



SN6: GEOMETRY

*Handwritten scribbles*

| SEQ         | OPN | A | X            | SA | COMMENTS |   |              |   |     |
|-------------|-----|---|--------------|----|----------|---|--------------|---|-----|
| $\alpha+25$ | A   | L | $(r_0)$      | 1  | $(1,2)$  | G | $(r_0)$      | 1 | (1) |
| 26          | ES  | S | 1            |    |          |   | $(r_0)$      | 1 | (1) |
| 27          | S   | S | $(r_0)$      | 1  | $(1,2)$  | G | $(\Delta_0)$ | 1 | (1) |
| 28          | D   | S | $(r_0)$      | 1  | (1)      |   | $(s_0)$      | 1 | (1) |
| 29          | L   |   | $(\Delta_0)$ | 1  | (1)      |   |              |   |     |
| 30          | TSL |   | $\alpha+31$  |    | L(F)     |   |              |   |     |
| 31          | M   |   | $(r_0)$      | 1  | (1)      |   |              |   |     |
| 32          | M   |   | $(r_0)$      | 1  | (1)      |   |              |   |     |
| 33          | ST  |   | $(t_0)$      | 1  | (1)      |   |              |   |     |
| 34          | IBR |   | $\alpha$     |    | 1        |   |              |   |     |
| 35          |     |   |              |    |          |   |              |   |     |
| 36          |     |   |              |    |          |   |              |   |     |
| 37          |     |   |              |    |          |   |              |   |     |
| 38          |     |   |              |    |          |   |              |   |     |
| 39          |     |   |              |    |          |   |              |   |     |
| 40          |     |   |              |    |          |   |              |   |     |
| 41          |     |   |              |    |          |   |              |   |     |
| 42          |     |   |              |    |          |   |              |   |     |
| 43          |     |   |              |    |          |   |              |   |     |
| 44          |     |   |              |    |          |   |              |   |     |
| 45          |     |   |              |    |          |   |              |   |     |
| 46          |     |   |              |    |          |   |              |   |     |
| 47          |     |   |              |    |          |   |              |   |     |
| 48          |     |   |              |    |          |   |              |   |     |
| 49          |     |   |              |    |          |   |              |   |     |

|     |             |    |   |                |
|-----|-------------|----|---|----------------|
| i:  | 1           | 0  | I | R <sub>0</sub> |
| -i: | 2           | -1 | - | R <sub>0</sub> |
| T   | $\alpha+31$ |    | - | -              |

- NOTES:
- $\bar{r}_i = \frac{r_i + r_{i-1}}{2}$
  - $\Delta_i = \frac{r_i - r_{i-1}}{2}$
  - $s_i = \Delta_i / r_i$
  - $t_i = \Delta_i \quad (P)$   
 $= \Delta_i \quad (0)$   
 $= \Delta_i \quad (S)$

*AM*

3119: INITIALIZE R16 & LOOP; REF: ...

| SEQ | OPN  | A          | X           | SA       | COMMENTS |
|-----|------|------------|-------------|----------|----------|
| 50  | TS   | $x+1$      | 3           | R5       |          |
| 51  | TS   | $x+2$      | 4           | R6       |          |
| 52  | TS   | $x+3$      | 5           | R7       |          |
| 53  | L    | L(0)       |             |          |          |
| 54  | BNP  | $x+66$     |             | #1       | *        |
| 55  | D    | L (Vg)     | 1 (3)       | *        |          |
| 56  | ST   | To         |             |          |          |
| 57  | L    | S (a)      | 1 (1)       | 6        |          |
| 58  | M    | L (G, G)   | 1 (5, 6)    | G (P)    | (1)      |
| 59  | A    | To         |             |          |          |
| 60  | M    | (a)        |             |          |          |
| 61  | BB   | $x+63$     |             | #2       |          |
| 62  | L    | L(0)       |             |          |          |
| 63  | ST   | (a)        | 1 (1)       |          |          |
| 64  | L    | S L(0)     |             | $\Sigma$ |          |
| 65  | L    | L(ZT, CT)  |             |          |          |
| 66  | BB   | $x+75$     |             | #1       |          |
| 67  | L    | (G, G)     | 1 (3, 5, 6) | G        |          |
| 68  | BB   | $x+73$     |             | #1       |          |
| 69  | M    | (N, a)     | 1 (1, 4)    | G        |          |
| 70  | A    | S $\Sigma$ |             | $\Sigma$ |          |
| 71  | ICBR | $x+72$     | 4           | R3       |          |
| 72  | ICBR | $x+67$     | 5           | R5       |          |
| 73  | M    | L (P)      | 1 1         | $\Sigma$ |          |
| 74  | ST   | $\Sigma$   |             |          |          |



|   |        |   |    |
|---|--------|---|----|
| 1 | 0      | I | R5 |
| 2 | -1     | - | R4 |
| 3 | G      | G | R5 |
| 4 | (G-1)I | 1 | R6 |
| 5 | 0      | 1 | R7 |
| 6 | -SET   |   |    |

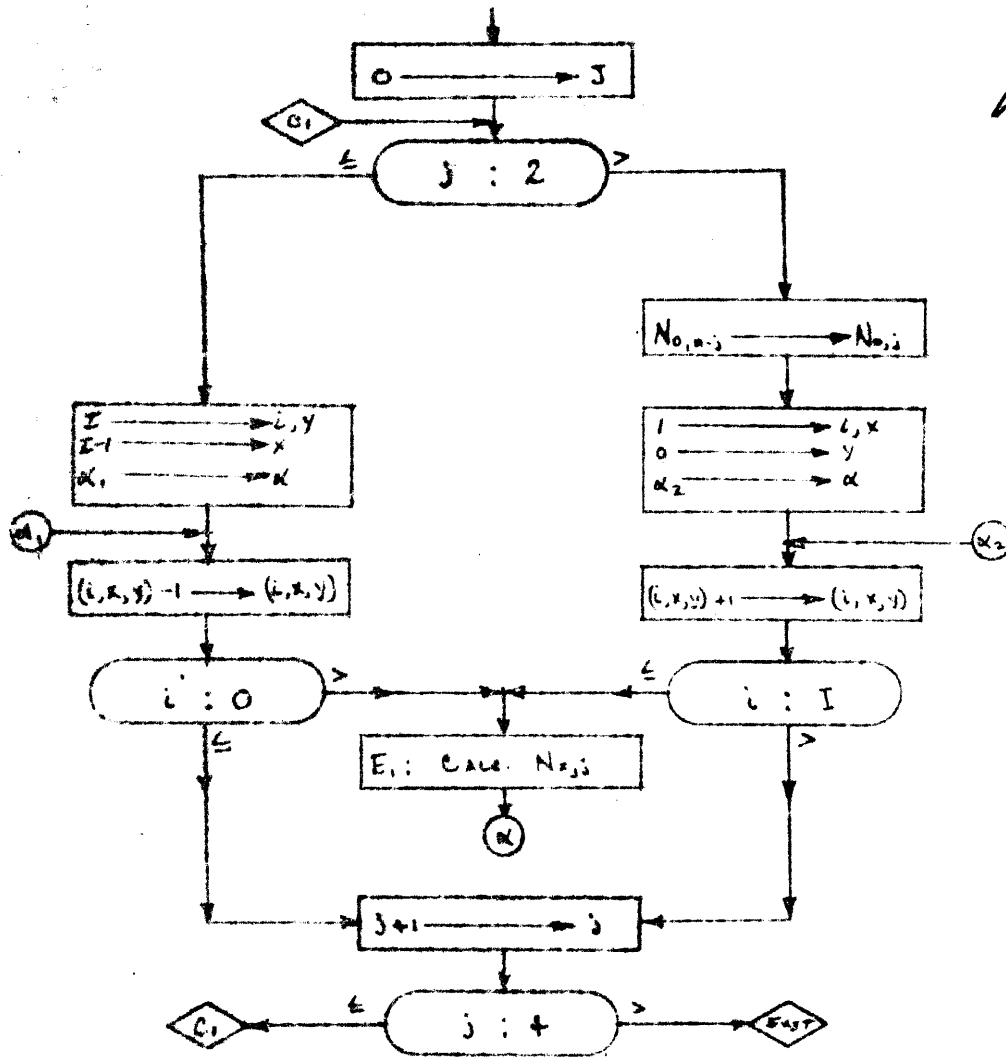
- Notes:
- $e(\pi) = \frac{1}{Vg} \text{ or } 0.$
  - $t_i = \Delta_i [\sigma_{gm} \cdot p_i + \frac{1}{Vg}]$
  - $\delta y_i = 2 \Delta_i [\Delta y_i + p_i \sum_{k=0}^{k=i} N_{k,i} \sigma_{gm,k}]$
  - $p \neq 1$  ON =  $\Delta$  case.  
OFF =  $\underline{a}$  case
  - IF  $t_i < 0, 0 \rightarrow t_i$
  - IF  $ZT, CT = 0, 0 \rightarrow \Sigma$   
for  $\delta_i$ .

| SEQ           | OPN | A | X                 | SA  | COMMENTS |                   |   |     |  |
|---------------|-----|---|-------------------|-----|----------|-------------------|---|-----|--|
| $\alpha + 75$ | M   | L | (V <sub>0</sub> ) | 1   | (B)      | (L <sub>i</sub> ) | 1 | (1) |  |
| 76            | A   |   | <del>Z</del>      |     |          |                   |   |     |  |
| 77            | M   |   | (A)               | 1   | (1)      |                   |   |     |  |
| 78            | AE  | S | 1                 |     |          | (L <sub>i</sub> ) | 1 | (1) |  |
| 79            | ZR  |   | $\alpha + 80$     | 4.5 | 6        |                   |   |     |  |
| 80            | ZBR |   | $\alpha + 37$     | 1   |          |                   | 1 |     |  |
| 81            | S   | L | (V <sub>0</sub> ) | 1   | (L(2))   |                   |   |     |  |
| 82            | S   | L | (V <sub>0</sub> ) | 1   | (L(2))   |                   |   |     |  |
| 83            | S   | L | (V <sub>0</sub> ) | 1   | (L(2))   |                   |   |     |  |
| 84            | L   | S | L(0)              |     |          |                   | 7 |     |  |
| 85            | BNP |   | $\alpha + 87$     |     |          |                   |   |     |  |
| 86            | TS  |   | $\alpha + 87$     | 7   |          | L(0, R, R)        |   |     |  |
| 87            |     |   |                   |     |          |                   |   |     |  |
| 88            |     |   |                   |     |          |                   |   |     |  |
| 89            |     |   |                   |     |          |                   |   |     |  |
| 90            |     |   |                   |     |          |                   |   |     |  |
| 91            |     |   |                   |     |          |                   |   |     |  |
| 92            |     |   |                   |     |          |                   |   |     |  |
| 93            |     |   |                   |     |          |                   |   |     |  |
| 94            |     |   |                   |     |          |                   |   |     |  |
| 95            |     |   |                   |     |          |                   |   |     |  |
| 96            |     |   |                   |     |          |                   |   |     |  |
| 97            |     |   |                   |     |          |                   |   |     |  |
| 98            |     |   |                   |     |          |                   |   |     |  |
| 99            |     |   |                   |     |          |                   |   |     |  |

B.C.  $\frac{1}{2}(1) = 0, 1, 2$

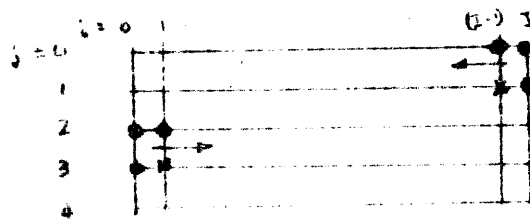
→ ... 1/2 of ...  
- 0 if ...

SNY: Calc  $N_{ij}$    
 JUL 11 1957  
 JUL 16 1957  
 WILLIAM J. WORLTON  
 AUG 7 1957 



$E_i: N_{ij} = \frac{(m_j - b_j s_j - h_j) N_{ij} + (\bar{w}_j + b_j s_j - h_j) N_{ij-1} - (m_j - b_j s_j + h_j) N_{ij+1} + \delta_i}{(m_j + b_j s_j + h_j)}$

INWARD:  $x = i-1$   
 $y = i$   
 OUTWARD:  $x = i$   
 $y = i-1$



$N_{ij}$  STORAGE

• *forget, ...*  
 $I = 50,$   
 $J = 5,$   
 $m_j = 10,$   
 $b_j = 10,$   
 $h_j = 10,$

SNG: ANGULAR FLUX CONTROL

| SEQ   | OPN  | A                            | X          | SA                          | COMMENTS          |
|-------|------|------------------------------|------------|-----------------------------|-------------------|
| α+100 | ST L | T <sub>0</sub>               | X.5        | (N <sub>0</sub> ) 1         | (X <sub>0</sub> ) |
| 101   | BVNE | α+103                        | L(7)       | 1                           |                   |
| 102   | M S  | (T <sub>0</sub> )            | (7)        | (T <sub>0</sub> ) 1         | (X <sub>0</sub> ) |
| 103   | IBR  | α+100                        | 15         | 1                           |                   |
| 104   | TS   | α+105                        | 4, 5 4     | R <sub>0</sub> : (0, J, R)  |                   |
| 105   | BYE  | α+112                        | 4          | 2                           |                   |
| 106   | TS   | α+107                        | 1, 9, 10 6 | R <sub>1</sub> : L(3, J, R) |                   |
| 107   | TD   | α+108                        | 9          | 1                           |                   |
| 108   | TSL  | α+110                        |            | α <sub>R</sub>              |                   |
| 109   | TD   | α+110                        | 9, 9, 10 6 | 1                           | ← P <sub>1</sub>  |
| 110   | BYE  | α+120                        | 1          | 0                           |                   |
| 111   | TSL  | α+125                        |            | -                           | → P               |
| 112   | L S  | (N <sub>0</sub> ) 1          |            | (N <sub>0</sub> ) 1         | (L(α+10))         |
| 113   | L S  | (N <sub>0</sub> ) 1          | L(I)       | (N <sub>0</sub> ) 1         | (L(α+10))         |
| 114   | TS   | α+105                        | 1, 9, 10 6 | R <sub>2</sub> : (0, J, R)  |                   |
| 115   | TI   | α+116                        | 1, 9 4     | 1                           |                   |
| 116   | TSL  | α+118                        |            | α <sub>R</sub>              |                   |
| 117   | IBR  | α+118                        | 1, 9, 10 6 | 1                           | ← P <sub>1</sub>  |
| 118   | BEE  | α+120                        | 1          | 0                           |                   |
| 119   | TSL  | α+125                        |            | -                           | → P               |
| 120   | IBR  | α+121                        | 5          | L(I+1) 1                    |                   |
| 121   | IBR  | α+105                        | 4          | 1                           |                   |
| 122   | BP   | PRINT (i, N <sub>i,j</sub> ) |            | *3                          | *                 |
| 123   |      |                              |            |                             |                   |
| 124   |      |                              |            |                             |                   |

|                  |    |        |    |                |    |
|------------------|----|--------|----|----------------|----|
| i:               | 1  | 0      | I  | R <sub>2</sub> | α= |
| -i:              | 2  | -1     | -  | -              | α= |
| g:               | 3  | 4      | G  | R <sub>2</sub> | α= |
| g <sub>1</sub> : | 4  | (4-1)  | 4  | R <sub>0</sub> | α= |
| g <sub>2</sub> : | 5  | 0      | 1  | R <sub>2</sub> | α= |
| (15):            | 15 | 0      | 15 | R <sub>2</sub> | α= |
| A:               | 7  | 0      | 2  | R <sub>2</sub> | α= |
| J:               | 4  | 0      | J  | R <sub>0</sub> | α= |
| J(2):            | 5  | 0      | J  | R <sub>0</sub> | α= |
| x:               | 9  | 0-0; 1 | I  | R <sub>0</sub> |    |
| J:               | 10 | I: 0   | I  | R <sub>0</sub> |    |
| -I:              | 11 | (I)    | -  | -              |    |

NOTES: 1. No ANGLES  $\alpha_i, \alpha_j$  to be located SW.  
 2. 11 CAN BE SET IN THE CODE INITIALIZATION.

Special Case:  $N_{RD} = \frac{(m_j - b_j s_i - k_i) N_{ij} + c_{ij}}{(m_j + b_j s_i + k_i)}$

SAP:  $N_{ij}$  (SUBROUTINE)

JUN 3 1967  
KUP

| SEQ            | OPN | A | X              | SA            | COMMENTS                                   |
|----------------|-----|---|----------------|---------------|--|
| $\alpha + 125$ | M   | L | $(b_j)$        | $(4)$         | $(s_i)$ L (1)                              |
| 26             | ST  |   | $T_0$          |               | $T_0: (b_j s_i)$                           |
| 27             | A   | S | $(k_i)$        | $(1)$         | $T_1$                                      |
| 28             | A   | S | $(m_j)$        | $(4)$         | $T_2$                                      |
| 29             | S   | L | $T_1$          |               | $T_2: (m_j + b_j s_i + k_i) = \text{DEN.}$ |
| 30             | M   |   | $(N_6)$        | $(5, 10)$     | $T_3: \text{Denom Num.}$                   |
| 31             | A   | S | $(k_i)$        | $(1)$         | $T_3$                                      |
| 32             | BYE |   | $\alpha + 102$ | $4$           | $0$  |
| 33             | S   | L | $(k_i)$        | $(1)$         | $T_0$                                      |
| 34             | ST  |   | $T_1$          |               |  |
| 35             | A   |   | $(m_j)$        | $(4)$         |  |
| 36             | M   |   | $(N_6)$        | $(5, 10, 11)$ | $G$  |
| 37             | A   | S | $T_3$          |               | $T_2$                                      |
| 38             | S   | L | $(m_j)$        | $(4)$         | $T_1$                                      |
| 39             | M   |   | $(N_6)$        | $(5, 9, 11)$  | $G$  |
| 40             | A   |   | $(k_i)$        | $(1)$         |  |
| 41             | A   |   | $T_3$          |               |  |
| 42             | D   | S | $T_2$          |               | $(N_6)$ 1 (5, 9)                           |
| 43             | TEL |   | 1              | $d_r$         | -  |
| 44             |     |   |                |               |  |
| 45             |     |   |                |               |  |
| 46             |     |   |                |               |  |
| 47             |     |   |                |               |  |
| 48             |     |   |                |               |  |
| 49             |     |   |                |               |  |

2167 *Map. 1st floor*

| SEQ | OPN | A                 | X         | SA              | COMMENTS |
|-----|-----|-------------------|-----------|-----------------|----------|
| 50  | TI  | α+151             | 1         | 1               |          |
| 51  | TS  | α+152             | 4         | R <sub>10</sub> |          |
| 52  | TS  | α+153             | 5         | R <sub>6</sub>  |          |
| 53  | L   | S L(6)            |           | Σ               |          |
| 54  | L   | L (N)             | 1 (1,2,4) | 1 (N)           | (1,4) ⊆  |
| 55  | BPE | α+157             | 4         | 5               |          |
| 56  | BPE | α+158             | 4         | 0               |          |
| 57  | SF  | 1                 |           |                 |          |
| 58  | A   | S Z               |           | Σ               |          |
| 59  | IBR | α+154             | 4         | L(2+1)          | 1        |
| 60  | D   | L(2,4)            |           |                 |          |
| 61  | BNP | α+165             |           | #2              |          |
| 62  | M   | (W)               | 1 (7)     |                 |          |
| 63  | BPE | α+165             | 7         | 2               |          |
| 64  | A   | (N <sub>6</sub> ) | 1 (1,2,5) | 9               |          |
| 65  | ST  | (N <sub>6</sub> ) | 1 (1,2,5) | 9               |          |
| 66  | IBR | α+153             | 1         | 1               |          |
| 67  |     |                   |           |                 |          |
| 68  |     |                   |           |                 |          |
| 69  |     |                   |           |                 |          |
| 70  |     |                   |           |                 |          |
| 71  |     |                   |           |                 |          |
| 72  |     |                   |           |                 |          |
| 73  |     |                   |           |                 |          |
| 74  |     |                   |           |                 |          |

|                   |   |        |   |                |
|-------------------|---|--------|---|----------------|
|                   | 1 | 1      | I | R <sub>3</sub> |
| (E <sub>1</sub> ) | 4 | 0      | J | R <sub>6</sub> |
| ST                | 5 | (G-D)I | - | R <sub>6</sub> |
| 11                | 2 | -1     | - | -              |
| 2                 | 7 | 0      | 2 | R              |

NOTES:

$$1. N_{gi} = \frac{1}{2n} \sum_j g_j [N_{ij} + N_{ji}]$$

where  $g_j = 2, 3, 0, n$

$g_j = 1, j+1, n$

2. D#2 or =  $\frac{1}{2}n$   
or =  $\frac{1}{2}n + \frac{1}{2}n$



| SEQ | OPN | A     | X   | SA        | COMMENTS |
|-----|-----|-------|-----|-----------|----------|
| 1   | 70  | 11116 | 5   | 1(22.0)   |          |
| 2   | 5   | 11111 |     | 3         |          |
| 3   | 4   | 11111 | (3) | (3)       |          |
| 4   | 3   | 11111 |     | 2         |          |
| 5   | 100 | 11111 | 5   | 1(22.0) 1 |          |
| 6   | 100 | 11111 | 4   | 1         |          |
| 7   | 50  |       |     |           |          |
| 8   | 100 | 11111 |     | 2         |          |
| 9   | A   | 11111 | (3) |           |          |
| 10  | SEE | 11116 | 7   | 2         |          |
| 11  | A   | (3)   | (3) |           |          |
| 12  | ST  | (3)   | (3) |           |          |
| 13  | ZBR | 11111 | 7   | 1         |          |
| 14  | TIC | 11111 | 6   | 1         |          |
| 15  | TIC | 11111 | 6   | 1         |          |
| 16  | TR  | 11111 | 6   | 1(E) 1    |          |
| 17  | DR  | 11111 | 5   | 1         |          |

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|   |   |   |   |   |   |   |   |   |    |
|   |   |   |   |   |   |   |   |   |    |
|   |   |   |   |   |   |   |   |   |    |

$$N_{res} = \sum_{j=1}^n N_{j,2}$$
 2. PR 2 on eye  
 10 = P or q.

SMG:  $I', \bar{e}, \bar{s}, e, \bar{I}, \bar{s}$

| SEQ          | OPN   | A            | X       | SA           | COMMENTS |
|--------------|-------|--------------|---------|--------------|----------|
| $\alpha+200$ | TSL   | $\alpha+205$ |         | $\bar{e}$    |          |
| 1            | STL S | $\bar{e}$    |         | $I'$         |          |
| 2            | TS    | $\alpha+203$ | 5       | $L(0, G, R)$ |          |
| 3            | L S   | $L(0)$       |         | $\Sigma_1$   |          |
| 4            | ST    | $\Sigma_2$   |         |              |          |
| 5            | L S   | $(1)$        | (1)     | 4            |          |
| 6            | M L   | $(6)$        | (4,5) 4 | $(N_{ij})$   | (1,3) 6  |
| 7            | A S   | $\Sigma_1$   |         | $\Sigma_1$   |          |
| 8            | M L   | $(6,16)$     | (4,5) 4 | $(N_{ij})$   | (1,3) 6  |
| 9            | A S   | $\Sigma_2$   |         | $\Sigma_2$   |          |
| 10           | IBR   | $\alpha+211$ | 3       | $(I)$        |          |
| 11           | IBR   | $\alpha+206$ | 5       |              |          |
| 12           | M S   | $(0)$        | (1)     | $(e)$        | (1)      |
| 13           | M L   | $(0)$        | (1)     | $\Sigma_1$   |          |
| 14           | ST    | $(0)$        | (1)     |              |          |
| 15           | IBR   | $\alpha+203$ | 1       |              |          |
| 16           | TSL   | $\alpha+205$ |         | $\bar{e}$    |          |
| 17           | STL S | $\bar{e}$    |         | $\bar{I}$    |          |
| 18           |       |              |         |              |          |
| 19           |       |              |         |              |          |
| 20           |       |              |         |              |          |
| 21           |       |              |         |              |          |
| 22           |       |              |         |              |          |
| 23           |       |              |         |              |          |
| $\alpha+226$ |       |              |         |              |          |

|     |   |   |      |       |
|-----|---|---|------|-------|
| $L$ | 1 | 0 | $I$  | $R_1$ |
| $g$ | 3 | 0 | $G$  | $R$   |
| $n$ | 4 |   | $ST$ |       |
| $g$ | 5 | 0 | $G$  | $R$   |

5 E (SUBROUTINE)

| SEQ | OPN | A | X    | SA  | COMMENTS |
|-----|-----|---|------|-----|----------|
| 24  | L   | S | L(0) |     |          |
| 25  | ST  |   |      |     |          |
| 27  | M   | L | (L)  | (0) | (0)      |
| 28  | A   | S |      |     |          |
| 29  | M   | L | (L)  | (0) | (0)      |
| 30  | A   | S |      |     |          |
| 31  | TBR |   |      | 1   |          |
| 32  | LL  | L |      |     |          |
| 33  | TSL |   |      | 0/2 |          |
| 34  |     |   |      |     |          |
| 35  |     |   |      |     |          |
| 36  |     |   |      |     |          |
| 37  |     |   |      |     |          |
| 38  |     |   |      |     |          |
| 39  |     |   |      |     |          |
| 40  |     |   |      |     |          |
| 41  |     |   |      |     |          |
| 42  |     |   |      |     |          |
| 43  |     |   |      |     |          |
| 44  |     |   |      |     |          |
| 45  |     |   |      |     |          |
| 46  |     |   |      |     |          |
| 47  |     |   |      |     |          |
| 48  |     |   |      |     |          |
| 49  |     |   |      |     |          |

| SEQ | OPN | A | X         | SA             | COMMENTS |
|-----|-----|---|-----------|----------------|----------|
| 50  | L   | S | L(0)      | $T_0 = \Sigma$ |          |
| 51  | M   | L | (1)       | (1,3)          | 4        |
| 52  | D   |   | (4)       | (5)            |          |
| 53  | A   | S | $\Sigma$  | $\Sigma$       |          |
| 54  | ZBR |   | d+251     | 1              |          |
| 55  | ZBR |   | d+256     | 2              |          |
| 56  | ZBR |   | d+251     | 5              |          |
| 57  | ST  |   | $\bar{v}$ |                |          |
| 58  | L   | S | L(0)      | $\Sigma$       |          |
| 59  | L   |   | (5)       | (5)            |          |
| 60  | TSL |   | d+261     | L(T)           |          |
| 61  | M   |   | (F)       | L(I-)          |          |
| 62  | M   |   | (V)       | L(I-)          |          |
| 63  | A   | S | $\Sigma$  | $\Sigma$       |          |
| 64  | ZBR |   | d+259     | 5              |          |
| 65  | ST  |   | l         |                |          |
| 66  | M   | L | e'        | I'             |          |
| 67  | D   | S | $\bar{v}$ | $\bar{v}_0'$   |          |
| 68  | A   | L | L(1)      | (I-)           |          |
| 69  | ST  |   | L(27.07)  |                |          |
| 70  | S   |   | L(3)      |                |          |
| 71  | BB  |   | d+300     | #3             |          |
| 72  |     |   |           |                |          |
| 73  |     |   |           |                |          |
| 74  |     |   |           |                |          |

|   |   |   |   |
|---|---|---|---|
| 1 | 0 | I | R |
| 3 | 0 | G | R |
| 5 | 0 | G | R |

NOTES:

- $\bar{v} = \sum_{i=0}^n v_i \cdot N_i / v_n$
- $l = \sum_{i=0}^n l_i \cdot \frac{1}{v_i} \cdot \frac{1}{v_i}$  (P)  
 $\cdot \frac{1}{v_i}$  (C)  
 $\cdot \frac{1}{v_i}$  (S)

1. For  $\alpha$  case:  $(\sqrt{a+3} - \sqrt{a-1})/2 \rightarrow x$

2. For  $\beta$  case:  $\frac{1}{2} \rightarrow x$  when  $a = \frac{1}{2} \rightarrow x$

| SEQ | OPN | A              | X             | SA            | COMMENTS  |
|-----|-----|----------------|---------------|---------------|---|
| 66  | 3NP | $\alpha + 281$ |               | $\frac{1}{2}$ | *<br><br>Notes:<br>1. For $\alpha$ case: $\frac{1}{2} \rightarrow x$<br>2. For $\beta$ case: $\frac{1}{2} \rightarrow x$<br>3. For $\alpha$ case: $(\sqrt{a+3} - \sqrt{a-1})/2 \rightarrow x$ |
| 67  | M   | L              | $\frac{1}{2}$ | $\frac{1}{2}$ |   |
| 68  | A   |                | $\frac{1}{2}$ |               |   |
| 69  | S   |                | $\frac{1}{2}$ |               |   |
| 70  | D   | S              | $\frac{1}{2}$ | $\alpha$      |   |
| 71  | 1SE |                |               |               |   |
| 72  | S   | L              | $\frac{1}{2}$ | $\frac{1}{2}$ |   |
| 73  | S+  |                | $\frac{1}{2}$ |               |   |
| 74  | S   | L              | $\frac{1}{2}$ | $\frac{1}{2}$ |   |
| 75  | D   |                | $\frac{1}{2}$ |               |   |
| 76  | DM  | (10) (11)      |               |               |   |
| 77  | 23  | $\alpha + 275$ | 1             | 1             |   |
| 78  |     |                |               |               |   |
| 79  |     |                |               |               |   |
| 80  |     |                |               |               |   |
| 81  |     |                |               |               |   |
| 82  |     |                |               |               |   |
| 83  |     |                |               |               |   |
| 84  |     |                |               |               |   |
| 85  |     |                |               |               |   |
| 86  |     |                |               |               |   |
| 87  |     |                |               |               |   |
| 88  |     |                |               |               |   |
| 89  |     |                |               |               |   |
| 90  |     |                |               |               |   |

