

# Failure Analysis of the New FOS Peakup Algorithm

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## Abstract

On day 94.235 during FOS proposal 5531, a series of Exec 20 Status Buffer messages occurred. This error message is issued when a PIT slew request is rejected by the DF224. A review of what was occurring at the time of the errors showed that the FOS was executing a new Target Acquisition Peakup Algorithm which was implemented in stored commanding and build 5.3 of the NSSC-I flight software. Analysis of the associated science data, engineering telemetry and commanding has shown that an error in the DF224 management of the Take-data flag, (TDF), can result in a timing error in the stored commanding. A fix to the DF224 software is being developed.

## Analysis

An FOS peakup will command a series of spacecraft slews in a specified pattern with science data being taken after each slew to determine the brightest pointing. In the new version of Peakup, the following, (simplified), commanding flow exists between the FOS and the NSSC-I:

1. FOS take a line of science data
2. NSSC-I process the data with processor 31 and 32
3. NSSC-I request next slew across PIT
4. FOS RTCS wait for event flag 3 to indicate start of slew
5. prepare processor 31 and 32 for next line of science data
6. FOS RTCS wait for event flag 2 to indicate end of slew
7. repeat from step 1 until peakup pattern completed

Event flag 3 will be low when there is no slew request pending and the TDF is high. Flag 2 is the opposite of flag 3.

When processor 32 requests a slew, the request pending bit causes flag 3 to go high, (flag 2 low). The DF224 services that request and clears the request pending bit. It was expected that the DF224 would immediately bring the TDF down. What has been discovered, however, is that there is a 2 to 3 second delay between when the request pending bit is cleared and the TDF goes down. During this delay, the state of flags 2 and 3 will flip, (see Table-1). If step 6 of the above sequence is reached before the TDF goes low, the FOS RTCS will begin to take the next line of science data, even though the slew has not yet executed, since flag 2 is high. If the integration period is less than the time required to complete the slew, a request for the next slew will be requested before the previous slew is completed. This new slew request will be rejected and Status Buffer message 20 will be issued.

|            | Req Pend | TDF | flag 2 | flag 3 |
|------------|----------|-----|--------|--------|
| begin      | 0        | 1   | 1      | 0      |
| req slew   | 1        | 1   | 0      | 1      |
| service    | 0        | 1   | 1      | 0      |
| start slew | 0        | 0   | 0      | 1      |
| end slew   | 0        | 1   | 1      | 0      |

Table-1

In the stored commanding, the wait on flag 2 will be reached 2.025 seconds after the slew request. Figures 1 and 2 are a graphical representation of Table-1 which show how the delay in bringing down the TDF can affect the proper execution of the FOS stored commanding. If the TDF goes down within 2.025 seconds of the requesting pending bit being set, (Figure 1), then the stored commanding will wait until the end of the slew for flag 2 to go high and proceed with the next exposure. If the delay in bringing down the TDF is greater than 2.025 seconds, (Figure 2), then flag 2 will be high when the stored commanding wait is reached and the next line of science data will be taken while the slew is being executed.

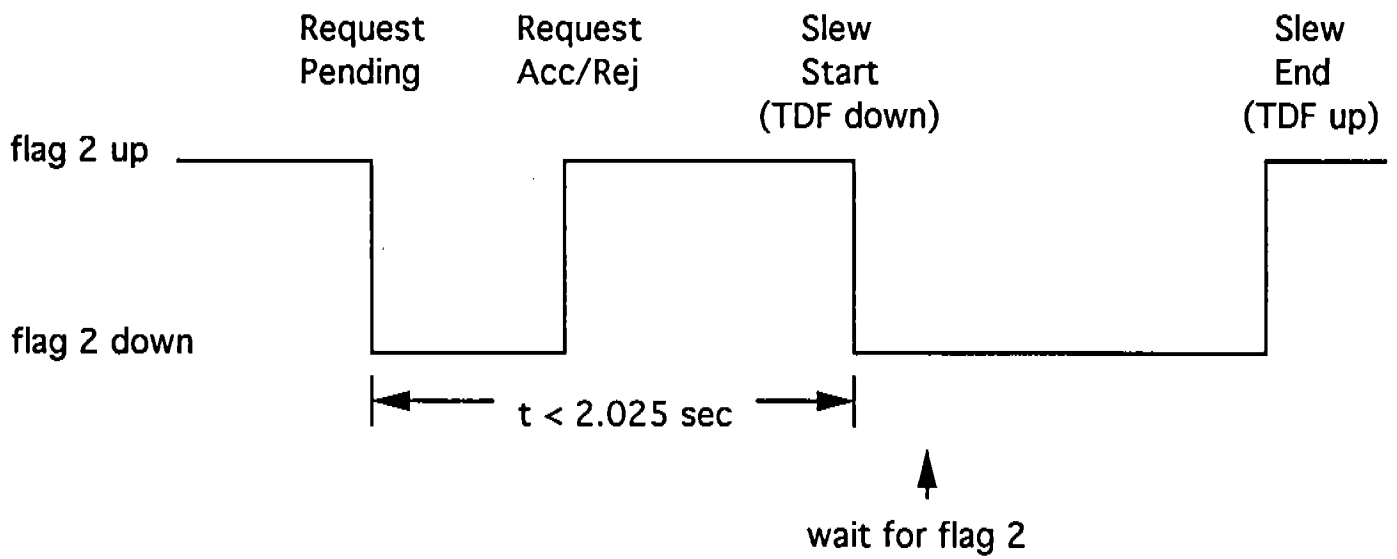


Figure 1

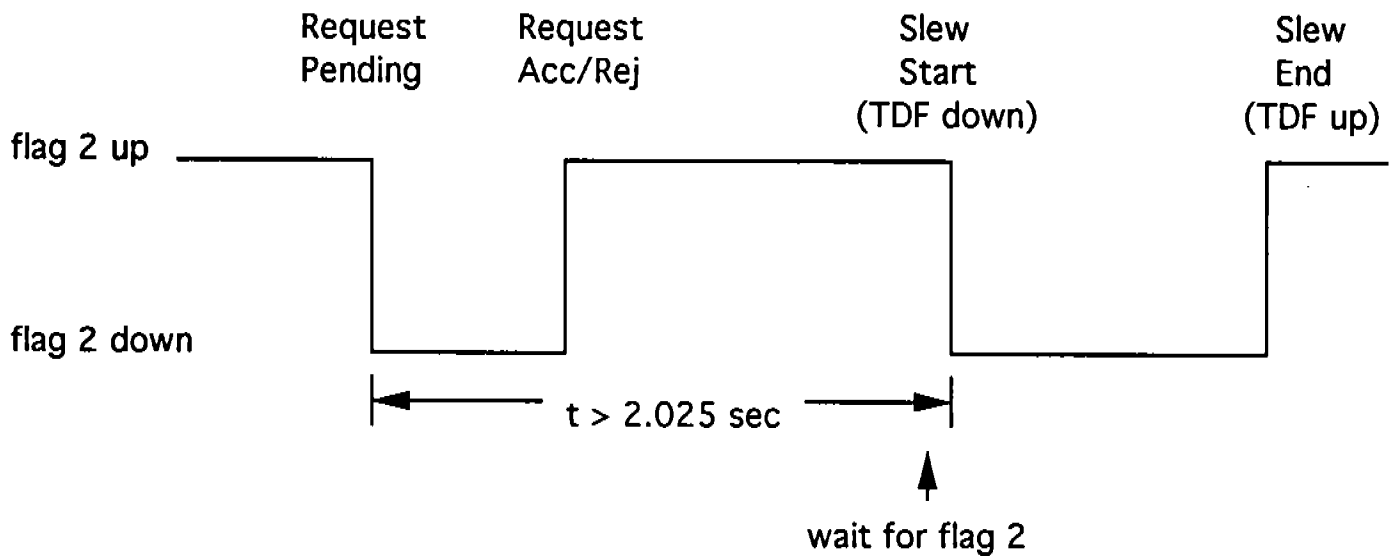


Figure 2

## Data Analysis

Attached to this report is a table of the data used for this analysis. This data includes:

- SOGS ID - exposure data set
- Exp Start Time - exposure start time (MJD)
- Exp Stop Time - exposure end time (MJD)
- Exp Time - exposure period (sec.)
- PIT Req Pend - time Request Pending bit went high (MJD)
- PIT Acc/Rej - time slew request was serviced by the DF224 (MJD)
- Pit Status - slew request accepted or rejected
- Slew Start - TDF down (MJD)
- Slew End - TDF up (MJD)
- RTCS timing OK - FALSE if next exposure started before slew end  
TRUE if next exposure started after slew end  
n/a - last exposure in data set  
(Last slew is return to bright pointing and is not commanded from within RTCS loop.)
- Start-Pend - time in sec. of period from Req Pend to Slew Start  
if > 2.025 , RTCS timing OK should = False  
if < 2.025 , RTCS timing OK should = True

note: MJD = modified Julian date

The data included in this analysis supports the theory that mismanagement of the TDF is the cause for all errors encountered during the running of the new FOS Pickup algorithm. A review of the attached data summary shows that when the time from setting the slew request pending bit to dropping the TDF is less than 2 seconds, the next exposure does not begin until the spacecraft slew is completed. When this time is greater than 2 seconds an error always

occurred. Due to the time resolution in the data a delay of 2 seconds may or may not produce an error, though each case seen in this data set did fail. We also see that when a timing error occurred and the exposure period was less than the slew period, the next slew request was rejected.

On day 94242 we do find four data points that do not fit our theory. These data points are marked with an asterisk in the last column of the data summary chart. These data were taken at a slower telemetry rate than the rest of the data. The slower telemetry rate results in a degradation of the time resolution available for our analysis. It is believed that the time between the setting of the request pending flag and the dropping of the TDF is actually greater than 2.025 seconds but the coarseness of the telemetry sampling and the relative position of the two monitors in the minor frame contribute to the aberrant results seen in these cases.

### **Conclusion**

An error in the DF224 management of the TDF has been identified, (See attached memo: "SI Offset Maneuver Timing Analysis"). If this error is corrected, the TDF will be commanded down when the slew request is serviced, and event flag 2 will not go high before the slew is completed. Once the DF224 software is corrected, the FOS commanding will work as it is written.

FOS Peakup Timing Data

| L  | K | Start-Pend (sec.) | J     | RTCS timing OK | I         |           | H          |           | G          |           | F         | E            |          | D             |                | C             |           | B              |               | A                |                   |
|----|---|-------------------|-------|----------------|-----------|-----------|------------|-----------|------------|-----------|-----------|--------------|----------|---------------|----------------|---------------|-----------|----------------|---------------|------------------|-------------------|
|    |   |                   |       |                | Slew End  | PIT TDF   | Slew Start | PIT TDF   | PIT Status | Acc/Rej   |           | PIT Req Pend | Exp Time | Exp Stop Time | Exp Start Time | Exp Stop Time | SOGSID    | Exp Start Time | Exp Stop Time |                  |                   |
| 1  |   |                   |       |                |           |           |            |           |            |           |           |              |          |               |                |               |           |                |               |                  |                   |
| 2  |   |                   |       |                |           |           |            |           |            |           |           |              |          |               |                |               |           |                |               |                  |                   |
| 3  |   | 2.125             | FALSE |                | 164.75405 | 164.75393 | 164.75409  | 164.75438 | Accepted   | 164.75391 | 164.75391 | 164.75390    | 9.6      | 164.75377     | 164.75390      | 164.75377     | 164.75390 | 164.75377      | 164.75390     | y2fp0101t.d0h[1] |                   |
| 4  |   | 1.625             | TRUE  |                | 164.75421 | 164.75409 | 164.75421  | 164.75438 | Accepted   | 164.75408 | 164.75407 | 164.75407    | 9.6      | 164.75407     | 164.75407      | 164.75407     | 164.75407 | 164.75407      | 164.75407     | y2fp0101t.d0h[2] |                   |
| 5  |   | 2.500             | n/a   |                | 164.75453 | 164.75438 | 164.75453  | 164.75438 | Accepted   | 164.75437 | 164.75436 | 164.75435    | 9.6      | 164.75436     | 164.75435      | 164.75435     | 164.75435 | 164.75435      | 164.75435     | y2fp0101t.d0h[3] |                   |
| 6  |   | 1.625             | TRUE  |                | 164.76004 | 164.75993 | 164.75993  | 164.75993 | Accepted   | 164.75991 | 164.75991 | 164.75990    | 9.6      | 164.75991     | 164.75990      | 164.75990     | 164.75990 | 164.75990      | 164.75990     | y2fp0102t.d0h[1] |                   |
| 7  |   | 1.750             | FALSE |                | 164.76033 | 164.76022 | 164.76033  | 164.76022 | Accepted   | 164.76020 | 164.76019 | 164.76018    | 9.6      | 164.76019     | 164.76018      | 164.76018     | 164.76018 | 164.76018      | 164.76018     | 164.76018        | y2fp0102t.d0h[2]  |
| 8  |   | 2.125             | TRUE  |                | 164.76078 | 164.76067 | 164.76078  | 164.76067 | Accepted   | 164.76037 | 164.76036 | 164.76035    | 9.6      | 164.76036     | 164.76035      | 164.76035     | 164.76035 | 164.76035      | 164.76035     | 164.76035        | y2fp0102t.d0h[3]  |
| 9  |   | 1.625             | TRUE  |                | 164.76094 | 164.76083 | 164.76094  | 164.76083 | Accepted   | 164.76065 | 164.76064 | 164.76064    | 9.6      | 164.76064     | 164.76064      | 164.76064     | 164.76064 | 164.76064      | 164.76064     | 164.76064        | y2fp0102t.d0h[4]  |
| 10 |   | 2.500             | FALSE |                | 164.76124 | 164.76112 | 164.76124  | 164.76112 | Accepted   | 164.76082 | 164.76081 | 164.76080    | 9.6      | 164.76081     | 164.76080      | 164.76080     | 164.76080 | 164.76080      | 164.76080     | 164.76080        | y2fp0102t.d0h[5]  |
| 11 |   | 1.750             | TRUE  |                | 164.76140 | 164.76128 | 164.76140  | 164.76128 | Accepted   | 164.76110 | 164.76109 | 164.76109    | 9.6      | 164.76109     | 164.76109      | 164.76109     | 164.76109 | 164.76109      | 164.76109     | 164.76109        | y2fp0102t.d0h[6]  |
| 12 |   | 2.125             | FALSE |                | 164.76168 | 164.76157 | 164.76168  | 164.76157 | Accepted   | 164.76127 | 164.76126 | 164.76125    | 9.6      | 164.76126     | 164.76125      | 164.76125     | 164.76125 | 164.76125      | 164.76125     | 164.76125        | y2fp0102t.d0h[7]  |
| 13 |   | 1.625             | TRUE  |                | 164.76185 | 164.76173 | 164.76185  | 164.76173 | Accepted   | 164.76155 | 164.76154 | 164.76154    | 9.6      | 164.76154     | 164.76154      | 164.76154     | 164.76154 | 164.76154      | 164.76154     | 164.76154        | y2fp0102t.d0h[8]  |
| 14 |   | 2.500             | FALSE |                | 164.76214 | 164.76202 | 164.76214  | 164.76202 | Accepted   | 164.76172 | 164.76171 | 164.76171    | 9.6      | 164.76171     | 164.76171      | 164.76171     | 164.76171 | 164.76171      | 164.76171     | 164.76171        | y2fp0102t.d0h[9]  |
| 15 |   | 1.750             | TRUE  |                | 164.76230 | 164.76219 | 164.76230  | 164.76219 | Accepted   | 164.76200 | 164.76199 | 164.76199    | 9.6      | 164.76199     | 164.76199      | 164.76199     | 164.76199 | 164.76199      | 164.76199     | 164.76199        | y2fp0102t.d0h[10] |
| 16 |   | 2.125             | n/a   |                | 164.76261 | 164.76249 | 164.76261  | 164.76249 | Accepted   | 164.76217 | 164.76216 | 164.76216    | 9.6      | 164.76216     | 164.76216      | 164.76216     | 164.76216 | 164.76216      | 164.76216     | 164.76216        | y2fp0102t.d0h[11] |
| 17 |   | 2.125             | FALSE |                | 164.80990 | 164.80979 | 164.80990  | 164.80979 | Accepted   | 164.80977 | 164.80976 | 164.80975    | 18       | 164.80976     | 164.80975      | 164.80975     | 164.80975 | 164.80975      | 164.80975     | 164.80975        | y2fp0103t.d0h[1]  |
| 18 |   | 2.500             | FALSE |                | 164.81017 | 164.81006 | 164.81017  | 164.81006 | Accepted   | 164.81004 | 164.81003 | 164.81002    | 18       | 164.81003     | 164.81002      | 164.81002     | 164.81002 | 164.81002      | 164.81002     | 164.81002        | y2fp0103t.d0h[2]  |
| 19 |   | 2.125             | FALSE |                | 164.81043 | 164.81032 | 164.81043  | 164.81032 | Accepted   | 164.81030 | 164.81029 | 164.81029    | 18       | 164.81029     | 164.81029      | 164.81029     | 164.81029 | 164.81029      | 164.81029     | 164.81029        | y2fp0103t.d0h[3]  |
| 20 |   | 2.500             | FALSE |                | 164.81070 | 164.81059 | 164.81070  | 164.81059 | Accepted   | 164.81057 | 164.81056 | 164.81055    | 18       | 164.81056     | 164.81055      | 164.81055     | 164.81055 | 164.81055      | 164.81055     | 164.81055        | y2fp0103t.d0h[4]  |
| 21 |   | 2.125             | FALSE |                | 164.81097 | 164.81085 | 164.81097  | 164.81085 | Accepted   | 164.81083 | 164.81083 | 164.81082    | 18       | 164.81083     | 164.81082      | 164.81082     | 164.81082 | 164.81082      | 164.81082     | 164.81082        | y2fp0103t.d0h[5]  |
| 22 |   | 2.500             | FALSE |                | 164.81124 | 164.81112 | 164.81124  | 164.81112 | Accepted   | 164.81110 | 164.81109 | 164.81109    | 18       | 164.81109     | 164.81109      | 164.81109     | 164.81109 | 164.81109      | 164.81109     | 164.81109        | y2fp0103t.d0h[6]  |
| 23 |   | 2.125             | FALSE |                | 164.81150 | 164.81138 | 164.81150  | 164.81138 | Accepted   | 164.81136 | 164.81136 | 164.81135    | 18       | 164.81136     | 164.81135      | 164.81135     | 164.81135 | 164.81135      | 164.81135     | 164.81135        | y2fp0103t.d0h[7]  |
| 24 |   | 2.500             | FALSE |                | 164.81177 | 164.81165 | 164.81177  | 164.81165 | Accepted   | 164.81163 | 164.81162 | 164.81162    | 18       | 164.81162     | 164.81162      | 164.81162     | 164.81162 | 164.81162      | 164.81162     | 164.81162        | y2fp0103t.d0h[8]  |
| 25 |   | 2.125             | FALSE |                | 164.81203 | 164.81192 | 164.81203  | 164.81192 | Accepted   | 164.81190 | 164.81189 | 164.81188    | 18       | 164.81189     | 164.81188      | 164.81188     | 164.81188 | 164.81188      | 164.81188     | 164.81188        | y2fp0103t.d0h[9]  |
| 26 |   | 2.500             | FALSE |                | 164.81230 | 164.81219 | 164.81230  | 164.81219 | Accepted   | 164.81217 | 164.81216 | 164.81215    | 18       | 164.81216     | 164.81215      | 164.81215     | 164.81215 | 164.81215      | 164.81215     | 164.81215        | y2fp0103t.d0h[10] |
| 27 |   | 2.125             | FALSE |                | 164.81256 | 164.81245 | 164.81256  | 164.81245 | Accepted   | 164.81243 | 164.81242 | 164.81242    | 18       | 164.81242     | 164.81242      | 164.81242     | 164.81242 | 164.81242      | 164.81242     | 164.81242        | y2fp0103t.d0h[11] |
| 28 |   | 2.500             | FALSE |                | 164.81283 | 164.81272 | 164.81283  | 164.81272 | Accepted   | 164.81270 | 164.81269 | 164.81268    | 18       | 164.81269     | 164.81268      | 164.81268     | 164.81268 | 164.81268      | 164.81268     | 164.81268        | y2fp0103t.d0h[12] |
| 29 |   | 2.125             | FALSE |                | 164.81310 | 164.81298 | 164.81310  | 164.81298 | Accepted   | 164.81296 | 164.81296 | 164.81295    | 18       | 164.81296     | 164.81295      | 164.81295     | 164.81295 | 164.81295      | 164.81295     | 164.81295        | y2fp0103t.d0h[13] |
| 30 |   | 2.500             | FALSE |                | 164.81337 | 164.81325 | 164.81337  | 164.81325 | Accepted   | 164.81323 | 164.81322 | 164.81322    | 18       | 164.81322     | 164.81322      | 164.81322     | 164.81322 | 164.81322      | 164.81322     | 164.81322        | y2fp0103t.d0h[14] |
| 31 |   | 2.125             | FALSE |                | 164.81363 | 164.81351 | 164.81363  | 164.81351 | Accepted   | 164.81349 | 164.81349 | 164.81348    | 18       | 164.81349     | 164.81348      | 164.81348     | 164.81348 | 164.81348      | 164.81348     | 164.81348        | y2fp0103t.d0h[15] |
| 32 |   | 2.500             | FALSE |                | 164.81390 | 164.81378 | 164.81390  | 164.81378 | Accepted   | 164.81376 | 164.81375 | 164.81375    | 18       | 164.81375     | 164.81375      | 164.81375     | 164.81375 | 164.81375      | 164.81375     | 164.81375        | y2fp0103t.d0h[16] |
| 33 |   | 2.125             | FALSE |                | 164.81416 | 164.81405 | 164.81416  | 164.81405 | Accepted   | 164.81403 | 164.81402 | 164.81401    | 18       | 164.81402     | 164.81401      | 164.81401     | 164.81401 | 164.81401      | 164.81401     | 164.81401        | y2fp0103t.d0h[17] |
| 34 |   | 2.500             | FALSE |                | 164.81443 | 164.81431 | 164.81443  | 164.81431 | Accepted   | 164.81430 | 164.81429 | 164.81428    | 18       | 164.81429     | 164.81428      | 164.81428     | 164.81428 | 164.81428      | 164.81428     | 164.81428        | y2fp0103t.d0h[18] |
| 35 |   | 2.125             | FALSE |                | 164.81469 | 164.81458 | 164.81469  | 164.81458 | Accepted   | 164.81456 | 164.81455 | 164.81455    | 18       | 164.81455     | 164.81455      | 164.81455     | 164.81455 | 164.81455      | 164.81455     | 164.81455        | y2fp0103t.d0h[19] |
| 36 |   | 2.500             | FALSE |                | 164.81496 | 164.81485 | 164.81496  | 164.81485 | Accepted   | 164.81483 | 164.81482 | 164.81481    | 18       | 164.81482     | 164.81481      | 164.81481     | 164.81481 | 164.81481      | 164.81481     | 164.81481        | y2fp0103t.d0h[20] |
| 37 |   | 2.125             | FALSE |                | 164.81523 | 164.81511 | 164.81523  | 164.81511 | Accepted   | 164.81509 | 164.81509 | 164.81508    | 18       | 164.81509     | 164.81508      | 164.81508     | 164.81508 | 164.81508      | 164.81508     | 164.81508        | y2fp0103t.d0h[21] |
| 38 |   | 2.500             | FALSE |                | 164.81550 | 164.81538 | 164.81550  | 164.81538 | Accepted   | 164.81536 | 164.81535 | 164.81535    | 18       | 164.81535     | 164.81535      | 164.81535     | 164.81535 | 164.81535      | 164.81535     | 164.81535        | y2fp0103t.d0h[22] |
| 39 |   | 2.125             | FALSE |                | 164.81576 | 164.81564 | 164.81576  | 164.81564 | Accepted   | 164.81562 | 164.81562 | 164.81561    | 18       | 164.81562     | 164.81561      | 164.81561     | 164.81561 | 164.81561      | 164.81561     | 164.81561        | y2fp0103t.d0h[23] |
| 40 |   | 2.500             | FALSE |                | 164.81603 | 164.81591 | 164.81603  | 164.81591 | Accepted   | 164.81589 | 164.81588 | 164.81588    | 18       | 164.81588     | 164.81588      | 164.81588     | 164.81588 | 164.81588      | 164.81588     | 164.81588        | y2fp0103t.d0h[24] |
| 41 |   | 2.500             | FALSE |                |           |           |            |           |            |           |           |              |          |               |                |               |           |                |               |                  |                   |

|    | A                 |                | B             |          | C            |             | D          |            | E       |           | F       |                | G                 |  | H |  | I |  | J |  | K |  | L |  |
|----|-------------------|----------------|---------------|----------|--------------|-------------|------------|------------|---------|-----------|---------|----------------|-------------------|--|---|--|---|--|---|--|---|--|---|--|
|    | SOGSID            | Exp Start Time | Exp Stop Time | Exp Time | PIT Req Pend | PIT Acc/Rej | PIT Status | Slew Start | PIT TDF | Slew End  | PIT TDF | RTCS timing OK | Start-Pend (sec.) |  |   |  |   |  |   |  |   |  |   |  |
| 1  |                   |                |               |          |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 2  |                   |                |               |          |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 42 | y2fp0103t.d0h[25] | 164.81591      | 164.81614     | 18       | 164.81615    | 164.81616   | Accepted   | 164.81618  |         | 164.81629 |         | n/a            | 2.125             |  |   |  |   |  |   |  |   |  |   |  |
| 43 | y2fp0104t.d0h[1]  | 164.87144      | 164.87174     | 24       | 164.87175    | 164.87176   | Accepted   | 164.87178  |         | 164.87189 |         | FALSE          | 2.125             |  |   |  |   |  |   |  |   |  |   |  |
| 44 | y2fp0104t.d0h[2]  | 164.87178      | 164.87208     | 24       | 164.87209    | 164.87210   | Accepted   | 164.87212  |         | 164.87223 |         | FALSE          | 2.500             |  |   |  |   |  |   |  |   |  |   |  |
| 45 | y2fp0104t.d0h[3]  | 164.87212      | 164.87242     | 24       | 164.87242    | 164.87243   | Accepted   | 164.87245  |         | 164.87256 |         | FALSE          | 2.125             |  |   |  |   |  |   |  |   |  |   |  |
| 46 | y2fp0104t.d0h[4]  | 164.87245      | 164.87275     | 24       | 164.87276    | 164.87277   | Accepted   | 164.87279  |         | 164.87290 |         | FALSE          | 2.500             |  |   |  |   |  |   |  |   |  |   |  |
| 47 | y2fp0104t.d0h[5]  | 164.87279      | 164.87309     | 24       | 164.87310    | 164.87310   | Accepted   | 164.87312  |         | 164.88242 |         | FALSE          | 2.125             |  |   |  |   |  |   |  |   |  |   |  |
| 48 | y2fp0104t.d0h[6]  | 164.87312      | 164.87343     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 49 | y2fp0104t.d0h[7]  | 164.87346      | 164.87376     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 50 | y2fp0104t.d0h[8]  | 164.87380      | 164.87410     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 51 | y2fp0104t.d0h[9]  | 164.87413      | 164.87443     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 52 | y2fp0104t.d0h[10] | 164.87447      | 164.87477     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 53 | y2fp0104t.d0h[11] | 164.87480      | 164.87510     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 54 | y2fp0104t.d0h[12] | 164.87514      | 164.87544     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 55 | y2fp0104t.d0h[13] | 164.87547      | 164.87577     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 56 | y2fp0104t.d0h[14] | 164.87581      | 164.87611     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 57 | y2fp0104t.d0h[15] | 164.87614      | 164.87644     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 58 | y2fp0104t.d0h[16] | 164.87648      | 164.87678     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 59 | y2fp0104t.d0h[17] | 164.87681      | 164.87712     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 60 | y2fp0104t.d0h[18] | 164.87715      | 164.87745     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 61 | y2fp0104t.d0h[19] | 164.87749      | 164.87779     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 62 | y2fp0104t.d0h[20] | 164.87784      | 164.87814     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 63 | y2fp0104t.d0h[21] | 164.87829      | 164.87859     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 64 | y2fp0104t.d0h[22] | 164.87874      | 164.87904     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 65 | y2fp0104t.d0h[23] | 164.87919      | 164.87950     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 66 | y2fp0104t.d0h[24] | 164.87985      | 164.87995     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 67 | y2fp0104t.d0h[25] | 164.88010      | 164.88040     | 24       |              |             |            |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 68 | y2gy060it.d0h[1]  | 235.75555      | 235.75559     | 1.6      | 235.75560    | 235.75560   | Accepted   | 235.75562  |         | 235.75574 |         | FALSE          | 2.000             |  |   |  |   |  |   |  |   |  |   |  |
| 69 | y2gy060it.d0h[2]  | 235.75562      | 235.75566     | 1.6      | 235.75567    | 235.75567   | Rejected   |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 70 | y2gy060it.d0h[3]  | 235.75574      | 235.75578     | 1.6      | 235.75579    | 235.75579   | Accepted   | 235.75580  |         | 235.75596 |         | n/a            | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 71 | y2gy060kt.d0h[1]  | 235.76544      | 235.76549     | 1.7      | 235.76549    | 235.76549   | Accepted   | 235.76552  |         | 235.76563 |         | FALSE          | 2.000             |  |   |  |   |  |   |  |   |  |   |  |
| 72 | y2gy060kt.d0h[2]  | 235.76551      | 235.76556     | 1.7      | 235.76556    | 235.76556   | Rejected   |            |         |           |         |                |                   |  |   |  |   |  |   |  |   |  |   |  |
| 73 | y2gy060kt.d0h[3]  | 235.76564      | 235.76568     | 1.7      | 235.76568    | 235.76568   | Accepted   | 235.76570  |         | 235.76582 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 74 | y2gy060kt.d0h[4]  | 235.76582      | 235.76586     | 1.7      | 235.76587    | 235.76587   | Accepted   | 235.76589  |         | 235.76600 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 75 | y2gy060kt.d0h[5]  | 235.76601      | 235.76605     | 1.7      | 235.76605    | 235.76605   | Accepted   | 235.76607  |         | 235.76619 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 76 | y2gy060kt.d0h[6]  | 235.76619      | 235.76623     | 1.7      | 235.76624    | 235.76624   | Accepted   | 235.76626  |         | 235.76637 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 77 | y2gy060kt.d0h[7]  | 235.76638      | 235.76642     | 1.7      | 235.76642    | 235.76642   | Accepted   | 235.76644  |         | 235.76656 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 78 | y2gy060kt.d0h[8]  | 235.76656      | 235.76660     | 1.7      | 235.76661    | 235.76661   | Accepted   | 235.76663  |         | 235.76674 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 79 | y2gy060kt.d0h[9]  | 235.76675      | 235.76679     | 1.7      | 235.76679    | 235.76679   | Accepted   | 235.76681  |         | 235.76693 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |
| 80 | y2gy060kt.d0h[10] | 235.76693      | 235.76697     | 1.7      | 235.76698    | 235.76698   | Accepted   | 235.76700  |         | 235.76711 |         | TRUE           | 1.500             |  |   |  |   |  |   |  |   |  |   |  |

FOS Peakup Timing Data

| L   | K                 | Start-Pend (sec.) | J         | RTCS timing OK | I        | Slew End PIT TDF | H         | Slew Start PIT TDF | G        | PIT Status | F         | PIT Acc/Rej | E         | PIT Req Pend | D   | Exp Time | C | Exp Stop Time | B              |        | A              |        |  |  |  |  |  |
|-----|-------------------|-------------------|-----------|----------------|----------|------------------|-----------|--------------------|----------|------------|-----------|-------------|-----------|--------------|-----|----------|---|---------------|----------------|--------|----------------|--------|--|--|--|--|--|
|     |                   |                   |           |                |          |                  |           |                    |          |            |           |             |           |              |     |          |   |               | Exp Start Time | SOGSID | Exp Start Time | SOGSID |  |  |  |  |  |
| 1   |                   |                   |           |                |          |                  |           |                    |          |            |           |             |           |              |     |          |   |               |                |        |                |        |  |  |  |  |  |
| 2   |                   |                   |           |                |          |                  |           |                    |          |            |           |             |           |              |     |          |   |               |                |        |                |        |  |  |  |  |  |
| 81  | y2gy060kt.d0h[11] | 235.76712         | 235.76716 | 1.7            | Accepted | 235.76716        | 235.76718 | 235.76730          | Accepted | 235.76716  | 235.76716 | 235.76716   | 235.76716 | 235.76716    | 1.7 |          |   |               |                |        |                |        |  |  |  |  |  |
| 82  | y2gy060kt.d0h[12] | 235.76730         | 235.76734 | 1.7            | Accepted | 235.76734        | 235.76737 | 235.76750          | Accepted | 235.76735  | 235.76735 | 235.76735   | 235.76735 | 235.76735    | 1.7 |          |   |               |                |        |                |        |  |  |  |  |  |
| 83  | y2gy060mt.d0h[1]  | 235.78100         | 235.78104 | 1.8            | Accepted | 235.78105        | 235.78107 | 235.78119          | Accepted | 235.78105  | 235.78105 | 235.78105   | 235.78105 | 235.78105    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 84  | y2gy060mt.d0h[2]  | 235.78107         | 235.78112 | 1.8            | Rejected | 235.78112        | 235.78112 | 235.78124          | Rejected | 235.78112  | 235.78112 | 235.78112   | 235.78112 | 235.78112    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 85  | y2gy060mt.d0h[3]  | 235.78119         | 235.78124 | 1.8            | Accepted | 235.78124        | 235.78127 | 235.78138          | Accepted | 235.78124  | 235.78124 | 235.78124   | 235.78124 | 235.78124    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 86  | y2gy060mt.d0h[4]  | 235.78127         | 235.78132 | 1.8            | Rejected | 235.78132        | 235.78132 | 235.78144          | Rejected | 235.78132  | 235.78132 | 235.78132   | 235.78132 | 235.78132    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 87  | y2gy060mt.d0h[5]  | 235.78139         | 235.78143 | 1.8            | Accepted | 235.78144        | 235.78146 | 235.78158          | Accepted | 235.78144  | 235.78144 | 235.78144   | 235.78144 | 235.78144    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 88  | y2gy060mt.d0h[6]  | 235.78146         | 235.78151 | 1.8            | Rejected | 235.78152        | 235.78152 | 235.78164          | Rejected | 235.78152  | 235.78152 | 235.78152   | 235.78152 | 235.78152    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 89  | y2gy060mt.d0h[7]  | 235.78158         | 235.78163 | 1.8            | Accepted | 235.78164        | 235.78166 | 235.78178          | Accepted | 235.78164  | 235.78164 | 235.78164   | 235.78164 | 235.78164    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 90  | y2gy060mt.d0h[8]  | 235.78166         | 235.78170 | 1.8            | Rejected | 235.78171        | 235.78171 | 235.78184          | Rejected | 235.78171  | 235.78171 | 235.78171   | 235.78171 | 235.78171    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 91  | y2gy060mt.d0h[9]  | 235.78178         | 235.78183 | 1.8            | Accepted | 235.78184        | 235.78186 | 235.78197          | Accepted | 235.78184  | 235.78184 | 235.78184   | 235.78184 | 235.78184    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 92  | y2gy060mt.d0h[10] | 235.78186         | 235.78190 | 1.8            | Rejected | 235.78191        | 235.78191 | 235.78203          | Rejected | 235.78191  | 235.78191 | 235.78191   | 235.78191 | 235.78191    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 93  | y2gy060mt.d0h[11] | 235.78198         | 235.78202 | 1.8            | Accepted | 235.78203        | 235.78205 | 235.78217          | Accepted | 235.78203  | 235.78203 | 235.78203   | 235.78203 | 235.78203    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 94  | y2gy060mt.d0h[12] | 235.78205         | 235.78210 | 1.8            | Rejected | 235.78211        | 235.78211 | 235.78223          | Rejected | 235.78211  | 235.78211 | 235.78211   | 235.78211 | 235.78211    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 95  | y2gy060mt.d0h[13] | 235.78218         | 235.78222 | 1.8            | Accepted | 235.78223        | 235.78225 | 235.78237          | Accepted | 235.78223  | 235.78223 | 235.78223   | 235.78223 | 235.78223    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 96  | y2gy060mt.d0h[14] | 235.78225         | 235.78229 | 1.8            | Rejected | 235.78230        | 235.78230 | 235.78243          | Rejected | 235.78230  | 235.78230 | 235.78230   | 235.78230 | 235.78230    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 97  | y2gy060mt.d0h[15] | 235.78237         | 235.78242 | 1.8            | Accepted | 235.78243        | 235.78245 | 235.78256          | Accepted | 235.78243  | 235.78243 | 235.78243   | 235.78243 | 235.78243    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 98  | y2gy060mt.d0h[16] | 235.78245         | 235.78249 | 1.8            | Rejected | 235.78250        | 235.78250 | 235.78262          | Rejected | 235.78250  | 235.78250 | 235.78250   | 235.78250 | 235.78250    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 99  | y2gy060mt.d0h[17] | 235.78257         | 235.78261 | 1.8            | Accepted | 235.78262        | 235.78265 | 235.78276          | Accepted | 235.78262  | 235.78262 | 235.78262   | 235.78262 | 235.78262    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 100 | y2gy060mt.d0h[18] | 235.78264         | 235.78269 | 1.8            | Rejected | 235.78270        | 235.78270 | 235.78282          | Rejected | 235.78270  | 235.78270 | 235.78270   | 235.78270 | 235.78270    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 101 | y2gy060mt.d0h[19] | 235.78277         | 235.78281 | 1.8            | Accepted | 235.78282        | 235.78284 | 235.78315          | Accepted | 235.78282  | 235.78282 | 235.78282   | 235.78282 | 235.78282    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 102 | y2gy060mt.d0h[20] | 235.78284         | 235.78288 | 1.8            |          |                  |           |                    |          |            |           |             |           |              | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 103 | y2gy060mt.d0h[21] | 235.78296         | 235.78301 | 1.8            |          |                  |           |                    |          |            |           |             |           |              | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 104 | y2gy060mt.d0h[22] | 235.78304         | 235.78308 | 1.8            |          |                  |           |                    |          |            |           |             |           |              | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 105 | y2gy060mt.d0h[23] | 235.78316         | 235.78320 | 1.8            | Accepted | 235.78321        | 235.78324 | 235.78335          | Accepted | 235.78321  | 235.78321 | 235.78321   | 235.78321 | 235.78321    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 106 | y2gy060mt.d0h[24] | 235.78323         | 235.78328 | 1.8            | Rejected | 235.78329        | 235.78329 | 235.78341          | Rejected | 235.78329  | 235.78329 | 235.78329   | 235.78329 | 235.78329    | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 107 | y2gy060mt.d0h[25] |                   |           |                |          |                  |           |                    |          |            |           |             |           |              | 1.8 |          |   |               |                |        |                |        |  |  |  |  |  |
| 108 | y2gy060ot.d0h[1]  | 235.80359         | 235.80367 | 5.1            | Accepted | 235.80368        | 235.80370 | 235.80382          | Accepted | 235.80368  | 235.80368 | 235.80368   | 235.80368 | 235.80368    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 109 | y2gy060ot.d0h[2]  | 235.80382         | 235.80390 | 5.1            | Accepted | 235.80391        | 235.80393 | 235.80405          | Accepted | 235.80392  | 235.80392 | 235.80392   | 235.80392 | 235.80392    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 110 | y2gy060ot.d0h[3]  | 235.80393         | 235.80401 | 5.1            | Rejected | 235.80402        | 235.80402 | 235.80416          | Rejected | 235.80402  | 235.80402 | 235.80402   | 235.80402 | 235.80402    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 111 | y2gy060ot.d0h[4]  | 235.80405         | 235.80413 | 5.1            | Accepted | 235.80414        | 235.80416 | 235.80428          | Accepted | 235.80415  | 235.80415 | 235.80415   | 235.80415 | 235.80415    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 112 | y2gy060ot.d0h[5]  | 235.80416         | 235.80424 | 5.1            | Rejected | 235.80425        | 235.80425 | 235.80440          | Rejected | 235.80425  | 235.80425 | 235.80425   | 235.80425 | 235.80425    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 113 | y2gy060ot.d0h[6]  | 235.80428         | 235.80436 | 5.1            | Accepted | 235.80437        | 235.80440 | 235.80451          | Accepted | 235.80438  | 235.80438 | 235.80438   | 235.80438 | 235.80438    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 114 | y2gy060ot.d0h[7]  | 235.80439         | 235.80447 | 5.1            | Rejected | 235.80448        | 235.80448 | 235.80463          | Rejected | 235.80448  | 235.80448 | 235.80448   | 235.80448 | 235.80448    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 115 | y2gy060ot.d0h[8]  | 235.80451         | 235.80459 | 5.1            | Accepted | 235.80460        | 235.80463 | 235.80474          | Accepted | 235.80461  | 235.80461 | 235.80461   | 235.80461 | 235.80461    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 116 | y2gy060ot.d0h[9]  | 235.80462         | 235.80470 | 5.1            | Rejected | 235.80471        | 235.80471 | 235.80486          | Rejected | 235.80471  | 235.80471 | 235.80471   | 235.80471 | 235.80471    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 117 | y2gy060ot.d0h[10] | 235.80474         | 235.80483 | 5.1            | Accepted | 235.80483        | 235.80484 | 235.80497          | Accepted | 235.80484  | 235.80484 | 235.80484   | 235.80484 | 235.80484    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 118 | y2gy060ot.d0h[11] | 235.80485         | 235.80494 | 5.1            | Rejected | 235.80494        | 235.80495 | 235.80507          | Rejected | 235.80495  | 235.80495 | 235.80495   | 235.80495 | 235.80495    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |
| 119 | y2gy060ot.d0h[12] | 235.80498         | 235.80506 | 5.1            | Accepted | 235.80507        | 235.80509 | 235.80521          | Accepted | 235.80507  | 235.80507 | 235.80507   | 235.80507 | 235.80507    | 5.1 |          |   |               |                |        |                |        |  |  |  |  |  |



|     | A                 |           | B              |           | C             |  | D        |  | E            |  | F           |  | G          |  | H          |  | I        |  | J              |  | K          |  | L      |  |
|-----|-------------------|-----------|----------------|-----------|---------------|--|----------|--|--------------|--|-------------|--|------------|--|------------|--|----------|--|----------------|--|------------|--|--------|--|
| 1   | SOGSID            |           | Exp Start Time |           | Exp Stop Time |  | Exp Time |  | PIT Req Pend |  | PIT Acc/Rej |  | PIT Status |  | Slew Start |  | Slew End |  | RTCS timing OK |  | Start-Pend |  | (sec.) |  |
| 2   |                   |           |                |           |               |  |          |  |              |  |             |  |            |  | PIT TDF    |  | PIT TDF  |  |                |  |            |  |        |  |
| 120 | y2gy0600t.d0h[13] | 235.80509 | 235.80517      | 235.80518 | Rejected      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 121 | y2gy0600t.d0h[14] | 235.80521 | 235.80529      | 235.80530 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 122 | y2gy0600t.d0h[15] | 235.80532 | 235.80540      | 235.80541 | Rejected      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 123 | y2gy0600t.d0h[16] | 235.80544 | 235.80552      | 235.80553 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 124 | y2gy0600t.d0h[17] | 235.80555 | 235.80563      | 235.80564 | Rejected      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 125 | y2gy0600t.d0h[18] | 235.80567 | 235.80575      | 235.80576 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 126 | y2gy0600t.d0h[19] | 235.80578 | 235.80586      | 235.80587 | Rejected      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 127 | y2gy0600t.d0h[20] | 235.80590 | 235.80598      | 235.80600 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 128 | y2gy0600t.d0h[21] | 235.80601 | 235.80609      | 235.80610 | Rejected      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 129 | y2gy0600t.d0h[22] | 235.80613 | 235.80621      | 235.80622 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 130 | y2gy0600t.d0h[23] | 235.80624 | 235.80632      | 235.80633 | Rejected      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 131 | y2gy0600t.d0h[24] | 235.80636 | 235.80644      | 235.80645 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 132 | y2gy0600t.d0h[25] | 235.80647 | 235.80655      | 235.80656 | Rejected      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 133 | y2gy0600t.d0h[1]  | 235.87023 | 235.87051      | 235.87052 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 134 | y2gy0600t.d0h[2]  | 235.87054 | 235.87081      | 235.87082 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 135 | y2gy0600t.d0h[3]  | 235.87084 | 235.87111      | 235.87112 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 136 | y2gy0600t.d0h[4]  | 235.87114 | 235.87141      | 235.87142 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 137 | y2gy0600t.d0h[5]  | 235.87144 | 235.87171      | 235.87172 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 138 | y2gy0600t.d0h[6]  | 235.87174 | 235.87202      | 235.87202 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 139 | y2gy0600t.d0h[7]  | 235.87204 | 235.87232      | 235.87232 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 140 | y2gy0600t.d0h[8]  | 235.87234 | 235.87262      | 235.87262 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 141 | y2gy0600t.d0h[9]  | 235.87264 | 235.87292      | 235.87292 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 142 | y2gy0600t.d0h[10] | 235.87295 | 235.87322      | 235.87322 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 143 | y2gy0600t.d0h[11] | 235.87325 | 235.87352      | 235.87352 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 144 | y2gy0600t.d0h[12] | 235.87355 | 235.87382      | 235.87382 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 145 | y2gy0600t.d0h[13] | 235.87385 | 235.87412      | 235.87412 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 146 | y2gy0600t.d0h[14] | 235.87415 | 235.87442      | 235.87442 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 147 | y2gy0600t.d0h[15] | 235.87445 | 235.87472      | 235.87472 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 148 | y2gy0600t.d0h[16] | 235.87475 | 235.87502      | 235.87502 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 149 | y2gy0600t.d0h[17] | 235.87505 | 235.87533      | 235.87533 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 150 | y2gy0600t.d0h[18] | 235.87535 | 235.87563      | 235.87563 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 151 | y2gy0600t.d0h[19] | 235.87565 | 235.87593      | 235.87593 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 152 | y2gy0600t.d0h[20] | 235.87595 | 235.87623      | 235.87623 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 153 | y2gy0600t.d0h[21] | 235.87626 | 235.87656      | 235.87653 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 154 | y2gy0600t.d0h[22] | 235.87656 | 235.87683      | 235.87683 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 155 | y2gy0600t.d0h[23] | 235.87686 | 235.87713      | 235.87713 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 156 | y2gy0600t.d0h[24] | 235.87716 | 235.87743      | 235.87743 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 157 | y2gy0600t.d0h[25] | 235.87746 | 235.87773      | 235.87773 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |
| 158 | y2gy0600t.d0h[1]  | 235.89970 | 235.90049      | 235.90049 | Accepted      |  |          |  |              |  |             |  |            |  |            |  |          |  |                |  |            |  |        |  |

FOS Peakup Timing Data

| L   | K | Start-Pend (sec.) | J | RTCS timing Ok | I | Slew End<br>PIT TDF | H | Slew Start<br>PIT TDF | G | PIT Status | F | PIT Acc/Rej | E | PIT Req Pend | D | Exp Time | C             |                | B             |                | A      |  |  |  |
|-----|---|-------------------|---|----------------|---|---------------------|---|-----------------------|---|------------|---|-------------|---|--------------|---|----------|---------------|----------------|---------------|----------------|--------|--|--|--|
|     |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          | Exp Stop Time | Exp Start Time | Exp Stop Time | Exp Start Time | SOGSID |  |  |  |
| 1   |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 2   |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 159 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 160 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 161 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 162 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 163 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 164 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 165 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 166 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 167 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 168 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 169 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 170 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 171 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 172 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 173 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 174 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 175 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 176 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 177 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 178 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 179 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 180 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 181 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 182 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 183 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 184 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 185 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 186 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 187 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 188 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 189 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 190 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 191 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 192 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 193 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 194 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 195 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 196 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |
| 197 |   |                   |   |                |   |                     |   |                       |   |            |   |             |   |              |   |          |               |                |               |                |        |  |  |  |

|     | A                 | B              | C             | D        | E            | F           | G          | H                     | I                   | J              | K                    | L |
|-----|-------------------|----------------|---------------|----------|--------------|-------------|------------|-----------------------|---------------------|----------------|----------------------|---|
|     | SOGS ID           | Exp Start Time | Exp Stop Time | Exp Time | PIT Req Pend | PIT Acc/Ref | PIT Status | Slew Start<br>PIT TDF | Slew End<br>PIT TDF | RTCS Timing OK | Start-Pend<br>(sec.) |   |
| 1   |                   |                |               |          |              |             |            |                       |                     |                |                      |   |
| 2   |                   |                |               |          |              |             |            |                       |                     |                |                      |   |
| 198 | y2gy030mt.d0h[1]  | 242.26875      | 242.26880     | 2.4      | 242.26881    | 242.26881   | Accepted   | 242.26884             | 242.26895           | FALSE          | 2.000                |   |
| 199 | y2gy030mt.d0h[2]  | 242.26884      | 242.26889     | 2.4      | 242.26890    | 242.26890   | Rejected   |                       |                     | FALSE          |                      |   |
| 200 | y2gy030mt.d0h[3]  | 242.26898      | 242.26903     | 2.4      | 242.26903    | 242.26903   | Accepted   | 242.26906             |                     | FALSE          | 2.000                |   |
| 201 | y2gy030mt.d0h[4]  | 242.26906      | 242.26911     | 2.4      | 242.26912    | 242.26912   | Rejected   |                       |                     |                |                      |   |
| 202 | y2gy030mt.d0h[5]  | 242.26918      | 242.26923     | 2.4      | 242.26924    | 242.26924   | Accepted   | 242.26925             | 242.26937           | TRUE           | 1.500                |   |
| 203 | y2gy030mt.d0h[6]  | 242.26937      | 242.26942     | 2.4      | 242.26943    | 242.26943   | Accepted   | 242.26945             | 242.26957           | TRUE           | 1.500                |   |
| 204 | y2gy030mt.d0h[7]  | 242.26957      | 242.26962     | 2.4      | 242.26963    | 242.26963   | Accepted   | 242.26965             | 242.26976           | TRUE           | 1.500                |   |
| 205 | y2gy030mt.d0h[8]  | 242.26977      | 242.26982     | 2.4      | 242.26983    | 242.26983   | Accepted   | 242.26984             | 242.26996           | TRUE           | 1.500                |   |
| 206 | y2gy030mt.d0h[9]  | 242.26997      | 242.27002     | 2.4      | 242.27002    | 242.27002   | Accepted   | 242.27004             | 242.27016           | TRUE           | 1.500                |   |
| 207 | y2gy030mt.d0h[10] | 242.27016      | 242.27021     | 2.4      | 242.27022    | 242.27022   | Accepted   | 242.27024             | 242.27035           | TRUE           | 1.500                |   |
| 208 | y2gy030mt.d0h[11] | 242.27036      | 242.27041     | 2.4      | 242.27042    | 242.27042   | Accepted   | 242.27043             | 242.27055           | TRUE           | 1.500                |   |
| 209 | y2gy030mt.d0h[12] | 242.27056      | 242.27061     | 2.4      | 242.27061    | 242.27061   | Accepted   | 242.27063             | 242.27075           | TRUE           | 1.500                |   |
| 210 | y2gy030mt.d0h[13] | 242.27075      | 242.27080     | 2.4      | 242.27081    | 242.27081   | Accepted   | 242.27083             | 242.27094           | TRUE           | 1.500                |   |
| 211 | y2gy030mt.d0h[14] | 242.27095      | 242.27100     | 2.4      | 242.27101    | 242.27101   | Accepted   | 242.27102             | 242.27114           | TRUE           | 1.500                |   |
| 212 | y2gy030mt.d0h[15] | 242.27115      | 242.27120     | 2.4      | 242.27120    | 242.27120   | Accepted   | 242.27122             | 242.27134           | TRUE           | 1.500                |   |
| 213 | y2gy030mt.d0h[16] | 242.27134      | 242.27139     | 2.4      | 242.27140    | 242.27140   | Accepted   | 242.27142             | 242.27153           | TRUE           | 1.500                |   |
| 214 | y2gy030mt.d0h[17] | 242.27154      | 242.27159     | 2.4      | 242.27160    | 242.27160   | Accepted   | 242.27162             | 242.27173           | TRUE           | 1.500                |   |
| 215 | y2gy030mt.d0h[18] | 242.27174      | 242.27179     | 2.4      | 242.27179    | 242.27179   | Accepted   | 242.27181             | 242.27193           | TRUE           | 1.500                |   |
| 216 | y2gy030mt.d0h[19] | 242.27193      | 242.27198     | 2.4      | 242.27199    | 242.27199   | Accepted   | 242.27201             | 242.27212           | TRUE           | 1.500                |   |
| 217 | y2gy030mt.d0h[20] | 242.27213      | 242.27218     | 2.4      | 242.27219    | 242.27219   | Accepted   | 242.27221             | 242.27232           | TRUE           | 1.500                |   |
| 218 | y2gy030mt.d0h[21] | 242.27233      | 242.27238     | 2.4      | 242.27238    | 242.27238   | Accepted   | 242.27240             | 242.27252           | TRUE           | 1.500                |   |
| 219 | y2gy030mt.d0h[22] | 242.27252      | 242.27257     | 2.4      | 242.27258    | 242.27258   | Accepted   | 242.27260             | 242.27271           | TRUE           | 1.500                |   |
| 220 | y2gy030mt.d0h[23] | 242.27272      | 242.27277     | 2.4      | 242.27278    | 242.27278   | Accepted   | 242.27280             | 242.27291           | TRUE           | 1.500                |   |
| 221 | y2gy030mt.d0h[24] | 242.27292      | 242.27297     | 2.4      | 242.27298    | 242.27298   | Accepted   | 242.27299             | 242.27311           | TRUE           | 1.500                |   |
| 222 | y2gy030mt.d0h[25] | 242.27311      | 242.27316     | 2.4      | 242.27317    | 242.27317   | Accepted   | 242.27319             | 242.27330           | n/a            | 1.500                |   |
| 223 | y2gy030ot.d0h[1]  | 242.29174      | 242.29185     | 7.2      | 242.29185    | 242.29186   | Accepted   | 242.29187             | 242.29199           | TRUE           | 1.625                |   |
| 224 | y2gy030ot.d0h[2]  | 242.29199      | 242.29210     | 7.2      | 242.29211    | 242.29212   | Accepted   | 242.29213             | 242.29224           | FALSE          | 1.625                | * |
| 225 | y2gy030ot.d0h[3]  | 242.29212      | 242.29223     | 7.2      | 242.29224    | 242.29225   | Accepted   | 242.29227             | 242.29238           | FALSE          | 2.125                |   |
| 226 | y2gy030ot.d0h[4]  | 242.29225      | 242.29236     | 7.2      | 242.29237    | 242.29238   | Rejected   |                       |                     |                |                      |   |
| 227 | y2gy030ot.d0h[5]  | 242.29235      | 242.29250     | 7.2      | 242.29251    | 242.29252   | Accepted   | 242.29253             | 242.29265           | FALSE          | 2.125                |   |
| 228 | y2gy030ot.d0h[6]  | 242.29253      | 242.29264     | 7.2      | 242.29265    | 242.29265   | Accepted   | 242.29267             | 242.29279           | FALSE          | 2.125                |   |
| 229 | y2gy030ot.d0h[7]  | 242.29266      | 242.29277     | 7.2      | 242.29277    | 242.29278   | Rejected   |                       |                     |                |                      |   |
| 230 | y2gy030ot.d0h[8]  | 242.29279      | 242.29290     | 7.2      | 242.29291    | 242.29292   | Accepted   | 242.29294             | 242.29305           | FALSE          | 2.125                |   |
| 231 | y2gy030ot.d0h[9]  | 242.29293      | 242.29304     | 7.2      | 242.29305    | 242.29306   | Accepted   | 242.29308             | 242.29319           | FALSE          | 2.125                |   |
| 232 | y2gy030ot.d0h[10] | 242.29306      | 242.29317     | 7.2      | 242.29318    | 242.29319   | Rejected   |                       |                     |                |                      |   |
| 233 | y2gy030ot.d0h[11] | 242.29320      | 242.29331     | 7.2      | 242.29332    | 242.29333   | Accepted   | 242.29334             | 242.29346           | FALSE          | 2.125                |   |
| 234 | y2gy030ot.d0h[12] | 242.29333      | 242.29344     | 7.2      | 242.29346    | 242.29346   | Accepted   | 242.29348             | 242.29360           | FALSE          | 2.125                |   |
| 235 | y2gy030ot.d0h[13] | 242.29347      | 242.29358     | 7.2      | 242.29358    | 242.29359   | Rejected   |                       |                     |                |                      |   |
| 236 | y2gy030ot.d0h[14] | 242.29360      | 242.29371     | 7.2      | 242.29372    | 242.29373   | Accepted   | 242.29375             | 242.29386           | FALSE          | 2.125                |   |



|     | A                 | B              | C             | D        | E            | F           | G          | H          | I         | J              | K          | L |
|-----|-------------------|----------------|---------------|----------|--------------|-------------|------------|------------|-----------|----------------|------------|---|
|     | SOGS ID           | Exp Start Time | Exp Stop Time | Exp Time | PIT Req Pend | PIT Acc/Ref | PIT Status | Slew Start | Slew End  | RTCS timing OK | Start-Pend |   |
| 1   |                   |                |               |          |              |             |            |            |           |                |            |   |
| 2   |                   |                |               |          |              |             |            |            |           |                |            |   |
| 276 | y2gy030tt.d0h[4]  | 242.40909      | 242.40913     | 1.7      | 242.40913    | 242.40914   | Accepted   | 242.40915  | 242.40927 | TRUE           | 1.625      |   |
| 277 | y2gy030tt.d0h[5]  | 242.40927      | 242.40931     | 1.7      | 242.40932    | 242.40933   | Accepted   | 242.40934  | 242.40945 | TRUE           | 1.625      |   |
| 278 | y2gy030tt.d0h[6]  | 242.40946      | 242.40950     | 1.7      | 242.40950    | 242.40951   | Accepted   | 242.40952  | 242.40964 | TRUE           | 1.625      |   |
| 279 | y2gy030tt.d0h[7]  | 242.40964      | 242.40968     | 1.7      | 242.40969    | 242.40970   | Accepted   | 242.40971  | 242.40982 | TRUE           | 1.625      |   |
| 280 | y2gy030tt.d0h[8]  | 242.40983      | 242.40987     | 1.7      | 242.40987    | 242.40988   | Accepted   | 242.40989  | 242.41001 | TRUE           | 1.625      |   |
| 281 | y2gy030tt.d0h[9]  | 242.41001      | 242.41005     | 1.7      | 242.41006    | 242.41007   | Accepted   | 242.41008  | 242.41019 | TRUE           | 1.625      |   |
| 282 | y2gy030tt.d0h[10] | 242.41020      | 242.41024     | 1.7      | 242.41025    | 242.41025   | Accepted   | 242.41026  | 242.41038 | TRUE           | 1.625      |   |
| 283 | y2gy030tt.d0h[11] | 242.41038      | 242.41042     | 1.7      | 242.41043    | 242.41044   | Accepted   | 242.41045  | 242.41056 | TRUE           | 1.625      |   |
| 284 | y2gy030tt.d0h[12] | 242.41057      | 242.41061     | 1.7      | 242.41062    | 242.41062   | Accepted   | 242.41063  | 242.41075 | TRUE           | 1.625      |   |
| 285 | y2gy030tt.d0h[13] | 242.41075      | 242.41079     | 1.7      | 242.41080    | 242.41081   | Accepted   | 242.41082  | 242.41094 | TRUE           | 1.625      |   |
| 286 | y2gy030tt.d0h[14] | 242.41094      | 242.41098     | 1.7      | 242.41099    | 242.41099   | Accepted   | 242.41100  | 242.41112 | TRUE           | 1.625      |   |
| 287 | y2gy030tt.d0h[15] | 242.41112      | 242.41116     | 1.7      | 242.41117    | 242.41118   | Accepted   | 242.41119  | 242.41131 | TRUE           | 1.625      |   |
| 288 | y2gy030tt.d0h[16] | 242.41131      | 242.41135     | 1.7      | 242.41136    | 242.41136   | Accepted   | 242.41137  | 242.41149 | TRUE           | 1.625      |   |
| 289 | y2gy030tt.d0h[17] | 242.41149      | 242.41153     | 1.7      | 242.41154    | 242.41155   | Accepted   | 242.41156  | 242.41168 | TRUE           | 1.625      |   |
| 290 | y2gy030tt.d0h[18] | 242.41168      | 242.41172     | 1.7      | 242.41173    | 242.41173   | Accepted   | 242.41175  | 242.41186 | TRUE           | 1.625      |   |
| 291 | y2gy030tt.d0h[19] | 242.41186      | 242.41190     | 1.7      | 242.41191    | 242.41192   | Accepted   | 242.41193  | 242.41205 | TRUE           | 1.625      |   |
| 292 | y2gy030tt.d0h[20] | 242.41205      | 242.41209     | 1.7      | 242.41210    | 242.41210   | Accepted   | 242.41212  | 242.41223 | TRUE           | 1.625      |   |
| 293 | y2gy030tt.d0h[21] | 242.41223      | 242.41227     | 1.7      | 242.41228    | 242.41229   | Accepted   | 242.41230  | 242.41242 | TRUE           | 1.625      |   |
| 294 | y2gy030tt.d0h[22] | 242.41242      | 242.41246     | 1.7      | 242.41247    | 242.41247   | Accepted   | 242.41249  | 242.41260 | TRUE           | 1.625      |   |
| 295 | y2gy030tt.d0h[23] | 242.41261      | 242.41265     | 1.7      | 242.41265    | 242.41266   | Accepted   | 242.41267  | 242.41279 | TRUE           | 1.625      |   |
| 296 | y2gy030tt.d0h[24] | 242.41279      | 242.41283     | 1.7      | 242.41284    | 242.41284   | Accepted   | 242.41286  | 242.41297 | TRUE           | 1.625      |   |
| 297 | y2gy030tt.d0h[25] | 242.41298      | 242.41302     | 1.7      | 242.41302    | 242.41303   | Accepted   | 242.41304  | 242.41316 | TRUE           | 1.625      |   |

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TO: L. Boyce / J. Geiger  
 FROM: B. Vreeland/MOSES Flight Software Task Manager  
 SUBJECT: SI Offset Maneuver Timing Analysis  
 REFERENCE: DM04, Vol III, Flight Software Detailed Design

The timing of the accept/reject and take data flags for the SI offset maneuvers are influenced by several factors. The factors are the status of the command generator, which PIT cycle the request comes in on and delay loops in the command generator processing.

The PIT exchange and data processing occurs each half second on specific and therefore consistent 10hz cycles, see figure 1. The data sent out (SSM PIT) is based on data processed from the previous half second, and the input data (SIC&DH PIT) processed, is data from the previous half second.

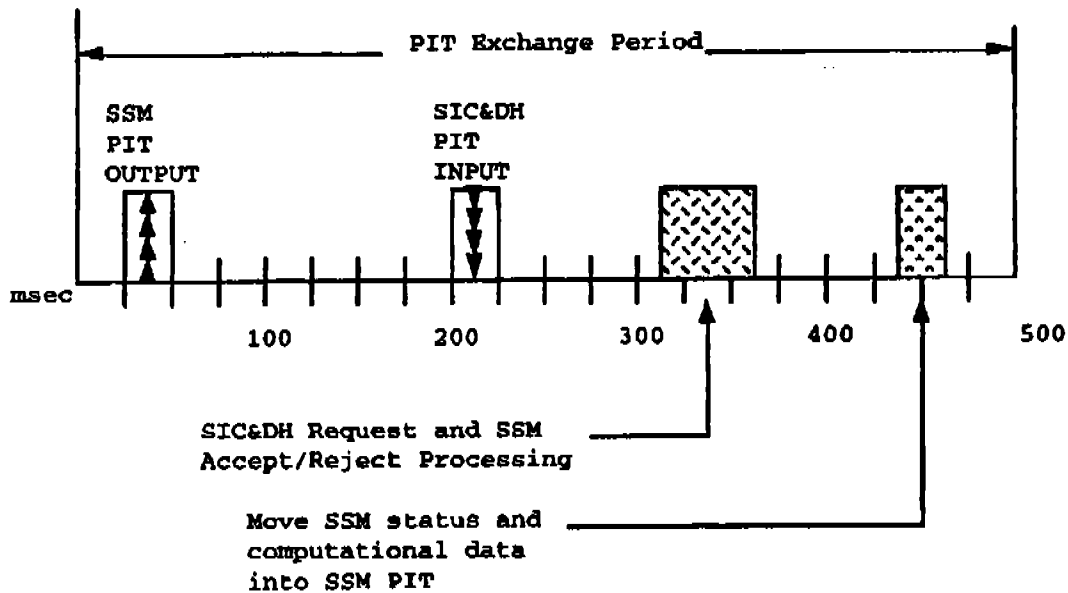


Figure 1

The PIT processing code after receiving an offset maneuver request, checks the magnitude of the offset, sets the command generator mail box for the offset and sets a delay flag (DFTCGC) to force a wait until the command generator accepts/rejects the offset. When the command generator accepts or rejects the offset (via SIMAFL) the PIT processing will set the accept or reject PIT flag accordingly.

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The command generator receives a offset request either from the PIT processing code or from the ground (via RTC or SPC). The command generator then synchronizes with the next 1 second mark, initializes for the new command and waits 1 full second before processing the offset request. After this 1 second period, the command generator will determine if it will accept or reject the request, by setting it's accept/reject flag (SIMAFL).

By design, the accept of an offset maneuver should not happen until the command generator evaluates the offset and accepts the command. Rejects of an offset maneuver could happen on the next PIT exchange or after the command generator processes the request. But due to a flight software discrepancy (still under investigation) the accept happens on the next PIT, because the command generator accept/reject flag, SIMAFL, is already set to a one (accept) prior to the request coming in.

The timing of the various flags can best be explained by a state diagram of the flags at the end of each PIT exchange period. Two state diagrams are included, one based on intended design and one based on the error stated above.

Intended Design for Accept/Reject of Offset:

5 sec steps

| PIT | OFFSET REQ    | ACC/REJ        | TD FLAG | DFTCCG | SIMAFL |
|-----|---------------|----------------|---------|--------|--------|
| x   | 0             | 00             | 1       | 0      | 0      |
| x1  | 1             | 00             | 1       | 1      | 0      |
| x2  | 1             | 00             | 1       | 1      | 0      |
| x3  | 1 <i>2sec</i> | 00 <i>2sec</i> | 1       | 1      | 0      |
| x4  | 1             | 00             | 1       | 1      | 0      |
| x5  | 1             | 10             | 0       | 0      | 1*     |
| x6  | 1             | 10             | 0       | 0      | 0      |
| x7  | 0             | 00             | 0       | 0      | 0      |
| x8  | 0             | 00             | 0       | 0      | 0      |
| x9  | 0             | 00             | 0       | 0      | 0      |
| x10 | 0             | 00             | 0       | 0      | 0      |
| x11 | 0             | 00             | 0       | 0      | 0      |

\* - note: SIMAFL gets set to a one by the CMD GEN and cleared by PIT processing (i.e. this flag will be zero at end of PIT processing)

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## Accept/Reject of Offset based on Error:

| PIT | OFFSET REQ        | ACC/REJ             | TD FLAG | DFTCGC | SIMAFI |
|-----|-------------------|---------------------|---------|--------|--------|
| x   | 0                 | 00                  | 1       | 0      | 1      |
| x1  | 1 <sup>1.5s</sup> | 00                  | 1       | 1      | 1      |
| x2  | 1                 | 10                  | 1       | 0      | 0      |
| x3  | 1                 | 10 <sup>2secs</sup> | 1       | 0      | 0      |
| x4  | 0                 | 00                  | 1       | 0      | 0      |
| x5  | 0                 | 00                  | 0       | 0      | 1      |
| x6  | 0                 | 00                  | 0       | 0      | 1      |
| x7  | 0                 | 00                  | 0       | 0      | 1      |
| x8  | 0                 | 00                  | 0       | 0      | 1      |
| x9  | 0                 | 00                  | 0       | 0      | 1      |
| x10 | 0                 | 00                  | 0       | 0      | 1      |
| x11 | 0                 | 00                  | 0       | 0      | 1      |

With the error condition (SIMAFI set to one prior to request) the accept of an offset from the PIT will occur on the next PIT exchange from when the request came in. Without the error condition the accept will occur on the same PIT as when the take data flag comes down.

The timing on the take data flag is dependent on which PIT exchange period the requests comes in on, prior to the start of the one second period. The minimum time for the take data flag to come down is 1.5 seconds the maximum time is 2.0 seconds (based on quantization of .5 seconds due to PIT processing rate). This time does not include the time needed for the PIT exchange, this time only accounts for the time from when DF-224 first "gets" the request until the take data flag goes down. One full second should be added to this time to account .5 second exchange on the front end and the .5 second exchange on the back end.

Therefore the minimum and maximum times for accept and TD flag including PIT exchange are:

With current error condition:

| flag    | Minimum | Maximum |
|---------|---------|---------|
| Accept  | 1.5     | 1.5     |
| Reject  | 1.5     | 1.5     |
| TD Flag | 2.5     | 3.0     |



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With out error condition:

| <u>flag</u> | <u>Minimum</u> | <u>Maximum</u> |
|-------------|----------------|----------------|
| Accept      | 2.5            | 3.0            |
| Reject      | 1.5            | 3.0            |
| TD Flag     | 2.5            | 3.0            |

If you have any questions please call 901-6092.

B.E. Vreeland  
MOSES/Flight Software Task Manager

