0.9091	61.609	180.442	23 40 33.4	7 52 49.9	0 0 41.2
230	0.8696	58.772	172.811	21 39 42.9	7 12 42.7	0 0 31.6
240	0.8333	56.201	165.775	19 53 39.7	6 37 28.8	0 0 24.4
250	0.8000	53.859	159.273	18 20 4.7	6 6 22.5	0 0 19.1
280	0.7143	47.916	142.444	14 36 58.6	4 52 9.8	0 0 9.7
300	0.6667	44.655	133.041	12 43 56.6	4 14 32.5	0 0 6.4
320	0.6250	41.819	124.788	11 11 26.1	3 43 44.4	0 0 4.3
340	0.5882	39.328	117.491	9 54 46.0	3 18 12.3	0 0 3.0
350	0.5714	38.192	114.150	9 21 15.9	3 7 2.8	0 0 2.5
380	0.5263	35.152	105.173	7 56 8.5	2 38 41.3	0 0 1.5
400	0.5000	33.383	99.931	7 9 43.1	2 23 13.2	0 0 1.1
420	0.4762	31.785	95.184	6 29 46.0	2 9 54.5	0 0 0.8
450	0.4444	29.657	88.850	5 39 31.8	1 53 10.1	0 0 0.6
475	0.4211	28.091	84.181	5 4 43.9	1 41 34.2	0 0 0.4
500	0.4000	26.683	79.977	4 35 1.2	1 31 40.1	0 0 0.3
525	0.3810	25.410	76.173	4 9 27.1	1 23 8.8	0 0 0.2
550	0.3636	24.253	72.713	3 47 17.3	1 15 45.6	0 0 0.2
575	0.3478	23.196	69.554	3 27 57.3	1 9 19.0	0 0 0.1
600	0.3333	22.229	66.658	3 10 59.2	1 3 39.6	0 0 0.1
650	0.3077	20.517	61.532	2 42 44.0	0 54 14.6	0 0 0.1
700	0.2857	19.051	57.139	2 20 19.0	0 46 46.3	0 0 0.0

750	0.2667	53.333	53.327	0.632	26.666	0.158	35.558
800	0.2500	50.000	49.995	0.521	24.999	0.130	33.335
850	0.2353	47.059	47.055	0.434	23.529	0.109	31.374
900	0.2222	44.444	44.442	0.366	22.222	0.091	29.631
950	0.2105	42.105	42.103	0.311	21.052	0.078	28.071
1000	0.2000	40.000	39.998	0.267	20.000	0.067	26.667
1050	0.1905	38.095	38.094	0.230	19.047	0.058	25.397
1100	0.1818	36.364	36.363	0.200	18.182	0.050	24.243
1150	0.1739	34.783	34.782	0.175	17.391	0.044	23.189
1200	0.1667	33.333	33.333	0.154	16.667	0.039	22.222
1250	0.1600	32.000	31.999	0.137	16.000	0.034	21.334
1300	0.1538	30.769	30.769	0.121	15.385	0.030	20.513
1400	0.1429	28.571	28.571	0.097	14.286	0.024	19.048
1500	0.1333	26.667	26.666	0.079	13.333	0.020	17.778

K =0.014 323 94'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 210 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
190	1.1053	232.105	223.594	46.012	114.624	11.658	157.873
200	1.0500	220.500	213.893	39.646	109.143	10.020	149.410
210	1.0000	210.000	204.810	34.380	104.131	8.672	141.878
220	0.9545	200.455	196.334	29.993	99.538	7.554	135.119
230	0.9130	191.739	188.434	26.312	95.317	6.619	129.009
240	0.8750	183.750	181.075	23.203	91.428	5.831	123.454
250	0.8400	176.400	174.217	20.561	87.835	5.163	118.376
280	0.7500	157.500	156.259	14.682	78.543	3.681	105.438
300	0.7000	147.000	146.120	11.954	73.353	2.995	98.310
320	0.6563	137.813	137.175	9.859	68.800	2.469	92.099
340	0.6176	129.706	129.235	8.225	64.774	2.059	86.636
350	0.6000	126.000	125.592	7.543	62.932	1.888	84.143
380	0.5526	116.053	115.782	5.897	57.981	1.476	77.463
400	0.5250	110.250	110.041	5.058	55.090	1.265	73.573
420	0.5000	105.000	104.836	4.370	52.473	1.093	70.057
450	0.4667	98.000	97.884	3.554	48.981	0.889	65.374
475	0.4421	92.842	92.753	3.022	46.406	0.756	61.926
500	0.4200	88.200	88.131	2.592	44.089	0.648	58.824
525	0.4000	84.000	83.946	2.239	41.991	0.560	56.019
550	0.3818	80.182	80.139	1.947	40.084	0.487	53.469
575	0.3652	76.696	76.662	1.704	38.342	0.426	51.142
600	0.3500	73.500	73.472	1.500	36.745	0.375	49.010
650	0.3231	67.846	67.828	1.180	33.920	0.295	45.237
700	0.3000	63.000	62.987	0.945	31.498	0.236	42.004
750	0.2800	58.800	58.791	0.768	29.398	0.192	39.203
800	0.2625	55.125	55.118	0.633	27.561	0.158	36.752
850	0.2471	51.882	51.878	0.528	25.940	0.132	34.590
900	0.2333	49.000	48.996	0.445	24.499	0.111	32.668
950	0.2211	46.421	46.418	0.378	23.210	0.095	30.948
1000	0.2100	44.100	44.098	0.324	22.050	0.081	29.401
1050	0.2000	42.000	41.998	0.280	21.000	0.070	28.001
1100	0.1909	40.091	40.090	0.244	20.045	0.061	26.728
1150	0.1826	38.348	38.347	0.213	19.174	0.053	25.566
1200	0.1750	36.750	36.749	0.188	18.375	0.047	24.500
1250	0.1680	35.280	35.279	0.166	17.640	0.041	23.520
1300	0.1615	33.923	33.922	0.148	16.961	0.037	22.616
1400	0.1500	31.500	31.500	0.118	15.750	0.030	21.000
1500	0.1400	29.400	29.400	0.096	14.700	0.024	19.600

K =0.012 992 24'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 220 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
200	1.1000	242.000	233.291	47.542	119.539	12.043	164.539
210	1.0476	230.476	223.632	41.260	114.091	10.427	156.146
220	1.0000	220.000	214.563	36.017	109.090	9.085	148.634
230	0.9565	210.435	206.073	31.612	104.488	7.963	141.859
240	0.9167	201.667	198.136	27.889	100.243	7.016	135.709
250	0.8800	193.600	190.718	24.721	96.318	6.213	130.095
280	0.7857	172.857	171.217	17.665	86.155	4.431	115.819

750	0.2667	17.780	53.330	2	2	13.9	0	40	44.6	0 0 0.0
800	0.2500	16.668	49.998	1	47	25.8	0	35	48.6	0 0 0.0
850	0.2353	15.687	47.057	1	35	9.8	0	31	43.2	0 0 0.0
900	0.2222	14.816	44.443	1	24	53.0	0	28	17.6	0 0 0.0
950	0.2105	14.036	42.104	1	16	11.0	0	25	23.6	0 0 0.0
1000	0.2000	13.334	39.999	1	8	45.3	0	22	55.1	0 0 0.0
1050	0.1905	12.699	38.095	1	2	21.8	0	20	47.3	0 0 0.0
1100	0.1818	12.122	36.363	0	56	49.3	0	18	56.4	0 0 0.0
1150	0.1739	11.594	34.782	0	51	59.3	0	17	19.8	0 0 0.0
1200	0.1667	11.111	33.333	0	47	44.8	0	15	56.9	0 0 0.0
1250	0.1600	10.667	32.000	0	44	0.2	0	14	40.1	0 0 0.0
1300	0.1538	10.257	30.769	0	40	41.0	0	13	33.7	0 0 0.0
1400	0.1429	9.524	28.571	0	35	4.7	0	11	41.6	0 0 0.0
1500	0.1333	8.889	26.667	0	30	33.5	0	10	11.2	0 0 0.0

K = 0.859 436 69*

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 210 M

R	A/R	ST	LC	θ			φ			C
M		M		DEG	MNT	SEC				
190	1.1053	80.227	228.279	34	59	47.2	11	37	41.9	0 2 13.8
200	1.0500	75.696	217.536	31	35	3.5	10	30	2.9	0 1 38.2
210	1.0000	71.711	207.676	28	38	52.4	9	31	44.3	0 1 13.2
220	0.9545	68.168	198.612	26	6	9.8	8	41	8.0	0 0 55.3
230	0.9130	64.990	190.263	23	52	56.2	7	56	56.4	0 0 42.3
240	0.8750	62.118	182.556	21	56	0.7	7	18	7.5	0 0 32.8
250	0.8400	59.506	175.426	20	12	50.2	6	43	51.1	0 0 25.6
280	0.7500	52.899	156.947	16	6	52.0	5	22	4.4	0 0 13.0
300	0.7000	49.282	146.608	14	2	14.9	4	40	36.4	0 0 8.6
320	0.6563	46.141	137.529	12	20	15.4	4	6	39.3	0 0 5.8
340	0.6176	43.386	129.496	10	55	43.8	3	38	30.5	0 0 4.0
350	0.6000	42.130	125.819	10	18	47.7	3	26	12.5	0 0 3.4
380	0.5526	38.770	115.932	8	44	56.8	2	54	56.9	0 0 2.1
400	0.5250	36.817	110.157	7	53	45.9	2	37	53.8	0 0 1.5
420	0.5000	35.052	104.927	7	9	43.1	2	23	13.2	0 0 1.1
450	0.4667	32.704	97.948	6	14	19.9	2	4	45.9	0 0 0.8
475	0.4421	30.976	92.803	5	35	58.0	1	51	58.8	0 0 0.5
500	0.4200	29.422	88.170	5	3	12.6	1	41	3.8	0 0 0.4
525	0.4000	28.017	83.976	4	35	1.2	1	31	40.1	0 0 0.3
550	0.3818	26.741	80.163	4	10	35.2	1	23	31.5	0 0 0.2
575	0.3652	25.576	76.680	3	49	16.2	1	16	25.2	0 0 0.2
600	0.3500	24.509	73.488	3	30	33.7	1	10	11.1	0 0 0.1
650	0.3231	22.621	67.838	2	59	24.8	0	59	48.2	0 0 0.1
700	0.3000	21.004	62.994	2	34	41.9	0	51	33.9	0 0 0.1
750	0.2800	19.603	58.796	2	14	45.6	0	44	55.2	0 0 0.0
800	0.2625	18.377	55.122	1	58	26.5	0	39	28.8	0 0 0.0
850	0.2471	17.296	51.880	1	44	55.0	0	34	58.3	0 0 0.0
900	0.2333	16.334	48.998	1	33	35.0	0	31	11.7	0 0 0.0
950	0.2211	15.475	46.420	1	23	59.5	0	27	59.8	0 0 0.0
1000	0.2100	14.701	44.099	1	15	48.1	0	25	16.0	0 0 0.0
1050	0.2000	14.001	41.999	1	8	45.3	0	22	55.1	0 0 0.0
1100	0.1909	13.364	40.090	1	2	38.8	0	20	52.9	0 0 0.0
1150	0.1826	12.783	38.347	0	57	19.0	0	19	6.3	0 0 0.0
1200	0.1750	12.250	36.750	0	52	38.4	0	17	32.8	0 0 0.0
1250	0.1680	11.760	35.280	0	48	30.8	0	16	10.3	0 0 0.0
1300	0.1615	11.308	33.923	0	44	51.2	0	14	57.1	0 0 0.0
1400	0.1500	10.500	31.500	0	38	40.5	0	12	53.5	0 0 0.0
1500	0.1400	9.800	29.400	0	33	41.4	0	11	13.8	0 0 0.0

K = 0.779 534 42*

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 220 M

R	A/R	ST	LC	θ			φ			C
M		M		DEG	MNT	SEC				
200	1.1000	83.589	238.086	34	39	50.2	11	31	6.7	0 2 10.0
210	1.0476	79.099	227.406	31	26	28.4	10	27	12.6	0 1 36.9
220	1.0000	75.126	217.565	28	38	52.4	9	31	44.3	0 1 13.2
230	0.9565	71.574	208.484	26	12	39.3	8	43	17.1	0 0 56.0
240	0.9167	68.373	200.089	24	4	19.9	8	0	43.3	0 0 43.4
250	0.8800	65.469	192.313	22	11	5.7	7	23	8.0	0 0 33.9
280	0.7857	58.147	172.126	17	41	8.5	5	53	25.7	0 0 17.2

300	0.7333	161.333	160.171	14.386	80.473	3.606	107.966
320	0.6875	151.250	150.407	11.867	75.484	2.973	101.130
340	0.6471	142.353	141.730	9.902	71.073	2.479	95.121
350	0.6286	138.286	137.747	9.081	69.053	2.273	92.380
380	0.5789	127.368	127.011	7.101	63.625	1.777	85.038
400	0.5500	121.000	120.723	6.090	60.454	1.524	80.764
420	0.5238	115.238	115.021	5.263	57.583	1.317	76.901
450	0.4889	107.556	107.402	4.280	53.752	1.071	71.757
475	0.4632	101.895	101.778	3.640	50.928	0.910	67.971
500	0.4400	96.800	96.709	3.121	48.385	0.781	64.565
525	0.4190	92.190	92.119	2.697	46.083	0.674	61.485
550	0.4000	88.000	87.944	2.346	43.991	0.587	58.686
575	0.3826	84.174	84.129	2.053	42.079	0.513	56.132
600	0.3667	80.667	80.630	1.807	40.327	0.452	53.791
650	0.3385	74.462	74.437	1.421	37.227	0.355	49.650
700	0.3143	69.143	69.126	1.138	34.569	0.285	46.101
750	0.2933	64.533	64.521	0.925	32.265	0.231	43.026
800	0.2750	60.500	60.491	0.762	30.249	0.191	40.336
850	0.2588	56.941	56.935	0.636	28.470	0.159	37.963
900	0.2444	53.778	53.773	0.536	26.888	0.134	35.854
950	0.2316	50.947	50.944	0.455	25.473	0.114	33.966
1000	0.2200	48.400	48.397	0.390	24.200	0.098	32.268
1050	0.2095	46.095	46.093	0.337	23.047	0.084	30.731
1100	0.2000	44.000	43.998	0.293	22.000	0.073	29.334
1150	0.1913	42.087	42.086	0.257	21.043	0.064	28.058
1200	0.1833	40.333	40.332	0.226	20.166	0.056	26.889
1250	0.1760	38.720	38.719	0.200	19.360	0.050	25.814
1300	0.1692	37.231	37.230	0.178	18.615	0.044	24.821
1400	0.1571	34.571	34.571	0.142	17.286	0.036	23.048
1500	0.1467	32.267	32.266	0.116	16.133	0.029	21.511
1600	0.1375	30.250	30.250	0.095	15.125	0.024	20.167

K =0.011 837 97'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 225 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
210	1.0714	241.071	233.249	45.049	119.224	11.396	163.578
220	1.0227	230.114	223.899	39.338	114.016	9.931	155.666
230	0.9783	220.109	215.122	34.537	109.220	8.705	148.538
240	0.9375	210.938	206.900	30.475	104.793	7.672	142.074
250	0.9000	202.500	199.204	27.019	100.699	6.794	136.178
280	0.8036	180.804	178.928	19.314	90.089	4.847	121.201
300	0.7500	168.750	167.420	15.731	84.153	3.944	112.970
320	0.7031	158.203	157.239	12.979	78.941	3.252	105.808
340	0.6618	148.897	148.185	10.831	74.330	2.712	99.515
350	0.6429	144.643	144.026	9.932	72.219	2.487	96.645
380	0.5921	133.224	132.815	7.767	66.544	1.944	88.959
400	0.5625	126.563	126.246	6.662	63.228	1.667	84.486
420	0.5357	120.536	120.288	5.757	60.227	1.440	80.444
450	0.5000	112.500	112.324	4.682	56.221	1.171	75.061
475	0.4737	106.579	106.445	3.982	53.267	0.996	71.100
500	0.4500	101.250	101.146	3.415	50.608	0.854	67.536
525	0.4286	96.429	96.347	2.950	48.201	0.738	64.314
550	0.4091	92.045	91.981	2.566	46.012	0.642	61.386
575	0.3913	88.043	87.992	2.246	44.013	0.562	58.714
600	0.3750	84.375	84.333	1.977	42.181	0.494	56.265
650	0.3462	77.885	77.857	1.555	38.938	0.389	51.933
700	0.3214	72.321	72.302	1.245	36.157	0.311	48.221
750	0.3000	67.500	67.486	1.012	33.748	0.253	45.005
800	0.2813	63.281	63.271	0.834	31.639	0.209	42.191
850	0.2647	59.559	59.552	0.695	29.778	0.174	39.708
900	0.2500	56.250	56.245	0.586	28.124	0.146	37.502
950	0.2368	53.289	53.285	0.498	26.644	0.125	35.528
1000	0.2250	50.625	50.622	0.427	25.312	0.107	33.751
1050	0.2143	48.214	48.212	0.369	24.107	0.092	32.144
1100	0.2045	46.023	46.021	0.321	23.011	0.080	30.683
1150	0.1957	44.022	44.020	0.281	22.011	0.070	29.348
1200	0.1875	42.188	42.186	0.247	21.094	0.062	28.125
1250	0.1800	40.500	40.499	0.219	20.250	0.055	27.000
1300	0.1731	38.942	38.941	0.194	19.471	0.049	25.962
1400	0.1607	36.161	36.160	0.156	18.080	0.039	24.107
1500	0.1500	33.750	33.750	0.127	16.875	0.032	22.500
1600	0.1406	31.641	31.640	0.104	15.820	0.026	21.094
1700	0.1324	29.779	29.779	0.087	14.890	0.022	19.853

K =0.011 317 68'

300	0.7333	54.151	160.816	15	24	22.3	5	7	56.1	0	0	11.3
320	0.6875	50.686	150.875	13	32	26.2	4	30	41.0	0	0	7.7
340	0.6471	47.650	142.076	11	59	40.0	3	59	48.0	0	0	5.3
350	0.6286	46.267	138.046	11	19	7.8	3	46	18.1	0	0	4.5
380	0.5789	42.570	127.209	9	36	7.9	3	11	59.9	0	0	2.7
400	0.5500	40.421	120.877	8	39	57.6	2	53	17.2	0	0	2.0
420	0.5238	38.482	115.142	7	51	37.1	2	37	10.9	0	0	1.5
450	0.4889	35.901	107.487	6	50	49.9	2	16	55.6	0	0	1.0
475	0.4632	34.002	101.843	6	8	43.5	2	2	53.8	0	0	0.7
500	0.4400	32.295	96.760	5	32	46.4	1	50	54.9	0	0	0.5
525	0.4190	30.753	92.159	5	1	50.1	1	40	36.3	0	0	0.4
550	0.4000	29.351	87.975	4	35	1.2	1	31	40.1	0	0	0.3
575	0.3826	28.072	84.154	4	11	37.5	1	23	52.3	0	0	0.2
600	0.3667	26.900	80.650	3	51	5.6	1	17	1.7	0	0	0.2
650	0.3385	24.828	74.451	3	16	54.5	1	5	38.0	0	0	0.1
700	0.3143	23.053	69.135	2	49	47.0	0	56	35.6	0	0	0.1
750	0.2933	21.515	64.528	2	27	54.0	0	49	17.9	0	0	0.0
800	0.2750	20.169	60.496	2	9	59.4	0	43	19.8	0	0	0.0
850	0.2588	18.982	56.938	1	55	8.8	0	38	22.9	0	0	0.0
900	0.2444	17.927	53.776	1	42	42.5	0	34	14.1	0	0	0.0
950	0.2316	16.984	50.946	1	32	10.9	0	30	43.6	0	0	0.0
1000	0.2200	16.134	48.399	1	23	11.6	0	27	43.9	0	0	0.0
1050	0.2095	15.366	46.094	1	15	27.5	0	25	9.2	0	0	0.0
1100	0.2000	14.667	43.999	1	8	45.3	0	22	55.1	0	0	0.0
1150	0.1913	14.029	42.086	1	2	54.4	0	20	58.1	0	0	0.0
1200	0.1833	13.445	40.333	0	57	46.4	0	19	15.5	0	0	0.0
1250	0.1760	12.907	38.720	0	53	14.6	0	17	44.9	0	0	0.0
1300	0.1692	12.410	37.230	0	49	13.6	0	16	24.5	0	0	0.0
1400	0.1571	11.524	34.571	0	42	26.7	0	14	8.9	0	0	0.0
1500	0.1467	10.756	32.267	0	36	56.5	0	12	19.5	0	0	0.0
1600	0.1375	10.083	30.250	0	32	29.8	0	10	49.9	0	0	0.0

K = 0.710 278 26"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 225 M

R	A/R	ST	LC	θ			φ			C		
M		M					DEG	MNT	SEC			
210	1.0714	82.967	237.560	32	53	11.8	10	55	53.0	0	1	51.0
220	1.0227	78.761	227.328	29	57	53.5	9	57	54.0	0	1	23.8
230	0.9783	75.008	217.877	27	24	57.1	9	7	14.9	0	1	4.1
240	0.9375	71.632	209.133	25	10	43.7	8	22	44.9	0	0	49.6
250	0.9000	68.573	201.028	23	12	17.2	7	43	26.9	0	0	38.8
280	0.8036	60.873	179.967	18	29	55.4	6	9	38.8	0	0	19.6
300	0.7500	56.677	168.157	16	6	52.0	5	22	4.4	0	0	13.0
320	0.7031	53.043	157.774	14	9	47.1	4	43	6.9	0	0	8.8
340	0.6618	49.860	148.580	12	32	45.0	4	10	48.9	0	0	6.1
350	0.6429	48.411	144.365	11	50	21.0	3	56	41.9	0	0	5.1
380	0.5921	44.538	133.042	10	2	37.0	3	20	49.2	0	0	3.1
400	0.5625	42.288	126.422	9	3	51.7	3	1	14.9	0	0	2.3
420	0.5357	40.258	120.425	8	13	17.9	2	44	24.3	0	0	1.7
450	0.5000	37.556	112.422	7	9	43.1	2	23	13.2	0	0	1.1
475	0.4737	35.569	106.519	6	25	40.5	2	8	32.7	0	0	0.8
500	0.4500	33.783	101.204	5	48	4.3	1	56	0.8	0	0	0.6
525	0.4286	32.169	96.392	5	15	42.7	1	45	13.8	0	0	0.5
550	0.4091	30.702	92.017	4	47	39.8	1	35	52.9	0	0	0.3
575	0.3913	29.364	88.021	4	23	11.5	1	27	43.6	0	0	0.3
600	0.3750	28.138	84.356	4	1	43.0	1	20	34.1	0	0	0.2
650	0.3462	25.970	77.872	3	25	57.6	1	8	39.1	0	0	0.1
700	0.3214	24.113	72.313	2	57	35.3	0	59	11.7	0	0	0.1
750	0.3000	22.504	67.494	2	34	41.9	0	51	33.9	0	0	0.1
800	0.2813	21.097	63.277	2	15	57.9	0	45	19.3	0	0	0.0
850	0.2647	19.855	59.556	2	0	26.4	0	40	8.8	0	0	0.0
900	0.2500	18.752	56.248	1	47	25.8	0	35	48.6	0	0	0.0
950	0.2368	17.764	53.288	1	36	25.1	0	32	8.4	0	0	0.0
1000	0.2250	16.876	50.624	1	27	1.1	0	29	0.3	0	0	0.0
1050	0.2143	16.072	48.213	1	18	55.7	0	26	18.6	0	0	0.0
1100	0.2045	15.342	46.022	1	11	54.9	0	23	58.3	0	0	0.0
1150	0.1957	14.674	44.021	1	5	47.9	0	21	56.0	0	0	0.0
1200	0.1875	14.063	42.187	1	0	25.7	0	20	8.6	0	0	0.0
1250	0.1800	13.500	40.500	0	55	41.5	0	18	33.8	0	0	0.0
1300	0.1731	12.981	38.942	0	51	29.4	0	17	9.8	0	0	0.0
1400	0.1607	12.054	36.160	0	44	23.8	0	14	47.9	0	0	0.0
1500	0.1500	11.250	33.750	0	38	40.5	0	12	53.5	0	0	0.0
1600	0.1406	10.547	31.640	0	33	59.5	0	11	19.8	0	0	0.0
1700	0.1324	9.927	29.779	0	30	6.6	0	10	2.2	0	0	0.0

K = 0.679 061 09"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 230 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
210	1.0952	251.905	242.993	49.083	124.457	12.430	171.214
220	1.0455	240.455	233.372	42.876	119.040	10.834	162.885
230	1.0000	230.000	224.316	37.654	114.048	9.498	155.391
240	0.9583	220.417	215.814	33.234	109.438	8.371	148.601
250	0.9200	211.600	207.842	29.470	105.172	7.415	142.413
280	0.8214	188.929	186.789	21.074	94.107	5.290	126.712
300	0.7667	176.333	174.816	17.168	87.913	4.305	118.092
320	0.7188	165.313	164.213	14.166	82.473	3.550	110.596
340	0.6765	155.588	154.776	11.822	77.659	2.961	104.011
350	0.6571	151.143	150.440	10.842	75.454	2.715	101.009
380	0.6053	139.211	138.744	8.479	69.527	2.122	92.971
400	0.5750	132.250	131.889	7.273	66.065	1.820	88.293
420	0.5476	125.952	125.669	6.285	62.929	1.573	84.067
450	0.5111	117.556	117.355	5.112	58.744	1.279	78.441
475	0.4842	111.368	111.215	4.348	55.659	1.087	74.299
500	0.4600	105.800	105.682	3.728	52.880	0.932	70.575
525	0.4381	100.762	100.669	3.221	50.365	0.806	67.207
550	0.4182	96.182	96.108	2.802	48.079	0.701	64.147
575	0.4000	92.000	91.941	2.452	45.990	0.613	61.354
600	0.3833	88.167	88.119	2.158	44.075	0.540	58.794
650	0.3538	81.385	81.353	1.698	40.687	0.425	54.268
700	0.3286	75.571	75.549	1.359	37.782	0.340	50.389
750	0.3067	70.533	70.518	1.105	35.264	0.276	47.028
800	0.2875	66.125	66.114	0.911	33.061	0.228	44.087
850	0.2706	62.235	62.227	0.759	31.116	0.190	41.493
900	0.2556	58.778	58.772	0.640	29.388	0.160	39.187
950	0.2421	55.684	55.679	0.544	27.841	0.136	37.124
1000	0.2300	52.900	52.896	0.466	26.449	0.117	35.268
1050	0.2190	50.381	50.378	0.403	25.190	0.101	33.588
1100	0.2091	48.091	48.089	0.350	24.045	0.088	32.061
1150	0.2000	46.000	45.998	0.307	23.000	0.077	30.667
1200	0.1917	44.083	44.082	0.270	22.041	0.067	29.389
1250	0.1840	42.320	42.319	0.239	21.160	0.060	28.214
1300	0.1769	40.692	40.691	0.212	20.346	0.053	27.129
1400	0.1643	37.786	37.785	0.170	18.893	0.042	25.191
1500	0.1533	35.267	35.266	0.138	17.633	0.035	23.511
1600	0.1438	33.063	33.062	0.114	16.531	0.028	22.042
1700	0.1353	31.118	31.117	0.095	15.559	0.024	20.745

K =0.010 830 96'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 240 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
220	1.0909	261.818	252.699	50.632	129.379	12.820	177.896
230	1.0435	250.435	243.113	44.494	123.990	11.242	169.624
240	1.0000	240.000	234.065	39.291	119.007	9.911	162.147
250	0.9600	230.400	225.556	34.856	114.389	8.781	155.344
280	0.8571	205.714	202.956	24.948	102.396	6.267	138.125
300	0.8000	192.000	190.043	20.331	95.673	5.101	128.693
320	0.7500	180.000	178.581	16.780	89.763	4.207	120.501
340	0.7059	169.412	168.363	14.007	84.531	3.509	113.311
350	0.6857	164.571	163.664	12.846	82.134	3.218	110.034
380	0.6316	151.579	150.977	10.049	75.689	2.516	101.264
400	0.6000	144.000	143.534	8.620	71.922	2.158	96.163
420	0.5714	137.143	136.778	7.449	68.511	1.864	91.557
450	0.5333	128.000	127.741	6.059	63.957	1.516	85.424
475	0.5053	121.263	121.066	5.154	60.599	1.289	80.911
500	0.4800	115.200	115.047	4.419	57.575	1.105	76.853
525	0.4571	109.714	109.595	3.818	54.837	0.955	73.185
550	0.4364	104.727	104.632	3.321	52.348	0.831	69.851
575	0.4174	100.174	100.098	2.907	50.074	0.727	66.809
600	0.4000	96.000	95.939	2.559	47.990	0.640	64.021
650	0.3692	88.615	88.574	2.013	44.301	0.503	59.091
700	0.3429	82.286	82.257	1.612	41.138	0.403	54.867
750	0.3200	76.800	76.780	1.310	38.397	0.328	51.207
800	0.3000	72.000	71.985	1.080	35.998	0.270	48.005
850	0.2824	67.765	67.754	0.900	33.881	0.225	45.180
900	0.2667	64.000	63.992	0.758	31.999	0.190	42.669

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 230 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
210	1.0952	86.956	247.900	34 21 52.1	11 25 10.7	0 2 6.7
220	1.0455	82.504	237.278	31 18 41.2	10 24 38.0	0 1 35.7
230	1.0000	78.540	227.455	28 38 52.4	9 31 44.3	0 1 13.2
240	0.9583	74.980	218.358	26 18 37.1	8 45 15.7	0 0 56.6
250	0.9200	71.759	209.920	24 14 51.3	8 4 12.8	0 0 44.3
280	0.8214	63.667	187.975	19 19 48.1	6 26 13.6	0 0 22.4
300	0.7667	59.266	175.657	16 50 18.9	5 36 31.5	0 0 14.8
320	0.7188	55.457	164.823	14 47 58.4	4 55 49.4	0 0 10.0
340	0.6765	52.123	155.227	13 6 34.7	4 22 4.6	0 0 7.0
350	0.6571	50.606	150.830	12 22 16.4	4 7 19.6	0 0 5.9
380	0.6053	46.552	139.003	10 29 41.9	3 29 50.4	0 0 3.6
400	0.5750	44.198	132.089	9 28 18.2	3 9 23.4	0 0 2.6
420	0.5476	42.074	125.827	8 35 28.0	2 51 47.4	0 0 2.0
450	0.5111	39.249	117.466	7 29 1.7	2 29 39.3	0 0 1.3
475	0.4842	37.171	111.300	6 43 0.4	2 14 19.2	0 0 0.9
500	0.4600	35.304	105.747	6 3 42.8	2 1 13.6	0 0 0.7
525	0.4381	33.617	100.721	5 29 53.9	1 49 57.5	0 0 0.5
550	0.4182	32.084	96.149	5 0 35.4	1 40 11.4	0 0 0.4
575	0.4000	30.685	91.974	4 35 1.2	1 31 40.1	0 0 0.3
600	0.3833	29.404	88.146	4 12 34.7	1 24 11.3	0 0 0.2
650	0.3538	27.138	81.370	3 35 12.9	1 11 44.2	0 0 0.1
700	0.3286	25.197	75.562	3 5 34.1	1 1 51.3	0 0 0.1
750	0.3067	23.516	70.526	2 41 39.0	0 53 52.9	0 0 0.1
800	0.2875	22.045	66.120	2 22 4.5	0 47 21.5	0 0 0.0
850	0.2706	20.748	62.232	2 5 51.1	0 41 57.0	0 0 0.0
900	0.2556	19.595	58.775	1 52 15.4	0 37 25.1	0 0 0.0
950	0.2421	18.563	55.682	1 40 45.1	0 33 35.0	0 0 0.0
1000	0.2300	17.635	52.898	1 30 55.7	0 30 18.6	0 0 0.0
1050	0.2190	16.795	50.380	1 22 29.5	0 27 29.5	0 0 0.0
1100	0.2091	16.031	48.090	1 15 8.8	0 25 2.9	0 0 0.0
1150	0.2000	15.334	45.999	1 8 45.3	0 22 55.1	0 0 0.0
1200	0.1917	14.695	44.083	1 3 8.7	0 21 2.9	0 0 0.0
1250	0.1840	14.107	42.319	0 58 11.7	0 19 23.9	0 0 0.0
1300	0.1769	13.564	40.692	0 53 48.2	0 17 56.1	0 0 0.0
1400	0.1643	12.595	37.785	0 46 23.5	0 15 27.8	0 0 0.0
1500	0.1533	11.756	35.266	0 40 24.8	0 13 28.3	0 0 0.0
1600	0.1438	11.021	33.062	0 35 31.1	0 11 50.4	0 0 0.0
1700	0.1353	10.373	31.118	0 31 27.8	0 10 29.3	0 0 0.0

K = 0.649 857 61"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 240 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
220	1.0909	90.32.	257.721	34 5 36.1	11 19 48.3	0 2 3.7
230	1.0435	85.909	247.151	31 11 35.4	10 22 17.2	0 1 34.6
240	1.0000	81.955	237.344	28 38 52.4	9 31 44.3	0 1 13.2
250	0.9600	78.388	228.233	26 24 6.8	8 47 5.0	0 0 57.2
280	0.8571	69.465	204.483	21 2 50.7	7 0 28.0	0 0 28.9
300	0.8000	64.631	191.128	18 20 4.7	6 6 22.5	0 0 19.1
320	0.7500	60.456	179.368	16 6 52.0	5 22 4.4	0 0 13.0
340	0.7059	56.807	168.945	14 16 27.8	4 45 20.2	0 0 9.0
350	0.6857	55.148	164.168	13 28 13.3	4 29 16.9	0 0 7.6
380	0.6316	50.719	151.311	11 25 38.7	3 48 28.3	0 0 4.6
400	0.6000	48.149	143.793	10 18 47.7	3 26 12.5	0 0 3.4
420	0.5714	45.831	136.980	9 21 15.4	3 7 2.8	0 0 2.5
450	0.5333	42.749	127.885	8 8 55.4	2 42 56.8	0 0 1.7
475	0.5053	40.484	121.175	7 18 48.8	2 26 15.0	0 0 1.2
500	0.4800	38.449	115.132	6 36 1.7	2 11 59.7	0 0 0.9
525	0.4571	36.609	109.661	5 59 12.6	1 59 43.5	0 0 0.7
550	0.4364	34.939	104.685	5 27 17.8	1 49 5.4	0 0 0.5
575	0.4174	33.415	100.140	4 59 27.3	1 39 48.7	0 0 0.4
600	0.4000	32.020	95.973	4 35 1.2	1 31 40.1	0 0 0.3
650	0.3692	29.552	88.597	3 54 20.2	1 18 6.5	0 0 0.2
700	0.3429	27.438	82.273	3 22 3.3	1 7 21.0	0 0 0.1
750	0.3200	25.606	76.791	2 56 0.8	0 58 40.2	0 0 0.1
800	0.3000	24.005	71.994	2 34 41.9	0 51 33.9	0 0 0.1
850	0.2824	22.592	67.760	2 17 2.0	0 45 40.6	0 0 0.0
900	0.2667	21.336	63.996	2 2 13.9	0 40 44.6	0 0 0.0

950	0.2526	60.632	60.625	0.645	30.315	0.161	40.423
1000	0.2400	57.600	57.595	0.553	28.799	0.138	38.402
1050	0.2286	54.857	54.853	0.478	27.428	0.119	36.573
1100	0.2182	52.364	52.361	0.415	26.181	0.104	34.910
1150	0.2087	50.087	50.085	0.364	25.043	0.091	33.392
1200	0.2000	48.000	47.998	0.320	24.000	0.080	32.001
1250	0.1920	46.080	46.078	0.283	23.040	0.071	30.721
1300	0.1846	44.308	44.306	0.252	22.154	0.063	29.539
1400	0.1714	41.143	41.142	0.202	20.571	0.050	27.429
1500	0.1600	38.400	38.399	0.164	19.200	0.041	25.600
1600	0.1500	36.000	36.000	0.135	18.000	0.034	24.000
1700	0.1412	33.882	33.882	0.113	16.941	0.028	22.588
1800	0.1333	32.000	32.000	0.095	16.000	0.024	21.333

K =0.009 947 18'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 250 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
230	1.0870	271.739	262.408	52.190	134.304	13.212	184.586
240	1.0417	260.417	252.855	46.114	128.941	11.651	176.366
250	1.0000	250.000	243.822	40.929	123.966	10.324	168.903
280	0.8929	223.214	219.694	29.323	111.019	7.372	150.067
300	0.8333	208.333	205.836	23.906	103.749	6.002	139.776
320	0.7813	195.313	193.501	19.736	97.354	4.951	130.849
340	0.7353	183.824	182.485	16.478	91.688	4.130	123.021
350	0.7143	178.571	177.413	15.114	89.092	3.787	119.456
380	0.6579	164.474	163.705	11.825	82.109	2.961	109.919
400	0.6250	156.250	155.655	10.145	78.026	2.540	104.376
420	0.5952	148.810	148.343	8.768	74.327	2.194	99.370
450	0.5556	138.889	138.558	7.132	69.389	1.785	92.708
475	0.5263	131.579	131.327	6.066	65.747	1.518	87.808
500	0.5000	125.000	124.805	5.203	62.467	1.301	83.402
525	0.4762	119.048	118.895	4.495	59.498	1.124	79.419
550	0.4545	113.636	113.515	3.910	56.798	0.978	75.800
575	0.4348	108.696	108.599	3.422	54.332	0.856	72.498
600	0.4167	104.167	104.088	3.012	52.070	0.753	69.472
650	0.3846	96.154	96.101	2.370	48.068	0.593	64.121
700	0.3571	89.286	89.249	1.898	44.637	0.474	59.536
750	0.3333	83.333	83.308	1.543	41.662	0.386	55.565
800	0.3125	78.125	78.106	1.271	39.059	0.318	52.090
850	0.2941	73.529	73.516	1.060	36.762	0.265	49.024
900	0.2778	69.444	69.434	0.893	34.720	0.223	46.300
950	0.2632	65.789	65.782	0.759	32.893	0.190	43.862
1000	0.2500	62.500	62.494	0.651	31.249	0.163	41.669
1050	0.2381	59.524	59.519	0.562	29.761	0.141	39.684
1100	0.2273	56.818	56.814	0.489	28.408	0.122	37.880
1150	0.2174	54.348	54.345	0.428	27.173	0.107	36.233
1200	0.2083	52.083	52.081	0.377	26.041	0.094	34.72.
1250	0.2000	50.000	49.998	0.333	25.000	0.083	33.334
1300	0.1923	48.077	48.075	0.296	24.038	0.074	32.052
1400	0.1786	44.643	44.642	0.237	22.321	0.059	29.762
1500	0.1667	41.667	41.666	0.193	20.833	0.048	27.778
1600	0.1563	39.063	39.062	0.159	19.531	0.040	26.042
1700	0.1471	36.765	36.764	0.133	18.382	0.033	24.510
1800	0.1389	34.722	34.722	0.112	17.361	0.028	23.148

K =0.009 167 32'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 260 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
240	1.0833	281.667	272.121	53.754	139.232	13.605	191.280
250	1.0400	270.400	262.598	47.735	133.893	12.060	183.108
280	0.9286	241.429	236.980	34.237	119.970	8.616	162.548
300	0.8667	225.333	222.176	27.925	112.139	7.017	151.347
320	0.8125	211.250	208.960	23.063	105.243	5.788	141.646
340	0.7647	198.824	197.130	19.260	99.129	4.830	133.147
350	0.7429	193.143	191.678	17.668	96.327	4.429	129.279
380	0.6842	177.895	176.923	13.826	88.785	3.463	118.939
400	0.6500	169.000	168.247	11.863	84.374	2.970	112.931
420	0.6190	160.952	160.362	10.253	80.378	2.567	107.509

950	0.2526	20.212	60.629	1	49	42.2	0	36	34.0	0	0	0.0
1000	0.2400	19.202	57.598	1	39	0.4	0	33	0.1	0	0	0.0
1050	0.2286	18.287	54.855	1	29	48.1	0	29	56.0	0	0	0.0
1100	0.2182	17.455	52.362	1	21	49.4	0	27	16.5	0	0	0.0
1150	0.2087	16.696	50.086	1	14	51.8	0	24	57.3	0	0	0.0
1200	0.2000	16.001	47.999	1	8	45.3	0	22	55.1	0	0	0.0
1250	0.1920	15.360	46.079	1	3	21.9	0	21	7.3	0	0	0.0
1300	0.1846	14.770	44.307	0	58	35.0	0	19	31.7	0	0	0.0
1400	0.1714	13.715	41.142	0	50	30.8	0	16	50.3	0	0	0.0
1500	0.1600	12.800	38.400	0	44	0.2	0	14	40.1	0	0	0.0
1600	0.1500	12.000	36.000	0	38	40.5	0	12	53.5	0	0	0.0
1700	0.1412	11.294	33.882	0	34	15.5	0	11	25.2	0	0	0.0
1800	0.1333	10.667	32.000	0	30	33.5	0	10	11.2	0	0	0.0

K = 0.596 831 04"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 250 M

R	A/R	ST	LC	θ			φ			C
M		M		DEG	MNT	SEC				
230	1.0870	93.702	267.548	33	50	48.3	11	14	55.1	0 2 1.0
240	1.0417	89.315	257.026	31	5	5.8	10	20	8.3	0 1 33.6
250	1.0000	85.370	247.233	28	38	52.4	9	31	44.3	0 1 13.2
280	0.8929	75.549	221.642	22	50	16.5	7	36	8.5	0 0 37.0
300	0.8333	70.252	207.219	19	53	39.7	6	37	28.8	0 0 24.4
320	0.7813	65.687	194.505	17	29	7.0	5	49	25.8	0 0 16.6
340	0.7353	61.704	183.227	15	29	19.3	5	9	34.9	0 0 11.5
350	0.7143	59.895	178.055	14	36	58.6	4	52	9.8	0 0 9.7
380	0.6579	55.070	164.132	12	23	58.3	4	7	53.5	0 0 5.9
400	0.6250	52.273	155.985	11	11	26.1	3	43	44.4	0 0 4.3
420	0.5952	49.752	148.602	10	9	0.7	3	22	57.0	0 0 3.2
450	0.5556	46.402	138.742	8	50	31.0	2	56	48.2	0 0 2.1
475	0.5263	43.940	131.467	7	56	8.5	2	38	41.3	0 0 1.5
500	0.5000	41.729	124.913	7	9	43.1	2	23	13.2	0 0 1.1
525	0.4762	39.731	118.980	6	29	46.0	2	9	54.5	0 0 0.8
550	0.4545	37.917	113.582	5	55	8.3	1	58	22.1	0 0 0.6
575	0.4348	36.263	108.653	5	24	55.7	1	48	18.1	0 0 0.5
600	0.4167	34.747	104.132	4	58	24.9	1	39	27.9	0 0 0.4
650	0.3846	32.068	96.130	4	14	16.3	1	24	45.2	0 0 0.2
700	0.3571	29.773	89.270	3	39	14.6	1	13	4.7	0 0 0.2
750	0.3333	27.786	83.322	3	10	59.2	1	3	39.6	0 0 0.1
800	0.3125	26.048	78.117	2	47	51.5	0	55	57.1	0 0 0.1
850	0.2941	24.514	73.523	2	28	41.5	0	49	33.8	0 0 0.0
900	0.2778	23.151	69.440	2	12	37.7	0	44	12.5	0 0 0.0
950	0.2632	21.932	65.786	1	59	2.1	0	39	40.7	0 0 0.0
1000	0.2500	20.835	62.497	1	47	25.8	0	35	48.6	0 0 0.0
1050	0.2381	19.843	59.522	1	37	26.5	0	32	28.8	0 0 0.0
1100	0.2273	18.941	56.816	1	28	47.1	0	29	35.7	0 0 0.0
1150	0.2174	18.117	54.346	1	21	13.9	0	27	4.6	0 0 0.0
1200	0.2083	17.362	52.082	1	14	36.2	0	24	52.1	0 0 0.0
1250	0.2000	16.667	49.999	1	8	45.3	0	22	55.1	0 0 0.0
1300	0.1923	16.026	48.076	1	3	34.1	0	21	11.4	0 0 0.0
1400	0.1786	14.881	44.642	0	54	48.7	0	18	16.2	0 0 0.0
1500	0.1667	13.889	41.666	0	47	44.8	0	15	54.9	0 0 0.0
1600	0.1563	13.021	39.062	0	41	57.9	0	13	59.3	0 0 0.0
1700	0.1471	12.255	36.765	0	37	10.4	0	12	23.5	0 0 0.0
1800	0.1389	11.574	34.722	0	33	9.4	0	11	3.1	0 0 0.0

K = 0.550 039 48"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 260 M

R	A/R	ST	LC	θ			φ			C
M		M		DEG	MNT	SEC				
240	1.0833	97.081	277.380	33	37	17.3	11	10	27.2	0 1 58.6
250	1.0400	92.722	266.902	30	59	8.0	10	18	10.0	0 1 32.7
280	0.9286	81.929	239.440	24	42	5.4	8	13	14.9	0 0 46.9
300	0.8667	76.135	223.924	21	31	3.9	7	9	50.4	0 0 30.9
320	0.8125	71.156	210.229	18	54	43.5	6	17	53.5	0 0 21.0
340	0.7647	66.819	198.069	16	45	9.3	5	34	48.5	0 0 14.6
350	0.7429	64.851	192.490	15	48	32.2	5	15	58.5	0 0 12.2
380	0.6842	59.609	177.462	13	24	40.8	4	28	6.1	0 0 7.5
400	0.6500	56.574	168.665	12	6	13.4	4	1	59.0	0 0 5.5
420	0.6190	53.839	160.690	10	58	42.4	3	39	30.0	0 0 4.1

450	0.5778	150.222	149.804	8.341	75.041	2.087	100.295
475	0.5474	142.316	141.997	7.095	71.105	1.775	94.989
500	0.5200	135.200	134.953	6.085	67.559	1.522	90.220
525	0.4952	128.762	128.568	5.258	64.349	1.315	85.909
550	0.4727	122.909	122.756	4.574	61.429	1.144	81.993
575	0.4522	117.565	117.442	4.003	58.762	1.001	78.420
600	0.4333	112.667	112.567	3.524	56.317	0.881	75.146
650	0.4000	104.000	103.933	2.772	51.989	0.693	69.357
700	0.3714	96.571	96.525	2.220	48.278	0.555	64.397
750	0.3467	90.133	90.101	1.805	45.061	0.451	60.100
800	0.3250	84.500	84.476	1.487	42.246	0.372	56.342
850	0.3059	79.529	79.512	1.240	39.762	0.310	53.026
900	0.2889	75.111	75.098	1.045	37.553	0.261	50.079
950	0.2737	71.158	71.148	0.888	35.577	0.222	47.442
1000	0.2600	67.600	67.592	0.762	33.799	0.190	45.069
1050	0.2476	64.381	64.375	0.658	32.189	0.164	42.923
1100	0.2364	61.455	61.450	0.572	30.726	0.143	40.971
1150	0.2261	58.783	58.779	0.501	29.391	0.125	39.190
1200	0.2167	56.333	56.330	0.441	28.166	0.110	37.557
1250	0.2080	54.080	54.077	0.390	27.040	0.097	36.054
1300	0.2000	52.000	51.998	0.347	26.000	0.087	34.667
1400	0.1857	48.286	48.284	0.278	24.143	0.069	32.191
1500	0.1733	45.067	45.066	0.226	22.533	0.056	30.045
1600	0.1625	42.250	42.249	0.186	21.125	0.046	28.167
1700	0.1529	39.765	39.764	0.155	19.882	0.039	26.510
1800	0.1444	37.556	37.555	0.131	18.778	0.033	25.037

K =0.008 475 71'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 270 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
250	1.0800	291.600	281.837	55.325	144.163	14.001	197.980
280	0.9643	260.357	254.785	39.730	129.246	10.010	175.578
300	0.9000	243.000	239.044	32.423	120.839	8.153	163.414
320	0.8438	227.813	224.943	26.787	113.427	6.727	152.895
340	0.7941	214.412	212.290	22.376	106.852	5.614	143.693
350	0.7714	208.286	206.449	20.528	103.836	5.148	139.507
380	0.7105	191.842	190.623	16.069	95.718	4.026	128.324
400	0.6750	182.250	181.306	13.788	90.968	3.453	121.832
420	0.6429	173.571	172.832	11.919	86.662	2.984	115.974
450	0.6000	162.000	161.476	9.698	80.913	2.427	108.184
475	0.5684	153.474	153.074	8.249	76.670	2.064	102.456
500	0.5400	145.800	145.490	7.075	72.848	1.770	97.308
525	0.5143	138.857	138.614	6.113	69.388	1.529	92.656
550	0.4909	132.545	132.353	5.318	66.241	1.330	88.431
575	0.4696	126.783	126.629	4.655	63.366	1.164	84.576
600	0.4500	121.500	121.376	4.098	60.729	1.025	81.044
650	0.4154	112.154	112.070	3.224	56.063	0.806	74.798
700	0.3857	104.143	104.085	2.581	52.062	0.645	69.449
750	0.3600	97.200	97.159	2.099	48.593	0.525	64.814
800	0.3375	91.125	91.095	1.730	45.558	0.432	60.760
850	0.3176	85.765	85.743	1.442	42.879	0.361	57.184
900	0.3000	81.000	80.984	1.215	40.497	0.304	54.006
950	0.2842	76.737	76.724	1.033	38.366	0.258	51.162
1000	0.2700	72.900	72.890	0.886	36.448	0.221	48.603
1050	0.2571	69.429	69.421	0.765	34.713	0.191	46.288
1100	0.2455	66.273	66.267	0.665	33.135	0.166	44.184
1150	0.2348	63.391	63.386	0.582	31.695	0.146	42.263
1200	0.2250	60.750	60.746	0.513	30.374	0.128	40.501
1250	0.2160	58.320	58.317	0.453	29.159	0.113	38.881
1300	0.2077	56.077	56.074	0.403	28.038	0.101	37.386
1400	0.1929	52.071	52.070	0.323	26.035	0.081	34.715
1500	0.1800	48.600	48.599	0.262	24.300	0.066	32.400
1600	0.1688	45.563	45.562	0.216	22.781	0.054	30.375
1700	0.1588	42.882	42.882	0.180	21.441	0.045	28.588
1800	0.1500	40.500	40.499	0.152	20.250	0.038	27.000
2000	0.1350	36.450	36.450	0.111	18.225	0.028	24.300

K =0.007 859 50'

450	0.5778	50.207	150.036	9	33	48.4	3	11	13.4	0	0	2.7
475	0.5474	47.540	142.174	8	34	59.7	2	51	38.0	0	0	2.0
500	0.5200	45.145	135.090	7	44	47.0	2	34	54.2	0	0	1.4
525	0.4952	42.982	128.676	7	1	34.3	2	20	30.4	0	0	1.1
550	0.4727	41.018	122.841	6	24	7.1	2	8	1.6	0	0	0.8
575	0.4522	39.227	117.511	5	51	26.6	1	57	8.2	0	0	0.6
600	0.4333	37.587	112.623	5	22	46.0	1	47	34.8	0	0	0.5
650	0.4000	34.688	103.970	4	35	1.2	1	31	40.1	0	0	0.3
700	0.3714	32.205	96.551	3	57	8.1	1	19	2.5	0	0	0.2
750	0.3467	30.055	90.119	3	26	34.2	1	8	51.3	0	0	0.1
800	0.3250	28.174	84.490	3	1	33.4	1	0	31.0	0	0	0.1
850	0.3059	26.515	79.522	2	40	49.5	0	53	36.4	0	0	0.1
900	0.2889	25.041	75.105	2	23	27.1	0	47	49.0	0	0	0.0
950	0.2737	23.722	71.153	2	8	44.9	0	42	54.9	0	0	0.0
1000	0.2600	22.536	67.597	1	56	11.8	0	38	43.9	0	0	0.0
1050	0.2476	21.462	64.378	1	45	23.6	0	35	7.8	0	0	0.0
1100	0.2364	20.486	61.452	1	36	1.8	0	32	0.6	0	0	0.0
1150	0.2261	19.595	58.781	1	27	51.6	0	29	17.2	0	0	0.0
1200	0.2167	18.779	56.332	1	20	41.5	0	26	53.8	0	0	0.0
1250	0.2080	18.027	54.079	1	14	21.9	0	24	47.3	0	0	0.0
1300	0.2000	17.334	51.999	1	8	45.3	0	22	55.1	0	0	0.0
1400	0.1857	16.096	48.285	0	59	17.0	0	19	45.7	0	0	0.0
1500	0.1733	15.023	45.066	0	51	38.6	0	17	12.8	0	0	0.0
1600	0.1625	14.084	42.250	0	45	23.3	0	15	7.8	0	0	0.0
1700	0.1529	13.255	39.764	0	40	12.4	0	13	24.1	0	0	0.0
1800	0.1444	12.519	37.555	0	35	51.8	0	11	57.3	0	0	0.0

K = 0.508 542 42"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISÉE

A = 270 M

R	A/R	ST	LC	θ			Φ			C		
M		M					DEG	MNT	SEC			
250	1.0800	100.463	287.216	33	24	53.6	11	6	21.5	0	1	30.4
280	0.9643	88.613	257.865	26	38	17.3	8	51	47.0	0	0	58.8
300	0.9000	82.287	241.233	23	12	17.2	7	43	26.9	0	0	38.8
320	0.8438	76.866	226.532	20	23	41.4	6	47	27.5	0	0	26.3
340	0.7941	72.154	213.466	18	3	57.6	6	1	0.9	0	0	18.3
360	0.7714	70.019	207.467	17	2	54.3	5	40	42.7	0	0	15.4
380	0.7105	64.338	191.299	14	27	46.2	4	49	6.0	0	0	9.4
400	0.6750	61.052	181.830	13	3	9.7	4	20	56.3	0	0	6.9
420	0.6429	58.093	173.242	11	50	21.0	3	56	41.9	0	0	5.1
450	0.6000	54.167	161.767	10	18	47.7	3	26	12.5	0	0	3.4
475	0.5684	51.285	153.296	9	15	22.3	3	5	5.0	0	0	2.5
500	0.5400	48.699	145.662	8	21	13.4	2	47	2.7	0	0	1.8
525	0.5143	46.363	138.749	7	34	37.5	2	31	31.1	0	0	1.3
550	0.4909	44.243	132.460	6	54	14.1	2	18	3.7	0	0	1.0
575	0.4696	42.310	126.714	6	18	59.8	2	6	19.2	0	0	0.8
600	0.4500	40.540	121.445	5	48	4.3	1	56	0.8	0	0	0.6
650	0.4154	37.411	112.117	4	56	34.9	1	38	51.3	0	0	0.4
700	0.3857	34.733	104.117	4	15	43.6	1	25	14.3	0	0	0.2
750	0.3600	32.413	97.182	3	42	46.0	1	14	15.2	0	0	0.2
800	0.3375	30.384	91.112	3	15	47.4	1	5	15.7	0	0	0.1
850	0.3176	28.595	85.755	2	53	26.0	0	57	48.6	0	0	0.1
900	0.3000	27.005	80.993	2	34	41.9	0	51	33.9	0	0	0.1
950	0.2842	25.583	76.731	2	18	50.6	0	46	16.8	0	0	0.0
1000	0.2700	24.303	72.896	2	5	18.4	0	41	46.1	0	0	0.0
1050	0.2571	23.145	69.425	1	53	39.4	0	37	53.1	0	0	0.0
1100	0.2455	22.093	66.270	1	43	33.5	0	34	31.2	0	0	0.0
1150	0.2348	21.132	63.389	1	34	45.0	0	31	35.0	0	0	0.0
1200	0.2250	20.251	60.748	1	27	1.1	0	29	0.3	0	0	0.0
1250	0.2160	19.441	58.319	1	20	11.7	0	26	43.9	0	0	0.0
1300	0.2077	18.693	56.076	1	14	8.7	0	24	42.9	0	0	0.0
1400	0.1929	17.358	52.071	1	3	55.9	0	21	18.6	0	0	0.0
1500	0.1800	16.200	48.599	0	55	41.5	0	18	33.8	0	0	0.0
1600	0.1688	15.188	45.562	0	48	56.9	0	16	19.0	0	0	0.0
1700	0.1588	14.294	42.882	0	43	21.5	0	14	27.2	0	0	0.0
1800	0.1500	13.500	40.500	0	38	40.5	0	12	53.5	0	0	0.0
2000	0.1350	12.150	36.450	0	31	19.6	0	10	26.5	0	0	0.0

K = 0.471 570 20"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 275 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
280	0.9821	270.089	263.874	42.705	134.004	10.766	182.304
300	0.9167	252.083	247.670	34.861	125.304	8.770	169.636
320	0.8594	236.328	233.126	28.807	117.629	7.237	158.692
340	0.8088	222.426	220.058	24.067	110.818	6.060	149.124
350	0.7857	216.071	214.022	22.081	107.694	5.539	144.773
380	0.7237	199.013	197.653	17.286	99.280	4.332	133.155
400	0.6875	189.063	188.009	14.834	94.356	3.716	126.412
420	0.6548	180.060	179.234	12.823	89.892	3.211	120.330
450	0.6111	168.056	167.471	10.434	83.930	2.612	112.242
475	0.5789	159.211	158.764	8.876	79.531	2.221	106.297
500	0.5500	151.250	150.904	7.613	75.567	1.905	100.954
525	0.5238	144.048	143.777	6.578	71.979	1.646	96.127
550	0.5000	137.500	137.285	5.723	68.714	1.431	91.742
575	0.4783	131.522	131.350	5.009	65.732	1.253	87.741
600	0.4583	126.042	125.903	4.409	62.998	1.103	84.076
650	0.4231	116.346	116.253	3.469	58.158	0.867	77.597
700	0.3929	108.036	107.971	2.778	54.007	0.695	72.046
750	0.3667	100.833	100.788	2.259	50.409	0.565	67.238
800	0.3438	94.531	94.498	1.861	47.260	0.465	63.032
850	0.3235	88.971	88.946	1.552	44.481	0.388	59.322
900	0.3056	84.028	84.005	1.307	42.011	0.327	56.025
950	0.2895	79.605	79.591	1.112	39.800	0.278	53.075
1000	0.2750	75.625	75.614	0.953	37.811	0.238	50.420
1050	0.2619	72.024	72.015	0.823	36.010	0.206	48.019
1100	0.2500	68.750	68.743	0.716	34.374	0.179	45.836
1150	0.2391	65.761	65.755	0.627	32.880	0.157	43.842
1200	0.2292	63.021	63.016	0.552	31.510	0.138	42.015
1250	0.2200	60.500	60.496	0.488	30.249	0.122	40.335
1300	0.2115	58.173	58.170	0.434	29.086	0.108	38.783
1400	0.1964	54.018	54.016	0.347	27.009	0.087	36.013
1500	0.1833	50.417	50.415	0.282	25.208	0.071	33.612
1600	0.1719	47.266	47.265	0.233	23.633	0.058	31.511
1700	0.1618	44.485	44.485	0.194	22.243	0.049	29.657
1800	0.1528	42.014	42.013	0.163	21.007	0.041	28.009
2000	0.1375	37.813	37.812	0.119	18.906	0.030	25.208

K =0.007 576 30'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 280 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
280	1.0000	280.000	273.081	45.840	138.841	11.563	189.171
300	0.9333	261.333	256.419	37.431	129.845	9.421	175.986
320	0.8750	245.000	241.434	30.937	121.904	7.775	164.605
340	0.8235	230.588	227.951	25.851	114.854	6.489	154.662
350	0.8000	224.000	221.717	23.719	111.619	5.952	150.142
380	0.7368	206.316	204.801	18.571	102.905	4.655	138.079
400	0.7000	196.000	194.827	15.938	97.804	3.993	131.080
420	0.6667	186.667	185.747	13.778	93.180	3.451	124.768
450	0.6222	174.222	173.570	11.212	87.002	2.807	116.377
475	0.5895	165.053	164.555	9.538	82.443	2.387	110.210
500	0.5600	156.800	156.415	8.181	78.336	2.047	104.668
525	0.5333	149.333	149.032	7.069	74.616	1.769	99.661
550	0.5091	142.545	142.306	6.150	71.233	1.538	95.114
575	0.4870	136.348	136.156	5.383	68.142	1.346	90.966
600	0.4667	130.667	130.512	4.739	65.308	1.185	87.165
650	0.4308	120.615	120.512	3.728	60.290	0.932	80.447
700	0.4000	112.000	111.928	2.985	55.988	0.746	74.692
750	0.3733	104.533	104.483	2.427	52.258	0.607	69.707
800	0.3500	98.000	97.963	2.000	48.994	0.500	65.346
850	0.3294	92.235	92.208	1.668	46.113	0.417	61.500
900	0.3111	87.111	87.091	1.405	43.552	0.351	58.081
950	0.2947	82.526	82.511	1.195	41.261	0.299	55.023
1000	0.2800	78.400	78.388	1.024	39.198	0.256	52.271
1050	0.2667	74.667	74.657	0.885	37.332	0.221	49.781
1100	0.2545	71.273	71.265	0.770	35.635	0.192	47.518
1150	0.2435	68.174	68.168	0.674	34.086	0.168	45.451
1200	0.2333	65.333	65.328	0.593	32.666	0.148	43.557

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 275 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
280	0.9821	92.073	267.307	27 38 2.0	9 11 35.0	0 1 5.7
300	0.9167	85.467	250.111	24 4 19.9	8 0 43.3	0 0 43.4
320	0.8594	79.814	234.895	21 9 25.9	7 2 39.2	0 0 29.4
340	0.8088	74.906	221.371	18 44 28.8	6 14 29.2	0 0 20.4
350	0.7857	72.684	215.158	17 41 8.5	5 53 25.7	0 0 17.2
380	0.7237	66.774	198.407	15 0 12.4	4 59 53.7	0 0 10.5
400	0.6875	63.358	188.594	13 32 26.2	4 30 41.0	0 0 7.7
420	0.6548	60.284	179.692	12 16 54.2	4 5 32.3	0 0 5.7
450	0.6111	56.205	167.795	10 41 55.5	3 33 54.7	0 0 3.8
475	0.5789	53.213	159.012	9 36 7.9	3 11 59.9	0 0 2.7
500	0.5500	50.527	151.096	8 39 57.6	2 53 17.2	0 0 2.0
525	0.5238	48.102	143.927	7 51 37.1	2 37 10.9	0 0 1.5
550	0.5000	45.902	137.405	7 9 43.1	2 23 13.2	0 0 1.1
575	0.4783	43.895	131.445	6 33 9.8	2 11 2.4	0 0 0.9
600	0.4583	42.058	125.980	6 1 5.0	2 0 21.0	0 0 0.7
650	0.4231	38.812	116.305	5 7 40.1	1 42 32.9	0 0 0.4
700	0.3929	36.032	108.007	4 25 17.1	1 28 25.4	0 0 0.3
750	0.3667	33.626	100.813	3 51 5.6	1 17 1.7	0 0 0.2
800	0.3438	31.521	94.517	3 23 6.5	1 7 42.1	0 0 0.1
850	0.3235	29.665	88.960	2 59 55.0	0 59 58.3	0 0 0.1
900	0.3056	28.015	84.020	2 40 28.9	0 53 29.6	0 0 0.1
950	0.2895	26.540	79.599	2 24 2.0	0 48 0.6	0 0 0.0
1000	0.2750	25.212	75.620	2 9 59.4	0 43 19.8	0 0 0.0
1050	0.2619	24.011	72.020	1 57 54.3	0 39 18.1	0 0 0.0
1100	0.2500	22.919	68.747	1 47 25.8	0 35 48.6	0 0 0.0
1150	0.2391	21.922	65.758	1 38 17.5	0 32 45.8	0 0 0.0
1200	0.2292	21.008	63.019	1 30 16.2	0 30 5.4	0 0 0.0
1250	0.2200	20.168	60.498	1 23 11.6	0 27 43.9	0 0 0.0
1300	0.2115	19.392	58.172	1 16 55.0	0 25 38.3	0 0 0.0
1400	0.1964	18.007	54.017	1 6 19.3	0 22 6.4	0 0 0.0
1500	0.1833	16.806	50.416	0 57 46.4	0 19 15.5	0 0 0.0
1600	0.1719	15.756	47.265	0 50 46.6	0 16 55.5	0 0 0.0
1700	0.1618	14.829	44.485	0 44 58.8	0 14 59.6	0 0 0.0
1800	0.1528	14.005	42.014	0 40 7.2	0 13 22.4	0 0 0.0
2000	0.1375	12.604	37.812	0 32 29.8	0 10 49.9	0 0 0.0

K = 0.454 578 09m

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 280 M

R	A/R	ST	LC	θ	φ	C
M		M			DEG MNT SEC	
280	1.0000	95.614	276.901	28 38 52.4	9 31 44.3	0 1 13.2
300	0.9333	88.716	259.137	24 57 19.8	8 18 18.3	0 0 48.3
320	0.8750	82.824	243.408	21 56 0.7	7 18 7.5	0 0 32.8
340	0.8235	77.715	229.412	19 25 44.5	6 28 12.1	0 0 22.8
350	0.8000	75.403	222.982	18 20 4.7	6 6 22.5	0 0 19.1
380	0.7368	69.258	205.641	15 33 14.3	5 10 53.1	0 0 11.7
400	0.7000	65.709	195.478	14 2 14.9	4 40 36.4	0 0 8.6
420	0.6667	62.516	186.257	12 43 56.6	4 14 32.5	0 0 6.4
450	0.6222	58.282	173.932	11 5 28.8	3 41 45.4	0 0 4.2
475	0.5895	55.176	164.831	9 57 16.4	3 19 2.4	0 0 3.1
500	0.5600	52.389	156.629	8 59 2.3	2 59 38.5	0 0 2.2
525	0.5333	49.874	149.199	8 8 55.4	2 42 56.8	0 0 1.7
550	0.5091	47.591	142.439	7 25 29.2	2 28 28.5	0 0 1.3
575	0.4870	45.510	136.263	6 47 35.4	2 15 50.8	0 0 1.0
600	0.4667	43.605	130.598	6 14 19.9	2 4 45.9	0 0 0.8
650	0.4308	40.238	120.569	5 18 57.5	1 46 18.7	0 0 0.5
700	0.4000	37.356	111.968	4 35 1.2	1 31 40.1	0 0 0.3
750	0.3733	34.861	104.511	3 59 34.4	1 19 51.3	0 0 0.2
800	0.3500	32.678	97.984	3 30 33.7	1 10 11.1	0 0 0.1
850	0.3294	30.754	92.223	3 6 31.1	1 2 10.3	0 0 0.1
900	0.3111	29.044	87.102	2 46 22.2	0 55 27.3	0 0 0.1
950	0.2947	27.514	82.519	2 29 19.1	0 49 46.3	0 0 0.0
1000	0.2800	26.137	78.395	2 14 45.6	0 44 55.2	0 0 0.0
1050	0.2667	24.892	74.662	2 2 13.9	0 40 44.6	0 0 0.0
1100	0.2545	23.760	71.269	1 51 22.3	0 37 7.4	0 0 0.0
1150	0.2435	22.727	68.171	1 41 53.9	0 33 57.9	0 0 0.0
1200	0.2333	21.779	65.331	1 33 35.0	0 31 11.7	0 0 0.0

1250	0.2240	62.720	62.716	0.524	31.359	0.131	41.815
1300	0.2154	60.308	60.304	0.466	30.153	0.117	40.206
1400	0.2000	56.000	55.998	0.373	28.000	0.093	37.334
1500	0.1867	52.267	52.265	0.304	26.133	0.076	34.845
1600	0.1750	49.000	48.999	0.250	24.500	0.063	32.667
1700	0.1647	46.118	46.117	0.209	23.059	0.052	30.745
1800	0.1556	43.556	43.555	0.176	21.778	0.044	29.037
2000	0.1400	39.200	39.200	0.128	19.600	0.032	26.133

K =0.007 308 14'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 290 M

R	A/R	LS	X	Y	Q	P	LT
M		M					
300	0.9667	280.333	274.275	42.983	139.153	10.830	189.072
320	0.9063	262.813	258.415	35.543	130.671	8.940	176.781
340	0.8529	247.353	244.100	29.710	123.133	7.463	166.060
350	0.8286	240.286	237.470	27.263	119.673	6.845	161.190
380	0.7632	221.316	219.446	21.353	110.346	5.354	148.205
400	0.7250	210.250	208.802	18.328	104.883	4.593	140.677
420	0.6905	200.238	199.103	15.846	99.930	3.970	133.892
450	0.6444	186.889	186.085	12.896	93.310	3.229	124.875
475	0.6105	177.053	176.439	10.972	88.424	2.746	118.251
500	0.5800	168.200	167.725	9.411	84.021	2.355	112.300
525	0.5524	160.190	159.818	8.133	80.033	2.035	106.924
550	0.5273	152.909	152.614	7.075	76.405	1.770	102.043
575	0.5043	146.261	146.024	6.193	73.091	1.549	97.590
600	0.4833	140.167	139.976	5.452	70.051	1.364	93.511
650	0.4462	129.385	129.257	4.289	64.671	1.073	86.301
700	0.4143	120.143	120.054	3.435	60.057	0.859	80.126
750	0.3867	112.133	112.071	2.793	56.056	0.698	74.777
800	0.3625	105.125	105.080	2.302	52.555	0.575	70.099
850	0.3412	98.941	98.908	1.919	49.465	0.480	65.972
900	0.3222	93.444	93.419	1.617	46.718	0.404	62.305
950	0.3053	88.526	88.507	1.375	44.260	0.344	59.024
1000	0.2900	84.100	84.085	1.179	42.048	0.295	56.072
1050	0.2762	80.095	80.084	1.018	40.046	0.255	53.401
1100	0.2636	76.455	76.445	0.886	38.226	0.221	50.973
1150	0.2522	73.130	73.123	0.775	36.564	0.194	48.756
1200	0.2417	70.083	70.077	0.682	35.041	0.171	46.724
1250	0.2320	67.280	67.275	0.604	33.639	0.151	44.855
1300	0.2231	64.692	64.688	0.537	32.345	0.134	43.130
1400	0.2071	60.071	60.069	0.430	30.035	0.107	40.049
1500	0.1933	56.067	56.065	0.349	28.033	0.087	37.378
1600	0.1813	52.563	52.561	0.288	26.281	0.072	35.042
1700	0.1706	49.471	49.470	0.240	24.735	0.060	32.981
1800	0.1611	46.722	46.721	0.202	23.361	0.051	31.148
2000	0.1450	42.050	42.050	0.147	21.025	0.037	28.033

K =0.006 812 82'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 300 M

R	A/R	LS	X	Y	Q	P	LT
M		M					
300	1.0000	300.000	292.586	49.114	148.759	12.389	202.683
320	0.9375	281.250	275.867	40.634	139.725	10.229	189.432
340	0.8824	264.706	260.723	33.978	131.687	8.541	177.892
350	0.8571	257.143	253.694	31.185	127.995	7.834	172.656
380	0.7895	236.842	234.552	24.433	118.039	6.129	158.705
400	0.7500	225.000	223.227	20.975	112.204	5.259	150.626
420	0.7143	214.286	212.895	18.137	106.911	4.545	143.347
450	0.6667	200.000	199.015	14.763	99.836	3.697	133.680
475	0.6316	189.474	188.721	12.561	94.611	3.145	126.580
500	0.6000	180.000	179.418	10.775	89.903	2.697	120.204
525	0.5714	171.429	170.972	9.312	85.638	2.330	114.446
550	0.5455	163.636	163.275	8.101	81.758	2.027	109.218
575	0.5217	156.522	156.232	7.092	78.213	1.774	104.449
600	0.5000	150.000	149.766	6.243	74.961	1.562	100.082
650	0.4615	138.462	138.305	4.912	69.205	1.228	92.363

1250	0.2240	20.908	62.718	1	26	14.8	0	28	44.9	0 0 0.0
1300	0.2154	20.104	60.306	1	19	44.4	0	26	34.8	0 0 0.0
1400	0.2000	18.667	55.999	1	8	45.3	0	22	55.1	0 0 0.0
1500	0.1867	17.423	52.266	0	59	53.6	0	19	57.9	0 0 0.0
1600	0.1750	16.334	48.999	0	52	38.4	0	17	32.8	0 0 0.0
1700	0.1647	15.373	46.117	0	46	37.8	0	15	32.6	0 0 0.0
1800	0.1556	14.519	43.555	0	41	35.5	0	13	51.8	0 0 0.0
2000	0.1400	13.067	39.200	0	33	41.4	0	11	13.8	0 0 0.0

K = 0.438 488 11m

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 290 M

R	A/R	ST	LC	θ			ϕ			C
M		M					DEG	MNT	SEC	
300	0.9667	95.432	277.623	26	46	11.5	8	54	24.2	0 0 59.7
320	0.9063	89.036	260.848	23	31	41.5	7	49	53.4	0 0 40.5
340	0.8529	83.504	245.901	20	50	29.7	6	56	21.8	0 0 28.1
350	0.8286	81.005	239.030	19	40	3.6	6	32	57.6	0 0 23.6
380	0.7632	74.373	220.483	16	41	5.3	5	33	27.4	0 0 14.4
400	0.7250	70.548	209.605	15	3	29.0	5	0	59.1	0 0 10.6
420	0.6905	67.109	199.733	13	39	29.1	4	33	1.8	0 0 7.9
450	0.6444	62.553	186.531	11	53	51.8	3	57	52.0	0 0 5.2
475	0.6105	59.213	176.779	10	40	41.8	3	33	30.2	0 0 3.8
500	0.5800	56.218	167.989	9	38	13.7	3	12	41.8	0 0 2.8
525	0.5524	53.515	160.025	8	44	28.2	2	54	47.3	0 0 2.1
550	0.5273	51.064	152.778	7	57	52.5	2	39	15.9	0 0 1.6
575	0.5043	48.829	146.156	7	17	13.5	2	25	43.3	0 0 1.2
600	0.4833	46.783	140.082	6	41	32.9	2	13	50.0	0 0 0.9
650	0.4462	43.169	129.328	5	42	8.8	1	54	2.4	0 0 0.6
700	0.4143	40.076	120.104	4	55	0.9	1	38	19.9	0 0 0.4
750	0.3867	37.398	112.105	4	16	59.4	1	25	39.6	0 0 0.2
800	0.3625	35.056	105.105	3	45	52.2	1	15	17.2	0 0 0.2
850	0.3412	32.991	98.926	3	20	4.8	1	6	41.5	0 0 0.1
900	0.3222	31.156	93.433	2	58	27.9	0	59	29.2	0 0 0.1
950	0.3053	29.515	88.518	2	40	10.5	0	53	23.4	0 0 0.1
1000	0.2900	28.038	84.093	2	24	33.4	0	48	11.1	0 0 0.0
1050	0.2762	26.702	80.090	2	11	7.1	0	43	42.3	0 0 0.0
1100	0.2636	25.488	76.450	1	59	28.1	0	39	49.4	0 0 0.0
1150	0.2522	24.379	73.127	1	49	18.4	0	36	26.1	0 0 0.0
1200	0.2417	23.363	70.081	1	40	23.2	0	33	27.7	0 0 0.0
1250	0.2320	22.428	67.278	1	32	31.0	0	30	50.3	0 0 0.0
1300	0.2231	21.565	64.691	1	25	32.2	0	28	30.7	0 0 0.0
1400	0.2071	20.025	60.070	1	13	45.2	0	24	35.1	0 0 0.0
1500	0.1933	18.690	56.066	1	4	14.9	0	21	24.9	0 0 0.0
1600	0.1813	17.521	52.562	0	56	28.1	0	18	49.4	0 0 0.0
1700	0.1706	16.491	49.470	0	50	1.2	0	16	40.4	0 0 0.0
1800	0.1611	15.574	46.722	0	44	37.0	0	14	52.3	0 0 0.0
2000	0.1450	14.017	42.050	0	36	8.4	0	12	2.8	0 0 0.0

K = 0.408 768 94m

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 300 M

R	A/R	ST	LC	θ			ϕ			C
M		M					DEG	MNT	SEC	
300	1.0000	102.444	296.680	28	38	52.4	9	31	44.3	0 1 13.2
320	0.9375	95.509	278.843	25	10	43.7	8	22	44.9	0 0 49.6
340	0.8824	89.529	262.927	22	18	13.4	7	25	30.0	0 0 34.5
350	0.8571	86.831	255.604	21	2	50.7	7	0	28.0	0 0 28.9
380	0.7895	79.685	235.821	17	51	19.2	5	56	48.7	0 0 17.7
400	0.7500	75.570	224.210	16	6	52.0	5	22	4.4	0 0 13.0
420	0.7143	71.874	213.667	14	36	58.6	4	52	9.8	0 0 9.7
450	0.6667	66.982	199.561	12	43	56.6	4	14	32.5	0 0 6.4
475	0.6316	63.398	189.139	11	25	38.7	3	48	28.3	0 0 4.6
500	0.6000	60.186	179.741	10	18	47.7	3	26	12.5	0 0 3.4
525	0.5714	57.288	171.226	9	21	15.9	3	7	2.8	0 0 2.5
550	0.5455	54.661	163.475	8	31	24.0	2	50	26.1	0 0 1.9
575	0.5217	52.266	156.393	7	47	53.8	2	35	56.5	0 0 1.5
600	0.5000	50.075	149.896	7	9	43.1	2	23	13.2	0 0 1.1
650	0.4615	46.204	138.392	6	6	9.0	2	2	2.3	0 0 0.7

700	0.4286	128.571	128.463	3.933	64.268	0.984	85.752
750	0.4000	120.000	119.923	3.199	59.987	0.800	80.027
800	0.3750	112.500	112.444	2.636	56.241	0.659	75.019
850	0.3529	105.882	105.841	2.198	52.934	0.549	70.603
900	0.3333	100.000	99.969	1.851	49.995	0.463	66.677
950	0.3158	94.737	94.713	1.574	47.364	0.394	63.166
1000	0.3000	90.000	89.982	1.350	44.997	0.337	60.006
1050	0.2857	85.714	85.700	1.166	42.855	0.292	57.148
1100	0.2727	81.818	81.807	1.014	40.907	0.254	54.549
1150	0.2609	78.261	78.252	0.888	39.129	0.222	52.177
1200	0.2500	75.000	74.993	0.781	37.499	0.195	50.003
1250	0.2400	72.000	71.994	0.691	35.999	0.173	48.002
1300	0.2308	69.231	69.226	0.614	34.615	0.154	46.156
1400	0.2143	64.286	64.282	0.492	32.142	0.123	42.858
1500	0.2000	60.000	59.998	0.400	30.000	0.100	40.001
1600	0.1875	56.250	56.248	0.330	28.125	0.082	37.501
1700	0.1765	52.941	52.940	0.275	26.470	0.069	35.295
1800	0.1667	50.000	49.999	0.231	25.000	0.058	33.334
2000	0.1500	45.000	44.999	0.169	22.500	0.042	30.000
2200	0.1364	40.909	40.909	0.127	20.454	0.032	27.273

K =0.006 366 20'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 325 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
380	0.8553	277.961	274.265	33.584	138.363	8.431	186.622
400	0.8125	264.063	261.200	28.828	131.553	7.235	177.057
420	0.7738	251.488	249.243	24.937	125.369	6.254	168.453
450	0.7222	234.722	233.131	20.306	117.096	5.089	157.043
475	0.6842	222.368	221.153	17.282	110.981	4.329	148.673
500	0.6500	211.250	210.309	14.828	105.448	3.713	141.164
525	0.6190	201.190	200.453	12.816	100.472	3.208	134.386
550	0.5909	192.045	191.461	11.152	95.925	2.791	128.235
575	0.5652	183.696	183.227	9.763	91.770	2.443	122.628
600	0.5417	176.042	175.663	8.595	87.958	2.150	117.494
650	0.5000	162.500	162.246	6.763	81.208	1.692	108.422
700	0.4643	150.893	150.718	5.417	75.417	1.355	100.657
750	0.4333	140.833	140.709	4.405	70.396	1.102	93.932
800	0.4063	132.031	131.941	3.630	66.001	0.908	88.052
850	0.3824	124.265	124.198	3.027	62.121	0.757	82.866
900	0.3611	117.361	117.311	2.550	58.672	0.638	78.258
950	0.3421	111.184	111.146	2.168	55.586	0.542	74.136
1000	0.3250	105.625	105.596	1.859	52.808	0.465	70.427
1050	0.3095	100.595	100.572	1.606	50.294	0.402	67.072
1100	0.2955	96.023	96.004	1.397	48.008	0.349	64.022
1150	0.2826	91.848	91.833	1.222	45.921	0.306	61.237
1200	0.2708	88.021	88.009	1.076	44.008	0.269	58.685
1250	0.2600	84.500	84.490	0.952	42.248	0.238	56.337
1300	0.2500	81.250	81.242	0.846	40.624	0.212	54.169
1400	0.2321	75.446	75.441	0.678	37.722	0.169	50.300
1500	0.2167	70.417	70.413	0.551	35.208	0.138	46.946
1600	0.2031	66.016	66.013	0.454	33.007	0.113	44.011
1700	0.1912	62.132	62.130	0.378	31.066	0.095	41.422
1800	0.1806	58.681	58.679	0.319	29.340	0.080	39.121
2000	0.1625	52.813	52.812	0.232	26.406	0.058	35.209
2200	0.1477	48.011	48.011	0.175	24,006	0.044	32.008

K =0.005 424 45'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 350 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
420	0.8333	291.667	288.170	33.468	145.249	8.403	195.687
450	0.7778	272.222	269.742	27.267	135.697	6.639	182.359
475	0.7368	257.895	256.001	23.214	128.631	5.819	172.598
500	0.7000	245.000	243.533	19.923	122.255	4.991	163.850
525	0.6667	233.333	232.184	17.223	116.475	4.313	155.960
550	0.6364	222.727	221.816	14.989	111.212	3.753	148.805

700	0.4286	42.892	128.523	5	15	42.7	1	45	13.8	0 0 0.5
750	0.4000	40.024	119.966	4	35	1.2	1	31	40.1	0 0 0.3
800	0.3750	37.518	112.475	4	1	43.0	1	20	34.1	0 0 0.2
850	0.3529	35.307	105.864	3	34	6.9	1	11	22.2	0 0 0.1
900	0.3333	33.343	99.986	3	10	59.2	1	3	39.6	0 0 0.1
950	0.3158	31.586	94.726	2	51	24.7	0	57	8.2	0 0 0.1
1000	0.3000	30.006	89.992	2	34	41.9	0	51	33.9	0 0 0.1
1050	0.2857	28.576	85.708	2	20	19.0	0	46	46.3	0 0 0.0
1100	0.2727	27.276	81.813	2	7	51.0	0	42	37.0	0 0 0.0
1150	0.2609	26.090	78.257	1	56	58.5	0	38	59.5	0 0 0.0
1200	0.2500	25.002	74.997	1	47	25.8	0	35	48.6	0 0 0.0
1250	0.2400	24.002	71.997	1	39	0.4	0	33	0.1	0 0 0.0
1300	0.2308	23.078	69.229	1	31	32.3	0	30	30.7	0 0 0.0
1400	0.2143	21.430	64.284	1	18	55.7	0	26	18.6	0 0 0.0
1500	0.2000	20.001	59.999	1	8	45.3	0	22	55.1	0 0 0.0
1600	0.1875	18.751	56.249	1	0	25.7	0	20	8.6	0 0 0.0
1700	0.1765	17.647	52.941	0	53	31.7	0	17	50.6	0 0 0.0
1800	0.1667	16.667	50.000	0	47	44.8	0	15	54.9	0 0 0.0
2000	0.1500	15.000	45.000	0	38	40.5	0	12	53.5	0 0 0.0
2200	0.1364	13.636	40.909	0	31	57.8	0	10	39.2	0 0 0.0

K = 0.381 971 86"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 325 M

R	A/R	ST	LC	θ			φ			C
M		M		DEG	MNT	SEC	DEG	MNT	SEC	
380	0.8553	93.850	276.312	20	57	18.8	6	58	37.7	0 0 28.6
400	0.8125	88.945	262.786	18	54	43.5	6	17	53.5	0 0 21.0
420	0.7738	84.552	250.488	17	9	13.7	5	42	48.9	0 0 15.7
450	0.7222	78.751	234.013	14	56	34.4	4	58	41.1	0 0 10.3
475	0.6842	74.512	221.827	13	24	40.8	4	28	6.1	0 0 7.5
500	0.6500	70.717	210.831	12	6	13.4	4	1	59.0	0 0 5.5
525	0.6190	67.299	200.862	10	58	42.4	3	39	30.0	0 0 4.1
550	0.5909	64.202	191.785	10	0	11.1	3	20	0.6	0 0 3.1
575	0.5652	61.381	183.487	9	9	7.8	3	3	0.2	0 0 2.4
600	0.5417	58.801	175.873	8	24	19.3	2	48	4.6	0 0 1.8
650	0.5000	54.247	162.387	7	9	43.1	2	23	13.2	0 0 1.1
700	0.4643	50.353	150.815	6	10	31.3	2	3	29.7	0 0 0.7
750	0.4333	46.984	140.778	5	22	46.0	1	47	34.8	0 0 0.5
800	0.4063	44.039	131.991	4	43	40.9	1	34	33.3	0 0 0.3
850	0.3824	41.443	124.235	4	11	17.3	1	23	45.5	0 0 0.2
900	0.3611	39.136	117.339	3	44	8.6	1	14	42.7	0 0 0.2
950	0.3421	37.073	111.167	3	21	10.2	1	7	3.3	0 0 0.1
1000	0.3250	35.218	105.612	3	1	33.4	1	0	31.0	0 0 0.1
1050	0.3095	33.539	100.585	2	44	40.6	0	54	53.5	0 0 0.1
1100	0.2955	32.013	96.015	2	30	2.8	0	50	0.9	0 0 0.0
1150	0.2826	30.621	91.841	2	17	16.9	0	45	45.6	0 0 0.0
1200	0.2708	29.344	88.016	2	6	4.8	0	42	1.6	0 0 0.0
1250	0.2600	28.170	84.496	1	56	11.8	0	38	43.9	0 0 0.0
1300	0.2500	27.086	81.246	1	47	25.8	0	35	48.6	0 0 0.0
1400	0.2321	25.151	75.444	1	32	37.8	0	30	52.6	0 0 0.0
1500	0.2167	23.473	70.415	1	20	41.5	0	26	53.8	0 0 0.0
1600	0.2031	22.006	66.014	1	10	55.2	0	23	38.4	0 0 0.0
1700	0.1912	20.711	62.131	1	2	49.3	0	20	56.4	0 0 0.0
1800	0.1806	19.561	58.680	0	56	2.1	0	18	40.7	0 0 0.0
2000	0.1625	17.604	52.812	0	45	23.3	0	15	7.8	0 0 0.0
2200	0.1477	16.004	48.011	0	37	30.7	0	12	30.2	0 0 0.0

K = 0.325 467 15"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 350 M

R	A/R	ST	LC	θ			φ			C
M		M		DEG	MNT	SEC	DEG	MNT	SEC	
420	0.8333	98.353	290.107	19	53	39.7	6	37	28.8	0 0 24.4
450	0.7778	91.539	271.111	17	19	48.7	5	46	20.1	0 0 16.1
475	0.7368	86.573	257.051	15	33	14.3	5	10	53.1	0 0 11.7
500	0.7000	82.136	244.347	14	2	14.9	4	40	36.4	0 0 8.6
525	0.6667	78.145	232.822	12	43	56.6	4	14	32.5	0 0 6.4
550	0.6364	74.534	222.322	11	36	4.4	3	51	56.6	0 0 4.8

575	0.6087	213.043	212.313	13.124	106.400	3.285	142.285
600	0.5833	204.167	203.576	11.555	101.985	2.892	136.318
650	0.5385	188.462	188.066	9.093	94.165	2.275	125.780
700	0.5000	175.000	174.727	7.284	87.454	1.822	116.762
750	0.4667	163.333	163.140	5.923	81.63.	1.481	108.957
800	0.4375	153.125	152.985	4.882	76.539	1.221	102.132
850	0.4118	144.118	144.014	4.070	72.042	1.018	96.115
900	0.3889	136.111	136.033	3.429	68.043	0.858	90.768
950	0.3684	128.947	128.888	2.916	64.444	0.729	85.986
1000	0.3500	122.500	122.454	2.500	61.242	0.625	81.683
1050	0.3333	116.667	116.631	2.160	58.327	0.540	77.790
1100	0.3182	111.364	111.335	1.879	55.677	0.470	74.252
1150	0.3043	106.522	106.495	1.644	53.257	0.411	71.022
1200	0.2917	102.083	102.065	1.447	51.039	0.362	68.062
1250	0.2800	98.000	97.985	1.280	48.997	0.320	65.339
1300	0.2692	94.231	94.218	1.138	47.113	0.285	62.825
1400	0.2500	87.500	87.491	0.911	43.749	0.228	58.336
1500	0.2333	81.667	81.661	0.741	40.832	0.185	54.447
1600	0.2188	76.563	76.558	0.611	38.281	0.153	51.043
1700	0.2059	72.059	72.056	0.509	36.029	0.127	48.040
1800	0.1944	68.056	68.053	0.429	34.027	0.107	45.371
2000	0.1750	61.250	61.249	0.313	30.625	0.078	40.834
2200	0.1591	55.682	55.681	0.235	27.841	0.059	37.122
2500	0.1400	49.000	49.000	0.160	24.500	0.040	32.667

K =0.004 677 21'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 375 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
475	0.7895	296.053	293.190	30.541	147.548	7.662	198.382
500	0.7500	281.250	279.033	26.219	140.255	6.573	188.283
525	0.7143	267.857	266.119	22.671	133.639	5.681	179.184
550	0.6818	255.682	254.304	19.734	127.611	4.943	170.939
575	0.6522	244.565	243.461	17.281	122.098	4.327	163.431
600	0.6250	234.375	233.483	15.217	117.039	3.810	156.563
650	0.5769	216.346	215.748	11.978	108.073	2.997	144.441
700	0.5357	200.893	200.480	9.595	100.378	2.400	134.073
750	0.5000	187.500	187.207	7.804	93.701	1.952	125.102
800	0.4688	175.781	175.569	6.432	87.855	1.609	117.262
850	0.4412	165.441	165.285	5.363	82.694	1.341	110.349
900	0.4167	156.250	156.132	4.519	78.105	1.130	104.208
950	0.3947	148.026	147.936	3.843	73.998	0.961	98.716
1000	0.3750	140.625	140.555	3.295	70.301	0.824	93.774
1050	0.3571	133.929	133.874	2.846	66.955	0.712	89.305
1100	0.3409	127.841	127.798	2.476	63.913	0.619	85.242
1150	0.3261	122.283	122.248	2.167	61.136	0.542	81.534
1200	0.3125	117.188	117.160	1.907	58.589	0.477	78.135
1250	0.3000	112.500	112.477	1.687	56.246	0.422	75.008
1300	0.2885	108.173	108.154	1.500	54.083	0.375	72.122
1400	0.2679	100.446	100.434	1.201	50.221	0.300	66.969
1500	0.2500	93.750	93.741	0.976	46.873	0.244	62.503
1600	0.2344	87.891	87.884	0.805	43.944	0.201	58.596
1700	0.2206	82.721	82.716	0.671	41.359	0.168	55.149
1800	0.2083	78.125	78.121	0.565	39.062	0.141	52.085
2000	0.1875	70.313	70.310	0.412	35.156	0.103	46.876
2200	0.1705	63.920	63.919	0.310	31.960	0.077	42.614
2500	0.1500	56.250	56.249	0.211	28.125	0.053	37.500

K =0.004 074 37'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 400 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
550	0.7273	290.909	288.881	25.517	145.116	6.395	194.655
575	0.6957	278.261	276.636	22.350	138.859	5.599	186.079
600	0.6667	266.667	265.353	19.684	133.114	4.930	178.240
650	0.6154	246.154	245.273	15.497	122.930	3.879	164.412
700	0.5714	228.571	227.963	12.416	114.184	3.107	152.594

575	0.6087	71.247	212.719	10	36	51.6	3	32	13.5	0 0 3.7
600	0.5833	68.244	203.904	9	44	53.7	3	14	55.0	0 0 2.9
650	0.5385	62.947	188.286	8	18	22.3	2	46	5.7	0 0 1.8
700	0.5000	58.420	174.879	7	9	43.1	2	23	13.2	0 0 1.1
750	0.4667	54.506	163.247	6	14	19.9	2	4	45.9	0 0 0.8
800	0.4375	51.086	153.063	5	29	0.2	1	49	39.6	0 0 0.5
850	0.4118	48.072	144.072	4	51	26.1	1	37	8.4	0 0 0.4
900	0.3889	45.395	136.077	4	19	57.2	1	26	38.8	0 0 0.3
950	0.3684	43.001	128.921	3	53	18.6	1	17	46.0	0 0 0.2
1000	0.3500	40.848	122.480	3	30	33.7	1	10	11.1	0 0 0.1
1050	0.3333	38.900	116.651	3	10	59.2	1	3	39.6	0 0 0.1
1100	0.3182	37.130	111.351	2	54	1.1	0	58	0.3	0 0 0.1
1150	0.3043	35.515	106.512	2	39	12.9	0	53	4.2	0 0 0.1
1200	0.2917	34.034	102.075	2	26	13.4	0	48	44.4	0 0 0.0
1250	0.2800	32.671	97.993	2	14	45.6	0	44	55.2	0 0 0.0
1300	0.2692	31.41	94.225	2	4	35.6	0	41	31.8	0 0 0.0
1400	0.2500	29.165	87.496	1	47	25.8	0	35	48.6	0 0 0.0
1500	0.2333	27.224	81.664	1	33	35.0	0	31	11.7	0 0 0.0
1600	0.2188	25.522	76.561	1	22	15.0	0	27	25.0	0 0 0.0
1700	0.2059	24.021	72.057	1	12	51.5	0	24	17.2	0 0 0.0
1800	0.1944	22.686	68.054	1	4	59.3	0	21	39.8	0 0 0.0
2000	0.1750	20.417	61.249	0	52	38.4	0	17	32.8	0 0 0.0
2200	0.1591	18.561	55.681	0	43	30.3	0	14	30.1	0 0 0.0
2500	0.1400	16.333	49.000	0	33	41.4	0	11	13.8	0 0 0.0

K = 0.280 632 39"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 375 M

R	A/R	ST	LC	θ			ϕ			C
M		M					DEG	MNT	SEC	
475	0.7895	99.606	294.777	17	51	19.2	5	56	48.7	0 0 17.7
500	0.7500	94.462	280.262	16	6	52.0	5	22	4.4	0 0 13.0
525	0.7143	89.843	267.083	14	36	58.6	4	52	9.8	0 0 9.7
550	0.6818	85.668	255.068	13	19	3.8	4	26	13.9	0 0 7.3
575	0.6522	81.875	244.074	12	11	5.4	4	3	36.2	0 0 5.6
600	0.6250	78.410	233.978	11	11	26.1	3	43	44.4	0 0 4.3
650	0.5769	72.306	216.080	9	32	6.6	3	10	39.5	0 0 2.7
700	0.5357	67.096	200.709	8	13	17.9	2	44	24.3	0 0 1.7
750	0.5000	62.593	187.370	7	9	43.1	2	23	13.2	0 0 1.1
800	0.4688	58.661	175.687	6	17	40.9	2	5	52.9	0 0 0.8
850	0.4412	55.197	165.372	5	34	33.3	1	51	30.6	0 0 0.5
900	0.4167	52.121	156.198	4	58	24.9	1	39	27.9	0 0 0.4
950	0.3947	49.371	147.986	4	27	49.8	1	29	16.3	0 0 0.3
1000	0.3750	46.897	140.594	4	1	43.0	1	20	34.1	0 0 0.2
1050	0.3571	44.660	133.904	3	39	14.6	1	13	4.7	0 0 0.2
1100	0.3409	42.627	127.822	3	19	45.9	1	6	35.2	0 0 0.1
1150	0.3261	40.772	122.267	3	2	46.3	1	0	55.4	0 0 0.1
1200	0.3125	39.071	117.175	2	47	51.5	0	55	57.1	0 0 0.1
1250	0.3000	37.507	112.490	2	34	41.9	0	51	33.9	0 0 0.1
1300	0.2885	36.064	108.165	2	23	1.7	0	47	40.5	0 0 0.0
1400	0.2679	33.486	100.441	2	3	19.5	0	41	6.5	0 0 0.0
1500	0.2500	31.253	93.746	1	47	25.8	0	35	48.6	0 0 0.0
1600	0.2344	29.299	87.888	1	34	25.2	0	31	28.4	0 0 0.0
1700	0.2206	27.575	82.718	1	23	38.3	0	27	52.8	0 0 0.0
1800	0.2083	26.043	78.123	1	14	36.2	0	24	52.1	0 0 0.0
2000	0.1875	23.438	70.312	1	0	25.7	0	20	8.6	0 0 0.0
2200	0.1705	21.307	63.920	0	49	56.5	0	16	38.8	0 0 0.0
2500	0.1500	18.750	56.250	0	38	40.5	0	12	53.5	0 0 0.0

K = 0.244 461 99"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 400 M

R	A/R	ST	LC	θ			ϕ			C
M		M					DEG	MNT	SEC	
550	0.7273	97.620	290.006	15	9	9.4	5	2	52.3	0 0 10.8
575	0.6957	93.274	277.537	13	51	49.1	4	37	8.1	0 0 8.3
600	0.6667	89.309	266.082	12	43	56.6	4	14	32.5	0 0 6.4
650	0.6154	82.332	245.762	10	50	56.1	3	36	54.7	0 0 4.0
700	0.5714	76.384	228.301	9	21	15.9	3	7	2.8	0 0 2.5

750	0.5333	213.333	212.902	10.099	106.595	2.527	142.373
800	0.5000	200.000	199.688	8.324	99.948	2.082	133.443
850	0.4706	188.235	188.005	6.941	94.079	1.736	125.571
900	0.4444	177.778	177.604	5.849	88.860	1.463	118.579
950	0.4211	168.421	168.289	4.974	84.188	1.244	112.327
1000	0.4000	160.000	159.898	4.265	79.983	1.066	106.702
1050	0.3810	152.381	152.301	3.684	76.177	0.921	101.615
1100	0.3636	145.455	145.391	3.205	72.717	0.801	96.992
1150	0.3478	139.130	139.080	2.805	69.557	0.701	92.771
1200	0.3333	133.333	133.292	2.469	66.660	0.617	88.903
1250	0.3200	128.000	127.966	2.184	63.994	0.546	85.345
1300	0.3077	123.077	123.049	1.942	61.534	0.485	82.061
1400	0.2857	114.286	114.267	1.555	57.140	0.389	76.197
1500	0.2667	106.667	106.653	1.264	53.331	0.316	71.116
1600	0.2500	100.000	99.990	1.042	49.998	0.260	66.670
1700	0.2353	94.118	94.110	0.868	47.058	0.217	62.748
1800	0.2222	88.889	88.883	0.732	44.444	0.183	59.261
2000	0.2000	80.000	79.997	0.533	39.999	0.133	53.334
2200	0.1818	72.727	72.725	0.401	36.363	0.100	48.486
2500	0.1600	64.000	63.999	0.273	32.000	0.068	42.667
3000	0.1333	53.333	53.333	0.158	26.667	0.040	35.556

K =0.003 580 99'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 425 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
650	0.6538	277.885	276.618	19.736	138.731	4.942	185.702
700	0.6071	258.036	257.161	15.815	128.872	3.958	172.331
750	0.5667	240.833	240.213	12.865	120.313	3.219	160.773
800	0.5313	225.781	225.332	10.605	112.816	2.653	150.678
850	0.5000	212.500	212.168	8.844	106.195	2.212	141.783
900	0.4722	200.694	200.445	7.452	100.306	1.864	133.884
950	0.4474	190.132	189.941	6.338	95.034	1.585	126.821
1000	0.4250	180.625	180.478	5.434	90.288	1.359	120.468
1050	0.4048	172.024	171.908	4.695	85.993	1.174	114.723
1100	0.3864	164.205	164.113	4.084	82.087	1.021	109.502
1150	0.3696	157.065	156.992	3.574	78.520	0.894	104.736
1200	0.3542	150.521	150.462	3.146	75.251	0.787	100.368
1250	0.3400	144.500	144.452	2.783	72.242	0.696	96.350
1300	0.3269	138.942	138.903	2.474	69.465	0.619	92.642
1400	0.3036	129.018	128.990	1.981	64.504	0.495	86.021
1500	0.2833	120.417	120.397	1.611	60.205	0.403	80.285
1600	0.2656	112.891	112.877	1.327	56.443	0.332	75.265
1700	0.2500	106.250	106.240	1.107	53.123	0.277	70.837
1800	0.2361	100.347	100.339	0.932	50.172	0.233	66.901
2000	0.2125	90.313	90.308	0.680	45.155	0.170	60.210
2200	0.1932	82.102	82.099	0.511	41.051	0.128	54.736
2500	0.1700	72.250	72.248	0.348	36.125	0.087	48.167
3000	0.1417	60.208	60.208	0.201	30.104	0.050	40.139

K =0.003 172 08'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 450 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
700	0.6429	289.286	288.053	19.865	144.437	4.974	193.290
750	0.6000	270.000	269.127	16.163	134.854	4.045	180.306
800	0.5625	253.125	252.492	13.325	126.457	3.334	168.972
850	0.5294	238.235	237.768	11.113	119.040	2.780	158.987
900	0.5000	225.000	224.649	9.365	112.441	2.342	150.123
950	0.4737	213.158	212.890	7.964	106.534	1.992	142.199
1000	0.4500	202.500	202.293	6.829	101.215	1.708	135.073
1050	0.4286	192.857	192.695	5.900	96.401	1.476	128.628
1100	0.4091	184.091	183.962	5.132	92.024	1.283	122.772
1150	0.3913	176.087	175.984	4.492	88.026	1.123	117.427
1200	0.3750	168.750	168.667	3.954	84.361	0.989	112.529
1250	0.3600	162.000	161.932	3.498	80.989	0.875	108.024
1300	0.3462	155.769	155.713	3.110	77.875	0.778	103.866
1400	0.3214	144.643	144.604	2.490	72.315	0.623	96.442
1500	0.3000	135.000	134.973	2.025	67.495	0.506	90.010
1600	0.2813	126.563	126.543	1.668	63.278	0.417	84.382
1700	0.2647	119.118	119.103	1.391	59.556	0.348	79.417
1800	0.2500	112.500	112.489	1.172	56.248	0.293	75.004
2000	0.2250	101.250	101.244	0.854	50.624	0.214	67.502
2200	0.2045	92.045	92.041	0.642	46.022	0.160	61.365

750	0.5333	71.248	213.142	8	8	55.4	2	42	56.8	0 0 1.7
800	0.5000	66.766	199.861	7	9	43.1	2	23	13.2	0 0 1.1
850	0.4706	62.818	188.133	6	20	39.0	2	6	52.2	0 0 0.8
900	0.4444	59.314	177.701	5	39	31.8	1	53	10.1	0 0 0.6
950	0.4211	56.182	168.362	5	4	43.9	1	41	34.2	0 0 0.4
1000	0.4000	53.366	159.954	4	35	1.2	1	31	40.1	0 0 0.3
1050	0.3810	50.819	152.345	4	9	27.1	1	23	8.8	0 0 0.2
1100	0.3636	48.505	145.426	3	47	17.3	1	15	45.6	0 0 0.2
1150	0.3478	46.393	139.108	3	27	57.3	1	9	19.0	0 0 0.1
1200	0.3333	44.458	133.315	3	10	59.2	1	3	39.6	0 0 0.1
1250	0.3200	42.677	127.985	2	56	0.8	0	58	40.2	0 0 0.1
1300	0.3077	41.034	123.065	2	42	44.0	0	54	14.6	0 0 0.1
1400	0.2857	38.101	114.277	2	20	19.0	0	46	46.3	0 0 0.0
1500	0.2667	35.560	106.661	2	2	13.9	0	40	44.6	0 0 0.0
1600	0.2500	33.336	99.996	1	47	25.8	0	35	48.6	0 0 0.0
1700	0.2353	31.375	94.114	1	35	9.8	0	31	43.2	0 0 0.0
1800	0.2222	29.631	88.886	1	24	53.0	0	28	17.6	0 0 0.0
2000	0.2000	26.666	79.999	1	8	45.3	0	22	55.1	0 0 0.0
2200	0.1818	24.243	72.726	0	56	49.3	0	18	56.4	0 0 0.0
2500	0.1600	21.334	64.000	0	44	0.2	0	14	40.1	0 0 0.0
3000	0.1333	17.778	53.333	0	30	33.5	0	10	11.2	0 0 0.0

K = 0.214 859 17M

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 425 M

R	A/R	ST	LC	θ			φ			C
M		M					DEG	MNT	SEC	
650	0.6538	93.033	277.321	12	14	50.6	4	4	51.2	0 0 5.7
700	0.6071	86.291	257.646	10	33	36.9	3	31	8.7	0 0 3.6
750	0.5667	80.475	240.558	9	11	57.0	3	3	56.6	0 0 2.4
800	0.5313	75.403	225.581	8	5	6.7	2	41	40.6	0 0 1.6
850	0.5000	70.939	212.352	7	9	43.1	2	23	13.2	0 0 1.1
900	0.4722	66.977	200.584	6	23	17.9	2	7	45.2	0 0 0.8
950	0.4474	63.438	190.047	5	44	0.8	1	54	39.7	0 0 0.6
1000	0.4250	60.255	180.560	5	10	28.3	1	43	29.0	0 0 0.4
1050	0.4048	57.378	171.973	4	41	36.4	1	33	51.8	0 0 0.3
1100	0.3864	54.764	164.164	4	16	35.3	1	25	31.5	0 0 0.2
1150	0.3696	52.378	157.033	3	54	45.7	1	18	15.0	0 0 0.2
1200	0.3542	50.192	150.495	3	35	36.3	1	11	52.0	0 0 0.1
1250	0.3400	48.182	144.479	3	18	42.1	1	6	13.9	0 0 0.1
1300	0.3269	46.327	138.925	3	3	42.7	1	1	14.1	0 0 0.1
1400	0.3036	43.015	129.006	2	38	24.2	0	52	48.0	0 0 0.1
1500	0.2833	40.145	120.408	2	17	59.2	0	45	59.7	0 0 0.0
1600	0.2656	37.635	112.884	2	1	16.7	0	40	25.5	0 0 0.0
1700	0.2500	35.420	106.245	1	47	25.8	0	35	48.6	0 0 0.0
1800	0.2361	33.452	100.344	1	35	49.5	0	31	56.5	0 0 0.0
2000	0.2125	30.106	90.310	1	17	37.1	0	25	52.4	0 0 0.0
2200	0.1932	27.368	82.101	1	4	8.8	0	21	22.9	0 0 0.0
2500	0.1700	24.084	72.249	0	49	40.5	0	16	33.5	0 0 0.0
3000	0.1417	20.070	60.208	0	34	29.8	0	11	29.9	0 0 0.0

K = 0.190 325 08M

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 450 M

R	A/R	ST	LC	θ			φ			C
M		M					DEG	MNT	SEC	
700	0.6429	96.822	288.737	11	50	21.0	3	56	41.9	0 0 5.1
750	0.6000	90.279	269.611	10	18	47.7	3	26	12.5	0 0 3.4
800	0.5625	84.577	252.844	9	3	51.7	3	1	14.9	0 0 2.3
850	0.5294	79.561	238.027	8	1	45.6	2	40	33.6	0 0 1.6
900	0.5000	75.112	224.844	7	9	43.1	2	23	13.2	0 0 1.1
950	0.4737	71.138	213.039	6	25	40.5	2	8	32.7	0 0 0.8
1000	0.4500	67.566	202.408	5	48	4.3	1	56	0.8	0 0 0.6
1050	0.4286	64.337	192.785	5	15	42.7	1	45	13.8	0 0 0.5
1100	0.4091	61.405	184.034	4	47	39.8	1	35	52.9	0 0 0.3
1150	0.3913	58.728	176.041	4	23	11.5	1	27	43.6	0 0 0.3
1200	0.3750	56.276	168.713	4	1	43.0	1	20	34.1	0 0 0.2
1250	0.3600	54.022	161.970	3	42	46.0	1	14	15.2	0 0 0.2
1300	0.3462	51.941	155.744	3	25	57.6	1	8	39.1	0 0 0.1
1400	0.3214	48.227	144.626	2	57	35.3	0	59	11.7	0 0 0.1
1500	0.3000	45.009	134.988	2	34	41.9	0	51	33.9	0 0 0.1
1600	0.2813	42.194	126.554	2	15	57.9	0	45	19.3	0 0 0.0
1700	0.2647	39.711	119.111	2	0	26.4	0	40	8.8	0 0 0.0
1800	0.2500	37.503	112.495	1	47	25.8	0	35	48.6	0 0 0.0
2000	0.2250	33.752	101.247	1	27	1.1	0	29	0.3	0 0 0.0
2200	0.2045	30.683	92.044	1	11	54.9	0	23	58.3	0 0 0.0

2500	0.1800	81.000	80.998	0.437	40.500	0.109	54.001
3000	0.1500	67.500	67.499	0.253	33.750	0.063	45.000

K =0.002 829 42'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 475 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
800	0.5938	282.031	281.156	16.534	140.870	4.138	188.328
850	0.5588	265.441	264.795	13.791	132.613	3.451	177.187
900	0.5278	250.694	250.209	11.622	125.266	2.908	167.300
950	0.5000	237.500	237.125	9.885	118.688	2.473	158.463
1000	0.4750	225.625	225.338	8.477	112.765	2.120	150.517
1050	0.4524	214.881	214.656	7.324	107.403	1.832	143.333
1100	0.4318	205.114	204.935	6.371	102.527	1.593	136.805
1150	0.4130	196.196	196.053	5.576	98.074	1.394	130.847
1200	0.3958	188.021	187.905	4.908	93.991	1.227	125.388
1250	0.3800	180.500	180.406	4.342	90.234	1.086	120.366
1300	0.3654	173.558	173.480	3.861	86.766	0.965	115.732
1400	0.3393	161.161	161.107	3.091	80.571	0.773	107.459
1500	0.3167	150.417	150.379	2.513	75.202	0.628	100.291
1600	0.2969	141.016	140.988	2.071	70.503	0.518	94.020
1700	0.2794	132.721	132.700	1.727	66.357	0.432	88.487
1800	0.2639	125.347	125.332	1.455	62.671	0.364	83.570
2000	0.2375	112.813	112.804	1.060	56.405	0.265	75.211
2200	0.2159	102.557	102.551	0.797	51.277	0.199	68.373
2500	0.1900	90.250	90.247	0.543	45.125	0.136	60.168
3000	0.1583	75.208	75.207	0.314	37.604	0.079	50.139
3500	0.1357	64.464	64.464	0.198	32.232	0.049	42.976

K =0.002 539 43'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 500 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
850	0.5882	294.118	293.238	16.926	146.912	4.236	196.387
900	0.5556	277.778	277.117	14.265	138.779	3.569	185.417
950	0.5263	263.158	262.654	12.133	131.495	3.035	175.615
1000	0.5000	250.000	249.610	10.405	124.935	2.603	166.803
1050	0.4762	238.095	237.789	8.990	118.997	2.249	158.837
1100	0.4545	227.273	227.030	7.820	113.596	1.956	151.600
1150	0.4348	217.391	217.197	6.845	108.663	1.712	144.995
1200	0.4167	208.333	208.176	6.025	104.141	1.507	138.944
1250	0.4000	200.000	199.872	5.331	99.979	1.333	133.378
1300	0.3846	192.308	192.203	4.739	96.136	1.185	128.242
1400	0.3571	178.571	178.499	3.795	89.274	0.949	119.073
1500	0.3333	166.667	166.615	3.086	83.325	0.772	111.129
1600	0.3125	156.250	156.213	2.543	78.119	0.636	104.180
1700	0.2941	147.059	147.031	2.120	73.525	0.530	98.049
1800	0.2778	138.889	138.868	1.786	69.441	0.447	92.600
2000	0.2500	125.000	124.988	1.302	62.498	0.326	83.338
2200	0.2273	113.636	113.629	0.978	56.817	0.245	75.760
2500	0.2000	100.000	99.996	0.667	49.999	0.167	66.668
3000	0.1667	83.333	83.332	0.386	41.666	0.096	55.556
3500	0.1429	71.429	71.428	0.243	35.714	0.061	47.619

K =0.002 291 83'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 550 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
1050	0.5238	288.095	287.553	13.157	143.957	3.291	192.253
1100	0.5000	275.000	274.571	11.446	137.428	2.863	183.484
1150	0.4783	263.043	262.700	10.018	131.464	2.506	175.483

2500	0.1800	27.001	80.999	0 55 41.5	0 18 33.8	0	0	0.0
3000	0.1500	22.500	67.500	0 38 40.5	0 12 53.5	0	0	0.0

K = 0.169 765 27"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 475 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
800	0.5938	94.289	281.642	10 5 58.2	3 21 56.2	0 0 3.2
850	0.5588	88.686	265.154	8 56 46.6	2 58 53.3	0 0 2.2
900	0.5278	83.719	250.476	7 58 47.5	2 39 34.2	0 0 1.6
950	0.5000	79.285	237.335	7 9 43.1	2 23 13.2	0 0 1.1
1000	0.4750	75.300	225.497	6 27 49.2	2 9 15.6	0 0 0.8
1050	0.4524	71.698	214.781	5 51 45.9	1 57 14.7	0 0 0.6
1100	0.4318	68.428	205.034	5 20 30.8	1 46 49.8	0 0 0.5
1150	0.4130	65.444	196.132	4 53 14.9	1 37 44.6	0 0 0.4
1200	0.3958	62.710	187.970	4 29 19.2	1 29 46.1	0 0 0.3
1250	0.3800	60.197	180.458	4 8 12.3	1 22 43.9	0 0 0.2
1300	0.3654	57.877	173.523	3 49 28.8	1 16 29.4	0 0 0.2
1400	0.3393	53.737	161.137	3 17 52.1	1 5 57.2	0 0 0.1
1500	0.3167	50.151	150.400	2 52 21.9	0 57 27.2	0 0 0.1
1600	0.2969	47.014	141.003	2 31 29.6	0 50 29.8	0 0 0.0
1700	0.2794	44.247	132.712	2 14 11.6	0 44 43.8	0 0 0.0
1800	0.2639	41.787	125.340	1 59 41.9	0 39 53.9	0 0 0.0
2000	0.2375	37.607	112.809	1 36 57.3	0 32 19.1	0 0 0.0
2200	0.2159	34.187	102.554	1 20 7.7	0 26 42.6	0 0 0.0
2500	0.1900	30.084	90.249	1 2 3.1	0 20 41.0	0 0 0.0
3000	0.1583	25.070	75.208	0 43 5.5	0 14 21.8	0 0 0.0
3500	0.1357	21.488	64.464	0 31 39.5	0 10 33.2	0 0 0.0

K = 0.152 365 51"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 500 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
850	0.5882	98.320	293.727	9 54 46.0	3 18 12.3	0 0 3.0
900	0.5556	92.803	277.484	8 50 31.0	2 56 48.2	0 0 2.1
950	0.5263	87.880	262.934	7 56 8.5	2 38 41.3	0 0 1.5
1000	0.5000	83.458	249.826	7 9 43.1	2 23 13.2	0 0 1.1
1050	0.4762	79.462	237.959	6 29 46.0	2 9 54.5	0 0 0.8
1100	0.4545	75.835	227.165	5 55 8.3	1 58 22.1	0 0 0.6
1150	0.4348	72.525	217.305	5 24 55.7	1 48 18.1	0 0 0.5
1200	0.4167	69.494	208.264	4 58 24.9	1 39 27.9	0 0 0.4
1250	0.4000	66.707	199.943	4 35 1.2	1 31 40.1	0 0 0.3
1300	0.3846	64.136	192.261	4 14 16.3	1 24 45.2	0 0 0.2
1400	0.3571	59.547	178.539	3 39 14.6	1 13 4.7	0 0 0.2
1500	0.3333	55.572	166.644	3 10 59.2	1 3 39.6	0 0 0.1
1600	0.3125	52.095	156.233	2 47 51.5	0 55 57.1	0 0 0.1
1700	0.2941	49.028	147.047	2 28 41.5	0 49 33.8	0 0 0.0
1800	0.2778	46.303	138.880	2 12 37.7	0 44 12.5	0 0 0.0
2000	0.2500	41.671	124.995	1 47 25.8	0 35 48.6	0 0 0.0
2200	0.2273	37.881	113.633	1 28 47.1	0 29 35.7	0 0 0.0
2500	0.2000	33.335	99.998	1 8 45.3	0 22 55.1	0 0 0.0
3000	0.1667	27.778	83.333	0 47 44.8	0 15 54.9	0 0 0.0
3500	0.1429	23.810	71.428	0 35 4.7	0 11 41.6	0 0 0.0

K = 0.137 509 87"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 550 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
1050	0.5238	96.204	287.854	7 51 37.1	2 37 10.9	0 0 1.5
1100	0.5000	91.803	274.809	7 9 43.1	2 23 13.2	0 0 1.1
1150	0.4783	87.791	262.891	6 33 9.8	2 11 2.4	0 0 0.9

1200	0.4583	252.083	251.805	8.819	125.995	2.206	168.153
1250	0.4400	242.000	241.773	7.803	120.962	1.951	161.413
1300	0.4231	232.692	232.506	6.938	116.315	1.735	155.193
1400	0.3929	216.071	215.943	5.556	108.014	1.389	144.093
1500	0.3667	201.667	201.576	4.517	100.818	1.130	134.476
1600	0.3438	189.063	188.997	3.722	94.520	0.931	126.065
1700	0.3235	177.941	177.892	3.104	88.962	0.776	118.644
1800	0.3056	168.056	168.019	2.615	84.022	0.654	112.050
2000	0.2750	151.250	151.228	1.906	75.621	0.477	100.841
2200	0.2500	137.500	137.487	1.432	68.748	0.358	91.671
2500	0.2200	121.000	120.993	0.976	60.499	0.244	80.669
3000	0.1833	100.833	100.830	0.565	50.416	0.141	67.223
3500	0.1571	86.429	86.427	0.356	43.214	0.089	57.620
4000	0.1375	75.625	75.624	0.238	37.812	0.060	50.417

K =0.001 894 08'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 600 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
1200	0.5000	300.000	299.532	12.486	149.922	3.123	200.164
1250	0.4800	288.000	287.618	11.049	143.936	2.763	192.134
1300	0.4615	276.923	276.609	9.824	138.409	2.457	184.725
1400	0.4286	257.143	256.926	7.867	128.535	1.967	171.504
1500	0.4000	240.000	239.846	6.397	119.974	1.600	160.054
1600	0.3750	225.000	224.889	5.272	112.481	1.318	150.039
1700	0.3529	211.765	211.683	4.395	105.869	1.099	141.205
1800	0.3333	200.000	199.938	3.703	99.990	0.926	133.355
2000	0.3000	180.000	179.964	2.700	89.994	0.675	120.013
2200	0.2727	163.636	163.614	2.028	81.814	0.507	109.099
2500	0.2400	144.000	143.988	1.382	71.998	0.346	96.004
3000	0.2000	120.000	119.995	0.800	59.999	0.200	80.002
3500	0.1714	102.857	102.855	0.504	51.428	0.126	68.572
4000	0.1500	90.000	89.999	0.337	45.000	0.084	60.000
4500	0.1333	80.000	79.999	0.237	40.000	0.059	53.334

K =0.001 591 55'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 650 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
1500	0.4333	281.667	281.418	8.810	140.792	2.203	187.865
1600	0.4063	264.063	263.883	7.260	132.001	1.815	176.104
1700	0.3824	248.529	248.397	6.053	124.243	1.514	165.733
1800	0.3611	234.722	234.622	5.100	117.344	1.275	156.516
2000	0.3250	211.250	211.191	3.718	105.615	0.930	140.854
2200	0.2955	192.045	192.009	2.794	96.017	0.698	128.043
2500	0.2600	169.000	168.981	1.904	84.497	0.476	112.673
3000	0.2167	140.833	140.826	1.102	70.415	0.275	93.892
3500	0.1857	120.714	120.711	0.694	60.357	0.173	80.477
4000	0.1625	105.625	105.623	0.465	52.812	0.116	70.417
4500	0.1444	93.889	93.888	0.326	46.944	0.082	62.593

K =0.001 356 11'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 700 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
1700	0.4118	288.235	288.028	8.141	144.083	2.036	192.229
1800	0.3889	272.222	272.067	6.859	136.085	1.715	181.536
2000	0.3500	245.000	244.908	5.001	122.485	1.250	163.365
2200	0.3182	222.727	222.676	3.757	111.354	0.939	148.505
2500	0.2800	196.000	195.976	2.561	97.995	0.640	130.677

1200	0.4583	84.116	251.960	6 1 5.0	2 0 21.0	0 0	0.7
1250	0.4400	80.739	241.899	5 32 46.4	1 50 54.9	0 0	0.5
1300	0.4231	77.623	232.609	5 7 40.1	1 42 32.9	0 0	0.4
1400	0.3929	72.065	216.014	4 25 17.1	1 28 25.4	0 0	0.3
1500	0.3667	67.251	201.626	3 51 5.6	1 17 1.7	0 0	0.2
1600	0.3438	63.042	189.033	3 23 6.5	1 7 42.1	0 0	0.1
1700	0.3235	59.329	177.920	2 59 55.0	0 59 58.3	0 0	0.1
1800	0.3056	56.030	168.039	2 40 28.9	0 53 29.6	0 0	0.1
2000	0.2750	50.424	151.240	2 9 59.4	0 43 19.8	0 0	0.0
2200	0.2500	45.838	137.494	1 47 25.8	0 35 48.6	0 0	0.0
2500	0.2200	40.336	120.997	1 23 11.6	0 27 43.9	0 0	0.0
3000	0.1833	33.612	100.832	0 57 46.4	0 19 15.5	0 0	0.0
3500	0.1571	28.810	86.428	0 42 26.7	0 14 8.9	0 0	0.0
4000	0.1375	25.209	75.625	0 32 29.8	0 10 49.9	0 0	0.0

K = 0.113 644 52"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 600 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
1200	0.5000	100.149	299.792	7 9 43.1	2 23 13.2	0 0 1.1
1250	0.4800	96.122	287.830	6 36 1.7	2 11 59.7	0 0 0.9
1300	0.4615	92.408	276.783	6 6 9.0	2 2 2.3	0 0 0.7
1400	0.4286	85.783	257.046	5 15 42.7	1 45 13.8	0 0 0.5
1500	0.4000	80.049	239.932	4 35 1.2	1 31 40.1	0 0 0.3
1600	0.3750	75.035	224.951	4 1 43.0	1 20 34.1	0 0 0.2
1700	0.3529	70.614	211.728	3 34 6.9	1 11 22.2	0 0 0.1
1800	0.3333	66.686	199.973	3 10 59.2	1 3 39.6	0 0 0.1
2000	0.3000	60.012	179.984	2 34 41.9	0 51 33.9	0 0 0.1
2200	0.2727	54.553	163.628	2 7 51.0	0 42 37.0	0 0 0.0
2500	0.2400	48.004	143.995	1 39 0.4	0 33 0.1	0 0 0.0
3000	0.2000	40.002	119.998	1 8 45.3	0 22 55.1	0 0 0.0
3500	0.1714	34.286	102.856	0 50 30.8	0 16 50.3	0 0 0.0
4000	0.1500	30.060	89.999	0 38 40.5	0 12 53.5	0 0 0.0
4500	0.1333	26.667	80.000	0 30 33.5	0 10 11.2	0 0 0.0

K = 0.095 492 97"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 650 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
1500	0.4333	93.968	281.556	5 22 46.0	1 47 34.8	0 0 0.5
1600	0.4063	88.078	263.983	4 43 40.9	1 34 33.3	0 0 0.3
1700	0.3824	82.885	248.470	4 11 17.3	1 23 45.5	0 0 0.2
1800	0.3611	78.272	234.678	3 44 8.6	1 14 42.7	0 0 0.2
2000	0.3250	70.435	211.224	3 1 33.4	1 0 31.0	0 0 0.1
2200	0.2955	64.027	192.029	2 30 2.8	0 50 0.9	0 0 0.0
2500	0.2600	56.339	168.991	1 56 11.8	0 38 43.4	0 0 0.0
3000	0.2167	46.947	140.830	1 20 41.5	0 26 53.8	0 0 0.0
3500	0.1857	40.239	120.713	0 59 17.0	0 19 45.7	0 0 0.0
4000	0.1625	35.209	105.624	0 45 23.3	0 15 7.8	0 0 0.0
4500	0.1444	31.297	93.888	0 35 51.8	0 11 57.3	0 0 0.0

K = 0.081 366 79"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 700 M

R	A/R	ST	LC	θ	Φ	C
M		M			DEG MNT SEC	
1700	0.4118	96.144	288.143	4 51 26.1	1 37 8.4	0 0 0.4
1800	0.3889	90.790	272.153	4 19 57.2	1 26 38.8	0 0 0.3
2000	0.3500	81.696	244.959	3 30 33.7	1 10 11.1	0 0 0.1
2200	0.3182	74.261	222.702	2 54 1.1	0 58 0.3	0 0 0.1
2500	0.2800	65.343	195.987	2 14 45.6	0 44 55.2	0 0 0.0

3000	0.2333	163.333	163.321	1.482	81.665	0.371	108.893
3500	0.2000	140.000	139.994	0.933	69.999	0.233	93.335
4000	0.1750	122.500	122.497	0.625	61.250	0.156	81.668
4500	0.1556	108.889	108.887	0.439	54.444	0.110	72.593
5000	0.1400	98.000	97.999	0.320	49.000	0.080	65.334

K =0.001 169 30'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 750 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
2000	0.3750	281.250	281.111	6.589	140.602	1.648	187.549
2200	0.3409	255.682	255.595	4.951	127.827	1.238	170.485
2500	0.3000	225.000	224.954	3.375	112.492	0.844	150.016
3000	0.2500	187.500	187.482	1.953	93.747	0.488	125.006
3500	0.2143	160.714	160.706	1.230	80.356	0.307	107.146
4000	0.1875	140.625	140.621	0.824	70.312	0.206	93.752
4500	0.1667	125.000	124.998	0.579	62.500	0.145	83.334
5000	0.1500	112.500	112.499	0.422	56.250	0.105	75.000

K =0.001 018 59'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 800 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
2200	0.3636	290.909	290.782	6.409	145.433	1.603	193.984
2500	0.3200	256.000	255.933	4.368	127.989	1.092	170.690
3000	0.2667	213.333	213.306	2.528	106.662	0.632	142.232
3500	0.2286	182.857	182.845	1.592	91.426	0.398	121.909
4000	0.2000	160.000	159.994	1.067	79.999	0.267	106.669
4500	0.1778	142.222	142.219	0.749	71.111	0.187	94.816
5000	0.1600	128.000	127.998	0.546	64.000	0.137	85.334
6000	0.1333	106.667	106.666	0.316	53.333	0.079	71.111

K =0.000 895 25'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FUNCTIONS DE LA SPIRALE NORMALISEE

A = 900 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
3000	0.3000	270.000	269.945	4.049	134.991	1.01	180.019
3500	0.2571	231.429	231.403	2.550	115.710	0.638	154.295
4000	0.2250	202.500	202.487	1.709	101.248	0.427	135.005
4500	0.2000	180.000	179.993	1.200	89.999	0.300	120.003
5000	0.1800	162.000	161.996	0.875	80.999	0.219	108.001
6000	0.1500	135.000	134.998	0.506	67.500	0.127	90.001

K =0.000 707 36'

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1000 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
3500	0.2857	285.714	285.667	3.887	142.849	0.972	190.493
4000	0.2500	250.000	249.976	2.604	124.996	0.651	166.675
4500	0.2222	222.222	222.209	1.829	111.109	0.457	148.153
5000	0.2000	200.000	199.992	1.333	99.999	0.333	133.336
6000	0.1667	166.667	166.663	0.772	83.333	0.193	111.112
7000	0.1429	142.857	142.856	0.486	71.428	0.121	95.239

K =0.000 572 96'

3000	0.2333	54.448	163.328	1 33 35.0	0 31 11.7	0	0	0.0
3500	0.2000	46.668	139.998	1 8 45.3	0 22 55.1	0	0	0.0
4000	0.1750	40.834	122.499	0 52 38.4	0 17 32.8	0	0	0.0
4500	0.1556	36.297	108.888	0 41 35.5	0 13 51.8	0	0	0.0
5000	0.1400	32.667	98.000	0 33 41.4	0 11 13.8	0	0	0.0

K = 0.070 158 10"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 750 M

R	A/R	ST	LC	θ	ϕ			C
M		M			DEG	MNT	SEC	
2000	0.3750	93.794	281.188	4 1 43.0	1	20	34.1	0 0 0.2
2200	0.3409	85.255	255.643	3 19 45.9	1	6	35.2	0 0 0.1
2500	0.3000	75.014	224.980	2 34 41.9	0	51	33.9	0 0 0.1
3000	0.2500	62.506	187.492	1 47 25.8	0	35	48.6	0 0 0.0
3500	0.2143	53.574	160.711	1 18 55.7	0	26	18.6	0 0 0.0
4000	0.1875	46.876	140.623	1 0 25.7	0	20	8.6	0 0 0.0
4500	0.1667	41.667	124.999	0 47 44.8	0	15	54.9	0 0 0.0
5000	0.1500	37.500	112.499	0 38 40.5	0	12	53.5	0 0 0.0

K = 0.061 115 50"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 800 M

R	A/R	ST	LC	θ	ϕ			C
M		M			DEG	MNT	SEC	
2200	0.3636	97.010	290.853	3 47 17.3	1	15	45.6	0 0 0.2
2500	0.3200	85.355	255.970	2 56 0.8	0	58	40.2	0 0 0.1
3000	0.2667	71.120	213.321	2 2 13.9	0	40	44.6	0 0 0.0
3500	0.2286	60.956	182.852	1 29 48.1	0	29	56.0	0 0 0.0
4000	0.2000	53.335	159.997	1 8 45.3	0	22	55.1	0 0 0.0
4500	0.1778	47.409	142.221	0 54 19.5	0	18	6.5	0 0 0.0
5000	0.1600	42.667	127.999	0 44 0.2	0	14	40.1	0 0 0.0
6000	0.1333	35.556	106.666	0 30 33.5	0	10	11.2	0 0 0.0

K = 0.053 714 79"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A = 900 M

R	A/R	ST	LC	θ	ϕ			C
M		M			DEG	MNT	SEC	
3000	0.3000	90.017	269.976	2 34 41.9	0	51	33.9	0 0 0.1
3500	0.2571	77.151	231.417	1 53 39.4	0	37	53.1	0 0 0.0
4000	0.2250	67.504	202.494	1 27 1.1	0	29	0.3	0 0 0.0
4500	0.2000	60.002	179.997	1 8 45.3	0	22	55.1	0 0 0.0
5000	0.1800	54.001	161.998	0 55 41.5	0	18	33.8	0 0 0.0
6000	0.1500	45.001	134.999	0 38 40.5	0	12	53.5	0 0 0.0

K = 0.042 441 32"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1000 M

R	A/R	ST	LC	θ	ϕ			C
M		M			DEG	MNT	SEC	
3500	0.2857	95.253	285.693	2 20 19.0	0	46	46.3	0 0 0.0
4000	0.2500	83.341	249.989	1 47 25.8	0	35	48.6	0 0 0.0
4500	0.2222	74.078	222.216	1 24 53.0	0	28	17.6	0 0 0.0
5000	0.2000	66.669	199.996	1 8 45.3	0	22	55.1	0 0 0.0
6000	0.1667	55.557	166.665	0 47 44.8	0	15	54.9	0 0 0.0
7000	0.1429	47.620	142.856	0 35 4.7	0	11	41.6	0 0 0.0

K = 0.034 377 47"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1100 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
4500	0.2444	268.889	268.865	2.678	134.440	0.669	179.268
5000	0.2200	242.000	241.986	1.952	120.998	0.488	161.338
6000	0.1833	201.667	201.661	1.130	100.832	0.282	134.446
7000	0.1571	172.857	172.855	0.711	86.428	0.178	115.239
8000	0.1375	151.250	151.249	0.477	75.625	0.119	100.834

K =0.000 473 52°

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1200 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
5000	0.2400	288.000	287.976	2.765	143.996	0.691	192.008
6000	0.2000	240.000	239.990	1.600	119.998	0.400	160.003
7000	0.1714	205.714	205.710	1.008	102.856	0.252	137.144
8000	0.1500	180.000	179.998	0.675	90.000	0.169	120.001
9000	0.1333	160.000	159.999	0.474	80.000	0.119	106.667

K =0.000 397 89°

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1300 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
6000	0.2167	281.667	281.651	2.204	140.831	0.551	187.783
7000	0.1857	241.429	241.421	1.388	120.713	0.347	160.955
8000	0.1625	211.250	211.246	0.930	105.624	0.232	140.835
9000	0.1444	187.778	187.776	0.653	93.889	0.163	125.186

K =0.000 339 03°

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1400 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
7 000	0.2000	280.000	279.989	1.867	139.998	0.467	186.671
8 000	0.1750	245.000	244.994	1.250	122.499	0.313	163.335
9 000	0.1556	217.778	217.775	0.878	108.888	0.220	145.186
10 000	0.1400	196.000	195.998	0.640	98.000	0.160	130.667

K =0.000 292 33°

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1500 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
8 000	0.1875	281.250	281.241	1.648	140.624	0.412	187.503
9 000	0.1667	250.000	249.995	1.157	124.999	0.289	166.668
10 000	0.1500	225.000	224.997	0.844	112.500	0.211	150.001

K =0.000 254 65°

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1600 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
5 000	0.1778	94.817	284.441	0 54 19.5	0 18 6.5	0 0 0.0
10 000	0.1600	85.335	255.998	0 44 0.2	0 14 40.1	0 0 0.0

K = 0.013 428 70"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1700 M

R	A/R	ST	LC	θ	ϕ	C
M		M		DEG MNT SEC		
10 000	0.1700	96.335	288.997	0 49 40.5	0 16 33.5	0 0 0.0

K = 0.011 895 32"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1100 M

R	A/R	ST	LC	θ	φ	C
M		M		DEG MNT SEC		
4500	0.2444	89.637	268.878	1 42 42.5	0 34 14.1	0 0 0.0
5000	0.2200	80.671	241.994	1 23 11.6	0 27 43.9	0 0 0.0
6000	0.1833	67.224	201.664	0 57 46.4	0 19 15.5	0 0 0.0
7000	0.1571	57.620	172.856	0 42 26.7	0 14 8.9	0 0 0.0
8000	0.1375	50.417	151.249	0 32 29.8	0 10 49.9	0 0 0.0

K = 0.028 411 13"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1200 M

R	A/R	ST	LC	θ	φ	C
M		M		DEG MNT SEC		
5000	0.2400	96.008	287.989	1 39 0.4	0 33 0.1	0 0 0.0
6000	0.2000	80.003	239.996	1 8 45.3	0 22 55.1	0 0 0.0
7000	0.1714	68.573	205.712	0 50 30.8	0 16 50.3	0 0 0.0
8000	0.1500	60.001	179.999	0 38 40.5	0 12 53.5	0 0 0.0
9000	0.1333	53.334	159.999	0 30 33.5	0 10 11.2	0 0 0.0

K = 0.023 873 24"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1300 M

R	A/R	ST	LC	θ	φ	C
M		M		DEG MNT SEC		
6000	0.2167	93.894	281.660	1 20 41.5	0 26 53.8	0 0 0.0
7000	0.1857	80.478	241.425	0 59 17.0	0 19 45.7	0 0 0.0
8000	0.1625	70.418	211.248	0 45 23.3	0 15 7.8	0 0 0.0
9000	0.1444	62.593	187.777	0 35 51.8	0 11 57.3	0 0 0.0

K = 0.020 341 70"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1400 M

R	A/R	ST	LC	θ	φ	C
M		M		DEG MNT SEC		
7 000	0.2000	93.337	279.995	1 8 45.3	0 22 55.1	0 0 0.0
8 000	0.1750	81.668	244.997	0 52 38.4	0 17 32.8	0 0 0.0
9 000	0.1556	72.594	217.776	0 41 35.5	0 13 51.8	0 0 0.0
10 000	0.1400	65.334	195.999	0 33 41.4	0 11 12.0	0 0 0.0

K = 0.017 539 52"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1500 M

R	A/R	ST	LC	θ	φ	C
M		M		DEG MNT SEC		
8 000	0.1875	93.753	281.246	1 0 25.7	0 20 8.6	0 0 0.0
9 000	0.1667	83.335	249.998	0 47 44.8	0 15 54.9	0 0 0.0
10 000	0.1500	75.001	224.999	0 38 40.5	0 12 53.5	0 0 0.0

K = 0.015 278 87"

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1600 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
9 000	0.1778	284.444	284.437	1.498	142.221	0.375	189.632
10 000	0.1600	256.000	255.996	1.092	127.999	0.273	170.668
			K =0.000 223 81'				

TABLE IV-FUNCTIONS OF THE STANDARD SPIRAL
TABLE IV-FONCTIONS DE LA SPIRALE NORMALISEE

A =1700 M

R	A/R	LS	X	Y	Q	P	LT
M				M			
10 000	0.1700	289.000	288.994	1.392	144.499	0.348	192.669
			K =0.000 198 26'				

b) SIMPLE SPIRAL
(CLOTHOID)

b) SPIRALE NATURELLE
(CLOTHOIDE)

TABLE V_0 -VALUES OF DESIGN ELEMENTS RELATED TO DESIGN SPEEDS AND CIRC. CURVE RADII
TABLE V_0 -VALEURS DES ELEMENTS DE DESIGN FONC. DE LA VITESSE ET DU RAYON DE COURBE CIRC.

V (KM/H)	40	50	60	70	80
R MIN (M)	55	90	130	190	250
A MIN (M)	45	65	85	110	130

$e_{max} = 0.06$

R (M)	E (M/M) ; A (M) FOR 2-LANE ; A (M) FOR 4-LANE E (M/M) ; A (M) POUR 2-VOIES ; A (M) POUR 4-VOIES														
50															
55	0.060	45	59												
60	0.059	45	61												
65	0.057	45	63												
70	0.056	46	65												
75	0.055	47	66												
80	0.054	48	68												
85	0.052	49	69												
90	0.051	50	70	0.060	65	79									
95	0.050	51	72	0.059	65	80									
100	0.049	51	73	0.058	65	82									
105	0.048	52	74	0.057	65	83									
110	0.048	53	75	0.057	65	85									
115	0.047	54	76	0.056	65	86									
120	0.046	54	77	0.055	65	87									
125	0.045	55	78	0.054	65	88									
130	0.044	55	78	0.053	65	90	0.060	85	99						
140	0.043	57	80	0.052	65	92	0.059	85	101						
150	0.041	58	81	0.051	66	94	0.058	85	104						
160	0.040	60	83	0.049	68	96	0.056	85	106						
170	0.039	61	84	0.048	69	97	0.055	85	108						
180	0.038	63	85	0.047	71	99	0.054	85	110						
190	0.037	65	86	0.046	73	100	0.053	85	112	0.060	110	125			
200	0.035	67	87	0.045	75	102	0.052	85	114	0.059	110	127			
210	0.035	68	88	0.044	76	103	0.051	85	116	0.058	110	129			
220	0.034	70	89	0.043	78	104	0.050	86	118	0.057	110	131			
230	0.033	71	90	0.042	80	106	0.050	88	119	0.056	110	133			
240	0.032	73	91	0.041	82	107	0.049	89	121	0.056	110	135			
250	0.031	75	91	0.040	83	108	0.048	91	122	0.055	110	137	0.060	130	149
280	0.029	79	93	0.038	88	111	0.046	97	126	0.053	110	142	0.058	130	154
300	0.028	82	94	0.037	91	113	0.044	100	129	0.051	110	145	0.057	130	158
320	0.027	84	95	0.035	94	114	0.043	103	131	0.050	112	148	0.055	130	161
340	0.025	87	96	0.034	97	116	0.042	106	133	0.049	115	150	0.054	130	165
350	0.025	88	97	0.033	99	116	0.041	108	134	0.048	117	151	0.054	130	166
380	0.024	92	98	0.032	103	118	0.039	113	137	0.046	122	155	0.052	130	170
400	0.023	94	99	0.031	105	119	0.038	115	138	0.045	125	157	0.051	133	173
420	0.022	97	99	0.030	108	120	0.037	118	140	0.044	128	159	0.050	137	176
450	0.021	100	100	0.029	112	122	0.036	122	142	0.043	132	162	0.048	141	179
475	0 020	103	103	0.028	115	123	0.035	126	143	0.042	136	164	0.047	145	182
500	RC	105	105	0.027	118	124	0.034	129	145	0.040	139	166	0.046	149	184
525		108	108	0.026	121	125	0.033	132	146	0.039	143	168	0.045	153	187
550		111	111	0.025	124	126	0.032	135	148	0.038	146	170	0.044	156	189
575		113	113	0.024	126	127	0.031	138	149	0.038	150	172	0.043	160	191
600		115	115	0.023	129	129	0.030	141	150	0.037	153	173	0.042	163	193
650		120	120	0.022	134	134	0.029	147	152	0.035	159	176	0.041	170	197
700	NC			0.021	139	139	0.027	153	154	0.033	165	179	0.039	176	201
750				RC	144	144	0.026	158	158	0.032	171	181	0.038	183	204
800					149	149	0.025	163	163	0.031	176	183	0.036	189	207
850					154	154	0.024	168	168	0.030	182	185	0.035	194	209
900					158	158	0.023	173	173	0.029	187	187	0.034	200	212
950					162	162	0.022	178	178	0.027	192	192	0.033	205	214
1000					167	167	0.021	183	183	0.027	197	197	0.032	211	216
1050					171	171	0.020	187	187	0.026	202	202	0.031	216	218
1100				NC			RC	191	191	0.025	207	207	0.030	221	221
1150								196	196	0.024	211	211	0.029	226	226
1200								200	200	0.023	216	216	0.028	231	231
1250								204	204	0.023	220	220	0.027	236	236
1300								208	208	0.022	225	225	0.027	240	240
1400								216	216	0.021	233	233	0.025	249	249
1500								224	224	RC	242	242	0.024	258	258
1600							NC				249	249	0.023	267	267
1700											257	257	0.022	275	275
1800											265	265	0.021	283	283
2000											279	279	RC	298	298
2200										NC				313	313
2500														333	333
3000													NC		
3500															
4000															
4500															
5000															
6000															
7000															
8000															
9000															
10 000	NC			NC			NC			NC			NC		

TABLE V_d – VALUES OF DESIGN ELEMENTS RELATED TO DESIGN SPEEDS AND CIRC. CURVE RADII

TABLE V_d – VALEURS DES ELEMENTS DE DESIGN FONC. DE LA VITESSE ET DU RAYON DE COURBE CIRC.

90	100	110	120	130	V (KM/H)
340	420	525	650	800	R MIN (M)
160	190	220	250	280	A MIN (M)

E (M/M) ; A (M) FOR 2-LANE ; A (M) FOR 4-LANE — R (M)
E (M/M) ; A (M) POUR 2-VOIES ; A (M) POUR 4-VOIES

V - ASSUMED DESIGN SPEED
R - RADIUS OF CURVE
A - SPIRAL PARAMETER (MINIMUM VALUES)
e - RATE OF SUPERELEVATION
NC - NORMAL CROWN SECTION
RC - REMOVE CROWN SECTION

BELOW THE HEAVY LINE SPIRALS ARE DESIRABLE BUT MIGHT BE OMITTED UNDER RESTRICTED GEOMETRIC SITUATIONS.

- The indicated parameters are minimum values governed by comfort, superelevation and aesthetic criteria. (R.T.A.C. Manual provides rounded values)
- Wherever possible values in excess of those indicated should be selected such that the ratio A:R is a rational number
- Spiral length is calculated by the equation $L_s = A^2/R$, this value should also preferably be a rational number
- Indicated parameter for 4-lane highways applies to 4-lane undivided with ℄ profile control and for 4-lane divided with median edge of pavement as profile control
- Caution should be exercised when utilizing large parameters on flat grades that may produce large pavement areas with little positive drainage

NOTE: Voir page 249 pour la version française du texte ci-dessus.

E (M/M) ; A (M) FOR 2-LANE			E (M/M) ; A (M) FOR 4-LANE									R (M)
0.060	160	180										340
0.059	160	182										360
0.058	160	187										380
0.057	160	190										400
0.056	160	193	0.060	190	207							420
0.054	160	198	0.059	190	212							450
0.053	160	201	0.058	190	216							475
0.052	160	204	0.057	190	220							500
0.051	167	207	0.056	190	223	0.060	220	240				525
0.050	166	210	0.055	190	226	0.059	220	244				550
0.049	170	212	0.054	190	229	0.058	220	247				575
0.048	173	215	0.053	190	232	0.057	220	251				600
0.046	180	219	0.051	190	238	0.056	220	257	0.060	250	277	650
0.045	187	224	0.049	197	243	0.054	220	263	0.058	250	284	700
0.043	194	228	0.048	204	248	0.053	220	269	0.057	250	290	750
0.042	200	231	0.047	211	252	0.051	221	274	0.056	250	296	0.060	280	316	800
0.041	206	234	0.045	217	256	0.050	224	278	0.054	250	302	0.059	280	322	850
0.039	212	238	0.044	224	260	0.049	235	283	0.053	250	307	0.057	280	328	900
0.038	218	240	0.043	230	263	0.047	241	287	0.052	252	312	0.056	280	334	950
0.037	224	243	0.042	236	266	0.046	247	291	0.051	258	316	0.055	280	339	1000
0.036	229	245	0.041	242	269	0.045	253	294	0.050	265	320	0.054	280	343	1050
0.035	235	248	0.040	247	272	0.044	259	298	0.048	271	324	0.053	282	348	1100
0.034	240	250	0.039	253	275	0.043	265	301	0.047	277	328	0.052	288	352	1150
0.033	245	252	0.038	258	277	0.042	271	304	0.046	283	332	0.051	294	356	1200
0.032	250	254	0.037	264	280	0.041	276	307	0.045	289	335	0.050	300	360	1250
0.032	255	256	0.036	269	282	0.040	282	310	0.045	294	338	0.049	306	364	1300
0.030	265	265	0.034	279	286	0.039	292	315	0.043	306	344	0.047	319	371	1400
0.029	274	274	0.033	289	290	0.037	303	319	0.041	316	350	0.046	329	377	1500
0.027	283	283	0.032	299	298	0.036	313	324	0.040	327	355	0.044	340	383	1600
0.026	292	292	0.030	307	307	0.034	322	327	0.039	337	361	0.043	350	389	1700
0.025	300	300	0.029	316	316	0.033	332	332	0.037	346	364	0.041	361	394	1800
0.023	316	316	0.027	333	333	0.031	350	350	0.035	365	372	0.039	380	403	2000
0.022	332	332	0.025	350	350	0.029	367	367	0.033	383	383	0.037	399	411	2200
RC	354	354	0.023	373	373	0.027	391	391	0.030	408	408	0.034	425	425	2500
	387	387	0.020	408	408	0.023	425	428	0.027	447	447	0.030	465	465	3000
NC			RC	441	441	0.021	462	462	0.024	483	483	0.027	503	503	3500
				471	471	RC	494	494	0.022	516	516	0.025	537	537	4000
			NC				524	524	RC	548	548	0.023	570	570	4500
						NC	553	553		577	577	0.021	601	601	5000
									NC	632	632	RC	658	658	6000
												NC	711	711	7000
															8000
															9000
NC			NC			NC			NC			NC			10 000

TABLE V_b-VALUES OF DESIGN ELEMENTS RELATED TO DESIGN SPEEDS AND CIRC. CURVE RADII
TABLE V_b-VALEURS DES ELEMENTS DE DESIGN FONC. DE LA VITESSE ET DU RAYON DE COURBE CIRC.

V (KM/H)	40	50	60	70	80
R MIN (M)	50	80	120	170	230
A MIN (M)	45	65	85	110	130

$e_{max} = 0.08$

R (M)	E (M/M) ; A (M) FOR 2-LANE ; A (M) FOR 4-LANE E (M/M) ; A (M) POUR 2-VOIES ; A (M) POUR 4-VOIES														
50	0.080	46	65												
55	0.078	48	68												
60	0.075	49	70												
65	0.073	50	71												
70	0.071	52	73												
75	0.069	53	74												
80	0.067	54	76	0.080	65	86									
85	0.065	55	77	0.078	65	88									
90	0.064	55	78	0.077	65	89									
95	0.062	56	80	0.075	65	91									
100	0.061	57	81	0.074	65	92									
105	0.059	58	82	0.073	66	94									
110	0.058	58	83	0.071	67	95									
115	0.057	59	84	0.070	68	96									
120	0.055	60	84	0.068	69	98	0.080	85	110						
125	0.054	60	85	0.068	70	99	0.079	85	111						
130	0.053	61	86	0.066	71	100	0.078	85	112						
140	0.051	62	87	0.064	72	102	0.076	85	115						
150	0.049	63	89	0.062	73	104	0.074	85	118						
160	0.047	64	90	0.060	75	106	0.072	85	120						
170	0.045	64	91	0.059	76	107	0.070	86	122	0.080	110	136			
180	0.044	65	92	0.057	77	109	0.068	88	124	0.078	110	139			
190	0.042	66	93	0.055	78	110	0.067	89	126	0.077	110	141			
200	0.041	67	94	0.054	79	111	0.065	90	128	0.075	110	143			
210	0.040	68	94	0.052	80	113	0.064	91	129	0.074	110	145			
220	0.038	70	95	0.051	80	114	0.062	93	131	0.072	110	147			
230	0.037	71	96	0.050	81	115	0.061	94	132	0.071	110	149	0.080	130	164
240	0.036	73	97	0.048	82	116	0.060	95	134	0.070	110	151	0.079	130	167
250	0.035	75	97	0.047	83	117	0.059	96	135	0.069	110	153	0.078	130	169
280	0.033	79	99	0.044	88	119	0.055	98	139	0.065	112	158	0.074	130	175
300	0.031	82	100	0.042	91	121	0.053	100	141	0.063	114	161	0.072	130	178
320	0.029	84	101	0.040	94	122	0.051	103	143	0.061	115	163	0.070	130	181
340	0.028	87	101	0.039	97	124	0.049	106	145	0.059	117	166	0.068	130	185
350	0.028	88	102	0.038	99	124	0.048	108	146	0.058	118	167	0.067	131	186
380	0.026	92	103	0.036	103	126	0.046	113	148	0.056	122	170	0.065	134	190
400	0.025	94	103	0.035	105	127	0.045	115	149	0.054	125	172	0.063	136	192
420	0.024	97	104	0.034	108	128	0.043	118	151	0.053	128	174	0.061	138	195
450	0.023	100	104	0.032	112	129	0.041	122	153	0.051	132	176	0.059	141	198
475	0.022	103	105	0.031	115	130	0.040	126	154	0.049	136	178	0.058	145	201
500	0.021	105	105	0.030	118	131	0.039	129	155	0.047	139	180	0.056	149	203
525	RC	108	108	0.028	121	131	0.037	132	156	0.046	143	182	0.054	153	205
550		111	111	0.027	124	132	0.036	135	158	0.045	146	183	0.053	156	207
575		113	113	0.027	126	133	0.035	138	159	0.043	150	185	0.052	160	209
600		115	115	0.026	129	133	0.034	141	160	0.042	153	186	0.050	163	211
650		120	120	0.024	134	134	0.032	147	161	0.040	159	188	0.048	170	214
700	NC			0.023	139	139	0.030	153	163	0.038	165	191	0.046	176	217
750				0.021	144	144	0.029	158	164	0.036	171	193	0.044	183	220
800				0.020	149	149	0.027	163	166	0.035	176	194	0.042	189	222
850				RC	154	154	0.026	168	168	0.033	182	196	0.040	194	224
900					158	158	0.025	173	173	0.032	187	198	0.039	200	226
950					162	162	0.024	178	178	0.031	192	199	0.037	205	228
1000					167	167	0.023	183	183	0.029	197	200	0.036	211	230
1050					171	171	0.022	187	187	0.028	202	202	0.035	216	232
1100				NC			0.021	191	191	0.027	207	207	0.034	221	233
1150							0.020	196	196	0.026	211	211	0.033	226	234
1200							RC	200	200	0.026	216	216	0.031	231	236
1250								204	204	0.025	220	220	0.031	236	237
1300								208	208	0.024	225	225	0.030	240	240
1400								216	216	0.023	233	233	0.028	249	249
1500								224	224	0.021	242	242	0.027	258	258
1600							NC			0.020	249	249	0.025	267	267
1700										RC	257	257	0.024	275	275
1800											265	265	0.023	283	283
2000											279	279	0.021	298	298
2200										NC			RC	313	313
2500														333	333
3000													NC		
3500															
4000															
4500															
5000															
6000															
7000															
8000															
9000															
10 000	NC			NC			NC			NC			NC		

TABLE VII – GREEK ALPHABET
TABLE VII – L'ALPHABET GREC

Letters Lettres	Name	Nom
A, α,	Alpha	Alpha
B, β,	Beta	Béta
Γ, γ,	Gamma	Gamma
Δ, δ,	Delta	Delta
E, ϵ,	Epsilon	Epsilon
Z, ζ,	Zeta	Zéta
H, η,	Eta	Eta
Θ, θ,	Theta	Theta
I, ι,	Iota	Iota
K, κ,	Kappa	Kappa
Λ, λ,	Lambda	Lambda
M, μ,	Mu	Mu
N, ν,	Nu	Nu
Ξ, ξ,	Xi	Xi
O, o,	Omicron	Omicron
Π, π,	Pi	Pi
P, ρ,	Rho	Rho
Σ, σ,	Sigma	Sigma
T, τ,	Tau	Tau
Υ, υ,	Upsilon	Upsilon
Φ, ϕ, φ,	Phi	Phi
X, χ,	Chi	Chi
Ψ, ψ,	Psi	Psi
Ω, ω,	Omega	Oméga

TABULATION

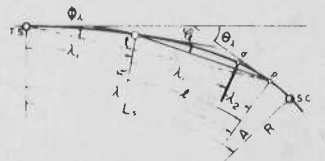
OF SPIRAL'S DEFLECTION ANGLES FOR LAYING OUT PURPOSES FROM SPIRAL TABLE III

TRANSIT AT THE				λ_1 = m $\Delta\lambda$ = m $\Delta\lambda/A$ =		SPIRAL DATA: A = m R = m	
	T. S.	P. O. S.	P. O. S.	P. O. S.			
λ							
λ_2							
ℓ							
λ/A							
$\frac{\sqrt{\lambda_1\lambda_2}}{A}$							
ℓ/A							
$\frac{1}{3}\theta_\lambda$							
$\frac{1}{3}\theta\sqrt{\lambda_1\lambda_2}$							
C_ℓ							
φ_ℓ							

$$\varphi_\ell = a\left[\frac{\lambda}{A}\right]^2 + a\frac{\lambda_1\lambda_2}{A^2} - C_\ell$$

$$= \left(\phi_\lambda + C_\lambda\right) + \left(\phi_{\sqrt{\lambda_1\lambda_2}} + C_{\sqrt{\lambda_1\lambda_2}}\right) - C_\ell$$

$$\boxed{\varphi_\ell = \frac{1}{3}\theta_\lambda + \frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}} - C_\ell}$$



with the relation $\lambda/A\left(=\frac{\lambda}{\sqrt{RL_s}}=\sqrt{\frac{\lambda}{r_\lambda}}=\frac{A}{r_\lambda}\right)$ as table III entry, read off $\underline{\frac{1}{3}\theta_\lambda}$ in the column '$\frac{1}{3}\theta$'

with the relation $\frac{\sqrt{\lambda_1\lambda_2}}{A}\left(=\sqrt{\frac{\lambda_1\lambda_2}{RL_s}}=\sqrt{\frac{\lambda_2}{r_{\lambda_1}}}=\sqrt{\frac{\lambda_1}{r_{\lambda_2}}}=\frac{A}{\sqrt{r_{\lambda_1}r_{\lambda_2}}}\right)$ as table III entry, read off $\underline{\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}}$ in same column

with the relation ℓ/A as table III entry, read off $\underline{C_\ell}$ in the column 'C'

NOTE: the second term, $\frac{1}{3}\theta_{\sqrt{\lambda_1\lambda_2}}\left(=\phi_{\sqrt{\lambda_1\lambda_2}}+C_{\sqrt{\lambda_1\lambda_2}}=a\frac{\lambda_1\lambda_2}{A^2}\right)$, might be either

<u>positive</u> if λ_2 is measured from its origin (point d) toward the S.C. point, or
<u>negative</u> if λ_2 is measured from its origin (point d) toward the T.S. point

$\Delta\lambda$ – is the constant interval between the consecutive points to be laid out

$a(=30/\pi)$ and all angles are expressed in degrees

With the transit at T.S. the angle φ_ℓ becomes ϕ_λ obtainable directly from Table III

TABULATION

OF CIRCULAR CURVE'S DEFLECTION ANGLES AND CHORD LENGTHS FOR LAYING OUT PURPOSES FROM CURVE TABLE I OR IA AND II

TRANSIT AT THE +	ℓ_i = m $\Delta\ell$ = m ℓ_e = m	C_i = m C = m C_e = m	GIVEN P.I STA + Δ = ° ' " R = m	CURVE Nº

POINT	STATION SIGHTED	CONSECUTIVE arc lenght	CONSECUTIVE defl angles	DEFL ∢ for STATION	DEFL ∢ for STATION to nearest second	Consecutive chord length	CURVE DATA
H.O.T	+						Az (or Bear) = ° ' "
	+						Δ = ° ' " R = m T = m L = m E = m T=R tan Δ/2 E=Rexsec Δ/2 L=RΔ π/180 } or read off Table II with Δ as table entry P.I STA + - T - B.C. + +L + E.C. + Defl ∢ = $\frac{90}{\pi}\frac{\ell}{R}$ = arc sin $\left(\frac{C}{2R}\right)$ Chord = 2R sin $\left(\frac{90}{\pi}\frac{\ell}{R}\right)$ } or read off Table I or IA with R as table entry

Subscript 'i' denotes initial
Subscript 'e' denotes end or last
ℓ - any arc length
$\Delta\ell$ - constant arc increament
C - chord length