

Flight Data File Crew Activity Plan

STS-7

Cycle 3 Trajectory

Mission Operations Directorate
Operations Division

Final
April 28, 1983



National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

FLIGHT DATA FILE

CONTROL

Ascent Checklist
Post Insertion Book
Crew Activity Plan
Deorbit Preparation Book
Entry Checklist

SUPPORT

Cue Cards
EVA Checklist
Flight Maps and Charts
Orbit Operations Checklist
Payload Deploy Checklist*
Payload Operations Checklist*
PDRS Operations Checklist*
Photo/TV Checklist
Proximity Operations Book*

OFF-NOMINAL

Ascent Pocket Checklist
Orbit Pocket Checklist
Entry Pocket Checklist
Ascent/Entry Pocket Checklist MS Supplement
Contingency Deorbit Preparation Book
Contingency EVA Operations Book
In-Flight Maintenance Checklist
Medical Checklist
Payload Systems Data and Malfunction Procedures*
Systems Malfunction Procedures

REFERENCE

Data Processing System Dictionary
Reference Data
Systems Data Book

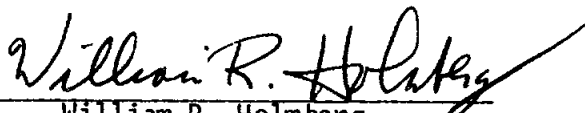
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MISSION OPERATIONS DIRECTORATE

STS-7 CREW ACTIVITY PLAN

FINAL
April 28, 1983

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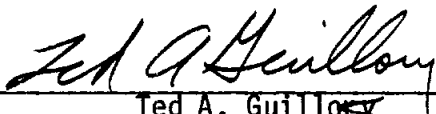


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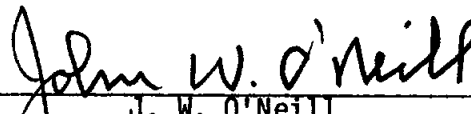
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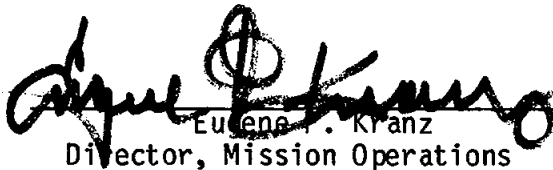
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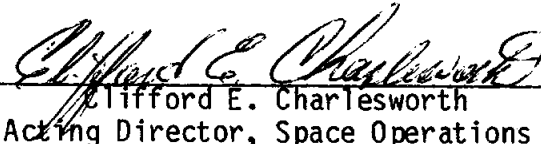
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STS-7 Crew Activity Plan

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| CAP (ALL)-40 | FINAL | 04/28/83 | |
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| CAP (7)-48 | FINAL | 04/28/83 | |
| CAP (7)-49 | FINAL | 04/28/83 | |
| CAP (7)-50 | FINAL | 04/28/83 | |
| CAP (7)-56 | FINAL | 04/28/83 | |
| CAP (7)-57 | FINAL | 04/28/83 | |
| CAP (7)-59 | | | DISAPPROVED |
| CAP (7)-60 | FINAL | 04/28/83 | |
| CAP (7)-62A | FINAL | 04/28/83 | |
| CAP ()-63 | FINAL | 04/28/83 | |
| CAP (7)-64 | FINAL | 04/28/83 | |
| CAP (7)-65 | FINAL | 04/28/83 | |
| CAP (7)-66 | FINAL | 04/28/83 | |
| CAP (7)-67 | FINAL | 04/28/83 | |
| FDF (ALL)-95A | FINAL | 04/28/83 | |
| FDF (ALL)-123 | FINAL | 04/28/83 | |
| FDF (ALL)-140A | FINAL | 04/28/83 | |
| FDF (T)-181 | FINAL | 04/28/83 | |
| CAP (7)-68 | FINAL | 04/28/83 | |
| CAP (7)-69 | FINAL | 04/28/83 | |

*482 changes incorporated into current edition only are identified by change bars.

STS-7 CREW ACTIVITY PLAN

LIST OF EFFECTIVE PAGES

FINAL 04/28/83

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| i..... | STS-7/FIN | 4-18..... | STS-7/FIN |
| ii..... | STS-7/FIN | 4-19..... | STS-7/FIN |
| iii..... | STS-7/FIN | 4-20..... | STS-7/FIN |
| iv..... | STS-7/FIN | 4-21..... | STS-7/FIN |
| v..... | STS-7/FIN | 4-22..... | STS-7/FIN |
| vi..... | STS-7/FIN | 4-23..... | STS-7/FIN |
| 1-1..... | STS-7/FIN | 4-24..... | STS-7/FIN |
| 1-2..... | STS-7/FIN | 4-25..... | STS-7/FIN |
| 1-3..... | STS-7/FIN | 4-26..... | STS-7/FIN |
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| 1-6..... | STS-7/FIN | 4-29..... | STS-7/FIN |
| 1-7..... | STS-7/FIN | 4-30..... | STS-7/FIN |
| 1-8..... | STS-7/FIN | 5-1..... | STS-7/FIN |
| 1-9..... | STS-7/FIN | 5-2..... | STS-7/FIN |
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| 3-10..... | STS-7/FIN | 5D-1..... | STS-7/FIN |
| 3-11..... | STS-7/FIN | 5D-2..... | STS-7/FIN |
| 3-12..... | STS-7/FIN | 5D-3..... | STS-7/FIN |
| 3-13..... | STS-7/FIN | 5D-4..... | STS-7/FIN |
| 3-14..... | STS-7/FIN | 6-1..... | STS-7/FIN |
| 4-1..... | STS-7/FIN | 6-2..... | STS-7/FIN |
| 4-2..... | STS-7/FIN | 6-3..... | STS-7/FIN |
| 4-3..... | STS-7/FIN | 6-4..... | STS-7/FIN |
| 4-4..... | STS-7/FIN | 7-1..... | STS-7/FIN |
| 4-5..... | STS-7/FIN | 7-2..... | STS-7/FIN |
| 4-6..... | STS-7/FIN | 7-3..... | STS-7/FIN |
| 4-7..... | STS-7/FIN | 7-4..... | STS-7/FIN |
| 4-8..... | STS-7/FIN | 7-5..... | STS-7/FIN |
| 4-9..... | STS-7/FIN | 7-6..... | STS-7/FIN |
| 4-10..... | STS-7/FIN | 7-7..... | STS-7/FIN |
| 4-11..... | STS-7/FIN | 7-8..... | STS-7/FIN |
| 4-12..... | STS-7/FIN | 8-1..... | STS-7/FIN |
| 4-13..... | STS-7/FIN | 8-2..... | STS-7/FIN |
| 4-14..... | STS-7/FIN | 8-3..... | STS-7/FIN |
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| 4-16..... | STS-7/FIN | 8-5..... | STS-7/FIN |
| 4-17..... | STS-7/FIN | 8-6..... | STS-7/FIN |

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INTRODUCTION

The STS-7 Crew Activity Plan is the flight data file article that contains the on-orbit timeline. It does not contain the detailed timelines that are covered in the Ascent, Post Insertion, Deorbit Prep, and Entry checklists. For continuity, the entire flight is shown in the summary level timeline.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive (Ref. 1) and the requirements of the STS-7 Flight Requirements Document (Basic, Rev C; April 25, 1983, Ref. 2) with exceptions as noted in Table 8-1.

The flight profile (Cycle 3 trajectory data, Ref. 3) used for this Crew Activity Plan is for a launch date of June 9, 1983. This trajectory has TDRS placed at an intermediate position of 63° W.

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TIMELINE FORMAT SYMBOL NOMENCLATURE



Figure 1-1 OVERVIEW
1-2

4/28/83

STS-7/FIN

A. FORMAT SYMBOL NOMENCLATURE

1. Overview Timeline (7-Day Timespan)

The following letters (a-c) refer to those highlighted in Figure 1-1.

- a. **TIMESCALE** - The time reference used on this format is Mission Elapsed Time (MET) expressed in hours. MET is referenced to liftoff, which occurs at 0/00:00:00 (days, hours, minutes, seconds).
- b. **ACTIVITY COLUMN** - This column presents an overview of activities scheduled during the flight. For clarity of presentation, only major activities are presented and activity durations are sometimes lengthened. Abbreviated activity titles can be found in the Abbreviations/Acronyms section of this CAP.
- c. **ORBIT and DAY/NIGHT**
 - 1) **Orbit** - A numerical sequence indicates which orbit the spacecraft is in. The beginning of an orbit occurs when the Orbiter crosses the Earth's equator going from the southern to the northern hemisphere (ascending node). Orbit 1 is for launch.
 - 2) **Day/Night** - The orbital day/night intervals are delineated with black bars indicating when the Orbiter is in darkness.

2. Summary Level Timeline (12-Hr Timespan)

The following letters (a-1) refer to those highlighted in Figure 1-2.

- a. **TIMESCALES** - Two time references are presented in this section of the summary timeline format. The two time references used are Greenwich Mean Time (GMT) and Mission Elapsed Time (MET). MET is referenced to liftoff, beginning at 0/00:00:00 (days, hours, minutes, seconds).
- b. **CREWMEN (CDR, PLT, MS1, MS2)** - Titles of scheduled activities are shown for the commander (CDR), pilot (PLT), and each mission specialist (MS1 & MS2) at the appropriate times in the flight.
- c. **DAY/NIGHT & ORBIT**
 - 1) **Day/Night** - The orbital day/night intervals are delineated with black bars indicating when the Orbiter is in darkness.

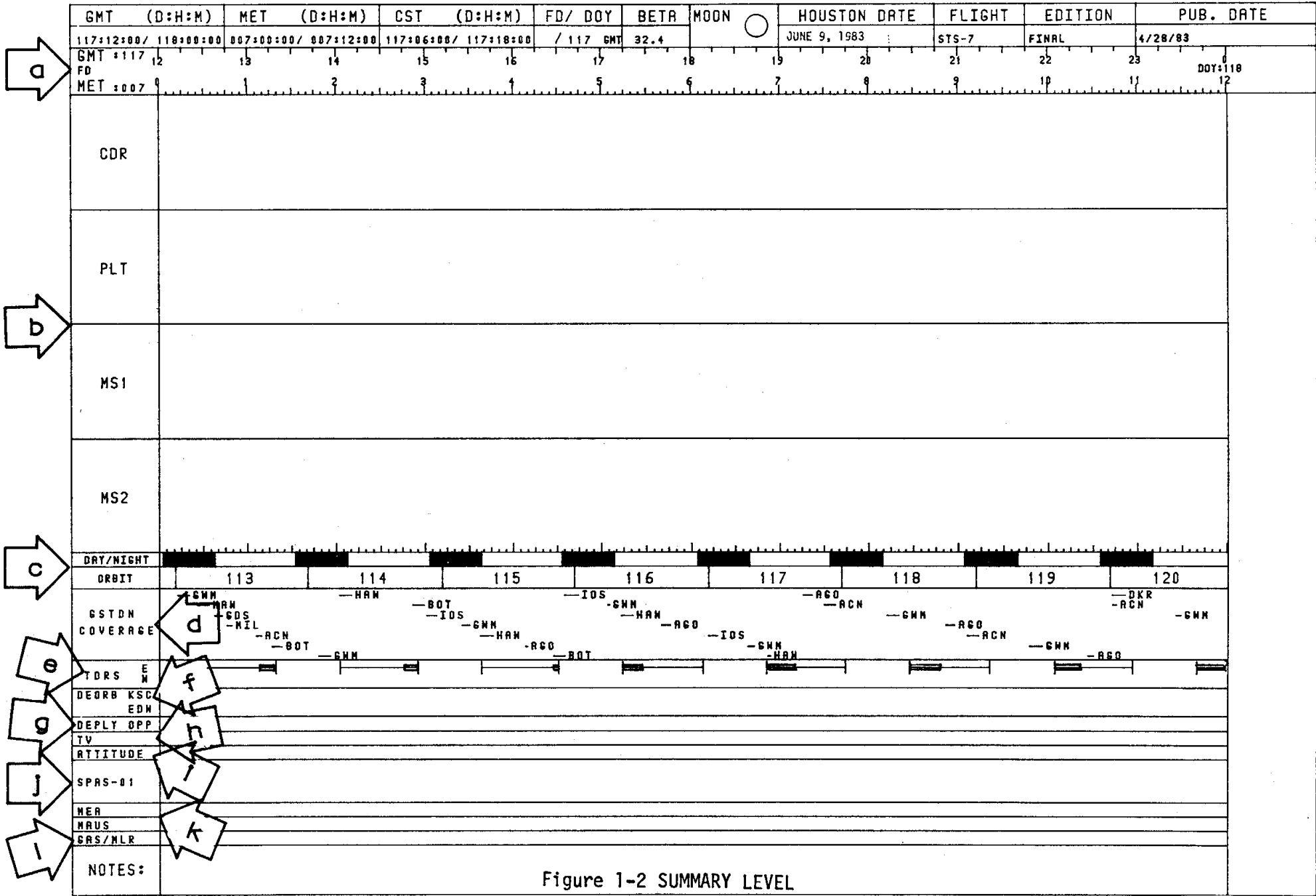


Figure 1-2 SUMMARY LEVEL

- 2) Orbit - A numerical sequence indicates which orbit the spacecraft is in. The beginning of an orbit occurs when the Orbiter crosses the Earth's equator going from the southern to the northern hemisphere (ascending node). Orbit 1 is for launch.
- d. GSTDN COVERAGE - The GSTDN communication coverage periods are indicated in this area with a horizontal line indicating when communication is available; the GSTDN site is identified to the right of the line.
- e. TDRS - The TDRS communication coverage periods are identified in this area, with a horizontal line indicating when there is a line-of-sight between TDRS and the Orbiter. The boxed areas indicate when there is Ku-Band communication. This is based upon Orbiter attitude and also blockage specified in Ref. 12.
- f. DEORB - Time of ignition for deorbit opportunities to Edwards AFB (EDW) or Kennedy Space Center (KSC) are identified in this area.
- g. DEPLOY OPP - Identifies the times that meet the TELESAT or PALAPA deployment criteria for ascending and descending node PKM burn opportunities. Each deployment opportunity is shown as an upward-pointing arrow (↑) indicating time of deployment and is labeled to show to which spacecraft it applies (TEL or PAL).
- h. TV - Identifies periods of CCTV downlink (indicated by a '—|—'). Real-time TV downlink periods are labeled 'TV', and dumps to the ground are labeled 'VTR'.
- i. ATTITUDE - The attitude of the vehicle (-ZLV, IMU, etc.) is shown in this column. The maneuver to a listed attitude starts at the vertical line at the beginning of the period. Attitudes of duration less than 15 minutes are not shown.
- j. SPAS-01 - SPAS-01 experiment data take times are identified in these columns. Periods when the payloads require minimum G forces (VRCS usage) are delineated by lowercase O's (o).
- k. MAUS & MEA - These columns identify the run time of OSTA-2 experiments. Periods when the payloads require minimum G forces (VRCS usage) are delineated by lowercase O's (o).
- l. GAS/MLR - GAS and MLR experiment periods are identified in this area (indicated by a '—|—').

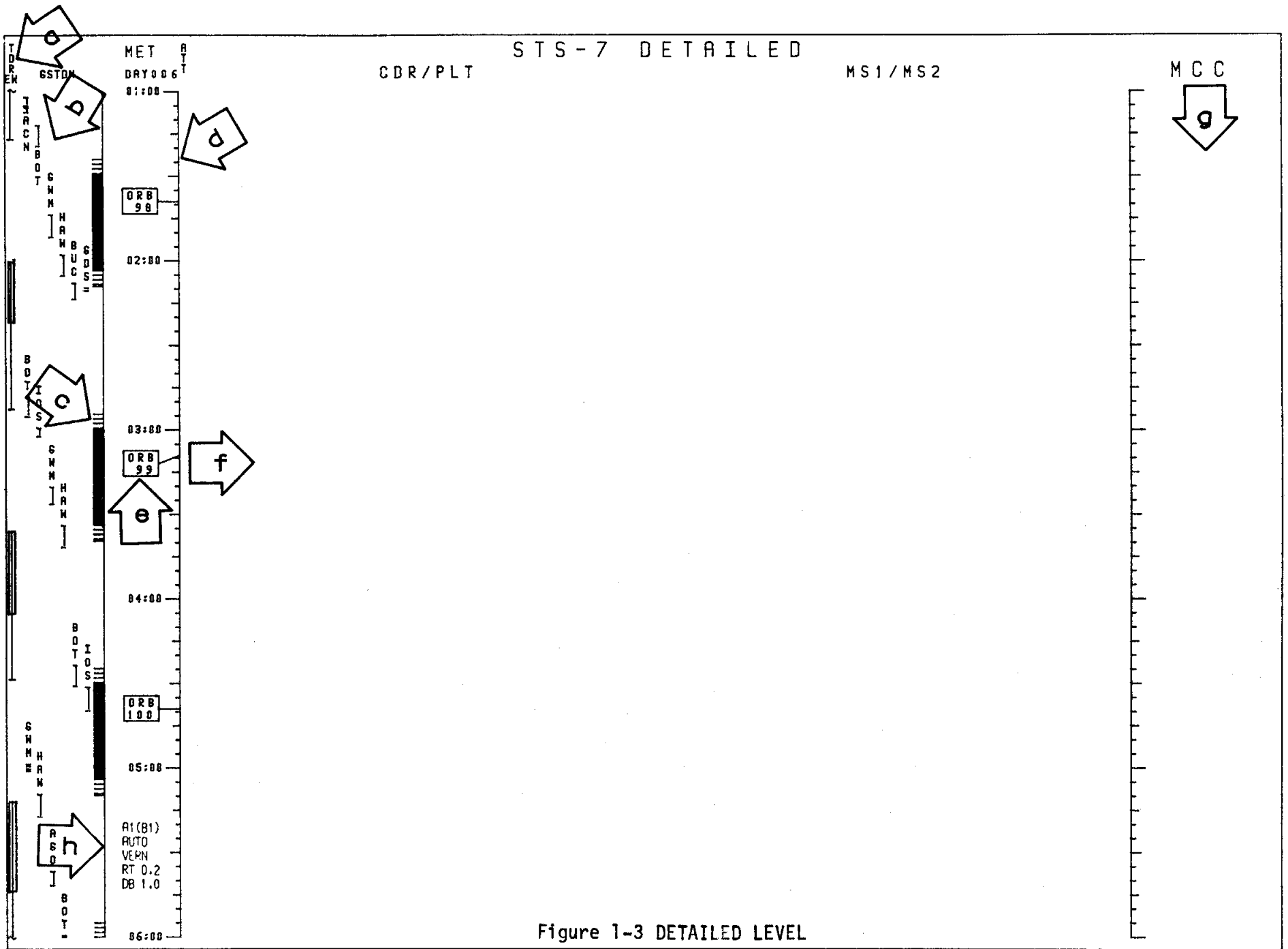


Figure 1-3 DETAILED LEVEL

3. Detailed Level Timeline (5-Hr Timespan)

The following letters (a-g) refer to those highlighted in Figure 1-3.

- a. TDRS - The TDRS communication coverage periods are identified in this area, with a vertical line indicating when there is a line-of-sight between TDRS and the orbiter. The boxed areas indicate when there is Ku-Band communication. This is based upon Orbiter attitude and also blockage specified in Ref. 12.
- b. GSTDN COVERAGE - In this column the GSTDN sites and their acquisition periods are identified.
- c. DAY/NIGHT CYCLE - In this column and solid bar indicates the period when the Orbiter and Earth are in darkness. A slashed line indicates when the Orbiter is in the daylight but the Earth beneath the Orbiter is still in darkness (terminator).
- d. MET TIMESCALE - This format is a 5-hour format with 5-minute tick marks on the vertical timescale referred to Mission Elapsed Time (MET) with liftoff occurring at 0/00:00:00.
- e. ORBIT - Indicates which orbit the spacecraft is in by numerical sequence. Orbit 1 begins at liftoff with subsequent orbits starting when the Earth's equator is crossed (ascending node).
- f. CREWMAN COLUMNS - The activities for the CDR, PLT, MS1, and MS2 are scheduled in these areas.
- g. MCC COLUMN - Any uplinks, commands, or updates required are scheduled at the appropriate time in this column. TV coverage is also identified in this column. Additionally, low G periods for applicable SPAS-01 and OSTA-2 experiments are delineated in this column.
- h. In the timescale a DAP A and DAP B CONFIG reference will be included. A number is associated with both DAPs A and B; each number indicates a particular DAP configuration for either DAP A or DAP B. The DAP reference without parentheses indicates the 'active' DAP for the time period on the page. Table 1-1 and Table 1-2 respectively identify the various configurations for DAP A and DAP B that are used in the STS-7 timeline.

TABLE 1-1

DAP A CONFIGURATIONS

| | | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 |
|--------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <u>TRANSLATION</u> | | | | | | | | | | | | | | | | |
| PULSE | ft/sec | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.25 | 0.25 | 0.05 | 0.05 | 0.03 | 0.05 | 0.05 | 0.05 | 0.05 |
| <u>ROTATION</u> | | | | | | | | | | | | | | | | |
| DSC RT | NORM | 0.200 | 0.400 | 0.200 | 0.200 | 0.200 | 0.200 | 0.800 | 0.200 | 0.150 | 0.150 | 0.500 | 0.150 | 0.150 | 0.150 | 0.150 |
| | VERN | 0.200 | 0.400 | 0.200 | 0.200 | 0.200 | 0.200 | 0.250 | 0.200 | 0.150 | 0.150 | 0.150 | 0.200 | 0.150 | 0.150 | 0.150 |
| PULSE | NORM | 0.10 | 0.10 | 0.30 | 0.10 | 0.10 | 0.10 | 0.10 | 0.05 | 0.60 | 0.30 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | VERN | 0.01 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| COMP | NORM | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | VERN | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| <u>DEADBAND</u> | | | | | | | | | | | | | | | | |
| ATT | NORM | 5.00 | 1.00 | 5.00 | 1.00 | 5.00 | 5.00 | 0.20 | 1.00 | 10.00 | 10.00 | 2.00 | 2.00 | 2.00 | 3.00 | 5.00 |
| | VERN | 1.000 | 1.000 | 1.000 | 1.000 | 0.070 | 1.000 | 0.100 | 1.000 | 5.000 | 5.000 | 0.500 | 0.300 | 0.500 | 5.000 | 0.500 |
| RATE | NORM | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.50 | 0.50 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| | VERN | 0.020 | 0.020 | 0.020 | 0.020 | 0.010 | 0.020 | 0.010 | 0.010 | 0.200 | 0.200 | 0.010 | 0.010 | 0.010 | 0.200 | 0.010 |
| <u>JET OPT</u> | | | | | | | | | | | | | | | | |
| P | | 1 | 1 | 3 | 1 | 1 | 3 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 3 | 1 |
| Y | | 1 | 1 | 3 | 3 | 1 | 3 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 3 | 1 |
| <u>CNTL ACCEL</u> | | | | | | | | | | | | | | | | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 |

TABLE 1-2

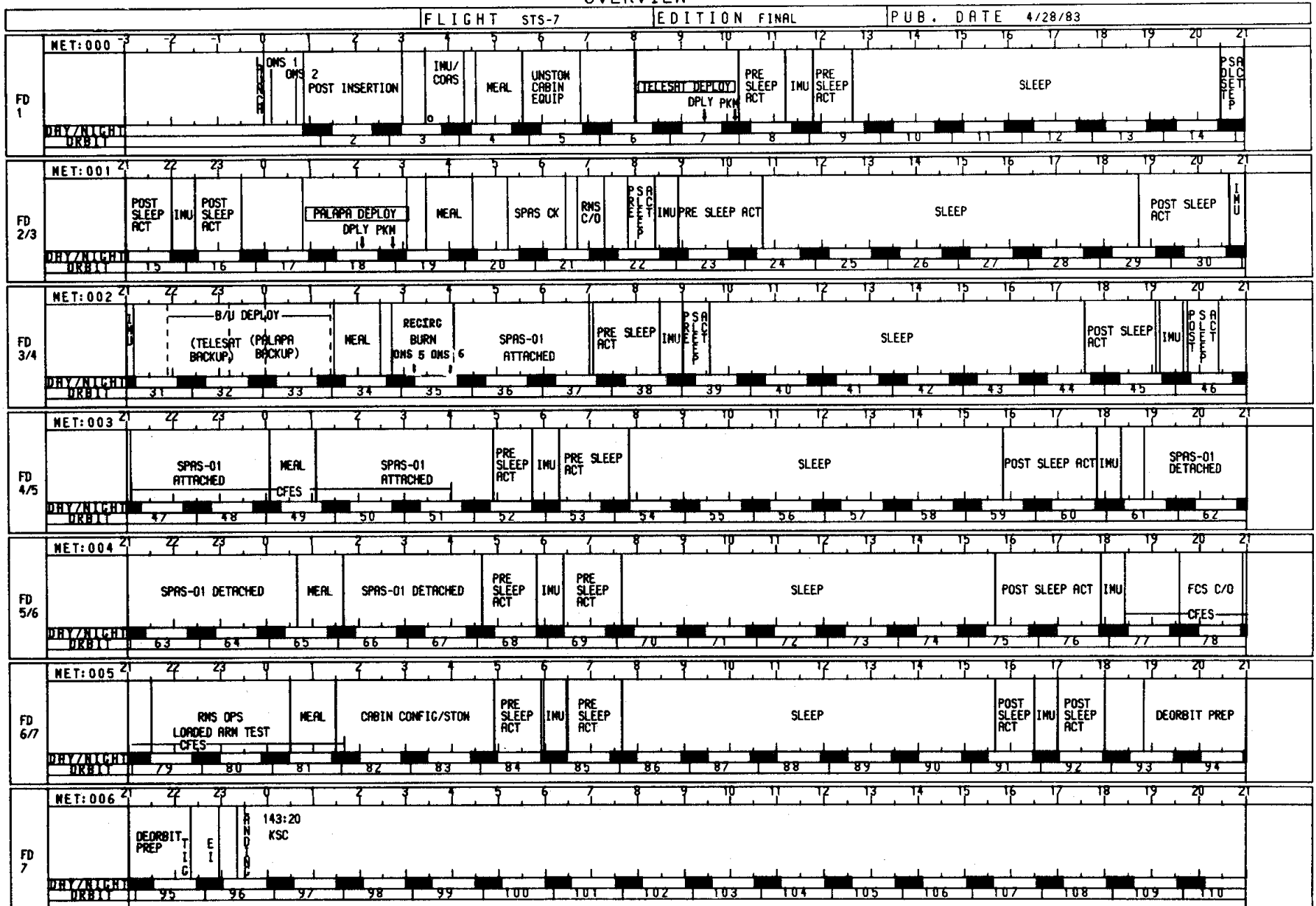
DAP B CONFIGURATIONS

| | | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 |
|--------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <u>TRANSLATION</u> | | | | | | | | | | | | |
| PULSE ft/sec | | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| <u>ROTATION</u> | | | | | | | | | | | | |
| DSC RT | NORM | 0.500 | 0.200 | 0.500 | 0.200 | 0.200 | 0.150 | 0.150 | 0.150 | 0.150 | 0.200 | 0.150 |
| | VERN | 0.200 | 0.200 | 0.200 | 0.008 | 0.200 | 0.150 | 0.050 | 0.150 | 0.150 | 0.050 | 0.100 |
| PULSE | NORM | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.10 | 0.05 |
| | VERN | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| COMP | NORM | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | VERN | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| <u>DEADBAND</u> | | | | | | | | | | | | |
| ATT | NORM | 3.00 | 3.00 | 3.00 | 0.30 | 3.00 | 5.00 | 2.00 | 2.00 | 2.00 | 5.00 | 2.00 |
| | VERN | 1.000 | 1.000 | 1.000 | 0.100 | 1.0 | 0.500 | 0.040 | 0.500 | 0.500 | 0.250 | 0.500 |
| RATE | NORM | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| | VERN | 0.020 | 0.020 | 0.020 | 0.010 | 0.020 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| <u>JET OPT</u> | | | | | | | | | | | | |
| P | | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| Y | | 1 | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| <u>CNTL ACCEL</u> | | | | | | | | | | | | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

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STS-7 OVERVIEW

OVERVIEW



SUMMARY TIMELINE

SUMMARY
TIMELINE

SUMMARY TIMELINE

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/ DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | | | | | |
|--|----------------------|----------------------|-------------|-----------|-------|----------------|----------|---------------|-----------|----|----------|---------|-----|------|---------|--------|
| 160:10:31/ 160:22:31 | 000:01:00/ 000:11:00 | 160:05:31/ 160:17:31 | 01/ 160 GMT | 17.1 | ● | JUNE 9, 1983 | STS-7 | FINAL | 4/28/83 | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: small;"> GMT :160 FD :01 MET :000 </div> | | | | | | | | | | | | | | | | |
| CDR | PLT | MS1 | MS2 | DAY/NIGHT | ORBIT | GSTDN COVERAGE | YDRS E M | DEORB KSC EDM | DEPLY OPP | TV | ATTITUDE | SPRS-01 | MEA | MAUS | CAS/MLR | NOTES: |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> 11 12 13 14 15 16 17 18 19 20 21 22 </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> 0 1 2 3 4 5 6 7 8 9 10 11 </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> LAUNCH OHS 1 OHS 2 PLBD OPS POST INSERTION TV ACT UNSTON CABIN EQUIP MEAL UNSTON CABIN EQUIP 70MM SETUP Y-POW Y-POW Y-POW Y-POW Y-POW Y-POW Y-POW </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> POST INSERTION POST INSERTION POST INSERTION POST INSERTION MEAL PREP UNSTON CABIN EQUIP MEAL UNSTON CABIN EQUIP MEAL UNSTON CABIN EQUIP TV ACT UNSTON CABIN EQUIP TV ACT UNSTON CABIN EQUIP TV ACT UNSTON CABIN EQUIP </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> TELESAT DEPLOY </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> PRE SLEEP ACT PRE SLEEP ACT PRE SLEEP ACT PRE SLEEP ACT </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> ASCENT TVI ZLV BIASED IMU ZLV YPOP DEPLOY SEP MIN ZLV </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> Y-POP (NOSE FND) Y-POP (NOSE FND) Y-POP (NOSE FND) </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> AFT STATION DTO 0602 CABIN ATMOSPHERE VERIFICATION Y-POP (NOSE FND) </div> | | | | | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> Y-POP (NOSE FND) APU HTR RECONFIG ASE TEMP CK </div> | | | | | | | | | | | | | | | | |

| GMT (D:H:M) | | MET (D:H:M) | | CDT (D:H:M) | | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|-----------------------|---|-----------------------|----------------|-----------------------|--|--------------|-------------------------------------|------|--------------|--------|---------|-----------|
| 160:22:31 / 161:10:31 | | 000:11:00 / 000:23:00 | | 160:17:31 / 161:05:31 | | 01 / 160 GMT | 18.7 | ● | JUNE 9, 1983 | STS-7 | FINAL | 4/28/83 |
| CMT:160 | | CMT:161 | | | | | | | | | | |
| FD:01 | | | | | | | | | | | | |
| MET:000 | | | | | | | | | | | | |
| CDR | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | | |
| PLT | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | | |
| MS1 | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | | |
| MS2 | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | | |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | | | | |
| ORBIT | [Orbit Cycle] | | | | | | | | | | | |
| GSTDN COVERAGE | [Coverage Data: -RCO, -ACN, -GMM, -DKR, -MAD, -YAR, -IO5, -MIL, -BDA, -BUK, -MIL, -BDK, -DKR] | | | | | | | | | | | |
| TDRS E H | [TDRS Coverage] | | | | | | | | | | | |
| DEORB KSC EDM | [Deorbit Data] | | | | | | | | | | | |
| DEPLY OPP | [Deployment Opportunities] | | | | | | | | | | | |
| TV | [TV Coverage] | | | | | | | | | | | |
| ATTITUDE | [Attitude Data] | | | | | | | | | | | |
| SPAS-01 | [SPAS-01 Data] | | | | | | | | | | | |
| NEA | [NEA Data] | | | | | | | | | | | |
| MAUS | [MAUS Data] | | | | | | | | | | | |
| GAS/MLR | [GAS/MLR Data] | | | | | | | | | | | |
| NOTES: | ● Y-POP (NOSE FND) ▲ ASE TEMP CK ● FLASH EVAP CNTLR PRI A(B) - OFF | | | | | | ● Y-POP (NOSE FND) ◆ ASE TEMP CK | | | | | |

| GMT (D:H:M) | | MET (D:H:M) | | CDT (D:H:M) | | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | |
|-----------------------|----------------|-----------------------|---------|-----------------------|--------------------|--------------|---------|------|--|-----------|---------|---------------|---|------|
| 161:10:31 / 161:22:31 | | 000:23:00 / 001:11:00 | | 161:05:31 / 161:17:31 | | 02 / 161 GMT | 20.8 | | JUNE 10, 1983 | STS-7 | FINAL | 4/28/83 | | |
| GMT :161 | 11 | MET:001 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | |
| FD :02 | | | | | | | | | | | | | | |
| MET :000 | 23 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| CDR | POST SLEEP ACT | | | PLY | DEPLY | DEPLY | MEAL | | | EXERCISE | | PRE SLEEP ACT | | |
| PLT | POST SLEEP ACT | | | MNVVR | DEPLY | DEPLY | MEAL | | | EXERCISE | | PRE SLEEP ACT | | |
| MS1 | POST SLEEP ACT | TV SET UP | TV ACT | DEPLY | DEPLY | DEPLY | MEAL | | | SPAS CK | RMS C/O | EXERCISE | PRE SLEEP ACT | |
| MS2 | POST SLEEP ACT | EXERCISE | | DEPLY | DEPLY | DEPLY | MEAL | | | SPAS CK | RMS C/O | PRE SLEEP ACT | PRE SLEEP ACT | |
| PALAPA DEPLOY | | | | | | | | | | | | | | |
| DAY/NIGHT | | | | | | | | | | | | | | |
| ORBIT | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | | | | | |
| GSTDN COVERAGE | -IOS | -YAR | -DNR | -ACN | -BOT | -YAR | -HAM | -DNR | -ACN | -BOT | -YAR | -HAM | -DNR | -ACN |
| TDRS | | | | | | | | | | | | | | |
| DEORB KSC | ↑ 23:25 | | ↑ 01:00 | | ↑ 02:35 | | | | | | | | | |
| EDM | | | ↑ 00:52 | | ↑ 02:27 | | ↑ 04:03 | | | | | | | |
| DEPLY OPP | ↑ PAL/TEL | | ↑ PAL | | ↑ PAL | | ↑ PAL | | ↑ PAL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL | ↑ TEL | |
| TV | | | | | | | | | | | | | | |
| ATTITUDE | | -ZLV YPOP | | ↑ DEPLOY | ↑ SEP | ↑ MIN | | | -ZLV YPOP | | ↑ INU | | -ZLV YPOP | |
| SPAS-01 | | | | | | | | | | | | | | |
| MEAL | | | | | | | | | | | | | MEAL-1 00000 | |
| HAUS | | | | | | | | | | | | | 000 HAUS C 000 | |
| GAS/MLR | | | | | | | | | | | | | | |
| NOTES: | ● OPTIONAL | | | | ● Y-POP (NOSE FND) | | | | ● DSO 0409 MICROBIOLOGY SCREENING TEST | | | | ● ACT MEAL-1, HAUS C | |
| | | | | | | | | | ● DSO 0408 NEAR VISION ACUITY | | | | ● Y-POP (NOSE FND) | |
| | | | | | | | | | | | | | ● DTO 0766 VRCS PLUME IMPINGEMENT EFFECTS | |
| | | | | | | | | | | | | | ● DTO 0602 CABIN ATMOSPHERE VERIFICATION | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/ DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | |
|--------------------------------|-----------------------|-----------------------|----------------------|------|--------------|----------------------|--|--------------------------------------|-----------------|--------------------------------------|--------------------|-----------|
| 161:22:31 / 162:10:31 | 001:11:00 / 001:23:00 | 161:17:31 / 162:05:31 | 03 / 161 GMT | 22.8 | ● | JUNE 10, 1983 | STS-7 | FINAL | 4/28/83 | | | |
| GMT :161 FD :02 MET :001 | | | | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CDR | SLEEP | | | | | | POST SLEEP ACT | IMU MNV R | ZLV MNV R | POST SLEEP ACT | 10.2 CABIN DEPRESS | EXERCISES |
| PLT | SLEEP | | | | | | POST SLEEP ACT | | | TV ACT | TDRS TEST | |
| MS1 | SLEEP | | | | | | POST SLEEP ACT | ASK TEMP | | POST SLEEP ACT | 10.2 CABIN DEPRESS | TEL B/U- |
| MS2 | SLEEP | | | | | | POST SLEEP ACT | | | | | |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | | | | |
| ORBIT | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | | | |
| GSTDN COVERAGE | -ACD -ACN | -GMM | -ACD -ACN -DKR | -GMM | -DKR -MAD | -BDA -DKR -MAD | -YAR -ORR -MIL -BDA -DKR -MAD | -YAR -ORR -MIL -BDA -DKR | -ORR | -BUD -GDS -MIL -BDA -DKR | | |
| TDRS E W | [TDRS Coverage] | | | | | | | | | | | |
| DEORB KSC EDM | 21:59 | | | | | | | | | | | |
| DEPLY OPP TV | ↑ PAL | ↑ PAL | | | | | ↑ TEL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL |
| ATTITUDE | -ZLV YPOP | | | | | | | | | | | |
| SPAS-01 | MASS SPEC CAL | | | | | | | | | | | |
| NEA | NEA-1 | | | | | | | | | | | |
| NAUS | | | | | | | | | | | | |
| GAS/MLR | GAS/MLR | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | | |

● Y-POP (NOSE FWD) ● DTD 0709 RU BRD CORR
 ● DTD 0620 DEPRESS CABIN
 ● MASS SPEC CAL

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/ DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|----------------------|----------------------|----------------------|-------------|------|------|---------------|--------|---------|-----------|
| 162:10:31/ 162:22:31 | 001:23:00/ 002:11:00 | 162:05:31/ 162:17:31 | 03/ 162 GMT | 24.8 | | JUNE 11, 1983 | STS-7 | FINAL | 4/28/83 |

| CDR | PLT | MS1 | MS2 | DAY/NIGHT | ORBIT | GSTDN COVERAGE | TDRS | DEDRB KSC EDM | DEPLY OPP | TV | ATTITUDE | SPAS-01 | MEA | MAUS | CAS/MLR |
|---|-----------------|--------------------------|-----------------|-----------|-------|---|------|---------------|-----------|----|-----------|-----------------------------|-----|------|---------|
| EXERCISE MAINT/HAUT REVIEW C/O | MEAL PREP | MASS SPEC CAL TEL B/U | YAW MNVR TEST | DAY | 32 | DKR -IOS | | 23:35 | ↑ PAL/TEL | | -XLV | MASS SPECT | | | CAS/MLR |
| ZLV MNVR YAW MNVR TEST | MEAL | EXERCISE PAL B/U | YAW MNVR TEST | NIGHT | 33 | MIL -BDR DKR -ACN HAW -BUC GDS -MIL BOT -YAR GMM | | 01:11 | ↑ PAL | | ANT | MASS/YAW | | | |
| RECIRC OMS BURN | MEAL | RECIRC OMS BURN | MEAL | DAY | 34 | HAW -BUC GDS -MIL BDR -ACN BOT -YAR GMM | | 02:38 | ↑ PAL | | -ZLV | MASS SPECT | | | |
| RECIRC OMS BURN | RECIRC OMS BURN | RECIRC OMS BURN | RECIRC OMS BURN | NIGHT | 35 | YAR -GMM HAW -BUC GDS -MIL BOT -ACN | | | ↑ PAL | TV | ONS | MASS SPECT | | | |
| ZLV MNVR YAW MNVR SUNSPOR | TV ACT | MASS SPEC CAL | EXERCISE | DAY | 36 | BOT -GMM HAW -BUC | | | ↑ PAL | | -ZLV | MASS/HP MOMS (tn): 05:17 | | | |
| PRE SLEEP ACT | EXERCISE | PRE SLEEP ACT | PRE SLEEP ACT | NIGHT | 37 | HAW -AGO BOT -IOS GMM | | | ↑ PAL/TEL | | -ZLV YPOP | MASS/HP/MAUS-1/YAW | | | |
| PRE SLEEP ACT | PRE SLEEP ACT | PRE SLEEP ACT | PRE SLEEP ACT | DAY | 38 | HAW -AGO BOT -IOS GMM | | | ↑ PAL/TEL | | IMU | | | | |
| SLEEP | SLEEP | SLEEP | SLEEP | NIGHT | 39 | GMM -HAW HAW -AGO ACN | | | ↑ PAL/TEL | | -ZLV YPOP | | | | |
| SLEEP | SLEEP | SLEEP | SLEEP | DAY | 40 | | | | ↑ PAL/TEL | | | | | | |

NOTES: ● CHILD EXP MNVR ● DSO 0404 ON-ORBIT HEAD AND EYE TRACKING TASKS ● Y-POP (NOSE FWD) ● Y-POP (NOSE FWD) (If Reqd) ● Y-POP (NOSE FWD)

● DSO 0408 NEAR VISION ACTIVITY ● ACT MAUS A & B ● MINUS YAW (If Reqd)

● DTO 0701 S-BAND/TDRS COMMUNICATION LINK PERFORMANCE TEST NO. 1 ● PLUS YAW (If Reqd)

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|-------------------------------|---|-----------------------|------------------------|--|----------------------------------|----------------|--------------------------|----------------|----------------------|
| 162:22:31 / 163:10:31 | 002:11:00 / 002:23:00 | 162:17:31 / 163:05:31 | 04 / 162 GMT | 26.9 | ● | JUNE 11, 1983 | STS-7 | FINAL | 4/28/83 |
| GMT:162 FD :03 MET :002 | 23 0 GMT:163 | 2 3 4 5 | 6 7 8 9 10 | 11 12 13 14 15 16 17 | 18 19 20 21 22 23 | | | | |
| CDR | SLEEP | | | | | POST SLEEP ACT | IMU MNV ZLV MNV | POST SLEEP ACT | EXERCISE |
| PLT | SLEEP | | | | | POST SLEEP ACT | IMU MNV ZLV MNV | POST SLEEP ACT | TV ACT EXERCISE |
| MS1 | SLEEP | | | | | POST SLEEP ACT | IMU MNV ZLV MNV | POST SLEEP ACT | EXERCISE |
| MS2 | SLEEP | | | | | POST SLEEP ACT | IMU MNV ZLV MNV | POST SLEEP ACT | SAMPLE 1 CFES OPS |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | |
| ORBIT | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |
| CSTDN COVERAGE | CWN -ACG -ACN | CWN -ACG -ACN | CWN -ACG -ACN | -DKR -MAD | -DKR -MAD | -DKR -MAD | -DKR -MAD | -DKR -MAD | -DKR -MAD |
| TDRS E H | [TDRS Coverage] | | | | | | | | |
| DEORB KSC EDM | ↑ 22:05 | | | | | | | | |
| DEPLY OPP | ↑ PAL | ↑ PAL | | | ↑ TEL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL | ↑ TEL |
| TV | | | | | | | | TV | TV |
| ATTITUDE | -ZLV YPOP | | | | | | | | |
| SPRS-01 | MASS/HP/MAUS-1/YAM ↑ 12:27 ↑ 13:57 ↑ 15:29 ↑ 16:55 ↑ 17:06 ↑ 18:25 ↑ 19:55 ↑ 21:31 | | | | | | | | |
| MAUS | MAUS A/B | | | | | | | | |
| CAS/MLR | CAS | | | | | | | | |
| NOTES: | <ul style="list-style-type: none"> ● FC PURGE HTR ON ● Y-POP (NOSE FWD) ● MANUAL ● FC PURGE HTR OFF ● DSO 0404 ON-ORBIT TRACKING ● HEAD AND EYE TASKS | | | | | | | | |

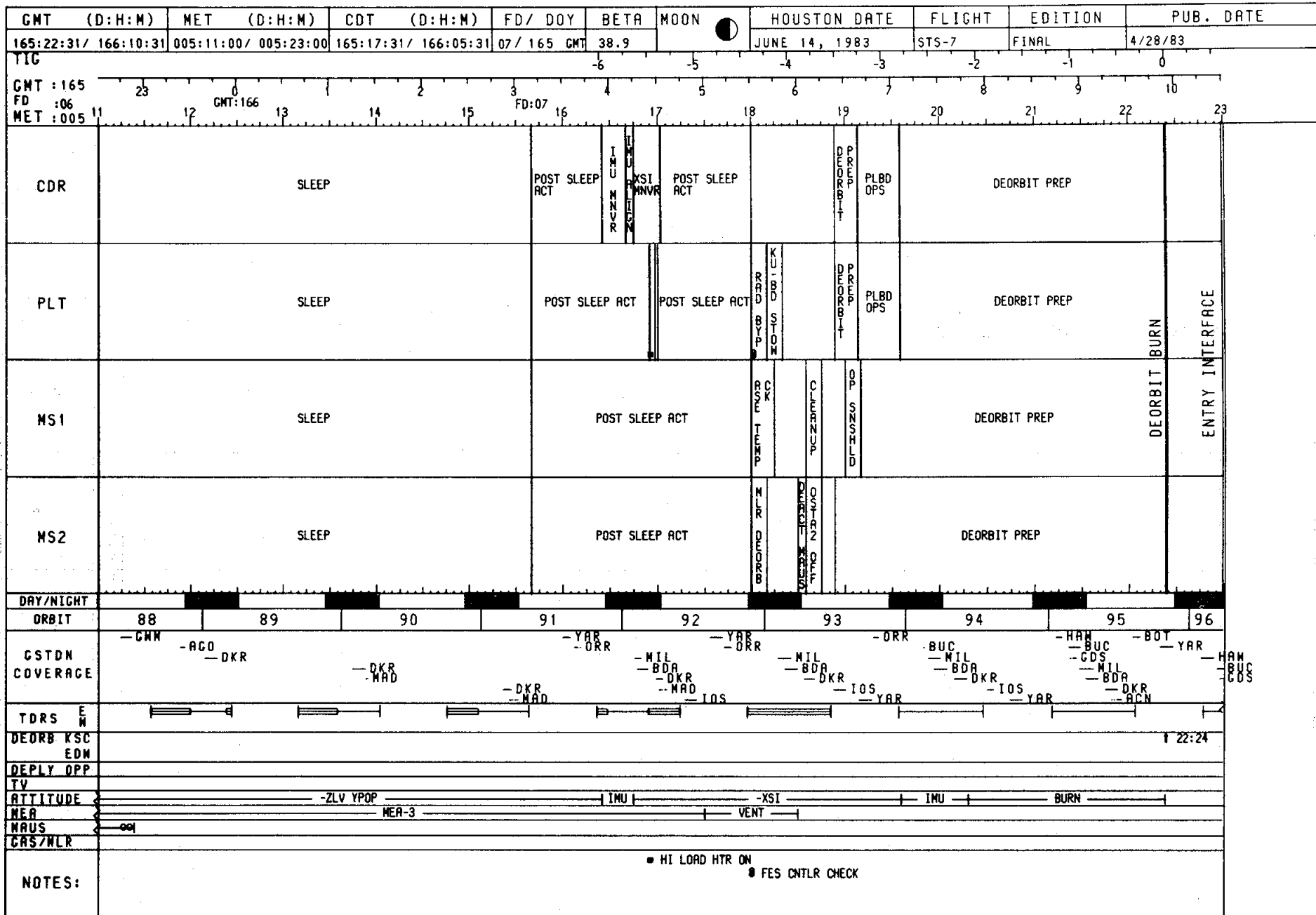
| GMT (D:H:M) | | MET (D:H:M) | | CDT (D:H:M) | | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|----------------------|---------------|----------------------|----------|----------------------|----------|--------------------|---------------|---------------|---------------|---------------|---------|-----------|
| 163:10:31/ 163:22:31 | | 002:23:00/ 003:11:00 | | 163:05:31/ 163:17:31 | | 04 / 163 | GMT 29.0 | | JUNE 12, 1983 | STS-7 | FINAL | 4/28/83 |
| GMT :163 | | MET:003 | | | | | | | | | | |
| FD :04 | | | | | | | | | | | | |
| MET :002 | | | | | | | | | | | | |
| CDR | YAW MNVR TEST | MEAL | ZSI MNVR | ZLV MNVR | EDG TEST | 18.2 CABIN REPRESS | PRE SLEEP ACT | IMU MNVR | ZLV MNVR | PRE SLEEP ACT | SLEEP | |
| PLT | MEAL PREP | MEAL | EXERCISE | EXERCISE | EXERCISE | EXERCISE | PRE SLEEP ACT | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | |
| MS1 | YAW MNVR TEST | MEAL | MEAL | MEAL | MEAL | MEAL | PRE SLEEP ACT | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | |
| MS2 | CFES OPS | MEAL | CFES OPS | CFES OPS | CFES OPS | EXERCISE | PRE SLEEP ACT | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | |
| DAY/NIGHT | | | | | | | | | | | | |
| ORBIT | | | | | | | | | | | | |
| GSTDN COVERAGE | | | | | | | | | | | | |
| TORS | | | | | | | | | | | | |
| DEORB KSC EDM | | | | | | | | | | | | |
| DEPLY OPP | | | | | | | | | | | | |
| TV | | | | | | | | | | | | |
| ATTITUDE | | | | | | | | | | | | |
| SPAS-01 | | | | | | | | | | | | |
| MEA | | | | | | | | | | | | |
| MAUS | | | | | | | | | | | | |
| GAS/MLR | | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | |
|--|---|-----------------------|--------------|-----------|-----------|---------------|-------------------------------|-------------------------------|-------------------------------|----------------|
| 163:22:31 / 164:10:31 | 003:11:00 / 003:23:00 | 163:17:31 / 164:05:31 | 05 / 163 GMT | 31.0 | ● | JUNE 12, 1983 | STS-7 | FINAL | 4/28/83 | |
| GMT: 163 23 0 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 FD: 04 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MET: 003 11 12 13 14 15 16 17 18 19 20 21 22 23 | | | | | | | | | | |
| CDR | SLEEP | POST SLEEP ACT | | | | | | PROX OPS | | |
| PLT | SLEEP | POST SLEEP ACT | | | | | | PROX OPS | EXERCISE | |
| MS1 | SLEEP | POST SLEEP ACT | | | | | | PROX OPS | | |
| MS2 | SLEEP | POST SLEEP ACT | | | | | | PROX OPS | | |
| DAY/NIGHT | | | | | | | | | | |
| ORBIT | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | |
| GSTDN COVERAGE | -GMM -ACG -ACN -DKR | -GMM -ACG -DKR | -DKR -HAD | -DKR -HAD | -YAR -ORR | -NIL | -BDA -DKR -HAD -IOS -YAR -ORR | -BDA -DKR -HAD -IOS -YAR -ORR | -BDA -DKR -HAD -IOS -YAR -ORR | -GMM -HAD -BDA |
| TDRS E/W | | | | | | | | | | |
| DEORB KSC EDM | ↑ 22:10 | | | | | | | | | |
| DEPLY OPP TV | ↑ PAL | | | | | | | | | |
| ATTITUDE | -ZLV YPOP IMU -ZLV YPOP INERTIAL +ZLV YPOP -ZLV YPOP | | | | | | | | | |
| SPAS-01 | ↑ 12:32 ↑ 14:02 ↑ 15:35 ↑ 17:11 ↑ 18:30 ↑ 20:00 ↑ 15:30 ↑ 17:00 | | | | | | | | | |
| NEA | ----- NEA-2 ----- | | | | | | | | | |
| MAUS | ----- MAUS A/B ----- | | | | | | | | | |
| GAS/HLR | ----- GAS ----- | | | | | | | | | |
| NOTES: | 0Y-POP (NOSE FWD) @ DTD 0504 PORS PERFORMANCE, 0505 RCS PLUME IMPINGEMENT TEST, 0722 ORBITER/DETACHED NASA PAYLOAD COMM. TEST NO. 2, 0801 RENDEZVOUS RADAR/SENSORS PERFORMANCE, PROXIMITY OPERATIONS, 0802 PROXIMITY OPERATIONS | | | | | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/ DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | | |
|----------------------|--------------------------------------|--|--|----------------------|---------------|------------------------------|----------------------|----------------------|----------------------|----|----|----|----|
| 164:10:31/ 164:22:31 | 003:23:00/ 004:11:00 | 164:05:31/ 164:17:31 | 05/ 164 GMT | 33.0 | ● | JUNE 13, 1983 | STS-7 | FINAL | 4/28/83 | | | | |
| GMT : 164 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 11 |
| FD : 05 | MET:004 | | | | | | | | | | | | |
| MET : 003 23 | | | | | | | | | | | | | |
| CDR | PROX OPS | MEAL | PROX OPS | PROX OPS | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | |
| PLT | PROX OPS | MEAL PREP | MEAL | PROX OPS | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | |
| MS1 | PROX OPS | MEAL | PROX OPS | PROX OPS | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | |
| MS2 | PROX OPS | MEAL | PROX OPS | PROX OPS | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | |
| DAY/NIGHT | | | | | | | | | | | | | |
| ORBIT | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | | | | |
| GSTDN COVERAGE | -WLL -BDA -DKR -ACN -BOT | -BUC -GDS -WLL -BDA -ACN -BOT -YAR | -GWM -HAM -BUC -GDS -WLL -ACN -BOT -YAR | -GWM -HAM -BUC | -BOT -IOS | -GWM -HAM -AGD -IOS | -HAM -AGD -ACN | -GWM -AGD -ACN | -GWM -AGD -ACN | | | | |
| TDRS E M | | | | | | | | | | | | | |
| DEDRB KSC | 1 23:46 | | | | | | | | | | | | |
| EDM | | 1 01:12 | | | | | | | | | | | |
| DEPLY OPP | | | | | | | | | | | | | |
| TV | | | | | VTR | VTR | | | | | | | |
| ATTITUDE | | -XLV | | INRTL | -ZLV YPOP | IMU | | -ZLV YPOP | | | | | |
| SPAS-01 | | MASS SPECT | | MAUS-2 | | | | | | | | | |
| MEA | | | | | | | | MEA-3 | | | | | |
| MAUS | | | | | MAUS A/B | | | | | | | | |
| GAS/NLR | | | | | GAS | | | | | | | | |
| NOTES: | | | | | | | | ● Y-POP (NOSE FWD) | | | | | |
| | | | | | | | | ● ACT MEA-3 | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|--------------------------------|------------------------------|---|--------------|-------------|----------------------|------------------------------|----------------------|--------------------------------------|--|
| 164:22:31 / 165:10:31 | 004:11:00 / 004:23:00 | 164:17:31 / 165:05:31 | 06 / 164 GMT | 35.0 | ● | JUNE 13, 1983 | STS-7 | FINAL | 4/28/83 |
| GMT: 164 FD :05 MET :004 | 23 0 GMT:165 | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 | FD:06 | | | | | | |
| CDR | SLEEP | POST SLEEP ACT | IMU MNRV | ZLV MNRV | | | FCS C/O | | RMS OPS |
| PLT | SLEEP | POST SLEEP ACT | | | | | FCS C/O | | |
| MS1 | SLEEP | POST SLEEP ACT | | | | EXERCISE | MICRO TEST | ACT SPRS | RMS OPS EVAL SYS |
| MS2 | SLEEP | POST SLEEP ACT | | | | | CFES OPS | | SAMPLE 4 SAMPLE 5 |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | |
| ORBIT | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| CSTDN COVERAGE | -CWN -AGO -ACN -DKR | -CWN -DKR | | -MAD | -BDA -DKR -MAD | -MIL -BDA -DKR -MAD | -MIL -BDA -DKR | -CDS -MIL -BDA -DKR -ACN | -HRM -BUC -CQS -MIL |
| TDRS E W | [Timeline] | [Timeline] | [Timeline] | [Timeline] | [Timeline] | [Timeline] | [Timeline] | [Timeline] | [Timeline] |
| DEORB KSC EDM | | | | | | | | | 22:15 |
| DEPLY OPP TV | | | | | | | | | |
| ATTITUDE | | | -ZLV YPOP | | | IMU | | -ZLV YPOP | PRCS |
| SPRS-01 | | | | | | | | | |
| MEA | | | | | MEA-3 | | | | |
| MAUS | MAUS A/B | | | | MAUS A | | | | |
| GAS/MLR | | | | | GAS | | | | |
| NOTES: | | | | | | | | | ● Y-POP (TAIL FWD) ● DSO 0409 MICROBIOLOGY ● APU HTR ACT ● DSO 0404 ON-ORBIT HEAD AND EYE TRACKING TASKS ● DSO 0404 ON-ORBIT HEAD AND EYE TRACKING TASKS |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | |
|----------------------|--|--|--|----------|---------------------------------|---|-------------------|--------------------|-------------------|---------------|-------|
| 165:10:31/ 165:22:31 | 004:23:09/ 005:11:00 | 165:05:31/ 165:17:31 | 06/ 165 GMT | 37.0 | | JUNE 14, 1983 | STS-7 | FINAL | 4/28/83 | | |
| GMT :165 | | | | | | | | | | | |
| FD :06 | MET:005 | | | | | | | | | | |
| MET :004 | | | | | | | | | | | |
| CDR | RMS OPS | MEAL | CABIN CONFIG/STON | EXERCISE | CABIN CONFIG/STON | LAMP/SNOKE | PRE SLEEP ACT | INU ZLV YPOD | PRE SLEEP ACT | SLEEP | |
| PLT | MEAL PREP | EXERCISE | TV SETUP | MEAL | TV ACT | KUI-BD KUI-BD STON | CABIN CONFIG/STON | | PRE SLEEP ACT | SLEEP | |
| MS1 | LSS TEST | RMS OPS AUT EVAL | BERTH PWRDN | MEAL | | | CABIN CONFIG/STON | PRE SLEEP ACT | ACK TEMP | PRE SLEEP ACT | SLEEP |
| MS2 | * SAMPLE 3 CFES OPS | MEAL | CABIN CONFIG/STON | EXERCISE | STON ENCDB | | EXERCISE | PRE SLEEP ACT | VIS ACUTY | PRE SLEEP ACT | SLEEP |
| DAY/NIGHT | [Day/Night Cycle Diagram] | | | | | | | | | | |
| ORBIT | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | | |
| GSTON COVERAGE | MIL BDR DKR ACN BOT | HAW BUC GDS MIL ACN BOT | HAW BUC GDS MIL ACN BOT | HAW | BOT IOS GWN HAW RGO | IOS GWN HAW RGO ACN IOS GWN | RGO ACN | GWN | RGO ACN DKR | | |
| TDRS | [TDRS Coverage Diagram] | | | | | | | | | | |
| DEDRB KSC | 1 23:51 | | | | | | | | | | |
| EDW | 1 01:17 | | | | | | | | | | |
| DEPLY DPP | | | | | | | | | | | |
| TV | TV | | | | | | | | | | |
| ATTITUDE | -ZLV YPOD | | | | | | | | | | |
| SPRS-01 | | | | | | | | | | | |
| MEA | MEAS 3 | | | | | | | | | | |
| MAUS | MAUS A | | | | | | | | | | |
| GAS/MLR | GAS | | | | | | | | | | |
| NOTES: | <ul style="list-style-type: none"> * DSO 0408 NEAR VISION ACUTY * Y-POP (NOSE FWD) * DSO 0408 NEAR VISION ACUTY | | | | | | | | | | |



| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | |
|--------------------------------------|--------------------------|--|--|---------------------------|---|----------------------------------|---------------------------|---------------------------|--------------------|---------------------------|
| 166:10:31 / 166:22:31 | 005:23:00 / 006:11:00 | 166:05:31 / 166:17:31 | 07 / 166 GMT | 40.7 | | JUNE 15, 1983 | STS-7 | FINAL | 4/28/83 | |
| TTC | | | | | | | | | | |
| GMT : 166 FD : 07 MET : 005 23 | | | | | | | | | | |
| MET: 006 | | | | | | | | | | |
| CDR | LANDING | | | | | | | | | |
| PLT | | | | | | | | | | |
| MS1 | | | | | | | | | | |
| MS2 | | | | | | | | | | |
| DRY/NIGHT | | | | | | | | | | |
| ORBIT | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | | |
| CSTDN COVERAGE | BUC CDS NIL BDR | -GMM HAM BUC CDS ACN BOT YAR | -GMM HAM BUC CDS NIL ACN BOT | -HAM BOT IOS GMM | -BOT IOS GMM HAM ACN BOT | -IOS GMM HAM ACN BOT | -GMM HAM ACN BOT | -ACN GMM ACN BOT | -GMM ACN BOT | -ACN GMM ACN BOT |
| TDRS E H | | | | | | | | | | |
| DEORB KSC EDM | † 23:55 † 01:21 | | | | | | | | | |
| DEPLY OPP | | | | | | | | | | |
| TV | | | | | | | | | | |
| ATTITUDE | | | | | | | | | | |
| WEA | | | | | | | | | | |
| WRS | | | | | | | | | | |
| CAS/WLR | | | | | | | | | | |
| NOTES: | | | | | | | | | | |

DETAILED TIMELINE

DETAILED
TIMELINE

DETAILED
TIMELINE

STS-7 DETAILED

CDR/PLT

MS1/MS2

MCC

ACTIVITIES PRIOR TO 0/03:00 MET ARE IN
THE ASCENT & POST INSERTION CHECKLISTS

ORBITER ATTITUDE WHEN ENTERING CAP IS
BIASED -ZLV NOSE FWD

IMU ALIGN LOG

STAR ID: -Y: 25, REGULUS
-Z: 15, HADAR
ANG DIF: 86.0

STARS AVAIL: 03:35 TO 04:11

| DUAL S TRKR | SINGLE S TRKR | |
|-------------|---------------|--------|
| ALIGN ATT | ALIGN ATT | |
| R +257.5 | R +343.6 | +168.4 |
| P +235.8 | P +243.8 | +247.9 |
| Y +27.4 | Y +14.5 | +37.1 |

REQD ID: -Y ____ -Z ____ ANG ERR ____ . ____
 1 2 3

ANG: Δ X () ____ . ____ () ____ . ____ () ____ . ____
 Δ Y () ____ . ____ () ____ . ____ () ____ . ____
 Δ Z () ____ . ____ () ____ . ____ () ____ . ____

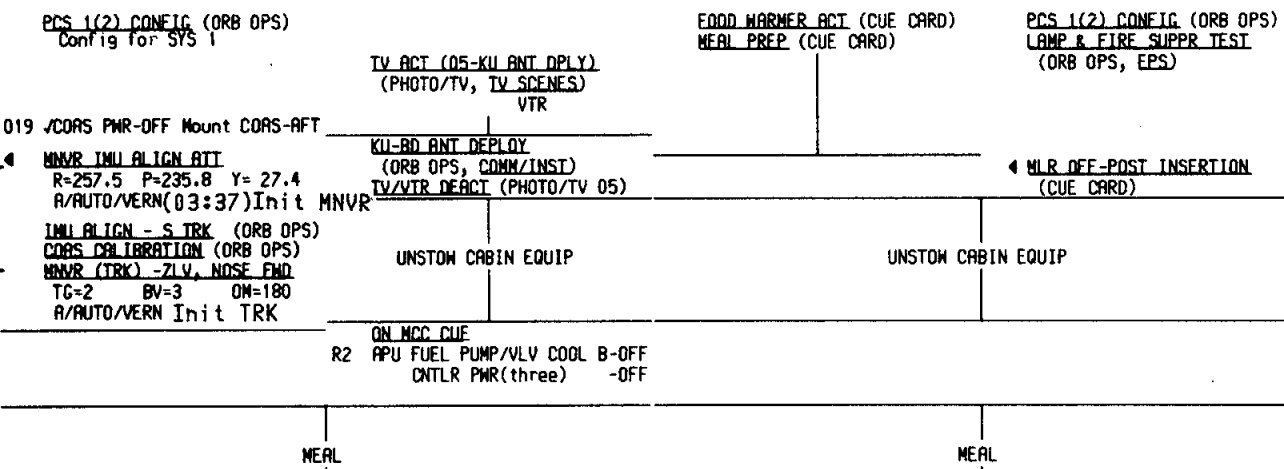
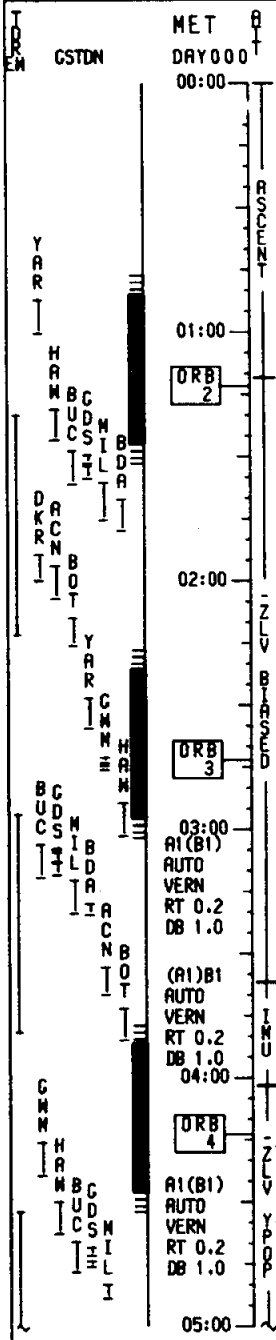
EXECUTION TIME: ____ / ____ : ____ : ____

CORS CALIBRATION LOG

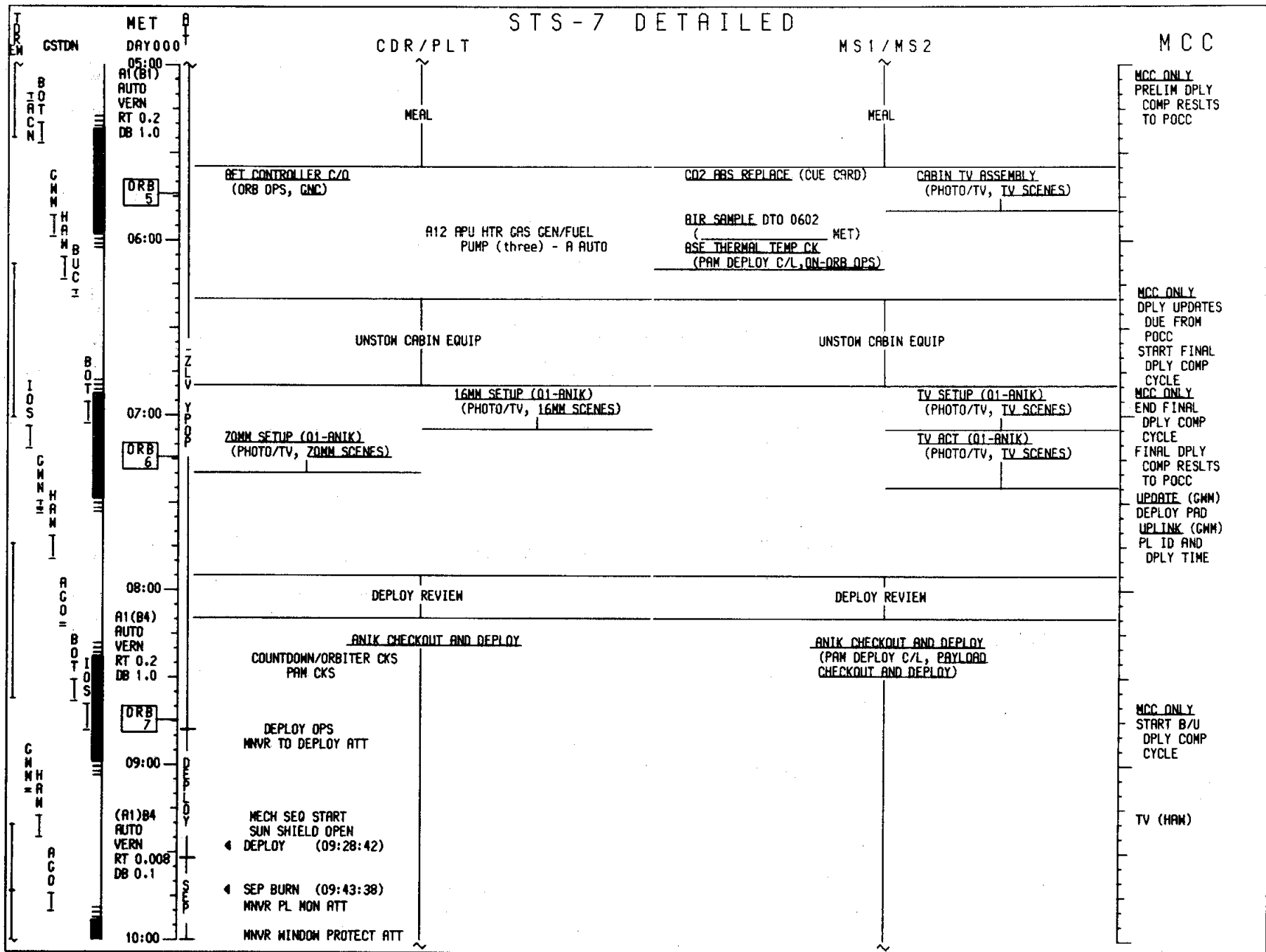
STAR ID: -Z 15, HADAR
STAR AVAIL: 03:35 to 04:23

-Z Δ BIAS ____ . ____

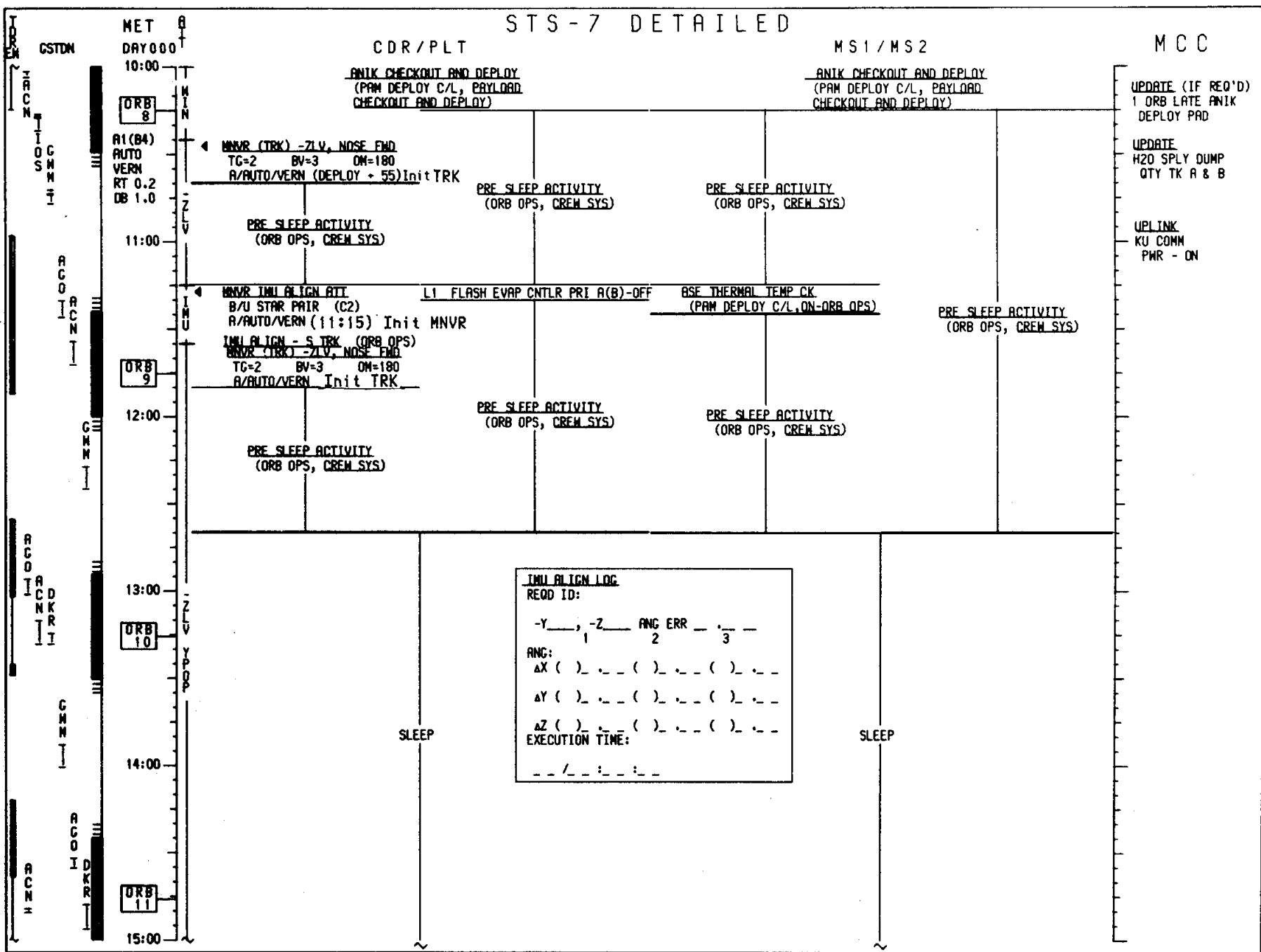
UPDATE TIME: ____ / ____ : ____ : ____



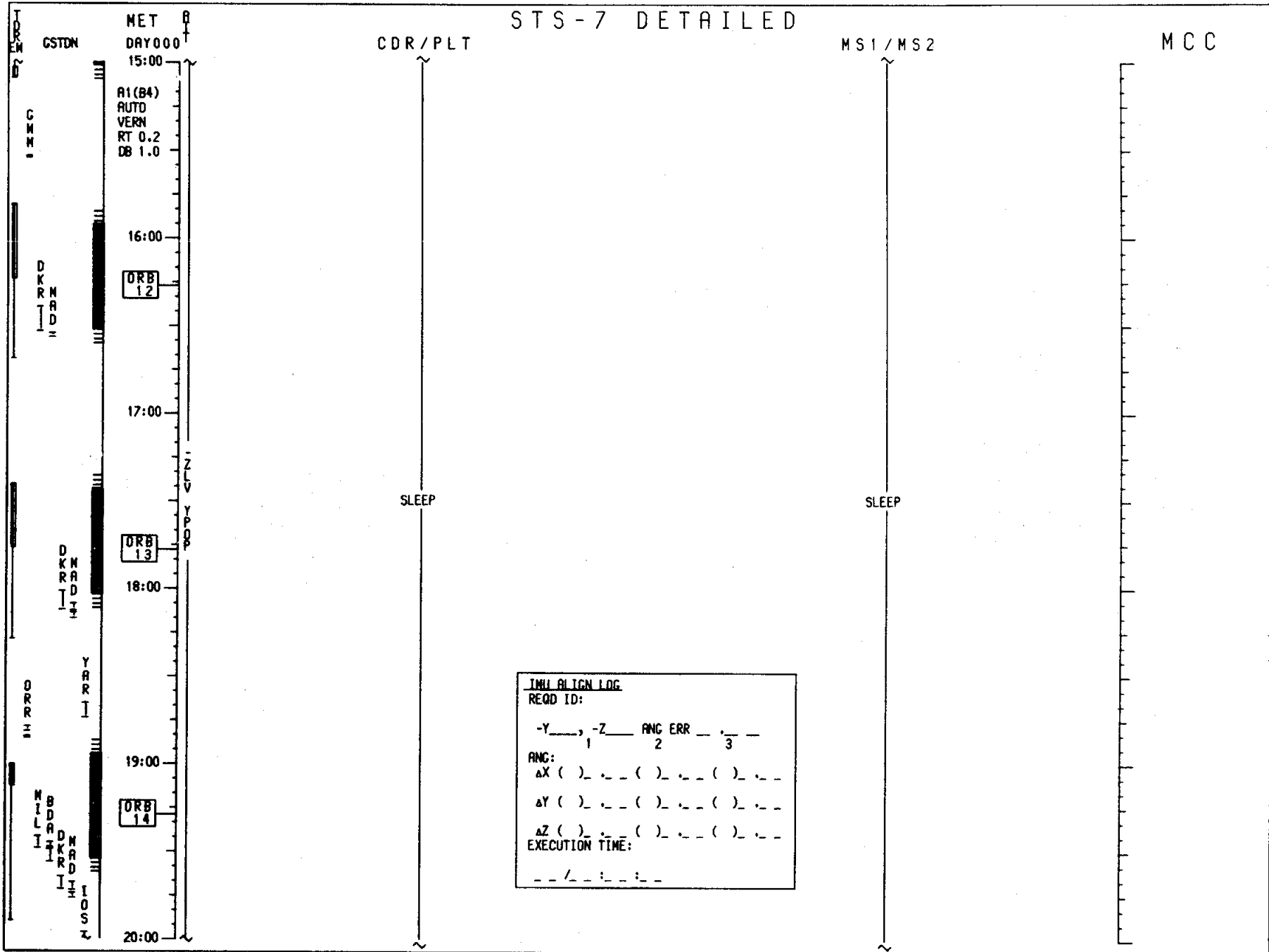
UPLINK (GMM)
KU COMM
PMR - STBY
INFORM CREW
GO FOR APU
COOL OFF
MCC ONLY
START PRELIM
DPLY COMP
CYCLE



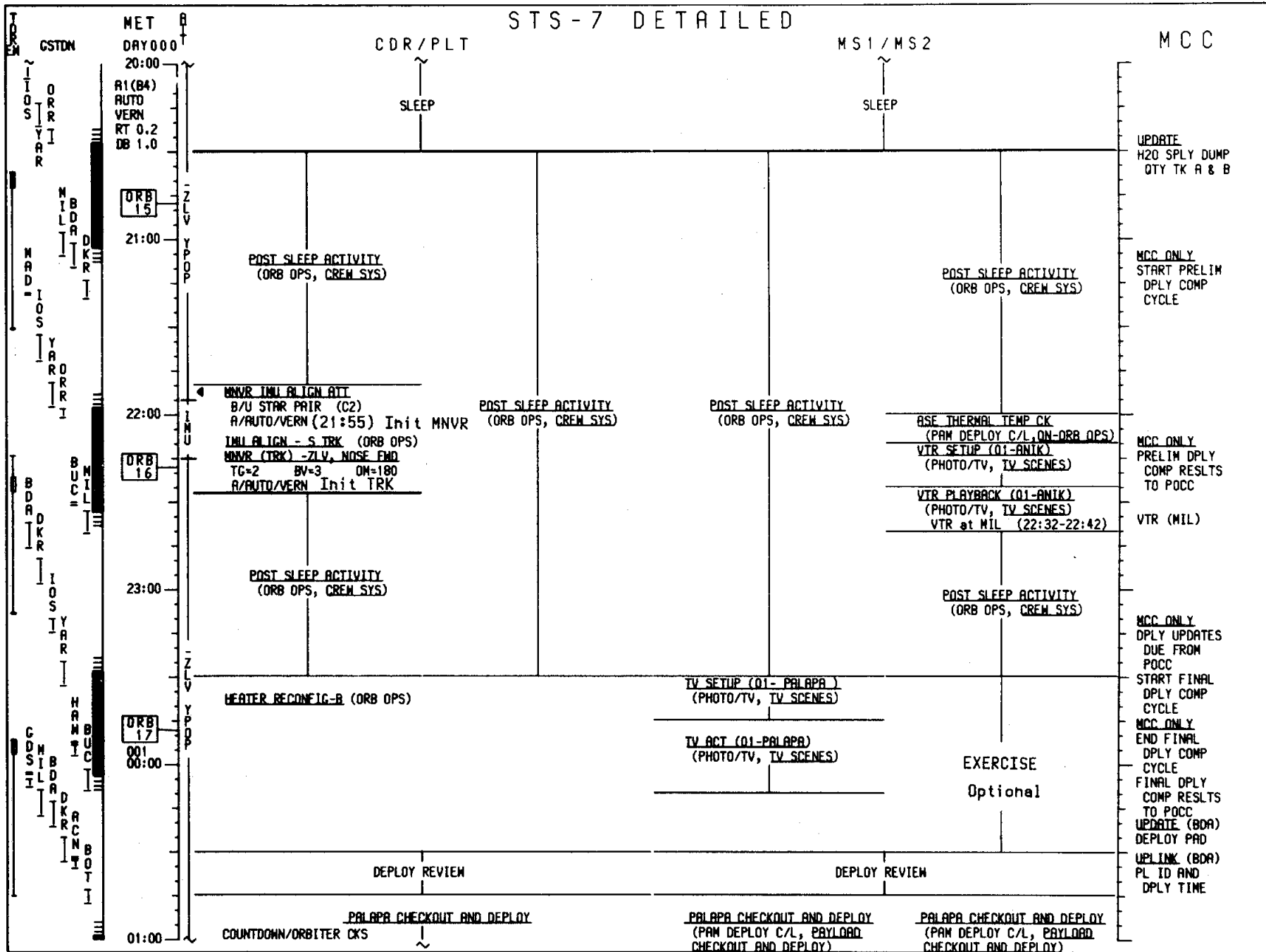
STS-7 DETAILED

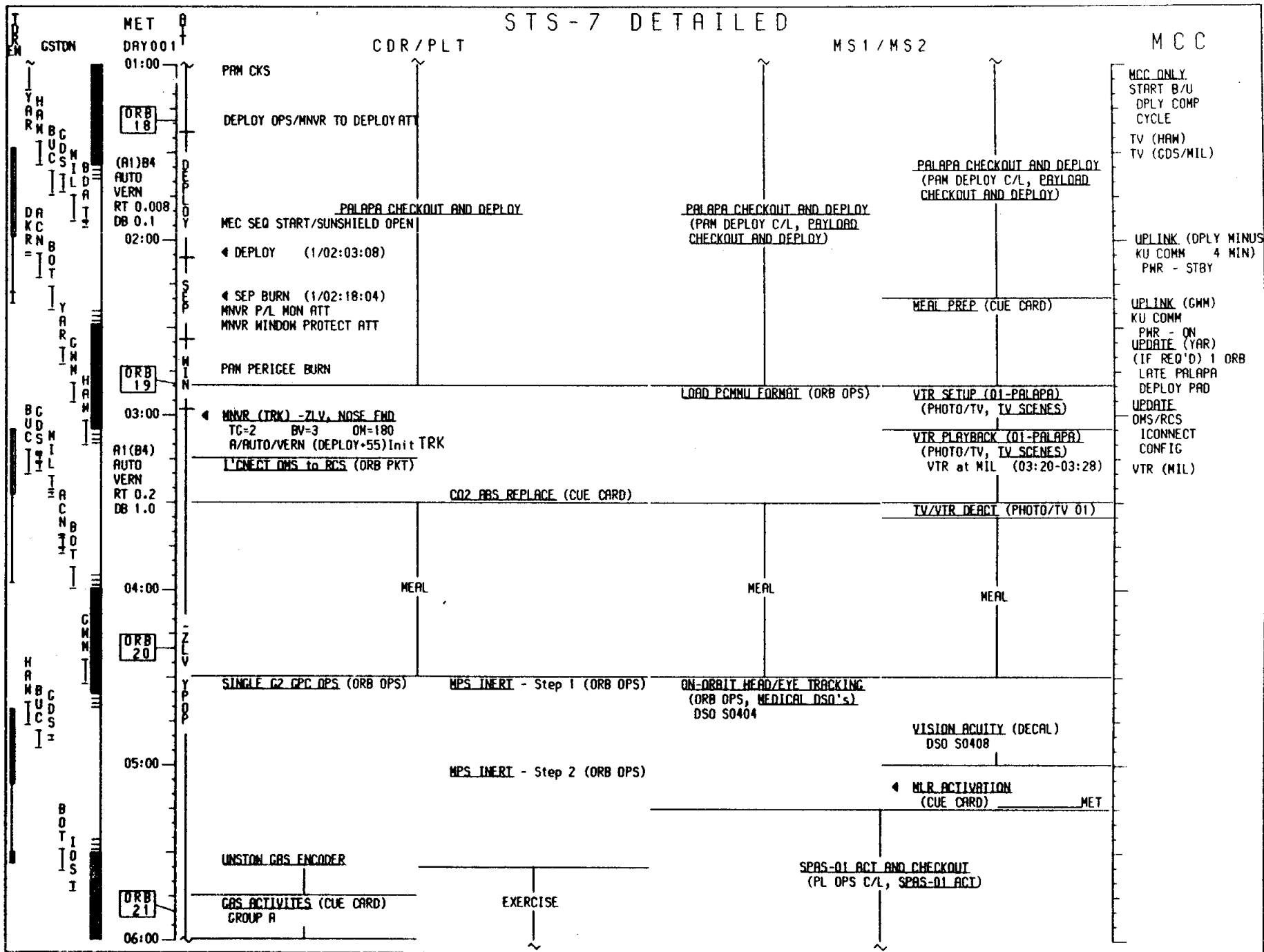


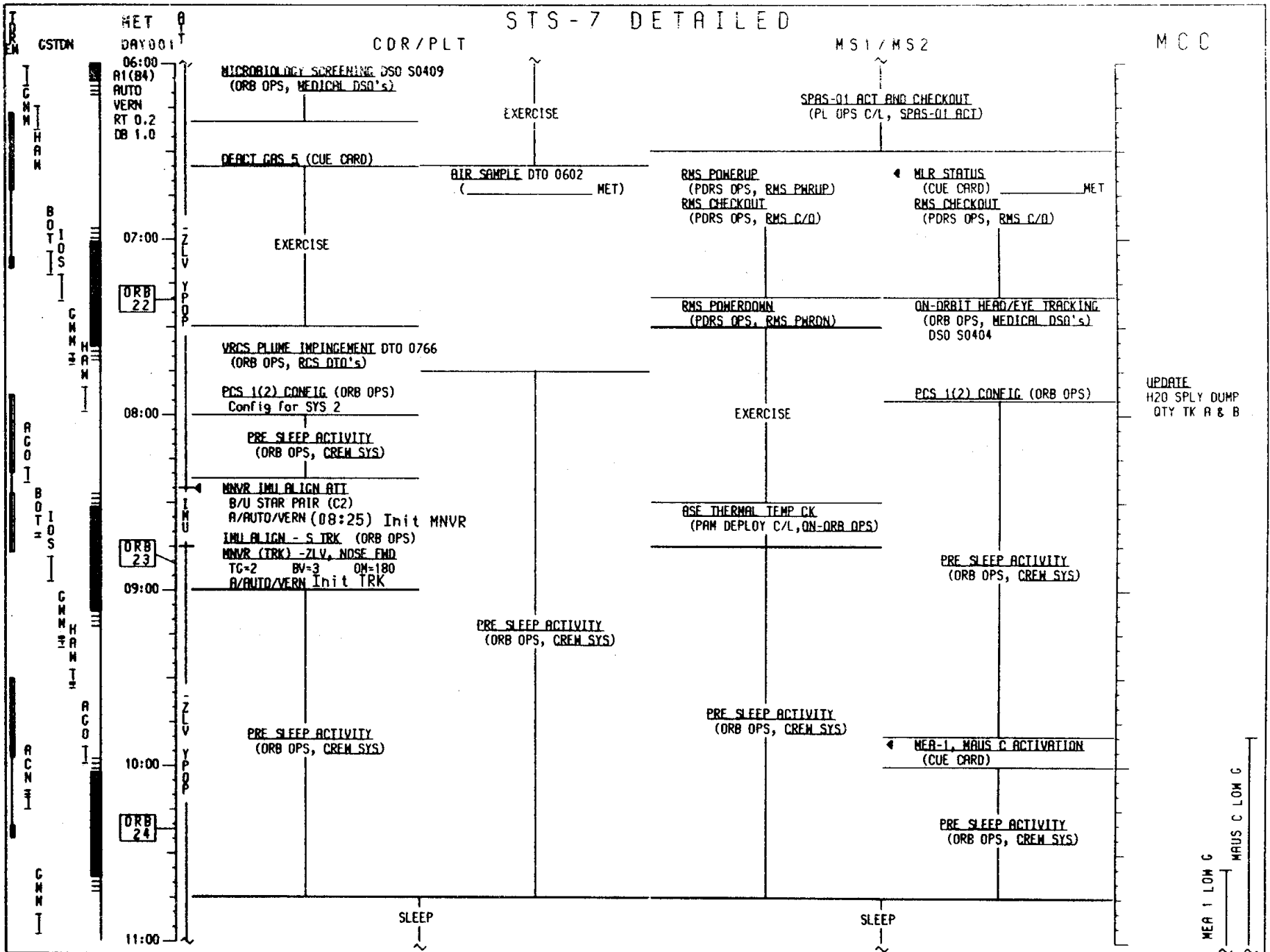
STS-7 DETAILED



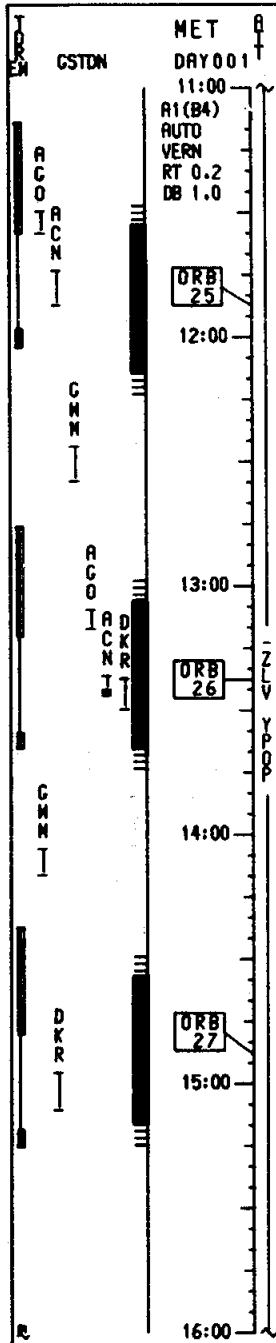
STS-7 DETAILED







STS-7 DETAILED



CDR/PLT

SLEEP

IMU ALIGN LOG
 RECD ID:

-Y____, -Z____ ANG ERR ____

1 2 3

ANG:

ΔX () _ _ () _ _ () _ _

ΔY () _ _ () _ _ () _ _

ΔZ () _ _ () _ _ () _ _

EXECUTION TIME:

_ _ / _ _ : _ _ : _ _

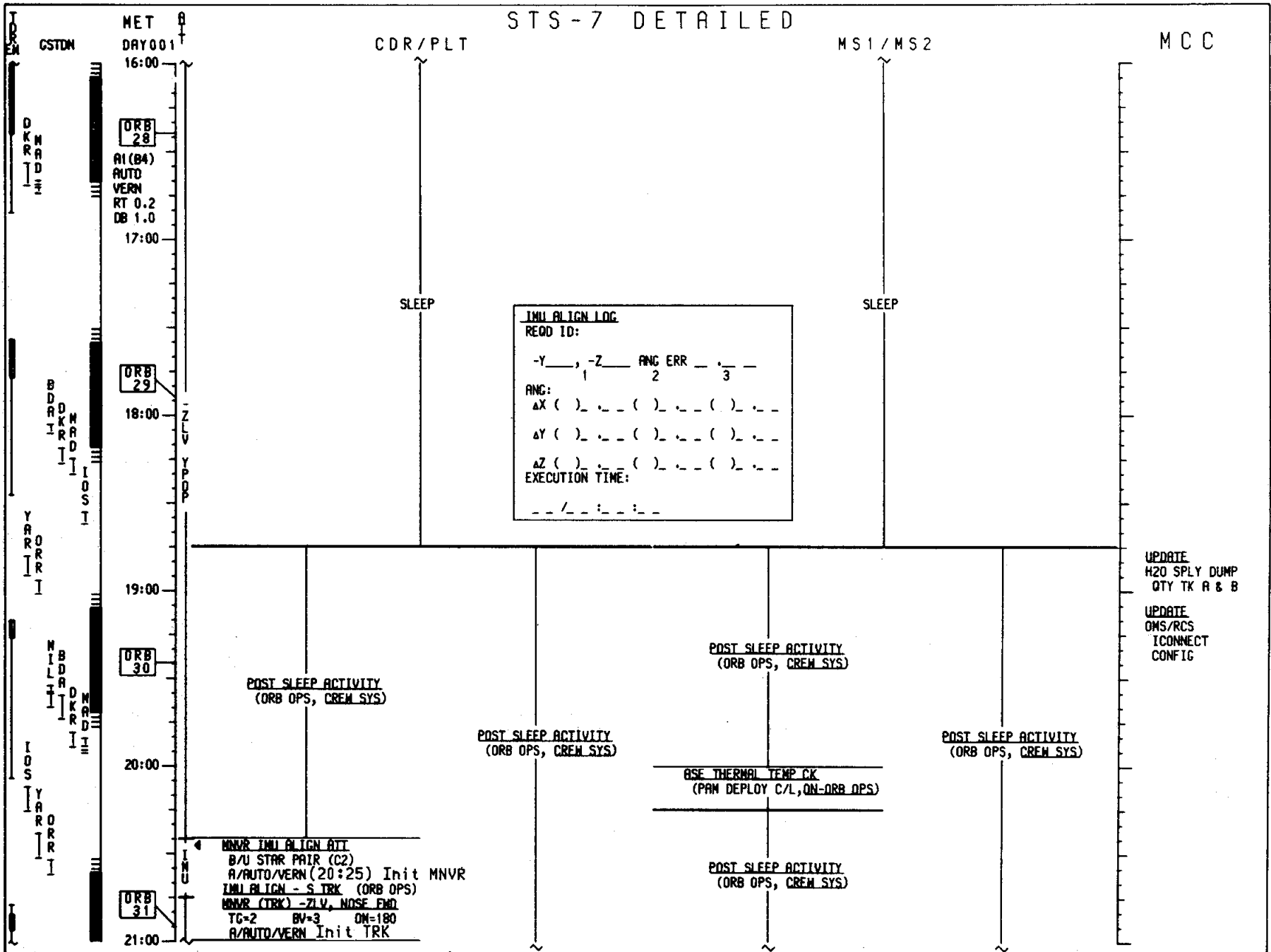
MS1/MS2

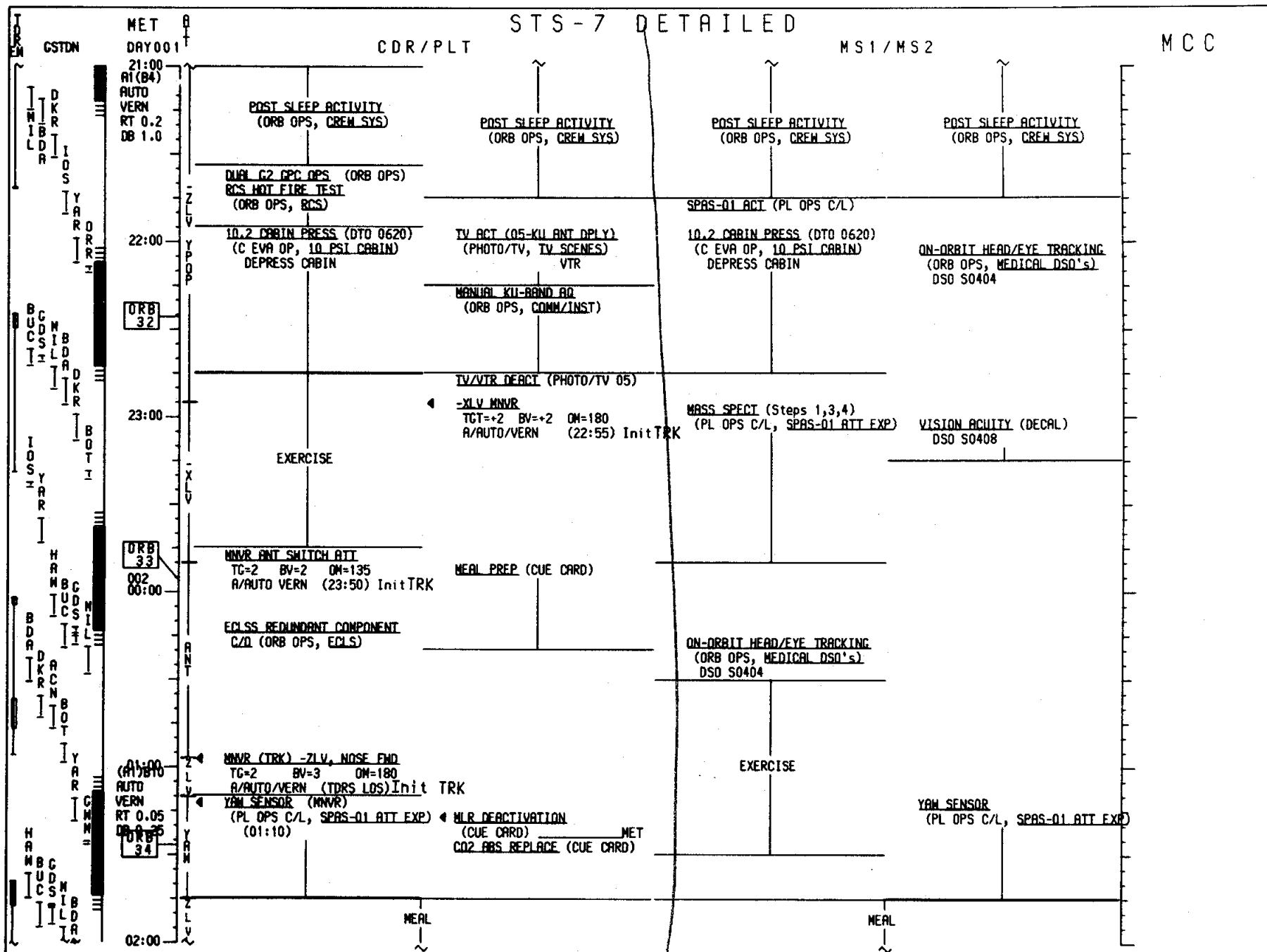
SLEEP

MCC

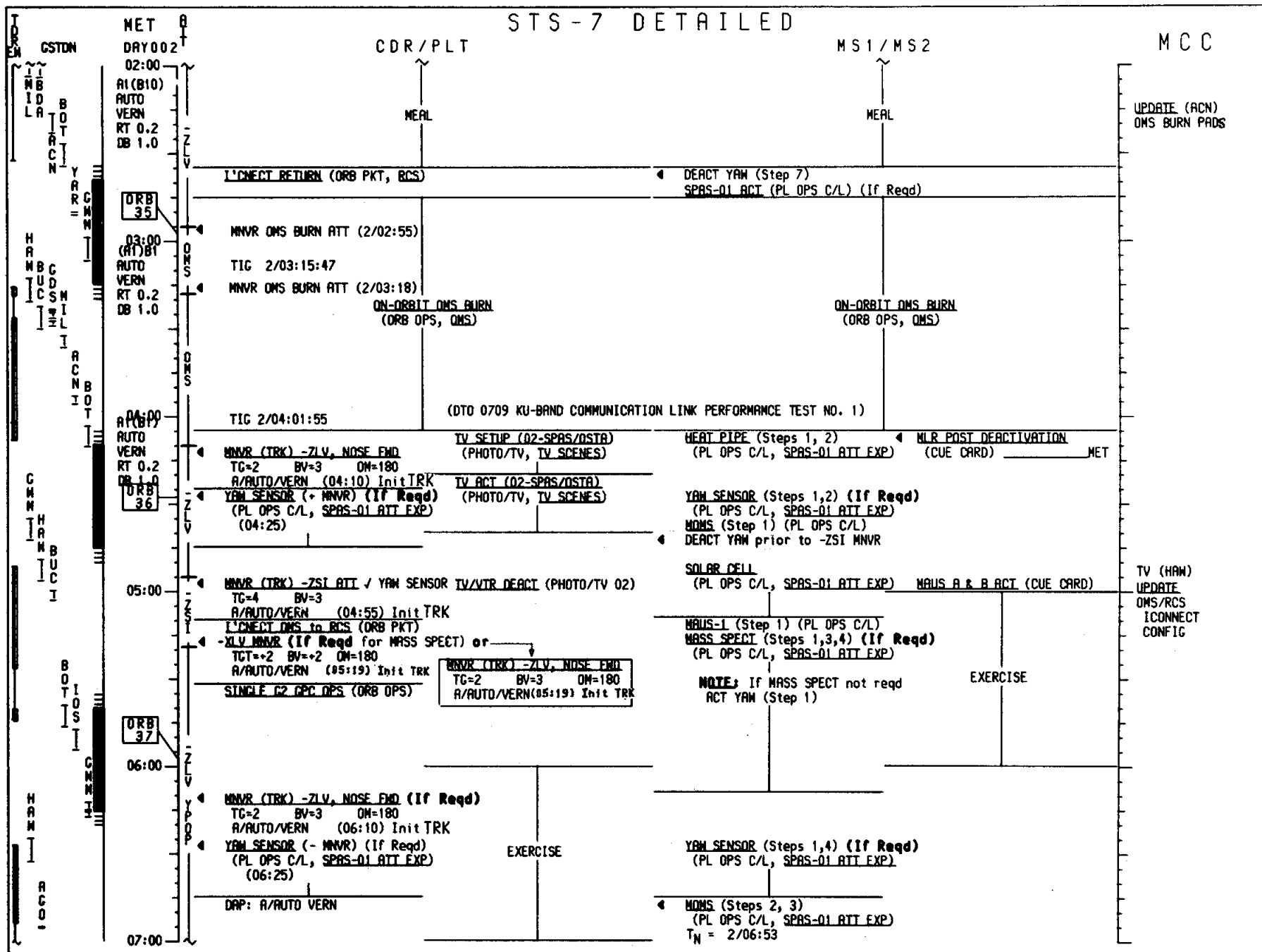
MEAS 1 LOW G
 MEAS 2 LOW G

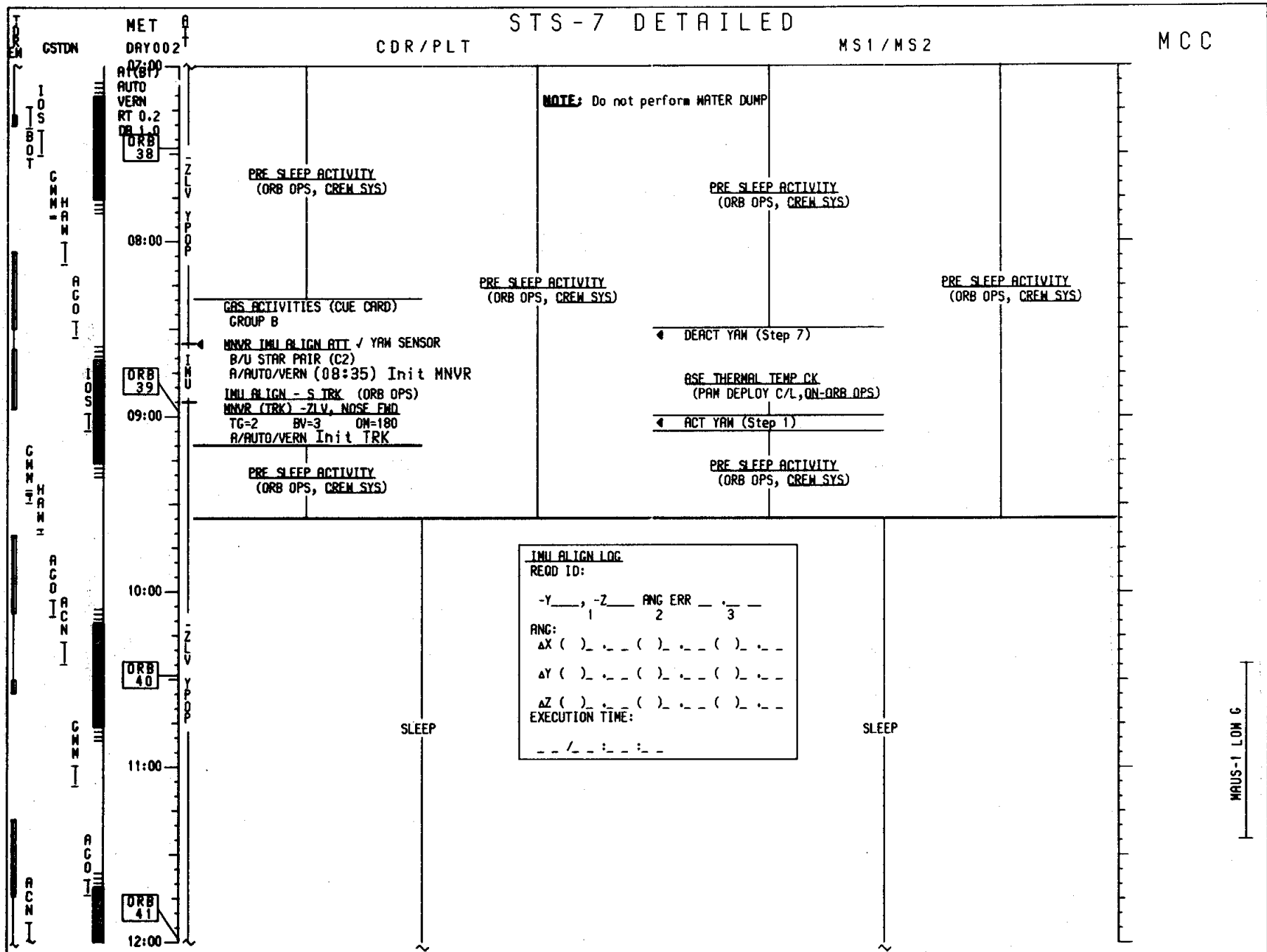
STS-7 DETAILED



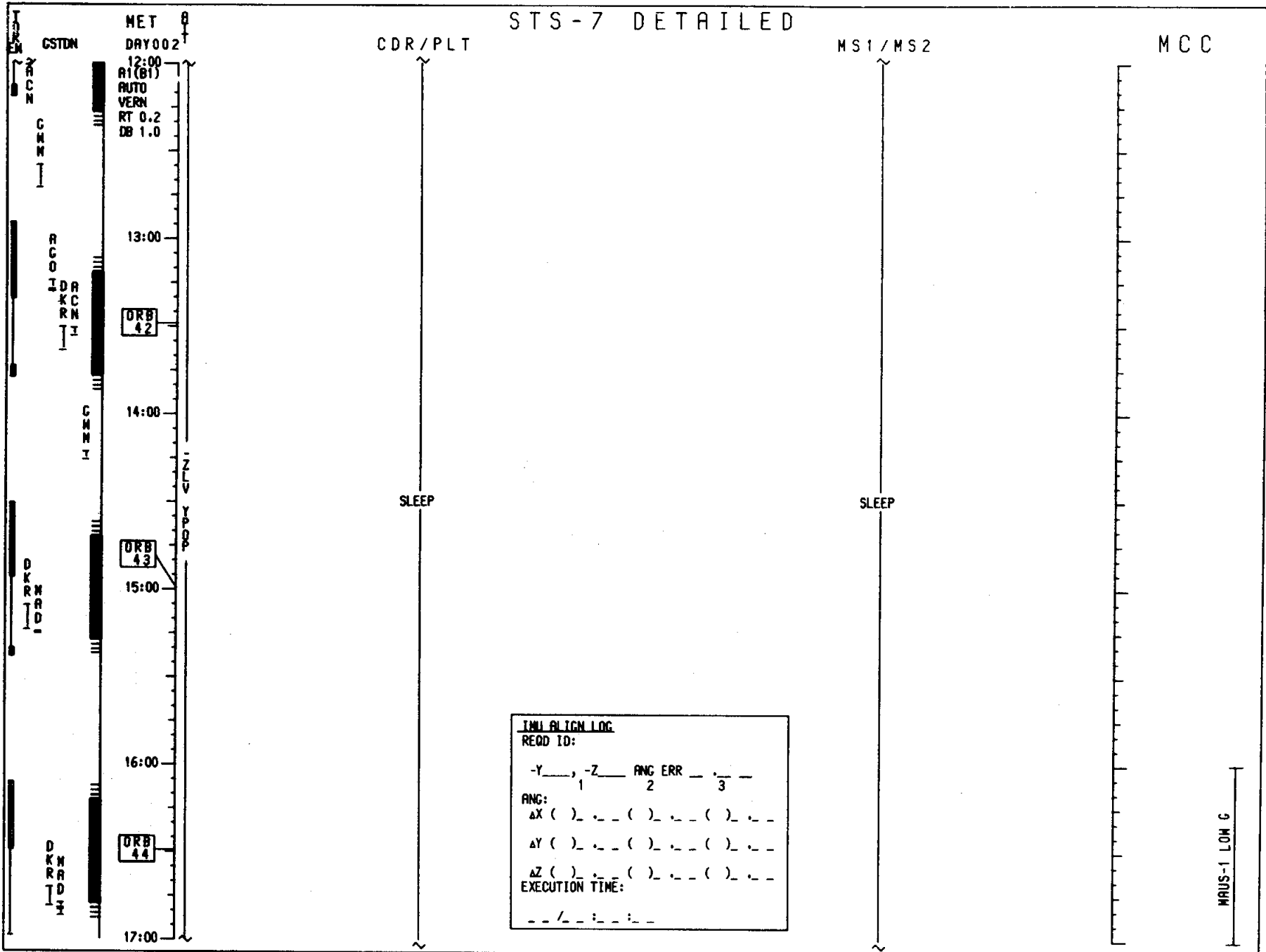


STS-7 DETAILED

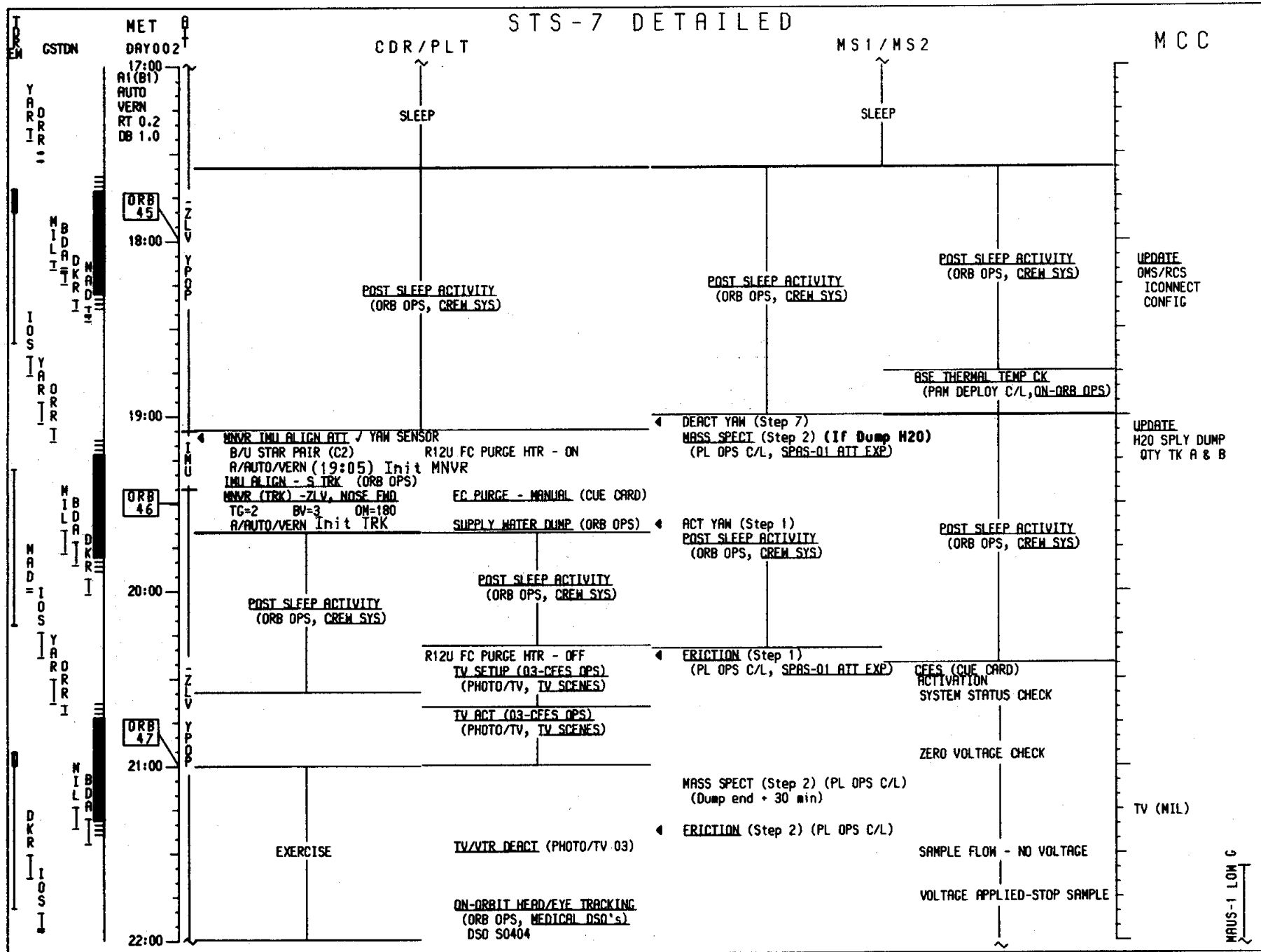


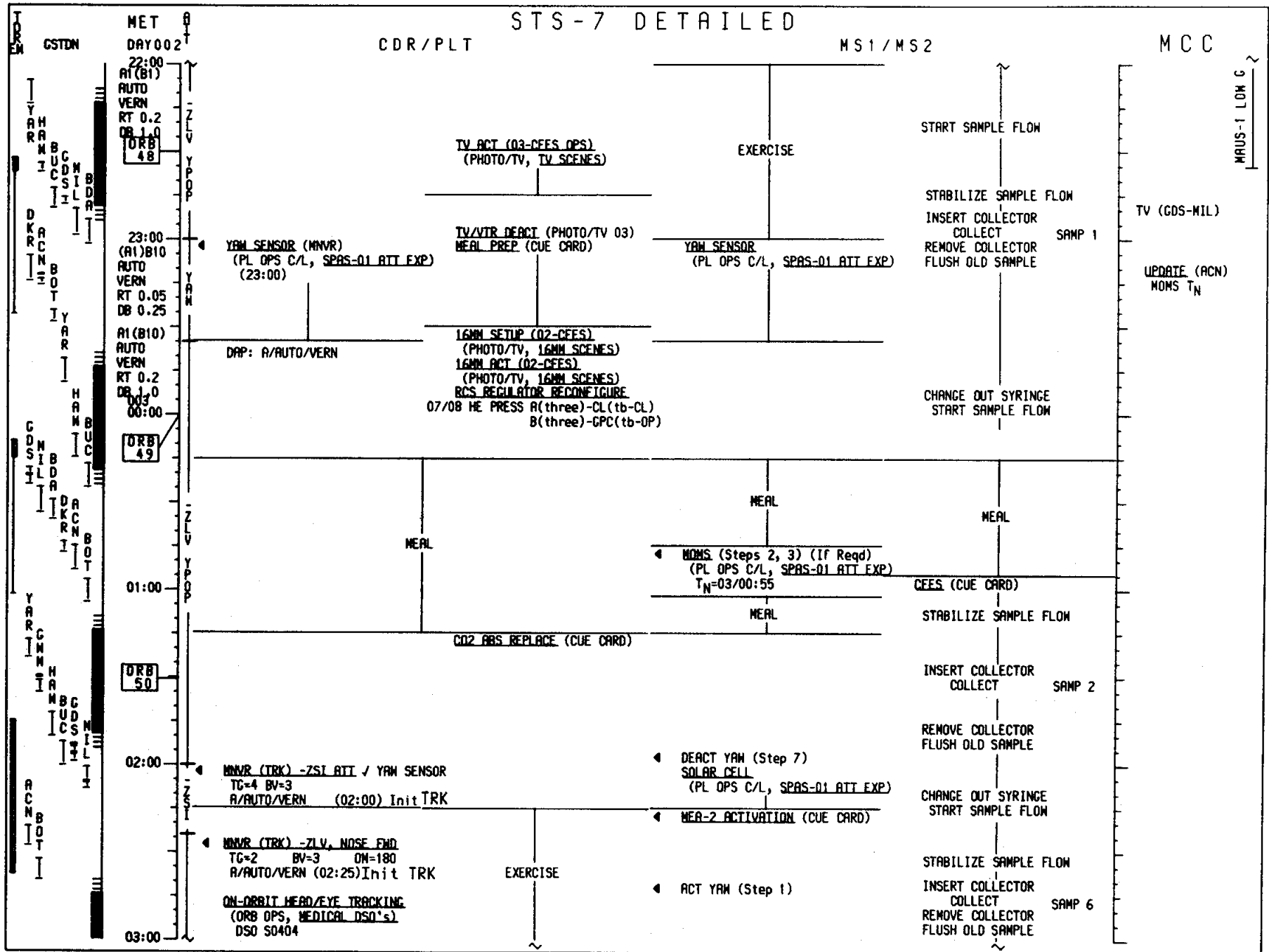


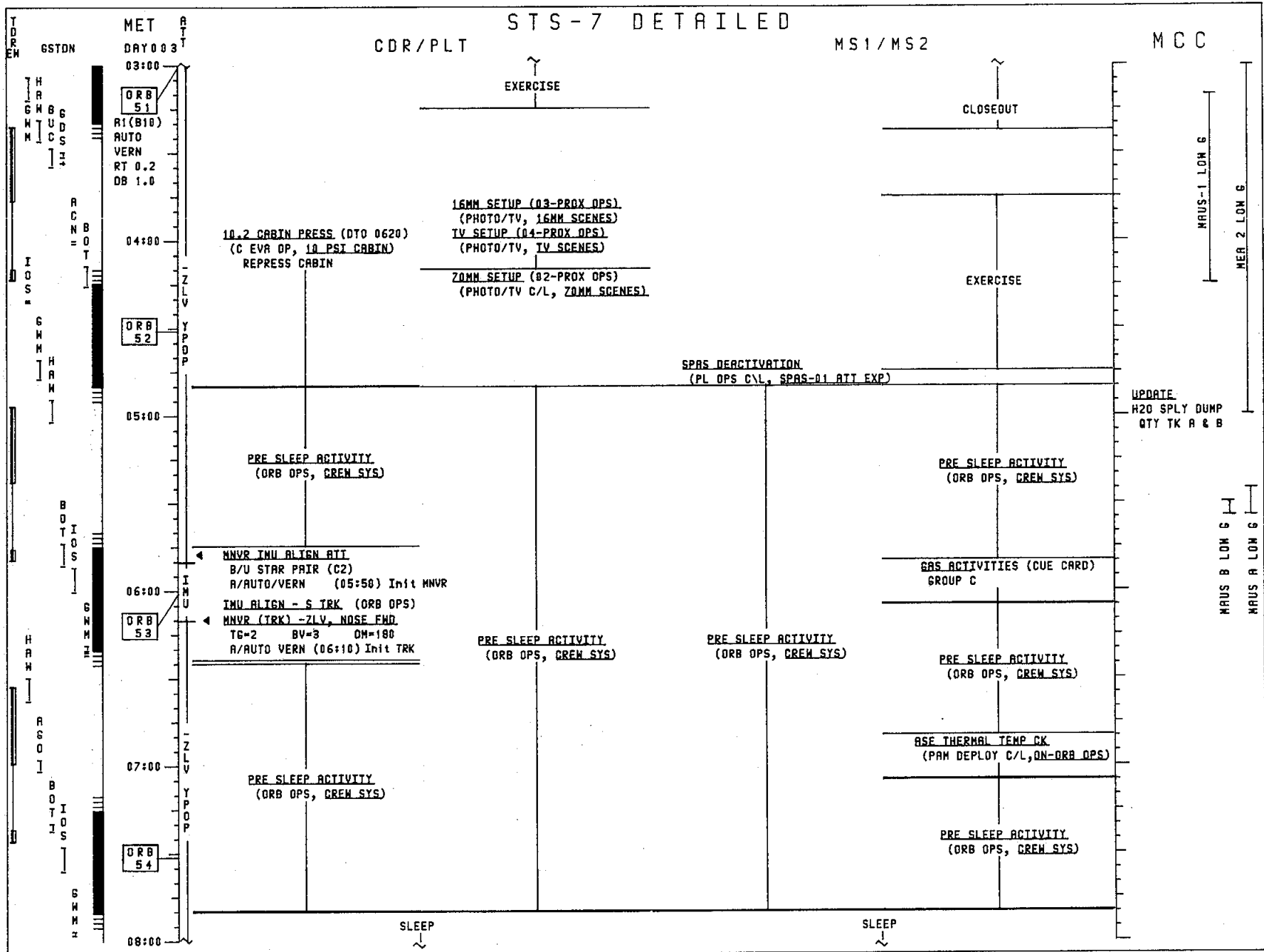
STS-7 DETAILED



STS-7 DETAILED







STS-7 DETAILED

MET DAY003
 08:00
 A1(B10)
 AUTO *VRN*
 VERN
 RT 0.2
 DB 1.0

GSTDN

09:00
 ORB 55

10:00
 ORB 56

11:00

12:00
 ORB 57

13:00

CDR/PLT

SLEEP

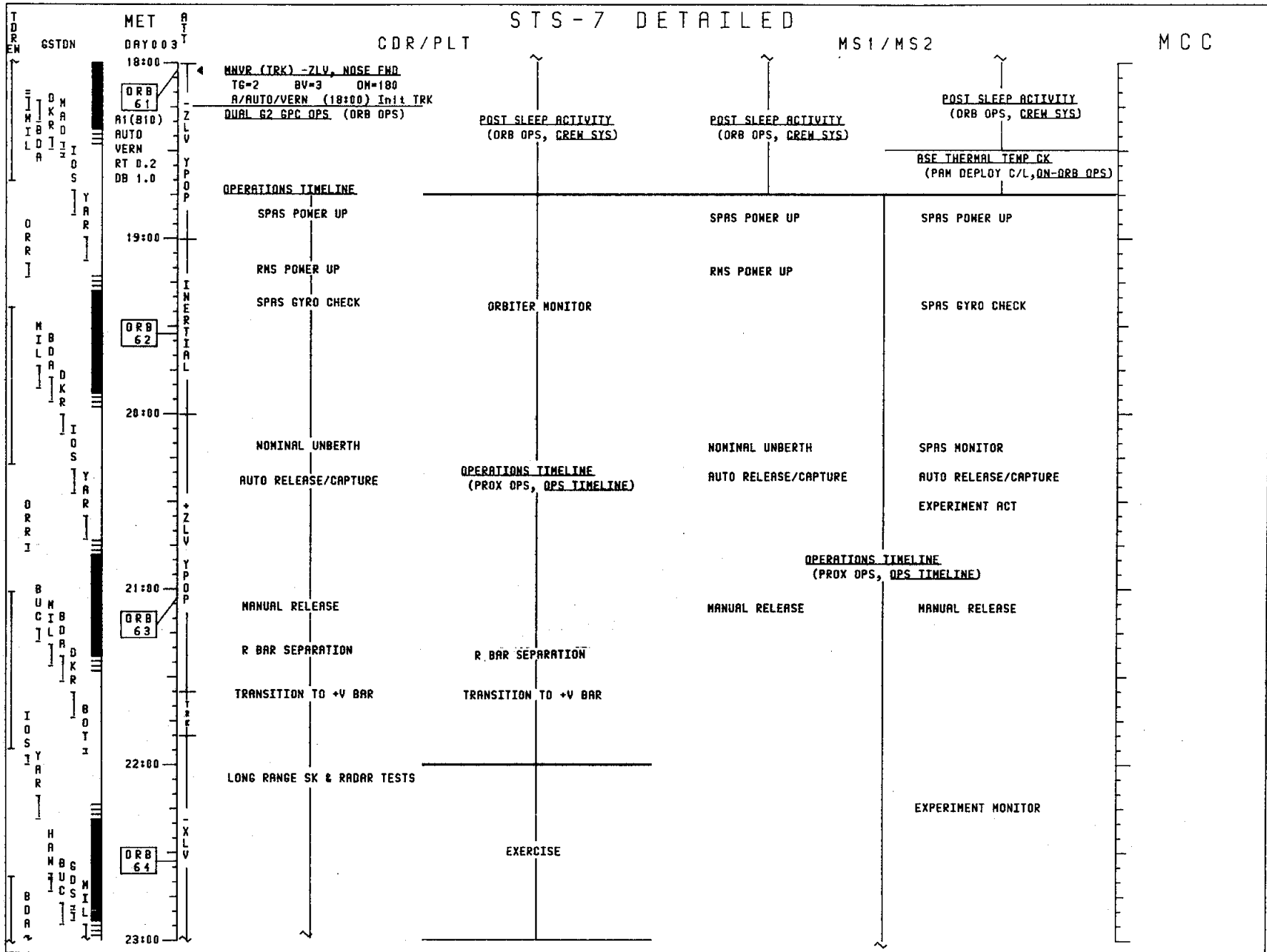
IMU ALIGN LOG
 RECD ID:
 -Y____, -Z____ ANG ERR _ . / _
 1 2 3
 ANG:
 ΔX () _ . _ () _ . _ () _ . _
 ΔY () _ . _ () _ . _ () _ . _
 ΔZ () _ . _ () _ . _ () _ . _
 EXECUTION TIME:
 _ . / _ . : _ . : _ .

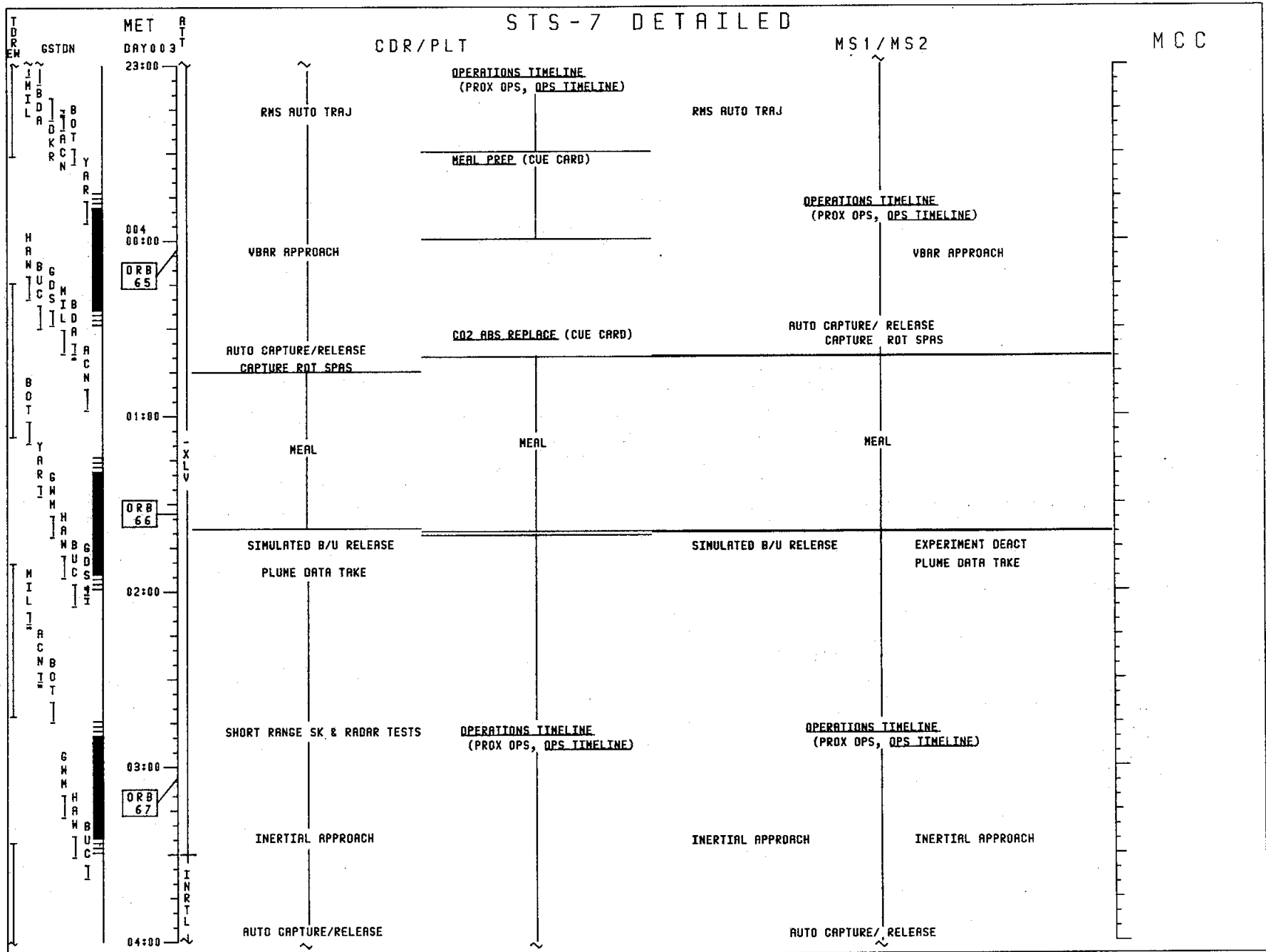
MS1/MS2

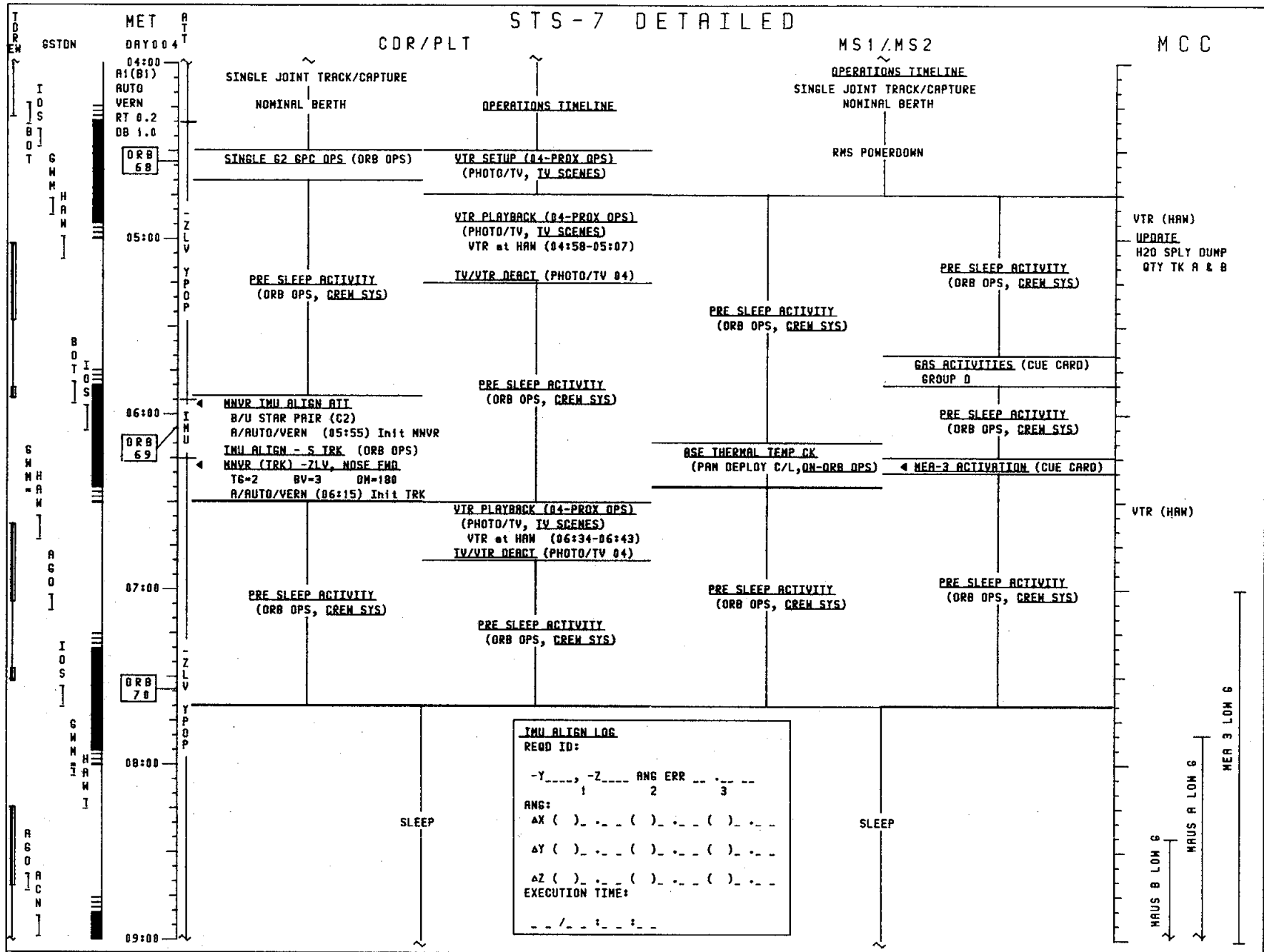
SLEEP

MCC

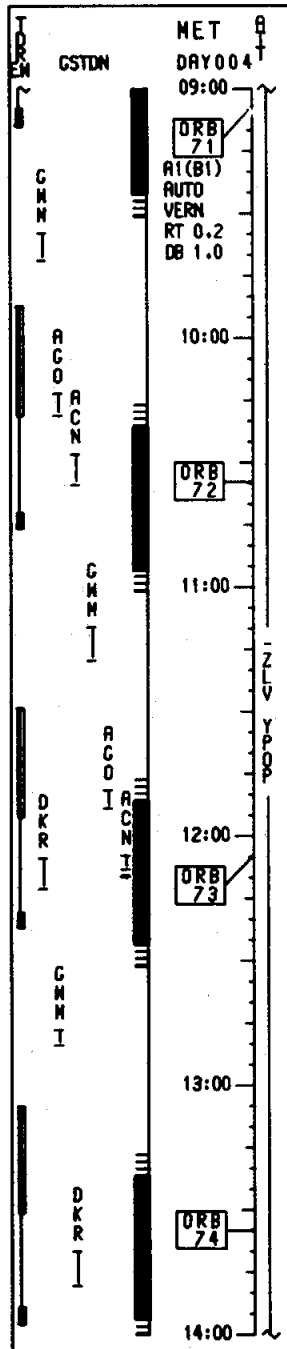
MER 2 LOW G







STS-7 DETAILED



CDR/PLT

SLEEP

MS1/MS2

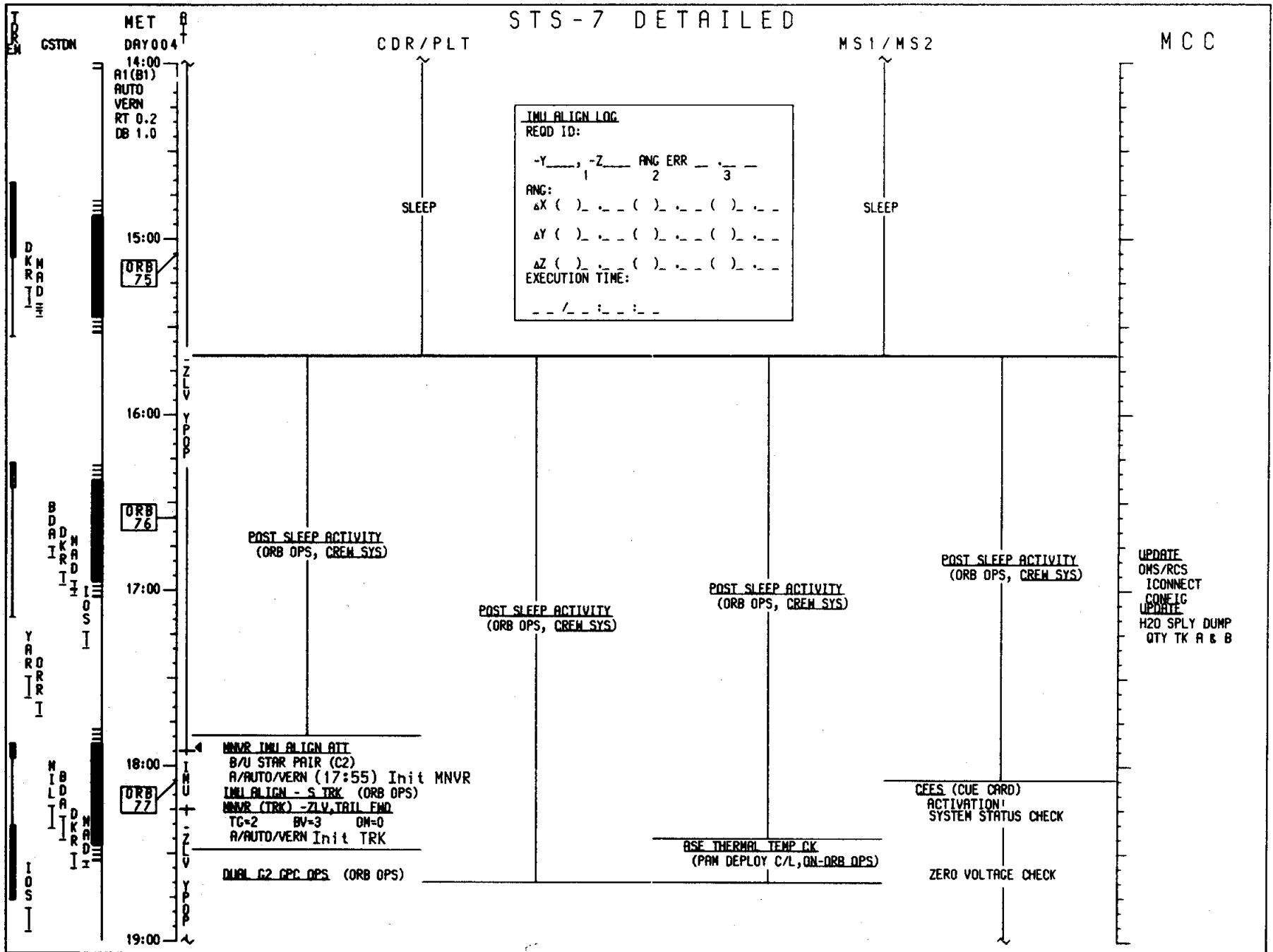
SLEEP

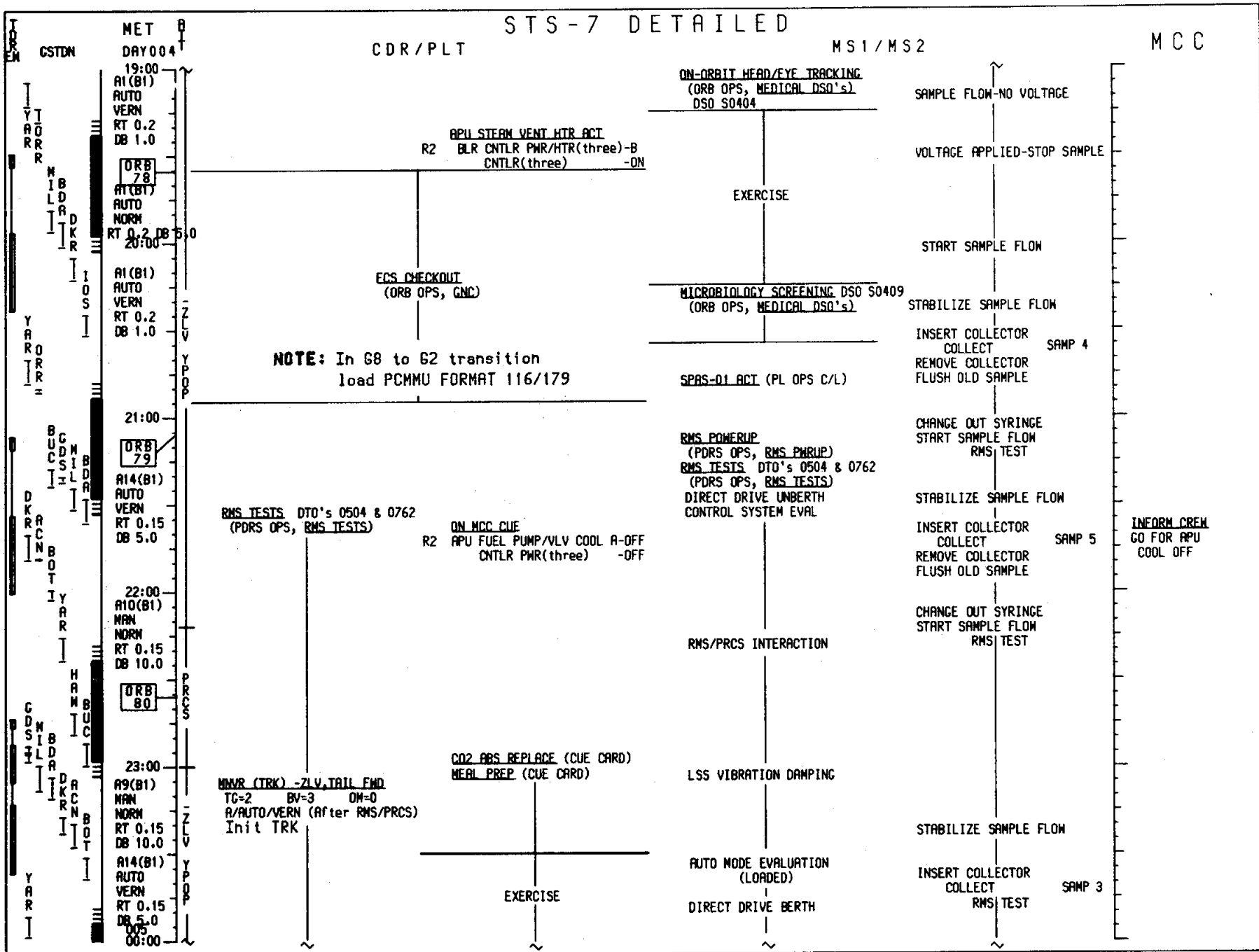
MCC

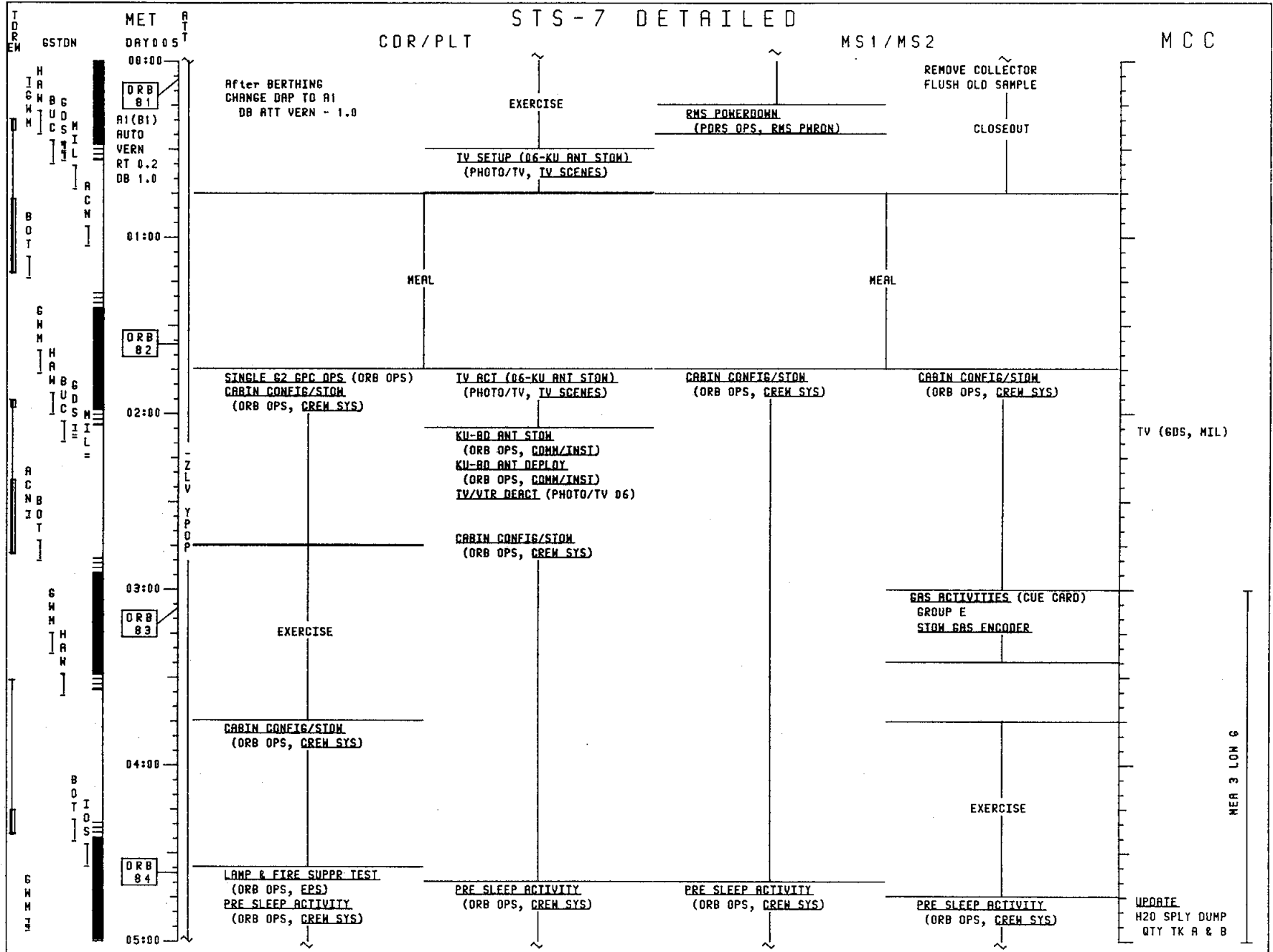
MAUS B LOW G

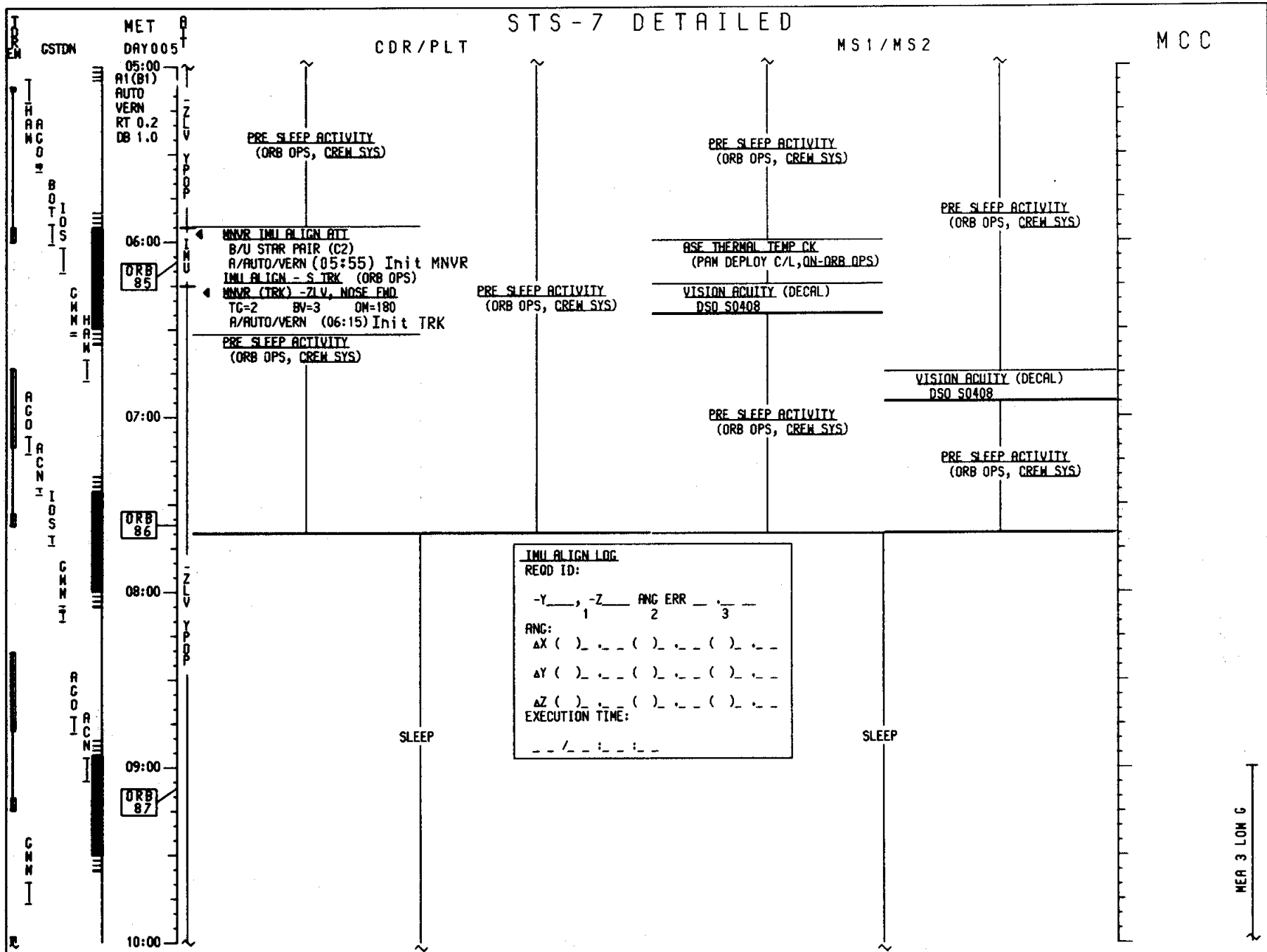
MAUS A LOW G

STS-7 DETAILED

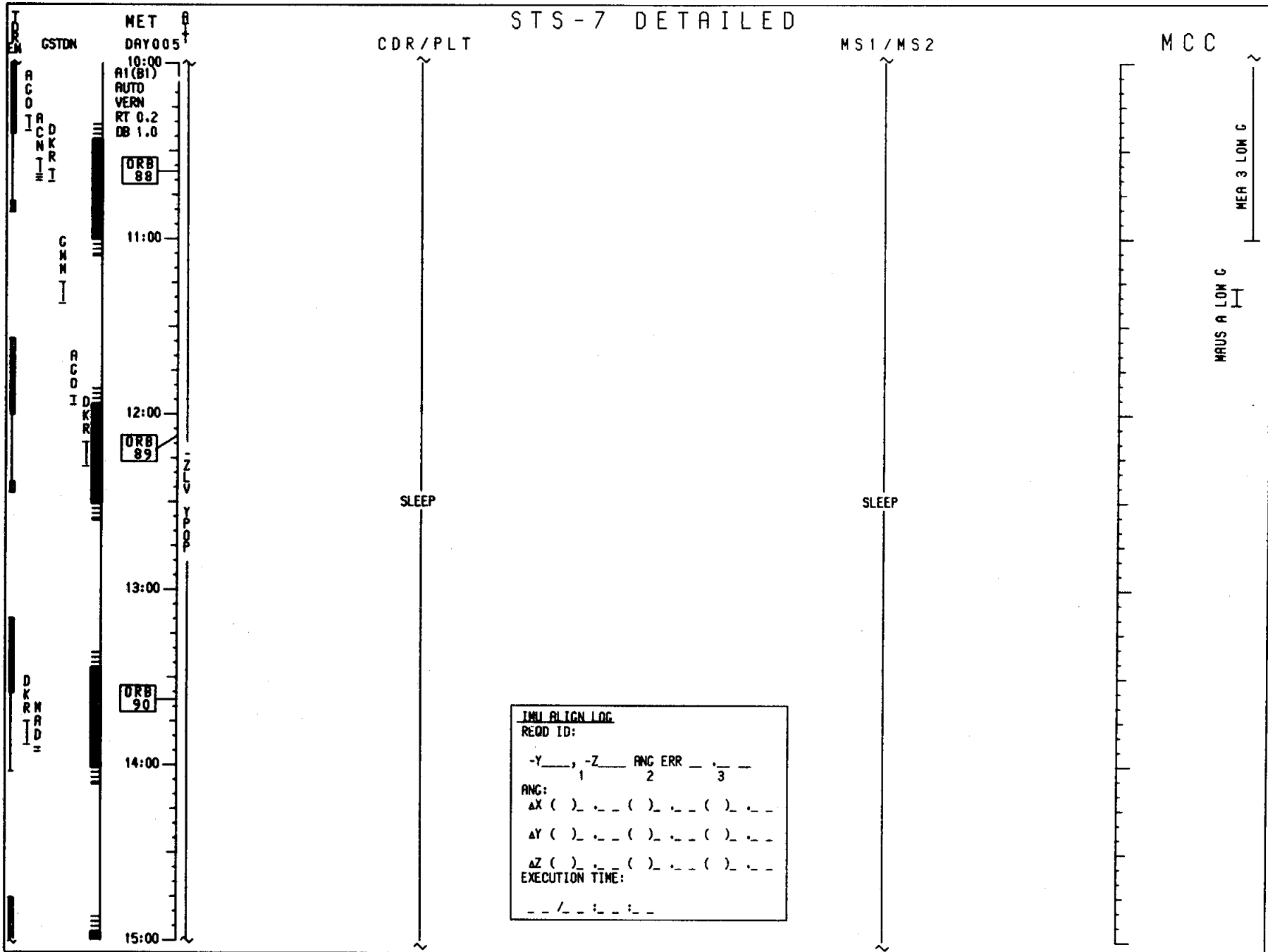




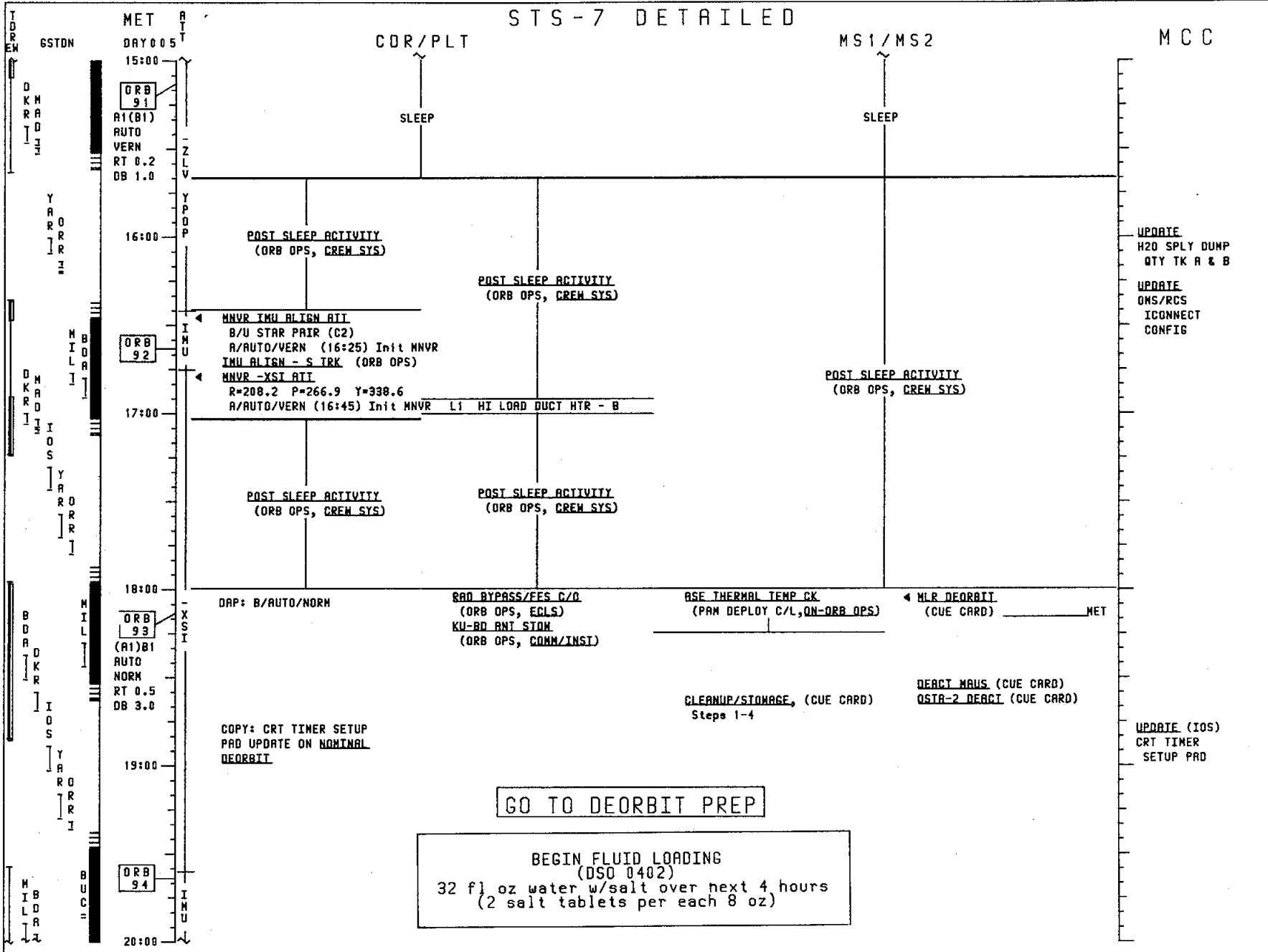




STS-7 DETAILED



STS-7 DETAILED



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CONTINGENCY TIMELINES

FLIGHT DAY 3 DEPLOYMENT..... 5A-1
FLIGHT DAY 3 DEPLOYMENT TIMELINE (PALAPA)..... 5A-2
FLIGHT DAY 3 DEPLOYMENT TIMELINE (TELESAT)..... 5B-1
HIGH PRIORITY MISSION..... 5C-1
HIGH PRIORITY MISSION TIMELINE..... 5C-2
WAVE OFF (1 DAY LATE ENTRY)..... 5D-1
WAVE OFF TIMELINE..... 5D-2

CONTINGENCY
TIMELINES

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FLIGHT DAY 3 DEPLOYMENT

Overview

This tab contains two separate timelines. The first is for a TELESAT deployment on orbit 32D with a 33A PKM. The second is for a PALAPA deployment on orbit 33D with a 34A PKM. In either case, the crew follows the FD 3 deploy timeline from 1/07:00 until 2/02:45 MET when they return to the nominal CAP.

Comparison with Nominal FD 2

Sleep starts 15 minutes earlier for TELESAT with no change for PALAPA. The CDR deletes DTO 0766 (VRCS Plume Impingement Effects) and starts the IMU alignment early. After the alignment, the Orbiter goes to top sun to provide 30 minutes of thermal conditioning for the PAM payload prior to orbital darkness. The Orbiter remains in top sun until 30 minutes after orbital sunrise to provide a second period of thermal conditioning before returning to -ZLV. During the daylight portions of this top sun attitude, the MS2 checks the SPAS-01 temperatures every 15 minutes. The MS2 performs the PCS configuration slightly later than in the nominal timeline. MS1 delays the ASE Temp Check until the top sun conditioning is completed. OSTA-2 activation is unchanged from the nominal.

Comparison with Nominal FD 3

Wakeup is unchanged for PALAPA, but is one hour and 15 minutes earlier for TELESAT. For CDR, the morning IMU alignment is moved earlier to accommodate predeploy tracking, Exercise is deleted, DTO 0701 (S-Band/TDRS Comm Link Performance Test 1) and DTO 0620 (10.2 PSIA Cabin Pressure Control Demonstration) are deleted, the RCS Hot Fire is moved to approximately 5/02:00 MET, 2 GNC GPC ops is moved to support deployment, ECLSS Checkout is moved earlier in the day, the YAW MNVR Test is deleted, and Interconnect Return is deleted since no interconnect was performed. The CDR also has an added deploy review period and may be required to set up the 70MM camera if it isn't already properly configured for deploy. For the PLT, DTO 0709 (Ku-Band Comm Link Performance) and the MASS SPECT Shield Experiment maneuver are deleted. The PLT has deploy review and 16MM camera setup (if required) added. His MLR Deactivation is moved to MS2 and, for the PALAPA deploy only, the CO2 absorber changeout is delayed slightly. The MS1 performs a Spacecraft State of Health Check if required, and an ASE TEMP CHECK for PALAPA if doing a TELESAT backup deploy. Also for MS1, DTO 0620 (10.2 PSIA Cabin Pressure Control Demonstration) is deleted, the MASS SPECT Calibration is deleted, the EOG Test is moved, TV Setup and Activation for the deployment is scheduled, deploy review time is provided, Exercise is deleted, YAW deactivation is not required, and the SPAS is activated at 2/02:40 MET. The schedule for MS2 deletes the YAW Test maneuver, deactivates MLR at the nominal time, provides deploy review time, and moves the EOG Test and Visual Acuity Test as required. For PALAPA deploy, the midday meal and its associated prep are slipped slightly for all crewmen.

| GMT (D:H:M) | | MET (D:H:M) | | CDT (D:H:M) | | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|----------------------|---|----------------------|-------|----------------------|--|-------------|------|------|---------------|--------|---------|------------|
| 161:18:31/ 162:06:31 | | 001:07:00/ 001:19:00 | | 161:13:31/ 162:01:31 | | 02/ 161 GMT | 22.1 | ● | JUNE 10, 1983 | STS-7 | FINAL | 4/28/83 |
| GMT: 161 | | | | | | GMT: 162 | | | | | | FD: 03 |
| MET: 001 | | | | | | | | | | | | |
| CDR | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | | | | POST SLEEP |
| PLT | PRE SLEEP ACT | | SLEEP | | | | | | | | | POST SLEEP |
| MS1 | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | | | | POST SLEEP |
| MS2 | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | | | | POST SLEEP |
| DAY/NIGHT | [Day/Night Cycle: 22 (Night), 23 (Night), 24 (Night), 25 (Night), 26 (Night), 27 (Night), 28 (Night), 29 (Night)] | | | | | | | | | | | |
| ORBIT | [Orbit Data] | | | | | | | | | | | |
| CSTDN COVERAGE | [Coverage Data: --BOT, --GMM, --HAM, --AGO, --ACN, --DKR, --MAD, --BDA, --IOS] | | | | | | | | | | | |
| TDRS E M | [TDRS Data] | | | | | | | | | | | |
| DEDRB KSC EDW | [DEDRB Data] | | | | | | | | | | | |
| DEPLY OPP | [DEPLY OPP Data] | | | | | | | | | | | |
| TV | [TV Data] | | | | | | | | | | | |
| ATTITUDE | [ATTITUDE Data: -IMU, -ZSI, -ZLV YPOP] | | | | | | | | | | | |
| SPAS-01 | [SPAS-01 Data] | | | | | | | | | | | |
| MEA | [MEA Data] | | | | | | | | | | | |
| MAUS | [MAUS Data] | | | | | | | | | | | |
| GAS/MLR | [GAS/MLR Data] | | | | | | | | | | | |
| NOTES: | <ul style="list-style-type: none"> ● DSO 0404 ON-ORBIT HEAD AND EYE TRACKING TASKS ● ACT MEA-1, MAUS C ● Y-POP (NOSE FWD) <p style="text-align: center;">PALAPA FD 3 DEPLOY</p> | | | | | | | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | |
|---|----------------------|----------------------|----------------|---|------|---------------|--------|---------|-----------|--|--|
| 162:06:31/ 162:18:31 | 001:19:00/ 002:07:00 | 162:01:31/ 162:13:31 | 03/ 162 GMT | 24.1 | | JUNE 11, 1983 | STS-7 | FINAL | 4/28/83 | | |
| GMT : 162 FD : 03 MET : 001 | | | | | | | | | | | |
| CDR | PLT | MS1 | MS2 | DAY/NIGHT ORBIT GSTON COVERAGE TDRS E M DEORB KSC EDM DEPLY OPP TV ATTITUDE SPAS-01 NEA NAUS GAS/MLR | | | | | | | |
| POST SLEEP ACT | POST SLEEP ACT | POST SLEEP ACT | POST SLEEP ACT | PALAPA DEPLOY | | | | | | | |
| MEAL | MEAL | MEAL | MEAL | RETURN TO NOMINAL CAP AT 2/02:45 MET (OMS BURN PREP) | | | | | | | |
| NOTES: | | | | | | | | | | | |
| ● Y-POP (NOSE FND) | | | | | | | | | | | |
| ● DSO 0404 ON-ORBIT HEAD AND EYE TRACKING TASKS | | | | | | | | | | | |
| ● DSO 0408 NEAR VISION ACUITY | | | | | | | | | | | |
| ● Y-POP (NOSE FND) | | | | | | | | | | | |
| PALAPA FD 3 DEPLOY | | | | | | | | | | | |

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| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/ DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | |
|-----------------------------------|----------------------|----------------------|----------------|----------------|----------------|---------------|-----------|----------------|-----------|-----|----------|----|
| 161:18:31/ 162:06:31 | 001:07:00/ 001:19:00 | 161:13:31/ 162:01:31 | 02 / 161 GMT | 22.1 | ● | JUNE 10, 1983 | STS-7 | FINAL | 4/28/83 | | | |
| GMT : 161 FD : 02 MET : 001 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| CDR | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | |
| PLT | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | | |
| MS1 | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | |
| MS2 | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | POST SLEEP ACT | | | | | | | | |
| DAY/NIGHT | | | | | | | | | | | | |
| ORBIT | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | | | | |
| GSTDN COVERAGE | -BOT -IOS | -GMM -HAM | -RCO -ACN | -GMM -RCO -ACN | -GMM -RCO -DKR | -GMM -DKR | -MAD -DKR | -MAD -DKR -IOS | | | | |
| TDRS E M | | | | | | | | | | | | |
| DEORB KSC EDM | | | | | | | | | | | | |
| DEPLY OPP | TEL | PAL/TEL | TEL | PAL/TEL | TEL | PAL | PAL | TEL | PAL/TEL | | | |
| TV | IMU | ZSI | | | | ZLV YPOP | | | | IMU | ZLV YPOP | |
| SPAS-01 | | | | | | | | | | | | |
| MEA | | | | | | | | | | | | |
| MAUS | | | | | | | | | | | | |
| GAS/MLR | | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | | |

● ACT MEA-1, MAUS C
● Y-POP (NOSE FWD)

TELESAT FD 3 DEPLOY

○ POST SLEEP ACT
● Y-POP (NOSE FWD)

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/ DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | |
|----------------------|---|-------------------------------|-------------------------------|---|---|---|---|---|--|-------------------------|
| 162:06:31/ 162:18:31 | 001:19:00/ 002:07:00 | 162:01:31/ 162:13:31 | 03/ 162 GMT | 24.1 | ● | JUNE 11, 1983 | STS-7 | FINAL | 4/28/83 | |
| GMT : 162 | FD : 03 | MET : 001 | | | | | | | | |
| CDR | POST SLEEP ACT | | | | | | | | | |
| PLT | POST SLEEP ACT | | | | | | | | RETURN TO NOMINAL CAP AT 2/02:45 MET (OMS BURN PREP) | |
| MS1 | POST SLEEP ACT | | | | | | | | | |
| MS2 | POST SLEEP ACT | | | | | | | | | |
| TELESAT DEPLOY | | | | | | | | | | |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | | |
| ORBIT | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | |
| GSTDN COVERAGE | DRR --MIL --BDR --DKR --MAD --IOS --YAR | --MIL --BDR --DKR --IOS --YAR | --MIL --BDR --DKR --IOS --YAR | --BUC --GDS --MIL --BDR --DKR --BOT --IOS | --YAR --HAW --ACN --BOT --YAR --GMM --HAW --BUC --MIL --BDR --DKR | --MIL --BDR --ACN --BOT --YAR --GMM --HAW --BUC --MIL --ACN --BOT --YAR --GMM --HAW | --MIL --BDR --ACN --BOT --YAR --GMM --HAW --BUC --MIL --ACN --BOT --YAR --GMM --HAW | --BUC --GDS --MIL --BDR --DKR --BOT --IOS --GMM --HAW | --BUC --BOT --IOS --GMM --HAW | --BOT --IOS --GMM --HAW |
| TDRS E M | [TDRS Coverage] | | | | | | | | | |
| DEDRB KSC EDM | [DEDRB Coverage] | | | | | | | | | |
| DEPLY OPP | TEL | PAL/TEL | TEL | PAL/TEL | PAL/TEL | PAL | PAL | PAL | PAL/TEL | |
| TV | [TV Coverage] | | | | | | | | | |
| ATTITUDE | -ZLV YPOP DEPLOY + SEP WIN -ZLV YPOP (SEE NOMINAL CAP AFTER 2/02:45 MET) | | | | | | | | | |
| SPAS-01 | [SPAS-01 Coverage] | | | | | | | | | |
| NEAR NAUS | [NEAR NAUS Coverage] | | | | | | | | | |
| GAS/MLR | GAS/MLR GAS | | | | | | | | | |
| NOTES: | ● DSO 0404 ON-ORBIT HEAD AND EYE TRACKING TASKS ● Y-POP (NOSE FWD) ● DSO 0408 NEAR VISION ACUITY TELESAT FD 3 DEPLOY | | | | | | | | | |

HIGH PRIORITY MISSION

The high priority mission is a 74.3 hour flight that lasts 3.5 flight days. For such a mission, the nominal timeline is used through the deployment of PALAPA on flight day two, then the high priority mission timeline is used, starting at 1/02:10 MET. This timeline accomplishes an abbreviated set of SPAS attached experiments, OSTA-2 experiments, CFES runs and proximity operations.

The SPAS activities for the high priority mission include one YAW SENSOR test, one SOLAR CELL calibration, MASS SPECT calibration, and the normal FRICTION PRESSURE LOSS run. The SPAS attached duration is shorter than nominal (15.5 hours vice 24 hours), and therefore the run times for MAUS 1, HEAT PIPE, YAW SENSOR, MASS SPECT are reduced.

For the OSTA-2 experiment, MEA-1, MEA-2 and MAUS-C will operate for their normal durations. The other OSTA-2 experiments will operate for shorter than their normal duration. MAUS A will run for 35 hrs 20 min vice 78 hrs 28 min; MAUS B will run for 35 hrs 20 min vice 55 hrs 54 min; MEA 3 will not be activated.

CFES will be operated and two samples (vice the nominal six) will be collected. Group A of the GAS payloads will be done with a run time of 23 hrs 10 min.

The high priority mission accomplishes some Detailed Test Objectives. The PRIORITY MISSION TEST in the Proximity Operations Book will be performed. This is essentially Phase 1 (VBAR) of the proximity operations test with the one orbit of stationkeeping deleted. No medical DTOs, TDRS DTOs or PHOTO/TV DSOs are accomplished except for those done previously in the nominal timeline (before 1/02:10 MET). The 10.2 PSI cabin depress test will be deleted.

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | | | |
|-----------------------------------|--|--|--|--|--|--|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| 161:10:31 / 161:22:31 | 000:23:00 / 001:11:00 | 161:05:31 / 161:17:31 | 02 / 161 GMT | 20.8 | ● | JUNE 10, 1983 | STS-7 | FINAL | 4/28/83 | | | | | |
| CDT : 161 FD : 02 MET : 000 | 11 MET:001 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| CDR | | | | | | | | | | | | | | |
| PLT | USE NOMINAL | | | | | | | | | | | | | |
| MS1 | TIMELINE UNTIL 1/02:10 | | | | | | | | | | | | | |
| MS2 | | | | | | | | | | | | | | |
| DAY/NIGHT | | | | | | | | | | | | | | |
| ORBIT | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | | | | | |
| GSTDN COVERAGE | -IOS -YAR -HAM -BUC -GDS -MIL -BDA | -DKR -ACN -BOT -YAR -HAM -BUC -GDS -MIL -BDA | -MIL -BDA -DKR -ACN -BOT -YAR -HAM -BUC -GDS -MIL -BDA | -HAM -BUC -GDS -MIL -ACN -BOT -YAR -HAM -BUC -GDS -MIL -BDA | -HAM -BUC -GDS -MIL -ACN -BOT -YAR -HAM -BUC -GDS -MIL -BDA | -HAM -BUC -GDS -MIL -ACN -BOT -YAR -HAM -BUC -GDS -MIL -BDA | -BOT -IOS -GMM -HAM -AGO -BOT -IOS | -GMM -HAM -AGO -BOT -IOS | -GMM -HAM -AGO -BOT -IOS | -GMM -HAM -AGO -BOT -IOS | -GMM -HAM -AGO -BOT -IOS | -GMM -HAM -AGO -BOT -IOS | -GMM -HAM -AGO -BOT -IOS | -GMM -HAM -AGO -BOT -IOS |
| TDRS | | | | | | | | | | | | | | |
| DEORB KSC EDM | ↑ 23:25 | ↑ 01:00 | ↑ 02:35 | ↑ 04:03 | | | | | | | | | | |
| DEPLY OPP | ↑ PAL/TEL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL | ↑ TEL |
| TV | | | | | | | | | | | | | | |
| ATTITUDE | -ZLV YPOP | DEPLOY | SEP | MIN | ZLV YPOP | XLV | ZSI | YAW | ZLV YPOP | IMU | ZLV YPOP | | | |
| SPAS-01 | | | SPAS CK | | MASS | MASS | SOLAR | YAW | MASS | MASS | MASS | YAW | HP | |
| MEA | | | | | | | | | | | | | | |
| MAUS | | | | | | | | | | | | | | |
| GAS/MLR | | | | | | | | | | | | | | |
| NOTES: | HIGH PRIORITY MISSION - FD 2 | | | | | | | | | | | | | |
| | ● Y-POP (NOSE FWD) ● Y-POP (NOSE FWD) ● Y-POP (NOSE FWD) | | | | | | | | | | | | | |
| | ○ GAS 5 DEACT ○ GAS 5 DEACT ○ GAS 5 DEACT | | | | | | | | | | | | | |
| | ● ACT MEA-1, MAUS A,B,C | | | | | | | | | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/ DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | |
|--------------------------------|-------------------------------------|-----------------------|----------------------|------|--------------|--------------------|--------------|------------------------------|---------------------|--------------------------------------|
| 161:22:31 / 162:10:31 | 001:11:00 / 001:23:00 | 161:17:31 / 162:05:31 | 03 / 161 GMT | 22.8 | | JUNE 10, 1983 | STS-7 | FINAL | 4/28/83 | |
| GMT :161 FD :02 MET :001 | | | | | | | | | | |
| | | | | | | | | | | |
| CDR | | SLEEP | | | | | | POST SLEEP ACT | | |
| PLT | | SLEEP | | | | | | POST SLEEP ACT | | |
| MS1 | | SLEEP | | | | | | POST SLEEP ACT | | |
| MS2 | | SLEEP | | | | | | POST SLEEP ACT | | |
| DAY/NIGHT | | | | | | | | | | |
| ORBIT | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | |
| GSTDN COVERAGE | -ACD -ACN | -GMM | -ACD -RCN -DKR | -DKR | -DKR -MAD | -YAR -ORR | -YAR -ORR | -MIL -BDA -DKR -MAD | -YAR -ORR | -BUC -GDS -MIL -DKR -ORR |
| TDRS E M | | | -GMM | | | -LOS | -LOS | -YAR | | |
| DEORB KSC EDM | | | | | | | | | 21:59 | |
| DEPLY OPP | ↑ PAL | ↑ PAL | | | | ↑ TEL | ↑ PAL/TEL | ↑ TEL | ↑ PAL/TEL | |
| TV | | | | | | | | | | |
| ATTITUDE | | | ZLV YPOP | | | IMU | ZLV YPOP | | PROX OPS | |
| SPAS-01 | MAUS1,MONS,MASS,YAW,HP | | | | | | | | MASS SPEC MAUS-2 | |
| NEA | MAUS-1 | | | | | | | | | |
| MAUS | | | | | | MAUS A/B | | | | |
| GAS/MLR | | | | | | MLR/GAS | | | | |
| NOTES: | HIGH PRIORITY MISSION - FD 2 - FD 3 | | | | | ● Y-POP (NOSE FWD) | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | | | | |
|-----------------------|--|-----------------------|--------------------|---------------|-------------------|---------------|---------------|---------------|-------------------|----------|---------------|---------------|----------|---------------|-------|
| 162:10:31 / 162:22:31 | 001:23:00 / 002:11:00 | 162:05:31 / 162:17:31 | 03 / 162 GMT | 24.8 | ● | JUNE 11, 1983 | STS-7 | FINAL | 4/28/83 | | | | | | |
| GMT : 162 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | | |
| FD : 03 | MET: 002 | | | | | | | | | | | | | | |
| MET : 001 | 23 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | |
| CDR | | ZLV MNVR | R/S C/HOT | MEAL | FCS C/O | C/S | STOW UNZOR | FCS C/O | CABIN CONFIG/STOW | EXERCISE | PRE SLEEP ACT | IMU MNVR | ZLV MNVR | PRE SLEEP ACT | SLEEP |
| PLT | V-BAR STATIONKEEPING | V-BAR APPROACH | CAPTURE/SPRS DEACT | MEAL PREP | V-BAR SULTA | V-BAR SULTA | MEAL | FCS C/O | CABIN CONFIG/STOW | EXERCISE | R/S C/HOT | PRE SLEEP ACT | FC PURGE | PRE SLEEP ACT | SLEEP |
| MS1 | V-BAR STATIONKEEPING | V-BAR APPROACH | CAPTURE/SPRS DEACT | MEAL | CABIN CONFIG/STOW | EXERCISE | PRE SLEEP ACT | PRE SLEEP ACT | SLEEP | | | | | | |
| MS2 | MEAL | EXERCISE | CABIN CONFIG/STOW | PRE SLEEP ACT | SLEEP | | | | | | | | | | |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | | | | | | | |
| ORBIT | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | | | | | | |
| GSTDN COVERAGE | [Coverage Schedule] | | | | | | | | | | | | | | |
| TDRS E M | [TDRS Schedule] | | | | | | | | | | | | | | |
| DEORB KSC EDW | [Deorbit Schedule] | | | | | | | | | | | | | | |
| DEPLY OPP | [Deployment Schedule] | | | | | | | | | | | | | | |
| TV | [TV Schedule] | | | | | | | | | | | | | | |
| ATTITUDE | [Attitude Schedule] | | | | | | | | | | | | | | |
| SPRS-01 | [SPRS-01 Schedule] | | | | | | | | | | | | | | |
| MEA MAUS GAS/MLR | [MEA/MAUS/GAS/MLR Schedule] | | | | | | | | | | | | | | |
| NOTES: | <p>HIGH PRIORITY MISSION - FD 3</p> <ul style="list-style-type: none"> ● Y-POP (NOSE FWD) ● FC PURGE HTR ON ● FC PURGE HTR OFF ● MANUAL ○ APU HTR ACT ○ EMERGENCY SHUTDOWN ● ACT MEA-2 | | | | | | | | | | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | | | | | | | | | | | | | | |
|-----------------------|-------------------------------------|-----------------------|--------------|----------------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|--|-----------|----------------|----------------|----------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|-----------|-----------|
| 162:22:31 / 163:10:31 | 002:11:00 / 002:23:00 | 162:17:31 / 163:05:31 | 04 / 162 GMT | 26.9 | ● | JUNE 11, 1983 | STS-7 | FINAL | 4/28/83 | | | | | | | | | | | | | | | | |
| TIC | | | | | | | | | | | | | | | | | | | | | | | | | |
| GMT :162 | 23 | 0 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| FD :03 | | | | | | | FD:4 | | | | | | | | | | | | | | | | | | |
| MET :002 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CDR | SLEEP | | | | | | | | | | | POST SLEEP ACT | | | | IMU MNVR | XSI MNVR | DEORBIT PREP | PLBD OPS | DEORBIT PREP | | | | | |
| PLT | SLEEP | | | | | | | | | | | POST SLEEP ACT | | POST SLEEP ACT | POST SLEEP ACT | POST SLEEP ACT | DEORBIT PREP | PLBD OPS | DEORBIT PREP | | | | | | |
| MS1 | SLEEP | | | | | | | | | | | POST SLEEP ACT | | | | DEORBIT PREP | DEORBIT PREP | DEORBIT PREP | DEORBIT PREP | | | | | | |
| MS2 | SLEEP | | | | | | | | | | | POST SLEEP ACT | | POST SLEEP ACT | DEORBIT PREP | DEORBIT PREP | DEORBIT PREP | DEORBIT PREP | | | | | | | |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | | | | [Day/Night Cycle] | | | | | | | | | | | | | |
| ORBIT | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | | | | | | | | | | | | | | | | |
| GSTDN COVERAGE | CNN | -RCO -ACN | -CNN | -RCO -DKR -ACN | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD | -DKR -WAD |
| TDRS | [TDRS Coverage] | | | | | | | | | | | [TDRS Coverage] | | | | | | | | | | | | | |
| DEORB KSC EDM | | | | | | | | | | | | | | | | | | | | | | | | | |
| DEPLY OPP | PAL | | | | | | | | | | | TEL | | | | | | | | | | | | | |
| TV | | | | | | | | | | | | | | | | | | | | | | | | | |
| ATTITUDE | | | | | | | | | | | | -ZLV YPOP | | | | | | | | | | | | | |
| NEA | [NEA Coverage] | | | | | | | | | | | [NEA Coverage] | | | | | | | | | | | | | |
| MAUS | [MAUS Coverage] | | | | | | | | | | | [MAUS Coverage] | | | | | | | | | | | | | |
| CAS/MLR | [CAS/MLR Coverage] | | | | | | | | | | | [CAS/MLR Coverage] | | | | | | | | | | | | | |
| NOTES: | HIGH PRIORITY MISSION - FD 3 - FD 4 | | | | | | | | | | | FES CNTLR CHECK HI LOAD HTR ON MEA 2, MAUS A/B/C DEACT | | | | | | | | | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|-----------------------------------|-------------------------------------|--|--|--|------------------------------|------------------------------|--|--------------------------------------|----------------------|
| 163:10:31/ 163:22:31 | 002:23:00/ 003:11:00 | 163:05:31/ 163:17:31 | 04/ 163 GMT | 29.0 | ● | JUNE 12, 1983 | STS-7 | FINAL | 4/28/83 |
| TIC | | | | | | | | | |
| GMT : 163 FD : 04 MET : 002 | | | | | | | | | |
| CDR | DEORBIT PREP | | | | | | | | |
| PLT | DEORBIT PREP | DEORBIT BURN | | | | | | | |
| MS1 | DEORBIT PREP | DEORBIT BURN | LANDING | | | | | | |
| MS2 | DEORBIT PREP | | | | | | | | |
| DAY/NIGHT | [Day/Night Cycle Bar] | | | | | | | | |
| ORBIT | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 |
| GSTDN COVERAGE | BDR -DKR -ACN -BOT -YAR | -GDS -NLL -BDR -DKR -ACN -HAW -BUC -BOT -YAR | -CWH -HAW -BUC -GDS -NLL -ACN -BOT | -CWH -HAW -BUC -GDS -ACN -BOT -IOS | -CWH -HAW -BOT -IOS | -CWH -HAW -BOT -IOS | -BOT -IOS -CWH -HAW -AGO -ACN -IOS | -CWH -HAW -AGO -ACN -IOS | -CWH -AGO -ACN |
| TDRS | [TDRS Coverage Bars] | | | | | | | | |
| DEORB KSC | ↑ 23:41 | | | | | | | | |
| EDM | ↑ 01:16 | | | ↑ 02:43 | | | | | |
| DEPLY OPP | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL | ↑ PAL |
| TV | [TV Coverage Bars] | | | | | | | | |
| ATTITUDE | DEORBIT BURN | | | | | | | | |
| NER | | | | | | | | | |
| NAUS | | | | | | | | | |
| CAS/NLR | | | | | | | | | |
| NOTES: | HIGH PRIORITY MISSION - FD 4 | | | | | | | | |

WAVE OFF (1 DAY LATE ENTRY)

The Timeline provided in this section is designed to follow a Deorbit Prep Backout on FD 7. It therefore assumes that the nominal timeline has already been accomplished.

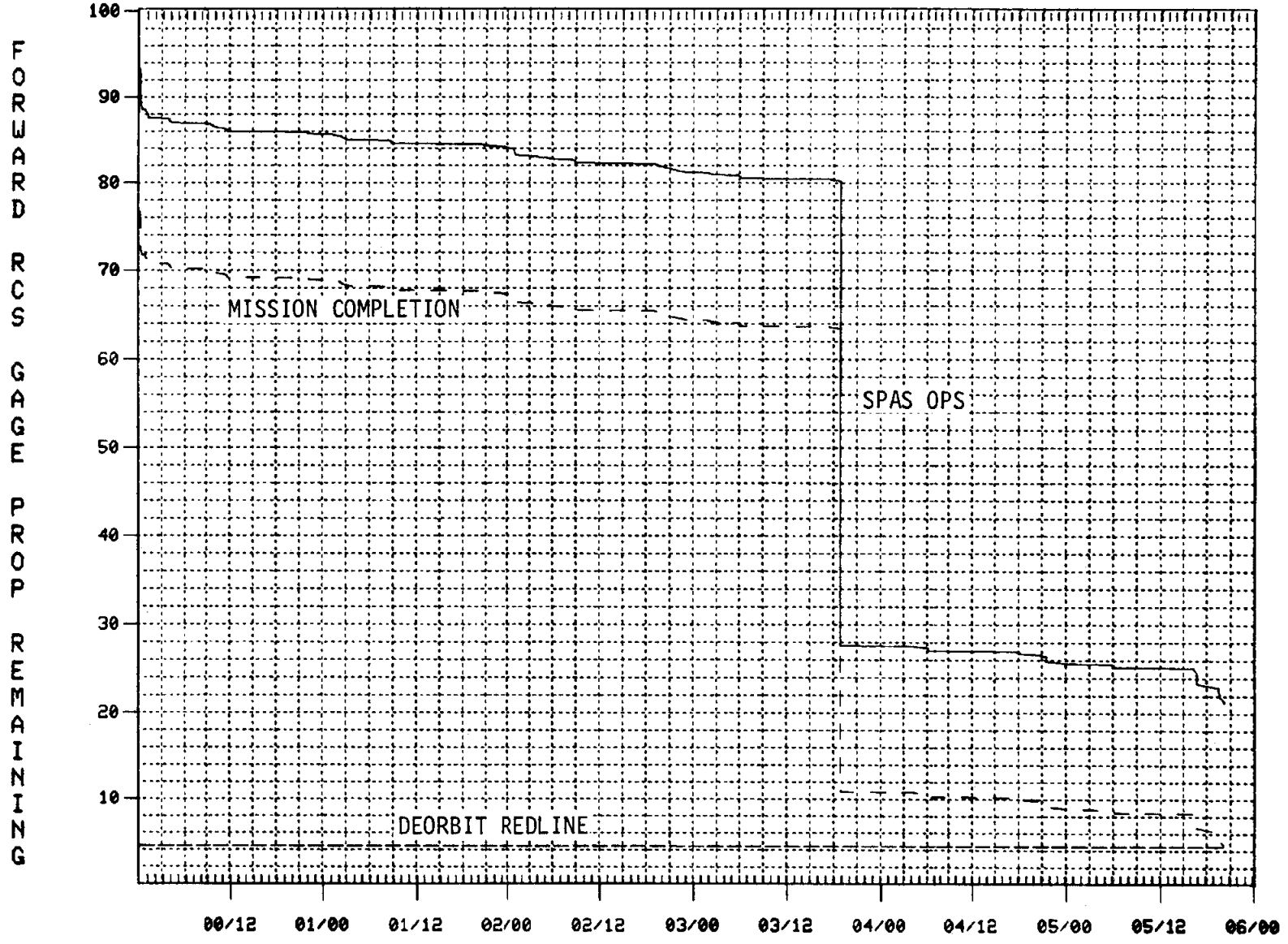
Note that extra time is allowed prior to the evening meal to accommodate reconfiguration or troubleshooting.

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE | | | | | | | | | | | | | | | | | | | |
|-----------------------|---|-----------------------|--------------|--------------|----------------|---------------|--------------|----------------|-----------|----------------------|----------|--------------|----------------------|----|----|----------------------|---------|---------|------------------------------|---------|---------|--|---------|---------|--|---------|---------|---------|
| 165:23:31 / 166:11:31 | 005:12:00 / 006:00:00 | 165:18:31 / 166:06:31 | 07 / 165 GMT | 39.0 | | JUNE 14, 1983 | STS-7 | FINAL | 4/28/83 | | | | | | | | | | | | | | | | | | | |
| TIC | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GMT: 165 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 0 | | | |
| FD :06 | GMT:166 | | | | | | | | | | | FD:07 | | | | | | | | | | | | | | | | |
| NET :005 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 0 | | | | | | | | | | | | | | | |
| CDR | SLEEP | | | | POST SLEEP ACT | INU MNV | XSI MNV | POST SLEEP ACT | | DEORBIT | PLBD OPS | DEORBIT PREP | | | | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT |
| PLT | SLEEP | | | | POST SLEEP ACT | | | POST SLEEP ACT | | DEORBIT | PLBD OPS | DEORBIT PREP | | | | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT |
| MS1 | SLEEP | | | | POST SLEEP ACT | | | | | DEORBIT | PLBD OPS | DEORBIT PREP | | | | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT |
| MS2 | SLEEP | | | | POST SLEEP ACT | | | | | DEORBIT | PLBD OPS | DEORBIT PREP | | | | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT | BACKOUT |
| DAY/NIGHT | [Day/Night Cycle] | | | | | | | | | | | | [Day/Night Cycle] | | | | | | | | | | | | | | | |
| ORBIT | 89 | | | 90 | | | 91 | | | 92 | | | 93 | | | 94 | | | 95 | | | 96 | | | YAR | | | |
| GSTDN COVERAGE | -DKR | | | -DKR -WAD | | | -DKR -WAD | | | -WIL -DKR -WAD | | | -WIL -DKR -WAD | | | -WIL -DKR -WAD | | | -GDS -WIL -DKR -ACN | | | -HAM -BUC -GDS -WIL -DKR -ACN | | | -HAM -BUC -GDS -WIL -DKR -ACN | | | |
| TDRS E M | [Timeline] | | | | | | | | | | | | [Timeline] | | | | | | | | | | | | | | | |
| DEORB KSC EDM | [Timeline] | | | | | | | | | | | | [Timeline] | | | | | | | | | | | | | | | |
| DEPLY OPP TV | [Timeline] | | | | | | | | | | | | [Timeline] | | | | | | | | | | | | | | | |
| ATTITUDE | -ZLV Y-POP | | | | | | | | | | | | -XSI | | | | | | | | | | | | | | | |
| MEA | MEA-3 | | | | | | | | | | | | VENT | | | | | | | | | | | | | | | |
| HAUS | [Timeline] | | | | | | | | | | | | [Timeline] | | | | | | | | | | | | | | | |
| CAS/NLR | [Timeline] | | | | | | | | | | | | [Timeline] | | | | | | | | | | | | | | | |
| NOTES: | <p>• HI LOAD HTR ON</p> <p>WAVE OFF</p> <p>• FES CNTLR CHECK</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| GMT (D:H:M) | MET (D:H:M) | CDT (D:H:M) | FD/DOY | BETA | MOON | HOUSTON DATE | FLIGHT | EDITION | PUB. DATE |
|-----------------------------------|--|----------------------|----------------------|------------------------------|----------------------|------------------------------|--|--------------------------------------|--|
| 166:23:31/ 167:11:31 | 006:12:00/ 007:00:00 | 166:18:31/ 167:06:31 | 08/ 166 GMT | 42.6 | | JUNE 15, 1983 | STS-7 | FINAL | 4/28/83 |
| TIC | | | | | | | | | |
| GMT : 166 FD : 07 MET : 006 | | | | | | | | | |
| | | | | | | | | | |
| CDR | SLEEP | POST SLEEP ACT | IMU MNVR | XSI MNVR | POST SLEEP ACT | DEORBIT PREP | PLBD OPS | DEORBIT PREP | |
| PLT | SLEEP | POST SLEEP ACT | POST SLEEP ACT | RAD BYP | POST SLEEP ACT | DEORBIT PREP | PLBD OPS | DEORBIT PREP | DEORBIT BURN ENTRY INTERFACE LANDING |
| MS1 | SLEEP | POST SLEEP ACT | | | | OP SNSHLD | | DEORBIT PREP | |
| MS2 | SLEEP | POST SLEEP ACT | MIL R/R | | POST SLEEP ACT | | | DEORBIT PREP | |
| DAY/NIGHT | | | | | | | | | |
| ORBIT | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | |
| GSTDN COVERAGE | -DKR | -DKR -WAD | -YAR -DKR -WAD | -MIL -BDA -DKR -WAD | -YAR -DKR -WAD | -MIL -BDA -DKR -WAD | -BUC -GDS -MIL -BDA -DKR -WAD | -IOS -YAR -DKR -ACN -BOT | -MIL -BDA -ACN -BOT |
| TDRS | | | | | | | | | |
| DEORB KSC EDM | I 22:28 | | | | | | | | |
| DEPLY OPP TV | I 23:51 | | | | | | | | |
| ATTITUDE | -ZLV Y-POP | | | | | | | | |
| NEA | IMU | | | | | | | | |
| MAUS | -XSI | | | | | | | | |
| GAS/HLR | IMU | | | | | | | | |
| NOTES: | DEORBIT BURN FES CNTLR CHECK HI LOAD HTR ON WAVE OFF | | | | | | | | |

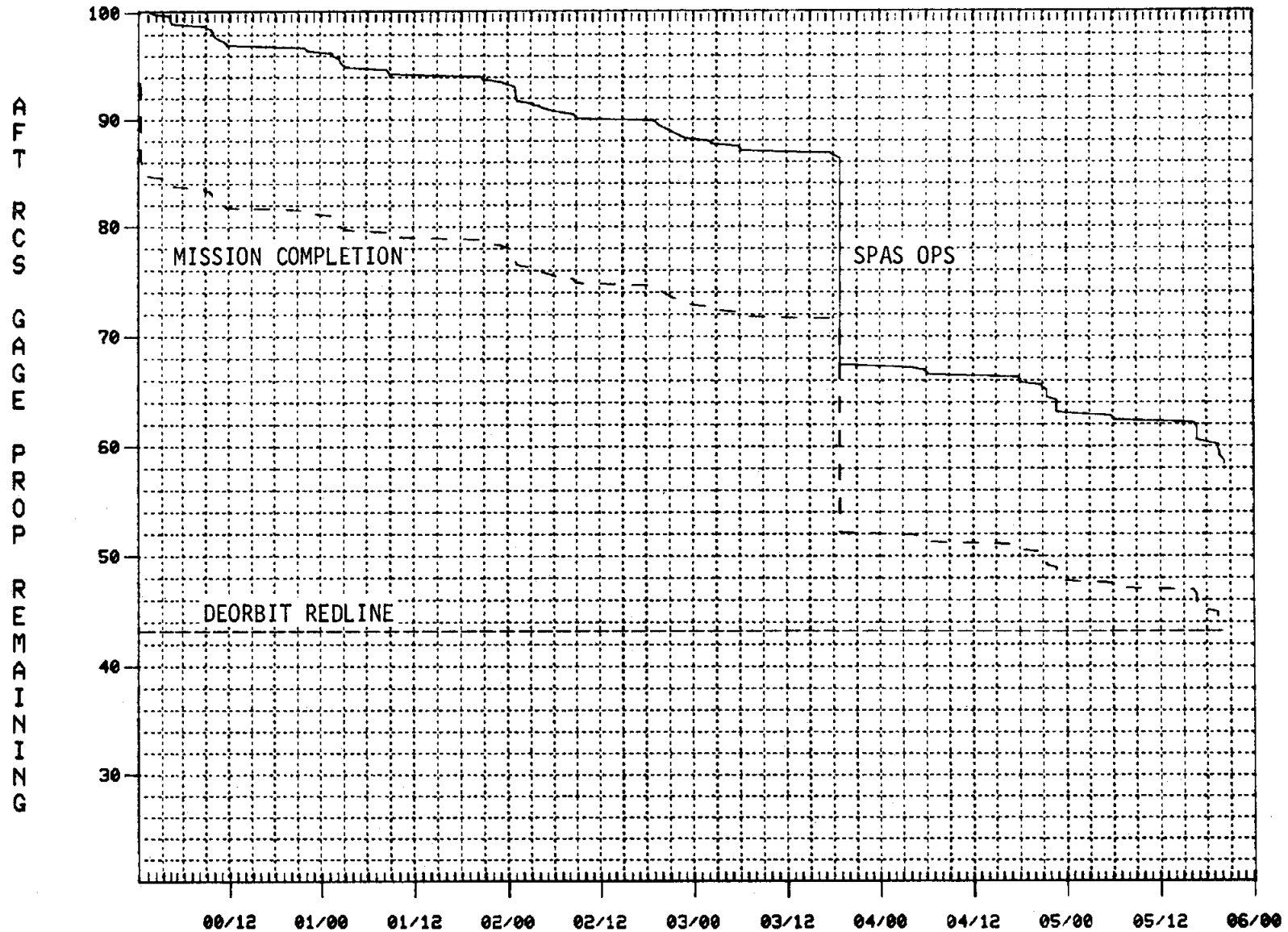
CONSUMABLES CURVES
(SUPPLY WATER, HYDROGEN
AND OXYGEN CONSUMABLES
CURVES ARE TBS)

STS-7 FORWARD RCS PROP REMAINING(% GAGE)



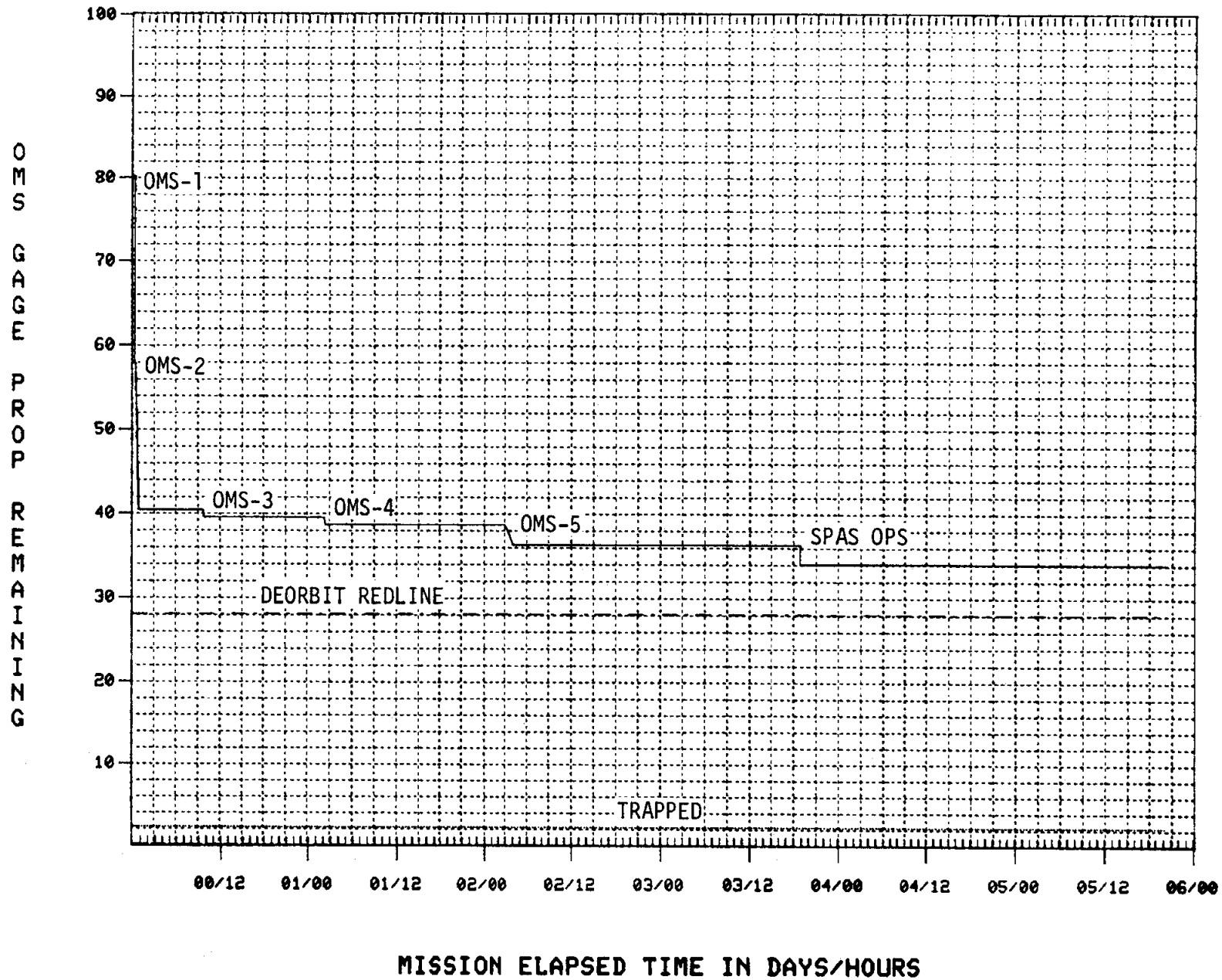
MISSION ELAPSED TIME IN DAYS/HOURS

STS-7 AFT RCS PROP REMAINING(% GAGE)



MISSION ELAPSED TIME IN DAYS/HOURS

STS-7 OMS PROP REMAINING(% GAGE)



MISSION ELAPSED TIME IN DAYS/HOURS

The sections following this divider page will
not be included in flight copies.

CREW ACTIVITY PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

FLIGHT DESCRIPTION..... 7-2

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CAP NOTES

CAP FORMAT CHANGES SINCE STS-6

- TDRS communication is indicated on the 12-hour summary timelines (FORMAT SYMBOL NOMENCLATURE 2.e, page 1-5) and 5-hour detail timelines (FORMAT SYMBOL NOMENCLATURE 3.a, page 1-7)
- A condensed 5 hour per page detailed timeline format is used. More of the detail procedures are referenced to other documents, particularly the Orbit Operations Checklist
- The Pre-Sleep and Post-Sleep activities have all been grouped together. The detailed procedures are contained in the Orbit Operations Checklist

CREW ACTIVITY PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

CAP NOTES

A. FLIGHT DESCRIPTION

STS-7 will launch from KSC on June 9, 1983 into a 160-nm orbit at an inclination of 28.5°. The mission duration will be 6 days (~143 hrs). Nominal landing occurs at KSC on June 15, 1983.

Landing opportunities are:

| | | <u>LANDING ORBIT NO.</u> | <u>SITE</u> | <u>LOCAL TIME</u> |
|-------------|-------------------|------------------------------|-------------|-------------------|
| Nominal | Primary | 96 | KSC | 06:51 EDT |
| | Backup | 97 | KSC | 08:26 EDT |
| | Weather Alternate | 98 | EDW | 06:52 PDT |
| 1 Day Late | Primary | 112 | KSC | 06:55 EDT |
| | Backup | NONE | | |
| | Weather Alternate | 113 | EDW | 05:22 PDT |
| 2 Days Late | Primary | 128 | KSC | 06:59 EDT |
| | Backup | NONE | | |
| | Weather Alternate | 129 | EDW | 05:27 PDT |

MAJOR EVENTS

| | |
|--------------------------|--------------|
| <u>LAUNCH (KSC)</u> | June 9, 1983 |
| <u>MET (DD/HH:MM:SS)</u> | 0/00:00:00 |
| Day of Year | 160 |
| <u>CDT/GMT</u> | 06:31/11:31 |

| | |
|--------------------------|--------------|
| <u>MECO</u> | |
| <u>MET (DD/HH:MM:SS)</u> | 0/00:08:19.7 |
| <u>ALT (nm)</u> | 57 |

| | |
|--------------------------|--------------|
| <u>OMS-1</u> | |
| <u>MET (DD/HH:MM:SS)</u> | 0/00:10:13.7 |
| <u>ΔV (fps)</u> | 239.9 |
| <u>ΔT (MM:SS)</u> | 2:31 |
| <u>ORBIT ha/hp (nm)</u> | 160 x 52 |

| | |
|--------------------------|--------------|
| <u>OMS-2</u> | |
| <u>MET (DD/HH:MM:SS)</u> | 0/00:44:23.7 |
| <u>ΔV (fps)</u> | 193.8 |
| <u>ΔT (MM:SS)</u> | 1:59 |
| <u>ORBIT ha/hp (nm)</u> | 160 x 160 |

| | |
|---------------------------------|------------|
| <u>TELESAT SEPARATION (OMS)</u> | |
| <u>MET (DD/HH:MM:SS)</u> | 0/09:43:38 |
| <u>ΔV (fps)</u> | 10 |
| <u>ΔT (MM:SS)</u> | 0:05.8 |
| <u>ORBIT ha/hp (nm)</u> | 165 x 160 |

| | |
|--------------------------------|-------------|
| <u>PALAPA SEPARATION (OMS)</u> | |
| MET (DD/HH:MM:SS) | 1/02:18:04 |
| ΔV (fps) | 10 |
| ΔT (MM:SS) | 0:05.7 |
| ORBIT ha/hp (nm) | 170 x 160 |
| | |
| <u>ORBIT ADJUST BURN (OMS)</u> | |
| MET (DD/HH:MM:SS) | 2/03:15:47 |
| ΔV (fps) | 6.4 |
| ΔT (MM:SS) | 0:03.7 |
| ORBIT ha/hp (nm) | 170 x 157 |
| | |
| <u>ORBIT ADJUST BURN (OMS)</u> | |
| MET (DD/HH:MM:SS) | 2/04:01:55 |
| ΔV (fps) | 22.5 |
| ΔT (MM:SS) | 0:12.9 |
| ORBIT ha/hp (nm) | 157 x 157 |
| | |
| <u>DEORBIT BURN</u> | |
| MET (DD/HH:MM:SS) | 5/22:23:38 |
| ΔV (fps) | 287.2 |
| ΔT (MM:SS) | 2:36 |
| ORBIT ha/hp (nm) | 156 x 5 |
| | |
| <u>ENTRY INTERFACE</u> | |
| MET (DD/HH:MM:SS) | 5/22:50:24 |
| | |
| <u>LANDING (KSC)</u> | |
| MET (DD/HH:MM:SS) | 5/23:20:04 |
| Day of year | 166 |
| CDT/GMT | 05:51/10:51 |

B. CREW

1. A typical crew day will be that specified in the STS Work Day Handbook (Ref. 9). The daily on-orbit STS activities and their scheduling constraints are identified in this document.
2. The crew will launch with an integrated harness restraint over Intravehicular Activity (IVA) clothing. Biomed sensors will be worn by the MS3 for launch and entry. Anti-G suits will be worn by all crewmembers for entry.
3. All crewmembers will launch wearing the Launch/Entry Helmets (LEH). After ascent, the Wireless Communication Control Units (WCCUs) are unstowed and distributed to the crew. Prior to seat ingress on entry day, the WCCUs are stowed and the LEHs are donned for entry until landing.
4. Activities for the fifth crewman, MS3, are not scheduled in this CAP.

C. ORBITER SYSTEMS

1. Communications and Instrumentation

- a. The Operational Instrumentation (OI) system will nominally be managed from the ground through uplink RTC commands coordinated with the crew.
- b. The Modular Auxiliary Data System (MADS) will nominally be managed through uplink RTC commands and crew switch actions.
- c. There are 14 GSTDN sites available for on-orbit coverage: ORR, BUC, GDS, MIL, BDA, HAW, GWM, AGO, IOS, ACN, MAD, YAR, BOT, and DKR.
- d. There are 3 GSTDN sites available for real-time TV: GDS, MIL, and HAW.
- e. There are 2 GSTDN sites available for UHF voice only: YAR and BOT.
- f. There is 1 SGLS site available for on-orbit coverage: IOS.
- g. TDRS is assumed to be in an intermediate position (63° W) for this edition of the Crew Activity Plan. It will be available for limited testing.

2. Guidance and Navigation

- a. The Orbiter state vector must be uplinked whenever down-track error in the on-board vector becomes greater than 20 nm, but is usually uplinked when errors are much greater than 5 nm. These are real-time calls.
- b. IMU alignments are scheduled approximately every 12 hours in morning and evening activities and prior to major events requiring low navigation uncertainty.
- c. The on-orbit avionics configuration is listed below. GPC 2 may be shut down during orbit to reduce electrical loads, and can be powered when redundancy is required.

| | |
|--------------------------|------------------|
| GPC 1 | - GNC OPS 2 |
| GPC 2 | - GNC OPS 2(OFF) |
| GPC 3 | - FD OPS 3 (OFF) |
| GPC 4 | - SM OPS 2 |
| GPC 5 | - BFS (OFF) |
| IMUs (3) | - OPERATE |
| STAR TRACKERS (2) | - ON |
| MASS MEMORY UNITS (2) | - ON |
| FLIGHT CRITICAL MDMs (8) | - ON |

3. Environmental Control and Life Support Subsystem (ECLSS)

- a. The Orbiter is launched with CO₂ absorber canisters installed. Canisters are installed and replaced as described in Ref. 9.

- b. The four supply water tanks and one waste water tank are loaded for launch with volumes sufficient to meet a rev 3 launch day deorbit opportunity with PLBDs failed closed (TK A = 2%, TK B = 100%, TK C = 75%, TK D = 75%, Waste TK = 2%). If waste water production exceeds storage capacity, a real-time call will be made to perform a dump. Eleven dumps are estimated to occur. A real-time call will be made prior to each to inform the crew whether a dump is required, and to what level. Tanks A and B will be dumped to a level that will allow the tanks to be full prior to the next daily group of deorbit opportunities.

D. TEXT UPLINK SYSTEM

1. The teleprinter (TPR) will provide an on-orbit capability to receive and reproduce text-only data (such as procedures, weather data, and CAP updates or changes) from MCC during routine and off-nominal situations. The TPR uses S-Band and is not dependent on TDRS Ku-Band. TPR uplink requires 1 to 2.5 minutes per message, depending upon the number of lines (up to 66). Activation includes powering up the unit during Post Insertion. The TPR will remain on continuously until deactivation prior to seat ingress on entry day.
2. The Text and Graphics System (TAGs) is basically a hard copy machine that operates via telemetry. The system provides the capability to transmit text material, maps, schematics, and photographs to the Orbiter through a two-way Ku-Band link using the TDRS. Transmission time for an 8- x 11- in. page can vary from just over 1 minute to just over 16 minutes depending on the hard-copy resolution desired. The hard-copier is installed on a dual coldplate in Avionics Bay 3B of the Orbiter.

E. TELEVISION/PHOTOGRAPHY

1. The CCTV system provides two color cameras for in-cabin and payload bay coverage.
2. The video tape recorder (VTR) is available with 30-min cassettes.
3. 16mm, 35mm, and 70mm camera systems are available.

F. REMOTE MANIPULATOR SYSTEM (RMS)

The RMS will be used to deploy the SPAS-01 for the proximity operations test and to retrieve it afterward. In addition the RMS will undergo tests on FD 6.

G. PAYLOADS

1. ACIP (Aerodynamic Coefficient Identification Package)

The data from this experiment are recorded on the MADS recorder. The experiment is controlled by commands sent from the ground; the only crew operation is to turn on the ACIP heaters during the post-insertion activities. The heaters are left on for the duration of the flight. The ACIP experiment may be turned on several times during the flight by ground command to collect baseline data.

2. OSTA-2

a. MEA (Materials Experiment Assembly) is a self-contained facility that accommodates multidiscipline experiments in the materials processing field. The three MEA experiments must be activated in sequence (MEA 1, followed by MEA 2, followed by MEA 3), and are activated by a single switch on the aft flight deck. These experiments require periods of minimum vehicle-induced G forces (VRCS attitude control is acceptable). The activation times and minimum G periods are listed in Table 9-3.

b. MAUS (Material Wissenschaftliche Autonome Experiment Unter Schwerelosigkeit). Like the MEA, this is a materials processing experiment. The experiments are housed in three GAS canisters located in the payload bay. The three MAUS experiments do not have to be activated in sequence. Each MAUS experiment has its own dedicated activation switch located on the aft flight deck. These experiments also require periods of minimum vehicle-induced G forces (VRCS attitude control is acceptable). The activation times and minimum G periods are listed in Table 9-4.

3. PALAPA

The PALAPA payload is a deployable upper stage spacecraft powered by a Payload Assist Module (PAM) solid rocket motor. The deployment opportunities are determined by constraints imposed on the right ascension of the ascending node of the orbit. Normally, a deployment at the descending node of orbit 18 is planned, followed 45 minutes later by a PAM Perigee Kick Motor (PKM) burn on the ascending node of orbit 19. If the deployment has to be delayed, a second attempt will be scheduled on FD 3 with an orbit 33D deployment and an orbit 34A PKM burn. PALAPA deployment events and times are presented in Table 9-1.

4. TELESAT

The TELESAT payload is also a deployable upper stage spacecraft powered by a PAM solid rocket motor. Again, the deployment opportunities are determined by constraints imposed on the right ascension of ascending node of the orbit. Normally, a deployment at the descending node of orbit 7 is planned, followed 45 minutes later by a PAM PKM burn on the ascending node

of orbit 8. In case of a delay, deployment will be rescheduled to orbit 32D on FD 3 with an orbit 33A PKM burn. TELESAT deployment events and times are presented in Table 9-2.

5. SPAS-01 (Shuttle Pallet Satellites)

The SPAS-01 mission will consist of two phases: attached operations and detached operations. During the 24-hr attached ops phase, the experiments to be performed are: Friction Pressure Loss, Modular Opto-Electronic Multispectral Scanner, Bonn Neutral Mass Spectrometer, Heat Pipes, Yaw Earth Sensor Package, Solar Cell Calibration Equipment, and Material Wissenschaftliche Autonome Experiment Unter Schwerelosigkeit (MAUS-1). Orbiter proximity operations tests and the Bonn Neutral Mass Spectrometer and MAUS-2 experiment operations will occur during the detached ops phase. SPAS-01 experiment activation times are listed in Table 9-5; the orbiter proximity operations sequence of events is described in Table 9-8.

6. GAS (Get Away Special)

The GAS payload is a self-contained experiment package that requires minimal crew activity. Seven GAS payloads have been defined for STS-7 (G002, G305, G009, G033, G088, G012, and G345). Experiment events are listed in Table 9-6.

Each payload contains multiple experiments. GAS payload G002 will observe crystal growth, process metallic catalysts, examine contamination of plants by heavy metals, study cosmic radiation on plant seeds, and try out a new approach in micro processor-controlled sequencing. These experiments desire two Vernier Reaction Control System (VRCS) attitude control periods of 8 to 10 hours each.

GAS payload G305 makes use of an optional GAS cannister opening cover. An ultraviolet spectrometer will observe emissions out of the cargo bay along the Orbiter's -Z axis. One attitude maneuver is desired during Mode 1 or 2 operation.

GAS payload G009 studies the geotropism of sunflower sprouts, fluid dynamics of an immiscible fluid, and characteristics of nuclear particles in a near-Earth orbit. This experiment also desires an attitude maneuver after the experiment starts.

GAS payload G033 will investigate geotropism of radish seedlings, and a combined study of the mechanics of droplet coalescence and free convection in a microgravity environment.

GAS payload G088 investigates the basic physics of soldering, desoldering, and debris collection in microgravity. One period of VRCS attitude control is desired for the duration of the experiment.

GAS payload G012 observes the effects of the launch and the on-orbit environments on a colony of ants.

GAS payload G345 will measure the effects of the shuttle bay environment on ultraviolet-sensitive film.

7. MLR (Monodisperse Latex Reactor)

The MLR is designed to conduct experiments associated with the manufacture of monodisperse latex particles in the near weightlessness of space. The MLR package occupies the space of three middeck lockers. It is activated via a single switch at MET 001/05:00 and runs continuously for 20 hours. Experiment events are listed in Table 9-7.

8. CFES (Continuous Flow Electrophoresis System)

The CFES provides a processing system that can segregate biological samples using a continuous separation process based on the relative motion of charged particles through an electric field (electrophoresis). Nominally, six samples will be processed during two experiment runs. The CFES payload is located on the Orbiter middeck. A low acceleration level is desired during CFES operations.

ON-ORBIT CREW ACTIVITY
DETAILED TEST OBJECTIVES (DTOs),
DETAILED SUPPLEMENTARY OBJECTIVES (DSOs)

INTRODUCTION..... 8-2
TABLE 8-1 - STS-7 DTOs/DSOs..... 8-3

DTOs/DSOs

INTRODUCTION

The following Table describes the scheduling data and rationale for on-orbit crew activity related DTOs/DSOs for STS-7. The current FRD (Ref. 2) was used for compiling this table.

DTOs/DSOs

TABLE 8-1
STS-7 ON-ORBIT CREW ACTIVITY RELATED DTOs/DSOs

| DTO NUMBER | TITLE | SCHEDULED (D/HH:MM) | SCHEDULING REMARKS |
|------------|---|--|---|
| DTO 0504 | PDRS Performance | 3/18:45 4/21:15 | |
| DTO 0505 | RCS Plume Impingement Test | 3/18:45 | |
| DTO 0602 | Cabin Atmosphere Verification | 0/05:50 1/06:35 5/01:45 | |
| DTO 0620 | 10.2 PSIA Cabin Pressure Control Demonstration | 1/21:55 (DEPRESS) 3/03:55 (REPRESS) | |
| DTO 0701 | S-Band/TDRS Communication Link Performance Test No. 1 | | Accomplished with normal S-Band to TDRS communication and a maneuver scheduled at 1/23:45 |
| DTO 0704 | TDRSS Navigation Test | | Accomplished with normal Ku-Band and S-Band TDRS communication |
| DTO 0709 | Ku-Band Communications Link Performance Test No. 1 | | Accomplished with normal Ku-Band TDRS communication, with crew activities scheduled at 1/22:15 and with the OMS BURN at 2/04:02 |

TABLE 8-1 (Continued)
 STS-7 ON-ORBIT CREW ACTIVITY RELATED DTOs/DSOs

| DTO NUMBER | TITLE | SCHEDULED (D/HH:MM) | SCHEDULING REMARKS |
|------------|--|---------------------|---|
| DTO 0716 | Orbiter S-Band and Ku-Band/TDRSS Operations Proficiency Test No. 1 | | Accomplished with nominal S-Band and Ku-Band operations |
| DTO 0722 | Orbiter/Detached NASA Payload Communications, Test No. 2 | 3/18:45 | |
| DTO 0762 | Orbiter-RMS Dynamic Interaction Test | 4/21:10 | |
| DTO 0766 | VRCS Plume Impingement Effects | 1/07:35 | |
| DTO 0801 | Rendezvous Radar/Sensors Performance Proximity Operations (<3000 ft) | 3/18:45 | |
| DTO 0802 | Proximity Operations | 3/18:45 | |

TABLE 8-1 (Continued)
 STS-7 ON-ORBIT CREW ACTIVITY RELATED DTOs/DSOs

| DSO NUMBER | TITLE | SCHEDULED (D/HH:MM) | SCHEDULING REMARKS |
|------------|--|---|---------------------------------------|
| DSO S0401 | Validation of Predictive Tests and Countermeasures for Space Motion Sickness | Pre-sleep | |
| DSO S0402 | Cardiovascular Deconditioning Countermeasure Assessment | FD 7 | |
| DSO S0403 | Head and Eye Motion Monitoring During Ascent and Entry | Ascent and Entry | |
| DSO S0404 | On-Orbit Head and Eye Tracking Tasks | 1/04:30 1/07:15 1/22:00 2/00:15 2/21:45 3/02:45 4/19:00 | Additional tests will be done by MS 3 |
| DSO S0405 | Acceleration Detection Sensitivity | | Shopping list, would be done by MS3 |

TABLE 8-1 (Continued)
 STS-7 ON-ORBIT CREW ACTIVITY RELATED DTOs/DSOs

| DSO NUMBER | TITLE | SCHEDULED (D/HH:MM) | SCHEDULING REMARKS |
|------------|-------------------------------------|-------------------------------|-------------------------------------|
| DSO S0406 | Kinesthetic Ability | | Done by MS3 |
| DSO S0407 | Leg Volume Stocking-plethysmography | | Shopping list, would be done by MS3 |
| DSO S0408 | Near Vision Acuity | 1/04:45 5/06:15 5/06:45 | Also done by MS3 |
| DSO S0409 | Microbiology Screening Test | 1/06:00 4/20:15 | |
| DSO S0410 | Audiometry (with cabin noise) | | Shopping list |
| DSO S0412 | Treadmill Photography | | Done by MS 3 |
| DSO S0414 | Ophthalmoscopy | | Shopping list, would be done by MS3 |

TABLE 8-1 (Continued)
 STS-7 ON-ORBIT CREW ACTIVITY RELATED DTOs/DSOs

| DSO NUMBER | TITLE | SCHEDULED (D/HH:MM) | SCHEDULING REMARKS |
|------------|--|--|---|
| DSO S0415 | Tissue Pressure-tonometer | | Done by MS3 |
| DSO S0416 | Ambulatory Monitoring with/without Skeletal Loading and Other Maneuvers | | Done by MS3 |
| DSO S0417 | Inflight Countermeasures for Space Adaptation Syndrome with Objective Measures | | Done by MS3 |
| DSO S0418 | Eye Hand Coordination | | Done by MS 3 |
| DSO S0901 | Documentary Television | FD 1 FD 2 FD 3 FD 4 FD 5 FD 6 | ANIK Deploy PALAPA Deploy SPAS attached activities SPAS attached activities or CFES activities Proximity operations Stow and deploy Ku-Band antenna |

TABLE 8-1 (Concluded)
 STS-7 ON-ORBIT CREW ACTIVITY RELATED DTOs/DSOs

| DSO NUMBER | TITLE | SCHEDULED (D/HH:MM) | SCHEDULING REMARKS |
|------------|---|------------------------------|---|
| DSO S0902 | Documentary Motion Picture Photography | FD 1 FD 2 FD 5 FD 6 | ANIK deploy PALAPA deploy Proximity operation CFES operations and cabin stowage activities |
| DSO S0903 | Documentary Still Photography | | Shopping list |

TABLES

TABLE 9-1 - PALAPA DEPLOYMENT EVENTS AND TIMES..... 9-2
TABLE 9-2 - TELESAT DEPLOYMENT EVENTS AND TIMES..... 9-3
TABLE 9-3 - MEA EXPERIMENT ACTIVATION AND OPERATION TIMES..... 9-4
TABLE 9-4 - MAUS EXPERIMENT ACTIVATION AND OPERATION TIMES..... 9-5
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TABLE 9-9 - STS-7 ATTITUDE TIMELINE..... 9-10

TABLES

TABLE 9-1
 PALAPA DEPLOYMENT EVENTS AND TIMES
 (ORBIT 19A PKM BURN)

| EVENT | MET (D/HH:MM) | DEPLOY MINUS (HH:MM) |
|---------------------------|---------------|----------------------|
| PREDEPLOY CHECKOUT | 1/01:03 | 01:00 |
| MNVR TO DEPLOY ATT | 1/01:23 | 00:40 |
| MECHANICAL SEQUENCE START | 1/01:48 | 00:15 |
| TERMINAL SEQUENCE | 1/02:00 | 00:03 |
| DEPLOY | 1/02:03 | 00:00 |
| OMS SEP MNVR | 1/02:18 | (+)00:15 |
| WINDOW PROTECT MNVR | 1/02:32 | (+)00:29 |
| PKM IGNITION | 1/02:48 | (+)00:45 |

TABLES

TABLE 9-2
 TELESAT DEPLOYMENT EVENTS AND TIMES
 (ORBIT 8A PKM BURN)

| EVENT | MET (D/HH:MM) | DEPLOY MINUS (HH:MM) |
|---------------------------|---------------|----------------------|
| PREDEPLOY CHECKOUT | 0/08:28 | 01:00 |
| MNVR TO DEPLOY ATT | 0/08:48 | 00:40 |
| MECHANICAL SEQUENCE START | 0/09:13 | 00:15 |
| TERMINAL SEQUENCE | 0/09:25 | 00:03 |
| DEPLOY | 0/09:28 | 00:00 |
| OMS SEP MNVR | 0/09:43 | (+)00:15 |
| WINDOW PROTECT MNVR | 0/09:57 | (+)00:29 |
| PKM IGNITION | 0/10:13 | (+)00:45 |

TABLE 9-3
OSTA-2 MEA EXPERIMENT ACTIVATION AND OPERATION TIMES

| EVENT | APPROX MET (D/HH:MM) | DURATION (HH:MM) |
|-------------------------------|-------------------------|---------------------|
| MEA-1 ACTIVATION | 1/09:50 | 3:45 |
| MEA-1 LOW ACCEL CONSTRAINT | 1/10:35 | 1:30 |
| MEA-2 ACTIVATION | 3/02:15 | 15:50 |
| MEA-2 LOW ACCEL CONSTRAINT | 3/03:00 | 2:00 |
| MEA-2 LOW ACCEL CONSTRAINT | 3/10:00 | 3:00 |
| MEA-3 ACTIVATION | 4/06:15 | 35:15 |
| MEA-3 LOW ACCEL CONSTRAINT | 4/07:00 | 2:00 |
| MEA-3 LOW ACCEL CONSTRAINT | 5/03:00 | 2:00 |
| MEA-3 LOW ACCEL CONSTRAINT | 5/09:00 | 2:00 |

TABLE 9-4
OSTA-2 MAUS EXPERIMENT ACTIVATION AND OPERATION TIMES

| EVENT | APPROX MET (D/HH:MM) | DURATION (HH:MM) |
|--------------------------------|-------------------------|---------------------|
| MAUS-A ACTIVATION | 2/04:55 | 78:25 |
| MAUS-A LOW ACCEL CONSTRAINT | 3/05:25 | 0:10 |
| LOW ACCEL CONSTRAINT | 4/07:50 | 1:15 |
| LOW ACCEL CONSTRAINT | 5/11:15 | 0:05 |
| MAUS-B ACTIVATION | 2/04:55 | 56:55 |
| MAUS-B LOW ACCEL CONSTRAINT | 3/05:30 | 0:05 |
| MAUS-B LOW ACCEL CONSTRAINT | 4/08:25 | 0:40 |
| MAUS-C ACTIVATION | 1/09:50 | 1:45 |
| MAUS-C LOW ACCEL CONSTRAINT | 1/09:50 | 1:45 |

TABLE 9-5
 SPAS EXPERIMENT ACTIVATION AND OPERATION TIMES

| EVENT | APPROX MET (D/HH:MM) | DURATION (HH:MM) |
|--------------------------------|-------------------------|---------------------|
| SPAS SYSTEM CHECK OUT | 1/05:15 | 1:15 |
| SPAS ATTACHED EXPERIMENTS | | |
| ACTIVATION | 1/21:45 | 30:55 |
| BNMS | 1/22:55 | 29:45 |
| YESP | 2/01:10 | 0:35 |
| HP | 2/04:05 | 24:00 |
| MOMS | 2/04:35 | 24:05 |
| SCCE | 2/04:50 | 0:20 |
| MAUS-1 | 2/05:10 | 23:30 |
| MAUS-1 LOW ACCEL CONSTRAINT | 2/10:25 | 1:00 |
| MAUS-1 LOW ACCEL CONSTRAINT | 2/16:00 | 1:00 |
| FPL | 2/20:20 | 1:00 |
| MAUS-1 LOW ACCEL CONSTRAINT | 2/21:35 | 1:00 |
| YESP | 2/23:00 | 0:45 |
| SCCE | 3/02:00 | 0:15 |
| MAUS-1 LOW ACCEL CONSTRAINT | 3/03:10 | 1:05 |
| DEACTIVATION | 3/04:40 | 0:10 |
| SPAS DETACHED EXPERIMENTS | | |
| ACTIVATION | 3/18:50 | 9:25 |
| BNMS | 3/20:30 | 5:15 |
| MAUS-2 | 3/20:45 | 4:35 |
| DEACTIVATION | 4/04:15 | -- |

TABLE 9-6
GAS EXPERIMENT ACTIVATION AND OPERATION TIMES

| GROUP | EVENT | APPROX MET (D/HH:MM) | DURATION (HH:MM) |
|-------|---------------------|-------------------------|---------------------|
| | Unstow GAS encoder | 1/05:30 | 00:15 |
| A | GAS G002 Activation | 1/05:45 | 71:55 |
| | G002 Exp 1 | | 26:35 |
| | G305 Activation | | 26:35 |
| | G009 Activation | | 93:15 |
| | G033 Activation | | 93:15 |
| | G088 Activation | | 00:45 |
| | G012 Activation | | 93:15 |
| | G088 Deactivation | 1/06:30 | - |
| B | G002 Exp 2 | 2/08:20 | 45:20 |
| | G305 Mode 1 | | 21:30 |
| C | G305 Mode 2 | 3/05:50 | 23:50 |
| | G009 Exp Start | | 23:50 |
| D | G305 Deactivation | 4/05:40 | - |
| | G002 Fixation | | 00:01 |
| | G002 Deactivation | | - |
| | G009 Exp Stop | | - |
| E | G009 Deactivation | 5/03:00 | - |
| | G033 Deactivation | | - |
| | G012 Deactivation | | - |
| | Stow GAS encoder | 5/03:10 | 00:15 |

TABLE 9-7
MLR EXPERIMENT ACTIVITY AND OPERATION TIMES

| EVENT | APPROX MET (D/HH:MM) | DURATION (HH:MM) |
|---------------------------|-------------------------|---------------------|
| MLR OFF-POST INSERTION | 0/03:35 | |
| MLR ACTIVATION | 1/05:05 | 20:10 |
| MLR STATUS | 1/06:35 | |
| MLR DEACTIVATION | 2/01:15 | |
| MLR POST DEACTIVATION | 2/04:05 | |
| MLR DEORBIT | 5/18:00 | |

TABLE 9-8
 PROXIMITY OPERATIONS EVENTS AND TIMES

| EVENT | APPROX MET (D/HH:MM) |
|------------------------------|-------------------------|
| SPAS CHECKOUT | 3/18:45 |
| RMS ACTIVATION | 3/19:05 |
| GRAPPLE | 3/20:10 |
| RELEASE | 3/20:35 |
| DRIFT TO 1000 FT | 3/21:00 |
| TRANSITION TO +VBAR | 3/21:35 |
| LONG-RANGE SK & RADAR TESTS | 3/22:00 |
| VBAR APPROACH | 4/00:00 |
| GRAPPLE | 4/00:35 |
| MEAL/DTO EVALUATION | 4/00:45 |
| PLUME DATA TAKE | 4/01:50 |
| SHORT-RANGE SK & RADAR TESTS | 4/02:45 |
| INERTIAL APPROACH & GRAPPLE | 4/03:20 |
| BERTH SPAS | 4/04:15 |
| PROX OPS COMPLETE | 4/04:35 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--|-------------------------------|-------|------|-------------|--------------|-----------------|-------------------------|-----|--------------|------|-------|-----|-----|-----|--|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 0/00:08:20 | MECO | 180 | 358 | 0 | LVLH | 3.5 | 0.3 | 0.5 | * | AUTO | * | | | | | |
| 0/00:08:38 | ET SEP | | | | | | | | | | | | | | | ΔV = 4 fps -Z |
| 0/00:09:30 | MAN MNVR TO OMS-1 ATT | -- | -- | -- | -- | N/A | N/A | N/A | * | MAN ACCEL | * | -- | -- | -- | -- | |
| 0/00:10:00 | OMS-1 ATT | 336 | 116 | 344 | INRTL | 3.5 | 0.3 | 0.5 | * | AUTO | * | 71 | 0 | 54 | 159 | |
| 0/00:10:14 | OMS-1 IGNITION | | | | | | | | | | | | | | | ΔV = 239.6 fps ΔT = 02:31 |
| 0/00:20:00 | AUTO MNVR TO OMS 2 ATT | -- | -- | -- | -- | 3.5 | 0.3 | 0.5 | * | AUTO | * | -- | -- | -- | -- | MNVR TIME = 5 EIG ANG = 141 |
| 0/00:25:00 | OMS 2 ATT | 28 | 260 | 359 | INRTL | 3.5 | 0.3 | 0.5 | * | AUTO | * | 8 | 184 | 158 | 55 | |
| 0/00:44:24 | OMS 2 IGNITION | | | | INRTL | 3.5 | 0.3 | 0.5 | * | AUTO | * | | | | | ΔV = 193.8 fps ΔT = 01:59 |
| 0/00:55:00 | DPS RECONFIG TO GNC 2 | | | | | 5.0 | 0.2 | 0.2 | A1 | AUTO | NORM | | | | | |
| 0/01:05:00 | INITIATE TRK TO BIAS -ZLV NOSE FWD ATT MODE | -- | -- | -- | -- | 5.0 | 0.2 | 0.2 | A1 | AUTO | NORM | -- | -- | -- | -- | MNVR TIME = 6 EIG ANG = 64 |
| 0/01:11:00 | BIAS -ZLV NOSE FWD ATT | 160 | 0 | 0 | LVLH | 5.0 | 0.2 | 0.2 | A1 | AUTO | NORM | 90 | 20 | 82 | 38 | TGT ID 2 P 90 BODY VECTOR 5 Y 20 OM 180 |
| 0/02:00:00 | GO FOR VERN | | | | | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | | | | | |
| 0/03:37:00 | AUTO MNVR TO IMU ALIGN AND -Z COAS CAL ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 10 EIG ANG = 110 |
| 0/03:47:00 | IMU ALIGN AND -Z COAS CAL ATT | 257.5 | 235.8 | 27.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 84 | 130 | 126 | 217 | -YST:25 REGULUS SEP 86.0 -ZST:15 HADAR 0/03:35 - 0/04:11 |
| 0/03:55:00 | -Z COAS CAL DAP CONFIG | | | | | 1.0 | 0.02 | 0.2 | B1 | AUTO | VERN | | | | | -Z COAS STAR: 15 HADAR 0/03:35 - 0/04:23 |
| 0/04:02:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 157 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|--------|-------------|--------------|-----------------|-------------------------|-----|--------------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 0/04:16:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 67 | 20 | TGT ID 2 BODY VECTOR 3 OM 180 |
| 0/08:48:42 | AUTO MNVR TO ANIK DEPLOY ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | -40:00 MNVR TIME = 13:04 EIG ANG = 157 |
| 0/09:01:46 | ANIK DEPLOY ATT | 160.85 | 60.39 | 293.88 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 66 | 187 | 90 | 273 | -Z TO SPIN AXIS TGT -Y TO SUN |
| 0/09:13:42 | DAP RECONFIG | | | | | 0.1 | 0.01 | 0.008 | B4 | AUTO | VERN | | | | | -15:00 |
| 0/09:28:42 | ANIK DEPLOY | | | | | | | | | | | | | | | |
| 0/09:31:42 | AUTO MNVR TO OMS SEP BURN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | +3:00 MNVR TIME = 9:11 EIG ANG = 110 |
| 0/09:40:53 | OMS SEP ATT | 23.9 | 229.0 | 344.5 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 82 | 0 | 152 | 136 | |
| 0/09:42:00 | OMS PREP | | | | | 5.0 | 0.2 | 0.2 | A1 | AUTO DISC | NORM | | | | | |
| 0/09:43:38 | OMS IGNITION | 180 | 0 | 0 | LVLH | | | | | | | | | | | +15:00 ΔV = 10 fps ΔT = 5.8 sec |
| 0/09:46:42 | INITIATE ANIK TRACK ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | +18:00 MNVR TIME = 2 EIG ANG = 14 |
| 0/09:48:00 | ANIK TRACK ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 161 | 100 | TGT ID 2 BODY VECTOR 3 OM 180 |
| 0/09:58:42 | INITIATE ORBITER PROTECTIVE ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | +29:00 MNVR TIME = 12:50 EIG ANG = 154 |
| 0/10:11:32 | ORBITER PROTECTIVE ATT | 21.7 | 21.7 | 29.9 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 109 | 147 | 116 | 166 | P 248 Y 31 TGT ID 2 BODY VECTOR 5 OM 20 |
| 0/10:13:42 | ATTITUDE HOLD | 213.9 | 327.2 | 355.9 | INRTL | 1.0 | 0.02 | 0.2 | A1 | MAN | VERN | 109 | 147 | 110 | 169 | DISC/DISC/DISC +45:00 |
| 0/10:13:42 | PAM PKM IGNITION | | | | | | | | | | | | | | | |
| 0/10:24:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 167 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|--------|-------------|----------------------|-----------------|-------------------------|-----|--------------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT RATE (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 0/10:37:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 22 | 120 | TGT ID 2 BODY VECTOR 3 OM 180 |
| 0/11:15:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 10 EIG ANG = 120 |
| 0/11:25:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 150 | 91 | 84 | 66 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 0/11:16 - 0/12:00 |
| 0/11:35:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 169 |
| 0/11:50:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 60 | 22 | TGT ID 2 BODY VECTOR 3 OM 180 |
| 0/21:55:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 12 MIN EIG ANG = 133 |
| 0/22:07:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 116 | 88 | 84 | 65 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 0/21:49 - 0/22:33 |
| 0/22:15:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 175 |
| 0/22:30:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 38 | 35 | TGT ID 2 BODY VECT 3 OM 180 |
| 1/01:23:08 | AUTO MNVR TO PALAPA DEPLOY ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 12:14 EIG ANG = 147 |
| 1/01:23:08 | AUTO MNVR TO PALAPA DEPLOY ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 12:14 EIG ANG = 147 |
| 1/01:35:22 | PALAPA DEPLOY ATT | 135.64 | 34.71 | 300.31 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 75 | 197 | 90 | 275 | -Z TO SPIN AXIS TGT -Y TO SUN |
| 1/01:48:08 | DAP RECONFIG | | | | | 0.1 | 0.01 | 0.008 | B4 | AUTO | VERN | | | | | -15:00 |
| 1/02:03:08 | PALAPA DEPLOY | | | | | | | | | | | | | | | |
| 1/02:06:08 | AUTO MNVR TO OMS SEP BURN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 9:30 EIG ANG = 114 |
| 1/02:15:38 | OMS SEP ATT | 24.0 | 223.9 | 344.5 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 82 | 0 | 147 | 138 | |
| 1/02:17:00 | OMS PREP | | | | | 5.0 | 0.2 | 0.2 | A1 | AUTO DISC | NORM | | | | | |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | | φ | | φ | |
| 1/02:18:04 | OMS IGNITION | 180 | 0 | 0 | LVLH | | | | | | | | | | | +15:00 ΔV = 10 fps ΔT = 5.7 sec |
| 1/02:21:08 | INITIATE PALAPA TRACK ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | +18:00 MNVR TIME = 1 EIG ANG = 17 |
| 1/02:22:00 | PALAPA TRACK ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 158 | 104 | TGT ID 2 BODY VECTOR 3 OM 180 |
| 1/02:32:08 | INITIATE ORBITER PROTECTIVE ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | | | | | +29:00 MNVR TIME = 14 EIG ANG = 168 |
| 1/02:46:10 | ORBITER PROTECTIVE ATT | 8.9 | 26.9 | 13.5 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 116 | 164 | 124 | 188 | TGT ID 2 BODY VECTOR 5 P 243 Y 14 OM 8 |
| 1/02:48:08 | ATTITUDE HOLD | 203.5 | 313.6 | 10.8 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 116 | 164 | 116 | 189 | +45:00 DISC/DISC/DISC |
| 1/02:48:08 | PAM PKM IGNITION | | | | | | | | | | | | | | | |
| 1/02:58:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 167 |
| 1/03:12:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 23 | 110 | TGT ID 2 BODY VECTOR 3 OM 180 |
| 1/07:35:00 | VRCS PLUME IMP DTO | 335.9 | 42.9 | 15.2 | ROTR | 1.0 | 0.02 | 0.2 | A1 | MAN | VERN | 90 | 0 | 34 | 43 | EIGEN AXIS P=0 .25 ^o /sec Y=270 ACCEL/ACCEL/ACCEL |
| 1/07:36:30 | STOP ROTATION | 343.3 | 20.6 | 23.1 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | | | | | |
| 1/07:36:30 | INITIATE TRK TO -ZLV | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 3 EIG ANG = 38 |
| 1/07:39:30 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 24 | 70 | TGT ID 2 BODY VECTOR 3 OM 180 |
| 1/08:25:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 11 EIG ANG = 123 |
| 1/08:36:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 136 | 91 | 83 | 65 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 1/08:23 - 1/09:07 |
| 1/08:45:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 146 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P, Y, R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--|---------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|----|-----|----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 1/09:00:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 53 | 29 | TGT 2 BODY VECTOR 3 OM 180 |
| 1/20:25:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 10 EIG ANG = 111 |
| 1/20:35:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 159 | 95 | 83 | 65 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 1/20:28 - 1/21:12 |
| 1/20:45:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 161 |
| 1/20:59:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 74 | 26 | TGT 2 BODY VECTOR 3 OM 180 |
| 1/22:55:00 | INITIATE AUTO MNVR TO MASS SPEC ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 8 EIG ANG = 90 |
| 1/23:03:00 | MASS SPEC ATT | 180 | 90 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 180 | 0 | 38 | 43 | TGT 2 BODY VECTOR 2 OM 180 |
| 1/23:50:00 | AUTO MNVR TO S-BAND/TDRE ANT ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 5 EIG ANG = 60 |
| 1/23:55:00 | S-BAND TDRE ANT ATT | 225 | 90 | 330 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 150 | 45 | 125 | 48 | TGT 2 BODY VECTOR 5 P +158 OM 131 Y +21 |
| 2/00:57:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 8 EIG ANG = 116 |
| 2/01:05:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 154 | 80 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/01:10:00 | INITIATE AUTO MNVR TO +YAW ATT #1 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1° |
| 2/01:10:20 | +YAW ATT #1 | 180 | 0 | 1 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 145 | 46 | TGT 2 BODY VECTOR 3 OM 181 |
| 2/01:10:50 | INITIATE AUTO MNVR TO +YAW ATT #2 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:11:10 | +YAW ATT #2 | 180 | 0 | 2 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 143 | 42 | TGT 2 BODY VECTOR 3 OM 182 |
| 2/01:11:40 | INITIATE AUTO MNVR TO +YAW ATT #3 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|---------------------------------------|-------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|----|-----|----|-----------------------------------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 2/01:12:00 | +YAW ATT #3 | 180 | 0 | 3 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 141 | 39 | TGT 2 BODY VECTOR 3 OM 183 |
| 2/01:12:30 | INITIATE AUTO MNVR TO +YAW ATT #4 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:12:50 | +YAW ATT #4 | 180 | 0 | 4 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 139 | 35 | TGT 2 BODY VECTOR 3 OM 184 |
| 2/01:13:20 | INITIATE AUTO MNVR TO +YAW ATT #5 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:13:40 | +YAW ATT #5 | 180 | 0 | 5 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 137 | 33 | TGT 2 BODY VECTOR 3 OM 185 |
| 2/01:14:10 | INITIATE AUTO MNVR TO +YAW ATT #6 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:14:30 | +YAW ATT #6 | 180 | 0 | 6 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 135 | 30 | TGT 2 BODY VECTOR 3 OM 186 |
| 2/01:15:00 | INITIATE AUTO MNVR TO +YAW ATT #7 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:15:20 | +YAW ATT #7 | 180 | 0 | 7 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 132 | 28 | TGT 2 BODY VECTOR 3 OM 187 |
| 2/01:15:50 | INITIATE AUTO MNVR TO +YAW ATT #8 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:16:10 | +YAW ATT #8 | 180 | 0 | 8 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 130 | 27 | TGT 2 BODY VECTOR 3 OM 188 |
| 2/01:16:40 | INITIATE AUTO MNVR TO +YAW ATT #9 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:17:00 | +YAW ATT #9 | 180 | 0 | 9 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 127 | 25 | TGT 2 BODY VECTOR 3 OM 189 |
| 2/01:17:30 | INITIATE AUTO MNVR TO +YAW ATT #10 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:17:50 | +YAW ATT #10 | 180 | 0 | 10 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 125 | 24 | TGT 2 BODY VECTOR 3 OM 190 |
| 2/01:18:20 | INITIATE AUTO MNVR TO +YAW ATT #11 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--|-------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|----|-----|----|-----------------------------------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 2/01:20:00 | +YAW ATT #11 | 180 | 0 | 15 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 120 | 21 | TGT 2 BODY VECTOR 3 OM 195 |
| 2/01:20:30 | INITIATE AUTO MNVR TO +YAW ATT #12 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |
| 2/01:22:10 | +YAW ATT #12 | 180 | 0 | 20 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 114 | 20 | TGT 2 BODY VECTOR 3 OM 200 |
| 2/01:22:40 | INITIATE AUTO MNVR TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 20 |
| 2/01:24:20 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 98 | 26 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/01:26:20 | INITIATE AUTO MNVR TO -YAW ATT #1 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:26:40 | -YAW ATT #1 | 180 | 0 | 359 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 89 | 26 | TGT 2 BODY VECTOR 3 OM 179 |
| 2/01:27:10 | INITIATE AUTO MNVR TO -YAW ATT #2 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:27:30 | -YAW ATT #2 | 180 | 0 | 358 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 85 | 25 | TGT 2 BODY VECTOR 3 OM 178 |
| 2/01:28:00 | INITIATE AUTO MNVR TO -YAW ATT #3 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:28:20 | -YAW ATT #3 | 180 | 0 | 357 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 82 | 25 | TGT 2 BODY VECTOR 3 OM 177 |
| 2/01:28:50 | INITIATE AUTO MNVR TO -YAW ATT #4 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:29:10 | -YAW ATT #4 | 180 | 0 | 356 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 79 | 25 | TGT 2 BODY VECTOR 3 OM 176 |
| 2/01:29:40 | INITIATE AUTO MNVR TO -YAW ATT #5 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME 20 sec EIG ANG = 1 |
| 2/01:30:00 | -YAW ATT #5 | 180 | 0 | 355 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 75 | 25 | TGT 2 BODY VECTOR 3 OM 175 |
| 2/01:30:30 | INITIATE AUTO MNVR TO -YAW ATT #6 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--|-------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|------|------|------|-------|----|-----|----|-----------------------------------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 2/01:30:50 | -YAW ATT #6 | 180 | 0 | 354 | LVLH | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | 90 | 0 | 72 | 25 | TGT 2 BODY VECTOR 3 OM 174 |
| 2/01:31:20 | INITIATE AUTO MNVR TO -YAW ATT #7 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME 20 sec EIG ANG = 1 |
| 2/01:31:40 | -YAW ATT #7 | 180 | 0 | 353 | LVLH | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | 90 | 0 | 68 | 25 | TGT 2 BODY VECTOR 3 OM 173 |
| 2/01:32:10 | INITIATE AUTO MNVR TO -YAW ATT #8 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:32:30 | -YAW ATT #8 | 180 | 0 | 352 | LVLH | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | 90 | 0 | 65 | 25 | TGT 2 BODY VECTOR 3 OM 172 |
| 2/01:33:00 | INITIATE AUTO MNVR TO -YAW ATT #9 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:33:20 | -YAW ATT #9 | 180 | 0 | 351 | LVLH | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | 90 | 0 | 62 | 24 | TGT 2 BODY VECTOR 3 OM 171 |
| 2/01:33:50 | INITIATE AUTO MNVR TO -YAW ATT #10 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/01:34:10 | -YAW ATT #10 | 180 | 0 | 350 | LVLH | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | 90 | 0 | 58 | 24 | TGT 2 BODY VECTOR 3 OM 170 |
| 2/01:34:40 | INITIATE AUTO MNVR TO -YAW ATT #11 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |
| 2/01:36:20 | -YAW ATT #11 | 180 | 0 | 345 | LVLH | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | 90 | 0 | 49 | 21 | TGT 2 BODY VECTOR 3 OM 165 |
| 2/01:36:50 | INITIATE AUTO MNVR TO -YAW ATT #12 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |
| 2/01:38:30 | -YAW ATT #12 | 180 | 0 | 340 | LVLH | 0.25 | 0.01 | 0.05 | B 10 | AUTO | VERN | 90 | 0 | 39 | 16 | TGT 2 BODY VECTOR 3 OM 160 |
| 2/01:39:00 | INITIATE AUTO MNVR TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A 1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 20 |
| 2/01:40:40 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A 1 | AUTO | VERN | 90 | 0 | 42 | 41 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/02:55:00 | AUTO MNVR TO ORB ADJ ATT #1 | -- | -- | - | -- | 1.0 | 0.02 | 0.2 | B 1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 180 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|--------------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 2/03:10:00 | ORB ADJ ATT #1 | 208.1 | 241.5 | 357.0 | INRTL | 1.0 | 0.02 | 0.2 | B1 | AUTO | VERN | 123 | 0 | 154 | 281 | RETROGRADE -Z: COE |
| 2/03:14:00 | OMS PREP | | | | | 5.0 | 0.2 | 0.2 | B1 | AUTO DISC | NORM | | | | | |
| 2/03:15:47 | OMS IGNITION | | | | | | | | | | | | | | | ΔV = 6.5 fps ΔT = 3.6 sec |
| 2/03:18:00 | AUTO MNVR TO ORB ADJ ATT #2 | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | B1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 158 |
| 2/03:32:00 | ORB ADJ ATT #2 | 154.6 | 41.6 | 13.0 | INRTL | 1.0 | 0.02 | 0.2 | B1 | AUTO | VERN | 166 | 180 | 37 | 227 | RETROGRADE -Z: COE WITH TDRE KU-BAND AOS |
| 2/04:01:00 | OMS PREP | | | | | 5.0 | 0.2 | 0.2 | B1 | AUTO DISC | NORM | | | | | |
| 2/04:01:55 | OMS IGNITION | | | | | | | | | | | | | | | ΔV = 22.7 fps ΔT = 12.9 sec |
| 2/04:10:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 180 |
| 2/04:25:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 99 | 26 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/04:55:00 | INITIATE TRK TO SCCE ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 9 EIG ANG = 108 |
| 2/05:04:00 | SCCE ATT | 23.2 | 351.5 | 354.9 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 132 | 184 | 90 | 0 | TGT 4 BODY VECTOR 3 |
| 2/05:19:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 165 |
| 2/05:33:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 152 | 108 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/08:35:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 11 EIG ANG = 124 |
| 2/08:46:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 130 | 93 | 83 | 65 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 2/08:31 - 2/09:16 |
| 2/08:55:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 178 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|-------|-------------|----------------------|-----------------|-------------------------|-----|------|------|-------|----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT RATE (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 2/09:10:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 50 | 36 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/19:05:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 10 EIG ANG = 118 |
| 2/19:15:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 143 | 95 | 82 | 64 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 2/19:05 - 2/19:48 |
| 2/19:25:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 172 |
| 2/19:40:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 58 | 35 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/23:00:00 | INITIATE AUTO MNVR TO +YAW ATT #1 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:00:20 | +YAW ATT #1 | 180 | 0 | 1 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 39 | 127 | TGT 2 BODY VECTOR 3 OM 181 |
| 2/23:00:50 | INITIATE AUTO MNVR TO +YAW ATT #2 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:01:10 | +YAW ATT #2 | 180 | 0 | 2 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 42 | 130 | TGT 2 BODY VECTOR 3 OM 182 |
| 2/23:01:40 | INITIATE AUTO MNVR TO +YAW ATT #3 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:02:00 | +YAW ATT #3 | 180 | 0 | 3 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 45 | 132 | TGT 2 BODY VECTOR 3 OM 183 |
| 2/23:02:30 | INITIATE AUTO MNVR TO +YAW ATT #4 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:02:50 | +YAW ATT #4 | 180 | 0 | 4 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 48 | 134 | TGT 2 BODY VECTOR 3 OM 184 |
| 2/23:03:20 | INITIATE AUTO MNVR TO +YAW ATT #5 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:03:40 | +YAW ATT #5 | 180 | 0 | 5 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 51 | 135 | TGT 2 BODY VECTOR 3 OM 185 |
| 2/23:04:10 | INITIATE AUTO MNVR TO +YAW ATT #6 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--|-------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|----|-----|-----|-----------------------------------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 2/23:04:30 | +YAW ATT #6 | 180 | 0 | 6 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 54 | 137 | TGT 2 BODY VECTOR 3 OM 186 |
| 2/23:05:00 | INITIATE AUTO MNVR TO +YAW ATT #7 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME 20 sec EIG ANG = 1 |
| 2/23:05:20 | +YAW ATT #7 | 180 | 0 | 7 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 57 | 138 | TGT 2 BODY VECTOR 3 OM 187 |
| 2/23:05:50 | INITIATE AUTO MNVR TO +YAW ATT #8 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:06:10 | +YAW ATT #8 | 180 | 0 | 8 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 60 | 140 | TGT 2 BODY VECTOR 3 OM 188 |
| 2/23:06:40 | INITIATE AUTO MNVR TO +YAW ATT #9 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:07:00 | +YAW ATT #9 | 180 | 0 | 9 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 63 | 141 | TGT 2 BODY VECTOR 3 OM 189 |
| 2/23:07:30 | INITIATE AUTO MNVR TO +YAW ATT #10 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:07:50 | +YAW ATT #10 | 180 | 0 | 10 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 67 | 142 | TGT 2 BODY VECTOR 3 OM 190 |
| 2/23:08:20 | INITIATE AUTO MNVR TO +YAW ATT #11 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |
| 2/23:10:00 | +YAW ATT #11 | 180 | 0 | 15 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 63 | 136 | TGT 2 BODY VECTOR 3 OM 195 |
| 2/23:10:30 | INITIATE AUTO MNVR TO +YAW ATT #12 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |
| 2/23:12:10 | +YAW ATT #12 | 180 | 0 | 20 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 73 | 139 | TGT 2 BODY VECTOR 3 OM 200 |
| 2/23:12:40 | INITIATE AUTO MNVR TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 20 |
| 2/23:14:20 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 68 | 148 | TGT 2 BODY VECTOR 3 OM 180 |
| 2/23:16:20 | INITIATE AUTO MNVR TO -YAW ATT #1 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|-----|------|------|----------|--------|----------|--------|-----------------------------------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | ϕ | θ | ϕ | |
| 2/23:16:40 | -YAW ATT #1 | 180 | 0 | 359 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 91 | 151 | TGT 2 BODY VECTOR 3 OM 179 |
| 2/23:17:10 | INITIATE AUTO MNVR TO -YAW ATT #2 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:17:30 | -YAW ATT #2 | 180 | 0 | 358 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 93 | 151 | TGT 2 BODY VECTOR 3 OM 178 |
| 2/23:18:00 | INITIATE AUTO MNVR TO -YAW ATT #3 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:18:20 | -YAW ATT #3 | 180 | 0 | 357 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 95 | 150 | TGT 2 BODY VECTOR 3 OM 177 |
| 2/23:18:50 | INITIATE AUTO MNVR TO -YAW ATT #4 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:19:10 | -YAW ATT #4 | 180 | 0 | 356 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 98 | 150 | TGT 2 BODY VECTOR 3 OM 176 |
| 2/23:19:40 | INITIATE AUTO MNVR TO -YAW ATT #5 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME 20 sec EIG ANG = 1 |
| 2/23:20:00 | -YAW ATT #5 | 180 | 0 | 355 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 100 | 149 | TGT 2 BODY VECTOR 3 OM 175 |
| 2/23:20:30 | INITIATE AUTO MNVR TO -YAW ATT #6 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:20:50 | -YAW ATT #6 | 180 | 0 | 354 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 102 | 148 | TGT 2 BODY VECTOR 3 OM 174 |
| 2/23:21:20 | INITIATE AUTO MNVR TO -YAW ATT #7 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:21:40 | -YAW ATT #7 | 180 | 0 | 353 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 105 | 147 | TGT 2 BODY VECTOR 3 OM 173 |
| 2/23:22:10 | INITIATE AUTO MNVR TO -YAW ATT #8 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:22:30 | -YAW ATT #8 | 180 | 0 | 352 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 107 | 146 | TGT 2 BODY VECTOR 3 OM 172 |
| 2/23:23:00 | INITIATE AUTO MNVR TO -YAW ATT #9 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 2/23:23:20 | -YAW ATT #9 | 180 | 0 | 351 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 109 | 145 | TGT 2 BODY VECTOR 3 OM 171 |
| 2/23:23:50 | INITIATE AUTO MNVR TO -YAW ATT #10 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 20 sec EIG ANG = 1 |
| 2/23:24:10 | -YAW ATT #10 | 180 | 0 | 350 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 111 | 143 | TGT 2 BODY VECTOR 3 OM 170 |
| 2/23:24:40 | INITIATE AUTO MNVR TO -YAW ATT #11 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |
| 2/23:26:20 | -YAW ATT #11 | 180 | 0 | 345 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 114 | 137 | TGT 2 BODY VECTOR 3 OM 165 |
| 2/23:26:50 | INITIATE AUTO MNVR TO -YAW ATT #12 | -- | -- | -- | -- | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 5 |
| 2/23:28:30 | -YAW ATT #12 | 180 | 0 | 340 | LVLH | 0.25 | 0.01 | 0.05 | B10 | AUTO | VERN | 90 | 0 | 105 | 141 | TGT 2 BODY VECTOR 3 OM 160 |
| 2/23:29:00 | INITIATE AUTO MNVR TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 1:40 EIG ANG = 22 |
| 2/23:31:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 138 | 133 | TGT 2 BODY VECTOR 3 OM 180 |
| 3/02:00:00 | INITIATE TRK TO SCCE ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 10 EIG ANG = 110 |
| 3/02:10:00 | SCCE ATT | 23.6 | 355.2 | 348.6 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 130 | 180 | 90 | 0 | TGT 4 BODY VECTOR 3 |
| 3/02:25:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 163 |
| 3/02:39:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 150 | 94 | TGT 2 BODY VECTOR 3 OM 180 |
| 3/05:50:00 | INITIATE AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 13 EIG ANG = 151 |
| 3/06:03:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 79 | 95 | 82 | 64 | -YST:48 ZUBENESCHEMALT -ZST:44 MERAK SEP 84.0 3/05:37 - 3/06:20 |
| 3/06:10:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 13 EIG ANG = 151 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|----|-----|-----|--|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 3/06:23:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 32 | 75 | TGT 2 BODY VECTOR 3 OM 180 |
| 3/17:40:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 10 EIG ANG = 117 |
| 3/17:50:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 140 | 98 | 82 | 64 | -YST:48 ZUBENESCHEMAL -ZST:44 MERAK SEP 84.0 3/17:40 - 3/18:22 |
| 3/18:00:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 15 EIG ANG = 174 |
| 3/18:15:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 58 | 39 | TGT 2 BODY VECTOR 3 OM 180 |
| 3/18:56:00 | DAP CONFIG | | | | | 0.3 | 0.01 | 0.2 | A12 | AUTO | VERN | | | | | +0:08 |
| 3/19:03:00 | ATT HOLD | 25.4 | 209.6 | 347.2 | INRTL | 0.3 | 0.01 | 0.2 | A12 | MAN | VERN | 90 | 0 | 130 | 135 | DISC/DISC/DISC |
| 3/19:22:00 | COARSE GYRO DRIFT CHECK INITIATE | | | | | .01 | 0.01 | .05 | B7 | MAN | VERN | | | | | +0:34 |
| 3/19:24:00 | DAP RECONFIG | | | | | 0.3 | 0.01 | 0.2 | A12 | MAN | VERN | | | | | +0:36 |
| 3/19:32:00 | COARSE GYRO DRIFT CHECK COMPLETE | | | | | .01 | 0.01 | .05 | B7 | MAN | VERN | | | | | +0:44 |
| 3/19:34:00 | DAP RECONFIG | | | | | 0.3 | 0.01 | 0.2 | A12 | MAN | VERN | | | | | +0:46 |
| 3/19:37:00 | FINE GYRO DRIFT CHECK INITIATE | | | | | .01 | 0.01 | .05 | B7 | MAN | VERN | | | | | +0:49 |
| 3/19:39:00 | DAP RECONFIG | | | | | 0.3 | 0.01 | 0.2 | A12 | MAN | VERN | | | | | +0:51 |
| 3/19:57:00 | FINE GYRO DRIFT CHECK COMPLETE | | | | | .01 | 0.01 | .05 | B7 | MAN | VERN | | | | | +1:09 |
| 3/19:59:00 | DAP RECONFIG | | | | | 0.3 | 0.01 | 0.2 | A12 | MAN | VERN | | | | | +1:11 |
| 3/20:03:00 | INITIATE TRK TO +ZLV, +XV ATT | -- | -- | -- | -- | 5.0 | 0.2 | 0.15 | A14 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = EIG ANG = |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|-------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 3/20:23:00 | +ZLV,+XVV ATT | 0 | 0 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A14 | AUTO | VERN | 90 | 180 | 98 | 327 | TGT 2 BODY VECTOR 5 OM 0 P 0 Y 270 +1:47 |
| 3/20:35:00 | INIT REF FRAME | | | | | 0.5 | 0.01 | 0.1 | B11 | AUTO | VERN | | | | | +1:50 |
| 3/20:38:00 | SPAS DEPLOY DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B11 | MAN | NORM | | | | | PULSE/PULSE/PULSE FREE DRIFT +1:55 |
| 3/20:43:00 | REESTABLISH +ZLV, +XVV ATT | 0 | 0 | 0 | LVLH | 0.5 | 0.01 | 0.10 | B11 | AUTO | VERN | 90 | 180 | 147 | 272 | TGT 2 BODY VECTOR 5 OM 0 P 0 Y 270 +2:17 |
| 3/21:05:00 | SPAS DEPLOY DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B11 | MAN | NORM | | | | | PULSE/PULSE/PULSE FREE DRIFT +2:22 |
| 3/21:10:00 | REESTABLISH +ZLV, +XVV ATT | 0 | 0 | 0 | LVLH | 2.0 | 0.20 | 0.15 | B11 | AUTO | NORM | 90 | 180 | 76 | 214 | +2:27 |
| 3/21:18:00 | DAP RECONFIG | | | | | 2.0 | 0.2 | 0.15 | B9 | AUTO | NORM | | | | | +2:30 |
| 3/21:21:00 | RBAR SEPARATION +Z | | | | | 2.0 | 0.2 | 0.15 | A13 | AUTO | NORM | | | | | +2:32 |
| 3/21:23:00 | RBAR SEPARATION -X | | | | | 2.0 | 0.2 | 0.15 | B9 | AUTO | NORM | | | | | +2:37 |
| 3/21:25:00 | INITIATE YPOP, -Z TO SPAS TRK | 151.7 | 53 | 0.5 | ROTR | 0.5 | 0.01 | 0.15 | A13 | MAN | VERN | 90 | 180 | 60 | 335 | DISC/PULSE/DISC EIGEN AXIS P = 0 ROT = .032°/S Y = 270 +2:48 |
| 3/21:36:00 | TRANS TO +VBAR | 153.3 | 72.2 | 350.4 | INRTL | 2.0 | 0.2 | 0.15 | A13 | MAN | NORM | 116 | 180 | 34 | 282 | DISC/DISC/DISC +3:05 |
| 3/21:53:00 | AUTO MNVR TO -XLV, +ZVV ATT | -- | -- | -- | -- | 2.0 | 0.20 | 0.15 | A13 | AUTO | NORM | -- | -- | -- | -- | MNVR TIME = 0 EIG ANG = 0 +3:10 |
| 3/21:53:00 | -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.15 | A13 | AUTO | NORM | 180 | 0 | 35 | 288 | TGT 2 BODY VECTOR 2 OM 0 +3:20 |
| 3/21:58:00 | DAP RECONFIG | | | | | 2.0 | 0.20 | 0.15 | B9 | AUTO | NORM | | | | | +3:25 |
| 3/22:08:00 | LONG RANGE SK DAP CONFIG | | | | | 0.5 | 0.01 | 0.15 | B6 | AUTO | VERN | | | | | NORM as reqd for THC corrections +3:25 |
| 3/22:13:00 | RR TEST #1 DAP CONFIG | | | | | 0.5 | 0.01 | 0.15 | B6 | LVLH | VERN | | | | | DISC/PULSE/DISC |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS | |
|---------------------|-----------------------------|-------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|-----|-----|-----|---|-------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | | |
| 3/22:15:00 | INITIATE PITCH | -- | -- | -- | -- | 0.5 | 0.01 | 0.15 | B6 | LVLH | VERN | -- | -- | -- | -- | MNVR TIME = 2 EIG ANG = 20 | +3:27 |
| 3/22:17:00 | PITCH ATT | 0 | 70 | 0 | LVLH | 0.5 | 0.01 | 0.15 | B6 | LVLH | VERN | 160 | 180 | 118 | 322 | DISC/DISC/DISC -Z SENSE 180, 160, 0 | +3:29 |
| 3/22:18:00 | AUTO MNVR TO -XLV, +ZVV ATT | -- | -- | -- | -- | 0.5 | 0.01 | 0.15 | B6 | AUTO | VERN | | | | | MNVR TIME = 2 EIG ANG = 20 | +3:30 |
| 3/22:20:00 | -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 0.5 | 0.01 | 0.15 | B6 | AUTO | VERN | 180 | 0 | 111 | 324 | TGT 2 BODY VECTOR 2 OM 0 | +3:35 |
| 3/22:23:00 | RR TEST #2 DAP CONFIG | | | | | 0.5 | 0.01 | 0.15 | B6 | LVLH | VERN | | | | | DISC/DISC/PULSE | +3:37 |
| 3/22:25:00 | INITIATE +YAW | -- | -- | -- | -- | 0.5 | 0.01 | 0.15 | B6 | LVLH | VERN | -- | -- | -- | -- | MNVR TIME = 2 EIG ANG = 20 | +3:39 |
| 3/22:27:00 | YAW ATT | 20 | 90 | 0 | LVLH | 0.5 | 0.01 | 0.15 | B6 | LVLH | VERN | 180 | 0 | 132 | 292 | DISC/DISC/DISC -Z SENSE 180, 180, 20 | +3:40 |
| 3/22:28:00 | AUTO MNVR TO -XLV, +ZVV ATT | -- | -- | -- | -- | 0.5 | 0.01 | 0.15 | B6 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 2 EIG ANG = 20 | +3:42 |
| 3/22:30:00 | -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 0.5 | 0.01 | 0.15 | B6 | AUTO | VERN | 180 | 0 | 140 | 302 | TGT 2 BODY VECTOR 2 OM 0 | +5:16 |
| 4/00:04:00 | DAP RECONFIG | | | | | 2.0 | 0.2 | 0.15 | A13 | AUTO | NORM | | | | | | +5:30 |
| 4/00:18:00 | DAP RECONFIG | | | | | 2.0 | 0.2 | 0.15 | B9 | AUTO | NORM | | | | | PULSE/PULSE/PULSE LOW Z | +5:50 |
| 4/00:38:00 | SPAS CAPTURE DAP CONFIG | | | | | 2.0 | 0.2 | 0.15 | B9 | MAN | NORM | | | | | PULSE/PULSE/PULSE LOW Z | +5:52 |
| 4/00:40:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 5.0 | 0.01 | 0.15 | A14 | AUTO | VERN | 180 | 0 | 55 | 223 | | +5:53 |
| 4/00:41:00 | PREP FOR SPAS RELEASE | | | | | 0.5 | 0.01 | 0.10 | B11 | AUTO | VERN | | | | | | +5:54 |
| 4/00:42:00 | SPAS RELEASE/CAPTURE | | | | | 2.0 | 0.20 | 0.15 | B11 | MAN | NORM | | | | | PULSE/PULSE/PULSE FREE DRIFT | +5:57 |
| 4/00:45:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 5.0 | 0.01 | 0.15 | A14 | AUTO | VERN | 180 | 0 | 42 | 236 | | |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P, Y, R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|---------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|----|-----|-----|---------------------------------------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 4/01:43:00 | SPAS DEPLOY DAP | | | | | 0.5 | 0.01 | 0.10 | B11 | AUTO | VERN | | | | | +6:55 |
| 4/01:50:00 | SPAS DEPLOY | | | | | 2.0 | 0.20 | 0.15 | B11 | MAN | NORM | | | | | PULSE/PULSE/PULSE FREE DRIFT +7:02 |
| 4/01:51:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.2 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 117 | 219 | +7:03 |
| 4/01:54:00 | PLUM DATA DAP CONFIG | | | | | 2.0 | 0.2 | 0.5 | A11 | AUTO | NORM | | | | | +7:06 |
| 4/01:58:00 | DATA POINT #1 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE +7:10 |
| 4/02:01:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 85 | 214 | TGT 2 BODY VECTOR 2 OM 0 +7:13 |
| 4/02:04:00 | DATA POINT #2 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE +7:16 |
| 4/02:05:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 71 | 216 | TGT 2 BODY VECTOR 2 OM 0 +7:17 |
| 4/02:10:00 | DATA POINT #3 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE +7:22 |
| 4/02:11:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 53 | 224 | TGT 2 BODY VECTOR 2 OM 0 +7:23 |
| 4/02:18:00 | DATA POINT #4 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE +7:30 |
| 4/02:19:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 36 | 253 | TGT 2 BODY VECTOR 2 OM 0 +7:31 |
| 4/02:24:00 | DATA POINT #5 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE +7:36 |
| 4/02:25:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 36 | 287 | TGT 2 BODY VECTOR 2 OM 0 +7:37 |
| 4/02:30:00 | INITIATE MNVR TO OUT-OF-PLANE ATT | -- | -- | -- | -- | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | -- | -- | -- | -- | MNVR TIME = 1 EIG ANG = 30 +7:42 |
| 4/02:31:00 | OUT-OF-PLANE ATT | 330 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 48 | 341 | TGT 2 BODY VECTOR 2 OM 30 +7:43 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS | |
|---------------------|--------------------------------|-------------------------------|-------|-----|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|-----|-----|-----|----------------------------------|-------|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | | |
| 4/02:33:00 | DATA POINT #6 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE | +7:45 |
| 4/02:34:00 | INITIATE TRK TO -XLV, +ZVV ATT | -- | -- | -- | -- | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | -- | -- | -- | -- | MNVR TIME = 1 EIG ANG = 30 | +7:46 |
| 4/02:35:00 | -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 59 | 320 | TGT 2 BODY VECTOR 2 OM 0 | +7:47 |
| 4/02:41:00 | DATA POINT #7 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE | +7:53 |
| 4/02:42:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 82 | 326 | TGT 2 BODY VECTOR 2 OM 0 | +7:54 |
| 4/02:46:00 | DATA POINT #8 DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B8 | MAN | NORM | | | | | +PITCH 1 PULSE | +7:58 |
| 4/02:47:00 | REESTABLISH -XLV, +ZVV ATT | 0 | 90 | 0 | LVLH | 2.0 | 0.20 | 0.50 | A11 | AUTO | NORM | 180 | 0 | 98 | 326 | TGT 2 BODY VECTOR 2 OM 0 | +7:59 |
| 4/02:50:00 | SK DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B9 | AUTO | NORM | | | | | | +8:02 |
| 4/03:28:00 | MNVR RMS TO CAPTURE POS | | | | | 0.5 | 0.01 | 0.15 | B9 | AUTO | VERN | | | | | | +8:40 |
| 4/03:30:00 | SK DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B9 | AUTO | NORM | | | | | | +8:42 |
| 4/03:33:00 | AUTO MNVR TO INRTL APP ATT | -- | -- | -- | -- | 2.0 | 0.20 | 0.15 | A13 | AUTO | NORM | -- | -- | -- | | MNVR TIME = 12 EIG ANG = 142 | +8:45 |
| 4/03:45:00 | INRTL APP ATT | 267.3 | 216.9 | 352 | INRTL | 2.0 | 0.20 | 0.15 | A13 | AUTO | NORM | 3 | 121 | 135 | 248 | PULSE/PULSE/PULSE LOW Z | +8:59 |
| 4/04:05:00 | SPAS CAPTURE DAP CONFIG | | | | | 2.0 | 0.20 | 0.15 | B11 | MAN | NORM | | | | | FREE DRIFT LOW Z | +9:17 |
| 4/04:18:00 | SPAS BERTH DAP CONFIG | | | | | 5.0 | 0.20 | 0.15 | A14 | AUTO | VERN | | | | | | +9:30 |
| 4/04:25:00 | INITIATE TRK TO -ZLV, +XVV ATT | -- | -- | -- | -- | 0.5 | 0.01 | 0.1 | B11 | AUTO | VERN | | | | | MNVR TIME = 24 EIG ANG = 170 | +9:37 |
| 4/04:49:00 | -ZLV, +XVV ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.25 | A1 | AUTO | VERN | 90 | 0 | 149 | 46 | TGT 2 BODY VECTOR 3 OM 180 | |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P, Y, R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|---------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|--------------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 4/05:55:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 13 EIG ANG = 152 |
| 4/06:08:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 77 | 98 | 81 | 63 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 4/05:42 - 4/06:25 |
| 4/06:15:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 13 EIG ANG = 149 |
| 4/06:28:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 36 | 77 | TGT 2 BODY VECTOR 3 OM 180 |
| 4/17:55:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 13 EIG ANG = 145 |
| 4/18:08:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 86 | 100 | 81 | 63 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 4/17:44 - 4/18:28 |
| 4/18:15:00 | INITIATE TRK TO -ZLV, -XVV | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 9 EIG ANG = 104 |
| 4/18:24:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 131 | 308 | TGT 2 BODY VECTOR 3 OM 0 |
| 4/19:40:00 | DPS RECONFIG TO GNC 8 | | | | | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | | | | | |
| 4/19:45:00 | FCS CHECKOUT APU START | | | | | 5.0 | 0.2 | 0.2 | A1 | AUTO | NORM | | | | | |
| 4/20:00:00 | APU SHUTDOWN | | | | | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | | | | | |
| 4/20:05:00 | SENSOR TEST | | | | | N/A | N/A | N/A | A1 | MAN PULSE | VERN | | | | | |
| 4/21:15:00 | REESTABLISH -ZLV, -XVV | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 3 EIG ANG = 30 |
| 4/20:18:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 114 | 221 | TGT 2 BODY VECTOR 3 OM 0 |
| 4/21:10:00 | RMS POWER UP DAP RECONFIG | | | | | 5.0 | 0.2 | 0.15 | A14 | AUTO | VERN | | | | | |
| 4/21:35:00 | RMS CONTROL SYSTEM EVALUATION | | | | | 5.0 | 0.2 | 0.15 | A14 | MAN PULSE | VERN | | | | | FREE DRIFT |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|--------------|------|-------|-----|-----|-----|--|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 4/22:09:00 | RMS/PRCS INTERACTION DAP RECONFIG | | | | | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | | | | | |
| 4/22:12:00 | ATT HOLD | 151.8 | 41.8 | 2.4 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 90 | 0 | 44 | 240 | SUNSET - 12 MIN |
| 4/22:13:00 | INITIATE - PITCH | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 0 Y 270 PLS RATE = .30°/S |
| 4/22:15:00 | TERMINATE - PITCH | 155.2 | 74.8 | 345.9 | INRTL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 115 | 0 | 38 | 283 | FREE DRIFT |
| 4/22:17:00 | ATT HOLD | 155.2 | 74.8 | 345.9 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 107 | 0 | 38 | 283 | |
| 4/22:18:00 | INITIATE + ROLL | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 0 Y 0 PLS RATE = .30°/S |
| 4/22:20:00 | TERMINATE + ROLL | 191.2 | 74.8 | 345.9 | INRTL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 94 | 324 | 38 | 247 | FREE DRIFT |
| 4/22:22:00 | ATT HOLD | 191.2 | 74.8 | 345.9 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 87 | 324 | 38 | 247 | |
| 4/22:26:00 | INITIATE - PITCH | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 0 Y 270 PLS RATE = .30°/S |
| 4/22:28:00 | TERMINATE - PITCH | 197.3 | 110.2 | 355.1 | INRTL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 92 | 329 | 39 | 295 | FREE DRIFT |
| 4/22:30:00 | ATT HOLD | 197.3 | 110.2 | 355.1 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 86 | 332 | 39 | 295 | |
| 4/22:31:00 | INITIATE - ROLL | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 180 Y 0 PLS RATE = .30°/S |
| 4/22:33:00 | TERMINATE - ROLL | 161.3 | 110.2 | 355.1 | INTRL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 74 | 12 | 39 | 331 | FREE DRIFT |
| 4/22:35:00 | ATTITUDE HOLD | 161.3 | 110.2 | 355.1 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 67 | 15 | 39 | 331 | |
| 4/22:36:00 | INITIATE - PITCH | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 0 Y 270 PLS RATE = .30°/S |
| 4/22:38:00 | TERMINATE - PITCH | 167.6 | 145.4 | 345.1 | INRTL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 90 | 17 | 72 | 341 | FREE DRIFT |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|---------------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|--------------|------|-------|----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 4/22:40:00 | ATTITUDE HOLD | 167.6 | 145.4 | 345.1 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 83 | 19 | 72 | 341 | |
| 4/22:41:00 | INITIATE - ROLL | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 180 Y 0 PLS RATE = .30/S |
| 4/22:43:00 | TERMINATE - ROLL | 131.6 | 145.4 | 345.1 | INRTL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 70 | 57 | 72 | 17 | FREE DRIFT |
| 4/22:45:00 | ATTITUDE HOLD | 131.6 | 145.4 | 345.1 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 63 | 60 | 72 | 17 | |
| 4/22:46:00 | INITIATE - PITCH | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 0 Y 270 PLS RATE = .30/S |
| 4/22:48:00 | TERMINATE - PITCH | 146 | 175.7 | 320.7 | INRTL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 72 | 47 | 107 | 17 | FREE DRIFT |
| 4/22:50:00 | ATTITUDE HOLD | 146 | 175.7 | 320.7 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 65 | 45 | 107 | 17 | |
| 4/22:51:00 | INITIATE + ROLL | | | | ROTR | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | | | | | EIG AXIS EIG ANG = 36° P 0 Y 0 PLS RATE = .30/S |
| 4/22:53:00 | TERMINATE + ROLL | 182 | 175.7 | 320.7 | INRTL | 10.0 | 0.5 | 0.15 | A10 | MAN PULSE | NORM | 53 | 4 | 107 | 341 | FREE DRIFT |
| 4/22:55:00 | ATTITUDE HOLD | 182 | 175.7 | 320.7 | INRTL | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 46 | 1 | 107 | 341 | |
| 4/22:56:00 | INITIATE -ZLV, -XVV | -- | -- | -- | -- | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 6 MIN EIG ANG = 53° |
| 4/23:02:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A10 | AUTO | VERN | 90 | 0 | 143 | 279 | TGT ID 2 BODY VECTOR 3 OM 0 |
| 4/23:04:00 | LSS VIBRATION DAMPING DAP RECONFIG | | | | | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | | | | | |
| 4/23:06:00 | ROLL DOUBLET | | | | | 10.0 | 0.5 | 0.15 | A9 | MAN PULSE | NORM | | | | | FREE DRIFT |
| 4/23:08:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | 90 | 0 | 139 | 249 | |
| 4/23:09:00 | ROLL DOUBLET | | | | | 10.0 | 0.5 | 0.15 | A9 | MAN PULSE | NORM | | | | | FREE DRIFT |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|--------------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|--------------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| 4/23:11:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | 90 | 0 | 134 | 237 | |
| 4/23:12:00 | ROLL DOUBLET | | | | | 10.0 | 0.5 | 0.15 | A9 | MAN PULSE | NORM | | | | | FREE DRIFT |
| 4/23:14:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | 90 | 0 | 127 | 229 | |
| 4/23:18:00 | ROLL DOUBLET | | | | | 10.0 | 0.5 | 0.15 | A9 | MAN PULSE | NORM | | | | | FREE DRIFT |
| 4/23:20:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | 90 | 0 | 110 | 220 | |
| 4/23:21:00 | ROLL DOUBLET | | | | | 10.0 | 0.5 | 0.15 | A9 | MAN PULSE | NORM | | | | | FREE DRIFT |
| 4/23:23:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | 90 | 0 | 100 | 218 | |
| 4/23:24:00 | ROLL DOUBLET | | | | | 10.0 | 0.5 | 0.15 | A9 | MAN PULSE | NORM | | | | | FREE DRIFT |
| 4/23:25:00 | INITIATE -ZLV | -- | -- | -- | -- | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 19 MIN EIG ANG = 164 |
| 4/23:44:00 | -ZLV, -XVV | 0 | 180 | 0 | LVLH | 5.0 | 0.2 | 0.15 | A9 | AUTO | VERN | 90 | 0 | 41 | 246 | |
| 4/23:45:00 | DIRECT DRIVE BERTH DAP CONFIG | | | | | 5.0 | 0.2 | 0.15 | A14 | AUTO | VERN | | | | | |
| 5/00:10:00 | RMS POWER DOWN DAP RECONFIG | | | | | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | | | | | |
| 5/05:55:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 10 EIG ANG = 114 |
| 5/06:05:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 107 | 103 | 81 | 63 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 5/05:46 - 5/06:29 |
| 5/06:15:00 | INITIATE TRK TO -ZLV NOSE FWD ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 14 EIG ANG = 162 |
| 5/06:29:00 | -ZLV NOSE FWD ATT | 180 | 0 | 0 | LVLH | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 90 | 0 | 45 | 62 | TGT 2 BODY VECTOR 3 OM 180 |

TABLE 9-9 STS-7 ATTITUDE TIMELINE

| MET (D/HH:MM:SS) | EVENT | ATTITUDE (P,Y,R EULER SEQ) | | | ATT MODE | DEADBANDS | | DISC RATE (o/sec) | DAP | | | EARTH | | SUN | | REMARKS |
|---------------------|-------------------------------|-------------------------------|-------|-------|-------------|--------------|-----------------|-------------------------|-----|------|------|-------|-----|-----|-----|---|
| | | Roll | Pitch | Yaw | | ATT (deg) | RATE (o/sec) | | SEL | CONT | RCS | θ | φ | θ | φ | |
| | | | | | | | | | | | | | | | | |
| 5/16:25:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | -- | -- | -- | -- | MNVR TIME = 11 EIG ANG = 132 |
| 5/16:36:00 | IMU ALIGN ATT | 83.5 | 145.7 | 330.4 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 111 | 105 | 80 | 62 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 5/16:18 - 5/17:01 |
| 5/16:45:00 | AUTO MNVR TO TAIL SUN ATT | -- | -- | -- | -- | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | | | | | MNVR TIME = 4 EIG ANG = 112 |
| 5/16:55:00 | TAIL SUN ATT | 208.2 | 266.9 | 338.6 | INRTL | 1.0 | 0.02 | 0.2 | A1 | AUTO | VERN | 129 | 40 | 176 | 180 | |
| 5/18:00:00 | DAP RECONFIG | | | | | 3.0 | 0.2 | 0.5 | B1 | AUTO | NORM | | | | | |
| 5/19:36:00 | AUTO MNVR TO IMU ALIGN ATT | -- | -- | -- | -- | 3.0 | 0.2 | 0.5 | B1 | AUTO | NORM | -- | -- | -- | -- | MNVR TIME = 3 EIG ANG = 72 |
| 5/19:39:00 | IMU ALIGN ATT | 197.6 | 308.0 | 39.1 | INRTL | 3.0 | 0.2 | 0.5 | B1 | AUTO | NORM | 94 | 164 | 105 | 210 | -YST:48 ZUBENESCHEMALI -ZST:44 MERAK SEP 84.0 5/19:19 - 5/20:02 |
| 5/19:44:00 | AUTO MNVR TO IMU VERIF ATT | -- | -- | -- | -- | 3.0 | 0.2 | 0.5 | B1 | AUTO | NORM | -- | -- | -- | -- | MNVR TIME = 4 EIG ANG = 95 |
| 5/19:48:00 | IMU VERIF ATT | 261 | 349.6 | 39 | INRTL | 3.0 | 0.2 | 0.5 | B1 | AUTO | NORM | 97 | 83 | 78 | 119 | -YST:43 RASALHAGUE -ZST:28 AL NAIR SEP 85.0 5/19:39 - 5/20:11 |
| 5/20:18:00 | AUTO MNVR TO DEORBIT BURN ATT | -- | -- | -- | -- | 3.0 | 0.2 | 0.5 | B1 | AUTO | NORM | -- | -- | -- | -- | MNVR TIME = 4 EIG ANG = 115 |
| 5/20:22:00 | DEORBIT BURN ATT | 155 | 64 | 347 | INRTL | 3.0 | 0.2 | 0.5 | B1 | AUTO | NORM | 147 | 179 | 41 | 268 | |
| 5/20:08:00 | DPS CONFIG TO GNC 3 | | | | | 3.5 | 0.3 | 0.5 | * | MAN | * | | | | | |
| 5/22:23:38 | DEORBIT IGNITION | | | | | 3.5 | 0.3 | 0.5 | * | AUTO | * | | | | | ΔV = 287.3 fps ΔT = 02:36 |
| 5/22:28:00 | AUTO MNVR TO EI-5 ATT | -- | -- | -- | -- | 3.5 | 0.3 | 0.5 | * | AUTO | * | -- | -- | -- | -- | MNVR TIME = 5 EIG ANG = 131 |
| 5/22:33:00 | EI-5 ATT | 187 | 295 | 29 | INRTL | 3.5 | 0.3 | 0.5 | * | AUTO | * | 80 | 179 | 119 | 229 | |
| 5/22:45:20 | EI-5 | 1 | 39 | 359 | LVLHL | 3.5 | 0.3 | 0.5 | * | AUTO | * | 129 | 180 | 120 | 214 | |

ABBREVIATIONS/ACRONYMS

More complete compilations of abbreviations and acronyms are available in the STS Glossary (Ref. 10).

ABBREVIATIONS/
ACRONYMS

ABBREVIATIONS/ACRONYMS

| | |
|------|--|
| ABS | ABSORBER |
| ACIP | AERODYNAMIC COEFFICIENTS IDENTIFICATION PACKAGE |
| ACN | ASCENSION ISLAND (STDN SITE) |
| ACT | ACTIVATE |
| ADI | ATTITUDE DIRECTION INDICATOR |
| AGO | SANTIAGO, CHILE (STDN SITE) |
| ALN | ALIGNMENT |
| ANT | ANTENNA |
| AOA | ABORT ONCE AROUND |
| AOS | ACQUISITION OF SIGNAL |
| ATCS | ACTIVE THERMAL CONTROL SYSTEM |
| ATO | ABORT TO ORBIT |
| ATT | ATTITUDE |
| BDA | BERMUDA ISLAND, BWI (STDN SITE) |
| BHD | BULKHEAD |
| BLKT | BLANKET |
| BNMS | BONN NEUTRAL MASS SPECTROMETER (SPAS EXPERIMENT) |
| BOT | BOTSWANA (STDN SITE) |
| BUC | BUCKHORN, CALIFORNIA (STDN SITE) |
| BYP | BYPASS |
| CAL | CALIBRATION |
| CCTV | CLOSED-CIRCUIT TV |
| CCU | CREWMAN COMMUNICATIONS UMBILICAL |
| CDR | COMMANDER |
| CDT | CENTRAL DAYLIGHT TIME |
| CHG | CHANGE |
| CL | CHECKLIST |

ABBREVIATIONS/
ACRONYMS

| | |
|-------------|---|
| CLN | CLEAN |
| CNTLS | CONTROLS |
| C/O | CHECKOUT |
| COAS | CREWMAN OPTICAL ALIGNMENT SIGHT |
| COM | COMMUNICATIONS |
| CONFIG/CNFG | CONFIGURATION |
| CST | CENTRAL STANDARD TIME |
| C&W | CAUTION AND WARNING |
| DAP | DIGITAL AUTO PILOT |
| DB | DEADBAND |
| DEACT | DEACTIVATION |
| DEU | DISPLAY ELECTRONICS UNIT |
| DKR | DAKAR, SENEGAL (STDN SITE) |
| DMP | DUMP |
| DMS | DATA MANAGEMENT SYSTEM |
| DPLY | DEPLOY |
| DSO | DETAILED SUPPLEMENTARY OBJECTIVE |
| DTO | DETAILED TEST OBJECTIVE |
| ECLS | ENVIRONMENTAL CONTROL LIFE SUPPORT SYSTEM |
| EDW | EDWARDS AFB, CALIFORNIA (DEORB OPT SITE) |
| EMU | EXTRAVEHICULAR MOBILITY UNIT |
| ENA | ENABLE |
| ENT | ENTRY |
| EVA | EXTRAVEHICULAR ACTIVITY |
| EX/EXER | EXERCISE |
| FC | FUEL CELL |
| FCS | FLIGHT CONTROL SYSTEM |
| FD | FREEZE DRIED |

| | |
|-------|--|
| FDF | FLIGHT DATA FILE |
| FES | FLASH EVAPORATOR SYSTEM |
| FM | FREQUENCY MODULATION |
| FPL | FRICTION PRESSURE LOSS (SPAS EXPERIMENT) |
| FRD | FLIGHT REQUIREMENTS DOCUMENT |
| F&S | FIRE AND SMOKE DETECTION |
| FSO | FUNCTIONAL SUPPLEMENTARY OBJECTIVE |
| FTO | FUNCTIONAL TEST OBJECTIVE |
| F/W | FOOD WARMER |
| FWD | FORWARD |
| | |
| GAS | GETAWAY SPECIAL |
| GDS | GOLDSTONE, CALIFORNIA (STDN SITE, 1ST ANTENNA) |
| GDX | GOLDSTONE, CALIFORNIA (STDN SITE, 2ND ANTENNA) |
| GG | GRAVITY GRADIENT |
| GMT | GREENWICH MEAN TIME |
| GNC | GUIDANCE NAVIGATION AND CONTROL |
| GPC | GENERAL PURPOSE COMPUTER |
| GRP | GROUP |
| GSTDN | GROUND SPACE TRACKING & DATA NETWORK |
| GWM | GUAM ISLAND, U.S. (STDN SITE) |
| | |
| HAW | HAWAII (KAUAI, STDN SITE) |
| HK | HOUSEKEEPING |
| HL | HI LOAD FLASH EVAPORATOR |
| HP | HEAT PIPE EXPERIMENT (SPAS EXPERIMENT) |
| HTR | HEATER |
| HYD | HYDRAULIC |
| | |
| IMU | INERTIAL MEASUREMENT UNIT |
| INH | INHIBIT |

| | |
|-------|---|
| INRTL | INERTIAL |
| IOS | INDIAN OCEAN (SGLS SITE) |
| IVA | INTRAVEHICULAR ACTIVITY |
| KSC | KENNEDY SPACE CENTER |
| LEH | LAUNCH/ENTRY HELMET |
| LOS | LOSS-OF-SIGNAL; LINE-OF-SIGHT |
| LVLH | LOCAL VERTICAL LOCAL HORIZONTAL |
| MAD | MADRID, SPAIN (STDN SITE, 1ST ANTENNA) |
| MAUS | MATERIAL WISSENSCHAFTLICHE AUTONOME EXPERIMENT UNTER SCHWERELOSIGKEIT (SPAS AND OSTA-2 EXPERIMENT) |
| MAX | MADRID, SPAIN (STDN SITE, 2ND ANTENNA) |
| MCC | MISSION CONTROL CENTER |
| MD | MIDDECK |
| MDM | MULTIPLEXER/DEMULTIPLEXER |
| MEA | MATERIALS EXPERIMENT ASSEMBLY (OSTA-2 EXPERIMENT) |
| MECH | MECHANISM; MECHANICAL |
| MECO | MAIN ENGINE CUTOFF |
| MET | MISSION ELAPSED TIME |
| MIL | MERRITT ISLAND, FLORIDA (STDN SITE) |
| MILA | MERRITT ISLAND LAUNCH AREA |
| MLX | MERRITT ISLAND, FLORIDA (STDN SITE, 2ND ANTENNA) |
| MNVR | MANEUVER |
| MOMS | MODULAR OPTOELECTRONIC MULTISPECTRAL SCANNER (SPAS EXPERIMENT) |
| MPES | MISSION PECULIAR EQUIPMENT SUPPORT STRUCTURE |
| MPM | MANIPULATOR POSITIONING MECHANISM |
| MPS | MAIN PROPULSION SYSTEM |
| MSG | MESSAGE |
| MTVC | MANUAL THRUST VECTOR CONTROL |

| | |
|--------|--|
| NAV | NAVIGATION |
| NOR | NORTHROP STRIP |
| OI | OPERATIONAL INSTRUMENTATION |
| OMS | ORBITAL MANEUVERING SYSTEM |
| O/O | ON ORBIT |
| OPS | OPERATIONS; OPERATIONAL SEQUENCE |
| ORB | ORBITER |
| ORR | ORRORAL VALLEY, AUSTRALIA (STDN SITE) |
| OSTA | OFFICE OF SPACE AND TERRESTRIAL APPLICATIONS |
| PALAPA | PALAPA (PERUMTEL PAYLOAD) |
| PAM | PAYLOAD ASSIST MODULE |
| PAM-D | PAM, DELTA CLASS SPACECRAFT |
| PCL | PALLET COOLANT LOOP |
| PCM | PULSE-CODE MODULATION |
| PCS | PRESSURE CONTROL SYSTEM |
| PKM | PERIGEE KICK MOTOR |
| PL | PAYLOAD |
| PLBD | PAYLOAD BAY DOORS |
| PLD | PAYLOAD |
| PLT | PILOT |
| PM | PHASE MODULATION |
| PMC | PRIVATE MEDICAL COMMUNICATION |
| PMP | PUMP |
| PRCS | PRIMARY REACTION CONTROL SYSTEM |
| PREP | PREPARATION |
| PRO | PROCEED |
| PSA | PRE/POST SLEEP ACTIVITY |
| PTC | PASSIVE THERMAL CONTROL |

| | |
|-----------|--|
| PWRDN | POWERDOWN |
| RAD | RADIATOR |
| RCS | REACTION CONTROL SYSTEM |
| REF | REFERENCE |
| REFSMMAT | REFERENCE STABLE MEMBER MATRIX |
| RELMAT | RELATIVE MATRIX |
| RF | RADIO FREQUENCY |
| RMS | REMOTE MANIPULATOR SYSTEM |
| ROT | ROTATION/ROTA FIELD |
| RSET | RESET |
| RTC | REAL-TIME COMMAND |
| SAA | SOUTH ATLANTIC ANOMALY |
| S-BD | S-BAND |
| SCCE | SOLAR CELL CALIBARATION EXPERIMENT (SPAS EXPERIMENT) |
| SEL | SELECT |
| SEP | SEPARATION |
| SEQ | SEQUENCE |
| SPAS | SHUTTLE PALLET SATELLITES |
| SPC | STORED PROGRAM COMMAND |
| SPLY | SUPPLY |
| STDN | SPACE TRACKING & DATA NETWORK |
| ST/S TRKR | STAR TRACKER |
| STS | SPACE TRANSPORTATION SYSTEM |
| STW | STOW |
| sw | SWITCH |
| SYS | SYSTEM |
| tb | TALKBACK |
| TDRS | TRACKING AND DATA RELAY SATELLITE |

| | |
|---------|--|
| TELESAT | TELESAT (CANADIAN PAYLAOD) |
| TERM | TERMINATE; TERMINAL |
| TH | THEODOLITE |
| TIG | TIME OF IGNITION |
| TPR | TELEPRINTER |
| UHF | ULTRA HIGH FREQUENCY |
| VAC | VACUUM |
| VER | VERIFICATION |
| VRCS | VERNIER REACTION CONTROL SYSTEM |
| VTR | VIDEO TAPE RECORDER |
| WB | WIDEBAND |
| WCS | WASTE COLLECTION SYSTEM |
| WMC | WASTE MANAGEMENT COMPARTMENT |
| XFER | TRANSFER |
| X-POP | X BODY AXIS PERPENDICULAR TO ORBIT PLANE |
| YAR | YARRAGADEE (STDN SITE) |
| YESP | YAW EARTH SENSOR PACKAGE (SPAS EXPERIMENT) |
| Y-POP | Y BODY AXIS PERPENDICULAR TO ORBIT PLANE |
| -ZLV | -Z LOCAL VERTICAL (-Z BODY AXIS TOWARDS EARTH) |

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