

CREW ACTIVITY

PLAN

FINAL, PCN-1

Project
[unclear]

Flight Data File Crew Activity Plan STS-4

Flight Operations Directorate
Operations Division

Final, PCN-1
June 11, 1982

**NOTE: This is a *Page Change Notice*
to be incorporated into the previous
edition. *Discard* only the changed out
pages.**

NASA

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
Contingency Deorbit Preparation Book**
Entry Checklist

SUPPORT

Orbit Operations Checklist**
Photo/TV Checklist
Cue Cards**
Flight Maps and Charts**

OFF-NOMINAL

Ascent Pocket Checklist**
Orbit Pocket Checklist**
Entry Pocket Checklist**
System Malfunction Procedures**
EVA Checklist**
EVA Operations Book**
Medical Checklist, SOMS-A**
In-Flight Maintenance Checklist**

REFERENCE

Reference Data**
Systems Data Book
Data Processing System Dictionary

PAYLOADS RELATED*

PDRS Operations Checklist**
Payload Operations Checklist
Payload Systems Data and Malfunction Procedures

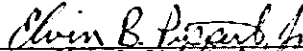
*If required
**May have flight supplement

FLIGHT OPERATIONS DIRECTORATE

STS-4 CREW ACTIVITY PLAN


FINAL, PCN 1
JUNE 11, 1982

PREPARED BY:


Elvin B. Pippert, Jr.
Book Manager

APPROVED BY:


John F. Whiteley
Head, Flight Activity Planning Section


Ted A. Guillo
Chief, Flight Activity Branch

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted on standard JSC Form 482 to CH4/R. D. Snyder, Bldg 4, Rm 2023, 713-493-2307.

Comments concerning this document may be addressed to CH4/Elvin B. Pippert, Jr., Bldg 4, Rm 231, 713-483-5871, or to the individual responsible for a specific technical area listed on the next page.

Changes to the distribution list should be submitted in writing to CH4/Lisa Saunders, Bldg 4, Rm 373, 713-493-5224.

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The following individuals contributed significantly in preparing the STS-4 Crew Activity Plan:

<u>AREA</u>	<u>NAME</u>	<u>PHONE NO.</u>
Nominal Timeline	Diane Freeman	483-5871
	Mark Maschoff	483-5871
High Priority Timeline	Carolynn Conley	483-2201
One Day Extension Timeline	Phil Engelauf	483-2868
24 Hour After Extension Day Timeline	Marianne Dyson	483-5871
Attitude and Pointing	Mark Rolwes	483-2201
	Tom Vollrath	483-2201
Editing (Kentron)	C. E. Crowley	
Word Processing (Kentron)	Y. Almdarez	
	R. J. Hill	
	K. Kerry	
	B. Ray	
	D. Runyon	
T. S. Walker		

CHANGE CONTROL RECORD

ORBITAL FLIGHT TEST: STS-4 Crew Activity Plan

CONTROL NO.	EDITION INCORPORATED*		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
	BASIC	03/13/82	
CAP(4)-1	FINAL	05/14/82	
CAP(4)-2	FINAL	05/14/82	
CAP(4)-3	FINAL	05/14/82	
CAP(4)-4A		05/14/82	
CAP(4)-5	FINAL	05/14/82	WITHDRAWN
CAP(4)-6	FINAL	05/14/82	
CAP(4)-7	FINAL	05/14/82	
CAP(4)-8	FINAL	05/14/82	
CAP(4)-9	FINAL	05/14/82	
CAP(4)-10	FINAL	05/14/82	
CAP(4)-11	FINAL	05/14/82	
CAP(4)-12	FINAL	05/14/82	
CAP(4)-13	FINAL	05/14/82	
CAP(4)-14	FINAL PCNI	06/11/82	
CAP(4)-15	FINAL PCNI	06/11/82	
CAP(4)-16A	FINAL PCNI	06/11/82	
CAP(4)-17	FINAL	05/14/82	
CAP(4)-18	FINAL PCNI	06/11/82	
CAP(4)-19			WITHDRAWN
CAP(4)-20	FINAL PCNI	06/11/82	
CAP(4)-21	FINAL PCNI	06/11/82	
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CAP(4)-32A	FINAL PCNI	06/11/82	DISAPPROVED
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CAP(4)-40	FINAL PCNI	06/11/82	
CAP(4)-41	FINAL PCNI	06/11/82	
CAP(4)-42	FINAL PCNI	06/11/82	

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

STS-4 CREW ACTIVITY PLAN

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 PCN-3 06/22/82
 PCN-4 06/23/82

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iv*	STS-4/FIN	1
v*	STS-4/FIN	1
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*CURRENT CHANGES

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INTRODUCTION

The STS-4 Crew Activity Plan contains the on-orbit timeline, which is a flight data file article. It does not contain the detailed crew activities that will be covered in the STS-4 Ascent, Post Insertion, Deorbit Prep, or Entry checklists.

This on-orbit timeline satisfies the objectives specified in the STS-4 Flight Requirements Document (Final).

The flight profile (trajectory data) used for this Crew Activity Plan is from Ref. 2 which is for a June 27, 1982 launch date.

TIMELINE FORMAT SYMBOL NOMENCLATURE

A. FORMAT SYMBOL NOMENCLATURE

1. Summary Level Timeline (12-Hr Timespan)

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

- a. **TINESCALES** - Three time references are presented in this section of the summary timeline format. The time references used are TIG Minus Time (TIG), Greenwich Mean Time (GMT), and Mission Elapsed Time (MET). MET is referenced to liftoff beginning at 00/00:00:00 (days, hours, minutes and seconds). TIG is referenced to the deorbit ignition time and counts down to 0/00:00:00 at ignition on the CRT timer. TIG is only used on the deorbit preparations on entry day.
- b. **CREWMEN (COR & PLT)** - This is the crewmen column of the format where titles of scheduled activities are shown for the commander (COR) and pilot (PLT) at the appropriate times in the flight.
- c. **DAY/NIGHT, ORBIT, MOON UP/DOWN**
 - 1) Day/Night - The orbital day/night intervals are delineated with black bars indicating when the Orbiter is in darkness.
 - 2) Orbit - Indicates which orbit the spacecraft is in by numerical sequence. The beginning of an orbit occurs when the Orbiter crosses the Earth's equator going from the southern to the northern hemisphere (ascending node). The succession of orbits is numbered in this column starting with Orbit 1 for launch.
 - 3) Moon Up/Down - The moon up/down intervals are delineated with black bars indicating when the moon is down.
- d. **EARTH TRACE W/SAA** - This is a display of the groundtrack of the Orbiter and when it passes over the South Atlantic Anomaly (SAA) (indicated by a '|—|').
- e. **GSTDN and SGLS COVERAGE** - The GSTDN and SGLS communication coverage periods are indicated in this area with a horizontal line indicating when communication is available; the GSTDN and SGLS site is identified to the right of the line.
- f. **OPS** - The GPC software configuration in use during the flight is indicated in this area.
- g. **DEORBIT KSC/EDW** - Times are identified in this area when deorbit burn opportunities exist for Edwards AFB (EDW) and Kennedy Space Center (KSC).
- h. **ATTITUDE and MANEUVERS**
 - 1) Attitude - The current attitude of the vehicle is identified in this area, i.e., PTC, IMU, -ZLV X-POP, -ASI.

2) Maneuvers - An 'M' is placed at the time an attitude maneuver occurs if the duration in attitude is to be greater than 15 minutes.

- i. TV/YTR - Live TV or recorded TV (YTR) is indicated in this area with a '[-]'
- j. CFES/MLR - Payload operating periods are indicated with a '[-xxx-]'

2. Detailed Level Timeline (1-Hr Timespan)

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

- a. SGLS COVERAGE - In this column the SGLS sites and their acquisition periods are identified by a solid line. The sites are HTS, VTS, GTS, IOS, and NHS.
- b. GSTDN COVERAGE - In this column the GSTDN sites and their acquisition periods are identified. Each site acquisition period is annotated by a solid line, a dashed line or a dotted line. The different annotations indicate the following:

I A site that has S-Band, UHF voice and TV capabilities (GOS, HAW, MIL, MLX, GOX)

I A site with S-Band and UHF voice capabilities (BDA, GNM, ACN, BUC, DKR, MAD, MAX)

⋮ A site with only S-Band (no UHF or TV) capabilities (AGO, ORR)

⋮ A site with only UHF (no S-band or TV) capabilities (BOT, YAR, IOS)

- c. DAY/NIGHT CYCLE - In this column a solid bar indicates the period when the Orbiter and Earth are in darkness. A slashed line indicates when the Orbiter is in daylight but the Earth beneath the Orbiter is still in darkness (terminator).
- d. SOUTH ATLANTIC ANOMALY (SAA) - This bar defines those periods when the Orbiter passes through the SAA.
- e. MET TIMESCALE - This format is a one-hour format with minute tick marks on the vertical timescale referenced to Mission Elapsed Time (MET) with liftoff occurring at 0700:00:00.
- f. 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).

- g. ATTITUDE and PAYLOAD USER COLUMN (ATT/CFES/MLR) - Indicates Orbiter attitude and when CFES and MLR are in operation.
- h. CREWMAN COLUMNS - The activities for the CDR and PLT are scheduled in this area.
- i. MCC COLUMN - Any uplinks, commands or updates required are scheduled at the appropriate time in this column. A vertical line is also used to indicate TV coverage.
- j. NOTES - This area will be used for location of pads, times of star availability, time and longitude of the ascending node, TV and photography scenes, and any other supplemental information required.
- k. 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 that time period on the page. Table 1-1 identifies the various configurations for DAP A and DAP B that are used in the STS-4 timeline.

DAP A CONFIGURATIONS

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
<u>TRANSACTION</u>																
PULSE	ft/sec	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.14	0.1	0.1	0.1	0.1
<u>ROTATION</u>																
DSC RT	NORM 0/sec	0.2	0.2	2.0	0.2	1.0	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	VERN 0/sec	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.5	0.007	0.2	0.2	0.2	0.2	0.2	0.2
PULSE	NORM 0/sec	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.28	0.6	1.0	0.1	0.3
	VERN 0/sec	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
COMP	NORM 0/sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VERN 0/sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<u>DEADBANDS</u>																
ATT	NORM	5.0	5.0	1.0	5.0	5.0	3.0	3.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0
	VERN	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5	1.0	3.0	1.0	5.0	0.07	1.0
RATE	NORM 0/sec	0.2	0.2	0.02	0.2	0.2	0.2	0.2	0.2	0.02	0.2	0.2	0.2	0.2	0.2	0.2
	VERN 0/sec	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02
<u>JET OPT</u>																
P		1	1	3	3	3	3	1	1	1	2	3	1	1	3	1
Y		1	1	3	3	1	3	1	1	3	1	3	1	1	3	1
<u>CNTL ACCEL</u>																
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DAP B CONFIGURATIONS

		B1	B2	B3	B4	B5	B6
<u>TRANSCATION</u>							
PULSE	ft/sec	0.02	0.02	0.02	0.02	0.02	0.1
<u>ROTATION</u>							
DSC RT	NORM o/sec	0.5	0.5	0.5	0.2	0.5	0.5
	VERN o/sec	0.2	0.2	0.2	0.2	0.2	0.3
PULSE	NORM o/sec	0.04	0.04	0.04	0.04	0.28	0.04
	VERN o/sec	0.002	0.002	0.002	0.002	0.002	0.001
COMP	NORM o/sec	0.0	0.0	0.0	0.0	0.0	0.0
	VERN o/sec	0.0	0.0	0.003	0.0	0.0	0.0
<u>DEADBAND</u>							
ATT	NORM*	3.0	3.0	3.0	3.0	3.0	3.0
	VERN*	1.0	0.1	1.0	1.0	1.0	3.0
RATE	NORM o/sec	0.2	0.2	0.2	0.2	0.2	0.2
	VERN o/sec	0.02	0.02	0.02	0.02	0.02	0.02
<u>JET OPT</u>							
P Y		1	1	1	3	3	1
		1	1	1	3	1	1
<u>CNTL ACCEL</u>							
		0	0	0	0	0	0

FLIGHT 575-0

EDITION FINN

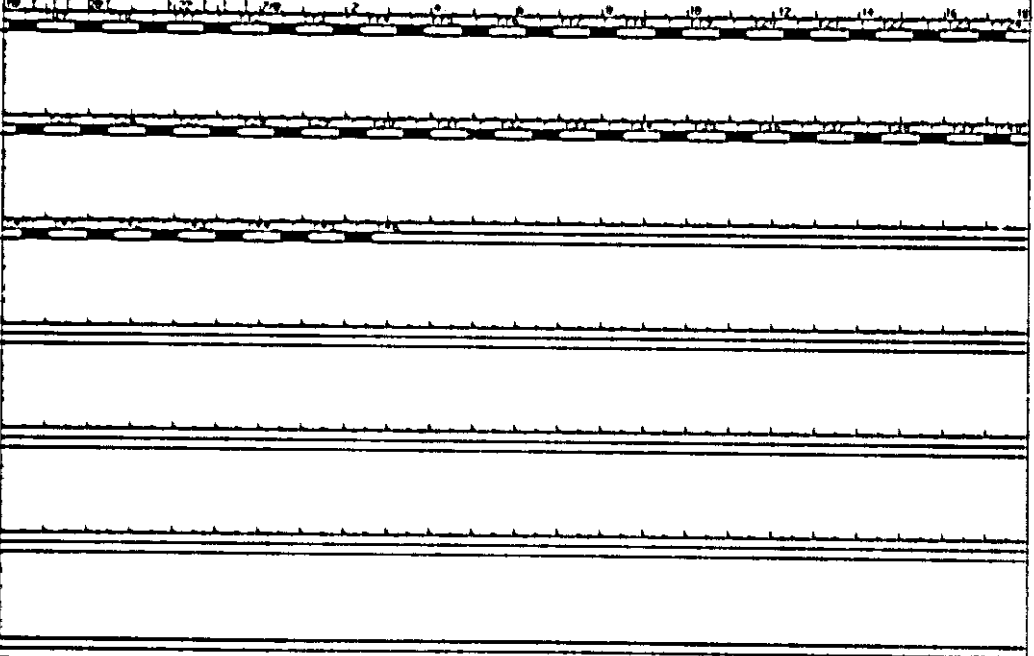
PUB. DATE 5/14/82

FD-8

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18

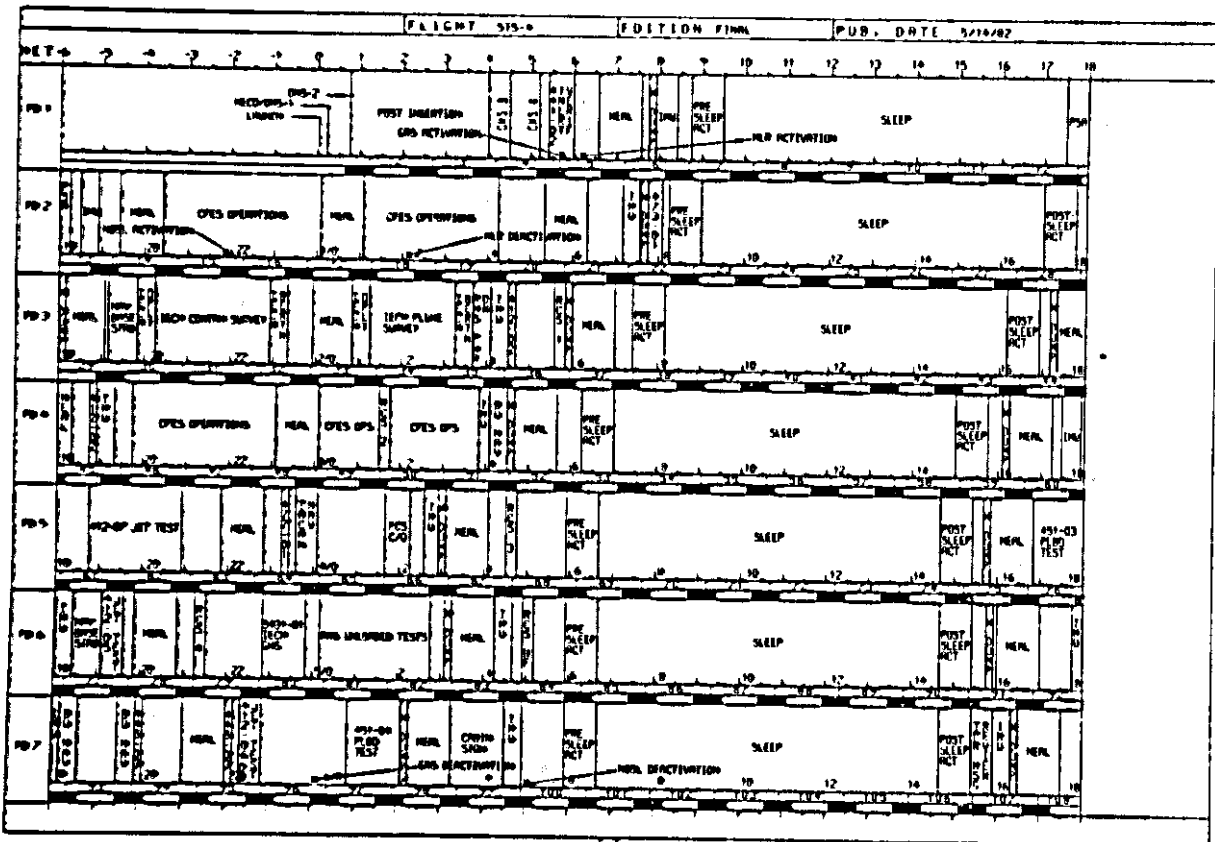
SECRET NOTATION (6/27/82-73)
ENTRY INTERPRET
LINDSAY (180000)



OVERVIEW

STS-4 OVERVIEW

OVERVIEW



SUMMARY TIMELINE

STANDARD
TIMING

CMT (D:MM)	MET (D:MM)	CDT (D:MM)	FD/DOY	BETA	NDDN	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
170:03:00	170:15:00	000:12:00	001:00:00	170:22:00	170:10:00	27 170 CDT	0.7	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
						JUNE 20, 1982	375-4	FINAL, PCN 1	6/11/82				
CMT 1779	4	5	6	7	8	9	10	11	12	13	14	15	
40 19	13	14	15	16	17	FUN 2	18	19	20	21	22	23	0
MET 000													
CDR		SLEEP					POST SLEEP ACT	TV MUSIC NET ACT	NEWS	TV SETUP	NEWS ACT	NEWS PREP	
PLT		SLEEP					POST SLEEP ACT	NEWS	ACT/ PHOTO PREP	ST STATION PHOTO ACT		NEWS PREP	ST STATION PHOTO ACT
INT/EXT													
ORBIT	0	1	10	1	11	1	12	1	13	1	14	1	15
NOV/ISS													
EARLY TRACE W/SAR													
CSFB COVERAGE	-GND	-RGO	-RGN	-GND	-GND	-GND	-GND	-VRR DPR	-VRR DPR	-VRR DPR	-VRR DPR	-VRR DPR	-VRR DPR
SGS COVERAGE	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS
SCUB PSC EPD													
ATTITUDE			-2W WOP										
ORBITAL ELEVATION													
CPES MAP													
NOTES:													

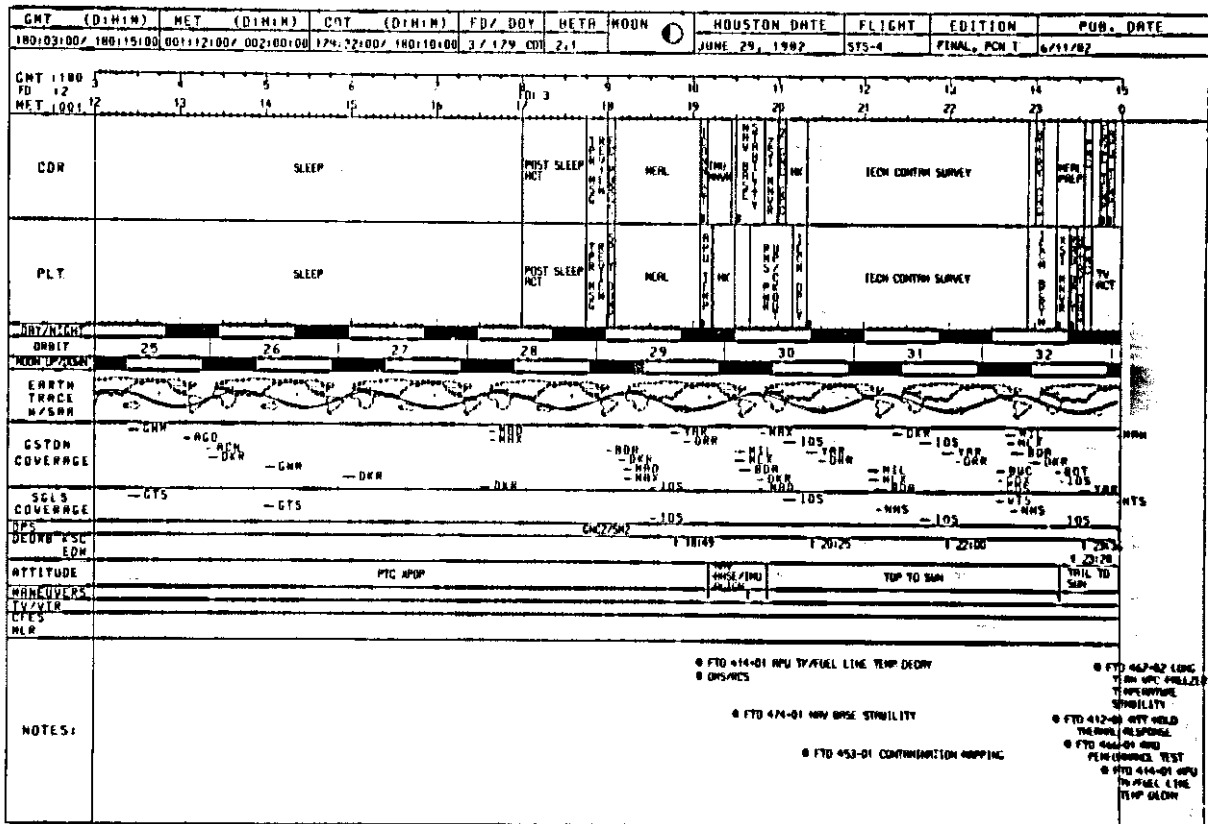
• TV ORBIT • FSO 5436-01 CPES (SEQUENCE 1) • FSO 5436-01 CPES

• FTD 477-02 PROSIVE GRAVITY GAMBIT • FSO 5441-01 NOA OPERATIONS
ATT HOLD

• FSO 5436-01 CPES

• (SAMPLE 1 SEPARATION
& COLLECTION)
FSO 5436-01 CPES
• FTD 462-01 WPC
FUELER INRT
EXCHANGE
DYNAMICS

CMT (D:MIN)	NET (D:MIN)	CDT (D:MIN)	PDF 30V	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUR. DATE		
17h 15:00	100:07:00	000:00:00	000:12:00	17h 18:00	17h 22:00	27 17h CDN 0.9	0	JUNE 28, 1967	ST9-0	FINAL, PGR 1	6/11/67
CMT 1979	PD 12	NET 1007									
CDN	HER	A2									
PLT	HER										
ROOT	17	18	19	20	21	22	23	24			
TRACE	[Wavy line representing a trace signal]										
CSFDN COVERAGE	-RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC										
SESS COVERAGE	-RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC -RUC										
CDN PSC	[Handwritten notes and symbols]										
APPITUDE	[Handwritten notes and symbols]										
STUCKER	[Handwritten notes and symbols]										
CPES	[Handwritten notes and symbols]										
NOTES:	<ul style="list-style-type: none"> PSB 3406-01 CPES PSB 3406-02 CPES PSB 3406-03 CPES PSB 3406-04 CPES (ISSUANCE 1) PSB 3406-05 CPES PSB 3406-06 CPES PSB 3406-07 CPES PSB 3406-08 CPES PSB 3406-09 CPES PSB 3406-10 CPES PSB 3406-11 CPES PSB 3406-12 CPES PSB 3406-13 CPES PSB 3406-14 CPES PSB 3406-15 CPES PSB 3406-16 CPES PSB 3406-17 CPES PSB 3406-18 CPES PSB 3406-19 CPES PSB 3406-20 CPES PSB 3406-21 CPES PSB 3406-22 CPES PSB 3406-23 CPES PSB 3406-24 CPES PSB 3406-25 CPES PSB 3406-26 CPES PSB 3406-27 CPES PSB 3406-28 CPES PSB 3406-29 CPES PSB 3406-30 CPES PSB 3406-31 CPES PSB 3406-32 CPES PSB 3406-33 CPES PSB 3406-34 CPES PSB 3406-35 CPES PSB 3406-36 CPES PSB 3406-37 CPES PSB 3406-38 CPES PSB 3406-39 CPES PSB 3406-40 CPES PSB 3406-41 CPES PSB 3406-42 CPES PSB 3406-43 CPES PSB 3406-44 CPES PSB 3406-45 CPES PSB 3406-46 CPES PSB 3406-47 CPES PSB 3406-48 CPES PSB 3406-49 CPES PSB 3406-50 CPES PSB 3406-51 CPES PSB 3406-52 CPES PSB 3406-53 CPES PSB 3406-54 CPES PSB 3406-55 CPES PSB 3406-56 CPES PSB 3406-57 CPES PSB 3406-58 CPES PSB 3406-59 CPES PSB 3406-60 CPES PSB 3406-61 CPES PSB 3406-62 CPES PSB 3406-63 CPES PSB 3406-64 CPES PSB 3406-65 CPES PSB 3406-66 CPES PSB 3406-67 CPES PSB 3406-68 CPES PSB 3406-69 CPES PSB 3406-70 CPES PSB 3406-71 CPES PSB 3406-72 CPES PSB 3406-73 CPES PSB 3406-74 CPES PSB 3406-75 CPES PSB 3406-76 CPES PSB 3406-77 CPES PSB 3406-78 CPES PSB 3406-79 CPES PSB 3406-80 CPES PSB 3406-81 CPES PSB 3406-82 CPES PSB 3406-83 CPES PSB 3406-84 CPES PSB 3406-85 CPES PSB 3406-86 CPES PSB 3406-87 CPES PSB 3406-88 CPES PSB 3406-89 CPES PSB 3406-90 CPES PSB 3406-91 CPES PSB 3406-92 CPES PSB 3406-93 CPES PSB 3406-94 CPES PSB 3406-95 CPES PSB 3406-96 CPES PSB 3406-97 CPES PSB 3406-98 CPES PSB 3406-99 CPES PSB 3406-100 CPES 										



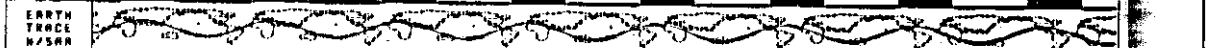
GMT (D:H:M)	MET (D:H:M)	COT (D:H:M)	FD/DOY	HE/M	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
180:15:00/	181:03:00/	002:00:00/	002:12:00/	180:18:00/	180:22:00/	3 / 180	CO1	3.5	☉	JUNE 29, 1982	STS-4	FINAL, PCN 1	6/11/82
GMT 1100	15	16	17	18	19	20	21	22	23	24	25	26	27
FD 13													
MET 1002	9	2	3	4	5	6	7	8	9	10	11	12	
CDR	MEAL	TECH PLANE SURVEY		EXERCISE		MEAL	MEAL	MEAL	PRE SLEEP	SLEEP			
PLT	MEAL	TECH PLANE SURVEY		EXERCISE		MEAL	MEAL	MEAL	PRE SLEEP	SLEEP			
DAY/NIGHT	[Bar chart showing day/night cycle]												
ORBIT	[Bar chart showing orbit parameters]												
MONTH/DAY	33	34	35	36	37	38	39	40					
EARTH TRACE W/SRA	[Wavy line representing Earth trace]												
STDM COVERAGE	[Coverage data: MAN, UUC, ACH, BOT, YAR, CHN, HAW, AUC, RGT, LOS, GTS, HTS, etc.]												
SCLS COVERAGE	[Coverage data: HTS, LOS, GTS, HTS, etc.]												
OPS DECK/ASC EDM	[Operational data: 1 01:12, 1 02:29, 0427547]												
ATTITUDE	[Attitude data: TRAIL TO SUN]												
MANEUVERS	[Maneuver data: TRAIL TO SUN]												
TV/YR													
CPES													
HLR													
NOTES:	<ul style="list-style-type: none"> • FTO 454-01 RCS PLANE FLDN FIELD MEASUREMENT • FTO 454-01 RCS PLANE FLDN FIELD MEASUREMENT • STAR TRACKERS OFF • FTO 412-02 STARTRACKER COLDSON • FTO 412-01 ATT HOLD THERMAL RESPONSE • FTO 412-01 ATT HOLD THERMAL RESPONSE • DIS/RCS • CHANGED OUT 												

GMT (D:H:M)	NET (D:H:M)	CDT (D:H:M)	FD/DOY	RETH	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
193103:00	193119:00	004:12:00 / 005:00:00	182:22:00 / 183:10:00	6 / 182 CDT	11.4	JULY 2, 1962	STS-4	FINAL, PGN 1	6/11/62

GMT	FD	NET	CDT	FD/DOY	RETH	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
1103	15	1004	12	13	14	15	16	17	18	19	20	21	22	23	24	25

CDR	PLT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT
SLEEP	SLEEP	POST SLEEP	POST SLEEP	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL
PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST	PLBD CYCLE TEST
EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE	TECH OPS RELEASE

ORBIT	ORBIT	ORBIT	ORBIT	ORBIT	ORBIT	ORBIT	ORBIT	ORBIT	ORBIT	ORBIT
73	74	75	76	77	78	79	80	81	82	83



GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE	GSTDN COVERAGE
WGD -DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN	-DWR -ACN

SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE	SGLS COVERAGE
-LTS	-LTS	-LTS	-LTS	-LTS	-LTS	-LTS	-LTS	-LTS	-LTS	-LTS

OPS	OPS	OPS	OPS	OPS	OPS	OPS	OPS	OPS	OPS	OPS
17143	17143	17143	17143	17143	17143	17143	17143	17143	17143	17143

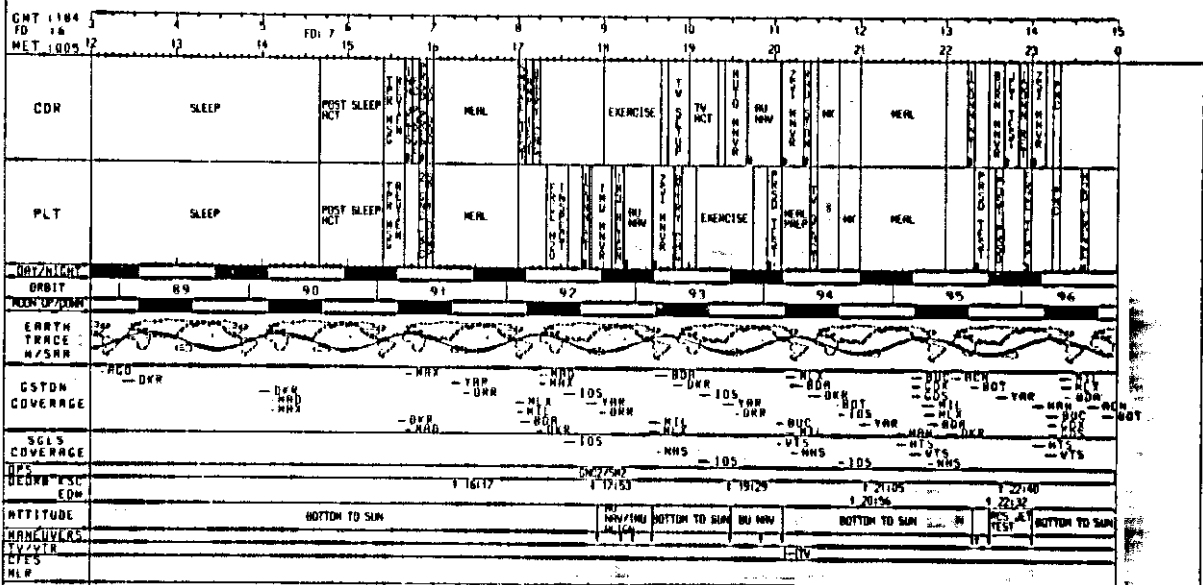
ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE	ATTITUDE
TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN	TRAIL TO SUN

NOTES:

- FTD 412-05 FMS THERMAL SOWBACK, ONE FWD ENGINE
- NI LONG DUCT HTK
- FTD 474-01 NAV WISE STABILITY
- ONS/WCS
- FTD 412-01 ATT HOLD THERMAL RESPONSE
- FTD 451-03 PLBD COLD CASE PERFORMANCE
- 30 SEC F3F BURN
- FTD 412-05 FMS THERMAL SOWBACK, ONE FWD ENGINE
- TECH OPS RELEASE AT (FSD 5421-01)
- FTD 412-01 ATT HOLD THERMAL RESPONSE
- FSD 5421-01 TECH OPERATION
- FTD 412-04 ATT HOLD THERMAL RESPONSE

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	HETA	NOON	HOUSTON DATE	FLIGHT	EDITION	PWR. DATE
183:15:00/184:03:00	005:00:00/005:12:00	183:10:00/183:22:00	6/183 CDT	13:2		JULY 2, 1982	STS-4	FINAL, PCN 1	6/11/82
GMT 183:15 FD 16 MET 1805:0									
CDR									
PLT									
DAY/NIGHT									
ORBIT									
HEALTH/DOWN									
EARTH TRACE M/SRA									
GSTN COVERAGE									
SGLS COVERAGE									
DPS									
DEDRM PSC EDM									
ATTITUDE									
MANEUVERS TYPE									
CPES									
M/P									
NOTES:	<p>251 MAN FTD 412-01 ATT HOLD THERMAL RESPONSE FTD 412-05 PWS THERMAL SWABACK, IME FWD ENGINE FTD 412-01 ATT HOLD THERMAL RESPONSE FTD 412-05 PWS THERMAL SWABACK, IME FWD ENGINE FTD 452-02 SINGULARITY MANAGEMENT FTD 462-01 WFO SURFACE INSPECT FTD 452-03 UNLOADED MAN RESPONSE TO PWS FTD 452-02 SINGULARITY MANAGEMENT FTD 467-02 LONG TERM WPC FREEZER TEMPERATURE STABILITY CHANGEOUT</p>								

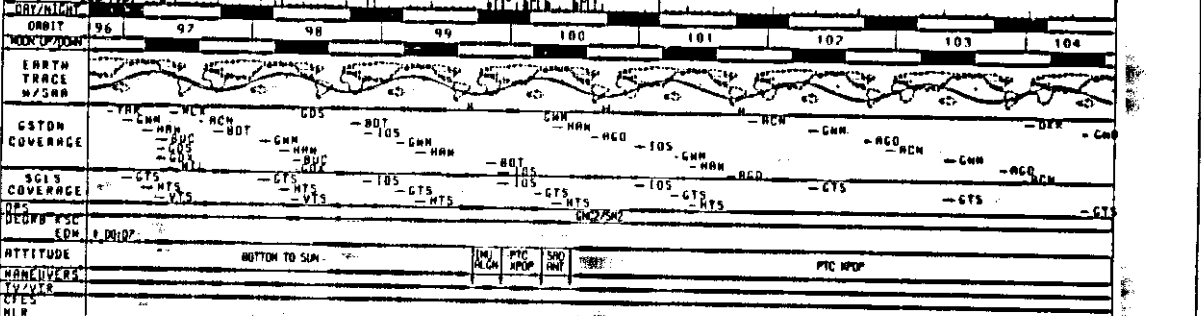
GMT (D:HH:MM)	NET (D:HH:MM)	CDT (D:HH:MM)	FD/DOY	RETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
184:03:00 / 184:15:00	089:12:00 / 086:00:00	183:22:00 / 184:10:00	7 / 183 ED	15.0	☉	JULY 3, 1982	SFS-4	FINAL, PGN 1	6/11/82



GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETH	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
184115:00/185103:00	086100:00/086112:00	184101:00/184122:00	7/184 011	16.9	☉	JULY 3, 1982	STS-4	FINAL, PGM 1	6/11/82

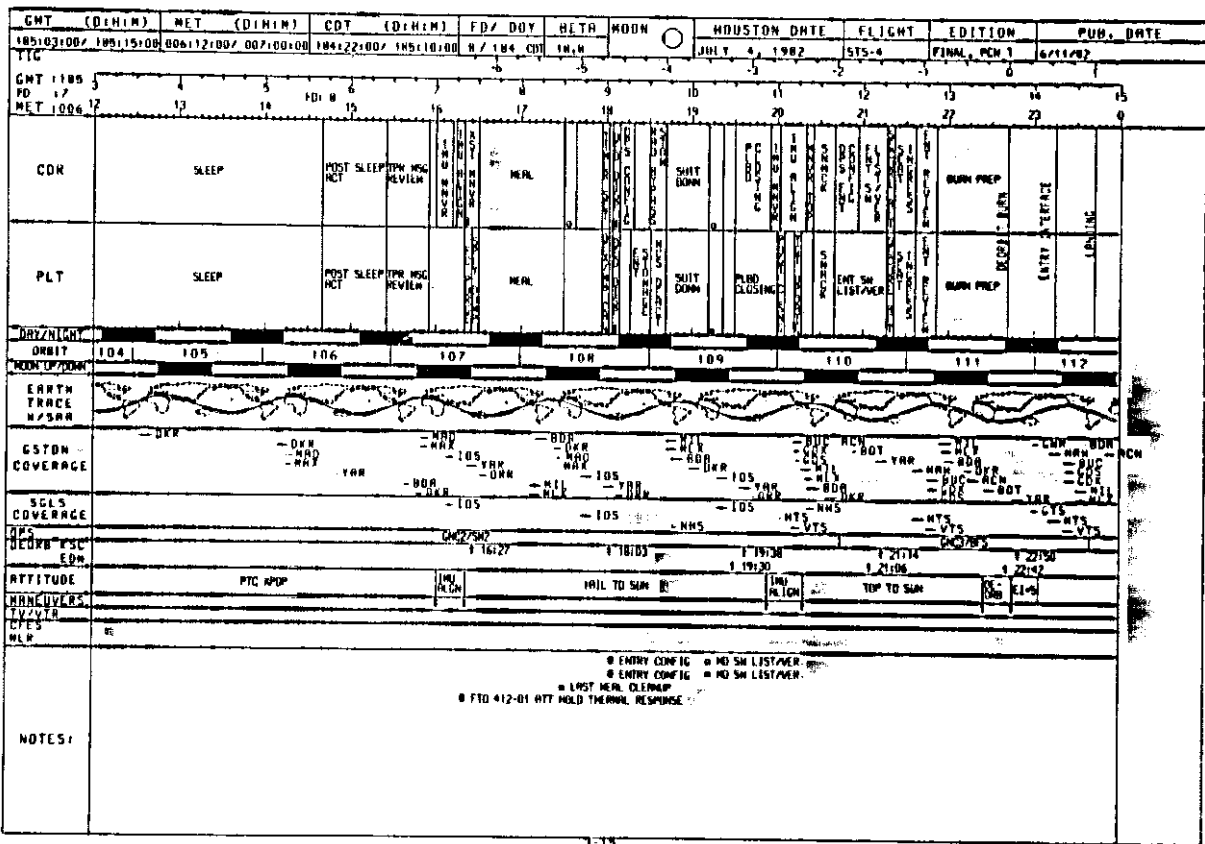
GMT 184	FD 17	MET 106	15	16	17	18	19	20	21	22	23	1	2	3

CDR	PLT	DRY/NIGHT	ORBIT	MOON/DOY	EARTH TRACE	W/SRB	GSTN COVERAGE	SGS COVERAGE	DPS	DEGRAD PSC	EDM	ATTITUDE	HANDOVERS	TV/VR	CPES	HLR
PLBD CYCLE TEST NEAL CABIN STIM MUSL DUCT PNE SLEEP SLEEP	NEAL PREP PLBD CYCLE TEST NEAL CABIN STIM MUSL DUCT PNE SLEEP SLEEP		96	97	98	99	100	101	102	103	104					



NOTES:

- F50 5435-01 GRS OPERATION
- PL LDND DUCT HTR
- FTD 451-04 PLBD THERMAL GRADIENT PERFORMANCE
- FTD 451-04 PLBD THERMAL GRADIENT PERFORMANCE
- FD 8 G040 CD
- STDN GRS CHECKER
- F50 5435-01 GRS OPERATION
- CIRC PUMPS TO OFF
- FTD 412-06, 08 RCS THERMAL STABILIZE, TMO FND & ONE L HACS ENGINE
- FTD 412-01 HTY HOLD THERMAL RESPONSE
- F50 5441-01 MUSL OPERATIONS
- PL DEGRADIT PREP
- CHANGEOUT
- FTD 471-01 S-HRND & LNF INT PHITTERS



DETAILED TIMELINE

FLT DAY 1

MET
DAY 000

05:00
R1 (B1)
AUTO
VERN
MT D.2
DN 1.0

05:10

05:20

05:30

R14 (B1)
NON
VERN
CC
CONFIG

05:40

05:50

06:00

STS-4 DETAILED

CDR

PLT

MCC

NOTES

DMS - 4 BURN (0205114112)

Primary RJD DRIVER (eight) - OFF

SINGLE G2 CEC OPS
(ORBIT OPS C/L, QPS) (P. 1-2)

C3 JDFI RECORDS PCW = LO SAMP

NO BSM = STBY (tb+bp)

CO2 ABSORBER INSTALLATION

(1 into A, 2 into B)

NOTE

This is the initial

installation of

CO2 ABSORBERS

GRAVITY GRADIENT FREE DRIFT OPS 2

(ORBIT OPS C/L, QCS) (P. 1-2)

(FTO 477-02)

(05:27) Perform Step 11

(AUTO MMAR TO ATTITUDE)

VERN Jets: ATT ID: A

Perform Step 21

(ESTABLISH FREE DRIFT)

VERN Jets: ATT ID: A

NRV RJD CTR VOICE MCD SEL 1,2 - OFF

GOOD NUMBER ACT. (Cue Card)

EXPERIMENT OPERATIONS DOCUMENTATION

(PHOTO/TV C/L, IMB.P1001)

TV ACT

EXPERIMENT ACTIVATION

(OPERATIONS C/L, IMB.A)

EXPERIMENT OPERATIONS DOCUMENTATION

(PHOTO/TV C/L, IMB.P2003)

EXPERIMENT OPERATIONS DOCUMENTATION

(PHOTO/TV C/L, IMB.P1001)

TV DEACT

HEAL-PRILE (Cue Card)

Prepare DAY 1, HEAL C

TPR
BLOCK DATA
HEALTH PAD
B- 1/3-6

ASCENDING NODE
DRW 5
NET: 00010539154
LON: 106.3 E

CNL
RSP TO DATA
MCD NODE

WPLINK
DRIBTER 5 V

SP4 - 100-100-100-100-100

STS-4 DETAILED

CDR

PLT

MCC

NOTES

MET

060000

0600
0605
0610
0615
0620
0625
0630
0635
0640
0645
0650
0655
0700

UNSAT. CAB. ENDS (FSU 5405-01)
 Remove encoder and cable from
 locker
 Plug 3 pin connector to SEP RIB L/D
 Plug 4 pin connector into encoder
 Route cable, mount encoder using
 wrench

PAYLOAD DURING RESET

REAL PREP

UNSAT. ENDS (FSU 5405-01)

Set LMS Relay 02 Latch to Hold
 Man.
 Set GPS Relay 08 Latch to Hold

#2 RPU MTR LMS GEN/FUEL PUMP (three) - R AUTO

HOUSEKEEPING

HOUSEKEEPING

REC. INSTRUMENT (LOCAL)
 (FSU 5442-01)

Record Traps

REAL

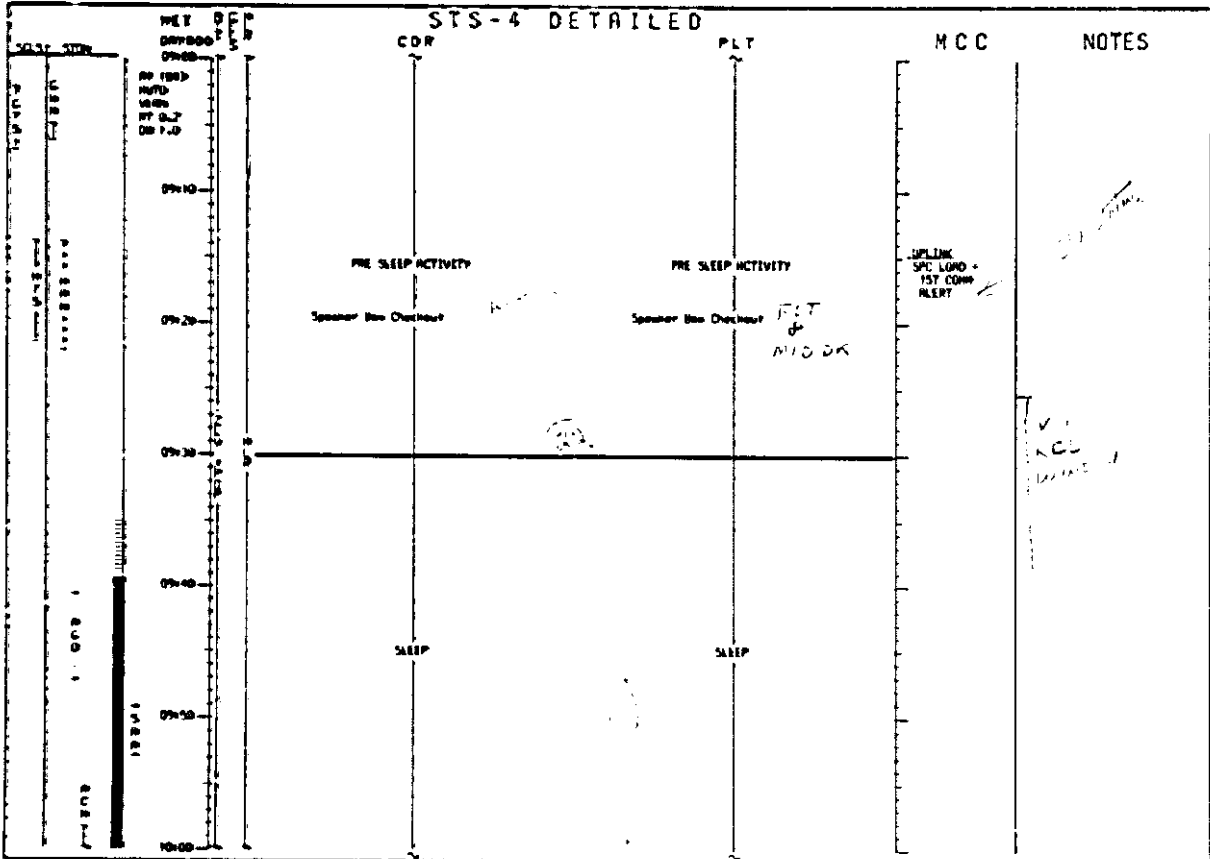
REAL

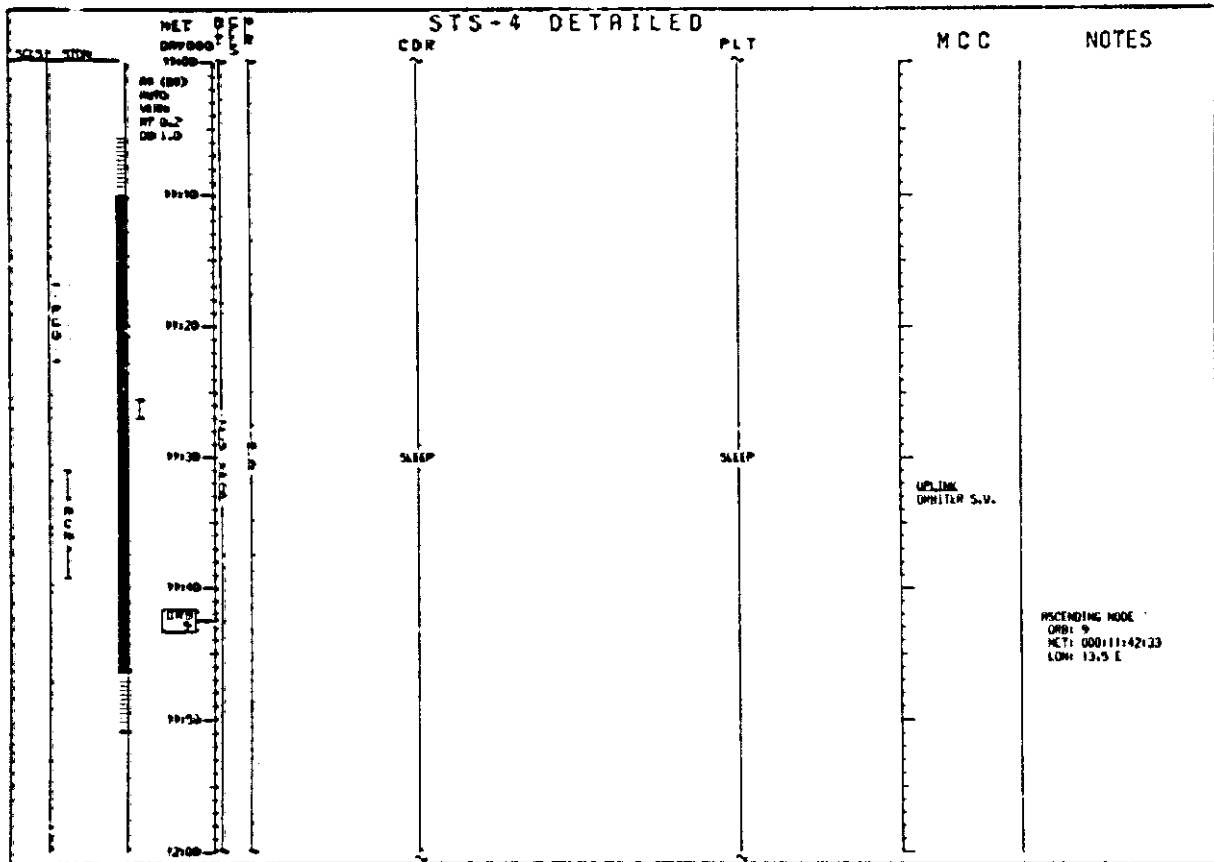
EVOLUC STATUS REPORT
 (FSU 5442-01)

RPT: PAL STATUS

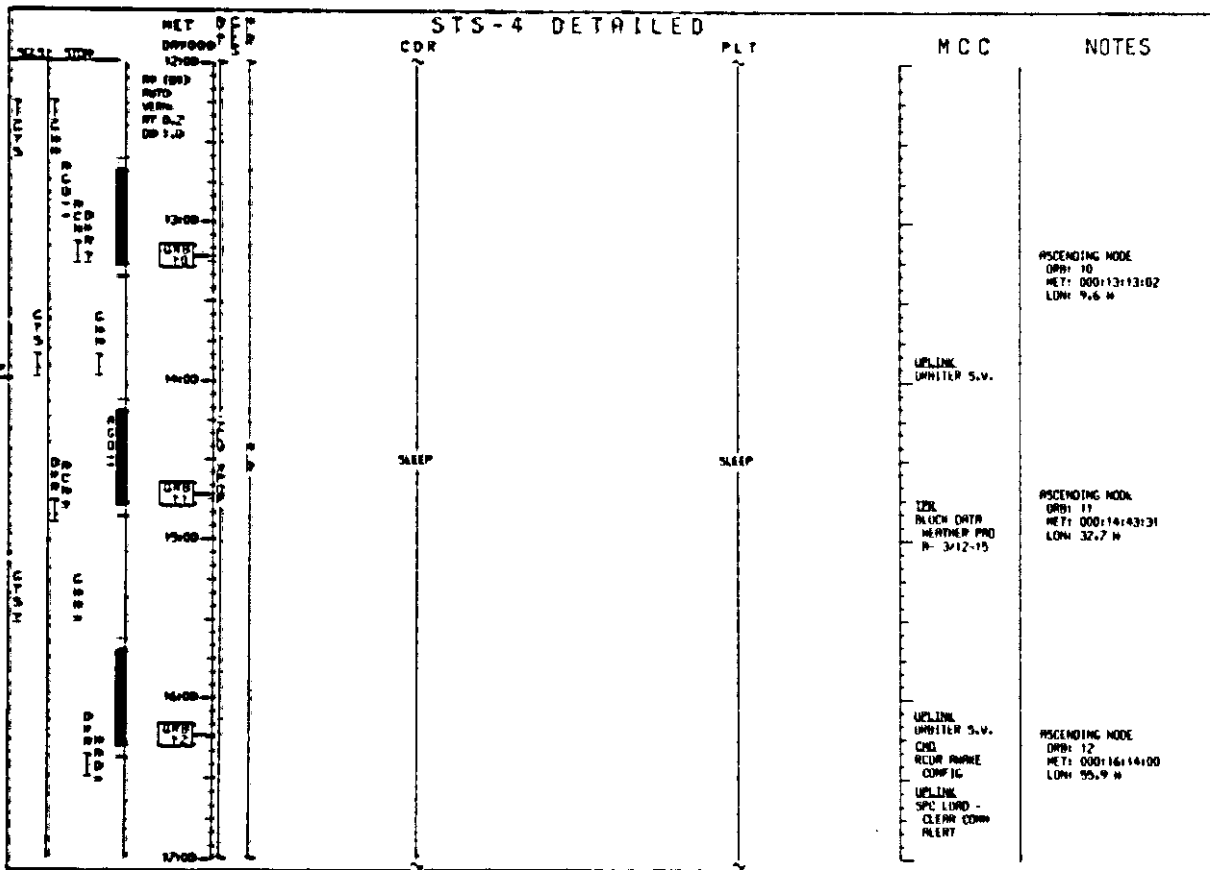
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STS-4 DETAILED

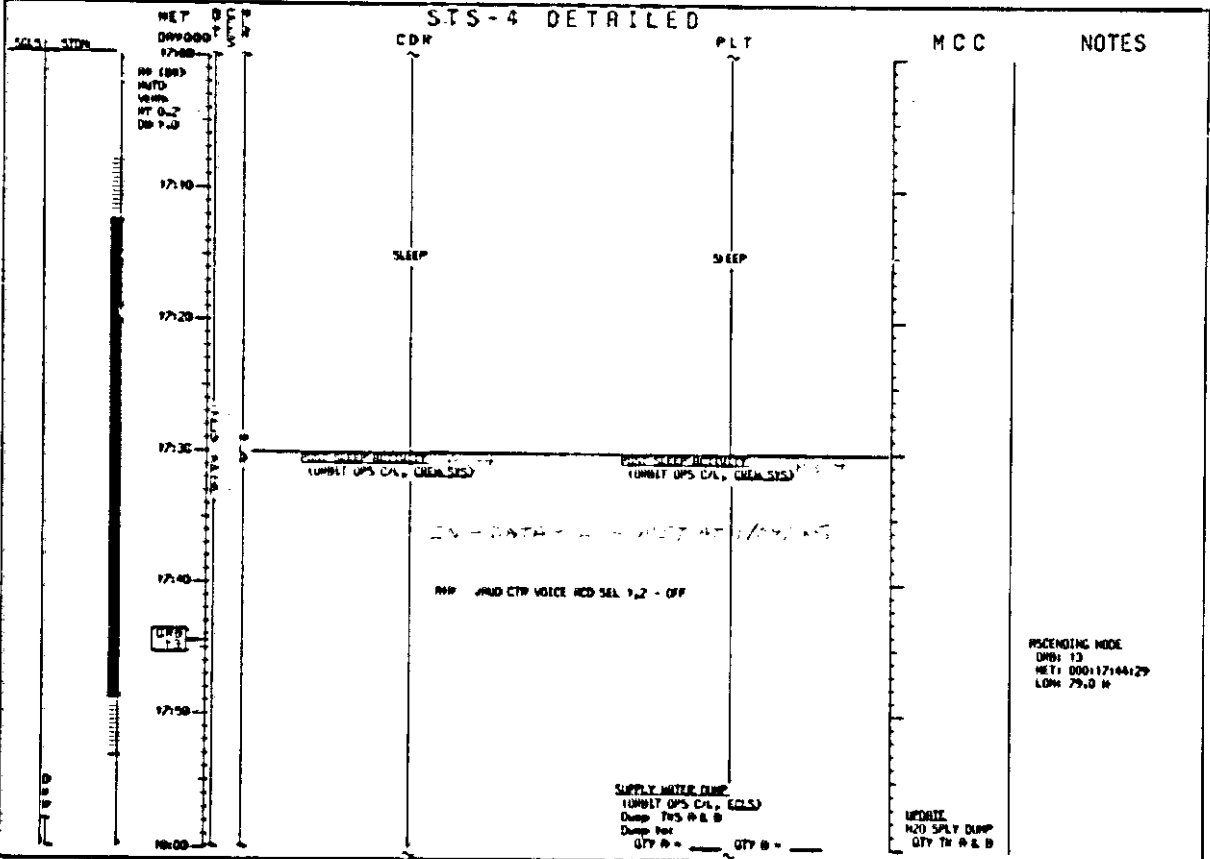


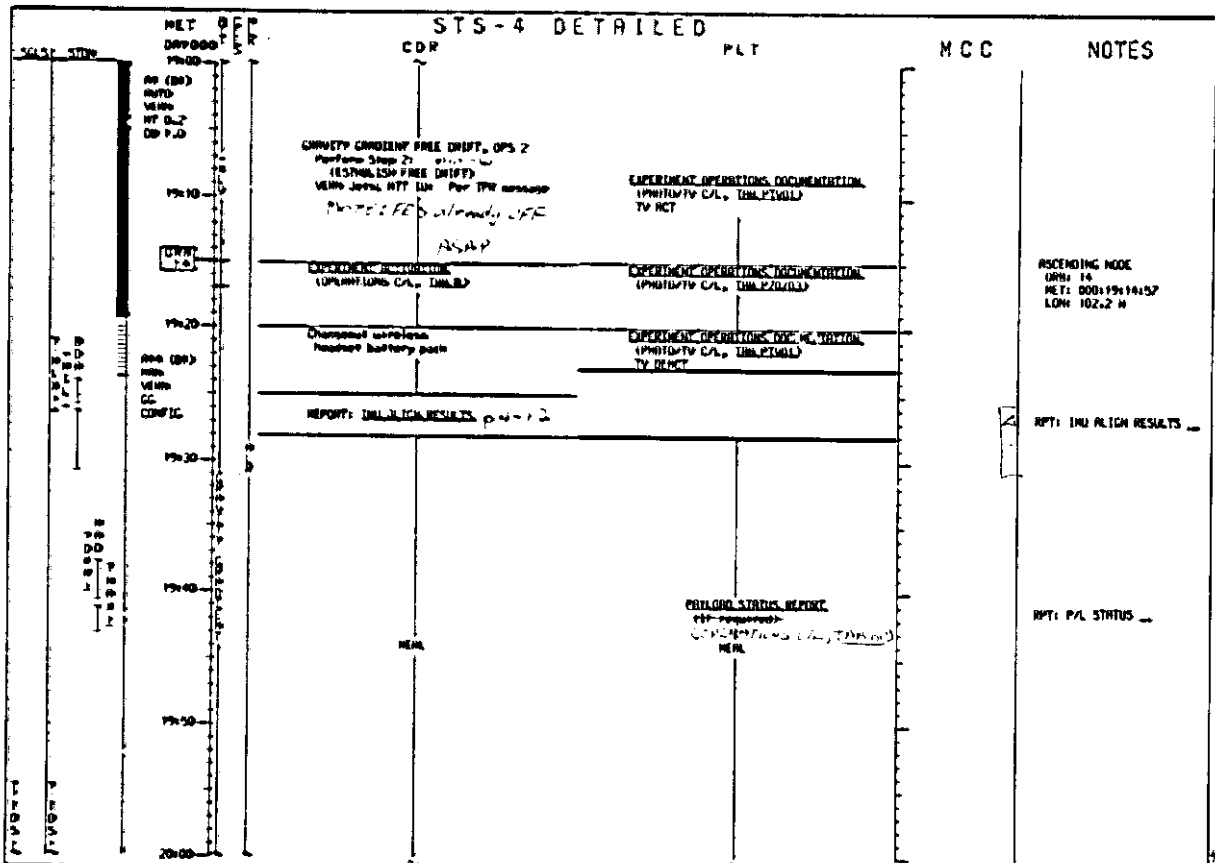


FET DAY 2

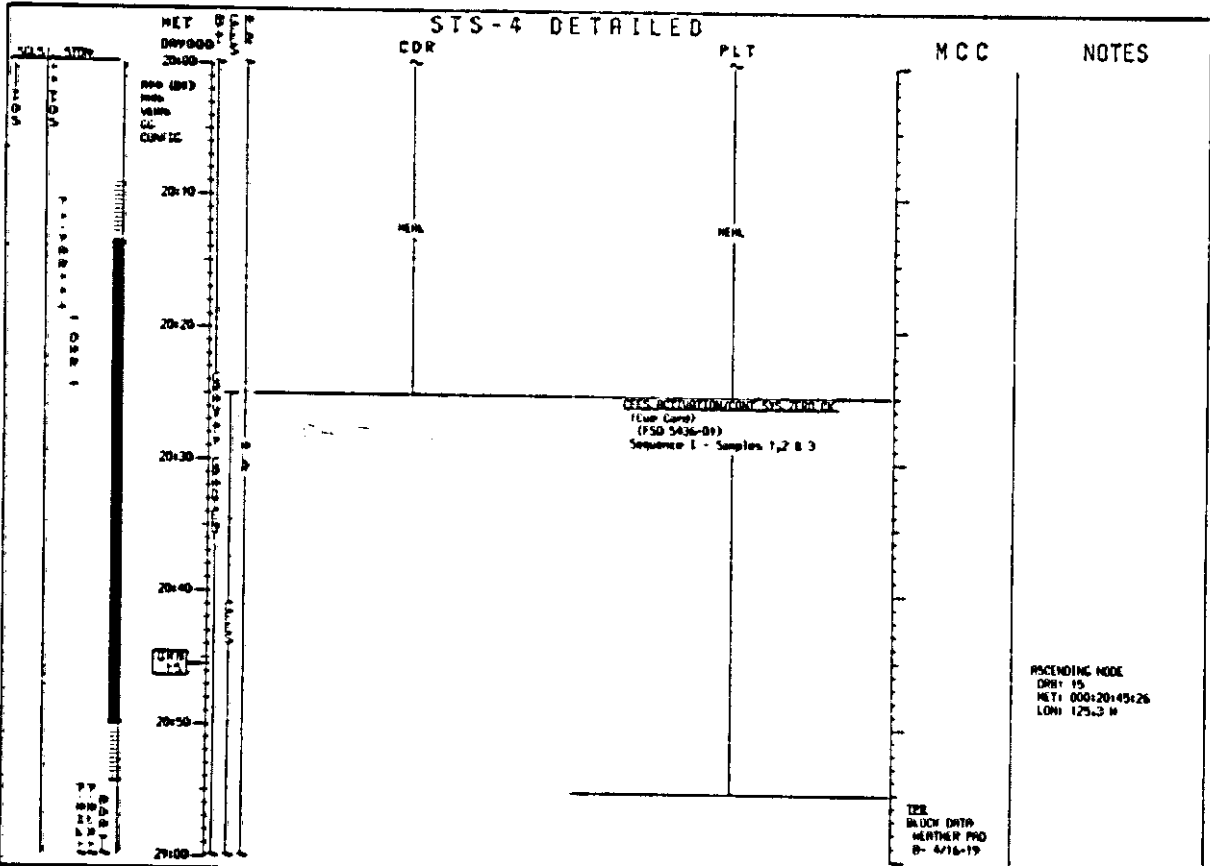


STS-4 DETAILED





STS-4 DETAILED



STS-4 DETAILED

CDR

PLT

MCC

NOTES

NET 0

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21:00

RR (00)
RRR
VRRR
CC
CRRIC

21:10

21:20

21:30

21:40

21:50

22:00

ORBIT TV SETUP, CONT. CTS, TRNG. OPS.
(PHOTO TV Cds, DCSOLMS)

P1-3

CONT. SAMPLE FLOW/CONT. SEP. RUN -
PHOT. L. (Cam Cord)
(PSD 5400-01) Sample 1
Operator Call (Approx. 21:15)
Display - CONT. SAMPLE FLOW

Operator Call (Approx. 21:20)
Display - PHOTO

EXPERIMENT OPERATIONS DOCUMENTATION
(PHOTO TV Cds, Cam. 21:40)

PHOT. OPERATIONS (Cam Cord)
(PSD 5400-01)

RECORDS WILL BE PREPARED SURVEY
PHOT. CDS (Cds)
Preparation Survey Publications MO
In the Mission by MCC

SL METRA OPS

STS-4 DETAILED

MET 0
DAY 000

CDR

PLT

MCC

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23:10

NEAL PREP

HOUSEKEEPING

REINSERT NEW COLLECTOR (Cur Card)
(PSD 50,00-07) Sample 1
Operator Call (Hypox. 23:25)
Display - PHOTO

23:20

REINSERT NEW COLLECTOR (Cur Card)
(PSD 50,00-07) Sample 1
Operator Call (Hypox. 23:25)
Display - PHOTO

23:30

REINSERT NEW COLLECTOR (Cur Card)
(PSD 50,00-07) Sample 1
Operator Call (Hypox. 23:25)
Display - PHOTO

23:40

Operator Call (Hypox. 23:43)
Display - PHOTO

23:50

REINSERT NEW COLLECTOR (Cur Card)
(PSD 50,00-07) Sample 1
Operator Call (Hypox. 23:25)
Display - PHOTO

NEAL

0017

ASCENDING NODE
DBI: 17
MET: 00023146124
LOM: 171.6 W

STS-4 DETAILED

NET
DAY 001
00:00

CDR

PLT

MCC

NOTES

R14 (B1)
MM
VERM
CC
CONFIG

00:10

00:20

00:30

00:40

00:50

01:00

STS-4 DEPARTURE FROM RAK-1

1

MEAL

RAM 2 FLUSH OR END

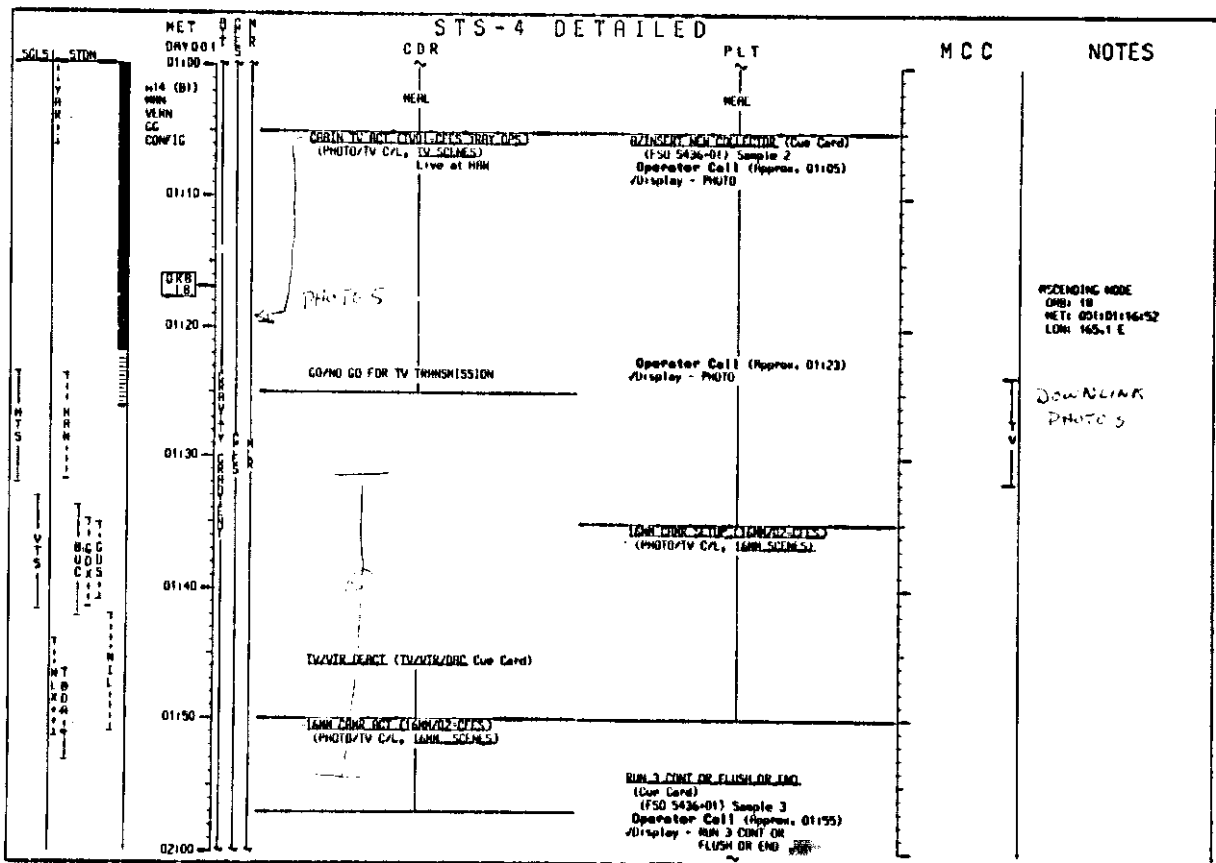
(Cue Card)
(FSD 5436-01) Sample 2
Operator Call (Approx. 00:15)
Display - RAM 2 COND OR
FLUSH OR END

Operator Call (Approx. 00:22)
Display - PHOTO

MEAL

MEAL

SCSI STON
VTS 1
CCK
BUCK
CCK
S
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MLK
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BDR
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MNS 1
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STS-4 DETAILED

CDR

PLT

MCC

NOTES

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NET
 DRYD01
 02:00
 R14 (B1)
 MNN
 VERN
 GC
 CONFIC
 02:10
 02:20
 02:30
 02:40
 02:50
 03:00

RUN 3 CONT OR FLUSH OR END
 Operator Call (Approx. 02:02)
 /Display - PHOTO

NER DEACTIVATION (Decal)
 (FSO 442-01)

Record Time

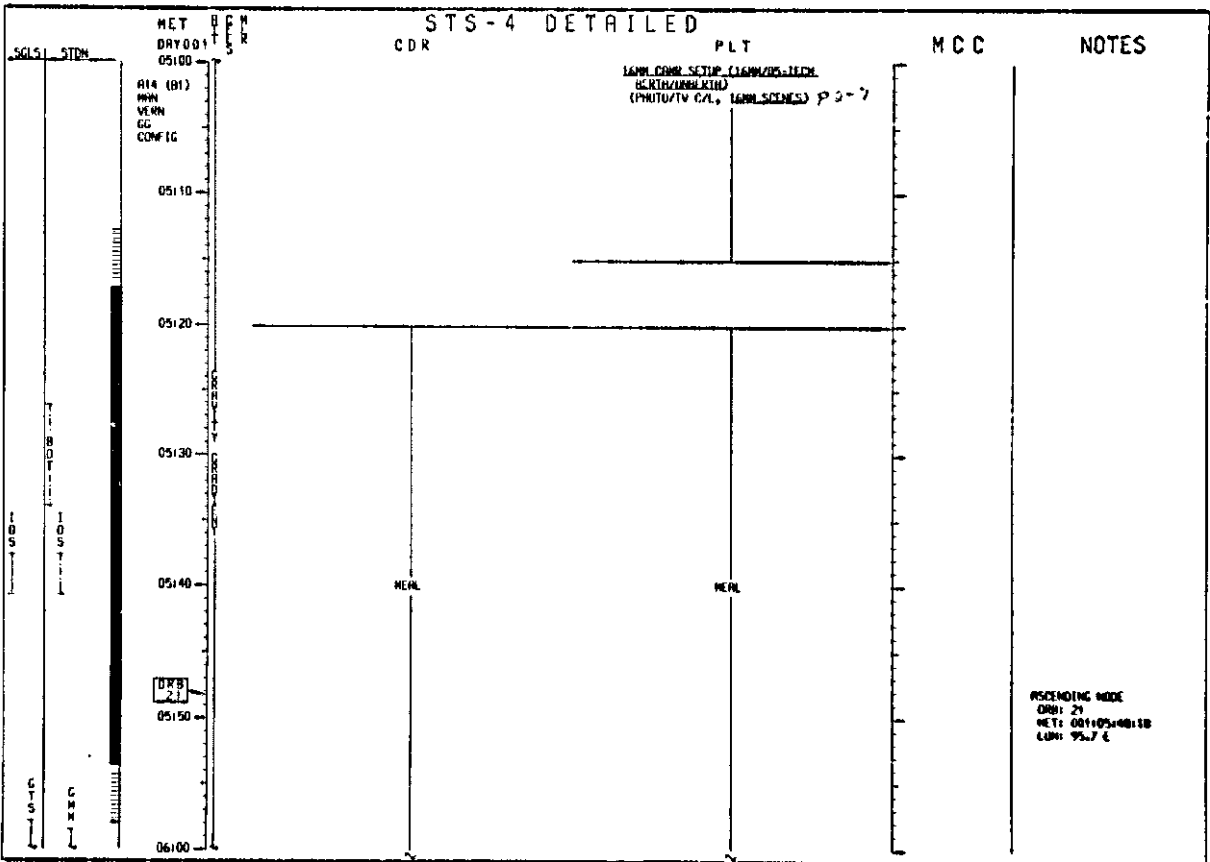
GLOW EXPERIMENT
 (PHOTO/TV (1/2), 10 MIN. MNN. DATA)
 TV, 70 MIN. CAMR. SET UP

GLOW EXPERIMENT
 (PHOTO/TV (1/2), 10 MIN. MNN. DATA)
 TV, 70 MIN. CAMR. SET UP

REINSERT NEN COLLECTOR. (Car Card)
 (FSO 5426-01) Sample 3
 Operator Call (Approx. 02:45)
 /Display - PHOTO

TER
 BLOOY DATA
 WEATHER PND
 B- 5/28-23

ASCENDING NODE
 ORB: 19
 NET: 00102147121
 LON: 142.0 E



STS-4 DETAILED

MET
DAY001

R14 (B1)
MNN
VERN
GC
CONFIG

06:10

06:30

06:40

06:50

07:00

R1 (B1)
AUTO
VERN
RT 0.2
DB 1.0

MET
DAY001
R14 (B1)
MNN
VERN
GC
CONFIG
06:10
06:30
06:40
06:50
07:00
R1 (B1)
AUTO
VERN
RT 0.2
DB 1.0

CDR

MEAL

CABIN TV SETUP (C/D2 FROM PLINK)
(PHOTO/TV C/L, TAB #2053) p 1-6

EXPERIMENT OPERATIONS DOCUMENTATION
(OPERATIONS C/L, TAB #)

GRAVITY ANNOTATION FROM DAILY OPS 2
(OMBIT OPS C/L, RCS) p 10-7
(FIO 477-02)
Perform Step 31
(VEHICLE RECOVERY & FES RESTART)

AUTO MNRK TO INIT. ACTION AT
MNRK OPTION: R = 212.5
P = 77.9
Y = 44.4
DRPI A/AUTO/VERN
(06:52) Initiate MNRK

PLT

MEAL

Changeout wireless
headset battery pack

EXPERIMENT OPERATIONS DOCUMENTATION
(PHOTO/TV C/L, TAB #2051)
TV ACT
Record 15 min

EXPERIMENT OPERATIONS DOCUMENTATION
(PHOTO/TV C/L, TAB #2023)

EXPERIMENT OPERATIONS DOCUMENTATION
(PHOTO/TV C/L, TAB #2051)
TV DEACT

~~RADIATORS STOW/DEPLOY
(FIO 466-01)
(OMBIT OPS C/L, TAB #170)
Perform Step 1 = STOW RADIATORS~~

MCC

NOTES

STS-4 DETAILED

MET D C N
 DRY 001
 07:00

CDR

PLT

MCC

NOTES

SCLS STDM

AL (B1)
 AUTO
 VERN
 RT 0.2
 DB 1.0

AUTO MWR TO IMU ALIGN ATT

HOUSEKEEPING

UPDATE
 H2O SPLY DUMP
 QTY TR A & B

07:10

IMU ALIGNMENT - S TRK
 (ORBIT OPS C/L, GNC) P 7-2
 STRK ID1 Y1 27, DENER
 21 54, DIPHOR
 ANG DIF1 83.7

Starts 27 & 54
 available from
 1/07:01 to 1/07:44

07:20

REPORT: IMU ALIGN RESULTS

H2O THERM - H2O SPLY DUMP
 (ORBIT OPS C/L, BELMID) p 5-2

APT: IMU ALIGN RESULTS
 ASCENDING NODE
 ORB: 22
 MET: 001-07:10-47
 LOW: 72.5 E

07:30

S TRK OPS DURING H2O DUMP (IN DAYLIGHT)
 (FTO 473-01)
 (ORBIT OPS C/L, GNC, EYD) p 5-2

SUPPLY WATER DUMP
 (ORBIT OPS C/L, LCIS) p 5-2
 Dump TRS A & B
 Dump for
 QTY A - QTY B -

TRK ID1

ANG ERR

AX () () ()

AY () () ()

AZ () () ()

EXECUTION TIME

07:40

0.4 DEG/SEC PTC WPOP - INITIATE
 (FTO 412-01)
 MWR OPTION: R = 132.8
 P = 236
 Y = 60.1
 DWP: R/AUTO/VERN
 (07:49) Initiate MWR

WPC FREEZER TEMP RESET to -09.0°C

VELIM
 CHALTER S.V.

TR
 BLOCK DATA
 WEATHER PRO
 B- 6/24-27

08:00

HET BCK
DAY 001

STS-4 DETAILED

CDR

PLT

MCC

NOTES

R2 (B1)
AUTO
VERN
RT 0.4
DB 1.0

09:10

09:20

09:30

09:40

09:50

10:00

SLEEP

SLEEP

MET

DAY 001

AZ (81)
AUTC
VEM
KT 0.4
DB 1.0

15:10

15:20

15:30

15:40

15:50

16:00

STS-4 DETAILED

COR

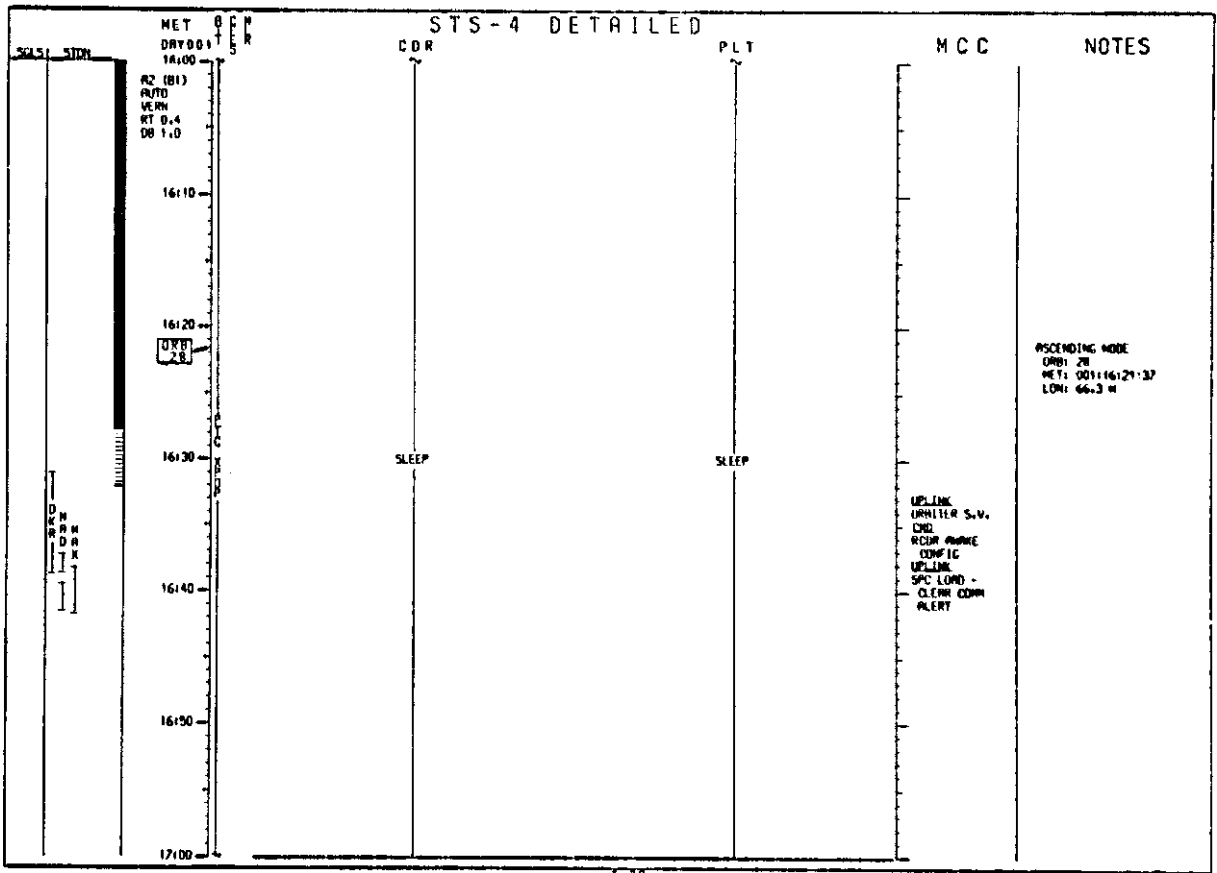
SLEEP

PLT

SLEEP

MCC

NOTES



SC451 STIM		MET DRY 0.1	STS-4 DETAILED		MCC	NOTES
		17:00	COR	PLT		
		17:10	POST SLEEP ACTIVITY (ORBIT OPS D/L, CREW SYS) p 3-4	POST SLEEP ACTIVITY (ORBIT OPS D/L, CREW SYS) p 3-4		
		17:20				
		17:30				
		17:40				
		17:50	TELEPRINTER MESSAGE REVIEW	TELEPRINTER MESSAGE REVIEW		ASCENDING NODE ORB: 29 HE T: 001:17:52:05 LOR: 09.4 u
		18:00				

STS-4 DETAILED

CDR

PLT

MCC

NOTES

NET D
DRYBO

FUEL CELL PRICE - BIDS (See Card)

SUPPLY WATER DUMP

(CONST OPS CXL, ECLS) 7-2

Dump To S A & B

Dump To

CITY M -

CITY B -

UPDATE
H2O SPLY DUMP
QTY TO A & B
IMEDRY CREAM
SH CKPT -
REGD/MT REGD

UPDATE
DMS/RCS
ICORRECT
CDW/IC

10:00
10:10
10:20
10:30
10:40
10:50
11:00

HEAL

HEAL

STS-4 DETAILED

NET

001221

22:00

22:05

22:10

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CDR

P/LT

MCC

NOTES

TECH CONTINUATION SURVEY
(FTO 453-01)

TECH CONTINUATION SURVEY
(FTO 453-01)

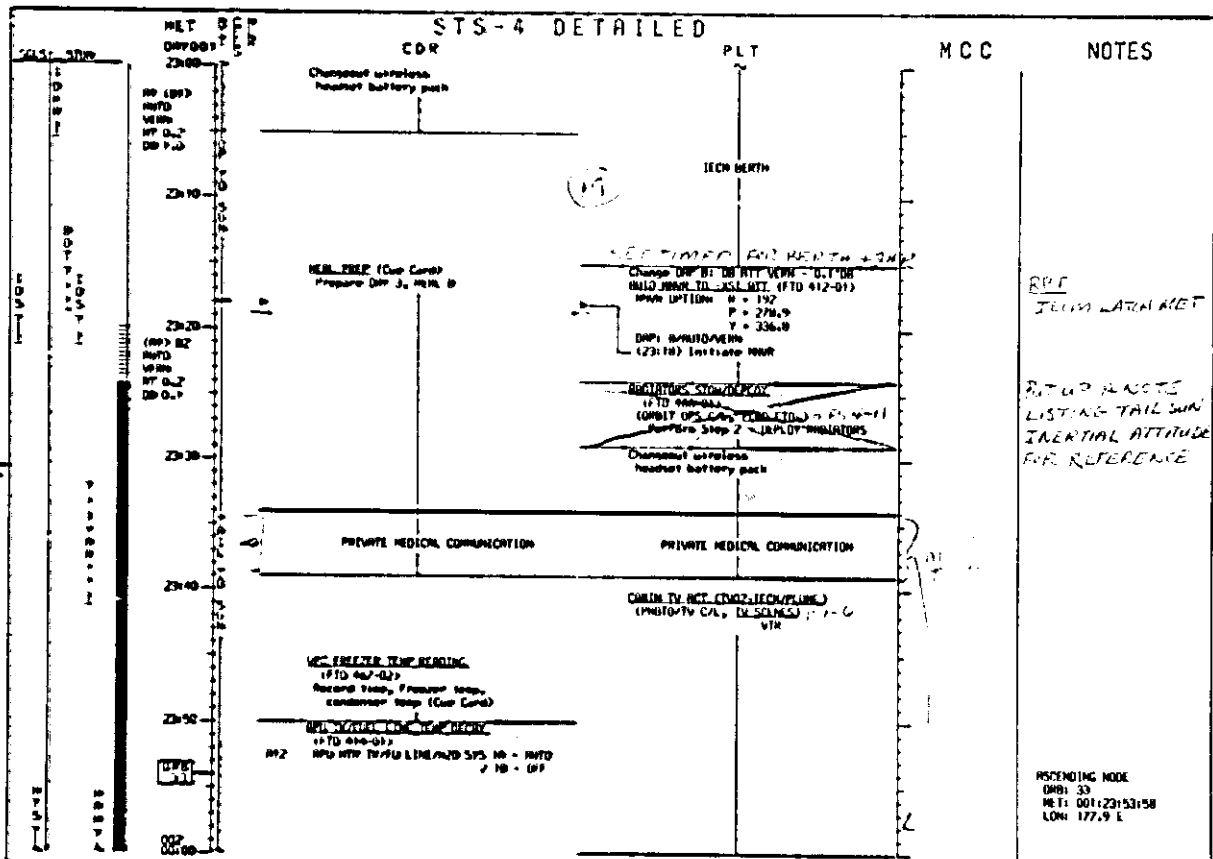
ASCENDING NODE
ORB: 32
NET: 00122123130
LON: 158.9 h

THOT 17

CONTROL GENERAL REVISION ES 110
CONTROL GENERAL REVISION ES 110

JOPL. RECORDS FOR - CO 5888

TECH BIRTH
1800S OPS C/A, TECH BIRTH, 2/5/82
Steps 1 & 2 only



MET
010002
010000

STS-4 DETAILED

CDR

PLT

MCC

NOTES

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MET (PDS)
FLINE SURVEY

TECH FLINE SURVEY
(FTD 454-81)
(PDS OPS CA, FLINE SURVEY)

TECH FLINE SURVEY
(FTD 454-81)
(PDS OPS CA, FLINE SURVEY)

TECH LIMEKIN
(PDS OPS CA, TECH LIMEKIN)
Steps 3 & 4 only

PRT
TECH CYCLE AND
RELEASE META

ASCENDING NODE
ORH: 34
MET: 00210124126
LON: 154.8 E

UPLINK
ORBITER S.V.

STS-4 DETAILED

NET 0
000002

CDR

PLT

MCC

NOTES

REP (00)
PLUM
SURVEY

02:10

02:20

02:30

02:40

02:50

02:00

TECH PLUM SURVEY
(PTD 454-01)

TECH PLUM SURVEY
(PTD 454-01)

TECH
MULCH-DATA
WARTH R. PRO
D- 97.36-39

ASCENDING MODE
ORB: 35
M.T: 002102154154
LOW: 131.6 E

STS-4 DETAILED

MET DEP
02000Z
01000

CDR

PLT

MCC

NOTES

Stars 22 & 51
available from
270315Z to 270413Z

AUTO HHR TO IMU ALIGN RTT

HOUSEKEEPING

IMU ALIGNMENT CHECK
(LIMIT OPS CA, CAL) P7-A
STAR ID: -9, 22, 46, 71W
-2, 50, 471W
ANG DEP: 04.0

STAR TRACKER CLOSING THERMAL
JASPER, (FTO 492-02)
STAR TRNG PWR (2nd) - OFF

Record MET
IMU ALIGN TO JASPER (FTO 492-01)

HEAT PREP (Cue Card)
Prepare DRY J, HEAT C

DRY: 5700-0000
(0422) Instrate HHR

HEAT PREP (Cue Card)
Prepare DRY J, HEAT C

HOUSEKEEPING

REPORT IMU ALIGN RESULTS

EXERCISE

DEL POWER UP (DUC)

0715H (D1) PER CLMP 1.2, 3 SEC (3000) - ON

UPLINK
ORBITER S.V.

ASCENDING NODE
ORB: 36
MET: 002104125122
LON: 108.5 E

RPT: IMU ALIGN RESULTS

UPDATE
MET &
HURN PHO

IMU ALIGNMENT

TRY ID: _____ ANG LAR: _____
ANG: 2 3

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() () ()

1 2
() () ()

2 3
() () ()

EXECUTION TIME: _____

SC107 STAR

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STS-4 DETAILED

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NOTES

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00:00

DET. POWER COMB
RSTRN DFI POW COMB 1,2,3 SCS (three) - OFF

EXERCISE

NO. 0000000000 (RCS 1)
LIMIT OPS CA, RCS
(no 2nd Burn)

1. AUTO HMR TO Burn ATY

RCS 1 (205:45:00)

ALTR HMR TO - USE NET (FTD 012-01)

MRD OPTION: X = 142
P = 278.9
Y = 306.9

DAP: B/AUTOMERS
(03:47) Inst. kdr HMR

0140F Primary RJD DRIVER (right) - OFF
0150F
0160F

SAMPLE WATER DUMP

(LIMIT OPS CA, RCS)

Dump 715 A & B

Dump 701

QTY A = QTY B =

SINGLE 42 APC OPS

(LIMIT OPS CA, RCS)

0140F
LIMIT POT CA, RCS

LEGEND:
H2O SPLY DUMP
QTY TX A & B

ASCENDING NODE
ORB: 37
NET: 002:05:55:50
LOH: 95.3 E

NET
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STS-4 DETRIELED

CDR

PLT

MCC

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REL

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STS-4 DETAILED

CDR

PLT

MCC

NOTES

EXPERIMENT OPERATIONS DOCUMENTATION
(PHOTO-TV CAL, TAB 23/24)

EXPERIMENT OPERATIONS DOCUMENTATION
(PHOTO-TV CAL, TAB 23/25)

MCC ONLY
COORD COMFOR
LIMITS CLEANUP
FOR CREW SLEEP

07:00
07:10
07:20
07:30
07:40
07:50
08:00

UPPER
18

(14)

LINK CELL PURGE - RND (Cue Card)

CONTROLLER REPLACEMENT
(5 into H)

PRE SLEEP ACTIVITY
(UPBIT OPS CAL, CREW SYS)

PRE SLEEP ACTIVITY
(UPBIT OPS CAL, CREW SYS)

ASCENDING NODE
ORBI 30
NET: 002:07:26:118
LDN: 62:2 E

Urn

UNLINK
SPEC LOAD -
1ST EDWH
ALERT
END
NCDR SLEEP
CONFIG

STS-4 DETAILED

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080000

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080100

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08:50

08:00

CDR

PLT

MCC

NOTES

PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

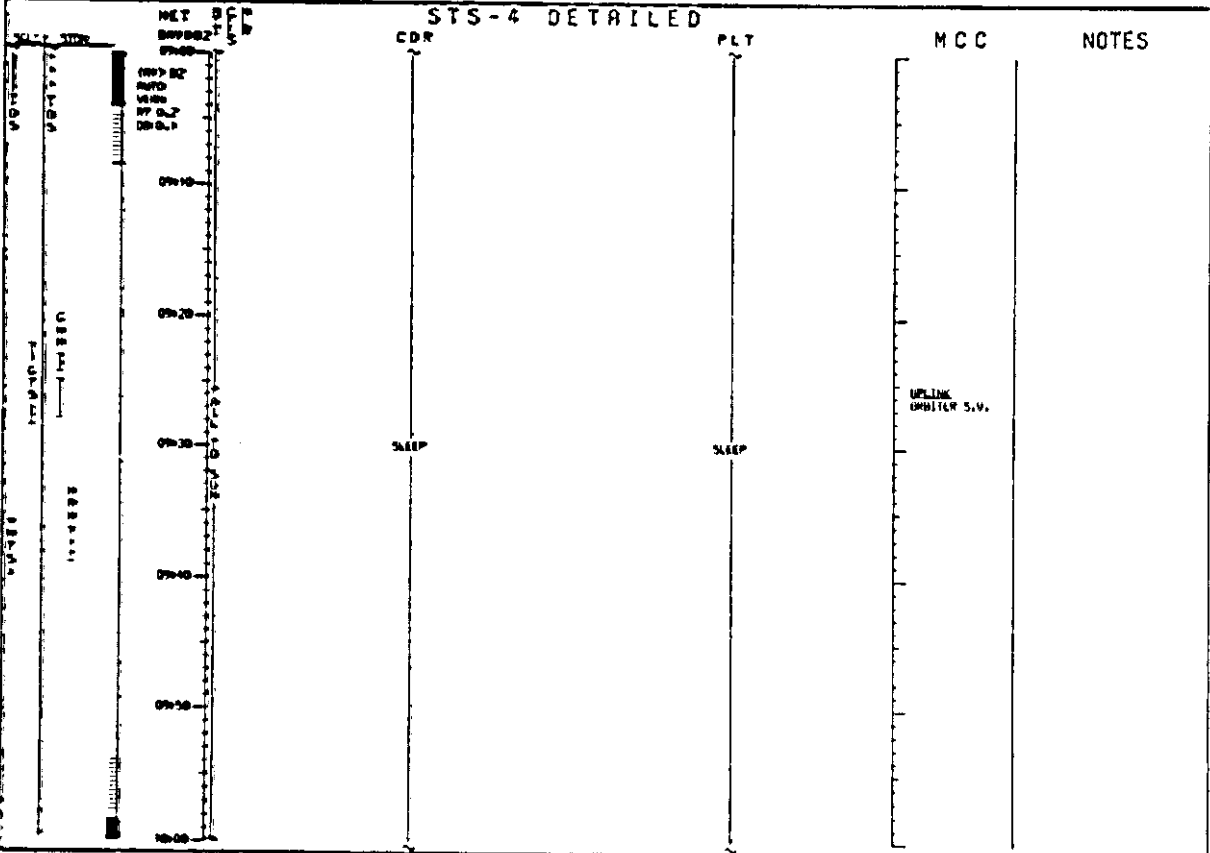
SLEEP

SLEEP

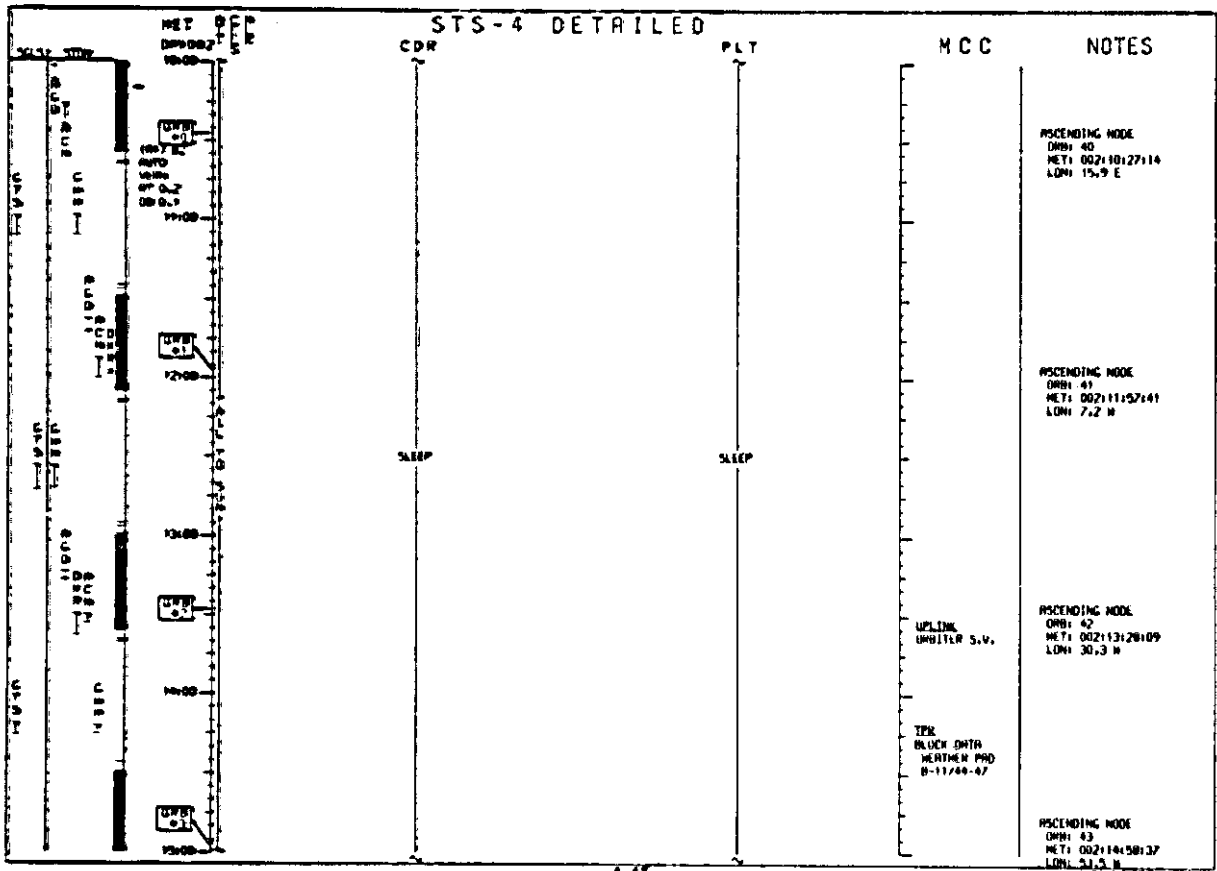
TER
BLOCK DATA
WEATHER PRO
8-10/40-43

ASCENDING NODE
DWH: 39
MET: 002108156146
LDW: 39.0 E

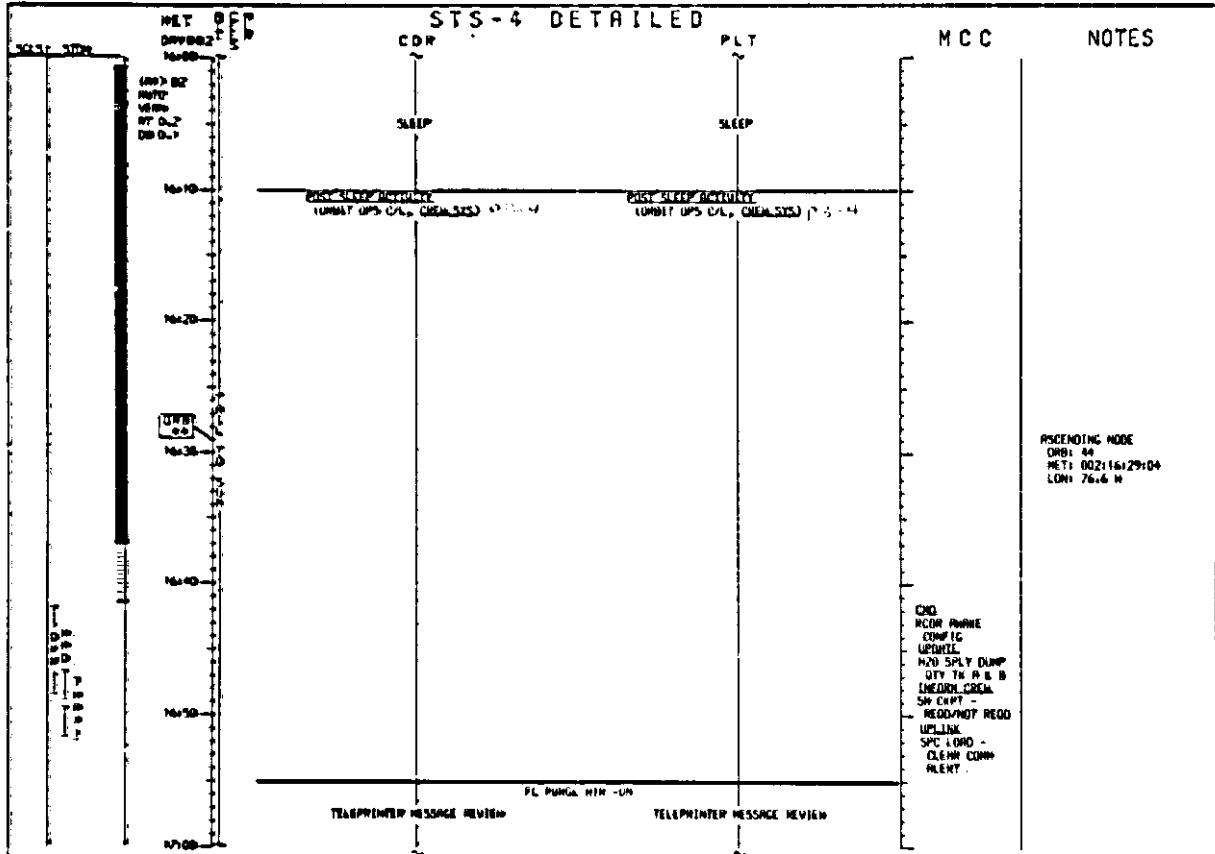
STS-4 DETAILED

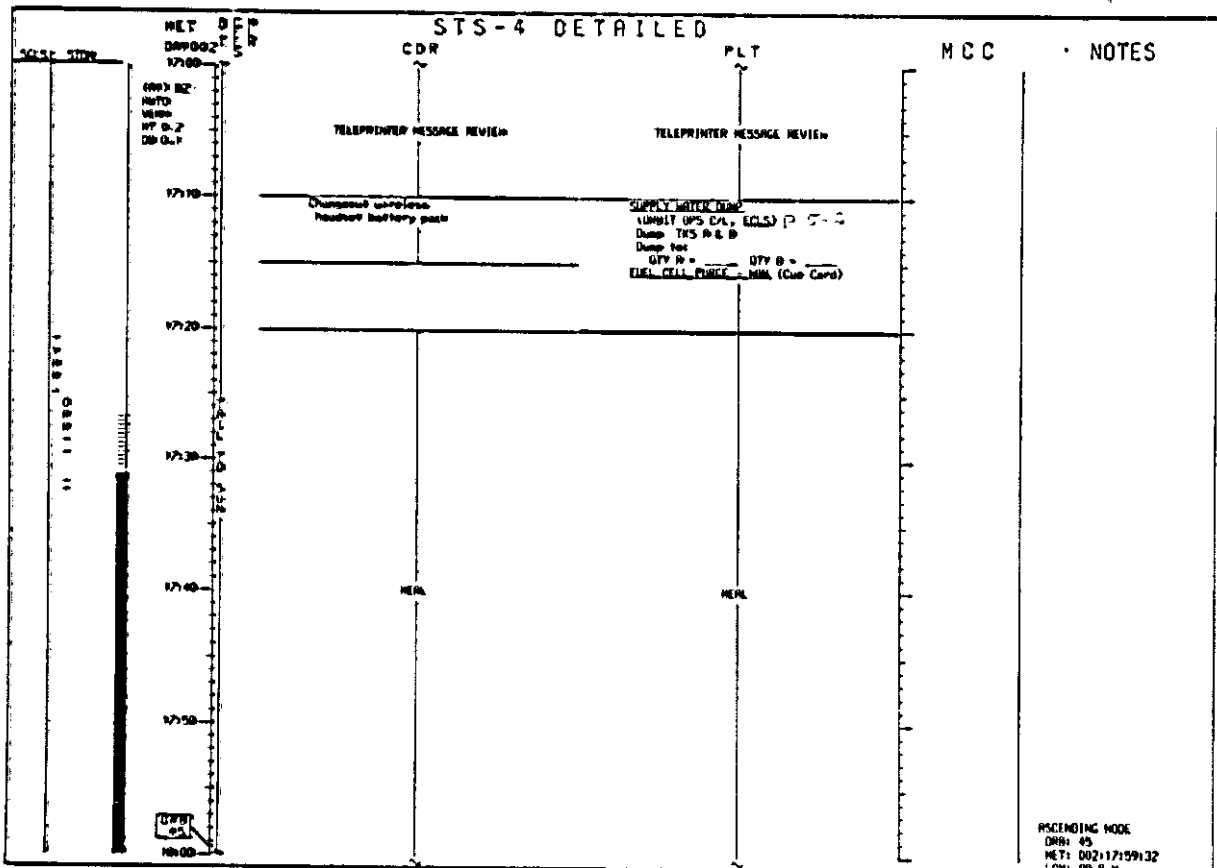


STS-4 DETAILED

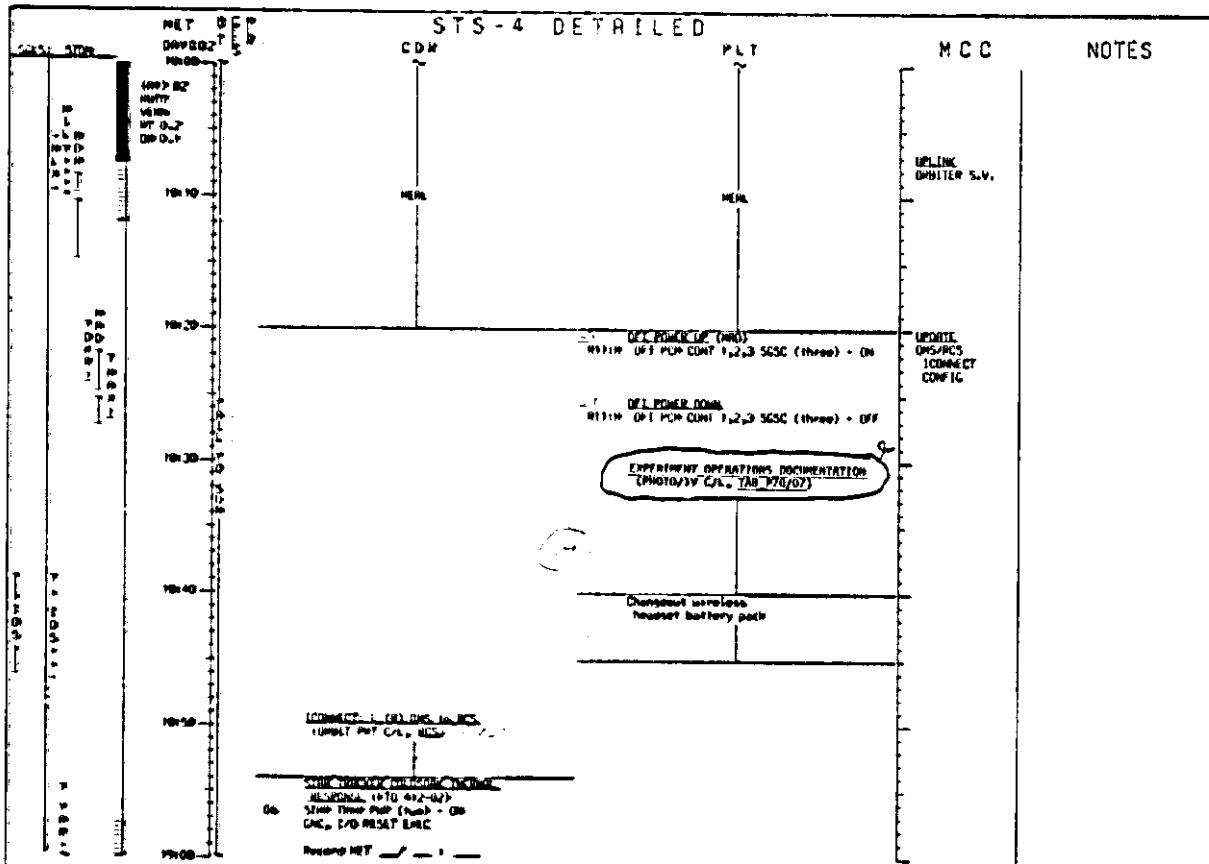


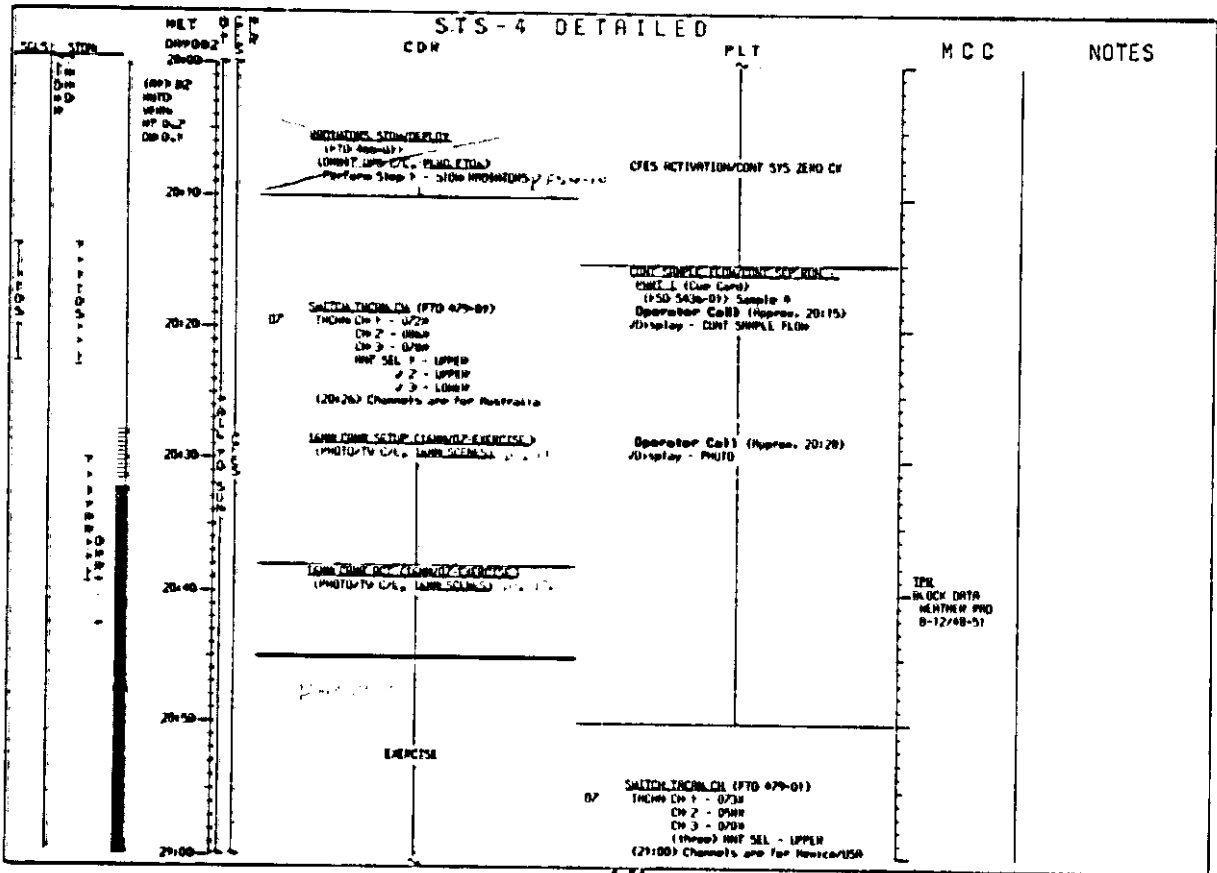
FLT DAY 4





STS-4 DETAILED





STS-4 DETAILED

NET
099002

27:00

(09) 02

NETO
VISA
MF 0.2
DB 0.7

27:10

27:20

27:30

27:40

27:50

27:00

CDR

EXERCISE

PHOTO TO CDR (LAWRENCE)

OP
SARVA (170 475-01)
TACOM Cdr 1 - 0900
Cdr 2 - 0900
Cdr 3 - 0920
MVF SEL 1 - LNER
2 - UPPER
3 - LNER
(27:30) Channels are for Africa

HOUSEKEEPING

COND SEP RUM - PHOT II (Cur Card)
(150 5420-01) Sample 6
Operation Card (Approx. 27:00)
J/display - PHOTO

PLT

MCC

NOTES

ASCEND... NODE
DMS: 47
NET: 00212100127
LON: 146.0 M

STS-4 DETAILED

CDR

PLT

MCC

NOTES

SACCOL INCH/OL (FTD 479-09)

OP
 TRACK CH 1 - 0700; INT SEL 1 - 10MIN
 CH 2 - 0700; 2 - UPPER
 CH 3 - 0700; 3 - LOWER
 (2300) Channels are for Africa

AVINSENT NEW COLLECTOR

1800 02
 1810
 1820
 1830
 1840

2310

2320

2330

2340

2350

0000
 0010

NEAL

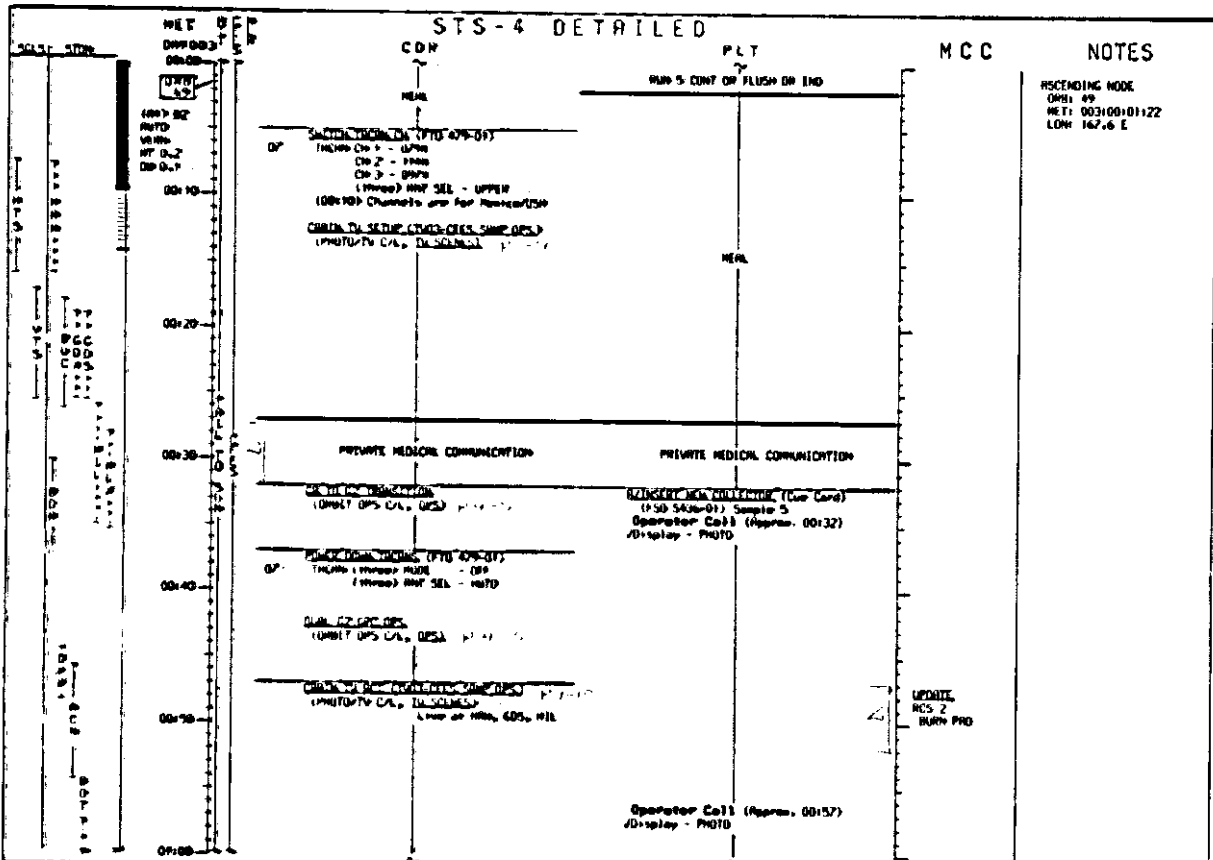
SACCOL INCH/OL (FTD 479-09)

OP
 TRACK CH 1 - 0720
 CH 2 - 0720
 CH 3 - 0720
 (Three) INT SEL 1 - UPPER
 2 - LOWER
 3 - LOWER
 (2340) Channels are for Australia

NEW S. CONT. DR. FLUSH DR. END

(Cue Card)
 (FSO 3436-09) Sample 5
 Operator Call (Approx. 2314Z)
 Display - SUB 5 CONT DR
 FLUSH DR END

Operator Call (Approx. 2349)
 Display - PHOTO



STS-4 DETAILED

MCC

NOTES

MET 01:00
 DWP003
 (AP) 02
 AUTO
 VIBR
 RT 0.2
 DB 0.7
 01:10
 (AP) 02
 AUTO
 VIBR
 RT 0.2
 DB 7.0
 01:20
 (AP) 02
 AUTO
 VIBR
 RT 0.5
 DB 3.0
 01:30
 (AP) 02
 AUTO
 VIBR
 RT 0.2
 DB 7.0
 01:40
 (AP) 02
 AUTO
 VIBR
 RT 0.2
 DB 7.0
 01:50
 (AP) 02
 AUTO
 VIBR
 RT 0.2
 DB 7.0
 02:00

CDR

PLT

ORDIN TO ACT

Level of MMS, COS, MIL

WINGERT NEW COLLECTOR

CALCULATE RMS BURST (MCS-2)
 (MMS1 OPS CAL & MCS) 01:10
 (MMS 202 MMS)

AUTO HMRP TO BURST RTT

DWP01 - Primary RUD DRIVER (single) - 01
 OPS 2 (3/01:32:00)

AUTO HMRP TO PISC BURST ACT.
 (Level MMS RTT)
 DWP: ANTI-INTERFERENCE
 Level: BURST HMRP

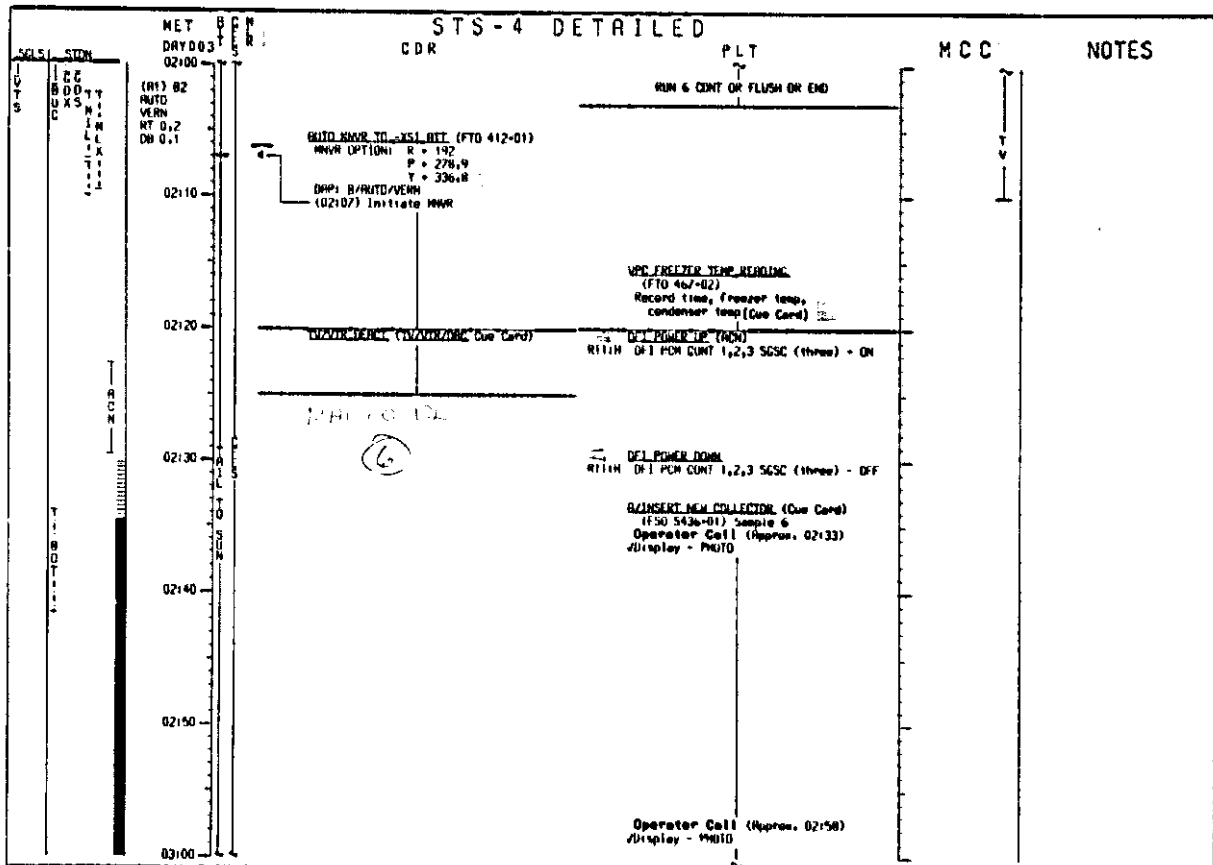
SINGLE CP OPS
 (MMS1 OPS CAL, MCS) 01:10

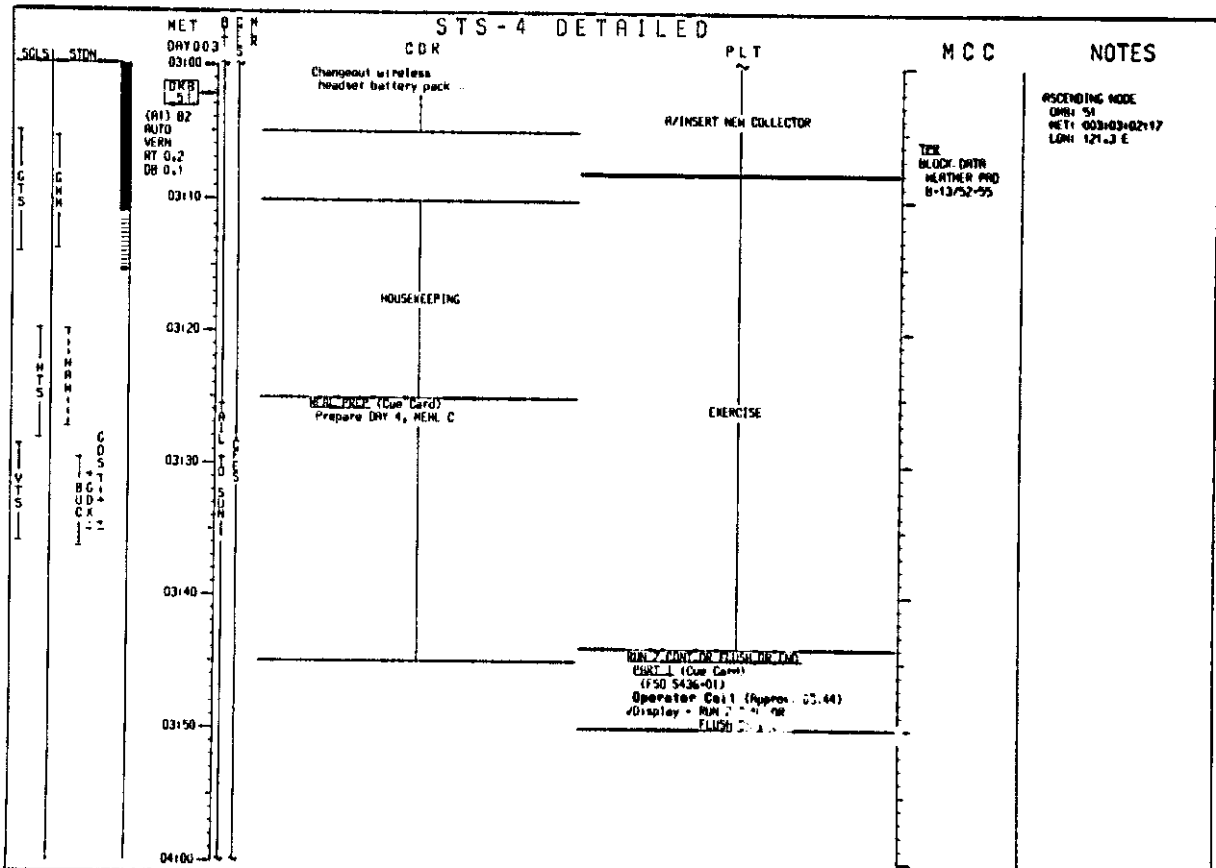
GOING GO FOR TV TRANSMISSION
 RUN & CONT OR ELISA OR EAG
 (Dwp Card)
 (FSD 5436-01) Sample &
 Operator Call (Approx. 01:43)
 JDisplay - RUN & CONT OR
 PLUSOR OR END

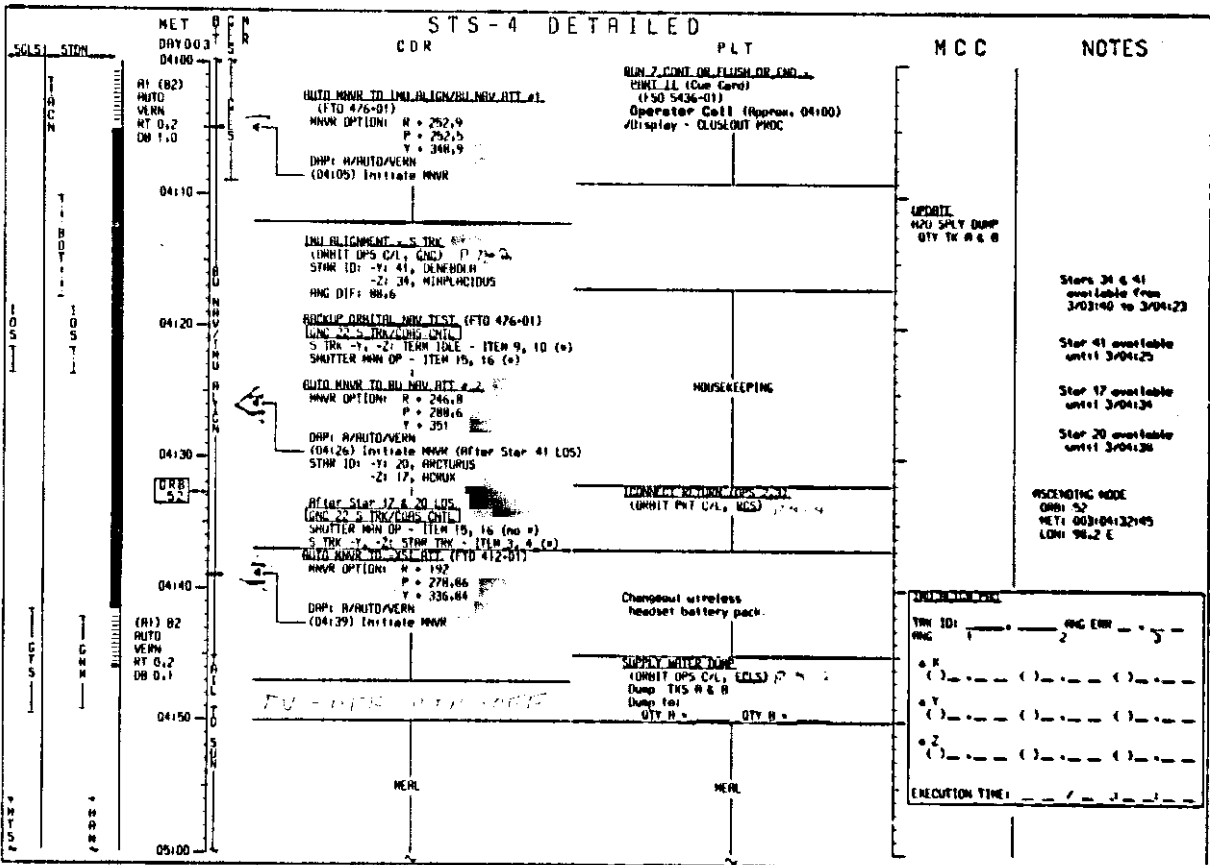
Operator Call (Approx. 01:50)
 JDisplay - AUTO

ASCENDING MODE
 ORB: 50
 MET: 003:01:31:50
 LONI 144.4 E

DOWNLINK
 01:37:00







TA, 4

TD, 4

STS-4 DETAILED

NET B C H
DAY 003 T C R

05:00
05:10
05:20
05:30
05:40
05:50
06:00

CDR

PLT

MCC

NOTES

(A1) #2
AUTO
VERN
RT 0.2
DB 0.1

MEAL

MEAL

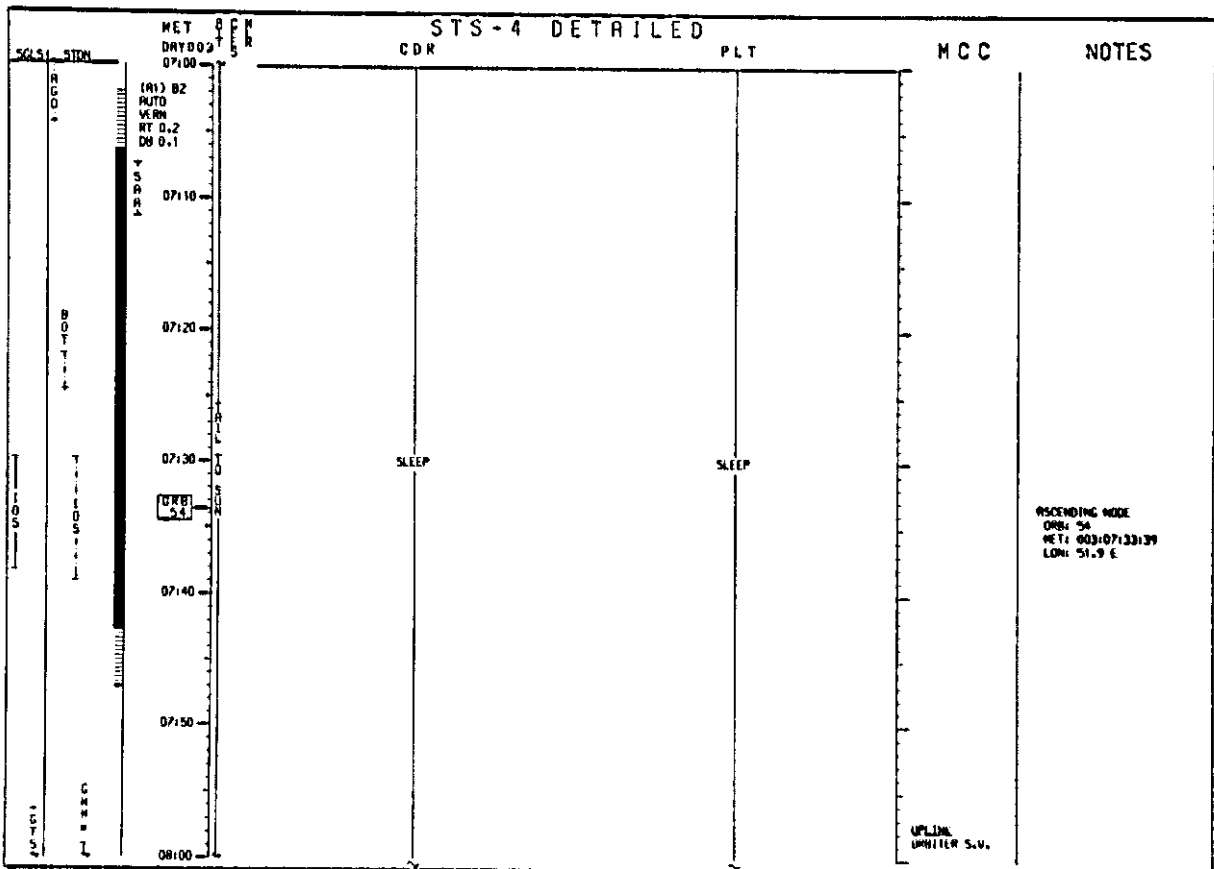
(4)

(5)

CAPRIED OPERATIONS POST-OPERATION
(PHOTO/IV CAL. TAB. P70706)

REPORT: IMU ALIGN RESULTS
ANNUNCIATOR, COLLAMP TEST
(ORBIT OPS C/L, MES) PGC-5

RPT: IMU ALIGN RESULTS



STS-4 DETAILED

NET 8
DRY 003
08:00

CDR

PLT

MCC

NOTES

(R1) B2
AUTO
VERN
RT 0.2
DB 0.1

09:00

09:55

10:00

10:55

11:00

12:00

13:00

SLEEP

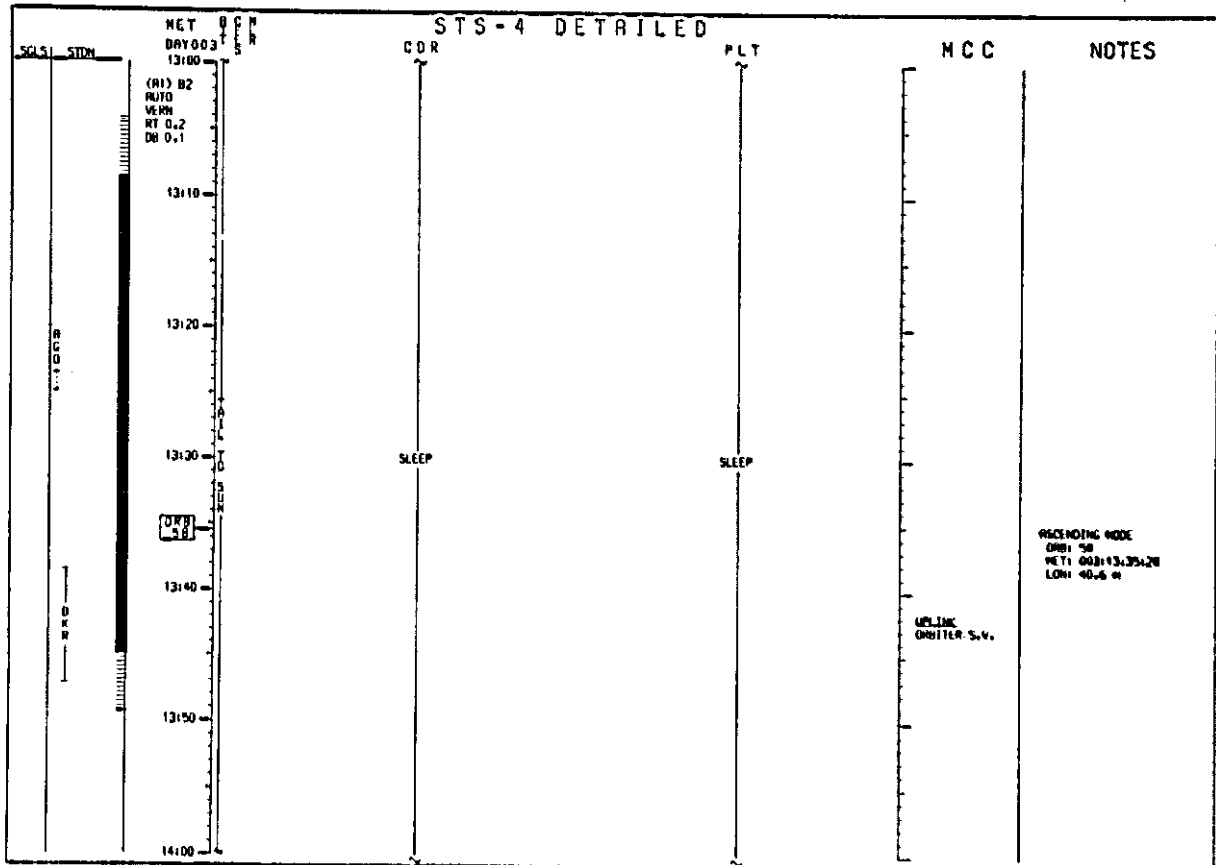
SLEEP

TER
BLOCK DATA
WEATHER PRO
8-14/56-59

ASCENDING NODE
ORR: 95
NET: 003:09:04+07
LON: 26.7 E

ASCENDING NODE
ORR: 96
NET: 003:10:34+34
LON: 5.6 E

ASCENDING NODE
ORR: 97
NET: 003:12:05+09
LON: 17.5 W

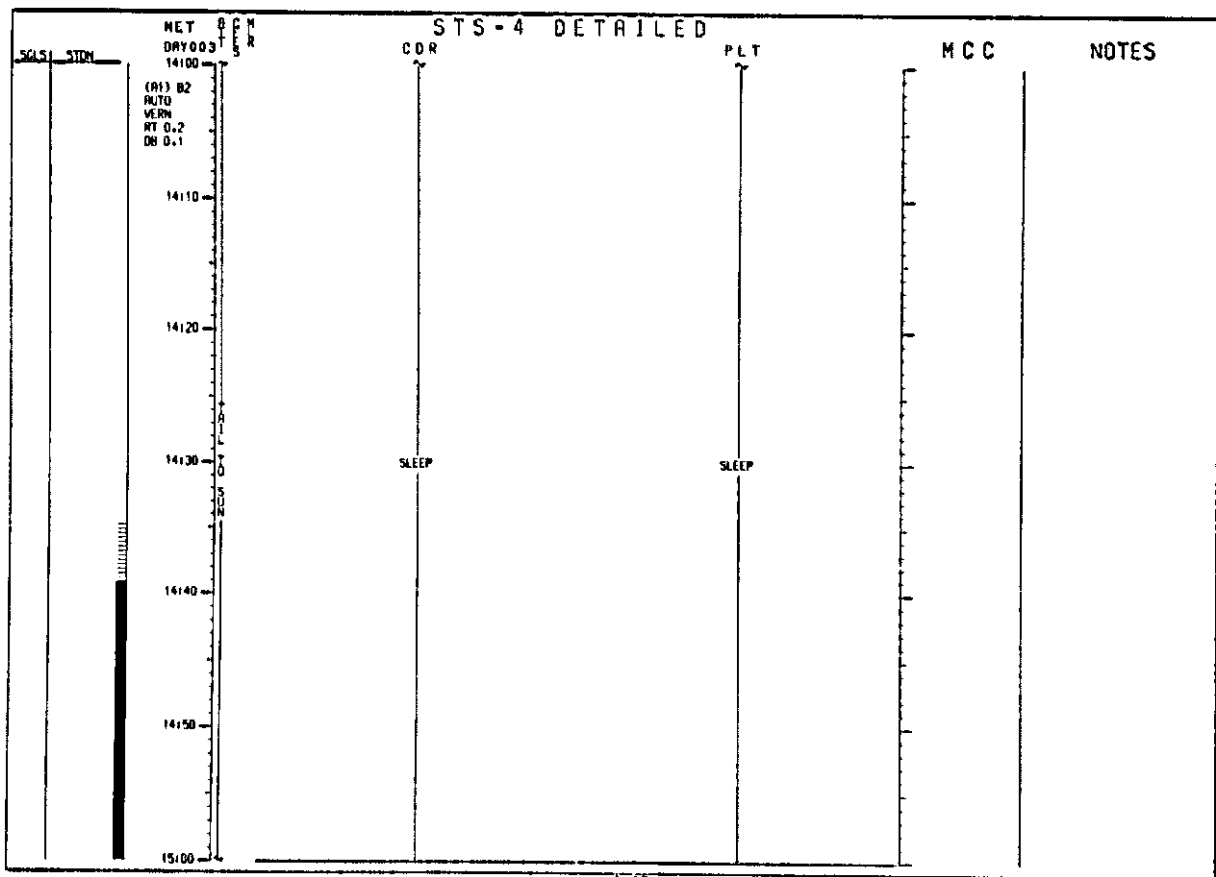


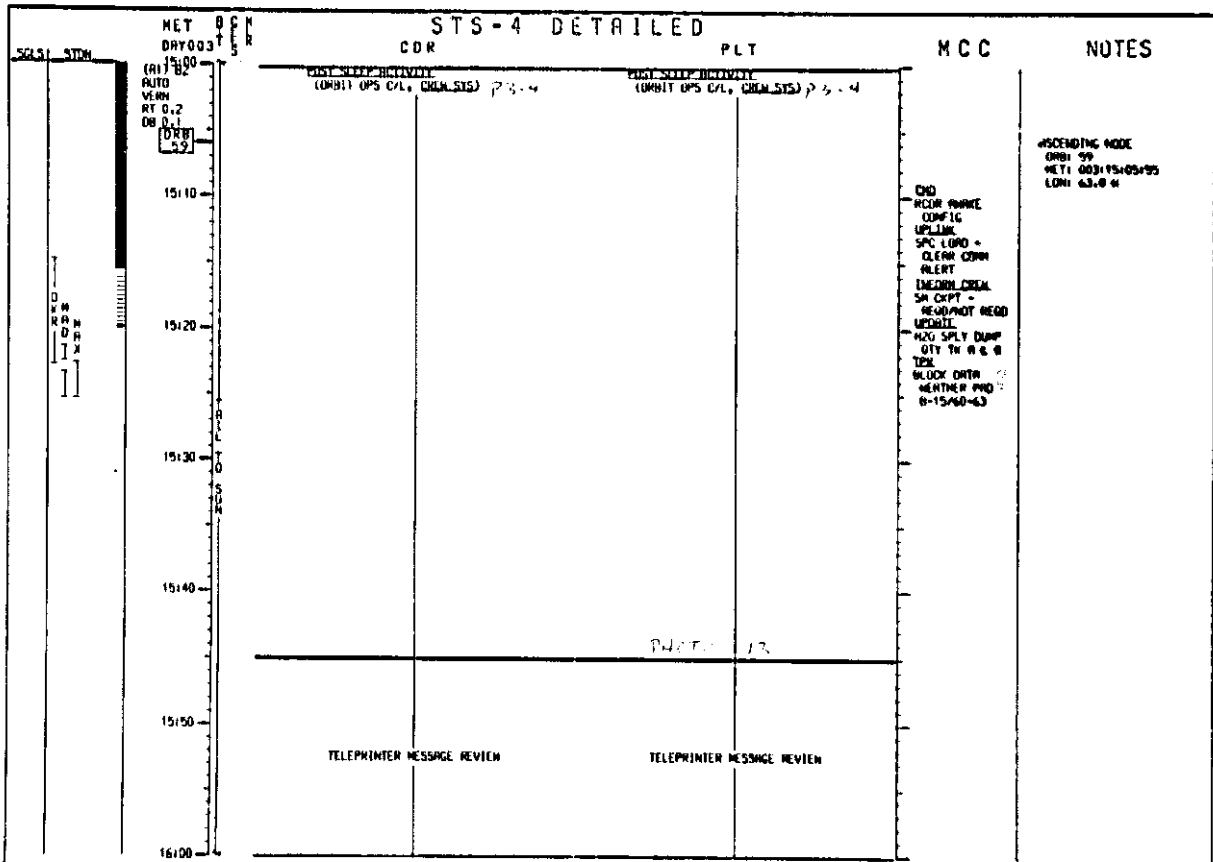
4-67

5/14/82 SYS0714

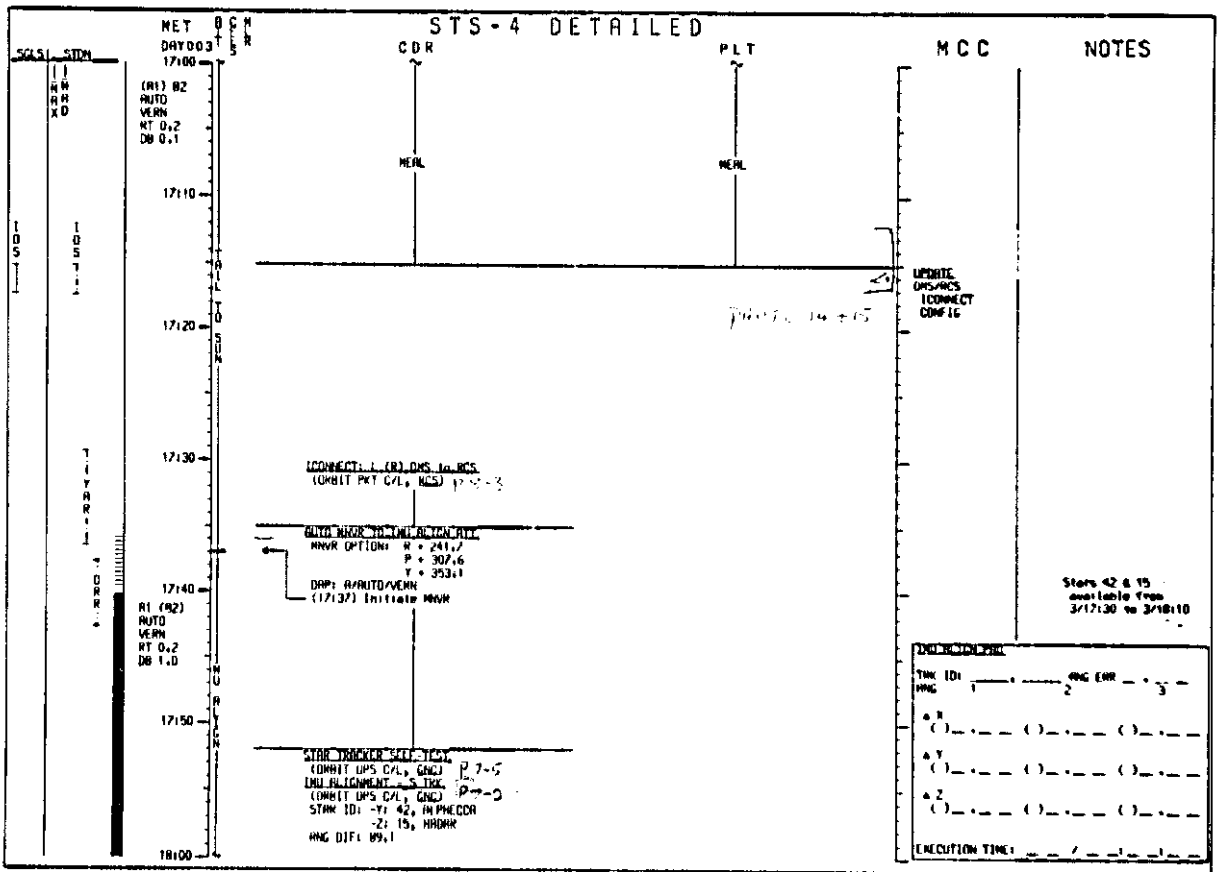
FLY DAY 5

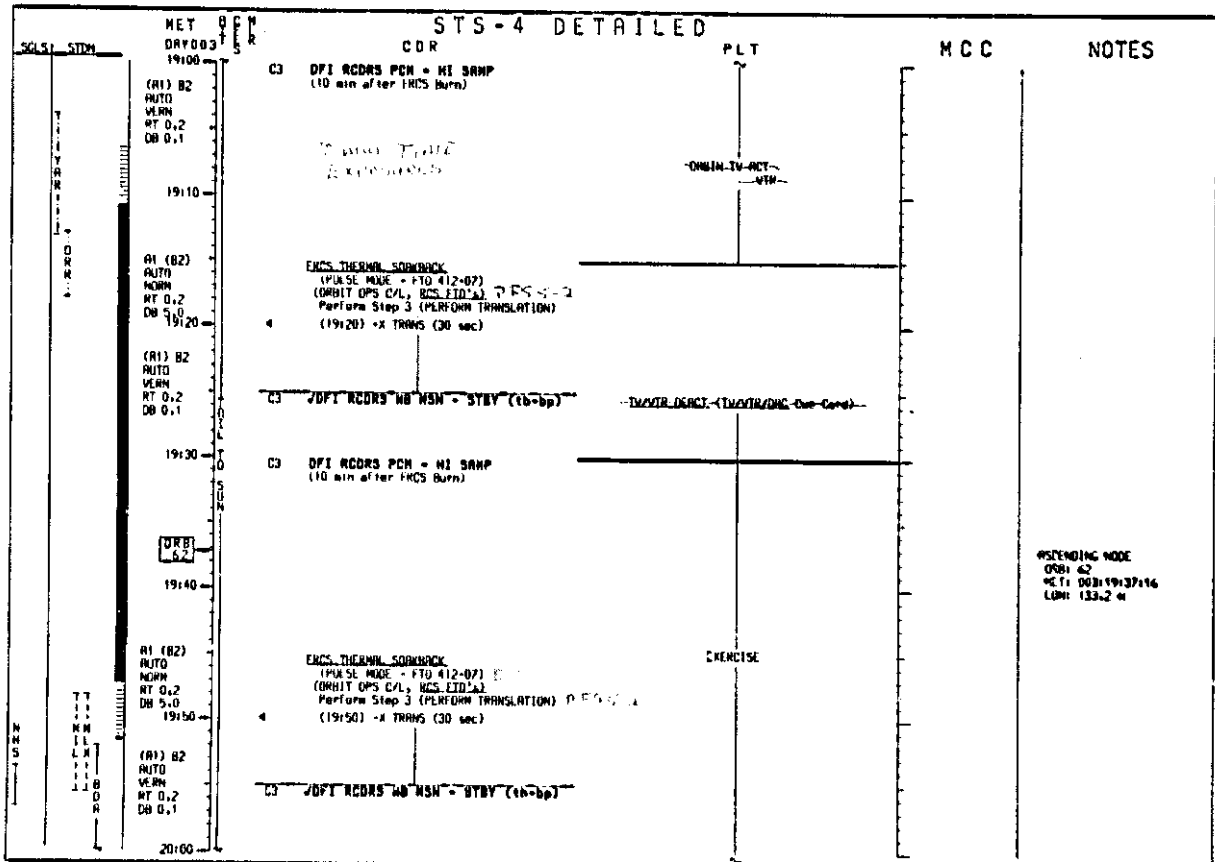
FLT DAY 5

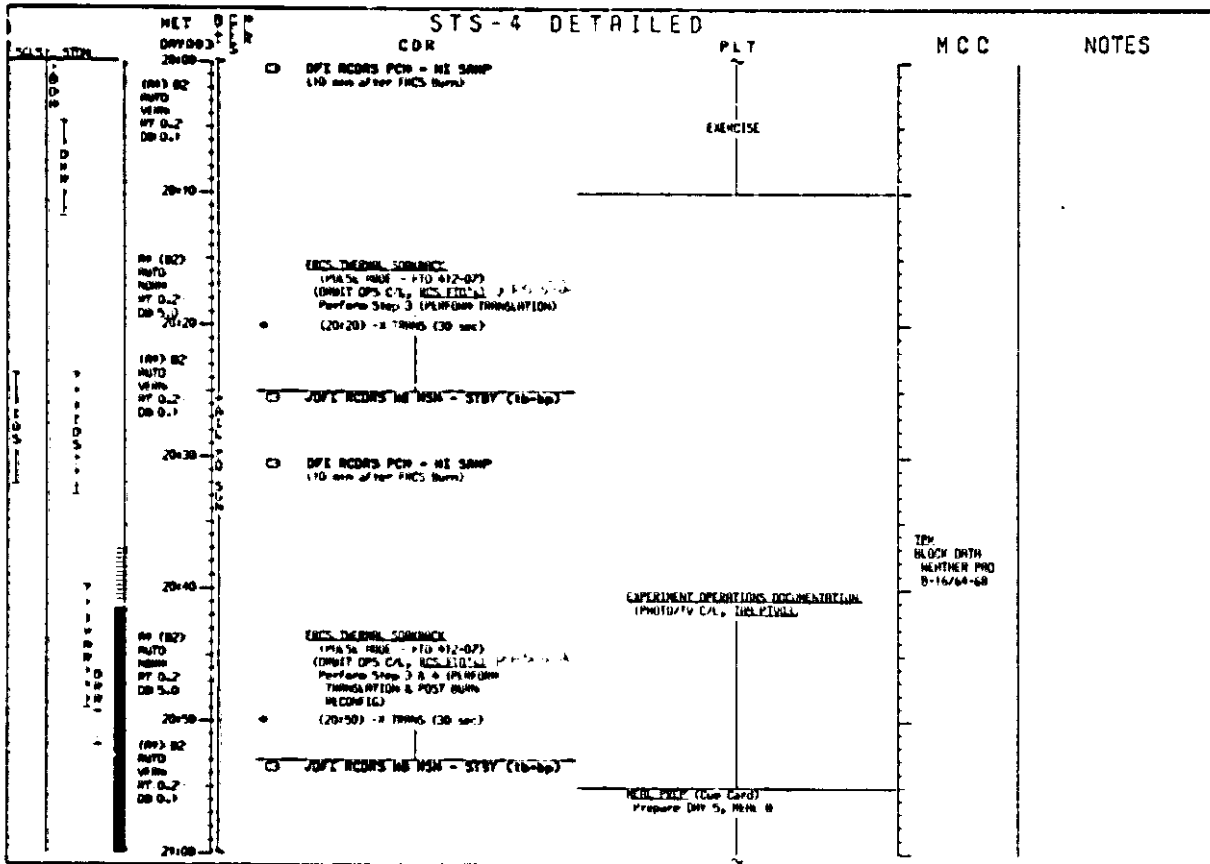


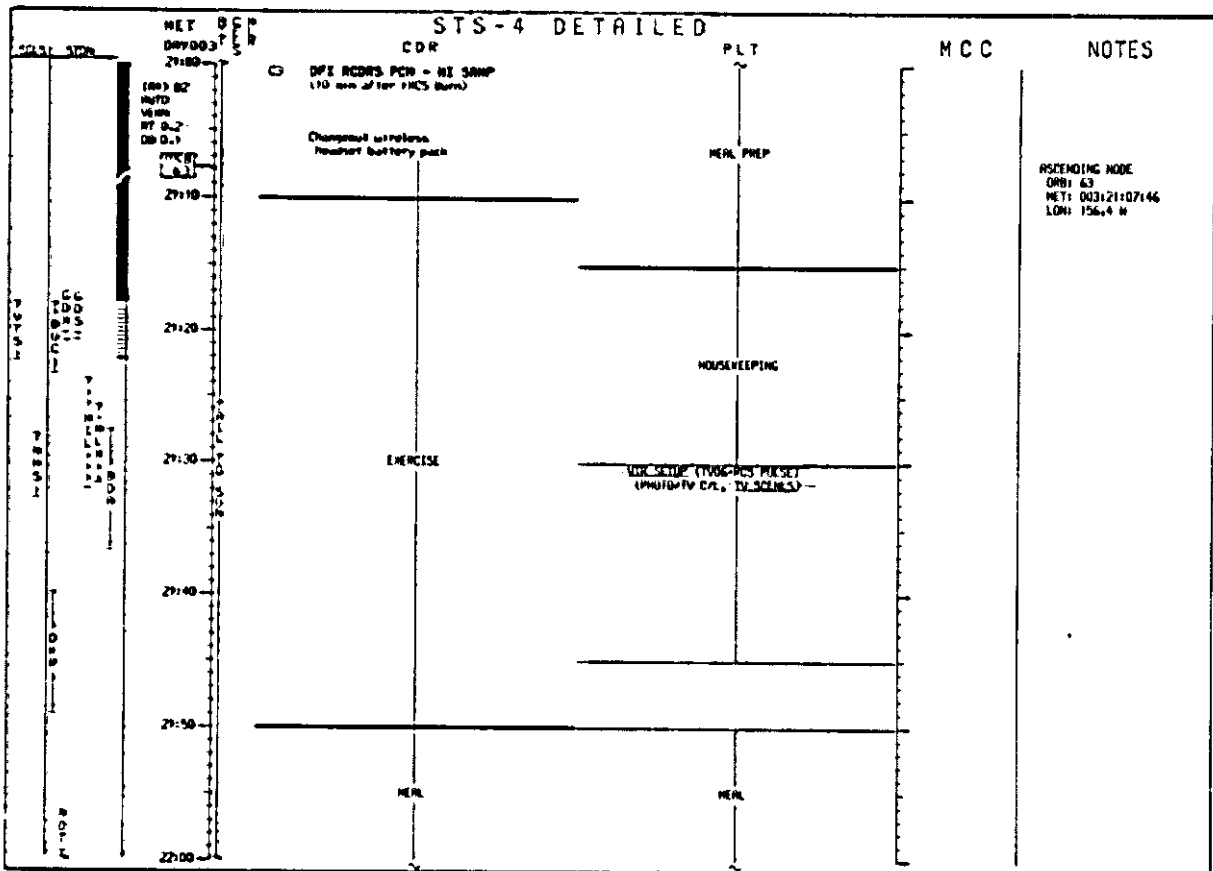


STS-4 DETAILED









STS-4 DETAILED

MET DEF

000000
 22:00
 1000 82
 1000 82
 1000 82
 1000 82
 1000 82

COR

PLT

MCC

NOTES

22:10

22:20

22:30

22:40

22:50

23:00

HEAL

HEAL

HOUSEKEEPING

Chaseout wireless headset battery pack

LOW FLIGHTBACK (PHOTOVHS PRESET)
 (PHOTOVIEW CAL, DL SCENES)
 VIEW on MIL
 (23:00-23:09)
 CMDR GO FOR TV TRANSMISSION

UPLINK ORBITER S.V.

ASCENDING NODE
 ORB: 6A
 MET: 003:22:30:13
 LOM: 179.5 W

STS-4 DETAILED

NET 0100

DAY 003

23:00

(00) 02
AUTO
VIR
PT 0.2
DB 0.1

CDR
HOUSEKEEPING

P.L.T

VTR PLAYBACK
VTR at NIL

MCC

NOTES

DOWNLINK
12.008

23:10

HOUSEKEEPING (HOUSEKEEPING Cue Card)

23:20

00 (02)
AUTO
VIR
PT 0.2
DB 0.1

PREC. REC. HOLD TEST (NON)
(PTD 077-01)
(COMPT OPS C/L, GNC/ETOL)

(9)

UPDATE
TACHO DATA

23:30

(00) 02
AUTO
VIR
PT 0.2
DB 0.1

23:40

00 (02)
AUTO
VIR
PT 0.2
DB 0.1

~~TACHO TRACKING
(PTD 477-01)
COMPT OPS C/L, GNC/ETOL~~

~~G2 TO G1 TRANSITION~~

23:50

~~TACHO TRACKING (PTD 477-01)
COMPT OPS C/L, GNC/ETOL~~

~~TACHO TRACKING SITE~~

00:00

STS-4 DETAILED

CDR

PLT

MCC

NOTES

NET 0
00:00

AS 1827
AUTO
V8.0
RT 0.2
DP 1.0

00:10

AS 1838
AUTO
V8.0
RT 0.2
DP 0.7

00:20

00:30

00:40

00:50

00:00

LABOR CONTROL (LAB/PRO-AUTO/MAIN)
(PRO/TV C/L, LAB/SCENES)

ON TO C2 TRANSITION

AUTO IMAGE TRIGGER (FTO 412-01)

MAIN OPTION: $M = 192$
 $N = 278.9$
 $P = 236.8$
DAP: 6/AUTO/VERN
(00152) Instrate MAIN

LABOR CONTROL (LAB/PRO-AUTO/MAIN)
(PRO/TV C/L, LAB/SCENES)

PRIVATE MEDICAL COMMUNICATION

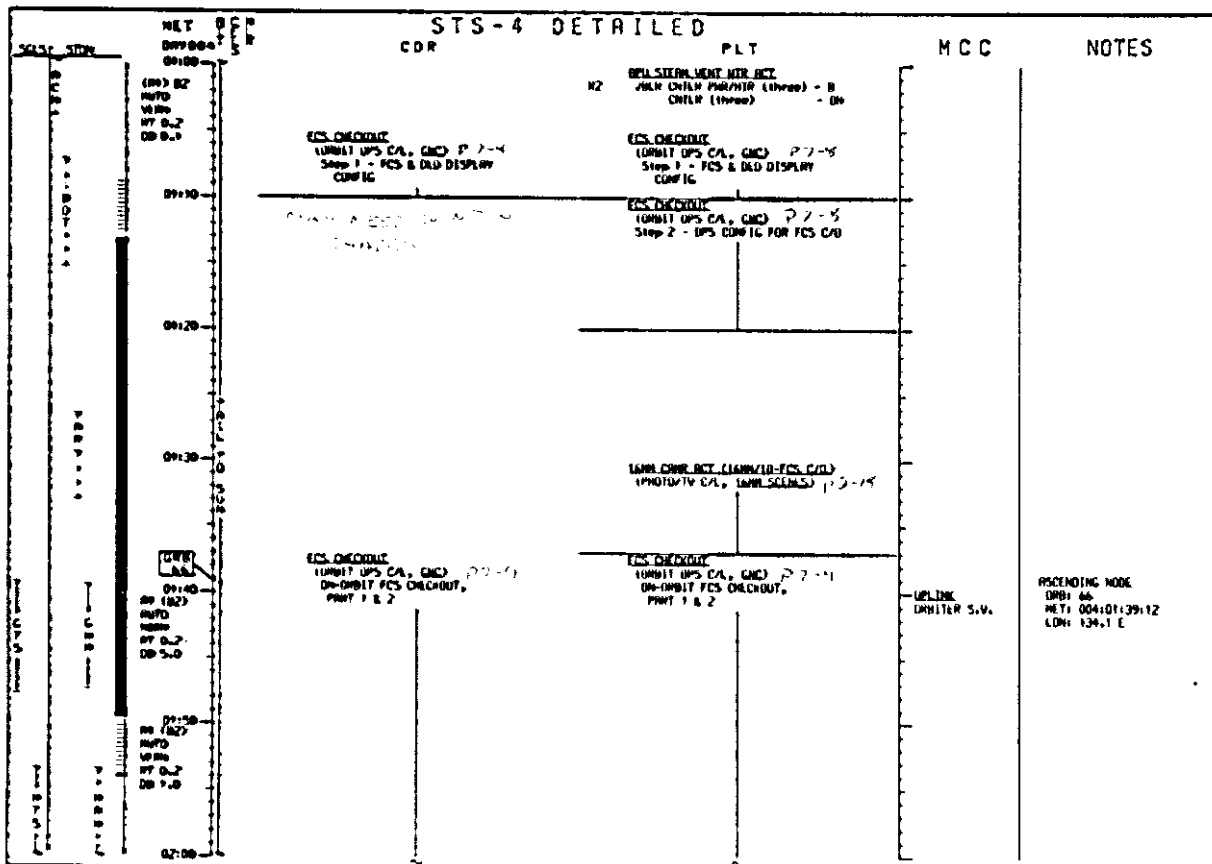
PRIVATE MEDICAL COMMUNICATION

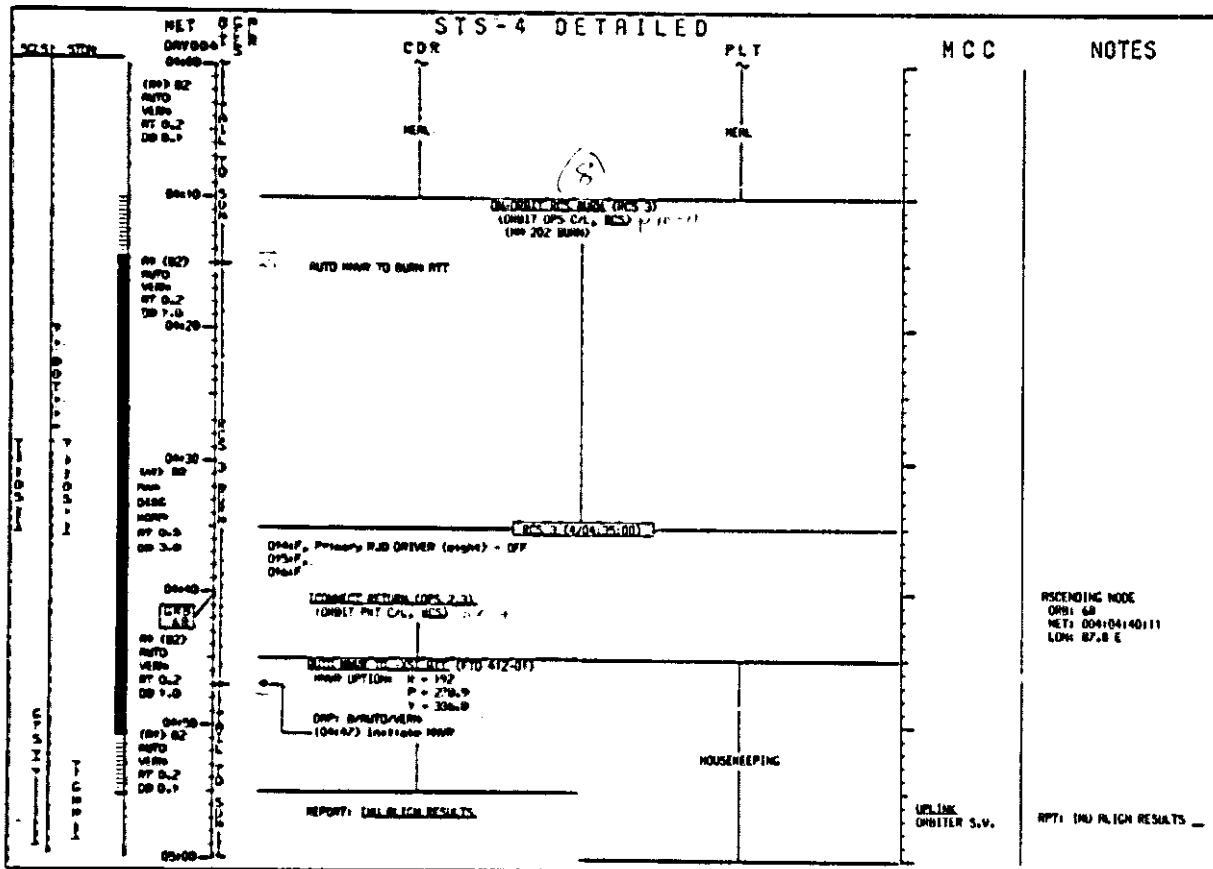
LABOR CONTROL SETUP (LAB/PRO/PCS C/O)
(PRO/TV C/L, LAB/SCENES)

EDGE UP TRACING (FTO 479-01)
OF TRIMS (three) MODE - T/R
(three) INT SEL - LDMR
Ch 1 HQ20
Ch 2 0/000
Ch 3 0/000

(00100) Channels are for News/USA

ASCENDING NODE
ORB: 65
NET: 004:00100143
LON: 157.3 E





NET
DRY 004
06:00

STS-4 DETAILED

CDR

PLT

MCC

NOTES

*CONTINUED ENTERTAINMENT
IN DETAILED LOGS
(TURN OFF FIRST)*

(06:00) 02
MFD
VARS
07 0.2
08 0.1

06:10
 (MFD)
0.2

06:20

PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

06:30

UPLINK
SPC LOAD -
1ST COMM
ALERT
END
HLOR SLEEP
CONFIG

06:40

06:50

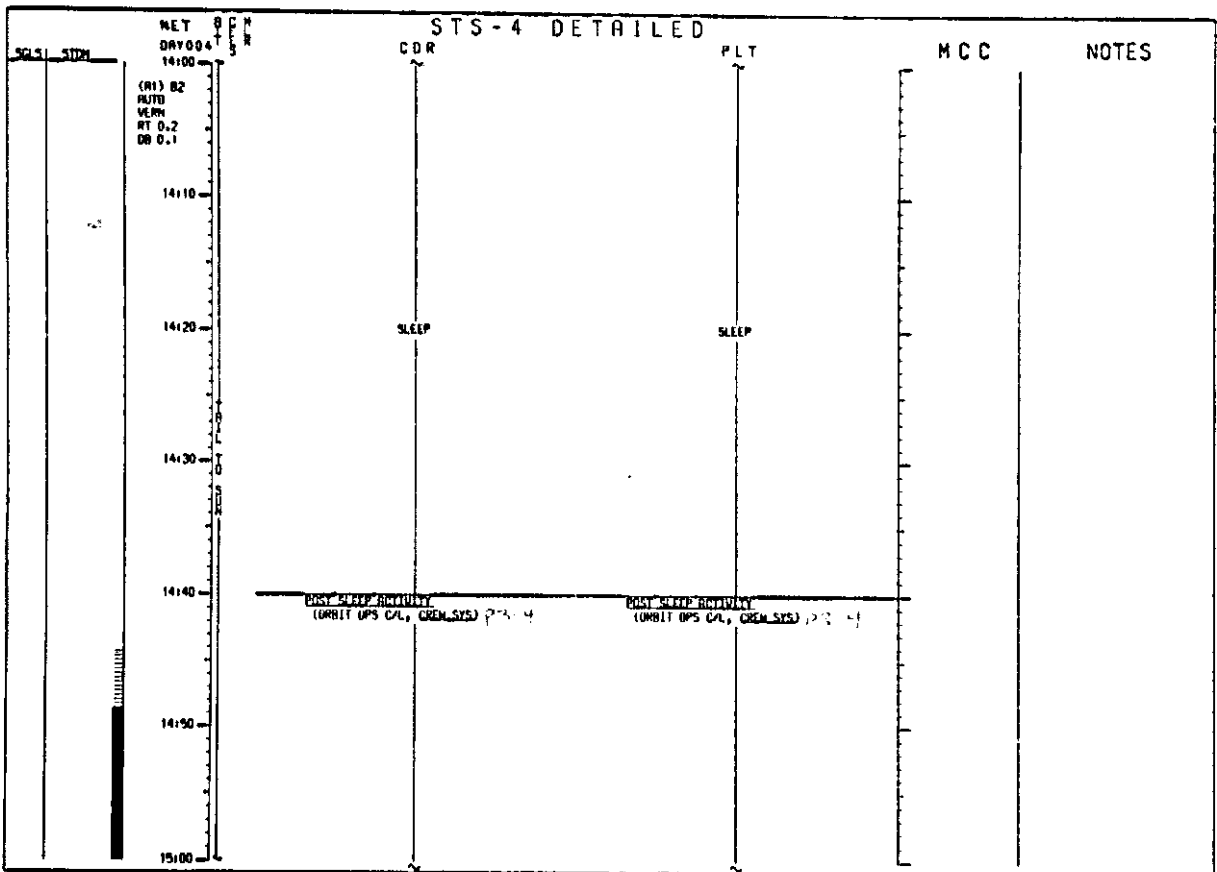
SLEEP

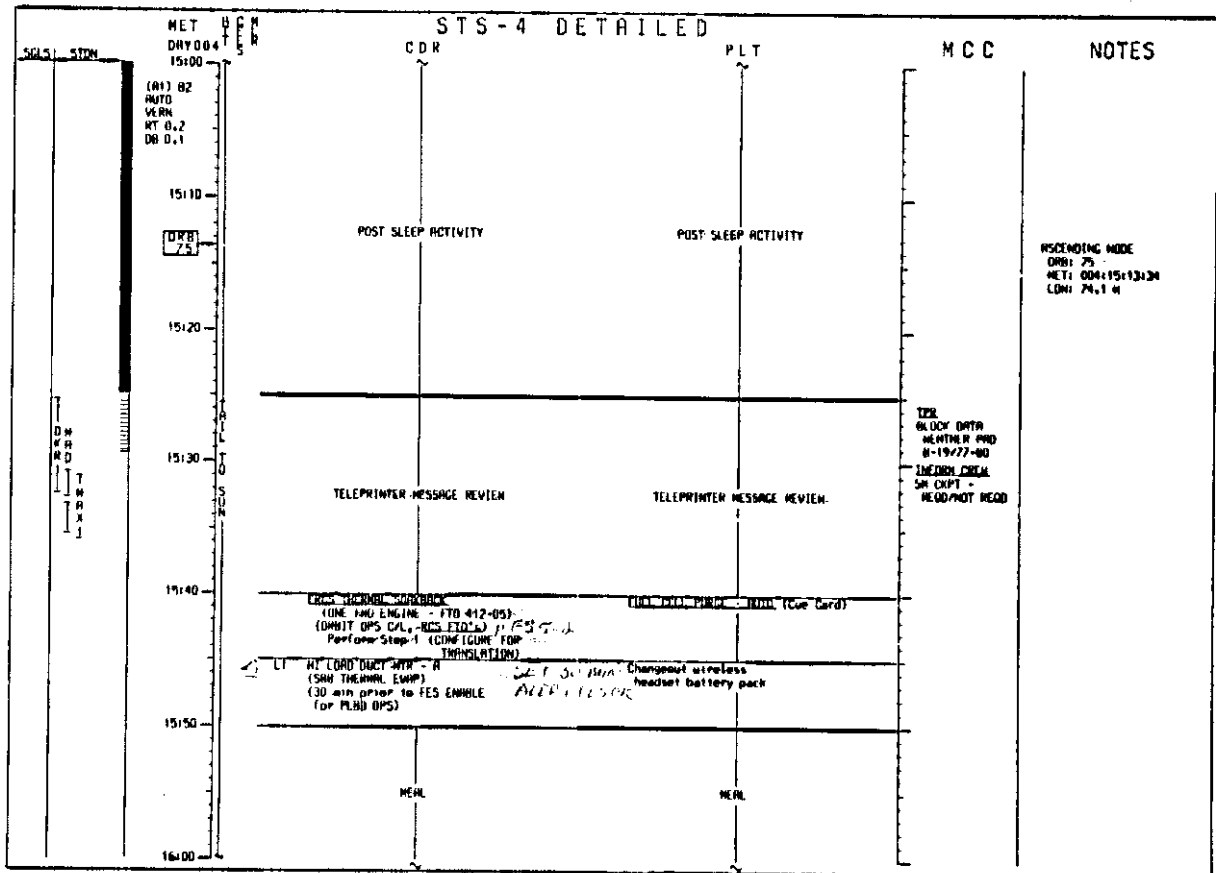
SLEEP

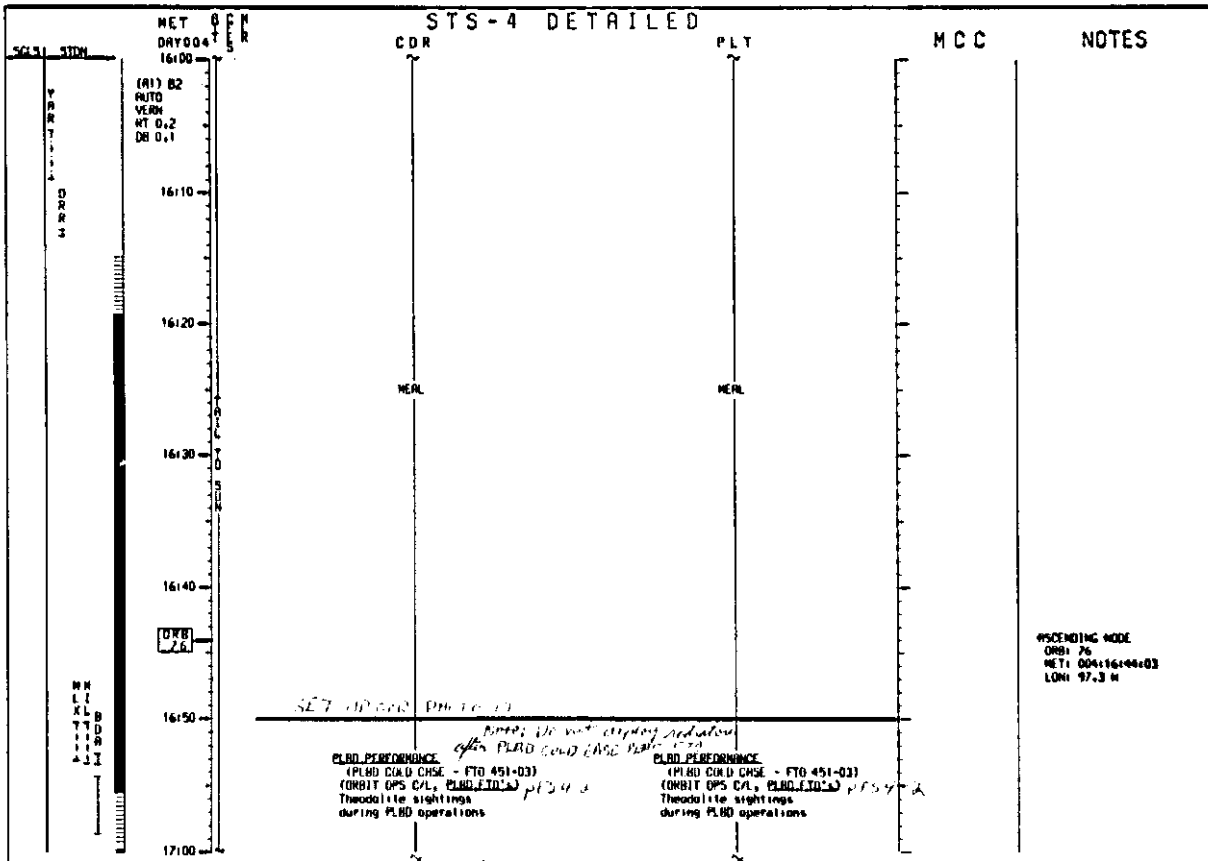
07:00

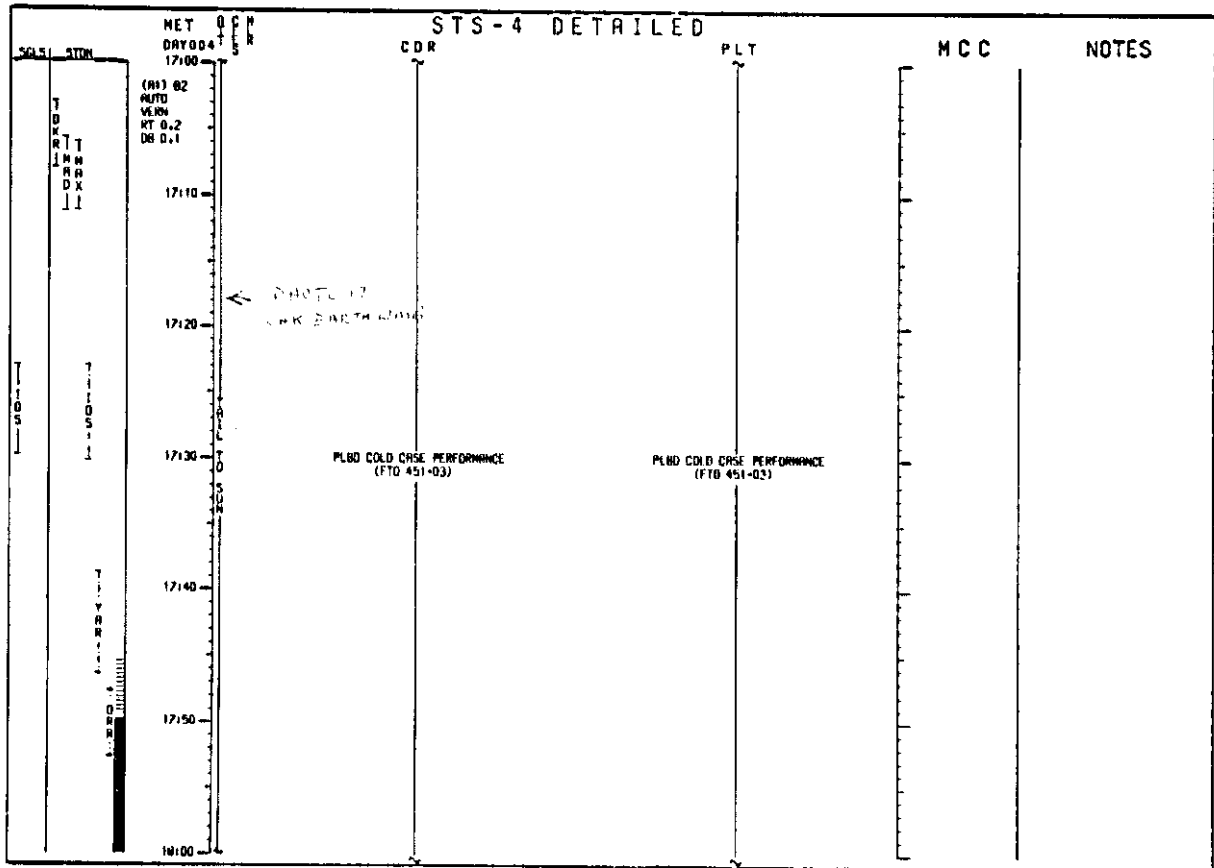
ASCENDING NODE
DRBI 89
NET: 004106410140
LON 66.7 E

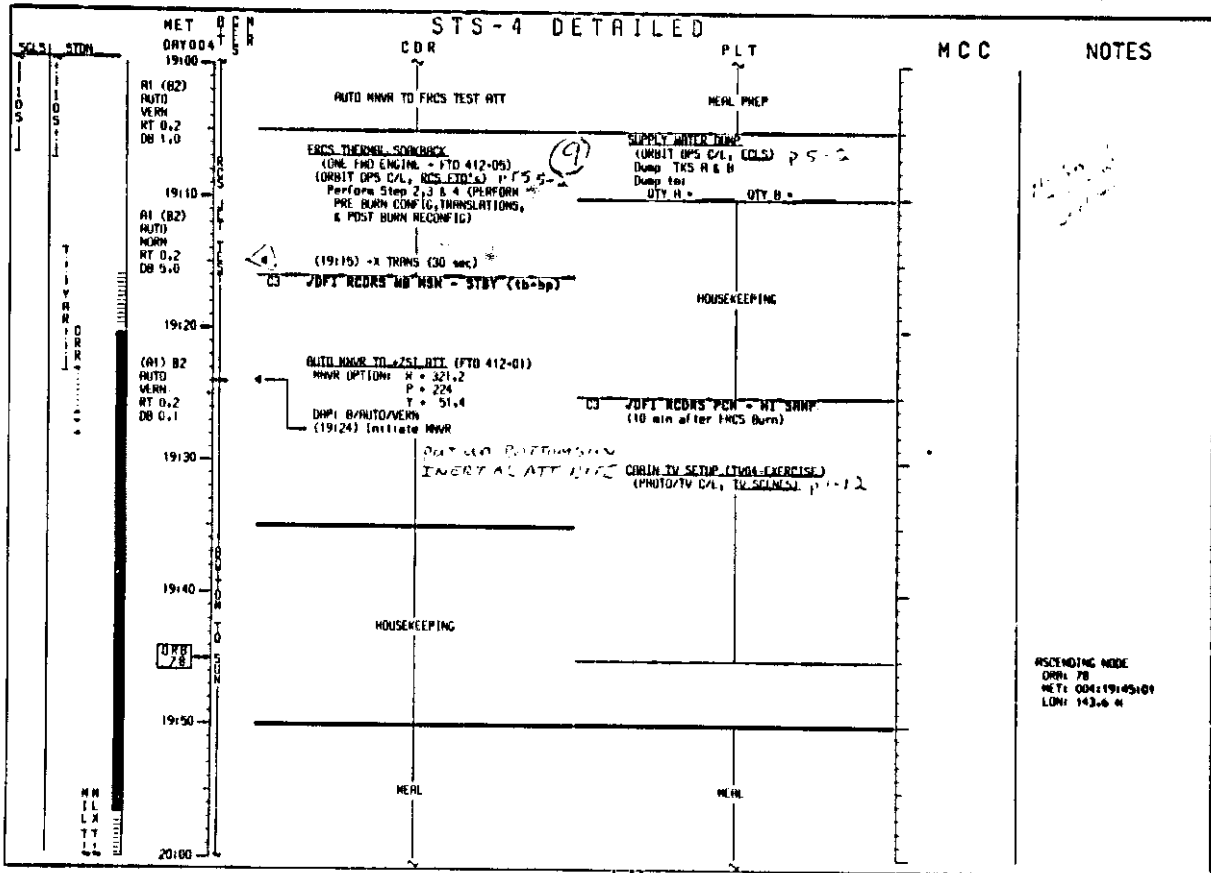
FLT DAY 6

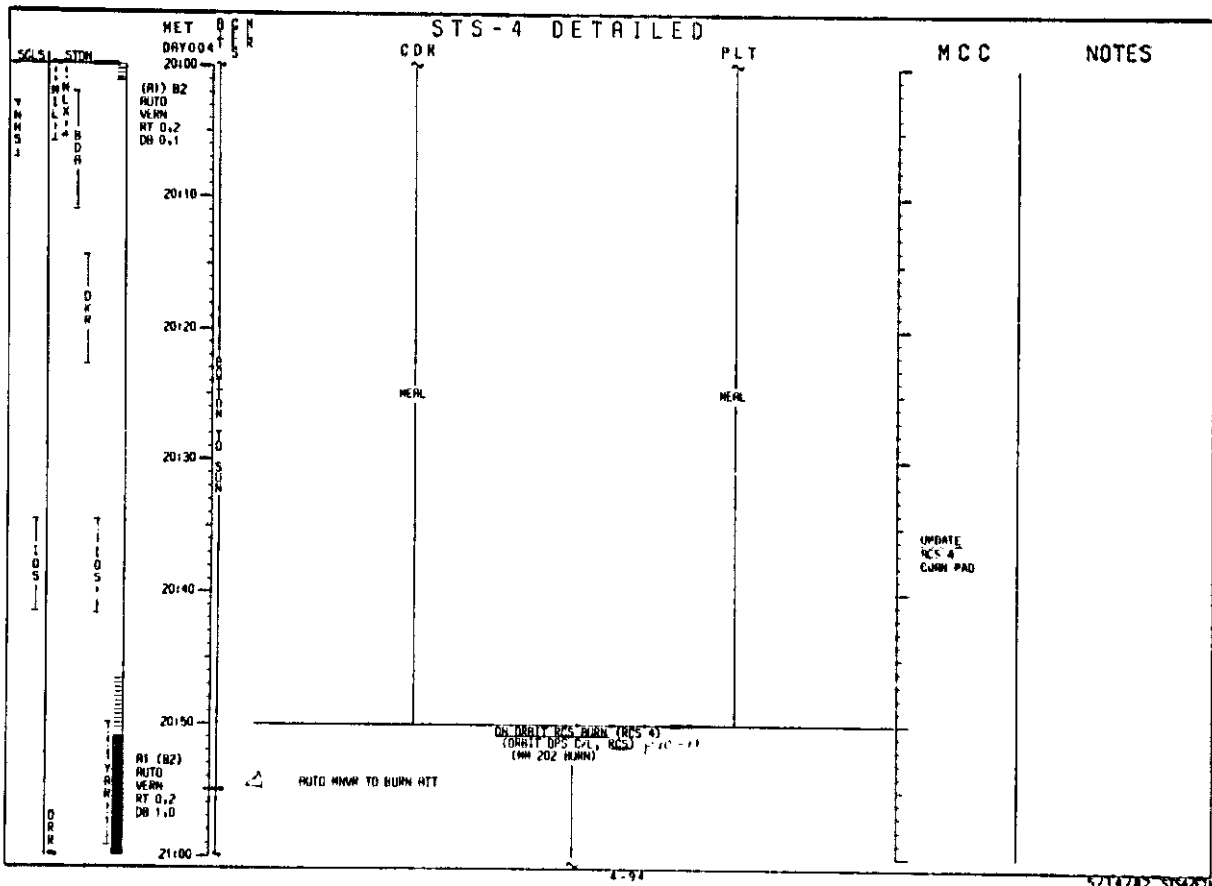


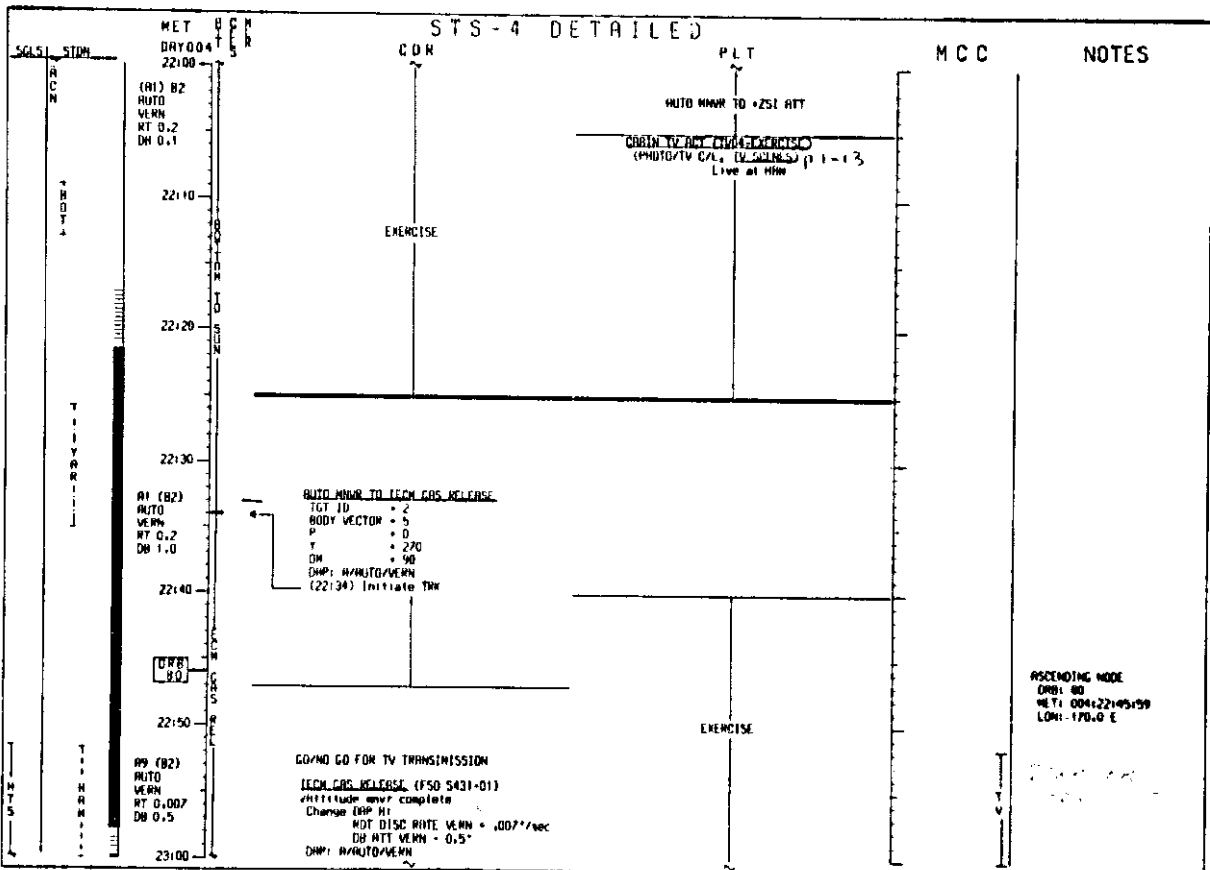


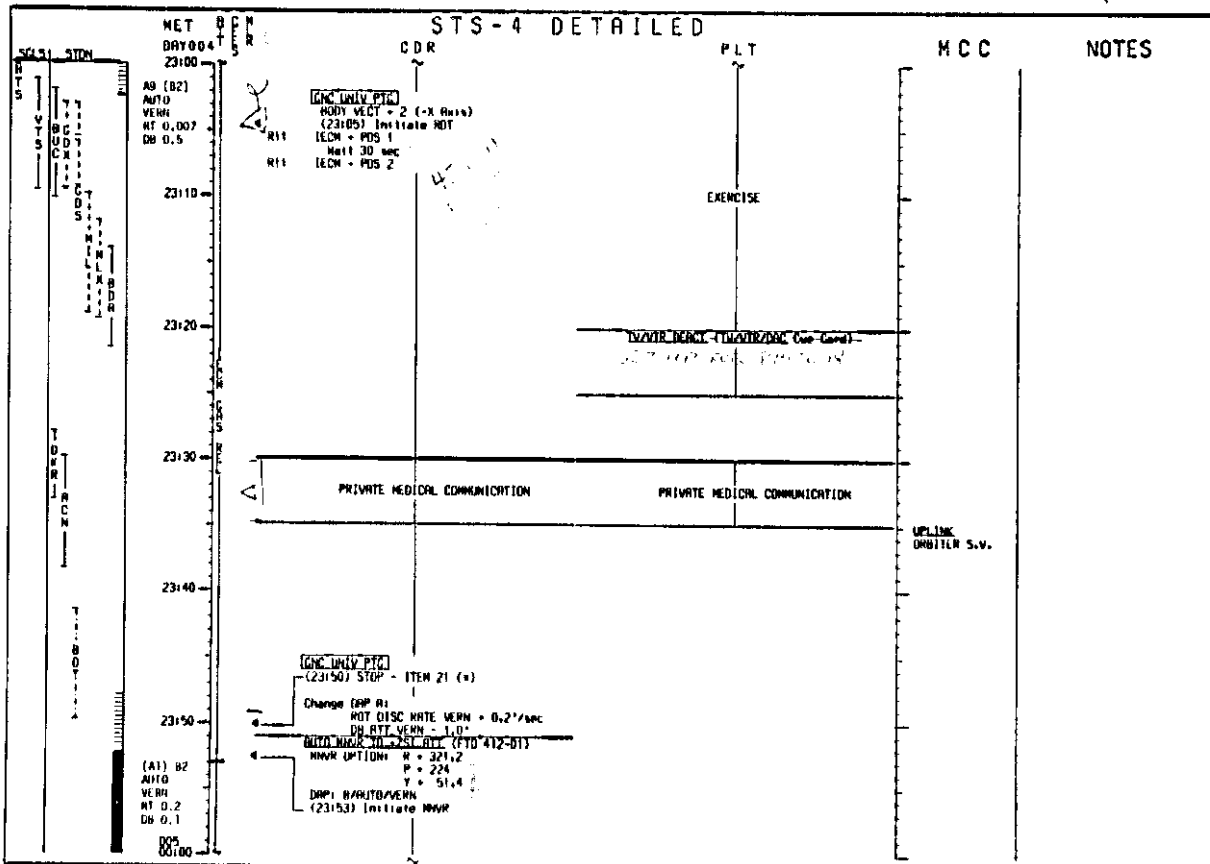


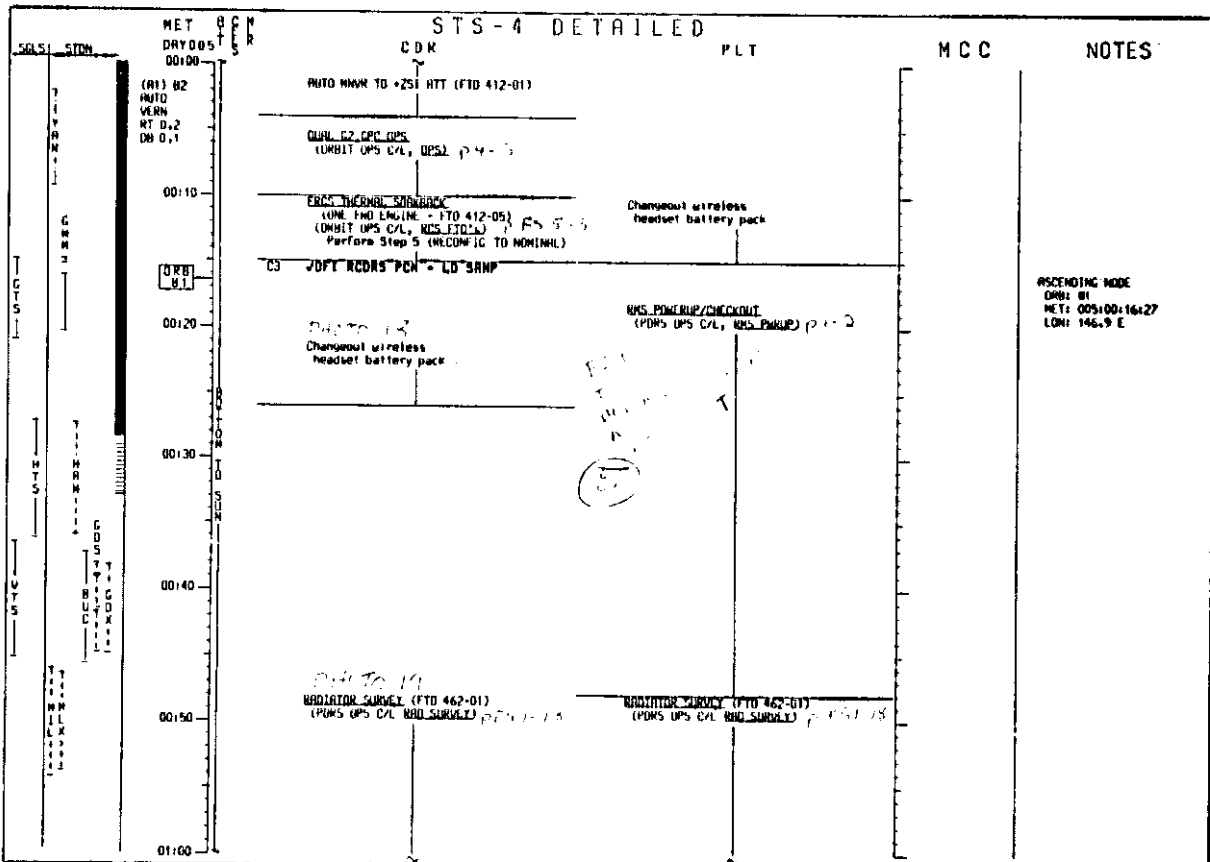


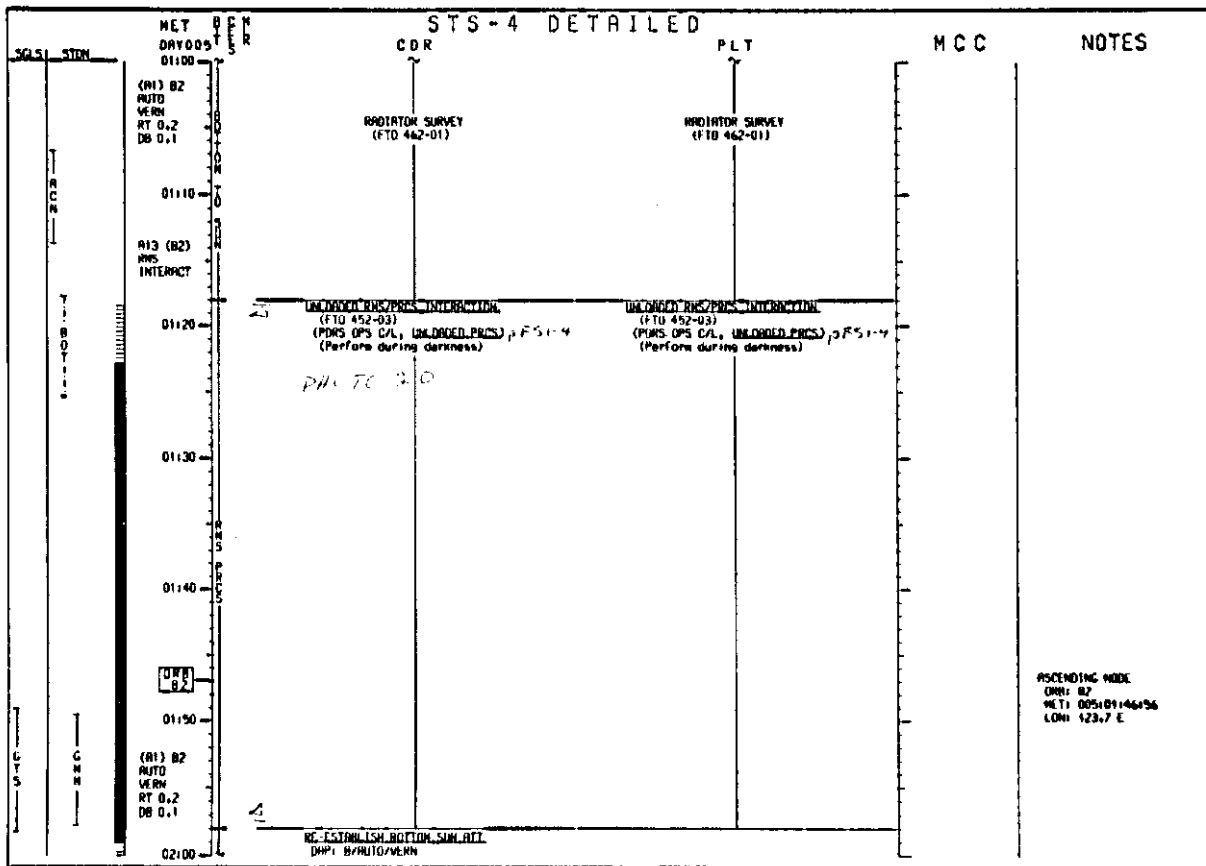






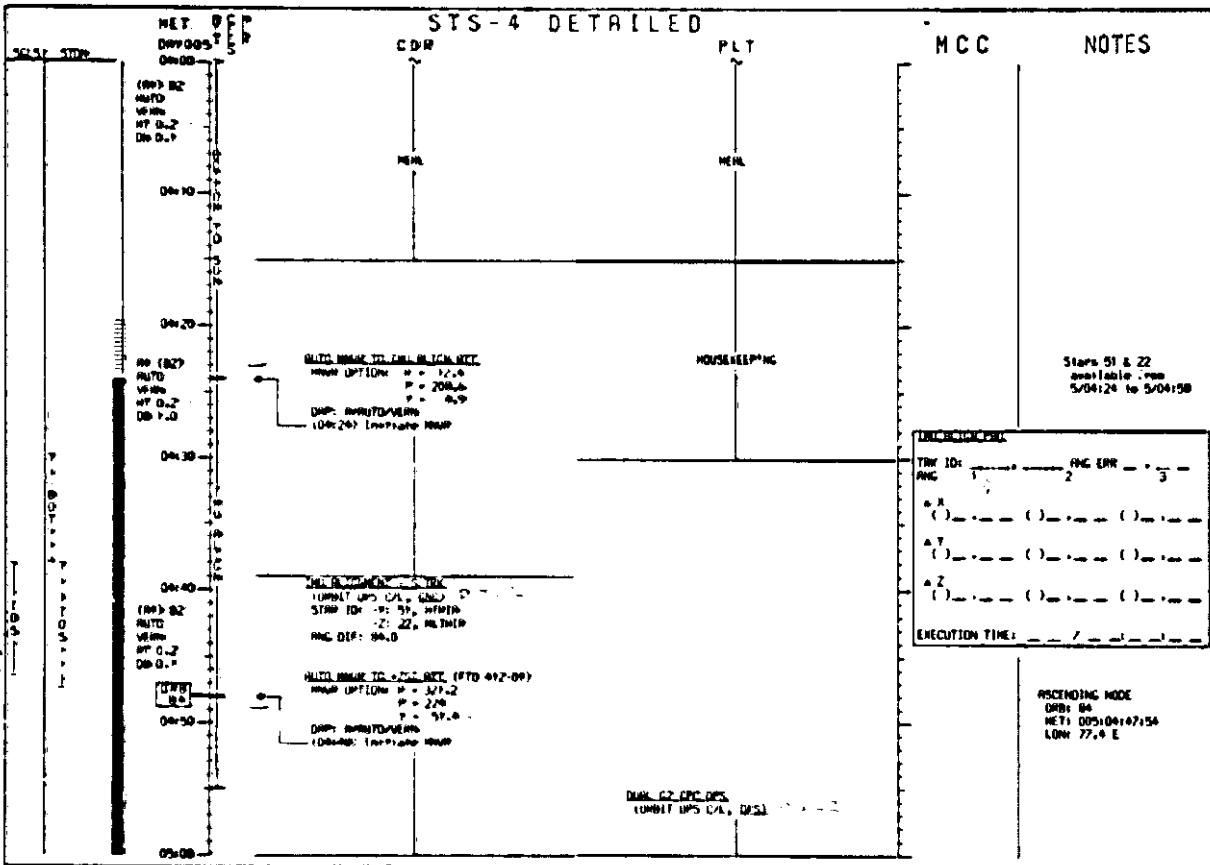






MET		STS-4 DETAILED		MCC		NOTES
DRY005		CDR	PLT			
02:00	(M) B2 AUTO VERB RT 0.2 DB 0.1	SINGULARITY HANDLING - MANUAL (FTO 452-02) (PDMS OPS C/L, SINGULAR HANDLING)	SINGULARITY HANDLING - MANUAL (FTO 452-02) (PDMS OPS C/L, SINGULAR HANDLING)			
02:10						
02:20						
02:30						
02:40		DEACT TO				
02:50		MEAL PREP (Due Card) Prepare DAY 6, MEAL C	RMS POWERDOWN (PDMS OPS C/L, RMS POWERDOWN) p 1-2			
03:00		R/L Cb PDMS DRC (str) - OP (Post RMS Activations)	SINGULARITY HANDLING - MANUAL (ORBIT OPS C/L, DPS) p 1-2			

TER
BLOCK DATA
HEADER PAD
0-21/95-00
UPLINK
ORBITER S.V.



NET
000005
00:00

STS-4 DETAILED

CDR

PLT

MCC

NOTES

NO. MET. FIRE TEST
(UMBIT OPS CAL, RCS) 7-4-2

00:00
00:05
00:10
00:15
00:20
00:25
00:30
00:35
00:40
00:45
00:50
00:55
01:00

00:10

RE-ESTABLISHMENT OF COMM.
(UMBIT PRT CAL, RCS) 7-4-2

DEF. POWER UP (MMA)
RTTR: DFE POW CNT 1,2,3 SSC (three) - ON

00:20

RE-ESTABLISHMENT TO SILENCE
DMP: SHUTD-VANS

DEF. POWER DOWN
RTTR: DFE POW CNT 1,2,3 SSC (three) - OFF

(M) 82
MTC
VENS
RT 0.2
DB 0.7

00:30

SINGLE C2 OPS OPS
(UMBIT OPS CAL, RCS) 7-4-2

00:40

HOUSEKEEPING

OPS PREPARE FOR READING
(FTD-MP-02)
Record Temp, Pressure Temp,
Condenser Temp (Cue Card)

C2 DISASSEMBLY PLACEMENT
(D into B)

00:50

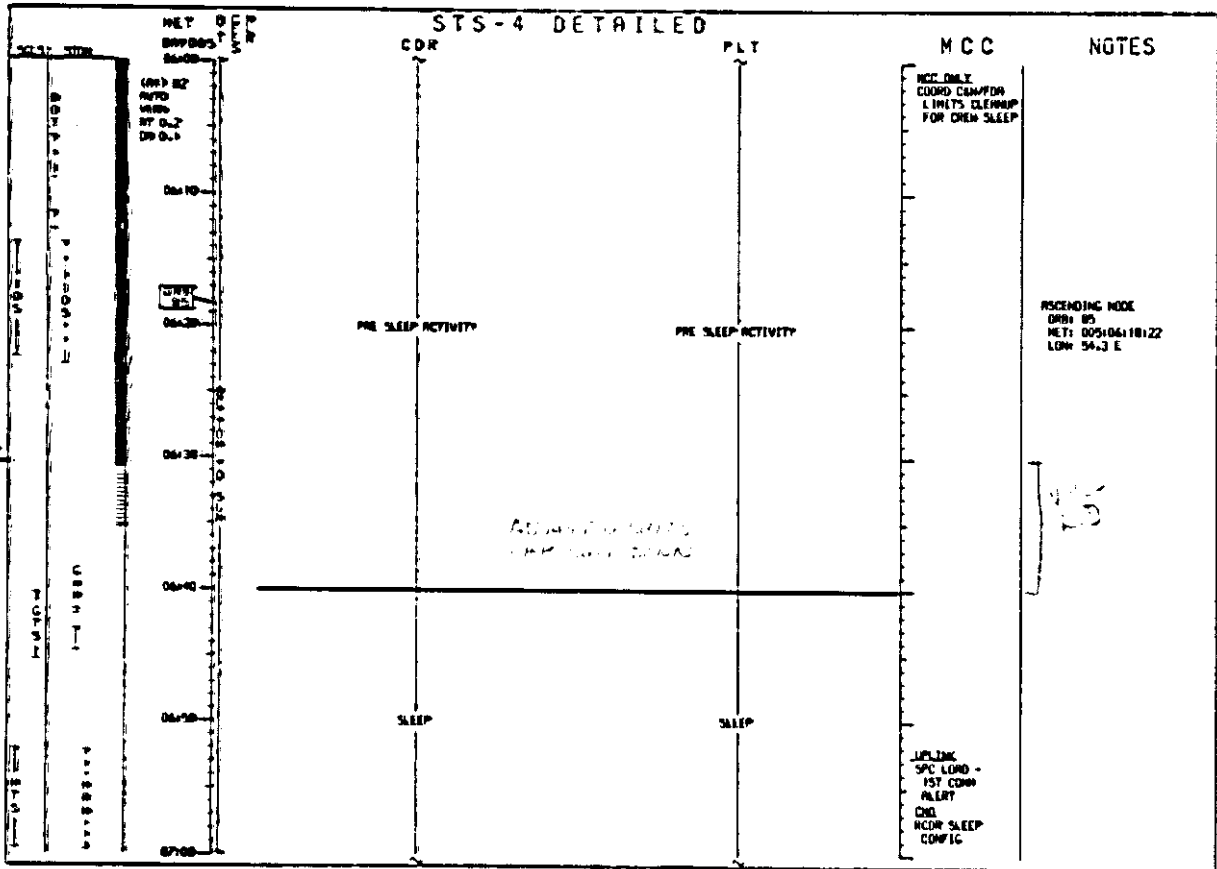
RE-ESTABLISHMENT OF COMM. (Cue Card)

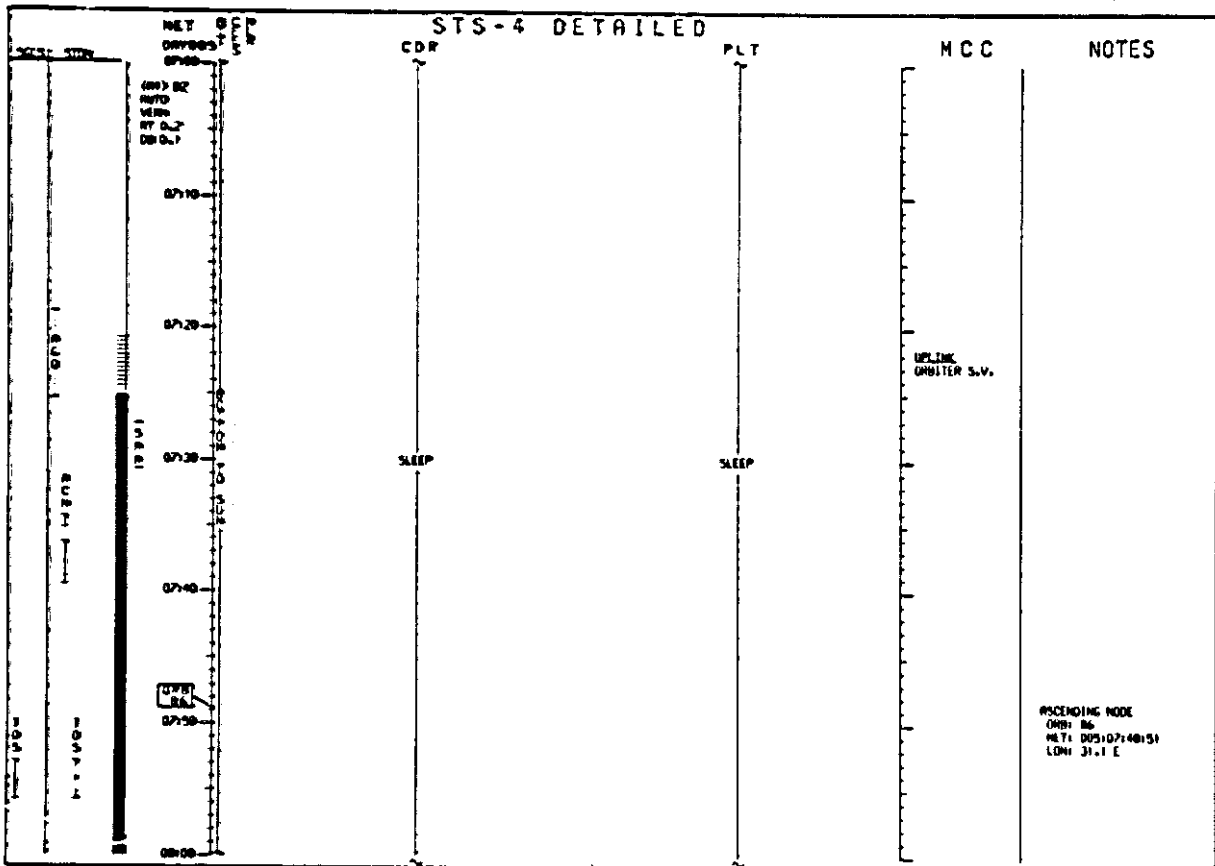
01:00

OPS REAPPLY SILENCE
(UMBIT OPS CAL, CREM SYS)

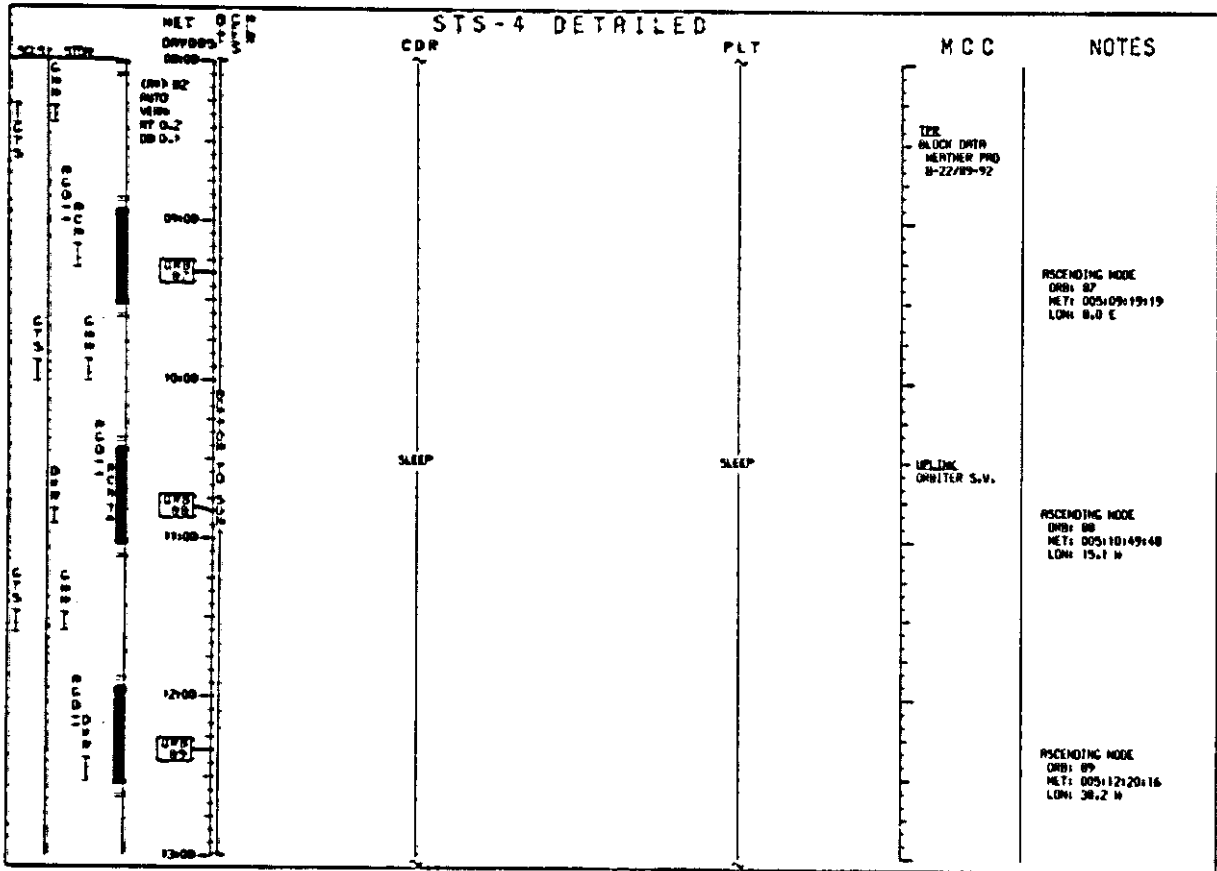
PRE SLEEP ACTIVITY
(UMBIT OPS CAL, CREM SYS)

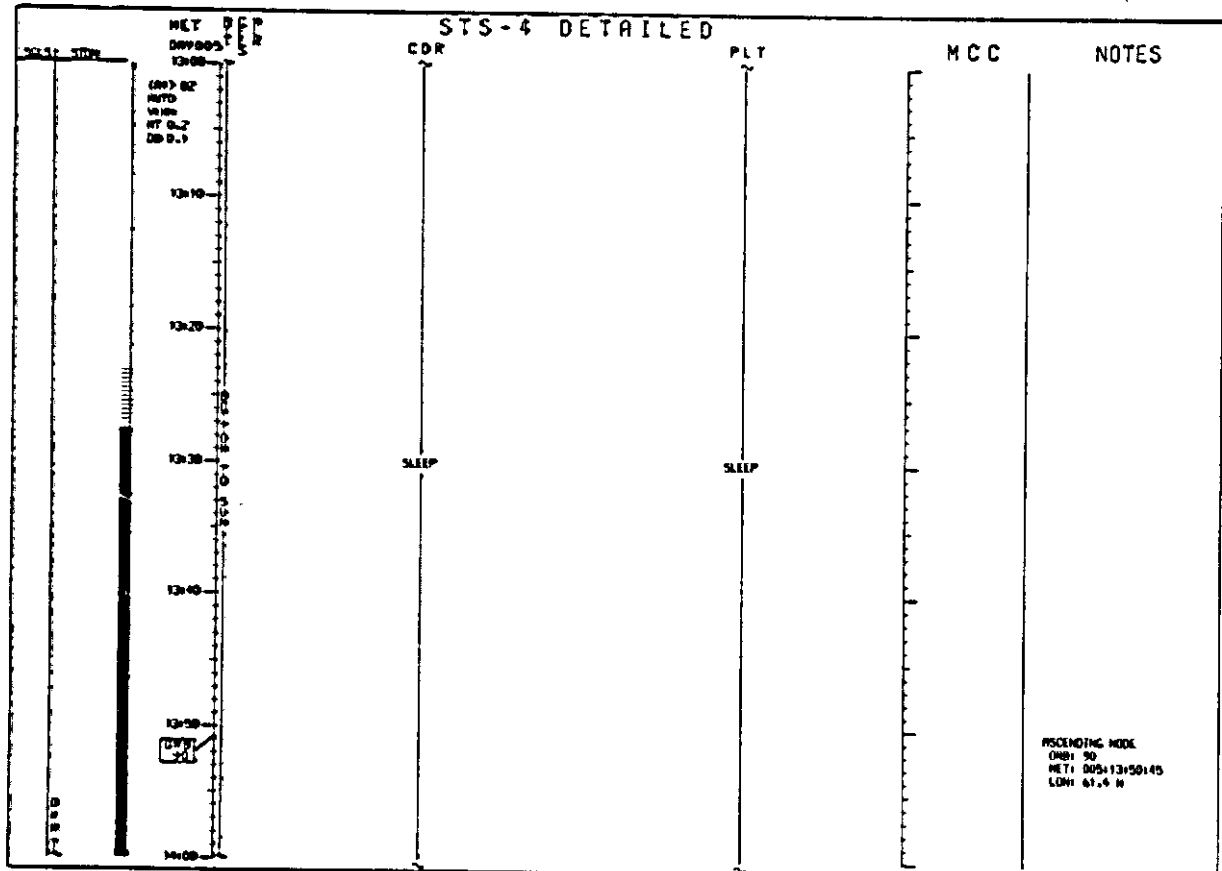
SCS: 1000
00:00
00:05
00:10
00:15
00:20
00:25
00:30
00:35
00:40
00:45
00:50
00:55
01:00





STS-4 DETAILED

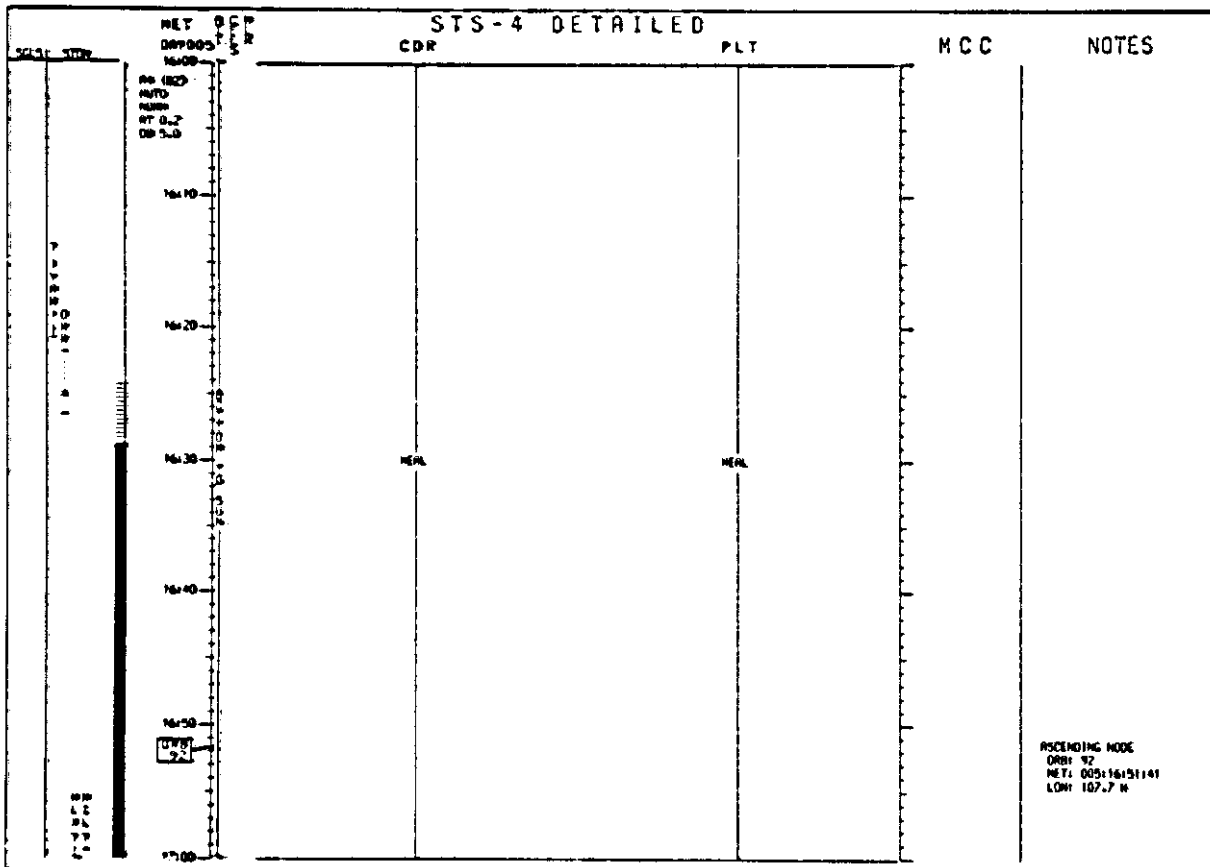




4-107

5/14/82 STS4/TM

FLT DAY 7



WET		STS-4 DETAILED		MCC		NOTES	
049005		CDR		PLT			
17:00	NO (82) AUTO NAME HT 6-2 DP 5-0	TIME/SIGNAL DETECT/SUPPRESS TEST LIMIT OPS (C/A, RES)	1 DEL POWER UP (NOR) WITHIN 0PT PWR COUNT 1,2,3 5GSC (three) - ON				
17:10		SIGNAL/HEAT/WARNING TEST LIMIT OPS (C/A, RES)	2 DEL POWER DOWN WITHIN 0PT PWR COUNT 1,2,3 5GSC (three) - OFF	CLARITY WILL BE MAINTAINED TIMES WITH MTC			
17:20		Checked wireless Recharge battery pack.					
17:30				CABIN HEAT EXCHANGER/SAMPLER FULL-SCALE INSPECTION			
17:40				1. Open vent duct access door (outboard of cabin heat exchanger) and loosen inner vent cap clamp (3/8 in deep screw) ↓ 2. Remove vent cap and inspect for free water ↓ 3. Reassemble - reinstall cap/secure Water observed - advise MCC			
17:50				RECONNECT L. (REL OPS) IN MCC LIMIT PWT (C/A, RES)			
18:00	NO (82) AUTO NAME HT 6-2 DP 5-0			CHANGE DATE AT 0800T NORM - 31 AUTO NAME TO ENL PLIC/BAL/NOV ATT-41 NAME (PT) (C/A, RES) H = 252.9 P = 252.5 T = 308.9 DWP: 00/AUTO/NOV (17:57) Institute NAME			

STS-4 DETAILED

TIME	CDN	PLT	MCC	NOTES
20:00	<p>HYPER STAR 20 & 22 LOS [LINE 20 & 22] (CDS ONLY) SWITCHER PROB OP - 17:00-19:00 (no op) 5 THY - 7 - 2 - STAR (M) (M) 2, 0 (2) CHANGE TIME B. DO NOT NORM - 5.0" DO HALLS BEING TO USE BICE (PTD 012-07) REAR UPTURN P = 220 P = 59.0 DMP: INVAUTO/NOOP (20:07) (no frame REAR)</p>	<p>PHSD PERFORMANCE</p> <p>REAR PREP (Cue Card) Prepare DMP 7, MEN, B GOING WD FOR TV TRANSMISSION</p>		<p>TER BLACK DATA WEATHER PRO B-2497-100 UPLINK ORBITER S.V.</p>
20:10				
20:20	<p>REAR PREP (Cue Card) (PTD 000-01) (ORBIT OPS CA, PLUG (TIA)) Perform Star / Star WINDUPONS p F-5 4-1-0 2 Dry</p>	<p>REAR BACK (PLUG/DUBB Cue Card)</p>		
20:30				
20:40	<p>HOUSEKEEPING</p>			
20:50				
20:55		<p>HOUSEKEEPING</p>		
21:00				

NET

DRY005

23:00

BCH

STS-4 DETAILED

CDR

PLT

MCC

NOTES

SGLS

STN

M
T
ST
H
M
I
AT
V
T
ST
C
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D
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E

006

00:00

AUTO MNRK ID +251 RTT (FTO 412-01)

MNRK OPTION: R = 371.2

P = 224

Y = 51.4

DAP: R/AUTO/MNRK
(23:02) Initiate MNRK

PRIVATE MEDICAL COMMUNICATION

PRIVATE MEDICAL COMMUNICATION

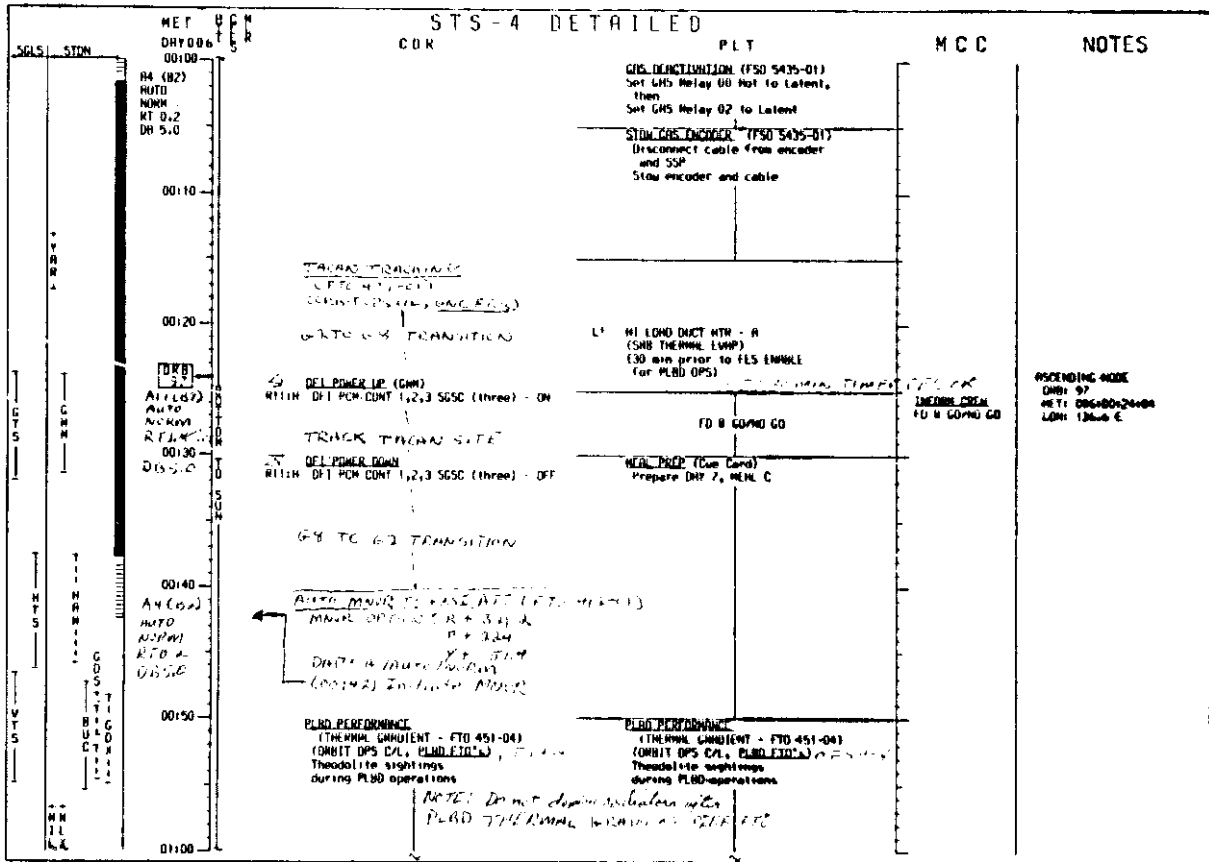
VPC FREEZER TEMP RESET to -17.5°C

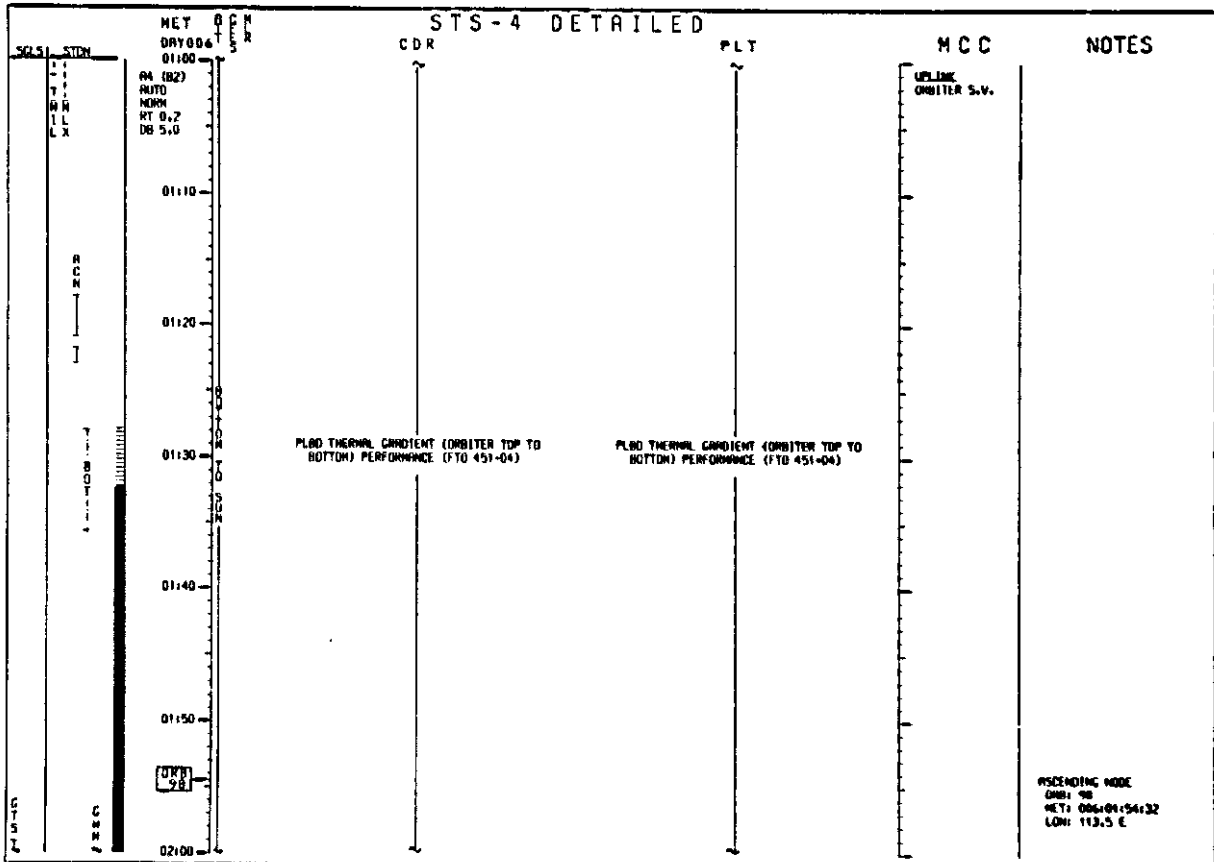
WATER SAMPLE FREEZING (FTO 467-03)

Unlabeled #20 used drink container
and fill with #20

Insert container into freezer

RECORD TIME ____ / ____ / ____





STS-4 DETAILED

SOLS: STDM

NET
DAY 006
03:00

03:10

03:20

03:30

03:40

03:50

04:00

03:00
03:10
03:20
03:30
03:40
03:50
04:00

03:00
03:10
03:20
03:30
03:40
03:50
04:00

03:00
03:10
03:20
03:30
03:40
03:50
04:00

03:00
03:10
03:20
03:30
03:40
03:50
04:00

AM (M2)
AUTO
NORM
RT D.2
DB 5.0

03:25
03:25

CDR

PIT

MCC

NOTES

MEAL

MEAL

Changeout wireless
headset battery pack

LT RT LOAD DUCT HYR - OFF
(30 min after RT LOAD SWP - OFF)

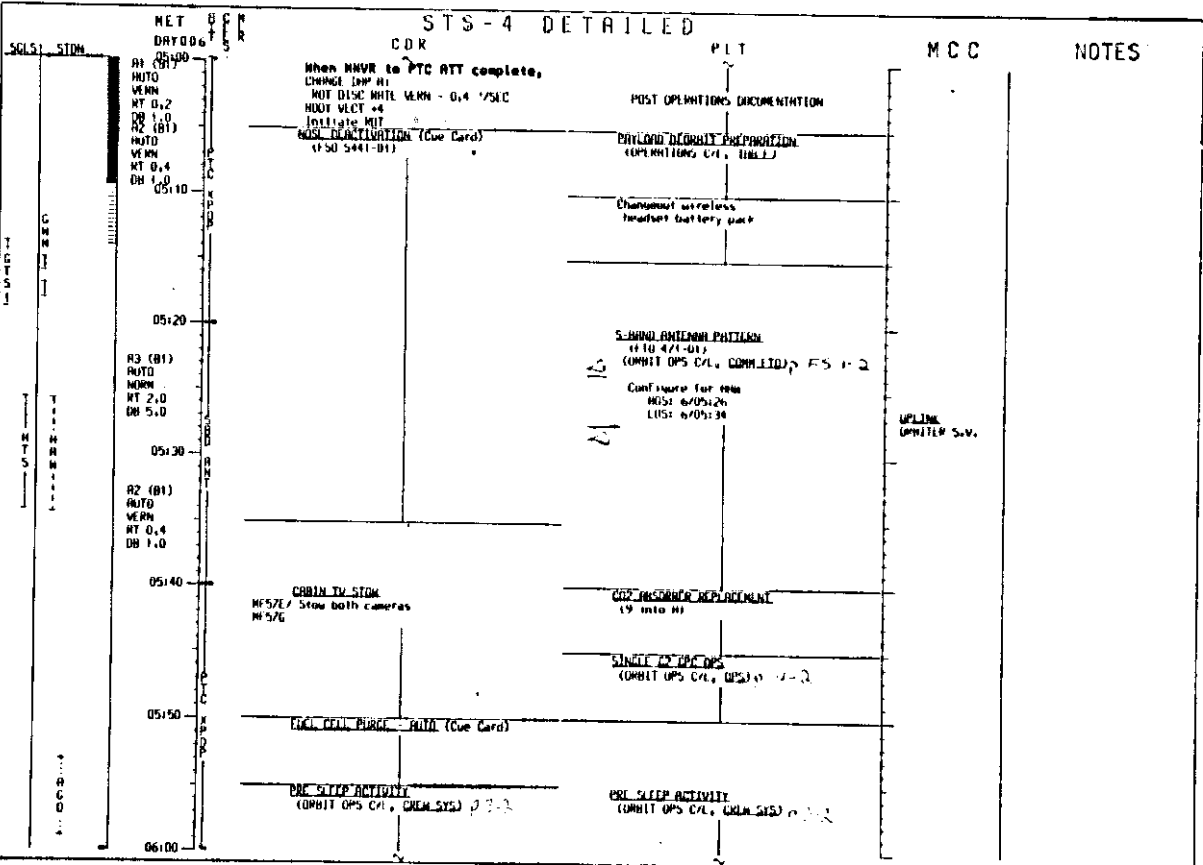
PHOTO 22

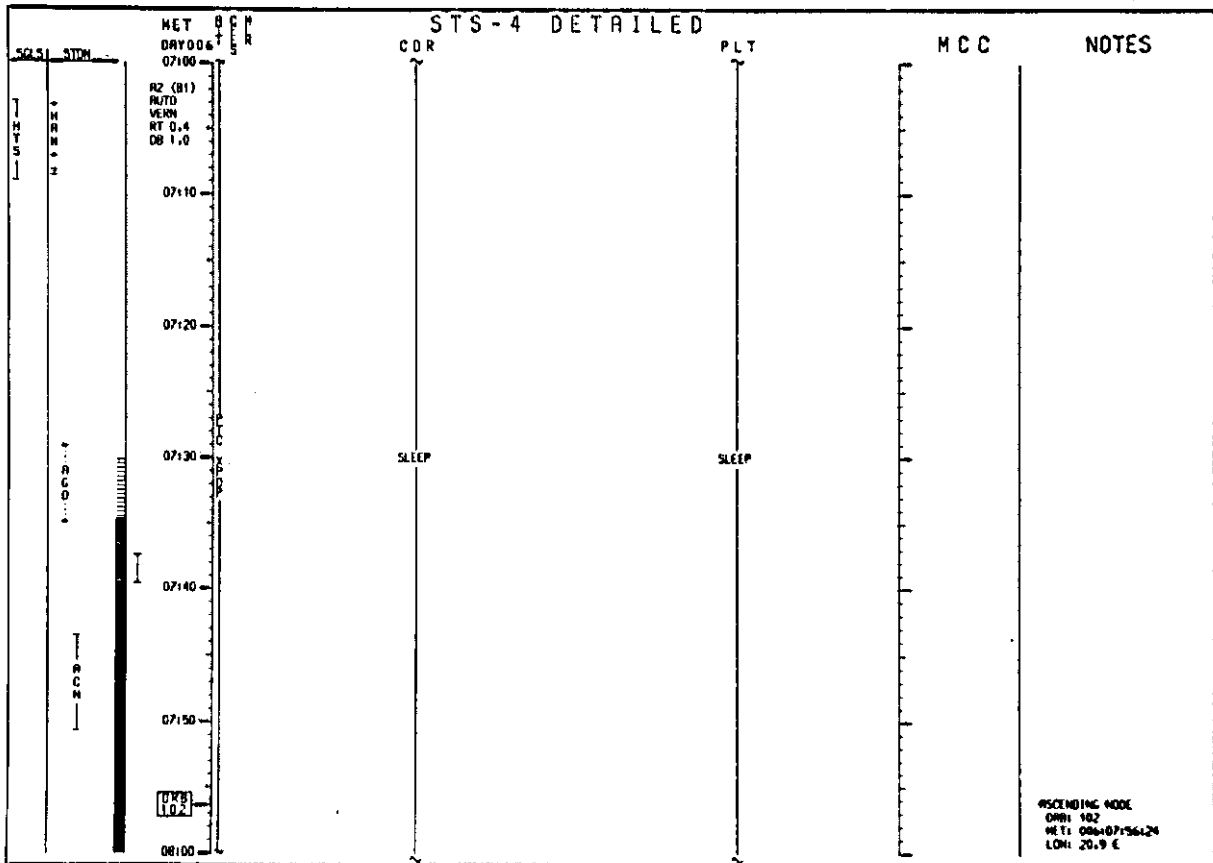
CABIN CONFIG/STDM
(UMHIT OPS CR, CROWN SEAT) P 3-5

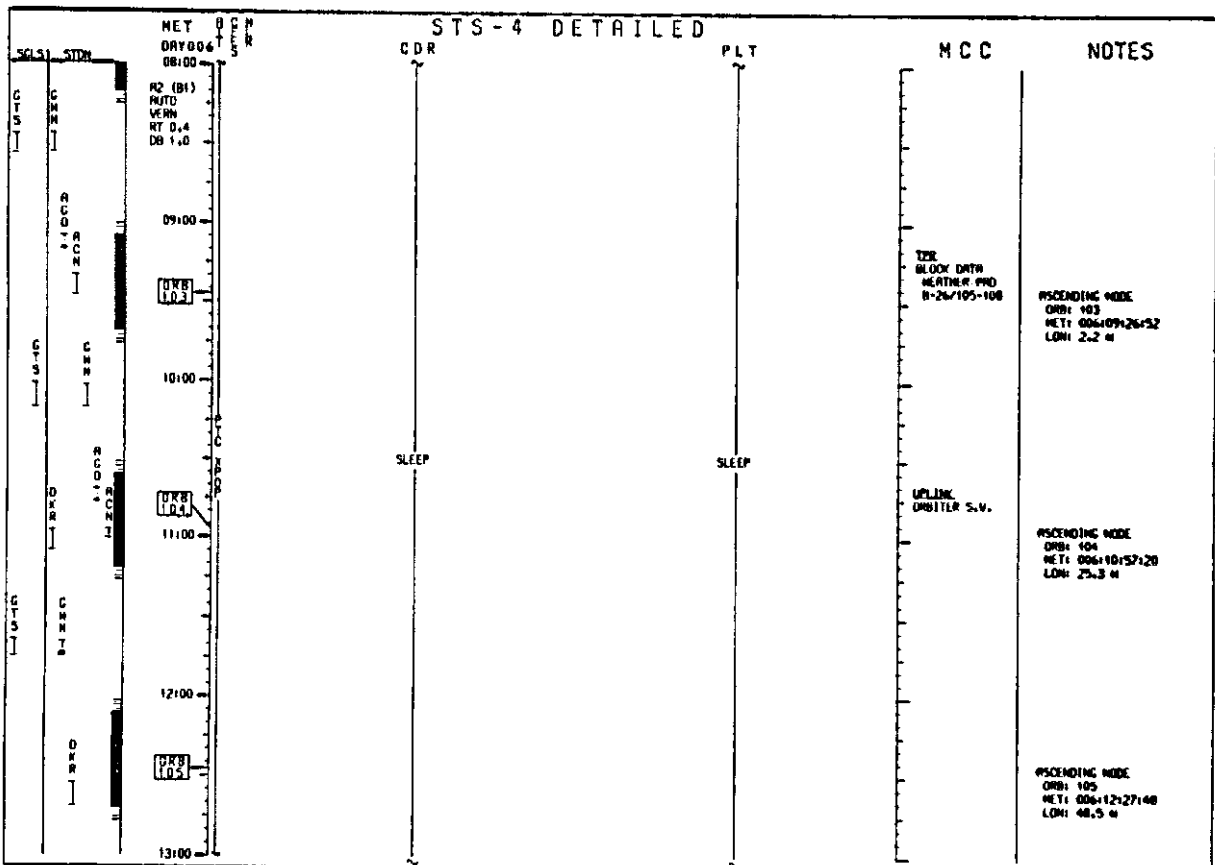
CABIN CONFIG/STDM
(UMHIT OPS CR, CROWN SEAT) P 3-5

(2)

ASCENDING NODE
GPH: 00
NET: 006:03:25:00
LON: 90.3 E







NET
DAY 006

STS-4 DETAILED

SGLS STDM

13:00
PZ (01)
AUTO
VERN
RT 0.4
DB 1.0

CDR

PLT

MCC

NOTES

13:10

13:20

13:30

SLEEP

SLEEP

13:40

13:50

14:00

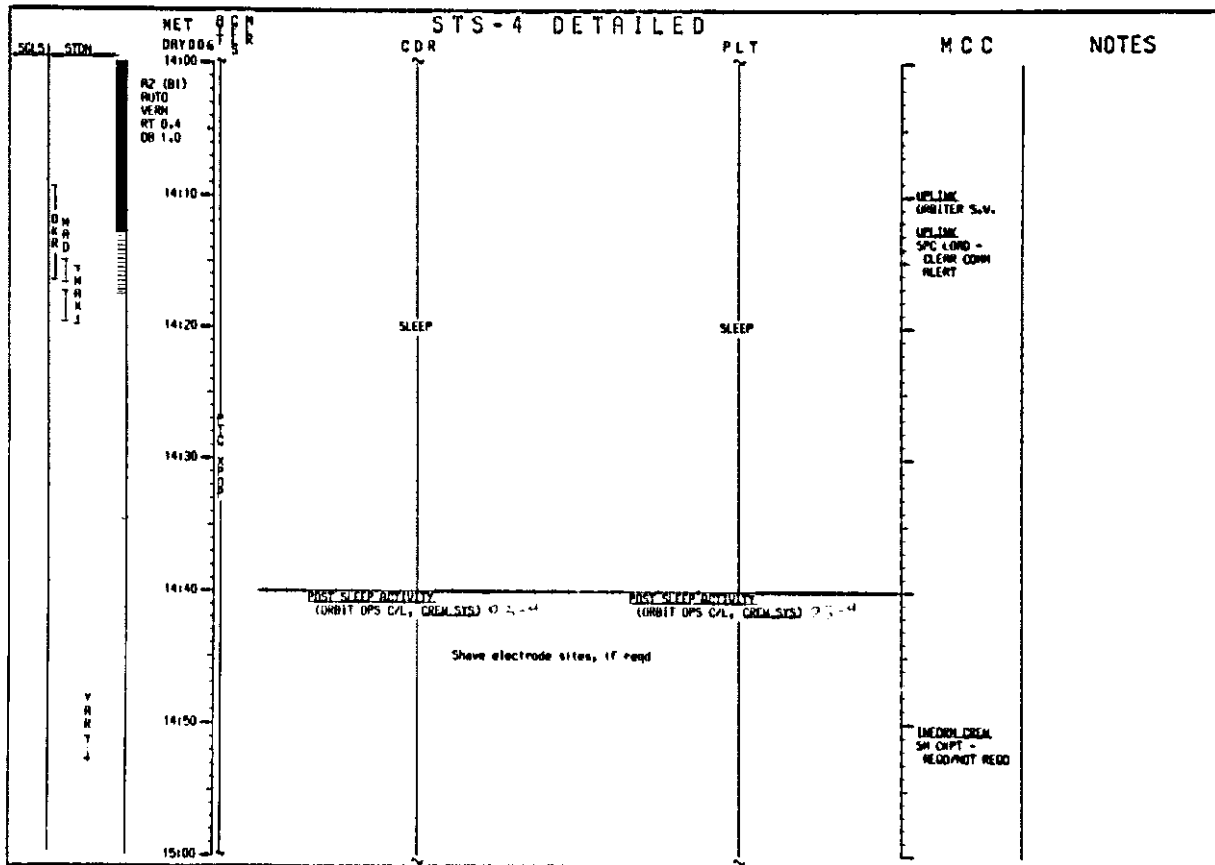
078
116

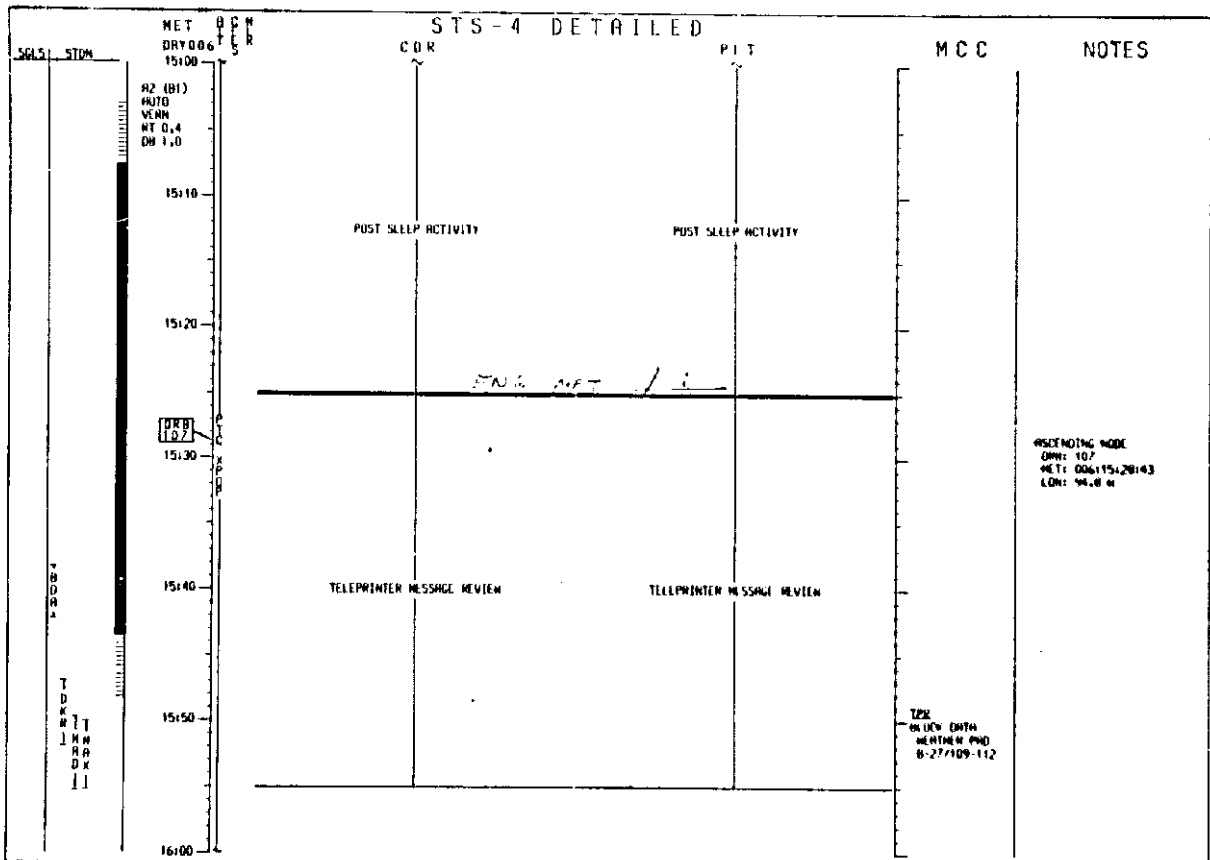
ASCENDING NODE
ORB: 106
NET: 00613198113
LON: 21.6 N

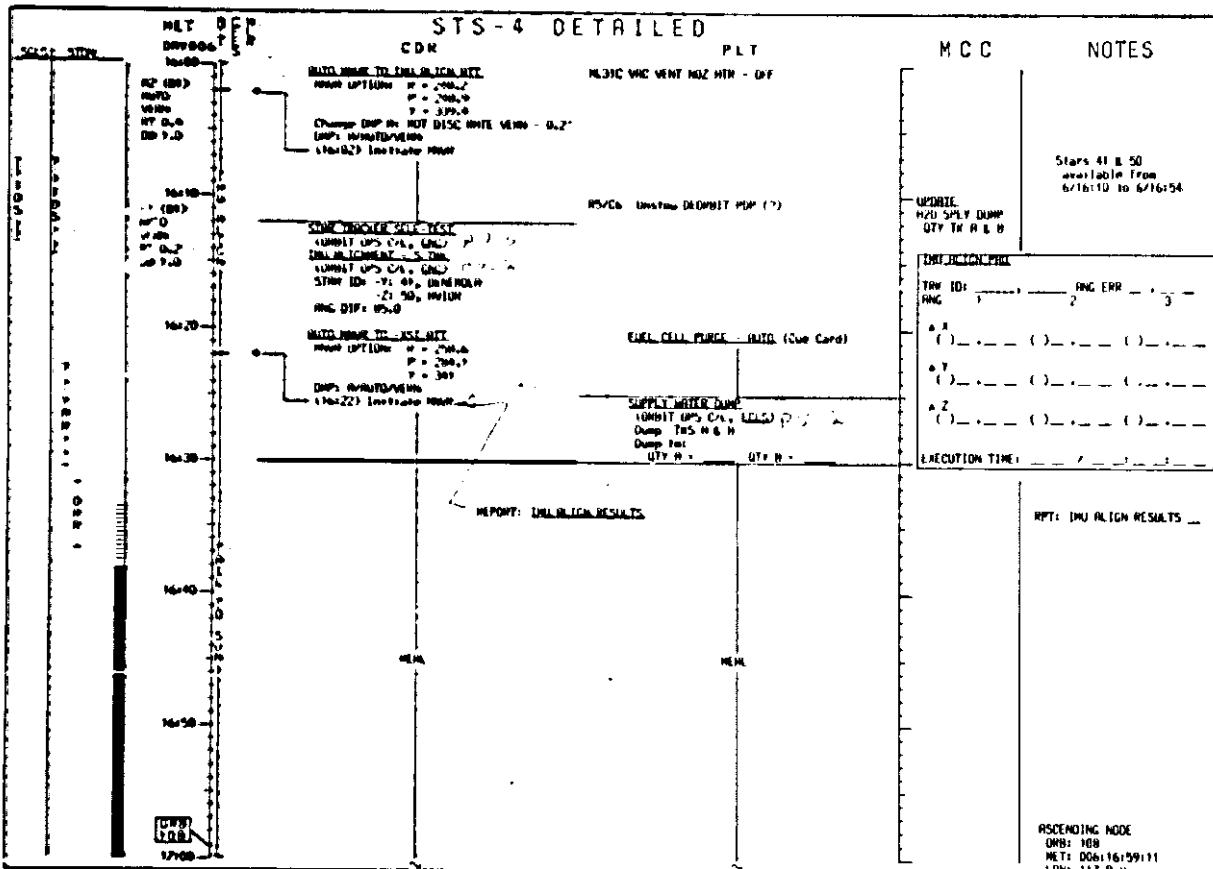
4-127

5/14/82 STS472H

FLT DAY 8







NET
000000
17:00

STS-4 DETAILED

MCC

NOTES

SCS: STW

17:00
17:10
17:20
17:30
17:40
17:50
18:00

17:00
17:10
17:20
17:30
17:40
17:50
18:00

17:00
17:10
17:20
17:30
17:40
17:50
18:00

NO (00)
AUTO
VISA
WF 0.7
DB 1.0

CDR

PLT

MEM

MEM

Copy: CRT TIMER SETUP PNO UPDATE
on DLRNA.PHP, 3-7

UPDATE
CRT TIMER
SETUP PNO

DIPKE 1175 DRIANS AND SALT
FOR STORAGE ON FTDK
PUT SALT IN FTDK STORAGE

UPDATE PNO (Car Card)
Steps 1-4

W11 DEB PHM - 00

STK FOD WITHER

STS-4 DETAILED

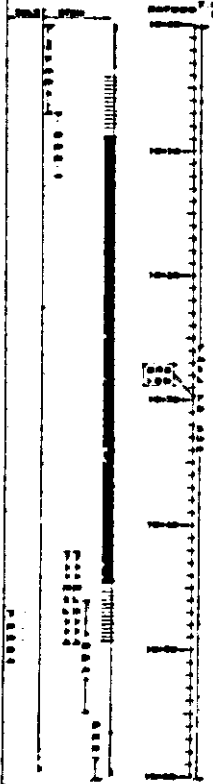
NET

CDN

PLI

MCC

NOTES



ARRIVING MOSE
0800 100
NETS 00010-20-50
LOS 149.1 M

CONTINGENCY TIMELINES

HIGH PRIORITY MISSION..... 5-3
ONE-DAY EXTENSION..... 5-55
24 HOURS AFTER EXTENSION DAY..... 5-93

HIGH PRIORITY
MISSION

HIGH PRIORITY MISSION

The High Priority Mission (HPM) is designed as a 74.3 hour flight lasting 3.5 flight days (FD). To enter HPM, complete the nominal FD 1 through 0/17:30. Begin HPM at 0/17:30.

HPM ACTIVITIES

FLIGHT DAY 1 - NOMINAL CAP FD 1 THROUGH SLEEP TO 0/17:30.

FLIGHT DAY 2 - BEGIN HPM SECTION AT 0/17:30. ACTIVITIES ARE SIMILAR TO NOMINAL CAP UNTIL 1/00:15 WHEN CFES SAMPLE 6 IS RUN.

- o ATTITUDES
 - o GRAVITY GRADIENT (8 HRS vs 12 HRS)
 - o BOTTOM SUN (26 HRS vs 33 HRS)
- o IECM CONTAMINATION SURVEY (1 HR) SCHEDULED WITH TOP SUN FOR WARM THERMAL ENVIRONMENT
- o IECM PLUME SURVEY (1 HR) IN BOTTOM SUN
- o HOT FIRE TEST
- o MLR DEACTIVATION (19.5 HRS)

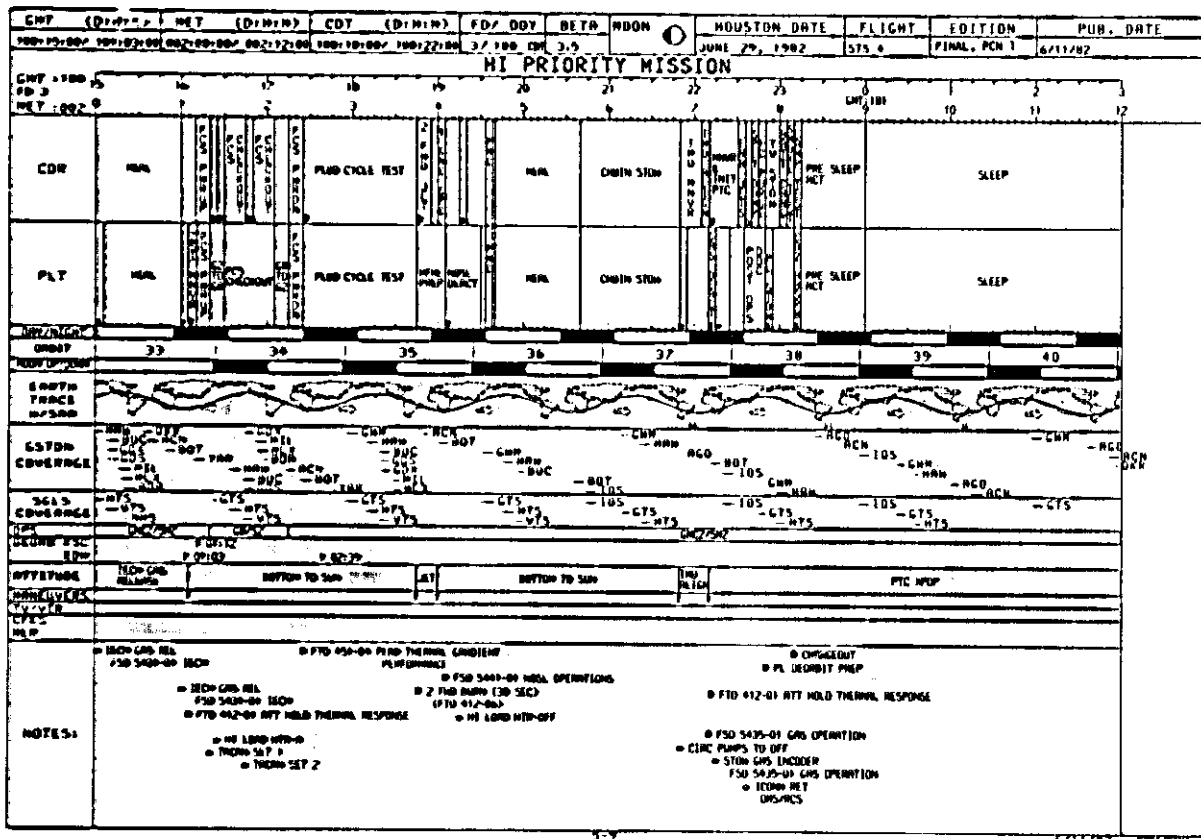
FLIGHT DAY 3 - o FRCs THERMAL SOAKBACK, PULSE MODE - F3F

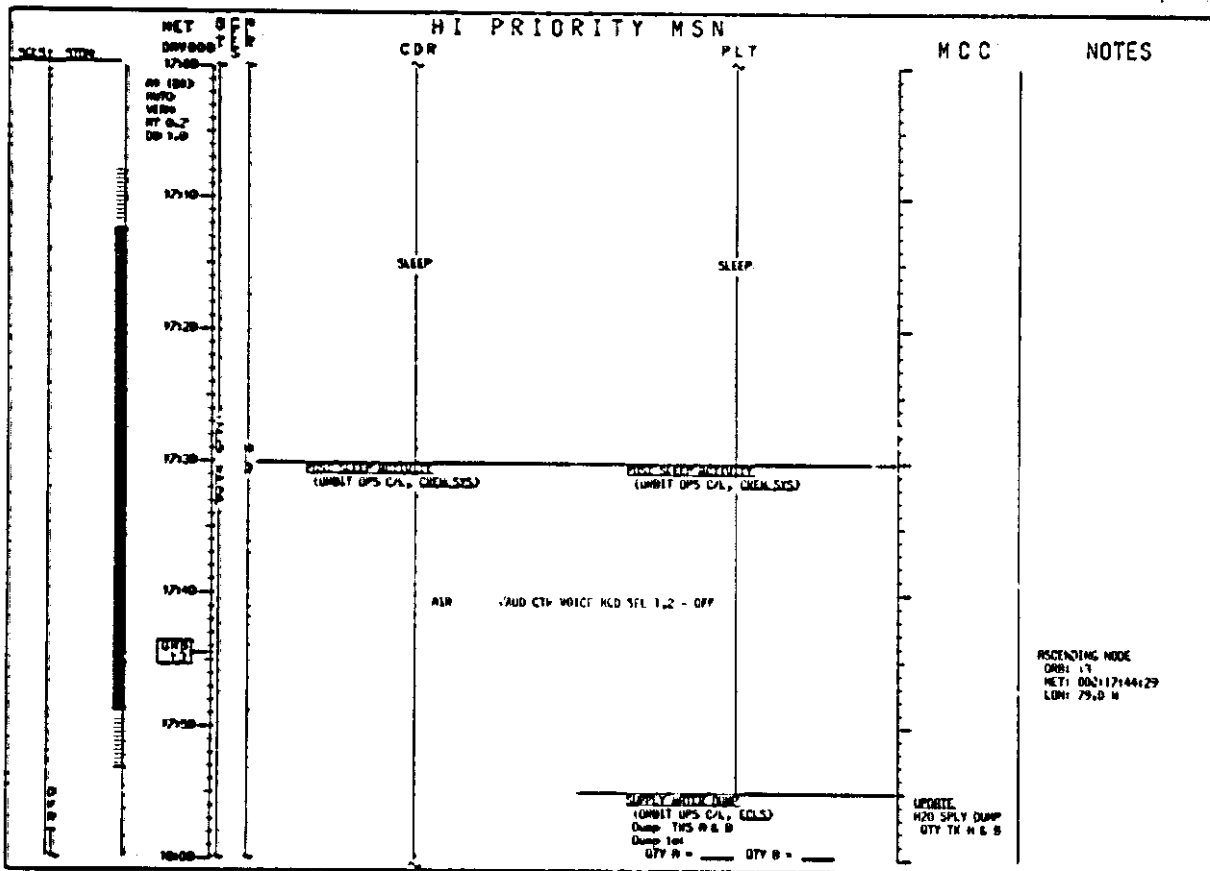
- o IECM GAS RELEASE
- o FRCs THERMAL SOAKBACK, TWO FORWARD ENGINES - F2F, F3F
- o FCS CHECKOUT, PART 1 AND 2. STAY ON TAIL ONLY JETS SO NO FRCs FIRINGS IN FORWARD POD. (REQUIREMENT OF FRCs THERMAL SOAKBACK TESTS)
- o RADIATOR PERFORMANCE TEST. STOW RADIATORS 3 HRS PRIOR TO PLBD CYCLE TEST, THEN DEPLOY AFTER PLBDs OPENED
- o PLBD CYCLE TEST AT THE END OF BOTTOM SUN THERMAL TEST
- o PTC FOR SLEEP

FLIGHT DAY 4 - o TAIL SUN AFTER MORNING IMU ALIGN

- o NOMINAL DEORBIT PREP (5 HRS)

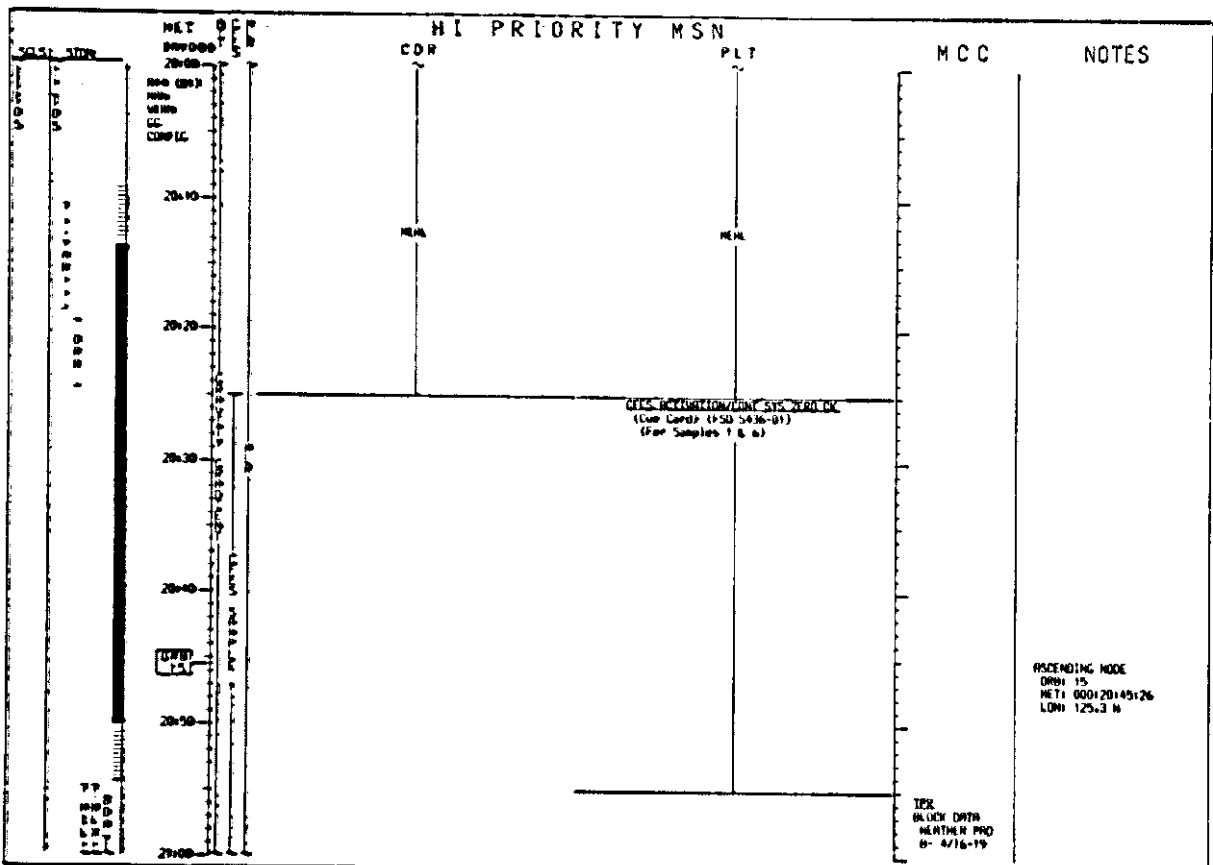
GMT (D:M:SS)	NET (D:M:SS)	CDT (D:M:SS)	P.D. DUTY (D:M:SS)	BIRTH	NOON	MISSION DATE	FLIGHT	EDITION	PHN. DATE					
17/01:00	17/01:00	17/01:00	17/01:00	2/ 17/01:00	0.2	JUNI 20, 1967	STS 4	FINAL, PCN 1	6/11/67					
HI PRIORITY MISSION														
GMT	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CDW			SLEEP											
PL7			SLEEP											
CDW														
PL7														
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MI PRIORITY MSN		PLT	MCC	NOTES																				
<p>0800</p> <p>0810</p> <p>0820</p> <p>0830</p> <p>0840</p> <p>0850</p> <p>0900</p>	<p>0800</p> <p>0810</p> <p>0820</p> <p>0830</p> <p>0840</p> <p>0850</p> <p>0900</p>	<p>C DRW</p> <p>POST SLEEP ACTIVITY LIMIT OPS CAL, UNASSIS)</p> <p>PC PURGE HW - SA</p> <p>TELEPRINTER MESSAGE REVIEW</p> <p>Terminate H20 BMDP</p> <p>LINK PROC PURGE - RIM (Cov Card)</p> <p>PC PURGE HW - CPC HEATER RECONFIG (LIMIT OPS CAL, EPS) Card 10 B</p> <p>Changeout wireless headset battery pack</p> <p>LINK PROC PURGE (LIMIT OPS CAL, GNC) LINK RECONFIG - S THE (LIMIT OPS CAL, GNC) STAR ID - 77 75, 76, 77 - 22 43, 44, 45, 46, 47, 48 LINK PROC PURGE (LIMIT OPS CAL, GNC) (LIMIT OPS CAL, GNC) (LIMIT OPS CAL, GNC) STAR ID - 77 75, 76, 77 - 22 43, 44, 45, 46, 47, 48 STAR ID - 77 75, 76, 77 - 22 43, 44, 45, 46, 47, 48</p>	<p>ENERGY DOWN SH EXPT - REG/PMT REGO</p> <p>Stars 15 & 43 available from 0718:39 to 0719:15</p> <p>LINK PROC PURGE</p> <table border="1"> <tr> <td>PRM ID</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>INC</td> <td></td> <td></td> <td></td> </tr> <tr> <td>A X</td> <td>()</td> <td>()</td> <td>()</td> </tr> <tr> <td>A Y</td> <td>()</td> <td>()</td> <td>()</td> </tr> <tr> <td>A Z</td> <td>()</td> <td>()</td> <td>()</td> </tr> </table> <p>EXECUTION TIME: _____</p>	PRM ID	1	2	3	INC				A X	()	()	()	A Y	()	()	()	A Z	()	()	()	
PRM ID	1	2	3																					
INC																								
A X	()	()	()																					
A Y	()	()	()																					
A Z	()	()	()																					

NET		HI PRIORITY MSG		MCC		NOTES
080000Z		CDR	PLT			
19-00	19-00	CARGO CHANGING CELL DATA, MSC 2 Partone Step 2: (ESTIM 150 FINE DRIFT) MSG# 100, RPT 10: Per IPN message		EXPERIMENT OPERATIONS DOCUMENTATION (PHOTO/TV CAL, IRR, P/VAL) TV ACT		
19-10	19-10	EXPERIMENT OPERATIONS DOCUMENTATION (PHOTO/TV CAL, IRR, P/VAL)		EXPERIMENT OPERATIONS DOCUMENTATION (PHOTO/TV CAL, IRR, P/VAL)		RESENDING MODE DRB: 14 NET: 000119:14:57 LDM: 102.2 N
19-20	19-20	Charged wireless Replaced battery pack		EXPERIMENT OPERATIONS DOCUMENTATION (PHOTO/TV CAL, IRR, P/VAL) TV IRR/CT		
19-30	19-30	REPORT: CHG B/LION RESULTS				
19-40	19-40	NIL		PHYSIOLOG STATUS REPORT (If reqd)		APT: IMU ALIGN RESULTS
19-50	19-50	NIL		NIL		APT: PAL STATUS
20-00	20-00					



NET 8:00 P

HI PRIORITY MSN

080000

CDR

PLT

MCC

NOTES

22:00

MSL ACCUMEN (Cue Card)
(FSD 5407-01)

MS (00)
MS
MS
SC
CONTC

22:10

MONITORING

22:20

22:30

DEL POWER UP (MIL)

RPTD OFI POW QMNT 1,2,3 SCSC (three) - DR

SIMULTANEOUS AVG 1 & AVG 2 DEMO

SIMULTANEOUS AVG 1 & AVG 2 DEMO

UPLINK
QBITER S.V.

22:40

DEL POWER DOWN

RPTD OFI POW QMNT 1,2,3 SCSC (three) - DR

CONT SEP BML - PHOT LL (Cue Card)

(FSD 5420-01) Sample 1
Operator Call (Approx. 22:43)
Display - PHOTO

22:50

HEAL PHZC (Cue Card)
Prepare DWP 2, HEAL B

22:00

20:00

20:00
20:05
20:10
20:15
20:20
20:25
20:30
20:35
20:40
20:45
20:50
20:55
21:00
21:05
21:10
21:15
21:20
21:25
21:30
21:35
21:40
21:45
21:50
21:55
22:00

NET DRYDDB
23:00

HI PRIORITY MSN

CDR

PLT

MCC

NOTES

HEAL. DEPT. (Cue Card)

APP (BR)
HNS
VARS
CC
CDWIC

23:10

HOUSEKEEPING

23:20

PRIVATE MEDICAL COMMUNICATION

PRIVATE MEDICAL COMMUNICATION

23:30

REINSERT MEDIA COLLECTOR (Cue Card)
(50 SAJ-03) Sample 1
Operator Call (Approx. 23:25)
Display - PHOTO

23:40

Operator Call (Approx. 23:43)
Display - PHOTO

23:50

WPC - EJECTOR SETTING (FTD 467-09)
NTP: Remove food from locker and
store on food tray
FREEZE/THAW - OFF

Reorder time (Cue Card)

23:55

HEAL

ASCENDING NODE
DRN: 17
NET: 000123146124
LON: 171.6 H

NET		HI PRIORITY MSN		PLT	MCC	NOTES
DRG	TIME	CDR				
00:00	00:00			HEA		
00:05	00:05					
00:10	00:10					
00:15	00:15					
00:20	00:20					
00:25	00:25					
00:30	00:30					
00:35	00:35					
00:40	00:40					
00:45	00:45					
00:50	00:50					
00:55	00:55					
01:00	01:00			HEA		

(Use Card)
 (FSO 5436-89) Sample 6
 Operator Call (Approx.00115)
 Display - RUN A CONT OR
 FLASH OF END
 Operator Call (Approx.00122)
 Display - PHOTO

MET

080000

0200

0200
0205
0210
0215
0220
0225
0230
0235
0240
0245
0250
0255
0300

0210

0215

0220

0225

0230

0235

0240

0245

0250

0255

0300

0305

0310

0315

0320

0325

0330

0335

0340

0345

0350

0355

0400

0405

0410

0415

0420

0425

0430

0435

0440

0445

0450

0455

0500

0505

0510

0515

0520

0525

0530

0535

0540

0545

0550

0555

0600

HI PRIORITY MSN

CDR

PLT

MCC

NOTES

BCIP ALLESCENE ON-OFFSET DATA
 (FSD 5433-02)
 ON-ICE CAL (MNO)
 DFI RECORD NO MNO - CONT RCD
 DFI RECORD NO MNO - STBY
 ON-ICE CAL
 DFI MNO PHR - OFF
 DFI MNO PHR - OFF

MLR DEACTIVATION (Decal)
 (FSD 442-01)

Record Time

NUM 7 CONT OR FLUSH OR END
 (MNT 11 (Cue Card)
 (FSD 5433-01)
 Operator Call (Approx:02:16)
 Display - NUM 7 CONT OR
 FLUSH OR END

DMN 02 OPS DES
 (DMN OPS CAL, DES)

NUM 7 CONT OR FLUSH OR END
 (MNT 11 (Cue Card)
 (FSD 5433-01)
 Operator Call (Approx:02:31)
 Display - CLOSEOUT PROC

OPS HOLDING/CHANGING
 (PMS OPS CAL, MGS, ENRUP)

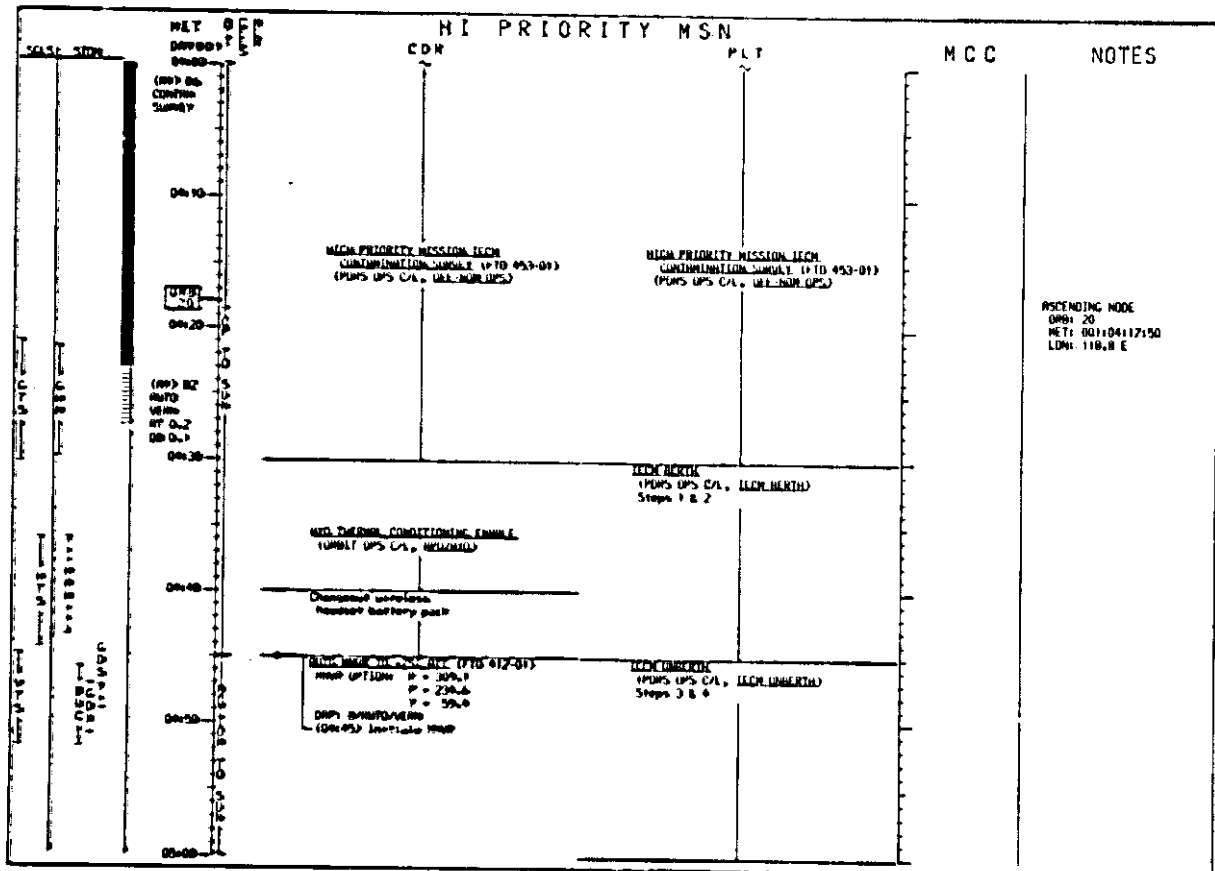
EXPERIMENT OPERATIONS DOCUMENTATION
 (PHOTO CAL, TALKER CALL)
 Record 15 min

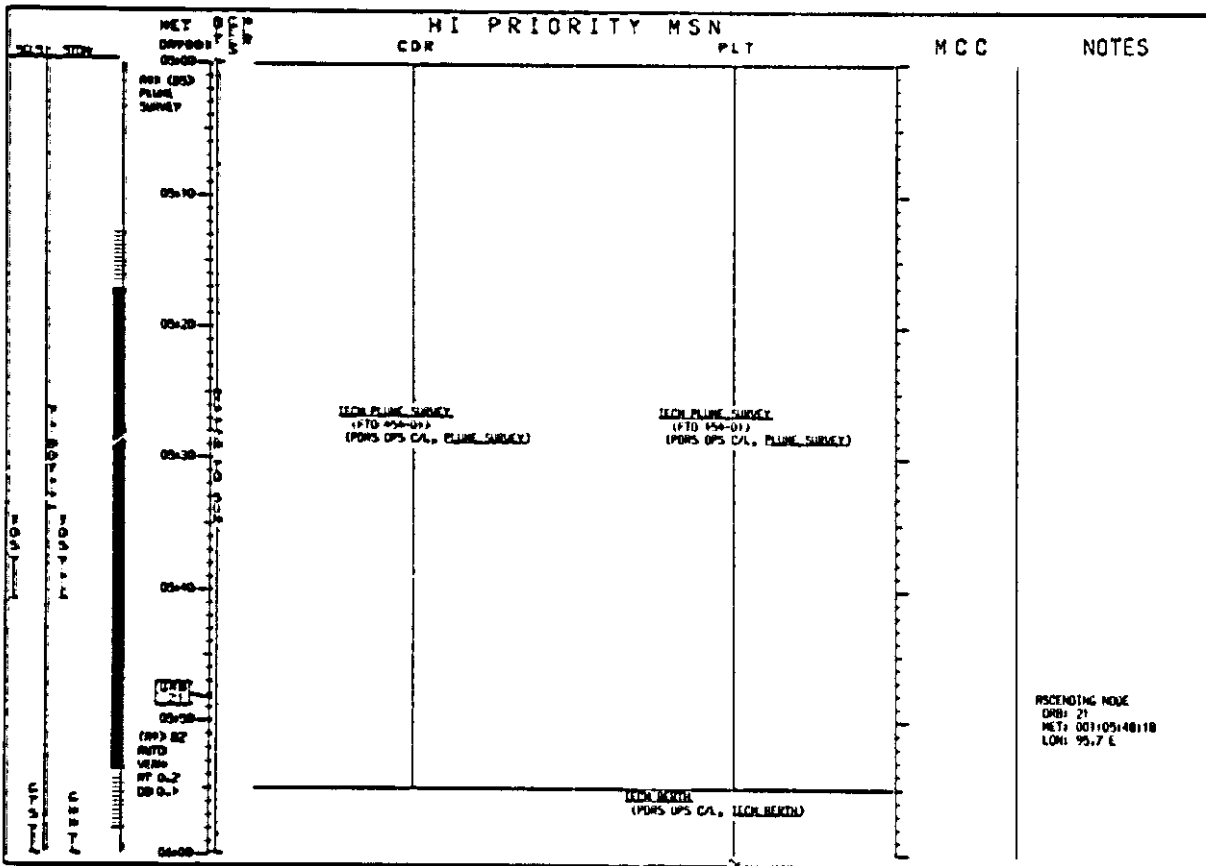
INERDR CREW
 DFI MNO-CONT RCD
 CAL
 DFI MNO-CONT OFF
 INERDR CREW
 PHR OFF HELPS

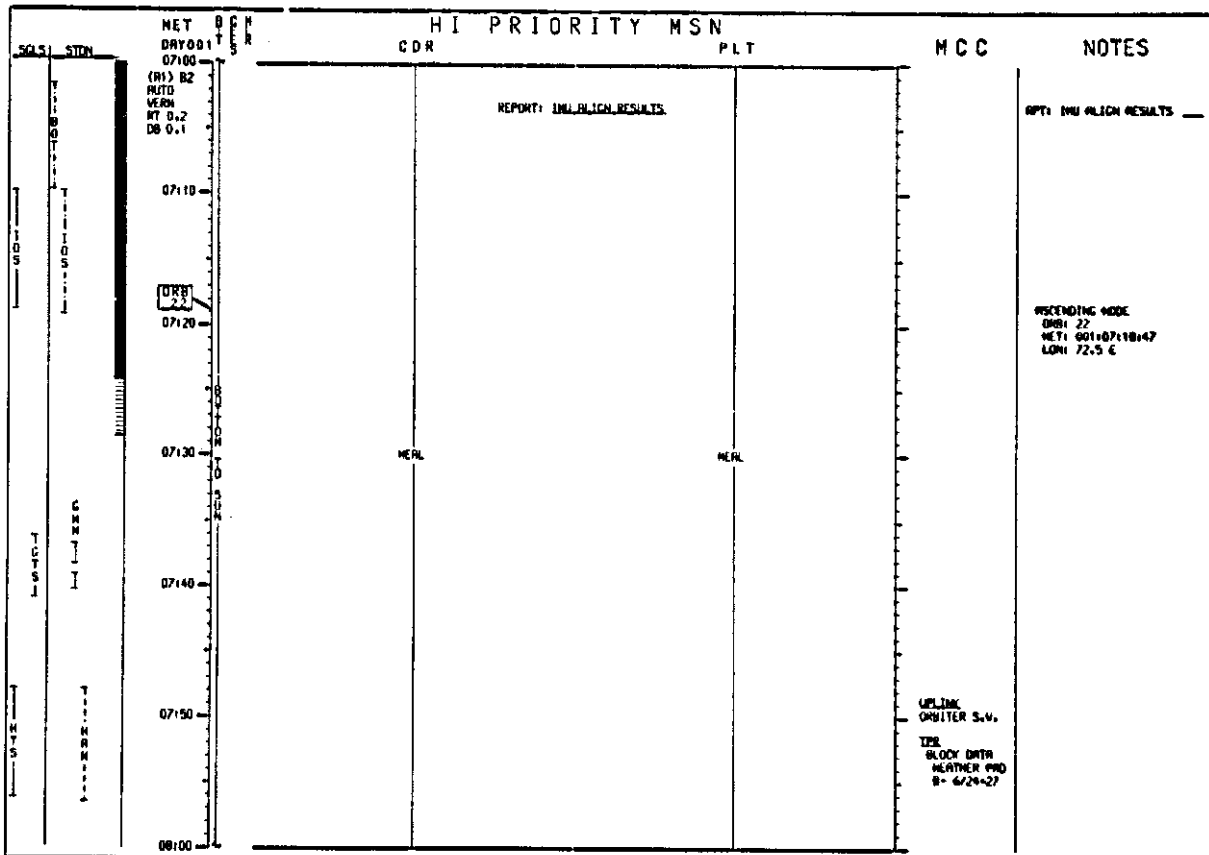
TYPE
 BLOCK DATA
 WEATHER PHD
 B- 5/20-23

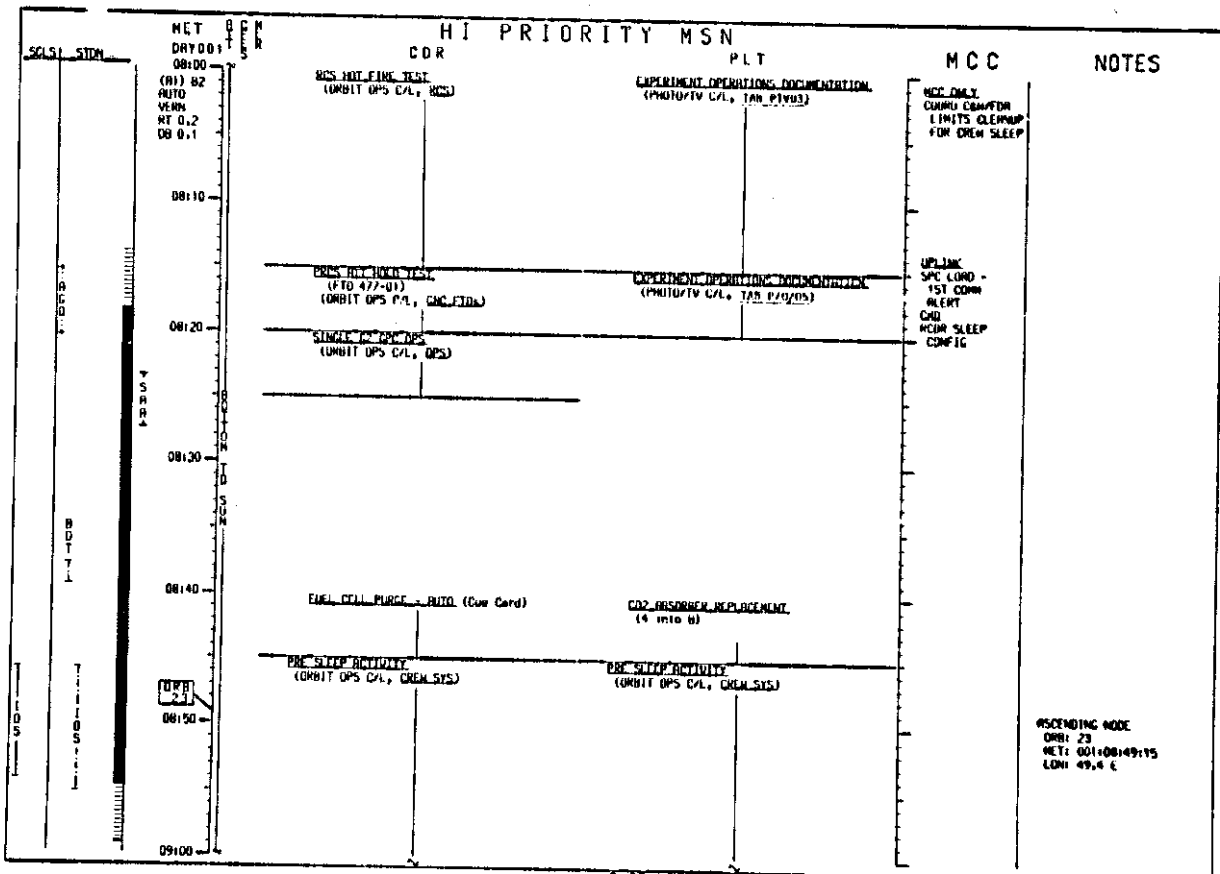
ASCENDING NODE
 DRB: 19
 MET: 001102147:21
 LOW: 142.0 E

NET		HI PRIORITY MSN		MCC	NOTES
CDR	PLT				
0000	EXPERIMENT OPERATIONS DOCUMENTATION (PHOTO TV CAL. IMMEDIATE)	DIS. POWERUP/CHECKOUT (PDMS OPS CAL. RES. P/OPS)			
0005					
0010	EXPERIMENT OPERATIONS UPPLATIONS CAL. IMMEDIATE	EXPERIMENT OPERATIONS DOCUMENTATION (PHOTO TV CAL. TAN. P/OPS)			
0015					
0020	EXPERIMENT OPERATIONS DOCUMENTATION UNBAY OPS CAL. RESP Perform Step 2 (VEHICLE RECOVERY & RES RESTRAINT)	TECH. DOCUMENTS (PDMS OPS CAL. TECH. DOCUMENTS)			
0025					
0030	EXPERIMENT OPERATIONS DOCUMENTATION TGT ID: 04 (Sum) BODY VECTOR: 03 (-1.2 Azim) DIR: 000 DIRS: 000/000/000 (00-25) Introduce TIR				
0035					
0040					
0045					
0050	HIGH PRIORITY MISSION TECH COMBINATION SUPPORT (P-TO 453-01) (PDMS OPS CAL. USE: BOM OPS)	HIGH PRIORITY MISSION TECH COMBINATION SUPPORT (P-TO 453-01) (PDMS OPS CAL. USE: BOM OPS)		UPLINK ORBITER S.V.	
0055					
0100					









NET 8
DAY 001 5
SER

HI PRIORITY MSN

5051 STDH

CDR

PLT

MCC

NOTES

09:00
(01) 82
AUTO
VELM
RT 0.2
DB 0.1

PRE SLEEP ACTIVITY
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY
(ORBIT OPS C/L, CREW SYS)

09:10

09:20

09:30

09:40

09:50

10:00

SLEEP

SLEEP

1
2
3
4

1
2
3
4

1
2
3
4

NET 8
DRY001T
C
R

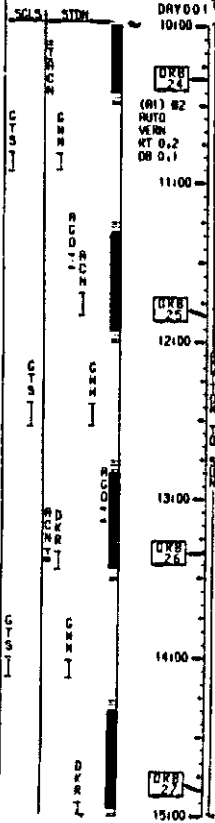
HI PRIORITY MSN

CDR

PLT

MCC

NOTES



UPR 24

(M) #2
AUTO
VERB
RT 0.2
DB 0.1

11:00

UPR 25

12:00

UPR 26

13:00

UPR 27

15:00

SLEEP

SLEEP

UPLINK
DRIFTER S.V.

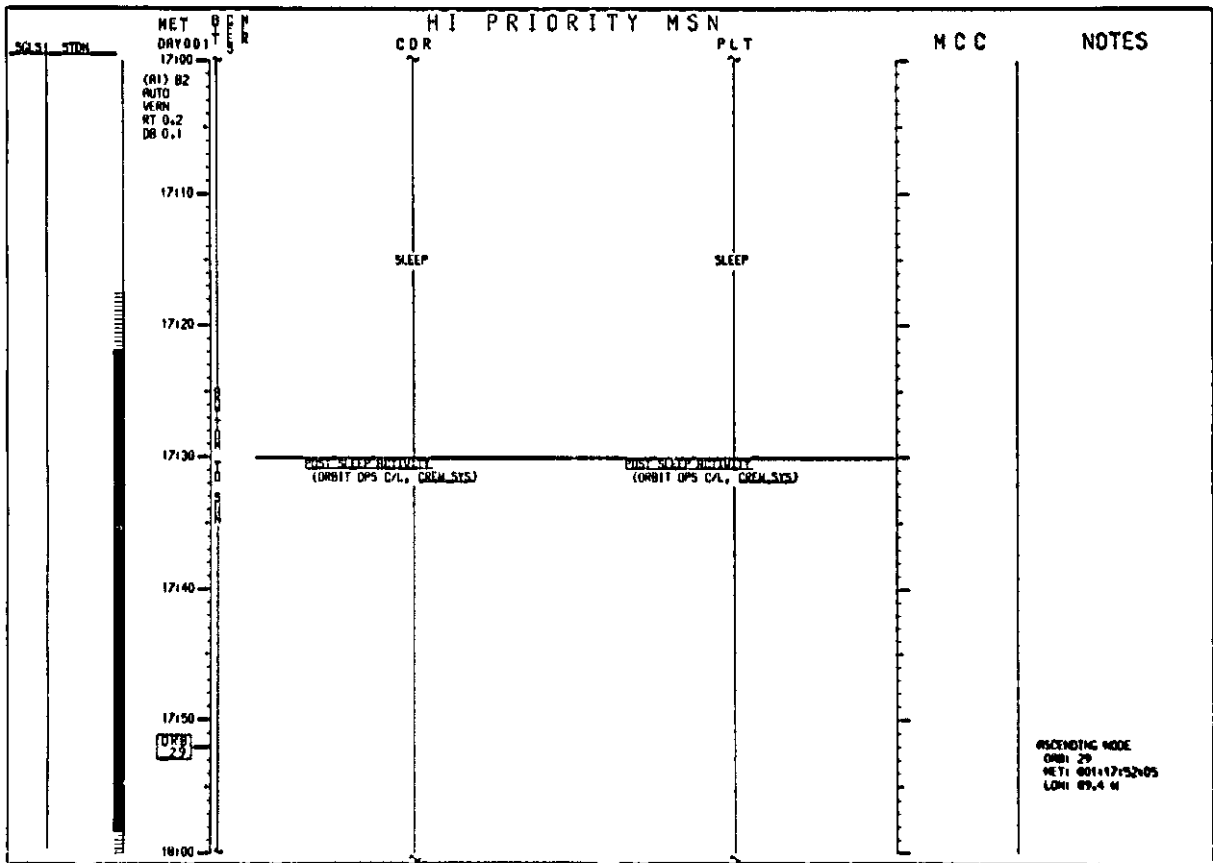
ASCENDING NODE
ORB: 24
NET: 001:18:19:00
LOW: 26.2 E

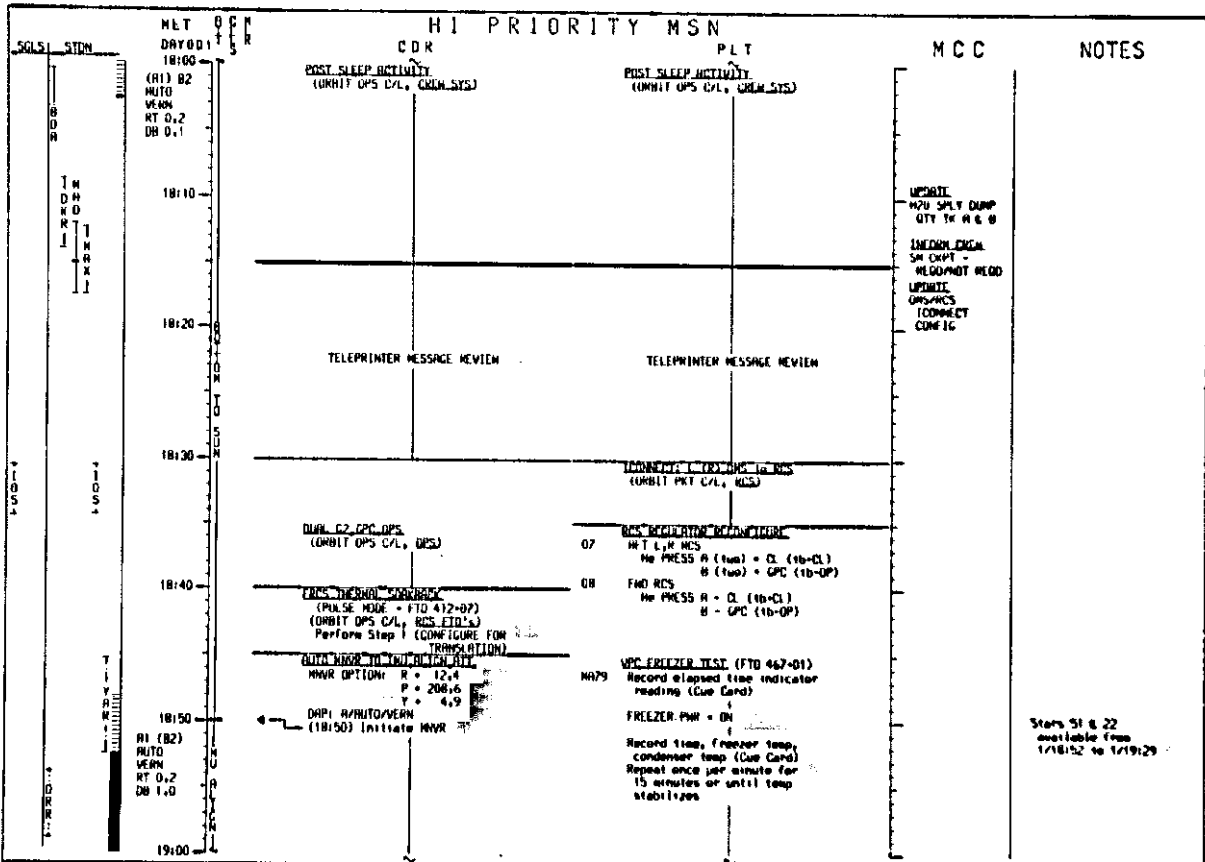
ASCENDING NODE
ORB: 25
NET: 001:19:50:12
LOW: 3.1 E

ASCENDING NODE
ORB: 26
NET: 001:13:20:00
LOW: 20.8 E

TEX
BLOCK DATA
WEATHER PWD
B- 728-31

ASCENDING NODE
ORB: 27
NET: 001:14:51:00
LOW: 13.1 E





SGLS		STN	MET	HI PRIORITY MSN	PLT	MCC	NOTES
			DAY 001	CDR			
			22:00				
			(R1) B2	ERCS THERMAL SOBCKACK			
			AUTO	(PULSE MODE = FTO 412-07)			
			NORM	(ORBIT OPS C/L, RCS LTD's)			
			RT 0.2	Perform Step 3 (PERFORM TRANSLATION)			
			DB 5.0				
			22:10	4 (22:10) *X TRANS (30 sec)			
			(R1) B2	C3 JDFI RCORS MB MSN = STBY (tb-bp)			
			AUTO				
			VERN				
			RT 0.2				
			DB 0.1				
			22:20	C3 JDFI RCORS PCM = NI SAMP			
			DRB				
			22				ASCENDING MODE
			22:30				ORBI 32
							MET: 001:22:23:30
							LONG 158.9 m
			22:40	4 (22:40) *X TRANS (30 sec)			
			(R1) B2	ERCS THERMAL SOBCKACK			
			AUTO	(PULSE MODE = FTO 412-07)			
			NORM	(ORBIT OPS C/L, RCS LTD's)			
			RT 0.2	Perform Step 3 & 4 (PERFORM			
			DB 5.0	TRANSLATION & POST BURN RECONFIC)			
			22:40	4 (22:40) *X TRANS (30 sec)			DEL POWER UP (NIL)
							WITH DFI PCM CNT 1,2,3 SGSC (three) - Di
			(R1) B2	C3 JDFI RCORS MB MSN = STBY (tb-bp)			
			AUTO				
			VERN				
			RT 0.2				
			DB 0.1				
			22:50	C3 JDFI RCORS PCM = NI SAMP			
							DEL POWER DOWN
							WITH DFI PCM CNT 1,2,3 SGSC (three) - DF
			23:00				

NET 8 C M
DAY 002

HI PRIORITY MSN

CDR

PLT

NCC

NOTES

00100
RR (02)
AUTO
VERN
RT 0.007
Db 0.5

ICOM COS RELEASE (FSO 5431-01)
[INC. UNLU. PTC]
MOD. VECT #2 (N. Rate)
(00107) Initiate NDT
ICOM - POS 1, Maint 30 sec
ICOM - POS 2

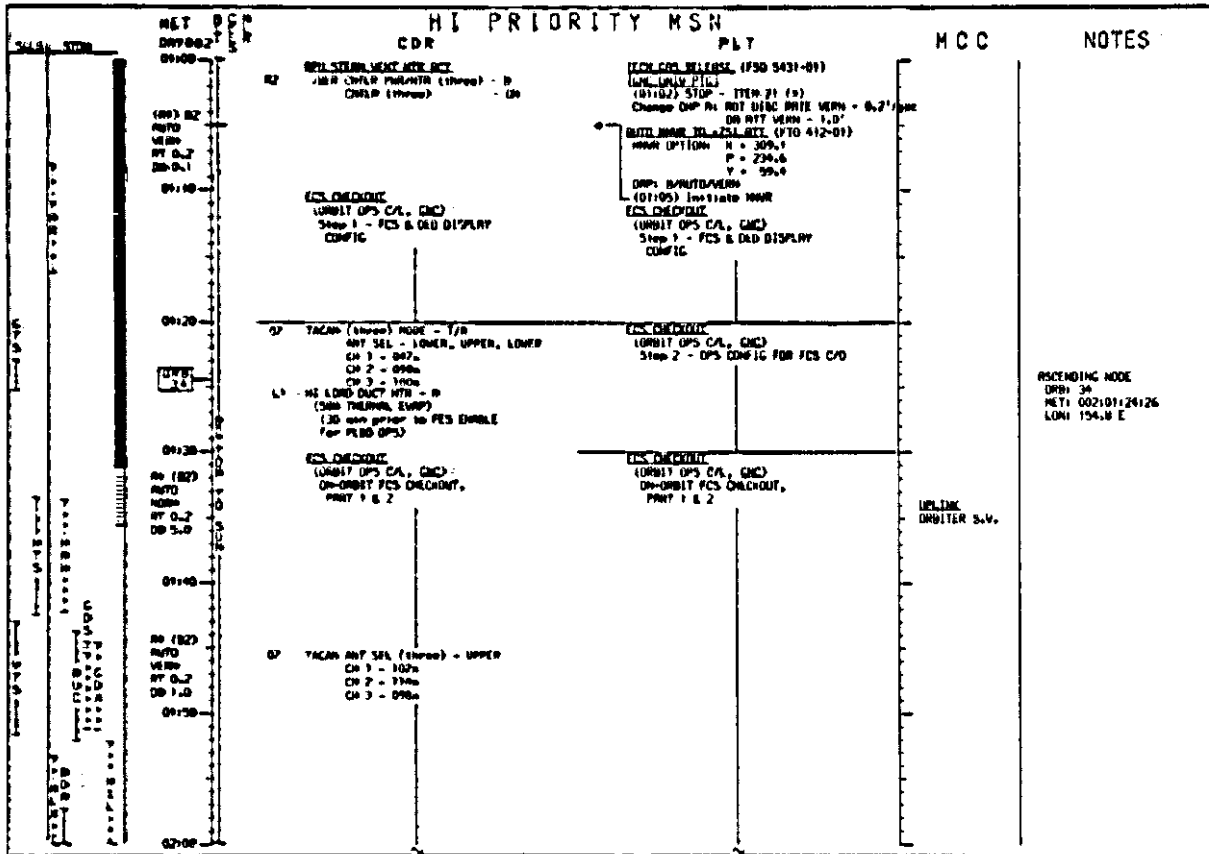
H11

4

NEAL

NEAL

00100
00110
00120
00130
00140
00150
01100



MET DCN

HI PRIORITY MSN

MCC

NOTES

03:00

(03) 02

AUTO

MCC

NY 0.2

DB 0.1

03:10

03:20

03:30

03:40

03:50

04:00

04:10

04:20

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05:00

05:10

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06:00

06:10

06:20

06:30

06:40

06:50

07:00

07:10

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07:30

07:40

07:50

08:00

08:10

08:20

08:30

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09:40

HI PRIORITY MSN

CDR

PLT

MCC NOTES

INITIAL ALIGN PROC

HW ID _____ ANG ERR _____
 INC 1 2 3

A X () () ()

A Y () () ()

A Z () () ()

EXECUTION TIME: _____

UPDATE

R20 SPLY DUMP
 QTY TX A B B

RPT: IMU ALIGN RESULTS

ASCENDING NODE
 DWR: 38
 MET: 002107126118
 LON: 62.2 E

MCC ONLY
 COUNT EBH/PDA
 LIMITS CLEARUP
 FOR CREW
 SLEEP

UPLINK
 SPC LOAD -
 1ST DOWN
 ALERT
 CDR
 RCVR SLEEP
 CONFIG

MET

07:00

07:10

07:20

07:30

07:40

07:50

08:00

R2 (B2)

WDR

HT 0.2

DB 1.0

07:10

07:20

R2 (B2)

WDR

HT 0.4

DB 1.0

07:30

07:40

07:50

08:00

INITIAL ALIGN PROC

UNIT OPS CAL, GND

STAR UP - 1: 43, HRS/ANALOG

- 2: 26, HL NOT IN

ANG DEF: 0.4

REPORT: IMU ALIGN RESULTS

0.4 DEGR/SEC PTC ADJ - INITIATE

(PTD #12-01)

MMW OPTIM: H= 165.8

P= 232.6

To 58.3

DMP: 0.4/0.4/0.4

(07:10) Initiate MMW

07:10

07:20

07:30

07:40

07:50

08:00

GAS DECONTAMINATION

(1530 1435-017)

Set GAS Delay DO NOT to LATENT, then

Set GAS Delay 02 NOT to LATENT

STATUS: ENCODER

Disconnect cable from encoder and SSP

Status encoder and cable

07:10

07:20

07:30

07:40

07:50

08:00

MMW MMW to PTC ATT complete,

CHANGE DMP A:

NOT 0.5C RATE VERR - 0.4 /SEC

CHANGE DMP B:

DO NOT VERR - 1.0"

BODY VERT on

(07:30) Initiate NOT

07:30

07:40

07:50

08:00

08:10

08:20

08:30

08:40

08:50

09:00

POST OPERATIONS DOCUMENTATION

(OPERATIONS CAL, IMU P20/01, A, P20/02)

07:10

07:20

07:30

07:40

07:50

08:00

INITIAL ALIGN PROC

UNIT OPS CAL, GND

STAR UP - 1: 43, HRS/ANALOG

- 2: 26, HL NOT IN

ANG DEF: 0.4

REPORT: IMU ALIGN RESULTS

0.4 DEGR/SEC PTC ADJ - INITIATE

(PTD #12-01)

MMW OPTIM: H= 165.8

P= 232.6

To 58.3

DMP: 0.4/0.4/0.4

(07:10) Initiate MMW

07:10

07:20

07:30

07:40

07:50

08:00

POST OPERATIONS DOCUMENTATION

(OPERATIONS CAL, IMU P20/01, A, P20/02)

07:10

07:20

07:30

07:40

07:50

08:00

INITIAL ALIGN PROC

UNIT OPS CAL, GND

STAR UP - 1: 43, HRS/ANALOG

- 2: 26, HL NOT IN

ANG DEF: 0.4

REPORT: IMU ALIGN RESULTS

0.4 DEGR/SEC PTC ADJ - INITIATE

(PTD #12-01)

MMW OPTIM: H= 165.8

P= 232.6

To 58.3

DMP: 0.4/0.4/0.4

(07:10) Initiate MMW

07:10

07:20

07:30

07:40

07:50

08:00

POST OPERATIONS DOCUMENTATION

(OPERATIONS CAL, IMU P20/01, A, P20/02)

07:10

07:20

07:30

07:40

07:50

08:00

INITIAL ALIGN PROC

UNIT OPS CAL, GND

STAR UP - 1: 43, HRS/ANALOG

- 2: 26, HL NOT IN

ANG DEF: 0.4

REPORT: IMU ALIGN RESULTS

0.4 DEGR/SEC PTC ADJ - INITIATE

(PTD #12-01)

MMW OPTIM: H= 165.8

P= 232.6

To 58.3

DMP: 0.4/0.4/0.4

(07:10) Initiate MMW

07:10

07:20

07:30

07:40

07:50

08:00

POST OPERATIONS DOCUMENTATION

(OPERATIONS CAL, IMU P20/01, A, P20/02)

07:10

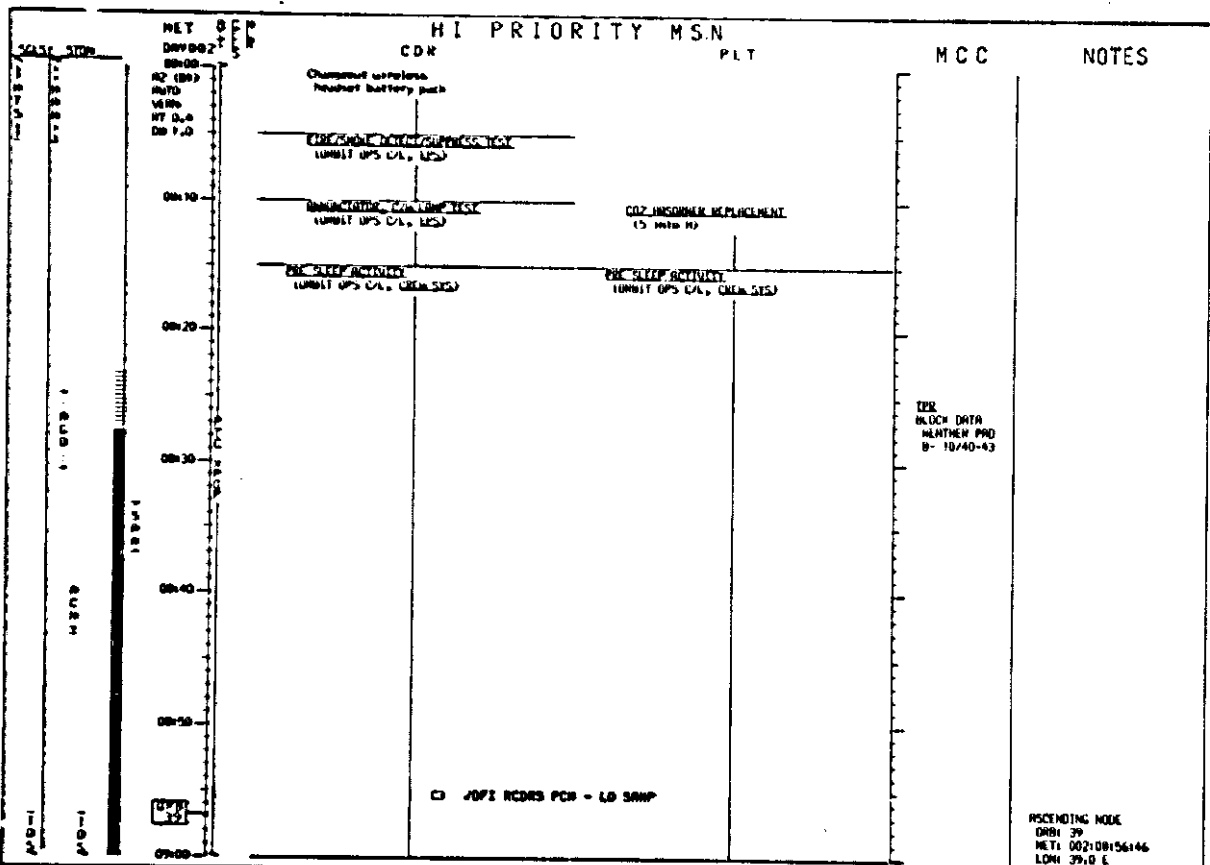
07:20

07:30

07:40

07:50

08:00



NET
DRV002

HI PRIORITY MSN

CDR

PLT

MCC

NOTES

RZ (M)
RTO
VEN
RT 0.0
DB 1.0

09:10

09:20

09:30

09:40

09:50

10:00

SLEEP

SLEEP

UPLINK
ORBITER S.V.

NET 8 C
087802
10:00

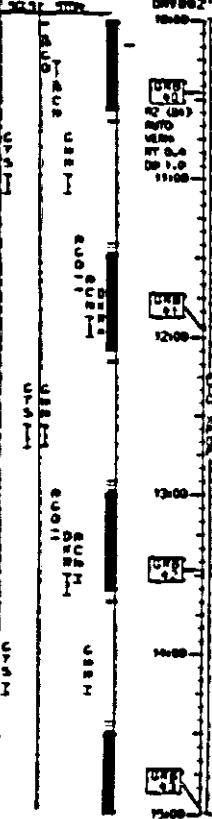
HI PRIORITY ASN

CDR

PLT

MCC

NOTES



10:00
NET 8 C
087802
10:00

12:00

13:00

14:00

15:00

SLEEP

SLEEP

RELINK
ORBITER S.V.

TER
BLOCK DATA
HEATHER PFD
B- 11/44-47

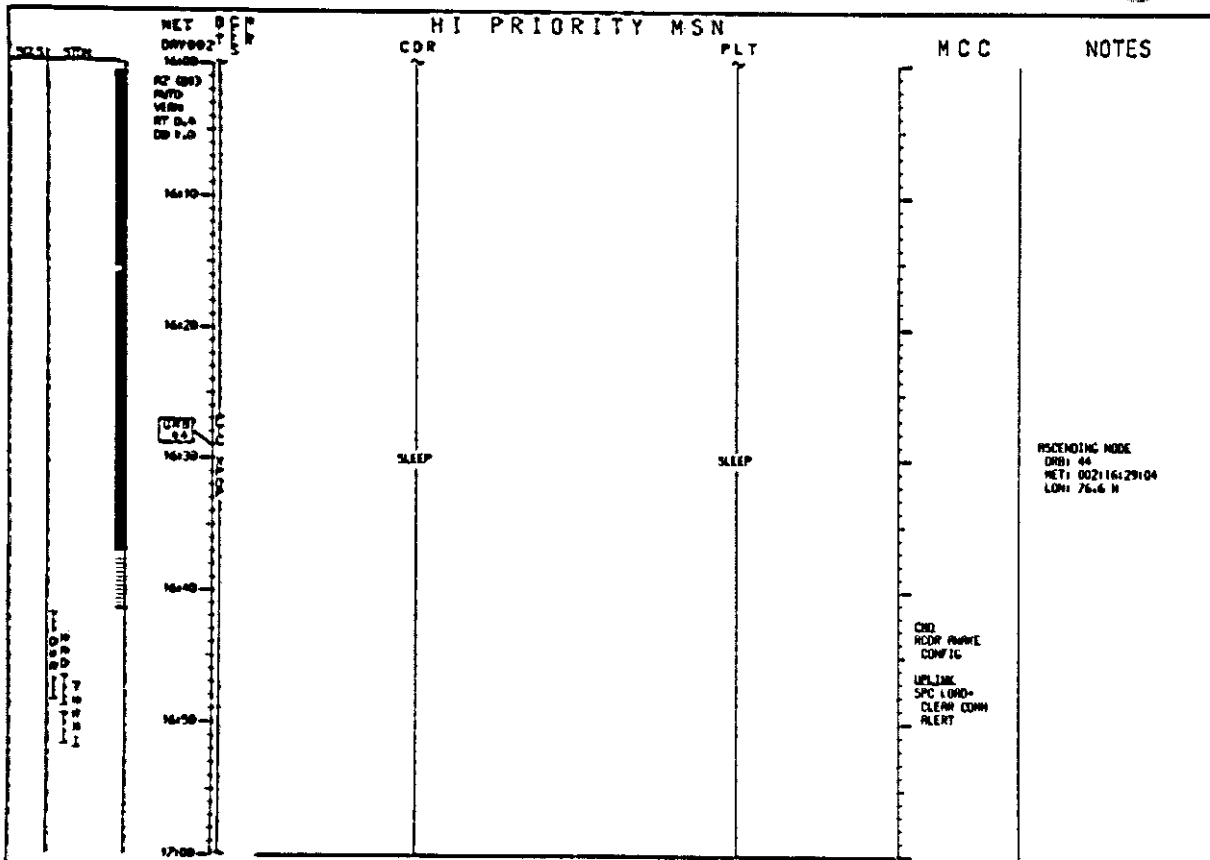
ASCENDING NODE
ORB: 40
NET: 002119:27:14
LON: 15.9 E

ASCENDING NODE
ORB: 41
NET: 002111:57:41
LON: 7.2 W

ASCENDING NODE
ORB: 42
NET: 002139:28:09
LON: 30.3 W

ASCENDING NODE
ORB: 43
NET: 002141:58:37
LON: 53.3 W

MET DCN		HI PRIORITY MSN		MCC	NOTES
CDR	PLT	CDR	PLT		
15:00					
15:05					
15:10					
15:15					
15:20					
15:25					
15:30					
15:35					
15:40					
15:45					
15:50					
15:55					
16:00					



NET DCN
0021759

HI PRIORITY MSN

CDR

PLT

MCC

NOTES

17:00

RP (DB)
RWD
VRS
RT 0.0
DB 1.0

FIRST SLEEP ACTIVITY
(LIMIT OPS CAL, CHEN, SYS)

FIRST SLEEP ACTIVITY
(LIMIT OPS CAL, CHEN, SYS)

Show electrode sites, if read

17:10

17:20

17:30

17:40

17:50

18:00

17:00
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17:40
17:50
18:00

17:00
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17:50
18:00

17:50
18:00

UPDATE
H2O SPLY DUMP
QTY TX A & B

INFORM CHEN
SR CRPT -
REQD/MOT REQD

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

ASCENDING MODE
ORB: 45
NET: 00217159132
LOR: 30.0.0

NET
DRY 002

HI PRIORITY MSN

MCC

NOTES

SOLS STIM
 19:00
 19:10
 19:20
 19:30
 19:40
 19:50
 20:00
 TT
 W
 L
 K
 I
 B
 D
 A
 W
 D
 K
 7
 D
 K
 4

19:00
 19:10
 19:20
 19:30
 19:40
 19:50
 20:00

CDR

PLT

MEAL

MEAL

DRB
4.6

ASCENDING MODE
 DRB: 46
 NET: 002119:30:00
 LONI 122.9 #

TER
 BLOCK DATA
 WEATHER PAD
 B- 12748-51

CLEANUP/STOWAGE (Due Card)
 Steps 1-4

R11 DEN PWR - DN

Copy! CRT TIMER SETUP PAD UPDATE
 in DOWNLIT.PMLP, 3-7

UPDATE
 CRT-TIMER
 SETUP PAD

Go to DEBRIT PREP

ONE-DAY EXTENSION

The STS-4 Extension Timeline is designed to follow a nominal flight up to the decision point for the 24 hour extension. This GO/NO GO decision point occurs at MET 6/00:25, prior to entry-related activities for the nominal flight.

Also, this timeline may be used after the D/O PREP BACKOUT has been executed on FD 8.

24 HOUR EXTENSION CASE:

- o Execute detailed timeline pages from 6/00:00 to Deorbit Prep on FD 9
- o A period of time with no scheduled activities is provided immediately following the GO/NO GO to allow preparations for the extension of the flight.

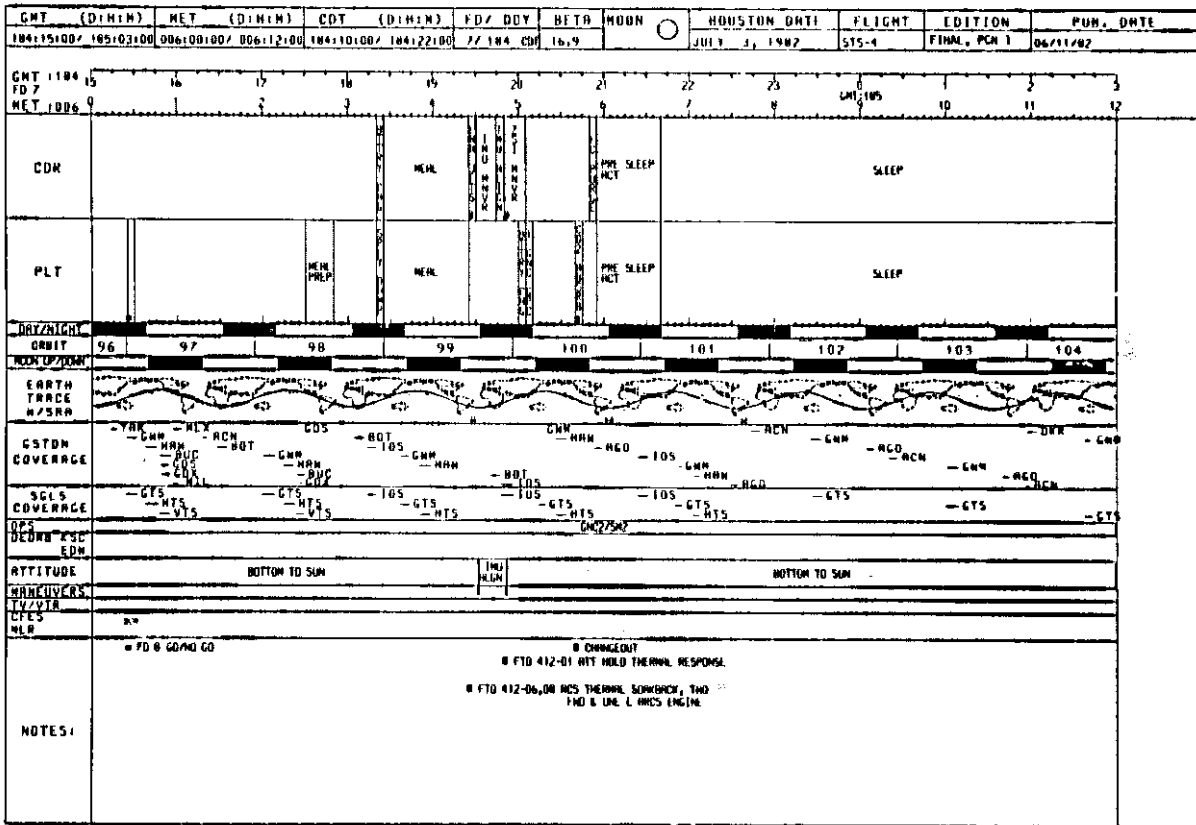
AFTER DEORBIT PREP BACKOUT CASE:

Begin timeline at 7/00:30 with the following changes:

- o CDR - MCC will modify PTC to -ZLV as required (5-83); omit CABIN TV STOW at 7/04:15 MET
- o PLT - Omit all activities between MET 7/02:10 and 7/04:20 (i.e., P/L DEACT, CABIN STOW, CO₂ ABSORBER REPLACEMENT)

ONE-DAY
EXTENSION

ONE-DAY EXTENSION



GMT (D:HM)	MET (D:HM)	CDT (D:HM)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE										
105:15:00 / 106:03:00	007:00:00 / 007:12:00	105:10:00 / 105:22:00	7 185 007	20.7	☉	JULY 4, 1982	575-6	FINAL, PCH 1	06/11/82										
GMT 1185 FD # MET 1007	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
CDR	NSL DEBIT	NSL	NSL	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN
PLT	NSL DEBIT	NSL	NSL	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN	CHIN STN
DAY/NIGHT																			
ORBIT	112	113	114	115	116	117	118	119	120										
EARTH TRACE W/SRR																			
GSTDN COVERAGE	-BDT	-GMR	-RHX	-ACH	-BDT	-GMR	-RHX	-ACH	-BDT	-GMR	-RHX	-ACH	-BDT	-GMR	-RHX	-ACH	-BDT	-GMR	-RHX
SGLD COVERAGE	-GTS	-HTS	-VTS	-GTS	-HTS	-VTS	-GTS	-HTS	-VTS	-GTS	-HTS	-VTS	-GTS	-HTS	-VTS	-GTS	-HTS	-VTS	-GTS
BPS DEOWN *SC EDW	1 0017																		
ATTITUDE	PTC *POP			[M] *LON			PTC												
RECOVER TV *R																			
CFES MLR																			
NOTES:	FSO 5441-01 NSL OPERATIONS * PL DEBIT PREP * CHANGEOUT																		

MET
DRY 006
00:00

R4 (R2)
R4TD
NORM
RT 0.2
DB 5.0

00:10

00:20

00:30

00:40

00:50

01:00

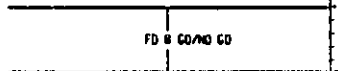
STS-4 DETAILED

CDR

PLT

MCC

NOTES



ASCENDING NODE
ORBI 97
NET: 006400124+04
LONI 136.6 E

MET
DAY 006
01:00

A4 (B2)
AUTO
NORM
RT 0.2
DB 5.0

01:10

01:20

01:30

01:40

01:50

02:00

STS-4 DETAILED

CDR

PLT

MCC

NOTES

SLS STN

C
T
R
L
L
K

MCC

TOB

MCC

000
98

ASCENDING NODE
ORBIT 98
MET: 006:01:54:32
LONG: 113.5 E

MET
DRY006

CDR

STS-4 DETAILED

PLT

MCC

NOTES

02:00
M (02)
AUTO
HUSH
HT 0.2
DB 5.0

02:10

02:20

02:30

02:40

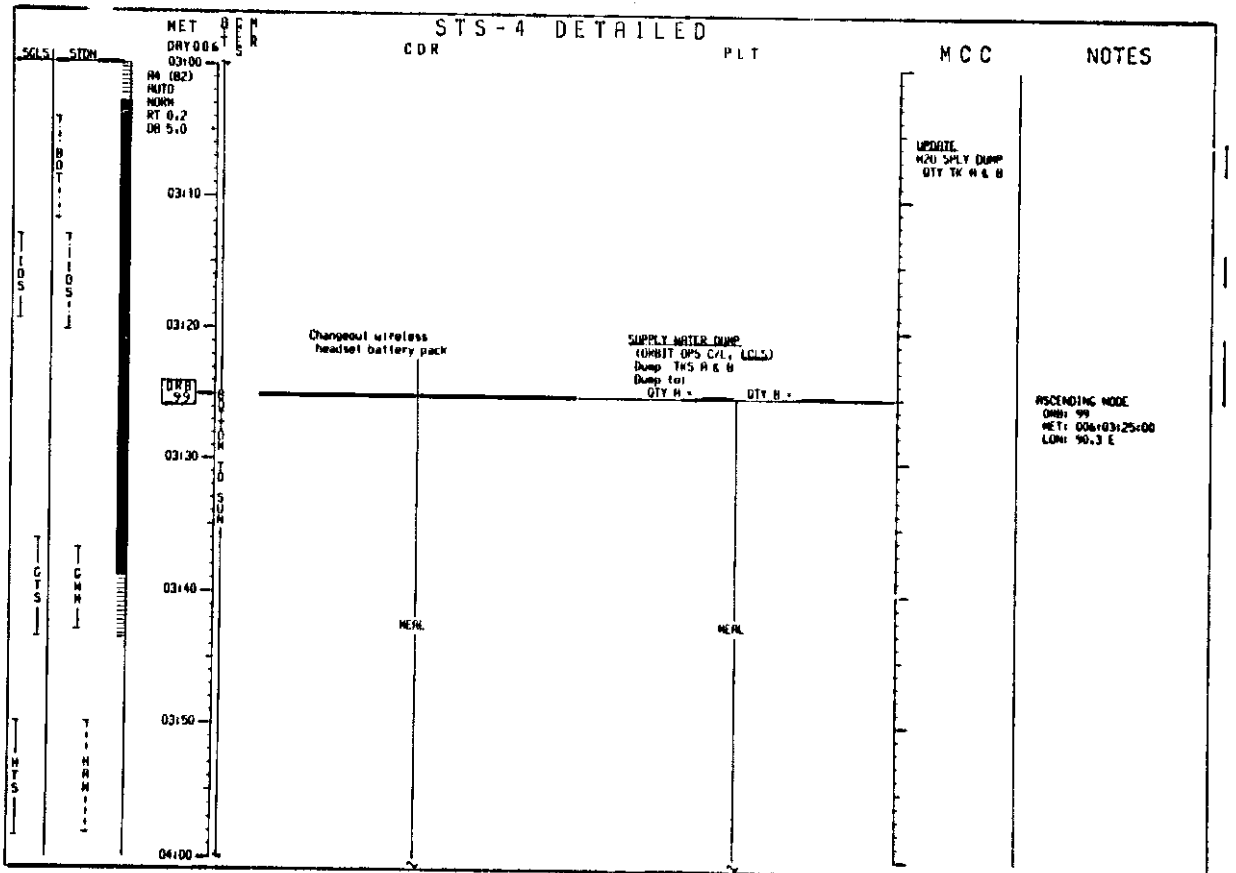
02:50

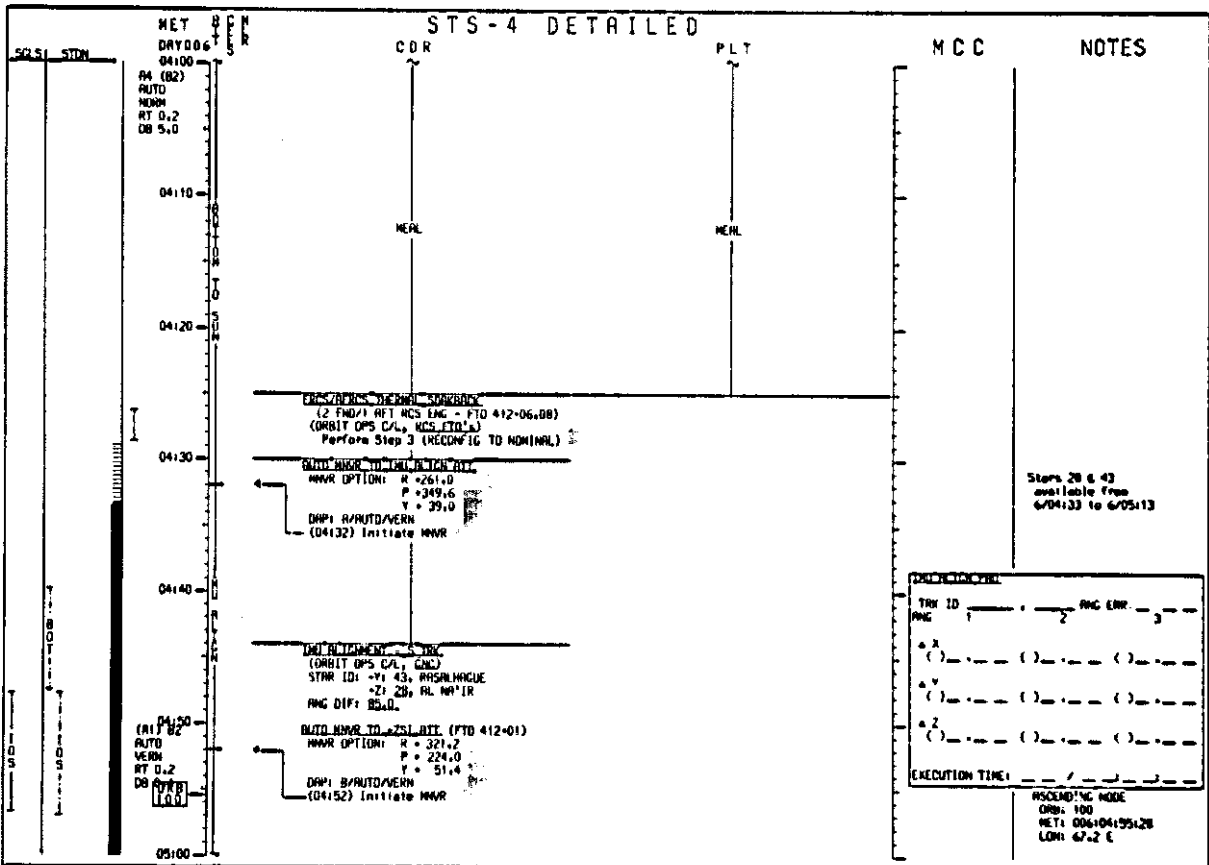
03:00

SCS1 STN
 CTS
 HTS
 MTS
 1000
 1490
 1490

NEAL PREP. (Cue Card)
Prepare DRY 7, NEAL C

TELE
BLOCK DATA
WEATHER PRO
8-25/101-104





NET
DAY 006

05:00
(R) B2
AUTO
VERN
RT 0.2
DB 0.1

STS-4 DETAILED

CDR

PLT

MCC

NOTES

AUTO. MNR. TD. 251. ALL

Changeout wireless
headset battery pack

SINGLE 22 TPE OPS
(ORBIT OPS C/L, CREW)

UPLINK
ORBITER S.V.

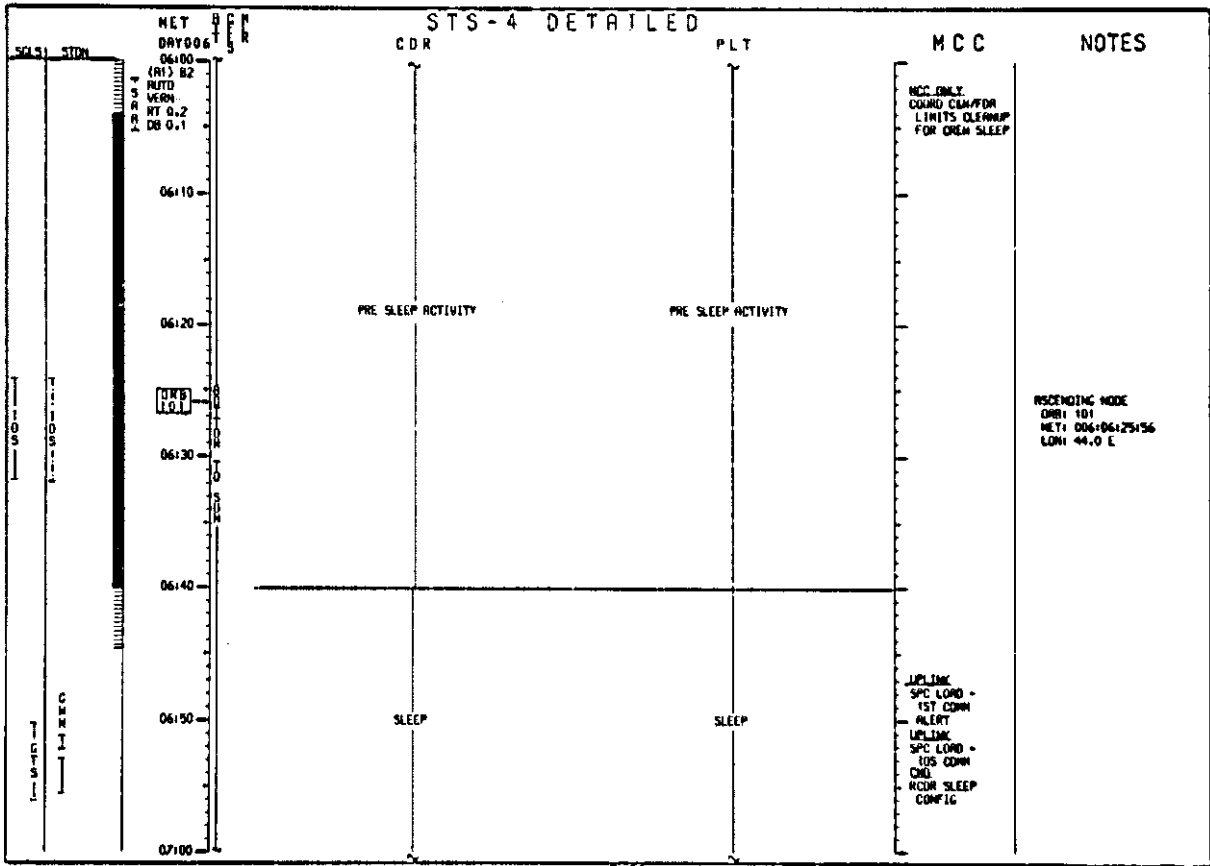
CO2 RESERVOIR REPLACEMENT
(9 into 8)

EUEL CELL PURGE - AUTO (Cue Card)

PRE SLEEP ACTIVITY
(ORBIT OPS C/L, CREW SYS)

PRE SLEEP ACTIVITY
(ORBIT OPS C/L, CREW SYS)

06:00



MET
099004

STS-4 DETAILED

CDR

PLT

MCC

NOTES

(M) BZ
RFD
VIRN
BY SLP
DB SLP

13:10

13:20

13:30

13:40

13:50

13:55

14:00

SLEEP

SLEEP

ASCENDING MODE
DRN: 10s
MET: 006(13:58:15)
LONL: 21.6 N

NET OCP
080004
1500

STS-4 DETAILED

CDR

PLT

MCC

NOTES

0001 0004

(100) 02
AUTO
MEMO
MT 0.2
DB 0.3

15:00

POST SLEEP ACTIVITY

POST SLEEP ACTIVITY

15:20

15:30

TELEPRINTER MESSAGE REVIEW

TELEPRINTER MESSAGE REVIEW

15:40

REPAIRS TO BE MADE (See Card)

SUPPLY DUMPING TIME
FORBIT OPS C/L, (ECLC)
Dump 7:55 P.M. B
Dump 7:58
QTY A = QTY B =

UPDATE
MID SPLY DUMP
QTY TH A & B

15:50

L1 HE LOAD DUCT MTR - A
(500 THERMAL SWMP)
(30 min period for PES ENABLE
For PLBY OPS)

UPDATE
DUMPER S.V.

MEMO

MEMO

ASCENDING NODE
DBH: 107
NET: 006115:20:43
LON: 94.8 W

T
D
W
R
D
D
I

16:00

NET
089804

STS-4 DETAILED

0831 1100

17:00
(100) SE
MAYD
MCM
RT 0-2
DB 0-2

17:10

17:20

17:30

17:40

17:50

18:00

CDR

FLD PERFORMANCE
(FTO 451-02)

PLT

FLD PERFORMANCE
(FTO 451-03)

MCC

IDE
BLODY DATA
WEATHER PRO
8-27/109-112

NOTES

NET
090000

STS-4 DETAILED

SC-1 STW

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07 (00)
AUTO
VIMS
NY 0.0
DB 1.0

19:10

19:20

19:30

19:40

19:50

20:00

CDR

HEAL PREP (Cue Cues)

PLT

CABIN TV SETUP

MCC

NOTES

PRIVATE MEDICAL COMMUNICATION
(If Required)

PRIVATE MEDICAL COMMUNICATION
(If Required)

EMERGENCY BATTERY REPAIR

CABIN TV SETUP (Cue Cues)
(PHOTO TV C/L, ILL. SCREENS)

19:30 HODDER FLOODS HANDBOOK 2 - DR-2/F
19:35 EGMAL VLV CHPS (1/2) - Remove, show
19:40 Open and show SWITCH
19:45 Remove VENT DUCT into airlock
19:50 LTC FLOOD 1, 2, 3 - DR
19:55 Restore lower tank resistance

HOUSEKEEPING

CABIN TV SETUP (Cue Cues)
(PHOTO TV C/L, ILL. SCREENS)
VTR

Chargeout wireless
reorder battery path

NET
047006

STS-4 DETAILED

CDR

PLT

MCC

NOTES

ASCENDING NODE
0491 710
NET1 006420100106
LDM 164.2 M

20-00

ORP
R2 (00)
R20
R21
R22
R23
R24

20-10

20-20

20-30

20-40

20-50

20-00

UPLINK
OMNITER S.V.

NEAL

NEAL

NET 0064

STS-4 DETAILED

CDR

PLT

MCC

NOTES

27:00
27:05
27:10
27:15
27:20
27:25
27:30
27:35
27:40
27:45
27:50
27:55
28:00

EXPLDING
(EVA C/L, (LOAD, PREP))

16MR CONG RET (16MR/12-EVA DEND)
(PHOTO/14 C/L, 16MR SCENES)

EVA SUPPORT

UNLOCK
(EVA C/L, UNLOCK/CREW PREP)

UNLOCK OPS C/L
(UNLOCK OPS C/L, DES)

SUBSEQUENTING PRETERA
(FTO 473-01)
(UNLOCK OPS C/L, COMPLETE)

Configure for COS & MIL
RDS: 6/21/87
LDS: 6/22/83

ASCENDING NODE
ORB: 111
NET: 00642130134
LDM: 172.6 E

STS-4 DETAILED

MET 0
DAY 006

CDR

PLT

MCC

NOTES

SCALE
1
2
3
4
5
6
7
8
9
10

22:00
AO (00)
AUTO
VENS
BT 0.0
DB 9.0

EVA PREP

3-BAND ANTENNA PATTERN

SINGLE OR DUAL OPS
(0.0017 OPS C/L, 0.05)

Changeout wireless
headset battery pack

22:10
AO (00)
AUTO
VENS
BT 0.0
DB 9.0

EMERGENCY EMBL
(EVA C/L, EVA PREP C/L, ONLY)

22:20

22:30

22:40

22:50

23:00

EVA SUPPORT

STS-4 DETAILED

CDR

PLT

MCC

NOTES

EMP & MWP CARTRIDGE/PLESS BATTERY
 NO PLACEMENT
 (EVA C/L, EMP PRINT/RECHARGE)

IZE
 BLOC DATA
 WEATHER PND
 B-28/113-116

ASCENDING MODE
 ORB: 112
 NET: 006123+01102
 LON: 149.4 E

NET

DAY004

23:00

TIME

00:00

00:00

00:00

00:00

00:00

23:10

23:20

23:30

23:40

23:50

00:00

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EMP & MWP CARTRIDGE/PLESS BATTERY
 NO PLACEMENT
 (EVA C/L, EMP PRINT/RECHARGE)

EVA SUPPORT

WORK DECK (EVA/WORK DECK)

WORK DECK (EVA/WORK DECK)

		STS-4 DETAILED				
		CDR	PLT	MCC	NOTES	
10:00 10:10 10:20 10:30 10:40 10:50 11:00 11:10 11:20 11:30 11:40 11:50 12:00	NET					
	0900					
	0910					
	0920					
	0930					
	0940					
	0950					
	1000					
	1010					
	1020					
1030						
1040						
1050						
1100						
1110						
1120						
1130						
1140						
1150						
1200						

STS-4 DETAILED

CDR

PLT

MCC

NOTES

REL

REL

NET

DRY007

02:00

02:10

02:20

02:30

02:40

02:50

03:00

B

C

M

R

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C

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STS-4 DETAILED

CDR

PLT

MCC

NOTES

CABIN STOW
(ORBIT OPS C/L, CREW SYSTEMS)

PLT OPERATIONS DOCUMENTATION
(OPERATIONS C/L, TAB P70/01 & P70/02)

CREW REPORT DOCUMENTATION
(OPERATIONS C/L, 104LL)

CABIN STOW
(ORBIT OPS C/L, CREW SYSTEMS)

ASCENDING NODE
ORB# 114
NET# 007102101157
LAN# 103.1 E

SCS STON

CTTS

CTTS

CTTS

CTTS

CTTS

CTTS

CTTS

CTTS

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CTTS

CTTS

CTTS

CTTS

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CTTS

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CTTS

MET

DRY007

STS-4 DETAILED

CDR

PLT

MCC

NOTES

03:00
R2 (B1)
AUTO
VERN
RT 0.4
DB 1.0

INITIATE NWR TO INH ALIGN ATTY
NWR OPTION: X = 340.0
P = 82.9
Y = 323.1
DPR: B/AUTO/VERN
(03:02) Initiate NWR

03:10
(R2) B1
AUTO
VERN
RT 0.2
DB 1.0

INH ALIGNMENT - S TRY
(ORBIT OPS CAL, GND)
STAR ID: +Y 33, PERCCOCK
-Z 47, GIEMNH
ANG DIP: 91.6

REPORT: INH ALIGN RESULTS
S TRK THRESHOLD VERIFICATION (FTD 473-02)
ORBIT OPS CAL, GND
STAR ID: -Z 47, GIEMNH +Y 33, PERCCOCK
THOLD = 3(2,1,0)

✓ S TRK THOLD -Z, +Y, -C

0.4 DEG/SEC ATT XPRP - INITIATE
(FTD 412-01)
NWR OPTION: R = 209.4
P = 226.8
Y = 52.8
DPR: B/AUTO/VERN
(03:40) Initiate NWR

03:40
R2 (B1)
AUTO
VERN
RT 0.4
DB 1.0

When NWR to PTC ATTY complete,

DPR: A/AUTO/VERN
ROOF TEST =
Initiate MET

03:50

04:00

TRACK ID		
TRK ID	1	2
ANG	1	2
ANG ERR	1	2
Δ X	()	()
Δ Y	()	()
Δ Z	()	()
EXECUTION TIME: / /		

Stars 47 & 33
available from
7/03:06 to 7/03:34

Star 47 available
1111 7/3:34

RPT: INH ALIGN RESULTS

ASCENDING NODE
DPR: 115
MET: 00703432124
LON: 00.0 E

S TRK THRESHOLD PWD

S TRK _____ STAR ID _____
ANG THOLD _____
MET
(DPR/NWR)

S TRK THRESHOLD PWD

S TRK _____ STAR ID _____
ANG THOLD _____
MET
(DPR/NWR)

NET
DAY 007

RZ (B)
AUTO
VERN
KT 0.4
DB 1.0

08:00

09:00

10:00

11:00

12:00

STS-4 DETAILED

CDR

SLEEP

PLT

SLEEP

MCC

NOTES

ASCENDING MODE
ORB: 118
NET: 007:08:03+47
LON: 10.6 E

ASCENDING MODE
ORB: 119
NET: 007:09:34+14
LON: 12.5 W

UPLINK
ORBITER S.V.

ASCENDING MODE
ORB: 120
NET: 007:11:04+41
LON: 25.6 W

TEX
BLOOD OXY
HEATER PAD
0-30/121-124

NET
DAY 007
12:00
RZ (01)
AUTO
VERN
RT 0.4
DB 1.0

12:10
12:20
12:30
12:40
12:50
13:00

13:00

STS-4 DETRIELED

COR

SLEEP

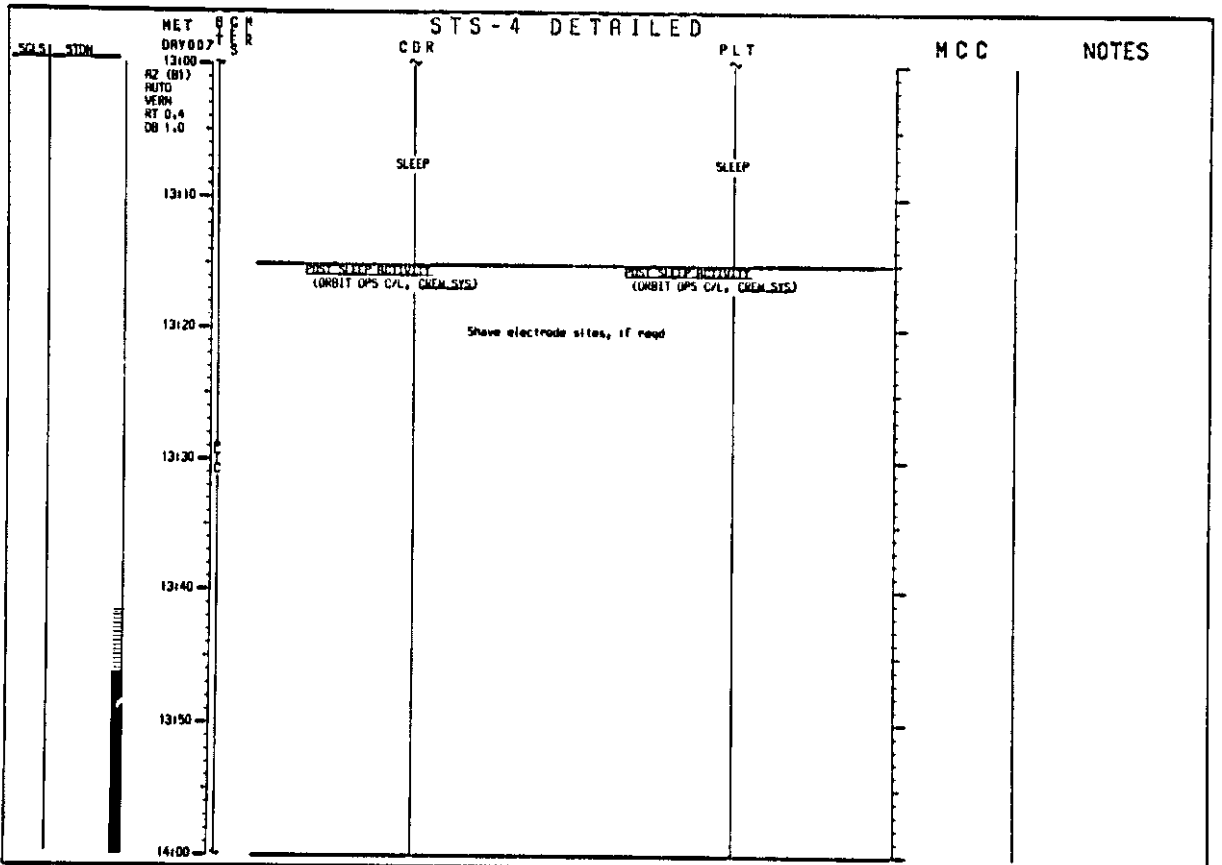
PLT

SLEEP

MCC

NOTES

ASCENDING NODE
ORB: 121
NET: 007:12:35:00
LOW: 50.0 M



24 HOURS AFTER EXTENSION DAY

The 24 Hours After Extension Day Timeline is designed to follow a Deorbit Prep Backout on Flight Day 9. It therefore assumes that the nominal timeline plus an extra day have already been accomplished.

Detailed timeline pages are provided from MET 7/22:00 until time for the Deorbit Pre,.

To compute the MET time at which this timeline is entered, take the Deorbit Burn TIG time and add -1 hr 50 min for Deorbit Prep Backout. Note that no activities are scheduled for the first hour and 15 minutes to allow extra time for reconfiguration or troubleshooting.

24 HRS AFTER
EXTENSION DAY

24 HRS AFTER
EXTENSION DAY

GMT (D+H+M)	NET (D+H+M)	CDT (D+H+M)	PD/ DOY	BETA	NDON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																																																																																																																																																							
188:12:00 / 188:12:00	007:12:00 / 007:00:00	188:22:00 / 188:10:00	PD/ 100 007	22.7	○	JULY 6, 1962	070-4	FINAL	6/14/62																																																																																																																																																							
GMT -1000 PD 10 MET 1007 12																																																																																																																																																																
CDR	EXT FROM CAP																																																																																																																																																															
PLT	EXT FROM CAP																																																																																																																																																															
<table border="1"> <tr> <th>RAZ/ALHT</th> <td>120</td><td>121</td><td>122</td><td>123</td><td>124</td><td>125</td><td>126</td><td>127</td><td>128</td> </tr> <tr> <th>MODE UP/DOWN</th> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>CARTN</th> <td colspan="9">[Map]</td> </tr> <tr> <th>YARRS</th> <td colspan="9">[Map]</td> </tr> <tr> <th>VFOAS</th> <td colspan="9">[Map]</td> </tr> <tr> <th>STATION COVERAGE</th> <td>-DOR -RAD</td> <td>-DOR -RAD -RAN</td> <td>-NEV -RIL -DOR -RAB -RAN</td> <td>-YAR -GRR</td> <td>-RIL -RIL -DOR -RAB -RAN</td> <td>-DOR -RIL -DOR -RAB -RAN</td> <td>-100 -YAR -RIL -DOR -RAB -RAN</td> <td>-RIL -DOR -RAB -RAN</td> <td>-DOR -RIL -DOR -RAB -RAN</td> <td>-DOR -RIL -DOR -RAB -RAN</td> </tr> <tr> <th>SOLE COVERAGE</th> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>OFFS</th> <td colspan="9">[Map]</td> </tr> <tr> <th>GEORG KEG EDV</th> <td colspan="9">[Map]</td> </tr> <tr> <th>ALTITUDE</th> <td>PTG</td><td></td><td>TAIL RUN</td><td></td><td>EN</td><td></td><td>TOP RUN</td><td></td><td>CHORD</td> </tr> <tr> <th>MANEUVERS</th> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>TV/TIR</th> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>OFFS</th> <td colspan="9">[Map]</td> </tr> <tr> <th>HLR</th> <td colspan="9">[Map]</td> </tr> <tr> <td>NOTES:</td> <td colspan="9"> <ul style="list-style-type: none"> • ENTRY COMP/0 • PD BY LIST/PER • ENTRY COMP/0 • PD BY LIST/PER • RAD NOT • PD BY COMP/0 • RAD NOT • PD BY COMP/0 • PD BY COMP/0 </td> </tr> </table>										RAZ/ALHT	120	121	122	123	124	125	126	127	128	MODE UP/DOWN										CARTN	[Map]									YARRS	[Map]									VFOAS	[Map]									STATION COVERAGE	-DOR -RAD	-DOR -RAD -RAN	-NEV -RIL -DOR -RAB -RAN	-YAR -GRR	-RIL -RIL -DOR -RAB -RAN	-DOR -RIL -DOR -RAB -RAN	-100 -YAR -RIL -DOR -RAB -RAN	-RIL -DOR -RAB -RAN	-DOR -RIL -DOR -RAB -RAN	-DOR -RIL -DOR -RAB -RAN	SOLE COVERAGE										OFFS	[Map]									GEORG KEG EDV	[Map]									ALTITUDE	PTG		TAIL RUN		EN		TOP RUN		CHORD	MANEUVERS										TV/TIR										OFFS	[Map]									HLR	[Map]									NOTES:	<ul style="list-style-type: none"> • ENTRY COMP/0 • PD BY LIST/PER • ENTRY COMP/0 • PD BY LIST/PER • RAD NOT • PD BY COMP/0 • RAD NOT • PD BY COMP/0 • PD BY COMP/0 								
RAZ/ALHT	120	121	122	123	124	125	126	127	128																																																																																																																																																							
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STATION COVERAGE	-DOR -RAD	-DOR -RAD -RAN	-NEV -RIL -DOR -RAB -RAN	-YAR -GRR	-RIL -RIL -DOR -RAB -RAN	-DOR -RIL -DOR -RAB -RAN	-100 -YAR -RIL -DOR -RAB -RAN	-RIL -DOR -RAB -RAN	-DOR -RIL -DOR -RAB -RAN	-DOR -RIL -DOR -RAB -RAN																																																																																																																																																						
SOLE COVERAGE																																																																																																																																																																
OFFS	[Map]																																																																																																																																																															
GEORG KEG EDV	[Map]																																																																																																																																																															
ALTITUDE	PTG		TAIL RUN		EN		TOP RUN		CHORD																																																																																																																																																							
MANEUVERS																																																																																																																																																																
TV/TIR																																																																																																																																																																
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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			
186:17:00/187:09:00	008:00:00/008:12:00	186:12:00/187:00:00	9/186 CDT	11.0	☉	JULY 5, 1982	STS-4	FINAL	5/14/82			
GMT 1106 FD 1 9 MET 1008	18	19	20	21	22	23	0	1	2	3	4	DOY: 107 12
CDR	EXERCISE	MEAL	IMU HAW	PRE SLEEP ACT					SLEEP			
PLT	EXERCISE	MEAL PREP	MEAL	COBIN STOW	PRE SLEEP ACT				SLEEP			
DAY/NIGHT	[Day/Night bar]											
ORBIT	128	129	130	131	132	133	134	135	136			
EARTH TRACE N/SAR	[Earth Trace Diagram]											
GSTDN COVERAGE	-BOT	-CMM -HAW -BAR	-BQDS -CMM -HAW	-BOT -CMM	-105 -GMM	-105 -CMM -HAW -RCO	-105 -CMM -RCN	-105 -CMM -RCN	-105 -CMM -RCN	-105 -CMM -RCN	-105 -CMM -RCN	-105 -CMM -RCN
SGLS COVERAGE	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS	-GTS
OPS DECK KSC EDM	[Operations Deck KSC EDM]											
ATTITUDE	-ZLV Y-POP			IMU	-ZLV Y-POP							
MANEUVERS TV/TA CPES MLR	[Maneuvers TV/TA CPES MLR]											
NOTES:	* Y-POP (NOSE FWD) # OPS/ACS - IF REQ											

STS-4 DETAILED

CDR

PLT

MCC

NOTES

NET 0
0900Z
22-00

22-00
22-10
22-20
22-30
22-40
22-50
22-00

For Retention from TIC to TIC = 1HR 50 MIN,
See GROUND PREP, D.C. PREP. BACKLOG.

WT (97)
WFO
WFO
WT 0.7
DB 1.0

NET 0800
080000
080000
080000

STS-4 DETAILED

CDR

PLT

MCC

NOTES

0800 (BY)
0800
0800
0800
0800

0810

0820

0830

0840

0850

0900

EXERCISE

ASCENDING MODE
QRB: 129
NET: 008100:30:30
LDM: 116.0 E

STS-4 DETAILED

COR

PLT

MCC

NOTES

NET
DAY 000

02:00
02:05
02:10
02:15
02:20
02:25
02:30
02:35
02:40
02:45
02:50
02:55
03:00

02:10

02:20

02:30

02:40

02:50

03:00

ASCENDING MODE
ORB: 130
NET: 008:02:09:05
LOH: 92.9 E

NET

NET

NET DDP000
00:00

STS-4 DETAILED

MCC

NOTES

00:00
00:10
00:20
00:30
00:40
00:50
01:00

CDR

PLT

NEAL

NEAL

BASED ON CDR'S CHECKLIST
NEAR OPTION: X = 250 ✓
P = 296 ✓
V = 12 ✓
DRY RUMTOVERN
(00:17) Include NEAR

ORBIT SIM
(ORBIT OPS CA., CREW STS.)

Steps 20 & 31
available from
8/03:06 to 8/03:53

ORBIT OPS CA., CREW STS.
(ORBIT OPS CA., CREW STS.)
STEP ID: 01 20 RECTURUS
-21 31 ATRIP
ANG DIS: 92 A

ORBIT OPS CA., CREW STS.
(ORBIT OPS CA., CREW STS.)
STEP ID: 01 20 RECTURUS
-21 31 ATRIP
ANG DIS: 92 A
DRY RUMTOVERN
(00:17) Include NEAR

ORBIT OPS CA., CREW STS.
(ORBIT OPS CA., CREW STS.)

REPORT: UNABLE TO RESULTS

ORBIT OPS CA., CREW STS.		
REQ ID: 1	-2	ANG ERR: 3
ANG	2	
A X	()	()
A Y	()	()
A Z	()	()
EXECUTION TIME: / /		

ASCENDING NODE
ORB: 131
NET: 008:03:39:32
LON: 69.7 E

UPLINK
ORBITER S.V.

REP: INU ALIGN RESULTS

NET
000000
00:00

STS-4 DETAILED

CDR

PLT

MCC

NOTES

NO (DB)
RFD
VFO
BY 2.7
DB 7.0

EYE/PHONE DETAIL/SUPPRESS TEST
(LIMIT OPS CAL, LES)

BRIDGE/PHONE CALL/OPS TEST
(LIMIT OPS CAL, LES)

00:10

00:20

CEL. CELL PHONE - RITE (Cup Camp)

00:30

PHONE CALL/PHONE
(LIMIT OPS CAL, CREW STS)

PRE SLEEP ACTIVITY
(LIMIT OPS CAL, CREW STS)

00:40

00:50

01:00

MCC ONLY
COORD CAMP/FOA
LIMITS CLEANUP
FOR CREW SLEEP

TEX
BLOCK DATA
WEATHER PRO
N-33/133-136

NET
000000
05:00

NO (00)
AUTO
VIBR
NY 0.7
DO 1.0

05:10

05:20

05:30

05:40

05:50

06:00

06:10

STS-4 DETAILED

CDR

PLT

MCC

NOTES

PRE SLEEP ACTIVITY

PRE SLEEP ACTIVITY

SLEEP

SLEEP

UPLINK
SPC LOAD -
1ST DOWN
ALERT
END
HOOR SLEEP
CONFIC

ASCENDING MODE
DRI 132
NET: 008/05109159
LDN: 46.6 E

05:00-05:10

05:10-05:20

05:20-05:30

NET
DAYS
06-00

STS-4 DETAILED

PLT

MCC

NOTES



CDR

SLEEP

SLEEP

ASCENDING NODE
 DRB: 133
 NET: 008106140125
 LON: 23.4 E

STS-4 DETAILED

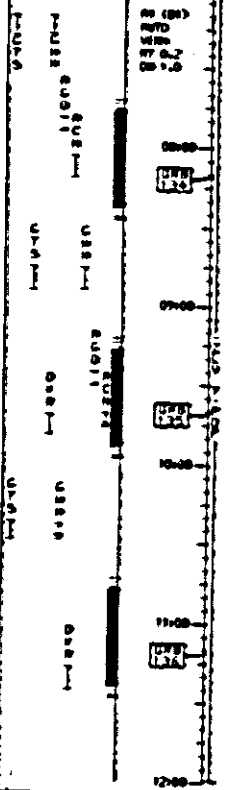
NET OF
0700
0700
0700
0700

CDR

PLT

MCC

NOTES



SLEEP

SLEEP

ASCENDING NODE
ORB: 134
MET: 00810810:52
LON: 0.3 E

ASCENDING NODE
ORB: 135
MET: 00810914:18
LON: 22.8 N

TZR
BLOCK DATA
WEATHER PAD
B-24/137-140

UPLINK
ORBITER S.V.

ASCENDING NODE
ORB: 136
MET: 00811111:45
LON: 45.9 N

STS-4 DETAILED

NET 0
DAY008

CDR

PLT

MCC

NOTES

RR (00)
RR00
16:00
BT 0.0
DD 1.0

12:10

12:20

12:30

12:40

12:50

13:00

SLEEP

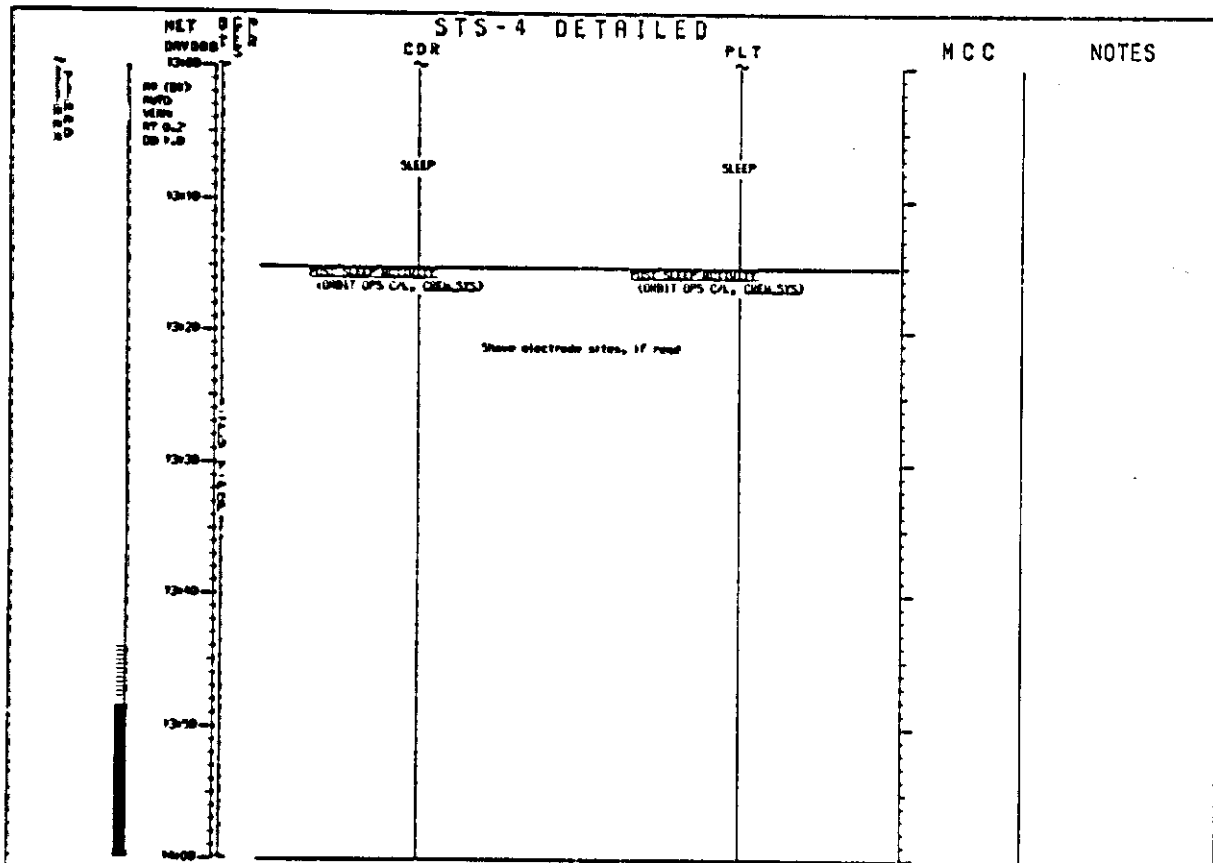
SLEEP

12:42

ASCENDING NODE
DRB: 137
NET: 008:12:42:11
LDM: 09.0 W

UPLINK
SPC LOAD
CLEAR COMM
ALERT

RR00
16:00
BT 0.0
DD 1.0



NET
DAYS

STS-4 DETAILED

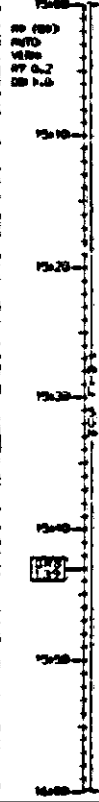
CDR

PLT

MCC

NOTES

SUPPLY WATER DUMP
(LIMIT UPS CL, ECL)
Dump TMS P & B
Dump Pos
QTY A - QTY B -



REPORT

NET

NET

APT: INU ALIGN RESULTS

ASCENDING MODE
DIR: 139
NET: 008115143:04
LON: 119.3 N

STS-4 DETAILED

NET DCP
090000
1600

MCC

NOTES

NO (80)
AUTO
VMO
BY 0.2
DB 1.0

CDR

PLT

NEAL

NEAL

UERRI
DRT TMR
SETUP PRO

UERRI/PLT/CDR (Use Card)
Steps 1-4

077 DEL PRP - 00

GO TO DEGR PRP

1610
1620
1630
1640
1650
1700

1600
1610
1620
1630
1640
1650
1700

CONSUMABLES CURVES

FWD RCS PROPELLANT & He PRESS.....	6-2
AFT RCS PROPELLANT & He PRESS.....	6-3
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CONSUMABLES
CURVES

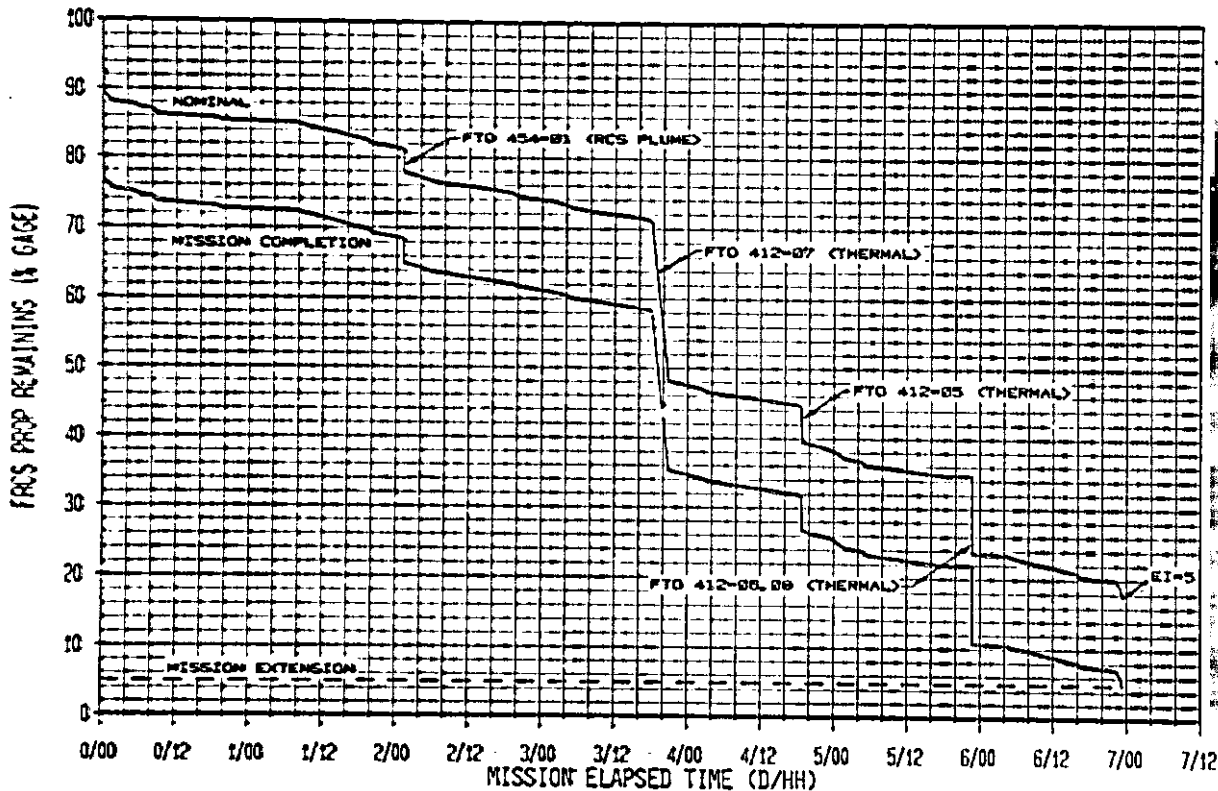
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Glow Van No

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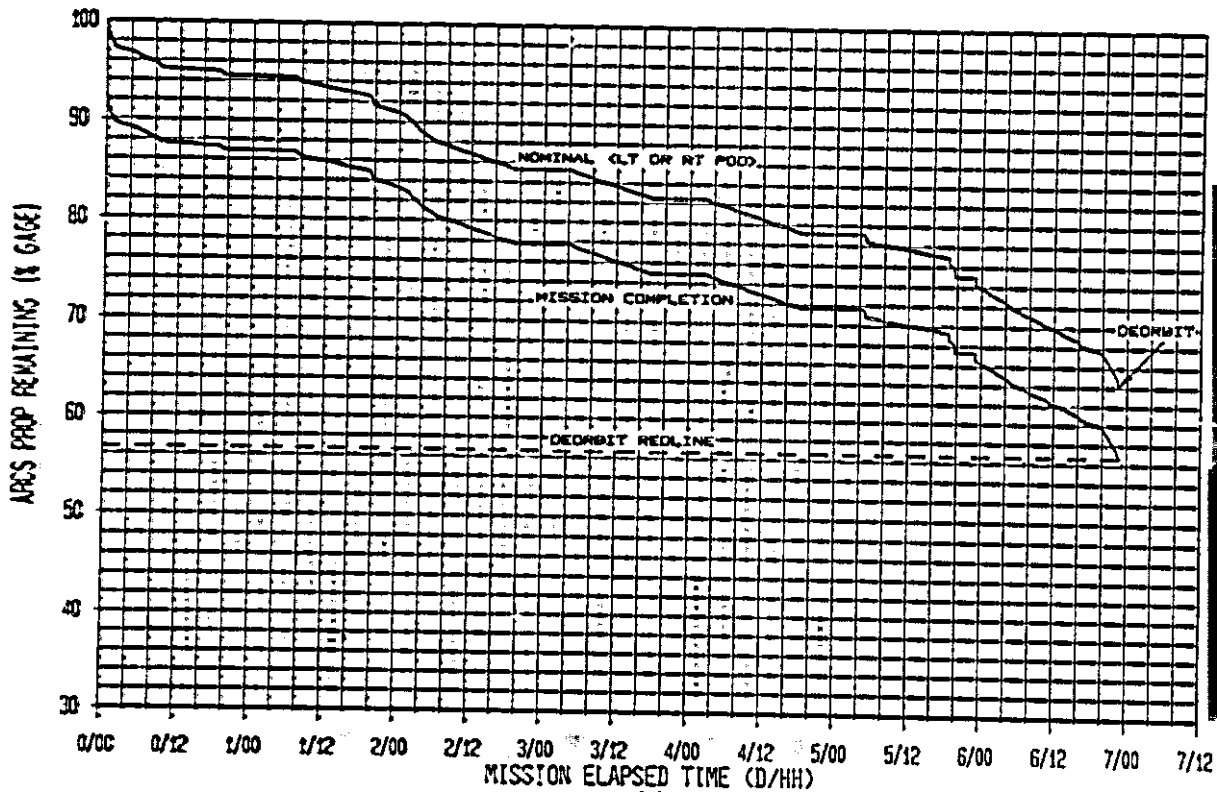
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STS-4 FWD RCS CREW CHART



G3AW MO
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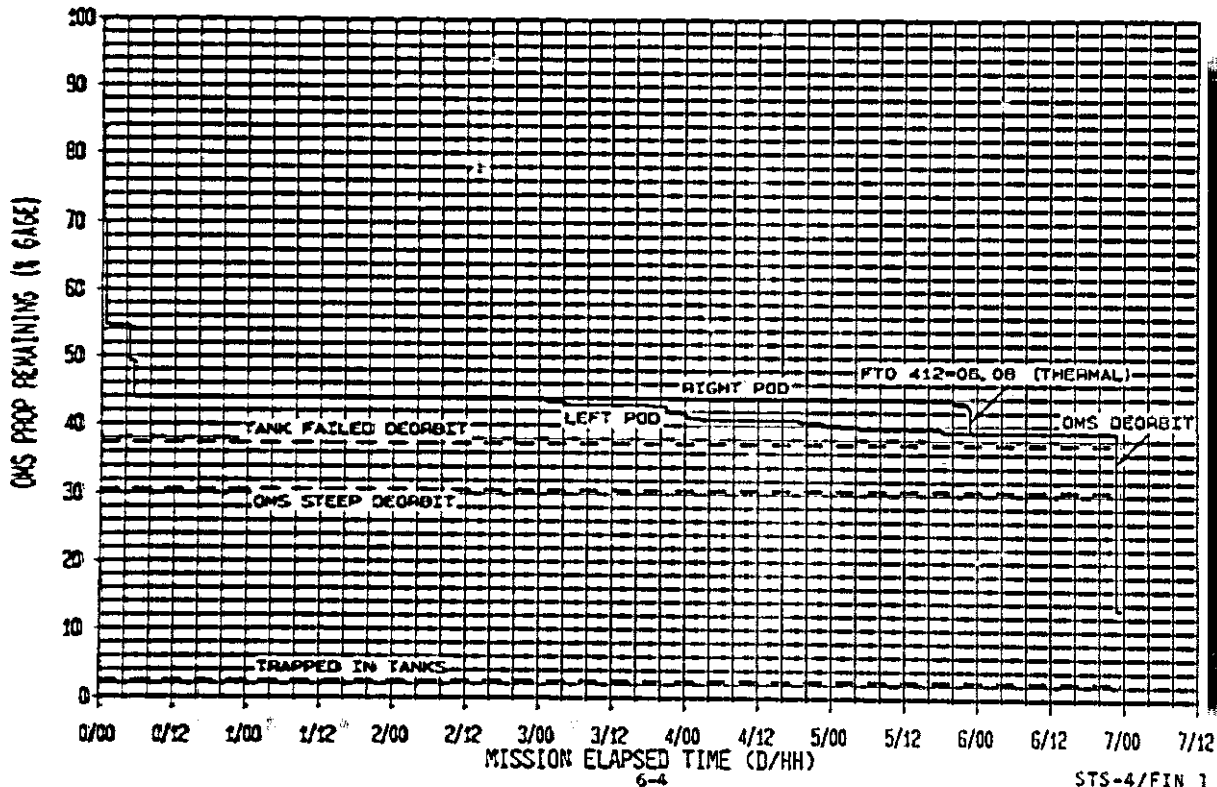
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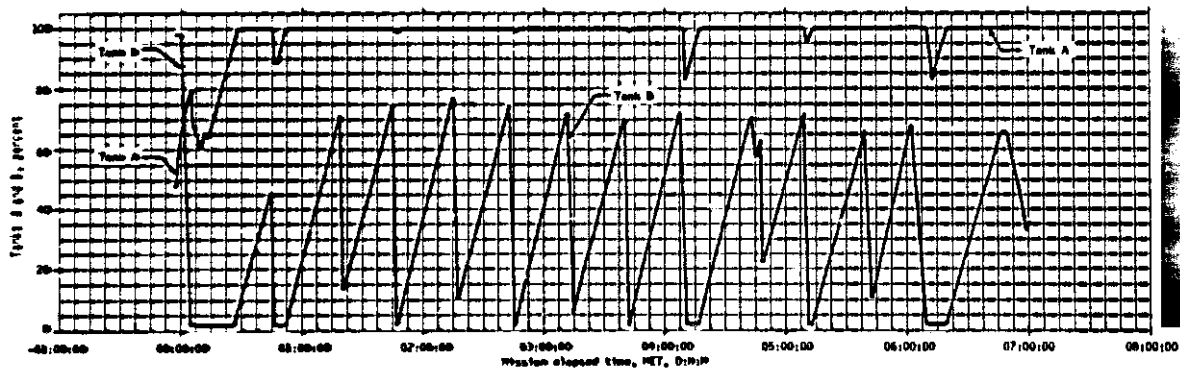
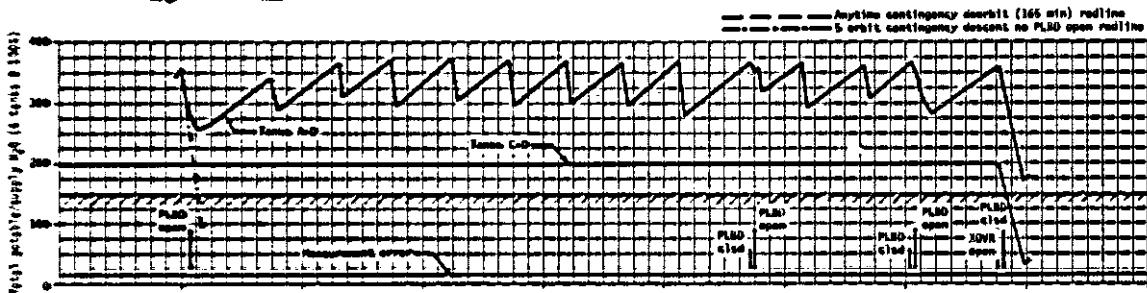
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STS-4 OMS CREW CHART

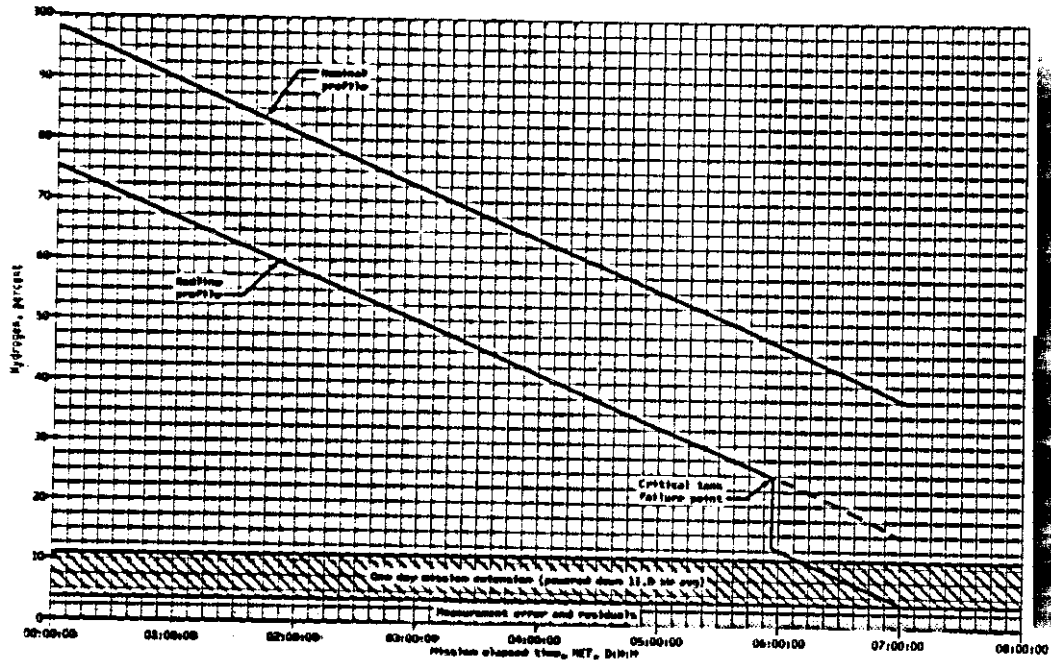


S. Fisher, Sr. APPROVED
 Date written 28 OCT 1976 (CAPT. 477) DC
 Data corrected *[Signature]*



ST5-4 Supply water.

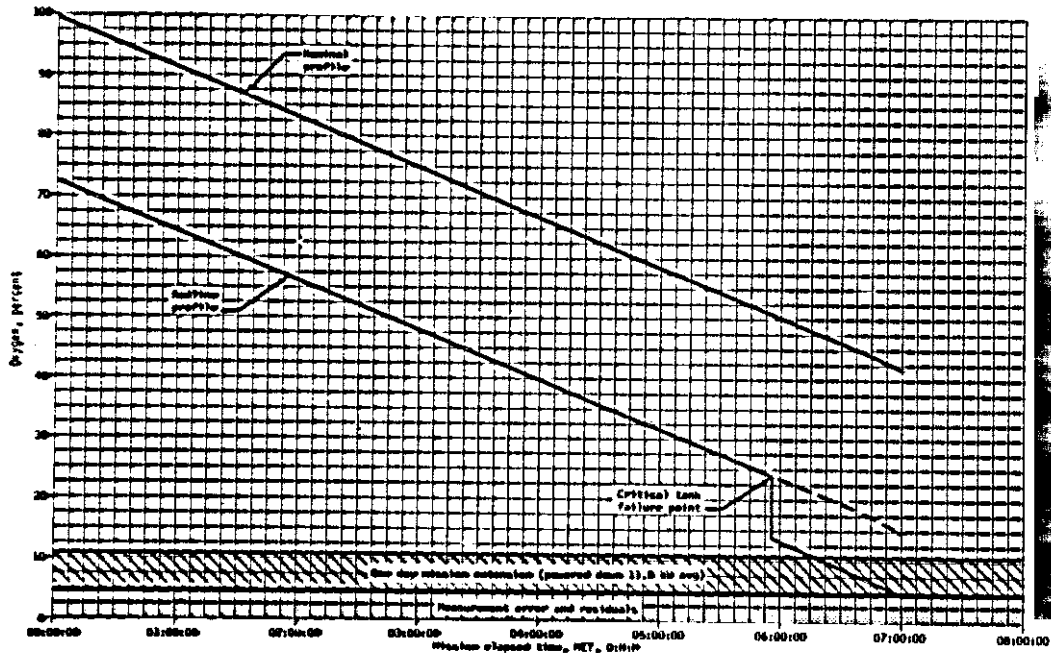
F. Cleghorn, W. Cleghorn/PPH/1000
 Data source: JSC 17875 (SEP 87) 1/82
 Data converted: 10/11/87



STS-8 Hydrogen
 6-6

STS-8/FIN 1

V. Chapman, R. Clough/1978/010
 Data source: *AS 1778 (1978) 113/114*
 Data reference: *113/114*



STS-4 Dryden
 6-7

STS-4/PLN 1

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

CREW ACTIVITY PLAN NOTES
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CAP NOTES

CREW ACTIVITY PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION - MAJOR EVENTS

MISSION DURATION (day/hr:min:sec) - 6/23:37:57

<u>LAUNCH (KSC)</u>	June 27, 1982
MET (day/hr:min:sec)	07/00:00:00
Day of Year	178
COT/GMT	10:00/15:00

<u>MECO</u>	
MET (day/hr:min:sec)	07/00:08:34.08
ORBIT ha/hp (nm)	87 x -10.3

<u>OMS-1</u>	
MET (day/hr:min:sec)	07/00:10:34
ΔV (fps)	162.
ΔT (min:sec)	01:38
ORBIT ha/hp (nm)	129.8 x 34

<u>OMS-2</u>	
MET (day/hr:min:sec)	07/00:37:39
ΔV (fps)	175
ΔT (min:sec)	01:44
ORBIT ha/hp (nm)	130.2 x 129.7

<u>OMS-3</u>	
MET (day/hr:min:sec)	07/04:29:11.6
ΔV (fps)	62.3
ΔT (min:sec)	0:36.7
ORBIT ha/hp (nm)	164.8 x 129.9

<u>OMS-4</u>	
MET (day/hr:min:sec)	07/05:14:12.5
ΔV (fps)	61.6
ΔT (min:sec)	0:36
ORBIT ha/hp (nm)	165.2 x 164.8

<u>DEORBIT</u>	
MET (day/hr:min:sec)	6/22:41:49
ΔV (fps)	315.2
ΔT (min:sec)	2:55
ORBIT ha/hp (nm)	162 x -5

<u>ENTRY INTERFACE</u>	
MET (day/hr:min:sec)	6/23:08:36

<u>LANDING (EDW)</u>	July 4, 1982
MET (day/hr:min:sec)	6/23:37:57
Day of year	185
COT	09:24

B. CREW

1. Crew designations and responsibilities
 - a. Commander (COR): Prime crewman for launch, entry, aborts and contingency EVA. Responsible for overall command of the vehicle including the safety of both vehicle and crew.
 - b. Pilot (PLT): Prime crewman for RMS operations and CFES activities. Responsible for on-orbit management of STS.
2. A typical crew day will be that specified in the STS Work Day Handbook (Ref. 3). The daily on-orbit STS activities and their scheduling constraints are identified in the referenced document.
3. The crew will wear Emergency Ejection Suits (EES) from launch through post-insertion and will don them again for entry. Whenever the EES is worn, OBS sensors are also worn. During the rest of the flight, in-flight garments are worn.
4. For crew sleep periods, the middeck and flight deck speaker boxes will be configured for air-to-ground voice and C&W tones. A level check of the speaker boxes is performed prior to the first sleep period. During sleep the MCCUs will be turned off and stowed.

C. ORBITER SYSTEMS

1. Electrical Power System
 - a. A crew-initiated automatic purge of the fuel cells will be scheduled approximately every 12 hours.
 - b. The fuel cell purge schedule is shown in Table 9-1.
2. Communications and Instrumentation
 - a. The Operational Instrumentation (OI) system will be managed from the ground through uplink commands coordinated with the crew. Exceptions to this would be the result of contingencies. Real-time OI data will be transmitted to MCC during each ground station pass via the S-Band FM downlink. In parallel with this, one of the two operations recorders will dump recorded OI data at a 3-to-1 or 8-to-1 playback-to-record ratio (depending upon whether or not voice is included in the recorded data). One OI recorder will be recording at all times, and the other will dump at every station pass via the S-Band FM downlink. Video downlink causes an exception to this recorder dump plan, but only during the station passes where TV is scheduled as a crew activity.

- b. The Development Flight Instrumentation (DFI) system will be crew controlled. The Wideband Ascent Recorder is not used on orbit. The PCM Recorder will be operated during the entire mission in one of three modes: CONTINUOUS RECORD, HI SAMPLE (a 10 second snapshot of data every 5 minutes) and LO SAMPLE (a 10 second snapshot of data every 10 minutes). The Wideband Mission Recorder will be operated in the continuous record mode with all tracks recording in parallel during OMS and RCS burns and as required for FTOs or FSOs. DFI data will be downlinked every ground station pass via a separate S-Band DFI FM downlink. This data will be recorded at the ground station for post-flight shipment to MCC. Recorded DFI data will not be dumped to ground stations during on-orbit operations.
- c. There are thirteen (13) GSTDN sites for on-orbit coverage: ORR, BUC, GOS, MIL, BDA, HAW, GWM, AGO, ACN, MAD, YAR, DKR, and BOT, and one (1) SGLS site, IOS. The BUC site does not support data dumps via S-band FM downlink. The IOS site will normally only support S-band PM downlink and down voice for this flight. The site will normally be supporting DOD requirements, but can be configured real time if required to support S-band up voice, FM uplink and FM downlink.
- d. Three (3) GSTDN sites can be used for real-time TV: GOS, MIL, and HAW.
- e. Nine (9) GSTDN sites and one (1) SGLS site have UHF voice capability: GOS, MIL, BDA, HAW, GWM, ACN, BUC, MAD, DKR, and IOS.
- f. Two (2) sites have only UHF voice capability: YAR, and BOT.
- g. There are five (5) SGLS sites available for on-orbit coverage: GTS, HTS, NHS, VTS, and IOS. IOS is the only site with voice capability and there is only voice via UHF while supporting DOD requirements.
3. Guidance and Navigation
- a. The Orbiter state vector is uplinked about once every three orbits.
- b. IMU alignments will be routinely scheduled approximately every twelve (12) hours.
- c. Both star trackers are left on continuously except for special tests. A self-test of the star tracker will be performed once a day, normally just prior to the IMU alignment scheduled after the sleep periods.

d. Each IMU will be aligned with different REFSMMATS to provide skewed platforms for enhancement of redundancy management at launch and entry. The launch REFSMMATS have a square root of five skewing and the preferred skew for entry is a square root of six. The REFSMMATS will be changed for entry normally at about 00/03:35 MET. In order to simplify recovery procedures for some contingency cases, one of the IMUs will have the same REFSMMAT for launch and entry. For the case where an IMU fails prior to the switch to the square root of six REFSMMATS, the IMU REFSMMATS, for entry, will be changed to a square root of two skewing to enhance the redundancy management during entry.

e. The on-orbit avionics configuration for STS-4 is listed below. GPC 3 (freeze dried) and GPC 5 (BFS) will be turned off at -0/01:00 MET.

GPCs - 2 RUN (1 GNC, 1 SM), 2 OFF, 1 INTERMITTENT (GNC)
IMUs - 3 OPERATE
STAR TRACKERS - 2 ON
MASS MEMORY UNITS - 2 ON
FLIGHT CRITICAL MDMs - 8 ON

f. The ADI RELMATs provide a means to change the reference system for presenting vehicle attitudes to the crew without having to reposition the IMU platforms. The RELMATs support specific flight phase requirements and are defined as listed below.

1) ASCENT (OPS 1 and 6)

'INRTL' Position:

This RELMAT will provide a +X sense ADI ball reading of roll 0°, pitch 0°, and yaw 0° when the vehicle is pointed at 0° Right Ascension, 0° Declination and the vehicle +Y axis is pointed at the celestial North Pole.

'REF' Position:

This will be a pad-oriented inertial RELMAT with the vehicle +X axis downrange along the first stage launch azimuth and the +Z towards the center of the earth along the launch pad radius vector at the time of lift off. This provides a +X sense ADI ball reading of roll 55.3° (launch azimuth), pitch 90°, and yaw 0° at liftoff.

'LVLH' Position:

This RELMAT will provide for an unbiased LVLH frame in major modes 104, 105, and 106 (i.e., the bias matrix will be an identity matrix). In major modes 101, 102, 103 and 601, the LVIV reference frame will be used.

2) ON-ORBIT (OPS 2 and 8)

'INRTL' Position:

This RELMAT will provide a +X sense ADI ball reading of roll 0° , pitch 0° , and yaw 0° when the vehicle +X axis is pointed at 0° Right Ascension, 0° Declination and the vehicle +Y axis is pointed at the celestial pole.

'REF' Position:

This RELMAT will provide a +X sense ADI ball reading of roll 0° , pitch 0° , and yaw 0° when the vehicle +X axis is in the direction of the velocity vector and the +Z axis is directed radially down to the center of the earth at the orbital noon time which is closest to the midway MET between TIG for nominal GMS-2 and TIG for nominal deorbit burn.

'LYLH' Position:

This RELMAT will provide for an unbiased LYLH frame (i.e., the bias matrix will be an identity matrix).

3) ENTRY (OPS 3)

'INRTL' Position:

This RELMAT will provide a +X sense ADI ball reading of roll 0° , pitch 0° , and yaw 0° when the vehicle is pointed at 0° Right Ascension, 0° Declination and the vehicle +Y axis is pointed at the celestial North Pole.

'REF' Position:

Same as 'INRTL' position.

'LYLH' Position:

Unbiased.

- g. The OPS-2 1-loaded DAP configuration is currently planned to be:

	DAP A	DAP B
Translation Pulse	0.1	0.02
Rotation Discrete Rate - NORM	0.20/sec	0.50/sec
- VERNIERS	0.20/sec	0.20/sec
Rotation Pulse - NORM	0.1	0.04
- VERNIERS	0.01	0.002
Rotation Compensation - NORM	0.0	0.0
- VERNIERS	0.0	0.0
Attitude Deadband (R,P,Y axis)		
- NORM	5.00	3.00
- VERNIERS	1.00	1.00
Rate Deadband - NORM	0.20/sec	0.20/sec
- VERNIERS	0.020/sec	0.020/sec
Jet Opt Pitch	1	1
Yaw	1	1
Cntl Accel	0	0

- h. The OPS-3 Transition DAP configuration is:

Rotation Discrete Rate	0.20/sec
Attitude Deadband	3.50
Rate Deadband	0.30/sec

4. Propulsion

The major burns maneuver schedule for STS-4 is identified in Section 7.A, FLIGHT DESCRIPTION - MAJOR EVENTS.

5. Environmental Control and Life Support Subsystem (ECLS)

- The CO₂ absorbers are not installed for launch or entry. Both canisters are initially installed at approximately 0/05:20 MET and are then alternately replaced with new canisters within the required frequency of approximately every 24 hours. The canisters are both removed approximately 4 hours prior to the deorbit burn ignition during the deorbit preparations on entry day. The installation/replacement schedule is shown in Table 9-3.
- The waste water tank will be loaded to 40% at launch, with sufficient ullage volume to accommodate waste water accumulation during the flight. The tank will be as full as feasible at the planned end of the mission.
- The supply water tanks will be sufficiently loaded at launch so that planned launch day deorbit opportunities can be supported through the use of combined supply and waste water, without opening the payload bay doors. Thus all tanks will be full at launch except Tank A which will be 45% full. This allows sufficient ullage to handle fuel cell water production during the ascent phase. Potential supply water dumps are scheduled approximately every 12 hours in the Crew Activity Plan which may or may not be required. A real-time call will be made prior to each

scheduled dump to inform the crew if a dump is required and to what level). Tanks A & B will be dumped to a level that will allow the tanks to be full prior to the next daily group of EDW deorbit opportunities. The supply water dump schedule is shown in Table 9-2.

D. INTERIM TELEPRINTER SYSTEM (ITS)

1. The Interim Teleprinter System (ITS) will be used for STS-4. The system will provide an on-orbit capability to receive and reproduce text data (such as procedures and CAP updates or changes) from the MCC during routine and off-nominal situations.
2. The teleprinter is located on the middeck in a standard flight locker (MA9F) adjacent to Avionics Bay 3A. Foam insulation inside the locker is used to reduce the noise from the teleprinter during operation.

E. TELEVISION/PHOTOGRAPHY

1. The Closed Circuit Television (CCTV) system will be used for STS-4. This system provides two cameras for in-cabin coverage and two RMS and four payload bay TV cameras for coverage of payload bay activities. The system, after activation, can be managed by ground commands during live coverage passes. For TV coverage outside of STDN coverage, the crew must manage the CCTV system.
2. There is a video tape recorder (VTR) available to record video during periods when there is no STDN coverage. The video is recorded on 30-minute cassettes and will normally not be dumped to the ground. Recorded video can be dumped to the ground if desired since the VTR output (dump) currently is hooked to the PLI video input, allowing recorded video to be played back into the Orbiter communication system as if it were a PLI (Spacelab) TV camera input. VTR management must be performed by the crew.
3. 16mm, 35mm, and 70mm camera systems are available.

F. REMOTE MANIPULATOR SYSTEM (RMS)

1. RMS/RCS CONSTRAINTS

- a. VRCS - No constraints during RMS OPS
- b. PRCS - Constraints during Loaded and Unloaded RMS OPS:
 1. Usage not permitted under the following conditions:
 - a. RMS JOINT in a Singularity
 - b. RMS at a Reach Limit
 - c. RMS in Test Mode
 - d. During EE OPS
 - e. Loaded RMS/PRCS Interaction Test will be NO GO for Failed VRCS.

2. Must be on Tail Only Jets with a 30 deadband when on AUTO OAP.

- c. RMS - Usage not permitted with RMS uncradled or attached to a berthed Payload.
2. No part of the RMS shall be positioned within the following distances of an RCS Thruster:
 - a. PRCS - 15 ft
 - b. VRCS - 3 ft
3. No part of the RMS/Payload/End Effector will be maneuvered outside the Crew/CCTV field of view, unless the joint angles and sequence to be maneuvered have been verified as acceptable.

G. PAYLOADS

1. IECM (Induced Environmental Contamination Monitor)

The crew will be required to operate the IECM switch on Panel R11 four times during the flight. These switch operations, which mode the IECM mass spectrometer, are performed after payload bay door openings, for plume impingement, contamination mapping, and gas release maneuver FTOs, per the STS-4 Flight Requirements Document (Ref. 1). The IECM mass spectrometer must be turned off when the payload bay doors are closed to prevent damage to the mass spectrometer by pressure buildup in the payload bay.

2. MLR (Monodisperse Latex Reactor)

The MLR is activated via a single switch prior to the first crew sleep period and runs continuously for 19.5 hours. The experiment occupies the space of three middeck lockers.

3. CFES (Continuous Flow Electrophoresis System)

The CFES provides a processing system which can segregate biological samples using a separation process based on the relative motion of charged particles through an electric field (electrophoresis). For STS-4, the crew will be required to operate the payload twice during the early portion of the flight. Each operating period lasts approximately eight hours. The PLT has been designated as the prime crewman for CFES operations. The CFES payload is located on the Orbiter middeck. A low acceleration level is desired during CFES operations.

4. GAS (Get-Away Special)

The GAS payload is a self-contained experiment package that requires minimal crew activity. After the crew is given approval for orbit operations, the crew unstows a handheld controller and activates the payload. Once activated, an internal controller sequentially initiates the biological, materials processing, and physical science experiments at the appropriate time. The experiments do not require any special attitudes during their operation. Deactivation and stowing of the handheld controller occur before deorbit preparation.

5. NOST (Night/Day Optical Survey of Thunderstorm Lightning)

The NOST experiment is performed in the Orbiter cabin. The experiment requires crew operations for unstowing and setting up in the aft flight deck, for on-orbit operations using targets of opportunity, and for stowage. A -2LV attitude is desired for taking data.

ON-ORBIT CREW ACTIVITY
FUNCTIONAL TEST OBJECTIVES (FTOs),
FUNCTIONAL SUPPLEMENTARY OBJECTIVES (FSOs)

INTRODUCTION..... 8-2
TABLE 8-1 - STS-4 FTOs/FSOs..... 8-3

FTOs/FSOs

INTRODUCTION

The following Table describes the scheduling data and rationale for on-orbit crew activity related FTOs/FSOs for STS-4. The current FRD (Ref. 1) was used for compiling this table.

FTOs/FSOs

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET) ⁶	SCHEDULING REMARKS
401-01	Ascent Performance Data Collection		
402-01	SRB Performance Data Collection		
403-01	On-Orbit Performance Data Collection	N/A	No crew interaction required except for DFI recorder configurations
404-01	Entry/Approach and Landing Performance Data		
411-01	Structural Conditioning	PTC initiated at 06/04:52	Ground will provide go/no-go for crew thermal conditioning
412-01	Attitude Hold Thermal Response	1/07:49 - 1/19:12 1/23:18 - 4/18:18 4/19:24 - 6/04:32 6/04:52 - 6/16:02	PTC -XSI (Tail To Sun) +ZSI (Bottom to Sun) PTC
412-02	Startracker Coldsoak Thermal Response	2/04:15 - 2/18:54 2/18:54	Both startrackers powered off Both startrackers powered on Both startrackers powered off for -12 hours followed by +12 hours of both startrackers powered on. A startracker self-test and a normal IMU alignment will be performed between the two periods ⁶ .

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
412-03	Supply Water Dump Line and Nozzle Thermal Response		Has been deleted
412-04	Waste Water Dump Line and Nozzle Thermal Response		Has been deleted
412-05	FRCS Thermal Soakback, One Forward Engine	4/15:40 - 5/00:10	Performed after 20 hours of -XSI or anytime after start of +ZSI. Inhibit 3 FRCS engines for 5 hours; fire F3F for 30 seconds; inhibit all 3 engines for 5 hours
412-06	FRCS Thermal Soakback, Two Forward Engines	5/22:41 - 6/04:24	Performed no earlier than 20 hours after initiation of -XSI thermal test period. Requires inhibiting 3 FRCS engines for 5 hours, subsequent firing of 2 of the 3 engines for 30 seconds, and a final 5-hour period of inhibiting of all 3 engines prior to return to normal operations.
412-07	FRCS Thermal Soakback, Pulse Mode	3/16:00 - 4/02:50	Performed after 20 hours in either -XSI or +ZSI; inhibit 3 FRCS engines for 5 hours; perform five 30-second firings of F3F (each firing separated by 30 minutes); inhibit all 3 engines for 5 hours
412-08	ARCS Thermal Soakback, One Aft Engine	5/22:41 - 6/04:24	Performed after 20 hours of +ZSI; inhibit aft firing PRCS engines and VRCS engines in port pod; fire L1A for 100 seconds; inhibit engines involved for 5 hours

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
413-01	ET Passive Ablation Sensor Target Photography	8 seconds after ET SEP	
421-01	Early Entry Roll Characteristics	Q = 22.0 psf	Has been deleted
421-02	Aerothermodynamics/ Performance	V = 21,000 fps	
421-03	Aerothermodynamics/ Performance	V = 18,000 fps	
421-04	Aerothermodynamics/ Performance	V = 14,000 fps	
421-05	Aerothermodynamics/ Performance	V = 8,400 fps	
421-06	Supersonic Lateral Trim	M = 3.2	
421-07	Transonic Lateral/ Directional Stability		
421-08	Wing and Tail Excitation (Structural PTI)	M = 2.2	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (O/HH:MM) (MET) *	SCHEDULING REMARKS
431-01	Window Observation and Reporting		Has been deleted
432-01	Ascent Wing and Tail Excitation	V = 460 fps	
433-01	Payload Bay Liner Performance	0/02:55	
434-01	Flight Debris Investigation	0/02:57	
441-01	Vacuum Inerting	Between OMS 1&2	The inerting is terminated prior to the OMS-2 burn
441-02	Inerting Verification	0/05:20 - 0/05:52	Between 6 and 12 hours after completion of FTO 441-01
442-01	Simulated OMS Engine Failure (OMS-3)		Has been deleted
444-01	Hydraulic System Warm-up	During FCS C/O on FD5	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
445-01	PRSD Stratification Test, 85% Level	Not Scheduled	
445-02	PRSD Stratification Test, 50% Level	Not Scheduled	
445-03	PRSD Stratification Test, 15% Level	5/22:20 - 5/22:30	Provide cryo supply with 15% density to all 3 FCPs. Configure electrical loads for 19.3 kW split among 3 FCPs and maintain for 2 hours. Plus and then minus pitch maneuvers of 175° at 1°/sec performed.
451-01	PLBD Initial Alignment Test		Has been deleted
451-02	PLBD Final Alignment Test		Has been deleted
451-03	PLBD Cold Case Performance	4/16:50 - 4/18:10	Performed as near the end of the -XSI thermal test period as practicable based on operational requirements. Theodolite must be installed. Calibration sightings required during initial PLBD operations
451-04	PLBD Thermal Gradient Performance	6/00:50 - 6/02:10	Performed as near the end of the +XSI thermal test period as practicable based on operational requirements

TABLE R-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
452-01	RMS Software Stop Performance		Has been deleted
452-02	Singularity Management	5/02:00 - 5/02:35	
452-03	Unloaded Arm Response to PRCS	5/01:18 - 5/01:58	
453-01	Contamination Mapping	1/20:20 - 1/22:50	IECM limited to 4 hours of operations after switching to internal battery power
454-01	RCS Plume Flow Field Measurement	2/01:10 - 2/03:10	IECM limited to 4 hours of operations after switching to internal battery power
455-01	Payload Deployment and Berthing Performance	1/20:10 - 1/23:15 2/01:00 - 2/03:30	
455-02	RMS/PRCS Interactions	Shopping List Item	
461-01	Whole Gas Samples	6/03:20	
461-03	ATCO Performance Evaluation	N/A	No crew interaction required

TABLE B-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HI:MM) (MET)	SCHEDULING REMARKS
462-01	Radiator Coating Bond Verification	5/00:48 - 5/01:18	
466-01	Radiator Performance Test	0/02:20 - 0/08:00 1/06:55 - 1/23:25 2/20:05 - 2/22:54 5/20:20 - 6/01:30	Desired to perform this test during the following attitudes: -ZLV; -ZSI; -XSI or +XSI; PTC; +ZSI; Gravity Gradient
467-01	VPC Freezer Heat Exchanger Dynamics	0/23:50 - 1/07:50	Freezer should have been off at least six (6) hours
467-02	Long Term VPC Freezer Temperature Stability	1/23:45 - 1/23:50 3/02:15 - 3/02:20 4/05:30 - 4/05:35 5/05:35 - 5/05:40 5/22:55 - 5/23:00	
467-03	Sample Freezing Storing and Return	1/07:50 - 1/07:56	FTO 467-01 must be accomplished before this FTO
471-01	S-Band and UHF Antenna Patterns	6/05:20 - 6/05:40	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
472-01	AutoLand Controlled Approach	N/A	
472-02	Crosswind Landing Performance	N/A	
473-01	Startracker Operation During Water Dumps	1/07:23 - 1/07:43	Daylight required
473-03	Forward Station COAS Calibration	0/08:24 - 0/08:29	
474-01	Navigation Base Stability	1/19:31 - 1/19:50 4/18:30 - 4/18:50	
475-01	Cold Case CCTV Evaluation, Non-Operating		Has been deleted
475-02	Cold Case CCTV Evaluation, Operating		Has been deleted
476-01	Backup Orbital Navigation	3/04:19 - 3/04:37 5/18:14 - 5/18:34 5/19:42 - 5/20:04	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FTO/FSO NUMBER	TITLE	SCHEDULED (O/HH:MM) (MET)	SCHEDULING REMARKS <small>USE</small>
477-01	PRCS Narrow Deadband Attitude Hold Performance	3/23:20 - 3/23:25	
477-02	Passive Gravity Gradient Attitude Hold	0/06:05 - 0/07:56 0/19:15 - 1/06:52	
479-01	On-Orbit TACAN Nav Aid Capability	2/19:35 - 3/00:37 3/23:40 - 4:00:10 4/00:53 - 4/02:43	GPC must be in OPS 8 during data collection
S401-01	Tile Gap Heating Data Collection	N/A	
S402-01	Catalytic Surface Effects Data Collection	N/A	
S403-01	Dynamic, Acoustic and Thermal Environment Data	N/A	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FSO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S431-01	IECM Operation	Post Insertion 4/23:05 - 4/23:50 Deorbit Prep	IECM switch is in POS 2 at launch; at four (4) defined times during the flight, the crew places the IECM switch in POS 1 position for 30 ± 5 seconds and then back to POS 2 position
S432-01	Infrared Imagery of Shuttle	N/A	
S433-01	Prelaunch and Ascent ACIP Data Operation	Prelaunch & Ascent	
S433-02	Quiescent On-Orbit Data Collection	1/03:18 - 1/03:24	Gravity gradient required
S433-03	Deorbit Through Landing ACIP Data Collection	Deorbit and Entry	
S434-01	Deploy Radiation Dosimeter Pouches	N/A	
S434-02	Stow Radiation Dosimeter Pouches	N/A	

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FSO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S435-01	GAS Operation	0/05:25 - 6/00:00	
S436-01	CFES Operation	0/20:25 - 1/04:15 2/19:45 - 3/04:09	Experiment run #1 Experiment run #2
S441-01	NOSL Operations	0/21:50 - 6/05:05	
S442-01	MLR Operation	0/06:30 - 1/02:15	Low acceleration level desired for 19.5 hours
S443-01	In-flight Motion Sickness Data Collection	0/08:45 1/08:15 2/07:25 3/06:15 4/05:55 5/05:55 6/05:55	
S491-01	Crew Activities TV	1/01:24 - 1/01:32 3/01:40 - 3/02:10 3/19:15 - 3/19:25 4/22:51 - 4/23:00 5/20:07 - 5/20:16	Group 2

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FSO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S491-02	IECM Handling Demonstration TV	2/01:10 - 2/03:10	Group 2
S491-03	Activities of Opportunity TV	TBD	Group 2
S491-04	TV of the COR	3/19:15 - 3/19:25	Group 1
S491-05	TV of the PLT	1/01:24 - 1/01:32 3/01:40 - 3/02:10 4/22:51 - 4/23:00 5/20:07 - 5/20:16	Group 1
S492-01	Launch Photography (16mm)	Ascent	Group 1
S492-02	Crew Activities (16mm)	1/01:50 - 1/04:15 2/02:38 - 2/21:25 4/00:11 - 4/00:16 4/01:30 - 4/02:12 4/16:50 - 4/18:10	Group 2
S492-03	Payload Bay Photography (16mm)	1/20:20 - 1/22:55	Group 1, associated with RMS/IECM OPS
S492-04	Unscheduled Photography (16mm)	TBD	Group 2

TABLE 8-1 - STS-4 ON-ORBIT CREW ACTIVITY RELATED FTOs/FSOs

FSO NUMBER	TITLE	SCHEDULED (D/HH:MM) (MET)	SCHEDULING REMARKS
S492-05	Approach and Landing Photography (16mm)	Entry	Group 1
S492-06	Photography of the CDR (16mm)	2/20:38 - 2/21:25	Group 2
S492-07	Photography of the PLT (16mm)	4/00:11 - 4/00:16	Group 2
S493-01	Crew Activity Photography (35mm)	TBD	Group 2
S493-02	Payload Bay Photography (35mm)	TBD	Group 2
S493-03	On-Orbit Photography (35mm)	TBD	Group 2
S493-04	Still Photography of the CDR (35mm)	TBD	
S493-05	Still Photography of the PLT (35mm)	TBD	

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TABLE 9-1
ORBITER FUEL CELL PURGES

APPROX MET (D/HH:MM)	FUEL CELL PURGE	
	NO.	Δt (HH:MM)
Post-Ins (0/02:52)	1	
0/08:40	2	04:43
0/18:30	3	09:50
1/08:10	4	13:40
1/18:00	5	09:50
2/07:15	6	13:15
2/17:15	7	10:00
3/06:05	8	12:50
3/16:10	9	10:05
4/05:50	10	13:40
4/15:40	11	09:50
5/05:50	12	14:10
5/15:45	13	09:55
6/05:50	14	14:05
6/16:20	15	10:30
Deorbit Prep (6/20:33)	16	05:53

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TABLE 9-2
ORBITER WATER PUMPS (SUPPLY)

APPROX MET (D/HH:MM)	SUPPLY H ₂ O	
	NO.	Δt (HH:MM)
0/07:44	1	
0/17:55	2	10:11
1/07:24	3	13:29
1/18:00	4	10:35
2/05:50	5	11:50
2/17:10	6	11:20
3/04:45	7	11:35
3/16:05	8	11:20
4/03:05	9	11:00
4/19:05	10	16:00
5/03:10	11	08:05
5/15:55	12	12:45
6/02:10	13	10:15
6/16:25	14	14:15

TABLE 9-3
CO2 ABSORBER REPLACEMENT

APPROX MET (O/HH:MM)	CO2 ABSORBER REPLACEMENT			
	ABSORBER NO.	POSITION	POSITION A At (HH:MM)	POSITION B At (HH:MM)
* 0/05:20	1 & 2	A & B		
** 0/08:35	3	A	03:15	
1/08:10	4	B		26:50
2/07:20	5	A	46:45	
3/06:00	6	B		45:50
4/05:35	7	A	46:15	
5/05:40	8	B		47:40
6/05:40	9	A	48:05	
***6/17:50			13:50	37:15

*INITIAL INSTALLATION OF BOTH CO2 ABSORBERS

**CO2 ABSORBER NO 1 IS REWRAPPED AND SAVED FOR CONTINGENCY

***BOTH CO2 ABSORBERS REMOVED FOR ENTRY

TABLE 9-4
CRYO MANAGEMENT

	MET	O2/H2 TANK HTRS SWITCH CONFIGURATION
POST INSERTION	0/03:00 (STATUS AS OF)	O2 TK1 & 2 HTRS A,B (four) - AUTO H2 TK1 & 2 HTRS A,B (four) - AUTO O2 TK3 HTRS (two) - AUTO H2 TK3 HTRS (two) - AUTO O2 TK4 HTRS (two) - OFF H2 TK4 HTRS (two) - OFF
PREP (PRSD TEST)	5/15:50	O2 TK1,2,3,4 HTRS (all) - OFF H2 TK1,2,3,4 HTRS (all) - OFF
POWERUP (PRSD TEST)	5/19:53	O2,H2 TK4 HTRS A (two) - AUTO
PERFORMANCE (PRSD TEST)	5/22:20	
POST (PRSD TEST)	5/22:35	O2 TK1 & 2 HTRS A (two) - AUTO H2 TK1 & 2 HTRS A,B (four) - AUTO O2,H2 TK3 HTRS A (two) - AUTO O2,H2 TK4 HTRS A (two) - OFF

TABLE 9-5 - DFI WIDEBAND ASCENT RECORDER USAGE

APPROX MET (DD/MM:MM:SS)	MODE	PWR	Δt USAGE (MM:SS)	ACCUM USAGE (MM:SS)	TAPE REMAINING (MM:SS)	P*
--/00:05:30	CONT	ON	--	00:00	32:00	T
00/00:13:00	STBY	ON	18:30	18:30	13:30	B
00/00:35:00	CONT	ON	00:00	18:30	13:30	S
00/00:39:00	STBY	ON	04:00	22:30	9:30	
00/01:05:00	STBY	OFF	04:00	22:30	9:30	

*Data Priority based from 10 down to 1 (01 Data is 10)

TABLE 9-6 - DFI WIDEBAND MISSTON RECORDER USAGE

APPROX. MET (DD/HH:MM)	MODE	PWR	ΔE USAGE (MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE REMAINING (HH:MM:SS)	REASON	P#
-00/00:06	CONT	ON	--	00:00:00	02:00:00	LAUNCH THRU OMS 1	T B S
00/00:13	STBY	ON	19:00	00:19:00	01:41:00		
00/00:35	CONT	ON	00:00	00:19:00		OMS 2	
00/00:39	STBY	ON	04:00	00:23:00	01:37:00		
00/01:05	STBY	OFF					
00/04:27	CONT	ON	00:00	00:23:00		OMS 3	
00/04:31	STBY	OFF	04:00	00:27:00	01:33:00		
00/05:12	CONT	ON	00:00	00:27:00		OMS 4	
00/05:16	STBY	OFF	04:00	00:31:00	01:29:00		
01/03:16	STBY	ON	00:00	00:31:00	01:29:00		
01/03:20	CONT	ON	00:00	00:31:00	01:29:00	ACIP ON-ORBIT TEST.	
01/03:21	STBY	ON	01:00	00:32:00	01:28:00		
01/03:26	STBY	OFF	00:00	00:32:00	01:28:00		
03/18:48	CONT	ON	00:00	00:31:00		F3F PULSE MODE TEST	
03/18:52	STBY	OFF	04:00	00:36:00	01:24:00		
03/19:18	CONT	ON	00:00	00:36:00		F3F PULSE MODE TEST	
03/19:22	STBY	OFF	04:00	00:40:00	01:20:00		
03/19:48	CONT	ON	00:00	00:40:00		F3F PULSE MODE TEST	
03/19:52	STBY	OFF	04:00	00:44:00	01:16:00		
03/20:18	CONT	ON	00:00	00:44:00		F3F PULSE MODE TEST	
03/20:22	STBY	OFF	04:00	00:48:00	01:12:00		
03/20:48	CONT	ON	00:00	00:48:00		F3F PULSE MODE TEST	
03/20:52	STBY	OFF	04:00	00:52:00	01:08:00		
04/19:13	CONT	ON	00:00	00:52:00		RCS TEST, 1 FWD ENG	
04/19:17	STBY	OFF	04:00	00:56:00	01:04:00		
05/22:44	CONT	ON	00:00	00:56:00		RCS TEST, 2 FWD/1 AFT ENG	

*Data Priority based from 10 down to 1 (OI Data is 10)

**Time of 2 min sample should correspond to the approximate time sleep station readings are taken

TABLE 9-6 - DFI WIDEBAND MISSION RECORDER USAGE (CONTINUED)

APPROX MET (DD/HH:MM)	MODE	PWR	ΔE USAGE (MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE REMAINING (HH:MM:SS)	REASON	P*
05/22:48	STBY	OFF	04:00	01:00:00	01:00:00		
06/18:00	CONT	ON	00:00			WD CAL	
06/18:01	STBY	OFF	01:00	01:01:00	00:59:00		
06/22:40	CONT	ON	00:00	01:01:00		DEORBIT BURN	
06/22:46	STBY	OFF	06:00	01:07:00	00:53:00		
06/23:06	CONT	ON	00:00	01:07:00		EI-3 THRU ROLLOUT	
06/23:39	STBY	OFF	46:00	01:53:00	00:07:00		

*Data Priority based from 10 down to 1 (01 Data is 10)

**Time of 2 min sample should correspond to the approximate time sleep station readings are taken

TABLE 9-7 - DFI PCM RECORDER USAGE

APPROX MET (DD:HH:MM)	MODE	Δt (HH:MM)	Δt TAPE** USAGE (HH:MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE RE- MAINING (HH:MM:SS)	REASON	P#
-00/00:06	CONT	--	--	--	05:52:00	ASCENT THRU VAC INERT #5	T B S
00/00:23	HI SAMP	00:29	29:00	00:29:00	05:23:00	RA	
00/00:35	CONT	00:12	00:22	00:29:22	05:22:38	OMS 2	
00/00:39	LO SAMP	00:04	04:00	00:33:22	05:18:38		
00/01:59	CONT	01:20	01:17	00:34:39	05:17:21	PLBD OPENING	
00/02:02	LO SAMP	00:03	03:00	00:37:39	05:14:21	NOMINAL CONFIG	
00/04:27	CONT	02:25	02:34	00:40:13	05:11:47	OMS 3 BURN	
00/04:31	LO SAMP	00:04	04:00	00:44:13	05:07:47	NOMINAL CONFIG	
00/05:12	CONT	00:41	00:44	00:44:57	05:07:03	OMS 4 BURN	
00/05:16	LO SAMP	00:04	04:00	00:48:57	05:03:03	NOMINAL CONFIG	
00/05:22	CONT***	00:06	00:00	00:48:57	05:03:03	INERTING VERIFICATION	
00/05:27	HI SAMP***	00:05	05:00	00:53:57	04:58:03	INERTING VERIFICATION	
00/05:52	LO SAMP	00:25	00:44	00:54:41	04:57:19	NOMINAL CONFIG	
01/20:20	HI SAMP	38:28	41:26	01:36:07	04:15:53	IECM CONTAM MAPPING	
01/22:55	LO SAMP	02:35	05:19	01:41:26	04:10:34	NOMINAL CONFIG	
03/18:48	CONT	43:53	47:18	02:28:44	03:23:16	F3F PULSE MODE TEST	
03/19:00	HI SAMP	00:12	12:00	02:40:44	03:11:16	F3F PULSE MODE TEST	
03/19:18	CONT	00:18	00:33	02:41:17	03:10:43	F3F PULSE MODE TEST	
03/19:30	HI SAMP	00:12	12:00	02:53:17	02:58:43	F3F PULSE MODE TEST	
03/19:48	CONT	00:18	00:33	02:53:50	02:58:10	F3F PULSE MODE TEST	
03/20:00	HI SAMP	00:12	12:00	03:05:50	02:46:10	F3F PULSE MODE TEST	
03/20:18	CONT	00:18	00:33	03:06:23	02:45:37	F3F PULSE MODE TEST	
03/20:30	HI SAMP	00:12	12:00	03:18:23	02:33:37	F3F PULSE MODE TEST	

*Data Priority based from 10 to 1 (01 Data is 10)

**11 sec of tape used every 5 min 11 sec for HI SAMPLE and 10 min 11 sec for LOW SAMPLE

***If inerting verification is not required, recorder stays at LO SAMPLE

TABLE 9-7 - DFI PCM RECORDER USAGE (CONTINUED)

APPROX MET (DD/HH:MM)	MODE	Δt (HH:MM)	Δt TAPE** USAGE (HH:MM:SS)	ACCUM USAGE (HH:MM:SS)	TAPE RE- MAINING (HH:MM:SS)	REASON	P#
03/20:48	CONT	00:18	00:33	03:18:56	02:33:04	F3F PULSE MODE TEST	
03/21:00	HI SAMP	00:12	12:00	03:30:56	02:21:04	F3F PULSE MODE TEST	
04/01:43	CONT	04:43	09:54	03:40:50	02:11:10	FCS C/D	
04/01:49	LO SAMP	00:06	06:00	03:46:50	02:05:10	NOMINAL CONFIG	
04/05:50	HI SAMP	04:01	04:13	03:51:03	02:00:57	LAST 10 HRS OF -XSI	
04:19:13	CONT	13:23	28:14	04:19:17	01:32:43	RCS TEST, 1 FWD ENG	
04:19:25	HI SAMP	00:12	12:00	04:31:17	01:20:43	RCS TEST, 1 FWD ENG	
05:00:12	LO SAMP	04:47	10:05	04:41:22	01:10:38	NOMINAL CONFIG	
05:22:44	CONT	22:32	24:12	05:05:34	00:46:26	RCS TEST, 2 FWD/1 AFT ENG	
05:22:56	HI SAMP	00:12	12:00	05:17:34	00:34:26	RCS TEST, 2 FWD/1 AFT ENG	
06/04:26	LO SAMP	05:30	11:33	05:29:07	00:22:53	NOMINAL CONFIG	
06/18:31	HI SAMP	14:05	15:02	05:44:09	00:07:51	RADIATOR BYPASS/STOW RADIATORS	
06/19:20	HI SAMP	00:49			01:36:00	DFI PCM RCDK REWIND	
06/19:48	CONT		00:28			PLBD CLOSING/STRAIN GAUGE	
06/19:52	HI SAMP		00:04				
06/19:57	CONT					RADIATOR HEAT SINK	
06/20:02	HI SAMP		00:05				
06/22:36	CONT					TIG-4 MINUTES THRU POST LANDING	
-07/00:00	HI SAMP		01:24			POST ROLLOUT	

*Data Priority based from 10 to 1 (OI Data is 10)

**11 sec of tape used every 5 min 11 sec for HI SAMPLE and 10 min 11 sec for LOW SAMPLE

***If inerting verification is not required, recorder stays at LO SAMPLE

TABLE 9-8 - ATTITUDE AND EVENT TIMELINE

MET (D/H/M/SS)	EVENT	ATTITUDE {P, Y, R EULER SEQ}			ATT MODE	DEADRANDS		DISC RATE (°/sec)	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT RATE (deg)	SEC		COMT	RCS	0	0	0	0		
0/00:08:34	MECO					3.5	0.3	0.2	*	AUTO	*					
0/00:08:49	ET SEP (4 fps, +2)					3.5	0.3	0.2	*	AUTO	*					
0/00:09:30	INITIATE MANUAL MNVR TO OMS-1 BURN ATT	**	**	**	**	N/A	N/A	N/A	*	MAN ACCEL	*	**	**	**	**	
0/00:10:00	OMS-1 BURN ATT	337.2	190.5	346.5	INRTL	3.5	0.3	0.2	*	AUTO	*	69	359	99	181	
0/00:10:31.3	OMS-1 IGNITION					3.5	0.3	0.2	*	AUTO	*					162.1 fps ΔV
0/00:12:07.3	OMS-1 CUTOFF					3.5	0.3	0.2	*	AUTO	*					
0/00:13:21	MPS DIMP TERMINATED					3.5	0.3	0.2	*	AUTO	*					
0/00:20:00	INITIATE AUTO MNVR TO OMS-2 BURN ATT	**	**	**	**	3.5	0.3	0.2	*	AUTO	*	**	**	**	**	MNVR TIME = 10 MIN EIG ANG = 115
0/00:30:00	OMS-2 BURN ATT	19.1	312.6	342	INRTL	3.5	0.3	0.2	*	AUTO	*	36	16	146	356	
0/00:37:39.3	OMS-2 IGNITION					3.5	0.3	0.2	*	AUTO	*					174.8 fps ΔV
0/00:39:26.5	OMS-2 CUTOFF					3.5	0.3	0.2	*	AUTO	*					
0/00:55:00	DPS RECONFIG TO GNC 2 (OMS-2 ATT)					10.0	0.2	0.2	A	AUTO	NORM					
0/01:05:00	INITIATE -ZLV, XPOP +YBY FWD ATT MODE	**	**	**	**	10.0	0.2	0.2	A	AUTO	NORM	**	**	**	**	MNVR TIME = 9 MIN EIG ANG = 103
0/01:14:00	-ZLV, XPOP ATT (PLBD OPENING) (120 ROLL BIAS)	0	192	90	LVLH	10.0	0.2	0.2	A	AUTO	NORM	90	348	89	54	TGT: EARTH OM 270
0/03:41:00	FREE DRIFT					N/A	N/A	N/A	A	MAN PULSE	VERN					
0/04:10:00	INITIATE AUTO MNVR TO OMS-3 ATT	**	**	**	**	1.0	0.02	0.2	A	AUTO	VERN	**	**	**	**	MNVR TIME = 11 MIN EIG ANG = 130

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEAGBANDS ATT RATE		DISC RATE	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		(deg)	(°/sec)		(°/sec)	SEL	CONT	RCS	0	0	0	
0/04:21:00	OMS-3 BURN ATT	331.6	153.4	359.3	INRTL	1.0	0.02	0.2	A	AUTO	VERN	40	0	60	181	
0/04:29:11.6	OMS-3 IGNITION					3.5	0.3	0.2	A	AUTO	NORM					62.3 fps ΔV
0/04:29:48.3	OMS-3 CUTOFF					1.0	0.02	0.2	A	AUTO	VERN					
0/04:55:00	INITIATE AUTO MNVR TO OMS-4 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 15 MIN ETG ANG = 180
0/05:10:00	OMS-4 BURN ATT	28.4	333.8	1	INRTL	1.0	0.02	0.2	A	AUTO	VERN	56	0	119	359	
0/05:14:12.5	OMS-4 IGNITION					3.5	0.3	0.2	A	AUTO	NORM					61.6 fps ΔV
0/05:14:48.6	OMS-4 CUTOFF					1.0	0.02	0.2	A	AUTO	VERN					
0/05:47:00	INITIATE GRAVITY GRADIENT ATT MODE	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 14 MIN ETG ANG = 159
0/06:01:00	GRAVITY GRADIENT ATT (PLB TO NORTH)	249.2	268.2	358.1	LVLH	N/A	N/A	N/A	A	MAN PULSE	VERN	3	157	241	209	P 357.6 Y 1 TGT: EARTH ON 249.2
0/07:47:00	TERMINATE GRAVITY GRADIENT	92.7	298	345.6	INRTL	1.0	0.02	0.2	A	MAN DISC	VERN	3	157	158	204	
0/07:56:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 13 MIN ETG ANG = 147
0/08:09:00	IMU ALIGN ATT	250	336.3	338.8	INRTL	1.0	0.02	0.2	A	AUTO	VERN	58	154	125	124	-Y ST TO STAR #43 -Z ST TO STAR #15 ANG SEP = 84.1
0/08:17:00	INITIATE AUTO MNVR TO COAS CAL ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 1 MIN ETG ANG = 11
0/08:18:00	COAS CAL ATT	253.2	343.7	330.1	INRTL	1.0	0.02	0.2	A	AUTO	VERN	90	140	120	118	→XBY TO STAR #26
0/08:24:00	+X COAS CAL					N/A	N/A	N/A	B	MAN PULSE	VERN					
0/08:29:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN					

TABLE 9-8 Continued

MET (D/HH:MM:SS)	EVENT	ATTITUDE (P, V, R Euler SEQ)			ATT MODE	DEADBANDS ATT RATE (deg) (O/sec)		DISC RATE (O/sec)	DAP			EARTH			SUN	REMARKS
		Roll	Pitch	Yaw		SEL	CONT		RCS	0	4	8	4			
0/08:35:00	INITIATE =ZLV, XPOP +Yby FWD ATT MODE	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 9 MIN ETG ANG = 99	
0/08:44:00	=ZLV, XPOP ATT (12° ROLL BIAS)	0	192	90	LVLH	1.0	0.02	0.2	A	AUTO	VERN	90	348	90	55 P 90 Y 348 OM 270 TGT: EARTH	
0/18:32:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 23 MIN ETG ANG = 146	
0/18:45:00	IMU ALIGN ATT	16.2	172.5	13.3	INRTL	1.0	0.02	0.2	A	AUTO	VERN	131	114	72	143 -Y ST TO STAR 015 -Z ST TO STAR 043 ANG SEP = 04.1	
0/18:57:00	INITIATE GRAVITY GRADIENT ATT MODE	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 8 MIN ETG ANG = 06	
0/19:05:00	GRAVITY GRADIENT ATT (PLB TO NORTH)	249.2	268.2	358.1	LVLH	N/A	N/A	N/A	A	MAN PULSE	VERN	13	157	16	215 P 357.6 Y 1 OM 249.2 TGT: EARTH	
1/06:43:00	TERMINATE GRAVITY GRADIENT	92.3	358.6	19.1	INRTL	1.0	0.02	0.2	A	MAN DISC	VERN	13	157	90	293	
1/06:52:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 15 MIN ETG ANG = 170	
1/07:07:00	IMU ALIGN/STNK OPS DURING H2O DUMP ATT (FTO 473-01)	212.5	77.9	44.4	INRTL	1.0	0.02	0.2	A	AUTO	VERN	30	102	27	101 -Y ST TO STAR 027 -Z ST TO STAR 054 ANG SEP = 03.7	
1/07:49:00	INITIATE AUTO MNVR TO PTC ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 9 MIN ETG ANG = 100	
1/07:58:00	PTC ATT	132.8	236	60.1	INRTL	1.0	0.02	0.2	A	AUTO	VERN	88	201	90	355 SUN IN Y2by PLANE +R TOWARD R ETG AXIS P 358 Y 0 ROT RATE = 0.4 O/SEC	
1/08:07:00	START 0.4 O/SEC PTC ROTATION	132.8	236	60.1	ROTR	1.0	0.02	0.4	A	AUTO	VERN	89	236	90	355	
1/19:12:00	INITIATE AUTO MNVR TO NAV BASE STA ATT #1	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	MNVR TIME = 12 MIN ETG ANG = 134	
1/19:24:00	NAV BASE STA ATT #1 (FTO 474-01)	221.4	128.1	3.5	INRTL	1.0	0.02	0.2	A	AUTO	VERN	18	119	35	282 -Y ST TO STAR 040 -Z ST TO STAR 057 ANG SEP = 90.4	
1/19:35:00	INITIATE AUTO MNVR TO IMU ALIGN/NAV BASE STA ATT #2	--	--	--	--	1.0	0.02	0.5	A	AUTO	VERN	--	--	--	MNVR TIME = 6 MIN ETG ANG = 180	
1/19:41:00	IMU ALIGN/NAV BASE STA ATT #2	50.5	326.1	357.9	INRTL	1.0	0.02	0.5	A	AUTO	VERN	111	160	129	338 -Y ST TO STAR 057 -Z ST TO STAR 040 ANG SEP = 90.4	

TABLE 9-8 Continued

MET (D/HHMM:SS)	EVENT	ATTITUDE (P, Y, R EULER Roll Pitch Yaw)			ATT MODE	DFDRBANDS ATT RATE (deg) (O/sec)		DISC RATE (O/sec)	DAP			EARTH		SUM	REMARKS	
		SEL	CONT	RCS		0	1		0	1						
1/19:53:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 8 MIN FIG ANG = 95
1/20:01:00	+ZSI ATT	129.6	234.2	59.2	INRTL	1.0	0.02	0.2	A	AUTO	VERN	87	199	90	0	P DO Y 0 TGT: SUM ON 90
1/20:20:00	IECM CONTAMINATION SURVEY (FTO 453-01)					3.0	0.02	0.3	B	AUTO & MAN	VERN					
1/22:55:00	RE-ESTABLISH +ZSI ATT					1.0	0.02	0.2	A	AUTO	VERN					
1/23:18:00	INITIATE AUTO MNVR TO +XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 8 MIN FIG ANG = 116
1/23:28:00	+XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	121	187	179	171	
2/01:10:00	IECM PLUME SURVEY (FTO 454-01)					3.0	0.02	0.2	A	AUTO & MAN	NORM & VERN					
2/03:10:00	RE-ESTABLISH +XSI ATT					0.1	0.02	0.2	B	AUTO	VERN					
2/03:56:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 8 MIN FIG ANG = 92
2/04:04:00	IMU ALIGN ATT	256.2	13.7	345.8	INRTL	1.0	0.02	0.2	A	AUTO	VERN	57	153	91	128	-Y ST TO STAR #22 -Z ST TO STAR #51 ANG SEP = 84
2/04:22:00	INITIATE AUTO MNVR TO +XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 8 MIN FIG ANG = 92
2/04:30:00	+XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	118	12	180	0	
2/05:25:00	INITIATE AUTO MNVR TO RCS BURN 1 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	
2/05:40:00	RCS BURN 1 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD	
2/05:45:00	RCS BURN 1					3.0	0.2	0.5	B	MAN DISC	NORM					
2/05:46:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN					

TABLE 9-8 Continued

MET (0/HR:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	HEADBANDS		DISC RATE (%/sec)	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT (deg)	RATE (%/sec)		SEL	CONT	RCS	6	6	6	6	
2/05:47:00	INITIATE AUTO MNVR TO +XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	
2/06:02:00	+XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	113	12	180	0	
2/19:02:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 10 MIN ETG ANG = 114
2/19:12:00	IMU ALIGN ATT	61	240.3	318.3	INRTL	1.0	0.02	0.2	A	AUTO	VERN	165	200	143	137	-Y ST TO STAR #26 -Z ST TO STAR #14 ANG SEP = 91.4
2/19:27:00	INITIATE AUTO MNVR TO +XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 10 MIN ETG ANG = 114
2/19:37:00	+XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	113	14	180	0	
3/01:12:00	INITIATE AUTO MNVR TO RCS BURN 2 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	
3/01:27:00	RCS BURN 2 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD	
3/01:32:00	RCS BURN 2					3.0	0.2	0.5	B	MAN DISC	NCRN					
3/01:33:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN					
3/01:37:00	INITIATE AUTO MNVR TO POST BURN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	
3/01:52:00	POST RCS BURN 2 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD	
3/02:07:00	INITIATE AUTO MNVR TO +XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	
3/02:22:00	+XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	57	196	180	0	
3/04:05:00	INITIATE AUTO MNVR TO IMU ALIGN/BACKUP NAV ATT #1	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 7 MIN ETG ANG = 74
3/04:12:00	IMU ALIGN/BACKUP NAV ATT #1 (FTO 476-01)	252.9	252.5	348.9	INRTL	1.0	0.02	0.2	A	AUTO	VERN	144	156	146	245	-Y ST TO STAR #41 -Z ST TO STAR #34 ANG SEP = 88.6

TABLE 9-8 Continued

NET (D/H/M/SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS		DISC RATE (G/sec)	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT RATE (deg)	RATE (G/sec)		SEL	CONT	RCS	0	0	0	0	
3/04126:00	INITIATE AUTO MNVR TO BACKUP NAV ATT #2	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 4 MIN ETG ANG = 38
3/04130:00	BACKUP NAV ATT #2	246.8	288.6	351	INRTL	1.0	0.02	0.2	A	AUTO	VERN	169	311	163	173	-Y ST TO STAR #20 -Z ST TO STAR #17 ANG SEP = 85
3/04139:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 5 MIN ETG ANG = 55
3/04144:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	98	13	179	353	
3/17137:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 5 MIN ETG ANG = 53
3/17142:00	IMU ALIGN ATT	241.7	307.6	353.1	INRTL	1.0	0.02	0.2	A	AUTO	VERN	82	148	149	153	-Y ST TO STAR #42 -Z ST TO STAR #35 ANG SEP = 89.1
3/18102:00	INITIATE AUTO MNVR TO -XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 5 MIN ETG ANG = 53
3/18107:00	-XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	145	26	179	352	
3/18145:00	PRE PRCS THERMAL SOAKBACK CONFIG					5.0	0.2	0.2	A	AUTO	NORM					
3/18150:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM					30 SEC F3F BURN
3/18150:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN					
3/19120:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM					30 SEC F3F BURN
3/19120:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN					
3/19150:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM					30 SEC F3F BURN
3/19150:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN					
3/20120:00	-X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM					30 SEC F3F BURN

TABLE 9-8 Continued

MET (D/HHMM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS		DISC RATE (°/sec)	DAP			EARTH		LIN		REMARKS
		Roll	Pitch	Yaw		ATT (deg)	RATE (°/sec)		SEL	CONT	RCS	◊	◊	◊	◊	
3/20:20:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN					
3/20:50:00	=X TRANS (FTO 412-07)					5.0	0.2	0.2	A	AUTO	NORM					30 SEC F3F BURN
3/20:53:00	POST PRCS THERMAL SOAKBACK CONFIG					0.1	0.02	0.2	B	AUTO	VERN					
3/23:18:00	PRCS ATT HOLD TEST (FTO 477-01)					0.1	0.2	0.2	A	AUTO	NORM					
3/23:18:30	ATTITUDE HOLD					0.1	0.02	0.2	B	AUTO	VERN					
3/23:41:00	INITIATE AUTO MNVR TO TACAN TRK ATT	--	--	--	--	5.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	P.Y. JET OFF (TAIL ONLY) MNVR TIME = 34 MIN EIG ANG = 170
3/23:56:00	TACAN TRK ATT (FTO 479-01)	21.4	347.8	29.2	INRTL	5.0	0.2	0.2	A	AUTO	NORM	79	357	97	10	P 2.5 (C1: 231KJ) Y 0 (LAT: -12.414 OM 180 (LN: 130.063)
3/23:56:30	INITIATE TACAN NAV ROT	21.4	347.8	29.2	ROTR	5.0	0.2	0.2	A	AUTO	NORM	81	357	97	10	EIGEN AXIS P 187.4 Y 276.8 ROT RATE = 0.323 °/SEC
4/00:12:00	INITIATE AUTO MNVR TO =XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 15 MIN BSL EIG ANG = 170
4/00:27:00	=XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	76	12	179	352	
4/01:45:00	PRCS CHECKOUT = APU START					5.0	0.2	0.2	A	AUTO	NORM					
4/01:53:00	APU SHUTDOWN					1.0	0.02	0.2	A	AUTO	VERN					
4/01:55:00	SENSOR TEST					N/A	N/A	N/A	A	MAN PULSE	VERN					
4/02:00:00	RE-ESTABLISH =XSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 3 MIN EIG ANG = 30
4/02:03:00	=XSI ATT	192	278.9	336.8	INRTL	0.1	0.02	0.2	B	AUTO	VERN	55	7	179	352	
4/02:14:00	INITIATE AUTO MNVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 5 MIN EIG ANG = 53

TABLE 9-8 Continued

NET (D/MH:MM:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS		DISC RATE (°/sec)	DAP		EARTH		SUM	REMARKS		
		Roll	Pitch	Yaw		ATT (deg)	RATE (°/sec)		SEL	CONT	RCS	0			0	
																0
4/02:51:00	IMU ALIGN ATT	241,7	307,6	353,1	INRTL	1,0	0,02	0,2	A	AUTO	VERM	104	145	149	153	-Y ST TO STAR 442 -Z ST TO STAR #15 ANG SEP = 89,1
4/03:02:00	INITIATE AUTO MNVR TO +XSI ATT	--	--	--	--	0,1	0,02	0,2	B	AUTO	VERM	--	--	--	--	MNVR TIME = 5 MIN EIG ANG = 53
4/03:07:00	+XSI ATT	192	278,9	336,8	INRTL	0,1	0,02	0,2	B	AUTO	VERM	157	39	179	352	
4/04:15:00	INITIATE AUTO MNVR TO RCS BURN 3 ATT	--	--	--	--	1,0	0,02	0,2	A	AUTO	VERM	--	--	--	--	
4/04:30:00	RCS BURN 3 ATT	TBD	TBD	TBD	INRTL	1,0	0,02	0,2	A	AUTO	VERM	TBD	TBD	TBD	TBD	
4/04:36:00	RCS BURN 3					3,0	0,2	0,5	B	MAN DISC	NORM					
4/04:37:00	ATTITUDE HOLD					1,0	0,02	0,2	A	AUTO	VERM					
4/04:47:00	INITIATE AUTO MNVR TO +XSI ATT	--	--	--	--	0,1	0,02	0,2	B	AUTO	VERM	--	--	--	--	
4/05:02:00	+XSI ATT	192	278,9	336,8	INRTL	0,1	0,02	0,2	B	AUTO	VERM	63	9	179	352	
4/18:18:00	INITIATE AUTO MNVR TO IMU ALIGN/NAV BASE STA ATT #1	--	--	--	--	1,0	0,02	0,2	A	AUTO	VERM	--	--	--	--	MNVR TIME = 11 MIN EIG ANG = 121
4/18:29:00	IMU ALIGN/NAV BASE STA ATT #1 (FTO 474-01)	165,6	157,2	4,3	INRTL	1,0	0,02	0,2	A	AUTO	VERM	31	131	57	350	-Y ST TO STAR 440 -Z ST TO STAR 432 ANG SEP = 87,8
4/18:35:00	INITIATE AUTO MNVR TO IMU ALIGN/NAV BASE STA ATT #2	--	--	--	--	1,0	0,02	0,5	A	AUTO	VERM	--	--	--	--	MNVR TIME = 6 MIN EIG ANG = 180
4/18:41:00	IMU ALIGN/NAV BASE STA ATT #2 (FTO 474-01)	104,9	346,1	11,1	INRTL	1,0	0,02	0,5	A	AUTO	VERM	123	101	108	284	-Y ST TO STAR 432 -Z ST TO STAR 440 ANG SEP = 87,8
4/18:52:00	INITIATE AUTO MNVR TO FRCS THERMAL SOAKBACK ATT	--	--	--	--	1,0	0,02	0,2	A	AUTO	VERM	--	--	--	--	MNVR TIME = 12 MIN EIG ANG = 144
4/19:04:00	FRCS THERMAL SOAKBACK ATT	317,6	227,7	54,5	INRTL	1,0	0,02	0,2	A	AUTO	VERM	81	42	90	180	+Z ST +X TOWARD B
4/19:13:00	FRCS THERMAL SOAKBACK CONFIG					5,0	0,2	0,2	A	AUTO	NORM					

TABLE 9-8 Continued

MET (D/HHMM:SS)	EVENT	ATTITUDE (P,Y,R EULER SEQ)			ATT MODE	DEADBANDS ATT RATE		DISC RATE	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		SEL	CONT		RCS	0	0	0	0			
4/19:15:00	+R TRANS (FTO 412-05)					5.0	0.2	0.2	A	AUTO	NORM					30 SEC F3F BURN
4/19:18:00	POST FRCS THERMAL SOAKBACK CONFIG					0.1	0.02	0.2	B	AUTO	VERN					
4/19:24:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNVR TIME = 1 MIN E16 ANG = 10
4/19:25:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	101	124	90	179	P 270 Y 0 OM 267 TGT: SUN
4/20:55:00	INITIATE AUTO MNVR TO RCS BURN 4 ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	
4/21:10:00	RCS BURN 4 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD	
4/21:15:00	RCS BURN 4 ATT					3.0	0.2	0.5	B	MAN DISC	NORM					
4/21:16:00	ATTITUDE HOLD					1.0	0.02	0.2	A	AUTO	VERN					
4/21:20:00	INITIATE AUTO MNVR TO POST BURN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	
4/21:35:00	POST RCS BURN 4 ATT	TBD	TBD	TBD	INRTL	1.0	0.02	0.2	A	AUTO	VERN	TBD	TBD	TBD	TBD	
4/21:52:00	INITIATE AUTO MNVR TO +ZSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	
4/22:07:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	84	50	90	180	P 270 Y 0 OM 267 TGT: SUN
4/22:34:00	INITIATE AUTO MNVR TO IECH GAS RELEASE ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNVR TIME = 10 MIN E16 ANG = 115
4/22:44:00	IECH GAS RELEASE ATT (FSD 5431-01)	0	90	270	LWLH	1.0	0.02	0.2	A	AUTO	VERN	90	270	77	254	P 0 Y 270 OM 90 TGT: EARTH
4/23:05:00	IECH GAS RELEASE ROTATION	345.4	206.5	61.7	ROTR	0.5	0.02	0.007	A	AUTO	VERN	90	270	77	170	E16N AXIS P 180 Y 0 ROT RATE = 0.007 °/SEC
4/23:50:00	STOP ROTATION/ATTITUDE HOLD	326.5	206.5	61.7	INRTL	1.0	0.02	0.2	A	AUTO	VERN	90	108	77	189	

TABLE 9-8 Continued

MET (D/H/M/MISS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS		DISC RATE (0/sec)	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		ATT (deg)	RATE (0/sec)		SEL	CONT	RCS	θ	φ	θ	φ	
4/23:53:00	INITIATE AUTO MHVR TO +ZSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MHVR TIME = 2 MIN EIG ANG = 17
4/23:55:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	100	117	90	180	P 270 Y 0 OM 267 TGT: SUN
5/01:18:00	PRE RMS/PRCS INTERACTION CONFIG (FTD 452-03)					N/A	N/A	N/A	B	MAN PULSE	NORM					
5/01:58:00	POST RMS/PRCS INTERACTION CONFIG					0.1	0.02	0.2	B	AUTO	VERN					
5/04:124:00	INITIATE AUTO MHVR TO IMU ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MHVR TIME = 6 MIN EIG ANG = 64
5/04:130:00	IMU ALIGN ATT	12.4	208.6	4.9	INRTL	1.0	0.02	0.2	A	AUTO	VERN	144	104	104	142	-Y ST TO STAR #51 -Z ST TO STAR #22 ANG SEP = 84
5/04:148:00	INITIATE AUTO MHVR TO +ZSI ATT	--	--	--	--	0.1	0.02	0.2	B	AUTO	VERN	--	--	--	--	MHVR TIME = 6 MIN EIG ANG = 64
5/04:154:00	+ZSI ATT	321.2	224	51.4	INRTL	0.1	0.02	0.2	B	AUTO	VERN	97	227	90	180	P 270 Y 0 OM 267 TGT: SUN
5/05:105:00	RCS HOT FIRE TEST					N/A	N/A	N/A	A	MAN PULSE	NORM					
5/05:120:00	RE-ESTABLISH +ZSI ATT					0.1	0.02	0.2	B	AUTO	VERN					
5/15:145:00	PRCS/ARCS THERMAL SOAKBACK DAP CONFIG					5.0	0.2	0.2	A	AUTO	NORM					P, Y JET OPT = 3 (TAIL CNTL)
5/17:157:00	INITIATE AUTO MHVR TO IMU ALIGN/BACKUP NAV ATT 1	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MHVR TIME = 8 MIN EIG ANG = 86
5/18:105:00	IMU ALIGN/BACKUP NAV ATT 1	252.9	252.5	348.9	INRTL	3.0	0.2	0.2	A	AUTO	NORM	150	141	149	260	-Y ST TO STAR #41 -Z ST TO STAR #34 ANG SEP = 88.6
5/18:122:00	INITIATE AUTO MHVR TO BACKUP NAV ATT 2	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MHVR TIME = 4 MIN EIG ANG = 38
5/18:126:00	BACKUP NAV ATT 2	246.8	288.6	351	INRTL	3.0	0.2	0.2	A	AUTO	NORM	158	339	165	180	-Y ST TO STAR #20 -Z ST TO STAR #17
5/18:135:00	INITIATE AUTO MHVR TO +ZSI ATT	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MHVR TIME = 8 MIN EIG ANG = 92

TABLE 9-4 Cont Inued

NET (D/M/R:PRECSS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEMANDS ATT RATE		DESC RATE	DAP			EARTH			SUN	REMARKS
		Roll	Pitch	Yaw		(deg)	(°/sec)		(°/sec)	SEL	CONT	PCS	0	0		
5/18:43:00	+ZSI ATT	321.2	224	51.4	INRTL	3.0	0.2	0.2	A	AUTO	NORM	84	281	90	180	P 270 Y 0 TGT: SUN ON 267
5/19:30:00	INITIATE AUTO MNR TO BACKUP MNR ATT 1	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNR TIME = 7 MIN EIG ANG = 75
5/19:37:00	BACKUP MNR ATT 1	255	256.8	0.4	INRTL	3.0	0.2	0.2	A	AUTO	NORM	145	183	145	241	-Y ST TO STAR #41
5/19:52:00	INITIATE AUTO MNR TO BACKUP MNR ATT 2	--	--	--	--	3.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNR TIME = 3 MIN EIG ANG = 36
5/19:56:00	BACKUP MNR ATT 2	246.8	288.6	361	INRTL	3.0	0.2	0.2	A	AUTO	NORM	164	347	165	180	+Y ST TO STAR #20 -Z ST TO STAR #17
5/20:07:00	INITIATE AUTO MNR TO +ZSI ATT	--	--	--	--	5.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNR TIME = 8 MIN EIG ANG = 92
5/20:15:00	+ZSI ATT	321.2	224	51.4	INRTL	5.0	0.2	0.2	A	AUTO	NORM	83	286	90	180	P 270 Y 0 TGT: SUN ON 267
5/22:22:00	PRSD +PTTR MNR (FTD 405-01)	321.2	224	51.4	ROTR	5.0	0.2	1.0	A	MNR	NORM	87	72	90	180	EIGEN AXIS P 0 Y 90 ROT RATE = 1.0 °/SEC
5/22:25:00	PDRS +PTTR MNR (FTD 405-01)	38.8	44	308.6	ROTR	5.0	0.2	1.0	A	MNR	NORM	89	96	90	0	EIGEN AXIS P 0 Y 270 ROT RATE = 1.0 °/SEC
5/22:28:00	+ZSI ATT	321.2	224	51.4	INRTL	5.0	0.2	0.2	A	AUTO	NORM	94	95	90	180	P 270 Y 0 TGT: SUN ON 267
5/22:32:00	INITIATE AUTO MNR TO FRCS/ARCS THERMAL SOWBACK ATT	--	--	--	--	5.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNR TIME = 1 MIN EIG ANG = 3
5/22:33:00	FRCS/ARCS THERMAL SOWBACK ATT	319.3	226.9	53.2	INRTL	5.0	0.2	0.2	A	AUTO	NORM	97	114	90	180	
5/22:46:00	FRCS THERMAL SOWBACK BURN (FTD 412-08)					5.0	0.2	0.2	A	AUTO	NORM					F2F/F3F 30 SEC BURN
5/22:47:00	ARCS THERMAL SOWBACK BURN (FTD 412-08)					5.0	0.2	0.2	A	AUTO	NORM					L1A 100 SEC BURN
5/22:49:00	ATTITUDE HOLD					5.0	0.2	0.2	A	AUTO	NORM					
5/23:02:00	INITIATE AUTO MNR TO +ZSI ATT	--	--	--	--	5.0	0.2	0.2	A	AUTO	NORM	--	--	--	--	MNR TIME = 1 MIN EIG ANG = 3

TABLE 9-8 Continued

NET (D/P/R/C/P/ESS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEADBANDS ATT RATE		DESC RATE	SUN			EARTH	SUN	REMARKS		
		Roll	Pitch	Yaw		(deg)	(°/sec)		(°/sec)	SEL	CONT				PCS	6
5/23:00:00	+CSA ATT	321.2	229.	51.4	INRTL	5.0	0.2	0.2	A	AUTO	NORM	98	236	90	180	P 270 Y 0 OM 267 TGT: SUN
6/04:22:00	PRCS/ARCS THERMAL SOAKBACK RECONFIG					1.0	0.02	0.2	A	AUTO	VERN					
6/04:32:00	INITIATE AUTO MNR TO IMP ALIGN ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNR TIME = 8 MIN FIG ANG = 90 -Y ST TO STAR #43 -Z ST TO STAR #28 ANG SEP = 85
6/04:40:00	IMP ALIGN ATT	281	349.6	30	INRTL	1.0	0.02	0.2	A	AUTO	VERN	51	101	92	131	
6/04:52:00	INITIATE AUTO MNR TO PTC ATT	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNR TIME = 7 MIN FIG ANG = 76
6/04:58:00	PTC ATT	8.6	226.8	53	INRTL	1.0	0.02	0.2	A	AUTO	VERP	236	161	90	131	SUN IN YZBY PLANE =E TOWARD R
6/05:09:00	START 0.4 DEG/SEC PTC ROTATION	8.6	226.8	53	ROTR	1.0	0.02	0.4	A	AUTO	VERN	101	185	90	131	EIGEN AXIS P 358 Y 0 ROT RATE = 0.40°/SEC
6/05:25:00	S-BAND/IMP ANTENNA PATTERNS (PTO 471-011)	133	221.3	54.1	ROTR	5.0	0.2	2.0	A	AUTO	NORM	79	143	87	11	EIGEN AXIS P 358 Y 0 ROT RATE = 2.00°/SEC
6/05:35:00	RE-ESTABLISH PTC	252	222.5	50.8	ROTA	1.0	0.02	0.4	A	AUTO	VERN	72	64	89	251	EIGEN AXIS P 358 Y 0 ROT RATE = 0.40°/SEC
6/18:02:00	INITIATE AUTO MNR TO IMP ALIGN ATT	--	--	--	--	1.0	0.02	0.2	B	AUTO	VERN	--	--	--	--	MNR TIME = 9 MIN FIG ANG = 105
6/18:11:00	IMP ALIGN ATT	248.2	248.9	339.4	INRTL	1.0	0.02	0.2	B	AUTO	VERN	28	141	148	281	-Y ST TO STAR #41 -Z ST TO STAR #50 ANG SEP = 85
6/18:22:00	INITIATE AUTO MNR TO TAIL-TO- SUN	--	--	--	--	1.0	0.02	0.2	A	AUTO	VERN	--	--	--	--	MNR TIME = 3 MIN FIG ANG = 34
6/18:25:00	TAIL-TO-SUN ATT	258.6	284.1	341	INRTL	1.0	0.02	0.2	A	AUTO	VERN	54	144	176	178	SUN 30 BELOW -XBY
6/18:05:00	CONFIG TO PRCS					3.0	0.2	0.5	B	AUTO	NORM					
6/19:54:00	INITIATE AUTO MNR TO IMP ALIGN ATT	--	--	--	--	3.0	0.2	0.5	B	AUTO	NORM	--	--	--	--	MNR TIME = 4 MIN FIG ANG = 119
6/19:58:00	IMP ALIGN ATT	227	35.6	43.9	INRTL	3.0	0.2	0.5	B	AUTO	NORM	66	114	59	135	-Y ST TO STAR #14 -Z ST TO STAR #26 ANG SEP = 91.4

TABLE 9-B Concluded

NET (DDMMHH:SS)	EVENT	ATTITUDE (P, Y, R EULER SEQ)			ATT MODE	DEBRANDS ATT RATE		DISC RATE	DAP			EARTH		SUN		REMARKS
		Roll	Pitch	Yaw		(deg)	(°/sec)		(°/sec)	SEL	CONT	RCS	0	φ	0	
6/20:05:00	INITIATE AUTO MNR TO IMP ALIGN VERIFICATION ATT	--	--	--	--	3.0	0.2	0.5	B	AUTO	NORM	--	--	--	--	MNR TIME = 2 MIN FIG ANG = 48
6/20:07:00	IMP ALIGN VERIFICATION ATT	176.1	57.6	25.8	INRTL	3.0	0.2	0.5	B	AUTO	NORM	78	165	41	192	-7 ST TO STAR #49 -2 ST TO STAR #60 ANG SEP = 84.1
6/20:22:00	INITIATE AUTO MNR TO TOP-TO- SUN ATT	--	--	--	--	3.0	0.2	0.5	B	AUTO	NORM	--	--	--	--	MNR TIME = 4 MIN FIG ANG = 111
6/20:26:00	TOP-TO-SUN ATT	141.2	156.9	304.9	INRTL	3.0	0.2	0.5	B	AUTO	NORM	46	204	70	0	
6/21:09:00	CONFIG RJ0% FOR ENTRY					3.0	0.2	0.5	B	AUTO	NORM					
6/21:11:00	OPS RECONFIG TO GNC 3					3.5	0.3	0.2	*	AUTO	*					
6/22:26:00	INITIATE AUTO MNR TO DEORB BURN ATT	--	--	--	--	3.5	0.3	0.2	*	AUTO	*	--	--	--	--	MNR TIME = 5 MIN FIG ANG = 51
6/22:31:00	DEORB BURN ATT	152	113	354	INRTL	3.5	0.3	0.2	*	AUTO	*	133	0	30	316	
6/22:40:00	ACTIVATE SINGLE AP0%					3.5	0.3	0.2	*	AUTO	*					
6/22:41:49	DEORB BURN IGNITION					7.5	0.3	0.2	*	AUTO	*					315.2 fps AV
6/22:44:44	DEORB BURN CUTOFF					3.5	0.3	0.2	*	AUTO	*					
6/22:48:00	INITIATE AUTO MNR TO E1-5 ATT	--	--	--	--	3.5	0.3	0.2	*	AUTO	*	--	--	--	--	MNR TIME = 11 MIN FIG ANG = 132
6/22:55:00	ACTIVATE REMAINING AP0%					3.5	0.3	0.2	*	AUTO	*					
6/22:57:00	E1-5 ATT	196	339	26	INRTL	3.5	0.3	0.2	*	AUTO	*	103	179	107	201	
6/23:00:37	E1-5	1	39	359	LVLN	3.5	0.3	0.2	*	AUTO	*	129	180	107	201	

ABBREVIATIONS/ACRONYMS

More complete compilations of abbreviations and acronyms are available in the Acronyms and Abbreviations Dictionary (Ref. 4).

ABBREVIATIONS/
ACRONYMS

ABBREVIATIONS/ACRONYMS

ACIP	AERODYNAMIC COEFFICIENTS IDENTIFICATION PACKAGE
ACN	ASCENSION ISLAND (STON SITE)
ACT	ACTIVATE
ADI	ATTITUDE DIRECTION INDICATOR
AGO	SANTIAGO, CHILE (STON SITE)
ANT	ANTENNA
AOA	ABORT ONCL. AROUND
AOS	ACQUISITION OF SIGNAL
ATT	ATTITUDE
ATO	ABORT TO ORBIT
BDA	BERMUDA ISLAND, BWI (STON SITE)
BOT	BOTSWANA (STON SITE)
BUC	BUCKHORN, CALIFORNIA (STON SITE)
CAL	CALIBRATION
CCTV	CLOSED CIRCUIT TV
CCU	CREWMAN COMMUNICATIONS UMBILICAL
COR	COMMANDER
COT	CENTRAL DAYLIGHT TIME
CFES	CONTINUOUS FLOW ELECTROPHORESIS SYSTEM
CHG	CHANGE
CL	CHECKLIST
COAS	CREWMAN OPTICAL ALIGNMENT SIGHT
CBW	CAUTION AND WARNING
DAP	DIGITAL AUTO PILOT
DB	DEADBAND
DEU	DISPLAY ELECTRONICS UNIT
DFI	DEVELOPMENT FLIGHT INSTRUMENTATION

ABBREVIATIONS/
ACRONYMS

DKR	DAXAR, SENEGAL (STON SITE)
OTO	DETAILED TEST OBJECTIVE
ECLS	ENVIRONMENTAL CONTROL LIFE SUPPORT SYSTEM
EDW	EDWARDS AFB, CALIFORNIA (DEORB OPT SITE)
EES	EMERGENCY EJECTION SUITS
EET	EVENT ELAPSED TIME
EMU	EXTRAVEHICULAR MOBILITY UNIT
EVA	EXTRAVEHICULAR ACTIVITY
FC	FUEL CELL
FDI	FLIGHT DATA FILE
FM	FREQUENCY MODULATION
FRD	FLIGHT REQUIREMENTS DOCUMENT
FSO	FUNCTIONAL SUPPLEMENTARY OBJECTIVE
FTO	FUNCTIONAL TEST OBJECTIVE
FWD	FORWARD
GAS	GET-AWAY SPECIAL
GOS	GOLDSTONE, CALIFORNIA (STON SITE, 1ST ANTENNA)
GOR	GOLDSTONE, CALIFORNIA (STON SITE, 2ND ANTENNA)
GNC	GUIDANCE NAVIGATION AND CONTROL
GPC	GENERAL PURPOSE COMPUTER
GSTDN	GROUND SPACE TRACKING & DATA NETWORK
GTS	GUAM ISLAND, U.S. (SGLS SITE)
GWM	GUAM ISLAND, U.S. (STON SITE)
HAW	HAWAII (KAUAI, STON SITE)
HTS	HAWAII (SGLS SITE)
HYD	HYDRAULIC
IECM	INDUCED ENVIRONMENTAL CONTAMINATION MONITOR

IMU	INERTIAL MEASUREMENT UNIT
INRTL	INERTIAL
IOS	INDIAN OCEAN (SGLS SITE)
ITS	INTERIM TELEPRINTER SYSTEM
LOS	LOSS-OF-SIGNAL; LINE-OF-SIGHT
LVLH	LOCAL VERTICAL LOCAL HORIZONTAL
MAD	MADRID, SPAIN (STDN SITE, 1ST ANTENNA)
MAX	MADRID, SPAIN (STDN SITE, 2ND ANTENNA)
MCC	MISSION CONTROL CENTER
MDM	MULTIPLEXER/DEMULTIPLEXER
MECO	MAIN ENGINE CUTOFF
MET	MISSION ELAPSED TIME
MIL	MERRITT ISLAND, FLORIDA (STDN SITE)
MILA	MERRITT ISLAND LAUNCH AREA
MLR	MONODISPERSE LATEX REACTOR
MLX	MERRITT ISLAND, FLORIDA (STDN SITE, 2ND ANTENNA)
MNVR	MANEUVER
MPM	MANIPULATOR POSITION MECHANISM
MPS	MAIN PROPULSION SYSTEM
MRL	MANIPULATOR RETENTION LATCHES
MTVC	MANUAL THRUST VECTOR CONTROL
NHS	NEW HAMPSHIRE (SGLS SITE)
OBS	OPERATIONAL BIOMED SENSORS; OBSERVATIONS
OEX	ORBITER EXPERIMENTS
OI	OPERATIONAL INSTRUMENTATION
OHS	ORBITAL MANEUVERING SYSTEM
OPS	OPERATIONS; OPERATIONAL SEQUENCE

ORB	ORBITER
ORR	ORRORAL VALLEY, AUSTRALIA (STDN SITE)
PCM	PULSE-CODE MODULATION
PDRS	PAYLOAD DEPLOYMENT AND RETRIEVAL SYSTEM
PL	PAYLOAD
PLBD	PAYLOAD BAY DOORS
PLT	PILOT
PM	PHASE MODULATION
PMC	PRIVATE MEDICAL COMMUNICATION
PMP	PUMP
PRCS	PRIMARY RCS
PRO	PROCEED
PSA	PRE/POST SLEEP ACTIVITY
PTC	PASSIVE THERMAL CONTROL
RCS	REACTION CONTROL SYSTEM
REF	REFERENCE
REFSMAT	REFERENCE STABLE MEMBER MATRIX
RELMAT	RELATIVE MATRIX
RF	RADIO FREQUENCY
RMS	REMOTE MANIPULATOR SYSTEM
ROT	ROTATION
RTC	REAL TIME COMMAND
SAA	SOUTH ATLANTIC ANOMALY
S-BD	S-BAND
SEL	SELECT
SGLS	SPACE GROUND LINK SYSTEM/STATION (DOO)
SPC	STORED PROGRAM COMMAND
SSO	SUPPORT SYSTEM FOR THE OER

ST	STAR TRACKER
STDN	SPACE TRACKING & DATA NETWORK
STS	SPACE TRANSPORTATION SYSTEM
TB	TALKBACK
TDRS	TRACKING AND DATA RELAY SATELLITE
TIG	TIME OF IGNITION
UHF	ULTRA HIGH FREQUENCY
VAC	VACUUM
VTR	VIDEO TAPE RECORDER
VTS	VANDENBERG TRACKING STATION (SGLS SITE)
WCCU	WIRELESS CREW COMMUNICATIONS UNIT
WCS	WASTE COLLECTION SYSTEM
WMC	WASTE MANAGEMENT COMPARTMENT
XFER	TRANSFER
X-POP	X BODY AXIS PERPENDICULAR TO ORBIT PLANE
-XSI	-X BODY AXIS TOWARDS SUN (TAIL TO SUN)
YAR	YARRAGADEE, AUSTRALIA (STDN SITE)
Y-POP	Y BODY AXIS PERPENDICULAR TO ORBIT PLANE
-ZLV	-Z LOCAL VERTICAL (-Z BODY AXIS TOWARDS EARTH)
+ZSI	+Z BODY AXIS TOWARDS SUN (BOTTOM TO SUN)

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