

TUBESPACE STUDIES 01  
**DÔME DOUBLE NAPPE**  
STRUCTURE ICOSAÉDRALE / FRÉQUENCE 8  
FABIEN VIENNE / 2007

# DÔME DOUBLE NAPPE STRUCTURE ICOSAÉDRALE / FRÉQUENCE 8

## VERSION DE BASE

2007

## DOMES DOUBLE NAPPE - STRUCTURE ICOSAÉDRALE - FRÉQUENCE 8

### NAPPE EXTERIEURE

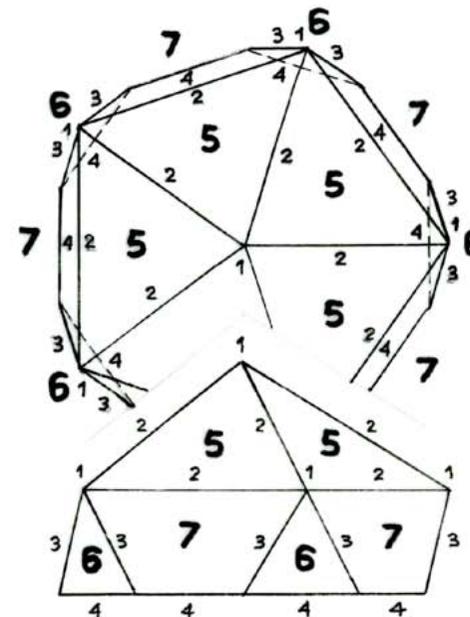
|         |     |     |
|---------|-----|-----|
| S 10 :  | 6   |     |
| S 6/6 : | 295 | 341 |
| S 4/6 : | 40  |     |
| L 30 :  |     | 335 |
| T 57 :  | 30  |     |
| T 63 :  | 90  |     |
| T 68 :  | 240 |     |
| T 74 :  | 370 |     |
| T 78 :  | 250 | 980 |

### NAPPE INTERIEURE

|         |     |     |
|---------|-----|-----|
| S 6/6 : | 640 |     |
| T 27 :  | 60  |     |
| T 30 :  | 150 |     |
| T 34 :  | 550 |     |
| T 38 :  | 180 | 940 |

### INTERMEDIAIRE

|         |     |      |
|---------|-----|------|
| S 6/6 : | 295 |      |
| S 3/6 : | 40  | 335  |
| T 36 :  | 30  |      |
| T 40 :  | 540 |      |
| T 44 :  | 990 |      |
| T 48 :  | 360 | 1920 |



### RECAPITULATION DES ELEMENTS PIECES TUBESPACE

- 1 SOMMETS ICOSA. 6
- 2 ARETES ENTIERES 10
- 3 ARETES 1/2 10
- 4 ARETES BASE 10
- 5 FACES ENTIERES 5
- 6 FACES 1/4 5
- 7 FACES 3/4 5

LES ELEMENTS SONT A CONSTRUIRE SEPAREMENT PAR NAPPES .  
ILS SONT ASSEMBLES ENTRE EUX PAR LES ARETES .  
LES SOMMETS ICOSA. ( 1 SEULE PIECE : S10 ) SONT PLACES EN DERNIER.

LONGUEUR TOTALE DES TUBES 186<sup>m</sup>, soit : L240x804 COMPRIS CHUTES(4%)

**5491** PIECES • Ø BASE : **1114** mm • POIDS **1581** gr EV. 16 10 2007

DOME DOUBLE NAPPE - STRUCTURE ICOSAEDRALE - FREQUENCE 8

NAPPE EXTERIEURE 74

57 A 67 63 E 73 68 I 78  
 B 75 T 78  
 C 81  
 F 81  
 S 82

L 84 78  
 D 85  
 O 86  
 Q 86  
 J 87  
 G 87  
 R 87

M 88  
 H 89  
 P 90  
 K 91  
 N 92

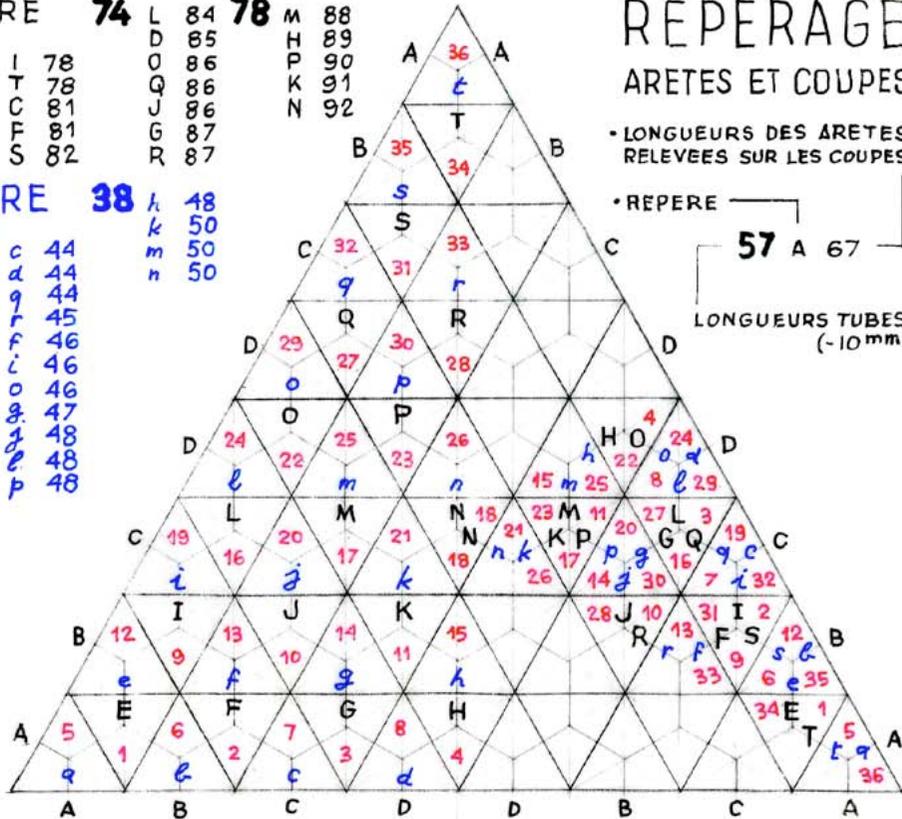
NAPPE INTERIEURE 38

27 t 37 30 s 41 34 c 44  
 r 39 e 42 d 44  
 e 44

h 48  
 k 50  
 m 50  
 n 50

INTERMEDIAIRE

36 36 46 27 57  
 40 34 50 29 57  
 35 50 33 57  
 32 52 8 57  
 1 53 10 58  
 5 53 11 58  
 12 54 13 58  
 33 54 22 58  
 2 55 20 59  
 6 55 25 59  
 9 55 14 59  
 44 7 55 28 59  
 31 55 15 60  
 3 56 17 60  
 4 56 21 60  
 24 56 23 60  
 16 57 26 60  
 19 57 18 61



REPERAGE

ARETES ET COUPES

• LONGUEURS DES ARETES RELEVÉES SUR LES COUPES

• REPERE 57 A 67

LONGUEURS TUBES (-10mm)

DOME DOUBLE NAPPE - STRUCTURE ICOSAEDRALE - FREQUENCE 8

SOMMETS ICOSA. NOMBRE: 6

NAPPE EXTERIEURE

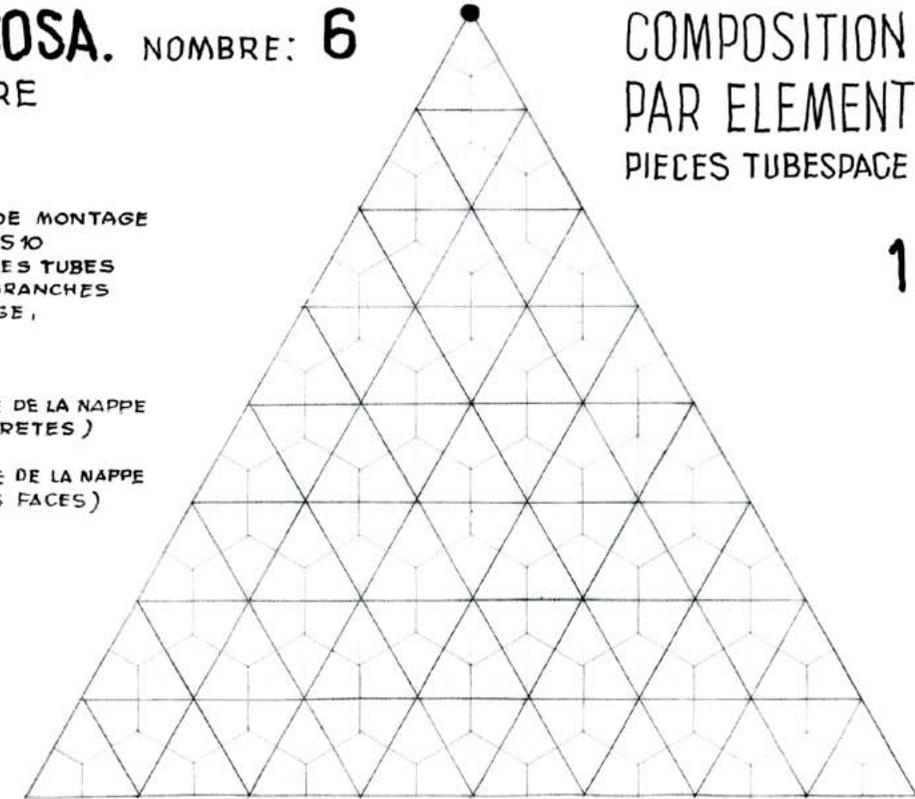
S 10 : 1

COMPOSITION PAR ELEMENT  
 PIECES TUBESPACE

NOTA:  
 PAR COMMODITE DE MONTAGE  
 CHAQUE SOMMET S10  
 PEUT COMPORTER LES TUBES  
 ATTACHES A SES BRANCHES  
 AVANT ASSEMBLAGE,

EN ALTERNANCE :

- 5, T57 (A DEPUIS DE LA NAPPE EXTERIEURE DES ARETES)
- 5, T36 (A DEPUIS DE LA NAPPE INTERMEDIAIRE DES FACES)



DOME DOUBLE NAPPE - STRUCTURE ICOSAEDRALE - FREQUENCE 8

**ARETES ENTIERES** NOMBRE: **10**

NAPPE EXTERIEURE

S 6/6 : 7

L 30 : 7

T 57 : 2

T 63 : 2

T 68 : 2

T 74 : 2

T 27 : 2

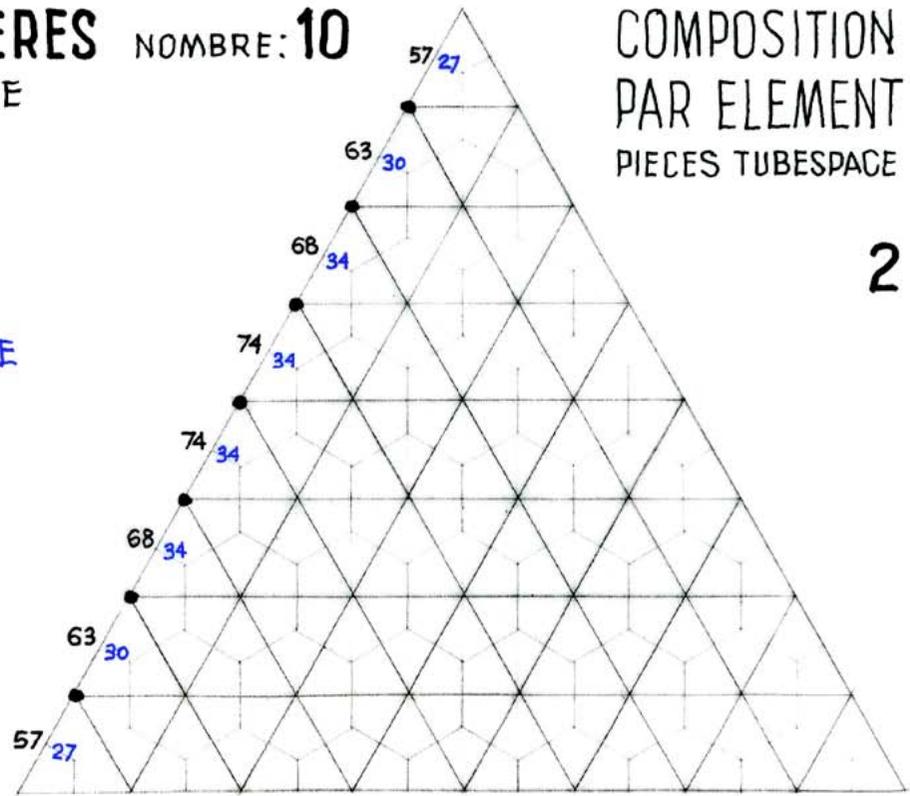
T 30 : 2

T 34 : 4

INTERMEDIAIRE

S 6/6 : 7

37



COMPOSITION  
PAR ELEMENT  
PIECES TUBESPACE

2

DOME DOUBLE NAPPE - STRUCTURE ICOSAEDRALE - FREQUENCE 8

**ARETES 1/2** NOMBRE: **10**

NAPPE EXTERIEURE

S 6/6 : 3

S 4/6 : 1

L 30 : 4

T 57 : 1

T 63 : 1

T 68 : 1

T 74 : 1

T 27 : 1

T 30 : 1

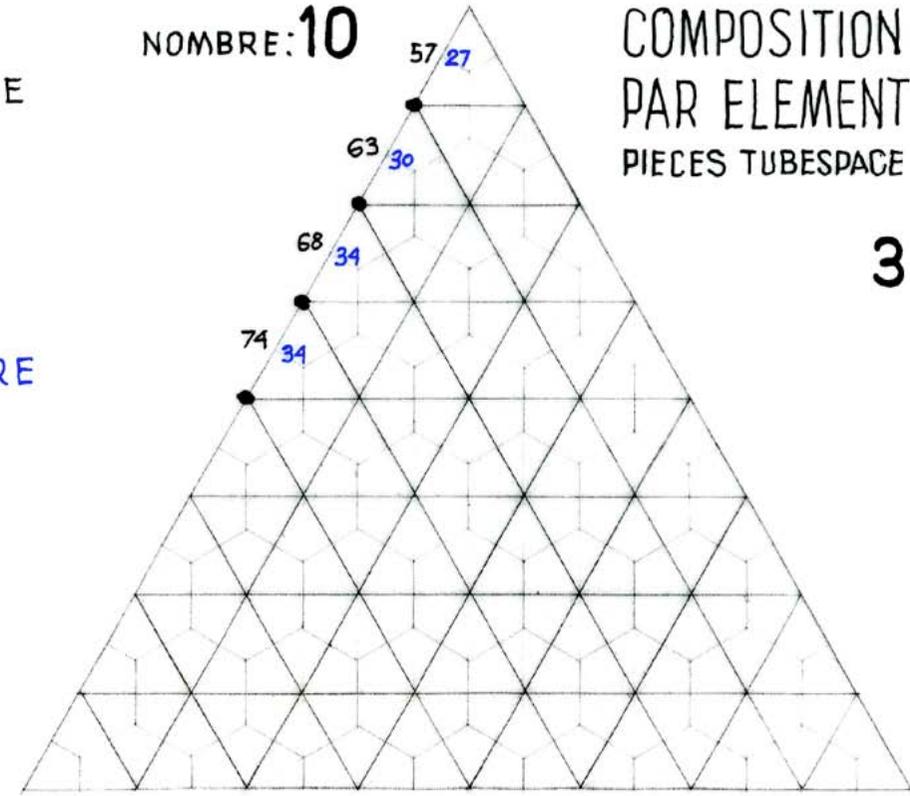
T 34 : 2

INTERMEDIAIRE

S 6/6 : 3

S 3/6 : 1

20



COMPOSITION  
PAR ELEMENT  
PIECES TUBESPACE

3



DOME DOUBLE NAPPE - STRUCTURE ICOSAEDRALE - FREQUENCE 8

**FACES 1/4**

NOMBRE: 5

COMPOSITION  
PAR ELEMENT  
PIECES TUBESPACE

NAPPE EXTERIEURE

S 6/6 : 3  
L 30 : 3  
I 63 : 2  
T 68 : 7  
T 74 : 9 18

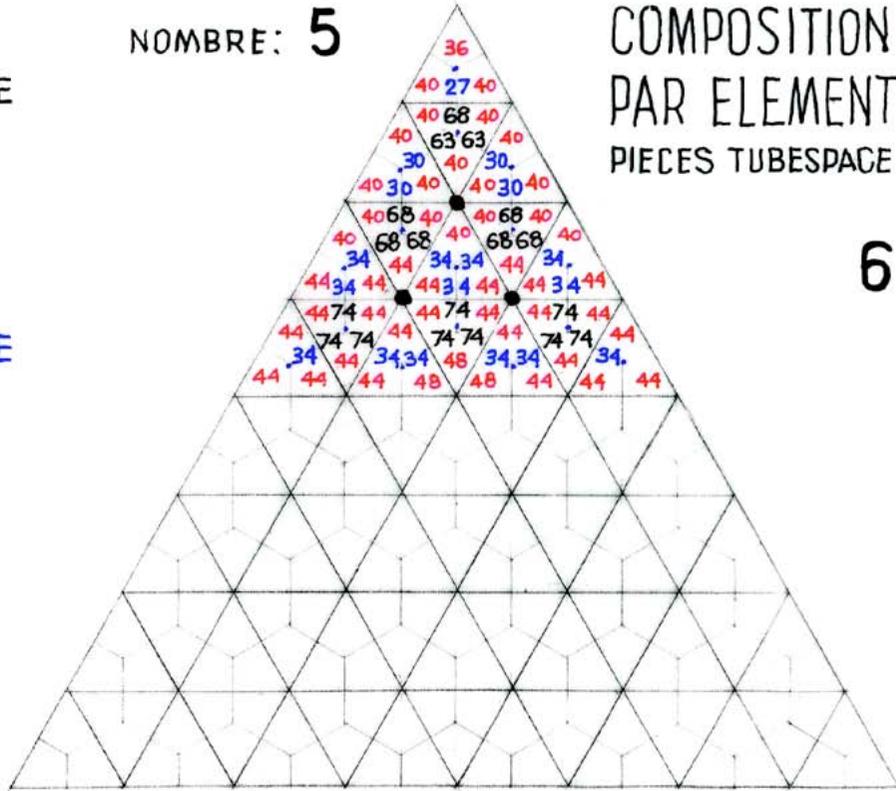
NAPPE INTERIEURE

S 6/6 : 16  
T 27 : 1  
T 30 : 4  
T 34 : 13 18

INTERMEDIAIRE

S 6/6 : 3  
T 36 : 1  
T 40 : 18  
T 44 : 26  
T 48 : 3 48

**109**



DOME DOUBLE NAPPE - STRUCTURE ICOSAEDRALE - FREQUENCE 8

**FACES 3/4**

NOMBRE: 5

COMPOSITION  
PAR ELEMENT  
PIECES TUBESPACE

NAPPE EXTERIEURE

S 6/6 : 15  
L 30 : 15  
I 63 : 4  
T 68 : 14  
T 74 : 22  
T 78 : 22 62

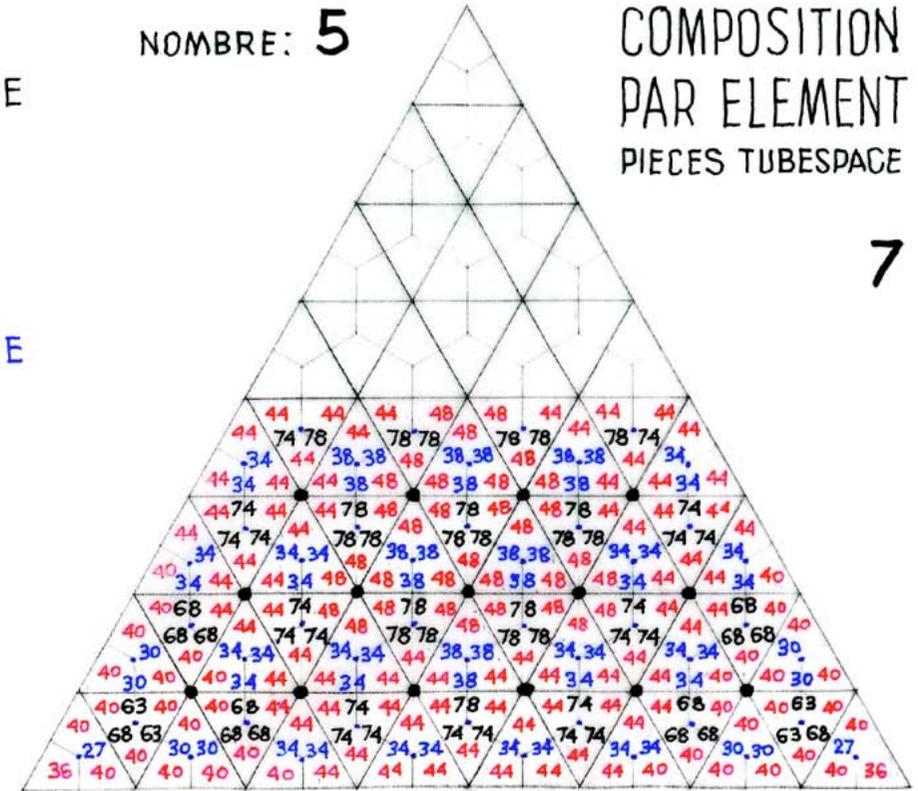
NAPPE INTERIEURE

S 6/6 : 48  
I 27 : 2  
T 30 : 8  
T 34 : 34  
T 38 : 18 62

INTERMEDIAIRE

S 6/6 : 15  
T 36 : 2  
T 40 : 36  
T 44 : 73  
T 48 : 33 144

**361**



# DOME DOUBLE NAPPE - FREQUENCE 8

PM: 1/2 ICOSAEDRE = 6 SOMMETS - 30 ARETES - 15 FACES  
 POLE = SOMMET, EQUATEUR = 10 DEMIES ARETES (DECAZONE)

## QUANTITES

6 SOMMETS = 1 POLE + 5  
 30 ARETES = 10 ENTIERES + 20 DEMIES  
 15 FACES = 5 ENTIERES + 5:3/4 + 5:1/4



## NAPPE EXTERIEURE

SOMMETS : 10 ARETES = 6  
 7 ARETES = 10 + 30 = 40  
 12 ARETES = (10x7) + (10x3) + (5x2) + (5x15) + (5x3) = 295

LIENS = 40 + 295 = 335

ARETES : (10x8) + (20x4) + (5x84) + (5x62) + (5x18) = 380

FACES : (5x64) + (5x48) + (5x16) = 640

## NAPPE INTERIEURE

SOMMETS : 5 ARETES (10x4) = 40  
 6 ARETES (5x64) + (5x44) + (5x12) = 600

ARETES : (10x8) + (10x4) + (5x64) + (5x62) + (5x18) = 940

FACES : 6 + (10x7) + (10x3) + (5x21) + (5x15) + (5x3) = 301

## INTERMEDIAIRE

SOMMETS : IDEM, SOMMETS NAPPE EXTERIEURE = 341

ARETES : (6x5) + (40x3) + (295x6) = 1920

FACES : (6x5) + (40x2) + (295x6) + (640x3) = 3800

## AVEC TUBESPACE

• ETOILES  
 N.Ext : S 10 = 6, S 6/6 = 590, S 4/6 = 40, S 3/6 = 40, = 676  
 N.Int : S 6/6 = 640, = 640

• LIENS: L 30 = 335

• TUBES  
 N.Ext : T57 = 30, T63 = 90, T68 = 240, T74 = 370, T78 = 250 = 980  
 N.Int : T27 = 60, T30 = 150, T34 = 550, T38 = 180, = 940  
 Inter. : T36 = 30, T40 = 540, T38 = 990, T48 = 360, = 1920

F.V 16.10.2007

TOTAL: 5491

# DOME DOUBLE NAPPE - STRUCTURE ICOSAEDRALE - FREQUENCE 8

## DECOUPAGE DES TUBES

|     |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|
| 15  | 57 | 57 | 27 | 27 | 27 | 27 | 18 |
| 45  | 63 | 63 | 38 | 38 | 38 | 38 |    |
| 7   | 38 | 38 | 38 | 38 | 38 | 35 | 12 |
| 80  | 68 | 68 |    |    | 68 |    | 34 |
| 67  | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| 123 | 74 | 74 |    |    | 74 |    | 18 |
| 83  | 78 | 78 |    |    | 78 |    | 6  |
| 18  | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| 10  | 36 | 36 | 36 | 44 | 44 | 44 |    |
| 192 | 44 | 44 | 44 | 44 | 44 | 44 | 20 |
| 90  | 40 | 40 | 40 | 40 | 40 | 40 |    |
| 72  | 48 | 48 | 48 | 48 | 48 | 48 |    |
| 1   | 38 | 38 | 74 |    | 30 | 30 | 30 |
| 1   | 38 | 34 | 78 |    | 30 | 30 | 30 |

## 240x804 NAPPE EXTERIEURE | NAPPE INTERIEURE | INTERMEDIAIRE

|                     |                       |                       |                        |
|---------------------|-----------------------|-----------------------|------------------------|
| 192960              | T57 = 2x15 = 30       | T27 = 4x15 = 60       | T36 = 3x10 = 30        |
| 185760              | T63 = 2x45 = 90       | T30 = 8x18(+6) = 150  | T40 = 6x30 = 540       |
|                     | T68 = 3x80 = 240      | T34 = 7x67(+81) = 550 | T44 = 5x102(+30) = 990 |
| CHUTES 7200         | T74 = 3x123(+1) = 370 | T38 = 3x45(+45) = 180 | T48 = 5x72 = 360       |
| (30 TUBES DE 240mm) | T78 = 3x83(+1) = 250  |                       |                        |
|                     | 185760 mm             | 380                   | 3840 TUBES + CHUTES    |
|                     |                       |                       | 193 ml                 |
|                     |                       |                       | 1020                   |

DÔME DOUBLE NAPPE  
STRUCTURE ICOSAÉDRALE / FRÉQUENCE 8

**VARIANTE DE CONSTRUCTION**

avec longueurs de tubes normalisées  
(arrondies de 5 en 5 mm)

2008

DOME ICOSA FREQ. 8

**5** FACES ENTIERES  
NAPPE EXTERIEURE

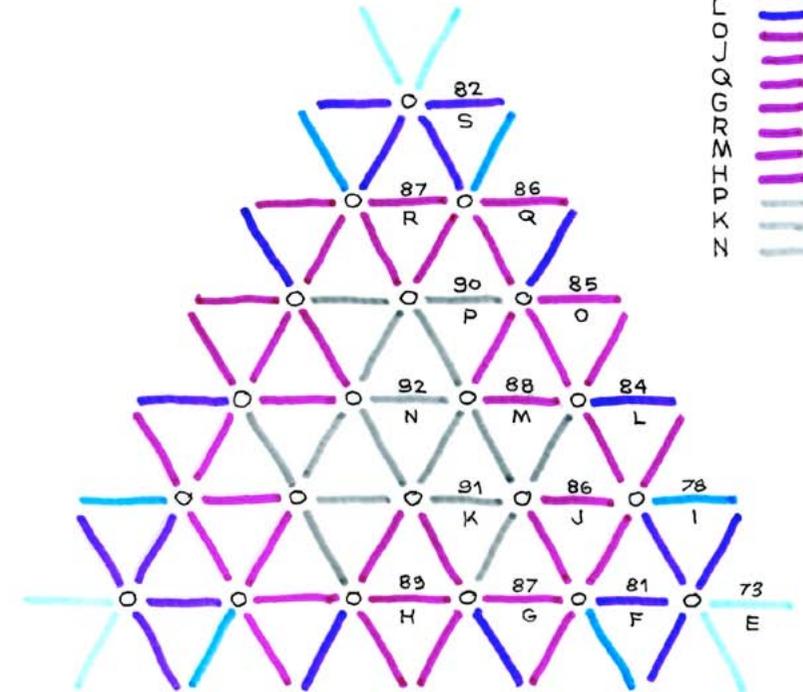
|      |   |              |
|------|---|--------------|
| t 60 |  | 6 x 5 = 30   |
| t 65 |  | 6 x 5 = 30   |
| t 70 |  | 18 x 5 = 90  |
| t 75 |  | 36 x 5 = 180 |
| t 80 |  | 15 x 5 = 75  |

s 6   o 21 x 5 = 105

ELEMENTS

1

|   |   |    |
|---|---|----|
| π |  | 73 |
| - |  | 78 |
| T |  | 81 |
| T |  | 82 |
| π |  | 84 |
| π |  | 85 |
| π |  | 86 |
| π |  | "  |
| π |  | 87 |
| π |  | "  |
| π |  | 88 |
| π |  | 89 |
| π |  | 90 |
| π |  | 91 |
| π |  | 92 |



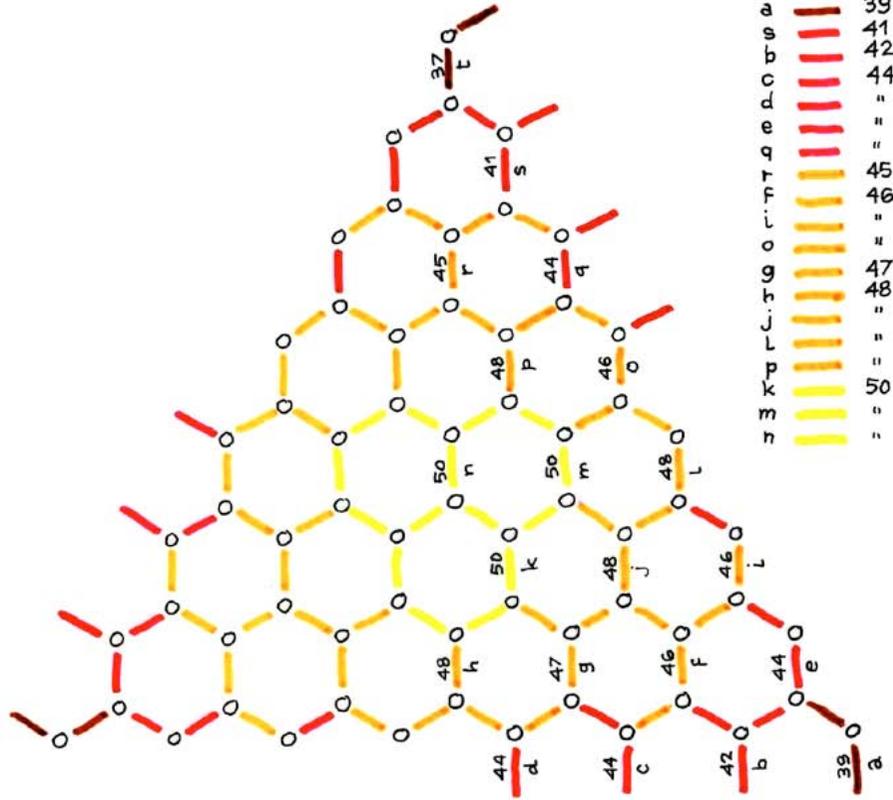
DOME ICOSA FREQ. 8

ELEMENTS 2

5 FACES ENTIERES  
NAPPE INTERIEURE

|      |  |              |
|------|--|--------------|
| t 25 |  | 6 x 5 = 30   |
| t 30 |  | 27 x 5 = 135 |
| t 35 |  | 48 x 5 = 240 |
| t 40 |  | 15 x 5 = 75  |

s 6 ○ 64 x 5 = 320



|  |    |
|--|----|
|  | 37 |
|  | 39 |
|  | 41 |
|  | 42 |
|  | 44 |
|  | "  |
|  | "  |
|  | "  |
|  | 45 |
|  | 46 |
|  | "  |
|  | "  |
|  | 47 |
|  | 48 |
|  | "  |
|  | 50 |
|  | "  |

DOME ICOSA FREQ. 8

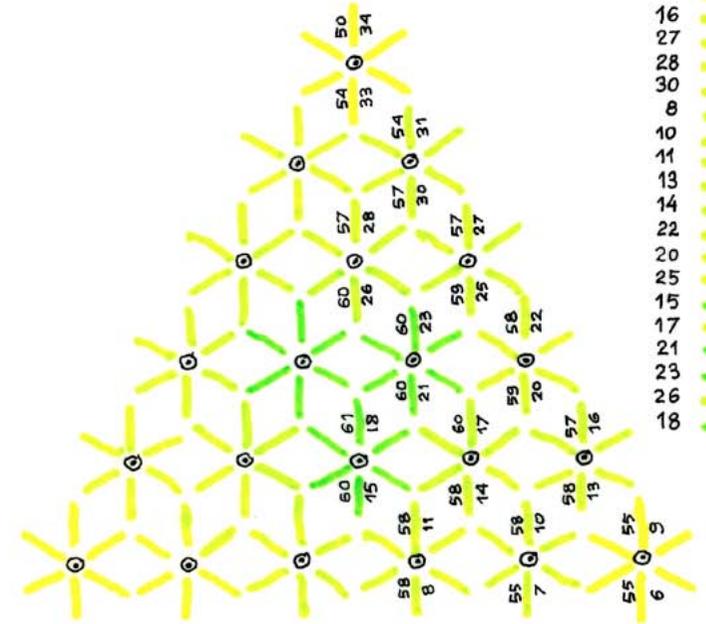
ELEMENTS 3

5 FACES ENTIERES  
COUCHE INTERMEDIAIRE

|      |  |              |
|------|--|--------------|
| t 40 |  | 18 x 5 = 90  |
| t 45 |  | 90 x 5 = 450 |
| t 50 |  | 18 x 5 = 90  |

s 6 ○ 21 x 5 = 105

l 30 • 21 x 5 = 105



|  |    |
|--|----|
|  | 34 |
|  | 31 |
|  | 54 |
|  | 33 |
|  | 6  |
|  | 55 |
|  | 7  |
|  | "  |
|  | 9  |
|  | "  |
|  | 16 |
|  | 57 |
|  | 27 |
|  | "  |
|  | 28 |
|  | "  |
|  | 30 |
|  | "  |
|  | 8  |
|  | 58 |
|  | 10 |
|  | "  |
|  | 11 |
|  | "  |
|  | 13 |
|  | "  |
|  | 14 |
|  | "  |
|  | 22 |
|  | "  |
|  | 20 |
|  | 59 |
|  | 25 |
|  | "  |
|  | 15 |
|  | 60 |
|  | 17 |
|  | "  |
|  | 21 |
|  | "  |
|  | 23 |
|  | "  |
|  | 26 |
|  | "  |
|  | 18 |
|  | 61 |

DOME ICOSA FREQ. 8

ELEMENTS 4

5 FACES 1/4  
NAPPE EXTERIEURE

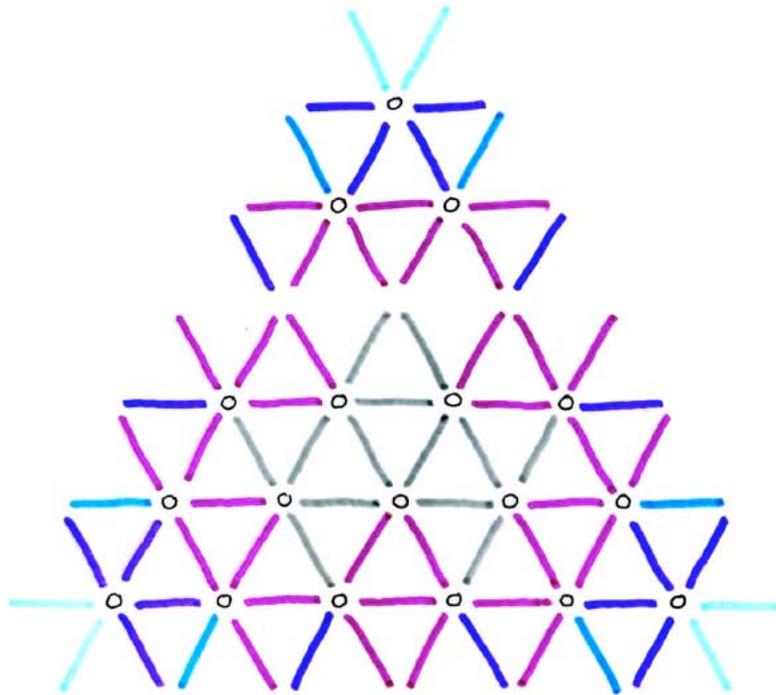
|      |   |            |
|------|---|------------|
| t 60 |  | 2 x 5 = 10 |
| t 65 |  | 2 x 5 = 10 |
| t 70 |  | 6 x 5 = 30 |
| t 75 |  | 7 x 5 = 35 |

s 6 o 3 x 5 = 15

5 FACES 3/4  
NAPPE EXTERIEURE

|      |   |              |
|------|---|--------------|
| t 60 |  | 4 x 5 = 20   |
| t 65 |  | 4 x 5 = 20   |
| t 70 |  | 12 x 5 = 60  |
| t 75 |  | 27 x 5 = 135 |
| t 80 |  | 13 x 5 = 65  |

s 6 o 15 x 5 = 75



DOME ICOSA FREQ. 8

ELEMENTS 5

5 FACES 1/4  
NAPPE INTERIEURE

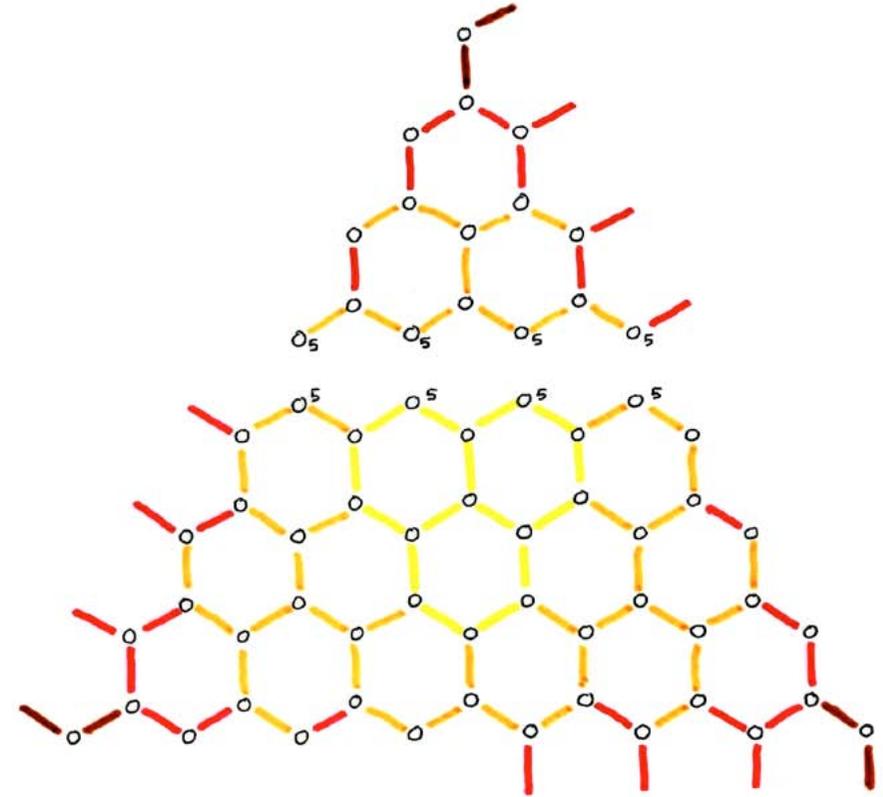
|      |   |             |
|------|---|-------------|
| t 25 |  | 2 x 5 = 10  |
| t 30 |  | 9 x 5 = 45  |
| t 35 |  | 11 x 5 = 55 |

s 6 o 12 x 5 = 60  
s 5/6 O5 4 x 5 = 20

5 FACES 3/4  
NAPPE INTERIEURE

|      |   |              |
|------|---|--------------|
| t 25 |  | 4 x 5 = 20   |
| t 30 |  | 18 x 5 = 90  |
| t 35 |  | 33 x 5 = 165 |
| t 40 |  | 15 x 5 = 75  |

s 6 o 44 x 5 = 220  
s 5/6 O5 4 x 5 = 20



DOME ICOSA FREQ. 8

ELEMENTS 6

5 FACES 1/4  
COUCHE INTERMEDIAIRE

t 40  6 x 5 = 30  
t 45  12 x 5 = 60

s 6 ○ 3 x 5 = 15

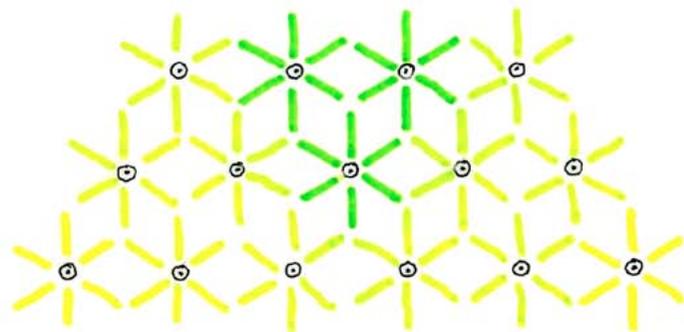
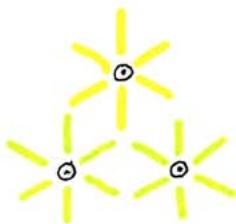
l 30 • 3 x 5 = 15

5 FACES 3/4  
COUCHE INTERMEDIAIRE

t 40  12 x 5 = 60  
t 45  60 x 5 = 300  
t 50  18 x 5 = 90

s 6 ○ 15 x 5 = 75

l 30 • 15 x 5 = 75



DOME ICOSA FREQ. 8

ELEMENTS 7

10 ARETES ENTIERES

t 40  24 x 10 = 240  
t 45  18 x 10 = 180

t 65  4 x 10 = 40  
t 70  2 x 10 = 20  
t 75  2 x 10 = 20

s 6 ○ 14 x 10 = 140

l 30 • 7 x 10 = 70

10 DEMI-ARETES

t 40  12 x 10 = 120  
t 45  9 x 10 = 90

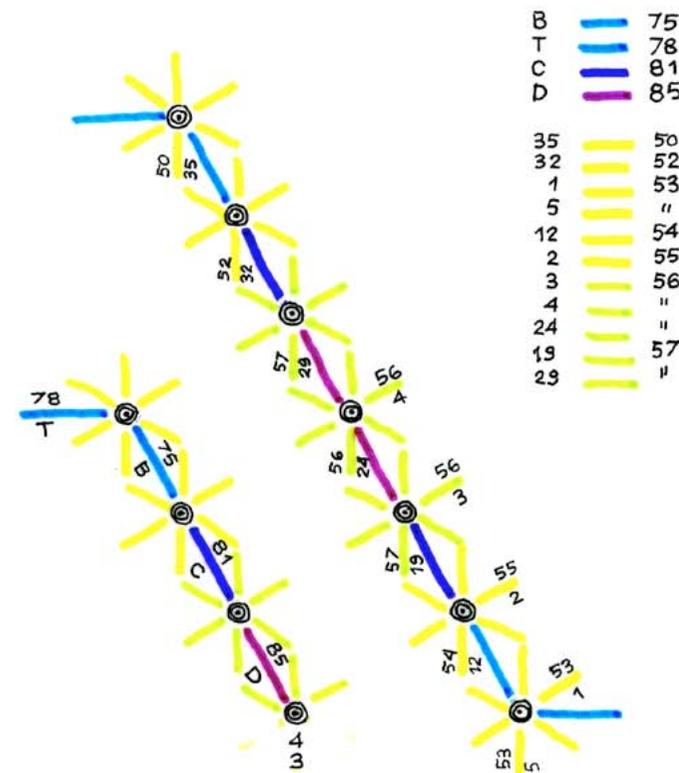
t 65  2 x 10 = 20  
t 70  1 x 10 = 10  
t 75  1 x 10 = 10

s 6 ○ 6 x 10 = 60

s 4/6 ○ 4 1 x 10 = 10

s 3/6 ○ 3 1 x 10 = 10

l 30 • 4 x 10 = 40



|    |   |    |
|----|---|----|
| B  |  | 75 |
| T  |  | 78 |
| C  |  | 81 |
| D  |  | 85 |
| 35 |  | 50 |
| 32 |  | 52 |
| 1  |  | 53 |
| 5  |  | "  |
| 12 |  | 54 |
| 2  |  | 55 |
| 3  |  | 56 |
| 4  |  | "  |
| 24 |  | "  |
| 19 |  | 57 |
| 23 |  | "  |

# DOME ICOSA FREQ. 8

## 6 SOMMETS

t 35 5 x 6 = 30

t 55 5 x 6 = 30

s 10 • 1 x 6 = 6

## 10 BASES (5<sup>F1/4</sup> + 5<sup>F3/4</sup>)

t 45 9 x 10 = 90

t 70 2 x 5 = 10

t 75 2 x 10 = 20

t 80 2 x 10 = 20

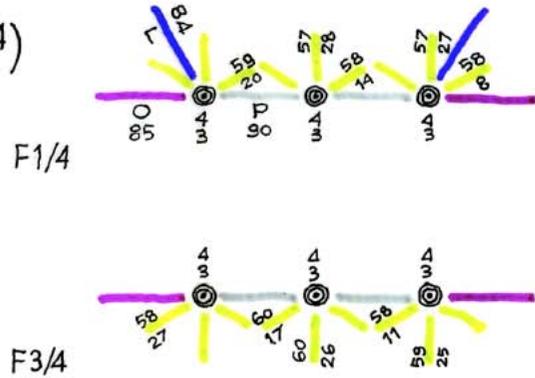
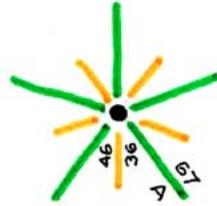
s 4/6 O4 3 x 10 = 30

s 3/6 O3 3 x 10 = 30

l 30 • 3 x 10 = 30

# ELEMENTS 8

A 67  
36 46



O 84  
P 85  
90  
27 57  
28 "  
8 58  
11 "  
14 "  
22 "  
20 59  
25 "  
17 60  
26 "

# DOME ICOSA FREQ. 8 RECAPITULATION 9

## PIECES TUBESPACE

## TUBES

t 25  
t 30  
t 35  
t 40  
t 45  
t 50  
t 55  
t 60  
t 65  
t 70  
t 75  
t 80

## ETOILES

s 5  
s 6  
s 5/6  
s 4/6  
s 3/6

## LIENS

NAPPE EXT.  
COUCHE INTER.  
NAPPE INT.

| PIECES TUBESPACE | FACES ENTI. |        |          | FACES 1/4 |        |          | FACES 3/4 |        |          | ARETES  |        | BASE | S. | TOTAUX |
|------------------|-------------|--------|----------|-----------|--------|----------|-----------|--------|----------|---------|--------|------|----|--------|
|                  | EXT. 1      | INT. 2 | INTER. 3 | EXT. 4    | INT. 5 | INTER. 6 | EXT. 4    | INT. 5 | INTER. 6 | ENTI. 7 | DEMI 7 | 8    | 8  |        |
| t 25             |             | 30     |          |           | 10     |          |           | 20     |          |         |        |      |    | 60     |
| t 30             |             | 135    |          |           | 45     |          |           | 90     |          |         |        |      |    | 270    |
| t 35             |             | 240    |          |           | 55     |          |           | 165    |          |         |        |      | 30 | 490    |
| t 40             |             | 75     |          |           |        |          |           | 75     |          |         |        |      |    | 690    |
| t 45             |             |        | 90       |           |        | 30       |           |        | 60       |         | 240    | 120  | 90 | 1170   |
| t 50             |             |        | 450      |           |        | 60       |           |        | 300      |         | 180    | 90   |    | 180    |
| t 55             |             |        | 90       |           |        |          |           |        | 90       |         |        |      |    | 30     |
| t 60             | 30          |        |          | 10        |        |          | 20        |        |          |         |        |      |    | 60     |
| t 65             | 30          |        |          | 10        |        |          | 20        |        |          | 40      | 20     |      |    | 120    |
| t 70             | 90          |        |          | 30        |        |          | 60        |        |          | 20      | 10     |      |    | 210    |
| t 75             | 180         |        |          | 35        |        |          | 135       |        |          | 20      | 10     | 20   |    | 400    |
| t 80             | 75          |        |          |           |        |          | 65        |        |          |         |        | 20   |    | 160    |
|                  | 405         | 480    | 630      | 85        | 110    | 90       | 300       | 350    | 450      | 500     | 250    | 130  | 60 | 3840   |
| s 5              |             |        |          |           |        |          |           |        |          |         |        |      | 6  | 6      |
| s 6              | 105         | 320    | 105      | 15        | 60     | 15       | 75        | 220    | 75       | 140     | 60     |      |    | 1190   |
| s 5/6            |             |        |          |           | 20     |          |           | 20     |          |         | 10     | 30   |    | 40     |
| s 4/6            |             |        |          |           |        |          |           |        |          |         | 10     | 30   |    | 40     |
| s 3/6            |             |        |          |           |        |          |           |        |          |         |        |      |    | 40     |
|                  | 105         | 320    | 105      | 15        | 80     | 15       | 75        | 240    | 75       | 140     | 80     | 60   | 6  | 1316   |
| LIENS            |             |        | 105      |           |        | 15       |           |        | 75       | 70      | 40     | 30   |    | 335    |
| NAPPE EXT.       | 980         |        |          |           |        |          |           |        |          |         |        |      |    | 1321   |
| COUCHE INTER.    | 1920        |        |          |           |        |          |           |        |          |         |        |      |    | 2590   |
| NAPPE INT.       | 940         |        |          |           |        |          |           |        |          |         |        |      |    | 1580   |
|                  |             |        |          |           |        |          | 341       |        |          | 335     |        |      |    | 5491   |
|                  |             |        |          |           |        |          | 640       |        |          |         |        |      |    |        |

