

**FLIGHT DATA FILE**

# Flight Plan

## STS-44

### (CTL Trajectory)

**Mission Operations Directorate  
Operations Division**

**Final  
October 8, 1991**

<u>EVENT</u>	<u>CST</u>		
Launch	17:51	Tue	Nov 19
DSP Deploy	00:10	Wed	Nov 20
KSC Landing	13:27	Fri	Nov 29



National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas

BRNH CHIEF  
B. NUTE  
BLDG T585  
BOND

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MISSION OPERATIONS DIRECTORATE

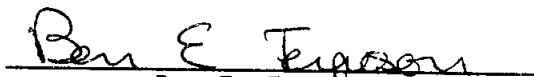
**STS-44 FLIGHT PLAN**


FINAL  
October 8, 1991

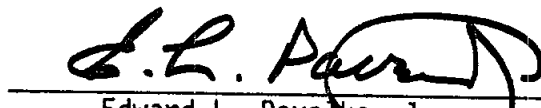
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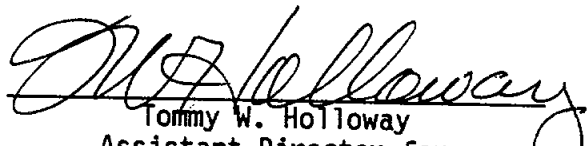
  
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STS-44 FLIGHT PLAN

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iv.....*	44/FIN	3-27.....	44/FIN
v.....*	44/FIN	3-28.....	44/FIN
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3-23.....	44/FIN	5-2.....*	44/FIN

(\*) - Omit from flight book

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7-1.....\* 44/FIN  
7-2.....\* 44/FIN  
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7-5.....\* 44/FIN  
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7-10.....\* 44/FIN

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DAP Book Front Cover.....	6-5	FLT PLN-1a/44/0/B
UNIV PTG (Back of DAP Book Front Cover).....	6-5	FLT PLN-1b/44/0/B
DAP A TOC.....	6-6	FLT PLN-2a/44/0/A
DAP A1.....	6-6	FLT PLN-2b/44/0/A
A1.....	6-6	FLT PLN-3a/44/0/A
DAP A2.....	6-7	FLT PLN-3b/44/0/A
A2.....	6-7	FLT PLN-4a/44/0/A
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A3.....	6-7	FLT PLN-5a/44/0/A
DAP A4.....	6-8	FLT PLN-5b/44/0/A
A4.....	6-8	FLT PLN-6a/44/0/A
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A5.....	6-8	FLT PLN-7a/44/0/A
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A7.....	6-9	FLT PLN-9a/44/0/A
DAP A8.....	6-10	FLT PLN-9b/44/0/A
A8.....	6-10	FLT PLN-10a/44/0/A
DAP A9.....	6-10	FLT PLN-10b/44/0/A
A9.....	6-10	FLT PLN-11a/44/0/A
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DAP ALT1.....	6-11	FLT PLN-12b/44/0/B
ALT1.....	6-11	FLT PLN-13a/44/0/B
(Blank).....	6-12	FLT PLN-13b/44/0/B
DAP B TOC.....	6-12	FLT PLN-14a/44/0/B
DAP B1.....	6-12	FLT PLN-14b/44/0/B
B1.....	6-12	FLT PLN-15a/44/0/B
DAP B2.....	6-13	FLT PLN-15b/44/0/B
B2.....	6-13	FLT PLN-16a/44/0/B
DAP B3.....	6-13	FLT PLN-16b/44/0/B
B3.....	6-13	FLT PLN-17a/44/0/B
DAP B4.....	6-14	FLT PLN-17b/44/0/B
B4.....	6-14	FLT PLN-18a/44/0/B
DAP B5.....	6-14	FLT PLN-18b/44/0/B
B5.....	6-14	FLT PLN-19a/44/0/B
DAP B6.....	6-15	FLT PLN-19b/44/0/B
B6.....	6-15	FLT PLN-20a/44/0/B
DAP B7.....	6-15	FLT PLN-20b/44/0/B
B7.....	6-15	FLT PLN-21a/44/0/B
DAP B8.....	6-16	FLT PLN-21b/44/0/B
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(Blank).....	6-17	FLT PLN-23a/44/0/B
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## INTRODUCTION

The STS-44 Flight Plan is the flight data file article that contains the on-orbit timeline. It does not contain the detailed timelines that are covered in the Ascent, Post Insertion, Deorbit Prep, and Entry Checklists. The detailed deploy procedures required during the deploy timeframe are in the IUS Deploy Checklist. For continuity, the entire flight is shown in the summary level timeline.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive and the requirements of the STS-44 Flight Requirements Document. The Flight Plan, as part of the Flight Data File, meets the specifications of the CTL Cycle release C version of the STS-44 Flight Initialization Data Pack.

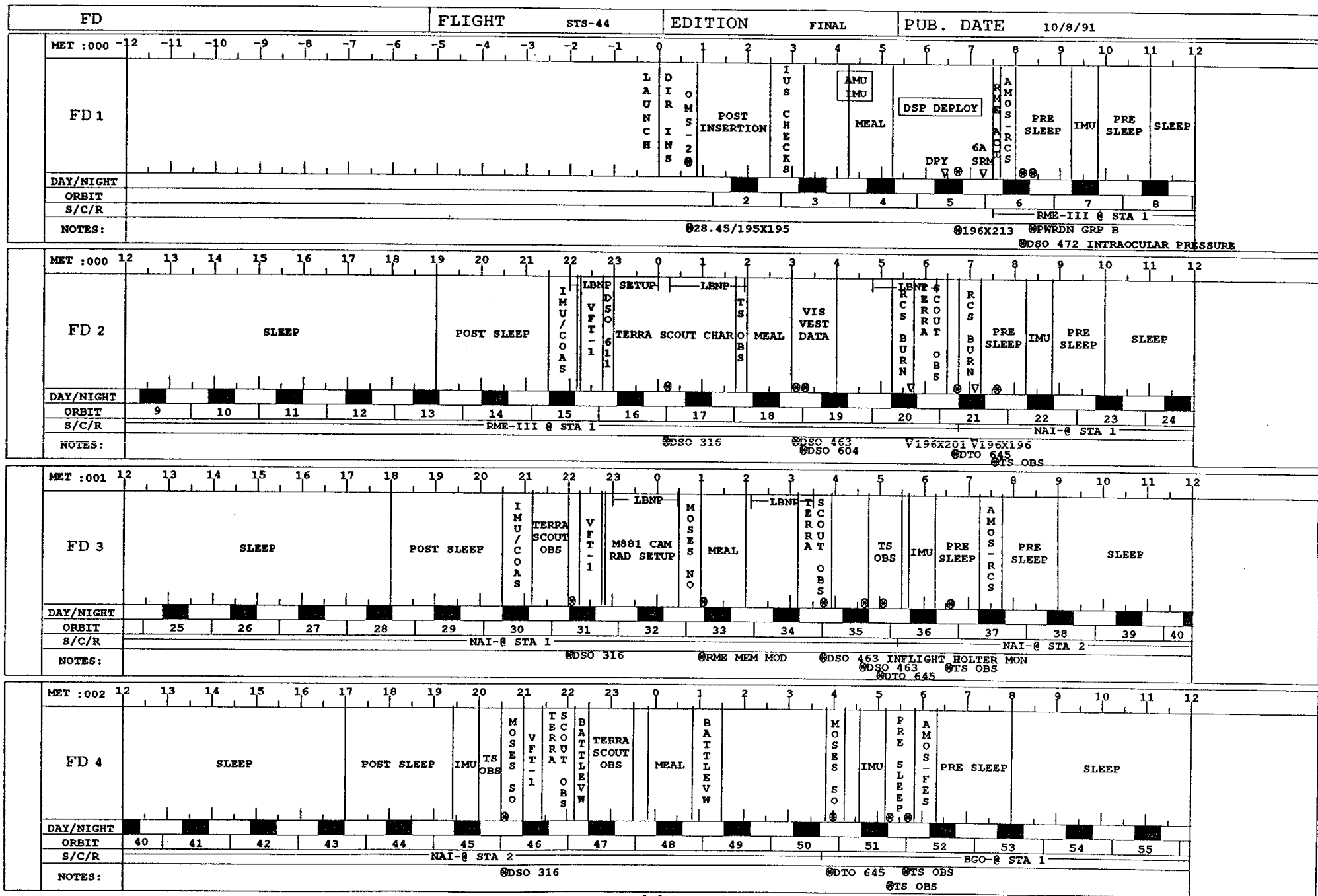
The flight profile used for this Flight Plan is for a launch date of November 19, 1991, at 17:51 CST. Orbiter inertial attitudes are expressed relative to a Mean of 1950 (M50) reference frame.

JSC-22359, Crew Scheduling Constraints (Appendix K, CPMP), Basic, Rev A, January 1990, has been used to build the timelines contained in this Flight Plan. Exemption 1403 #5 authorizes the Flight Day 2 unscheduled EVA timeline in Section 4. Exemption 1403 #22 authorizes MS2/Story Musgrave not to be scheduled for exercise. He will be a control subject for DSO 608, Effects of Space on Aerobic and Anaerobic Metabolism at Rest and During Exercise. Exemption 1403 #24 authorizes a total sleep shift of 6 hours earlier during this 10-day mission, with the last sleep period shortened to 6.5 hours, in order to maximize the probability of a lighted KSC landing.

The timeline formats used in this Flight Plan are based on JSC-19933, Timeline Format Definitions and Standard Notes, Revision C, May 1990.

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STS-44 OVERVIEW



FD												FLIGHT STS-44												EDITION FINAL												PUB. DATE 10/8/91											
MET :003	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12																						
FD 5	SLEEP				POST SLEEP				IMU	TERRA SCOUT OBS	BATT LEV W	BATT LEV W	TERRA SCOUT OBS	MEAL	TERRA SCOUT OBS	VFT-1	LBNP	BATT LEV W	IMU	PRE SLEEP	AMOS-NOSE	PRE SLEEP				SLEEP																					
DAY/NIGHT	[Day/Night Cycle]												[Day/Night Cycle]																																		
ORBIT	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71																															
S/C/R	BGO-8 STA 1												BGO-8 STA 2																																		
NOTES:	@RME MEM MOD @DSO 316												@DTO 645 @TS OBS																																		

FD 6												FLIGHT STS-44												EDITION FINAL												PUB. DATE 10/8/91											
MET :004	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12																						
FD 6	SLEEP				POST SLEEP				IMU	M O S E S N O	TERRA SCOUT OBS	BATT LEV W	LBNP	BATT LEV W	MEAL	BATT LEV W	BATT LEV W	FILE T A N I N G	C R E W C O N F	BATT LEV W	T S O B S	PRE SLEEP	IMU	PRE SLEEP	SLEEP																						
DAY/NIGHT	[Day/Night Cycle]												[Day/Night Cycle]																																		
ORBIT	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87																															
S/C/R	BGO-8 STA 2												BGO-8 STA 3																																		
NOTES:	@DSO 611												@VFT-1 @RME MEM MOD @DTO 645 @TS OBS																																		

FD 7												FLIGHT STS-44												EDITION FINAL												PUB. DATE 10/8/91											
MET :005	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12																						
FD 7	SLEEP				POST SLEEP				IMU	TERRA SCOUT OBS	VFT-1	M O S E S S O	TERRA SCOUT OBS	BATT LEV W	MEAL	BATT LEV W	TERRA SCOUT OBS	T S O B S	PRE SLEEP	IMU	PRE SLEEP	SLEEP																									
DAY/NIGHT	[Day/Night Cycle]												[Day/Night Cycle]																																		
ORBIT	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102																																
S/C/R	BGO-8 STA 3												BGO-8 STA 4																																		
NOTES:													@DTO 645 @TS OBS																																		

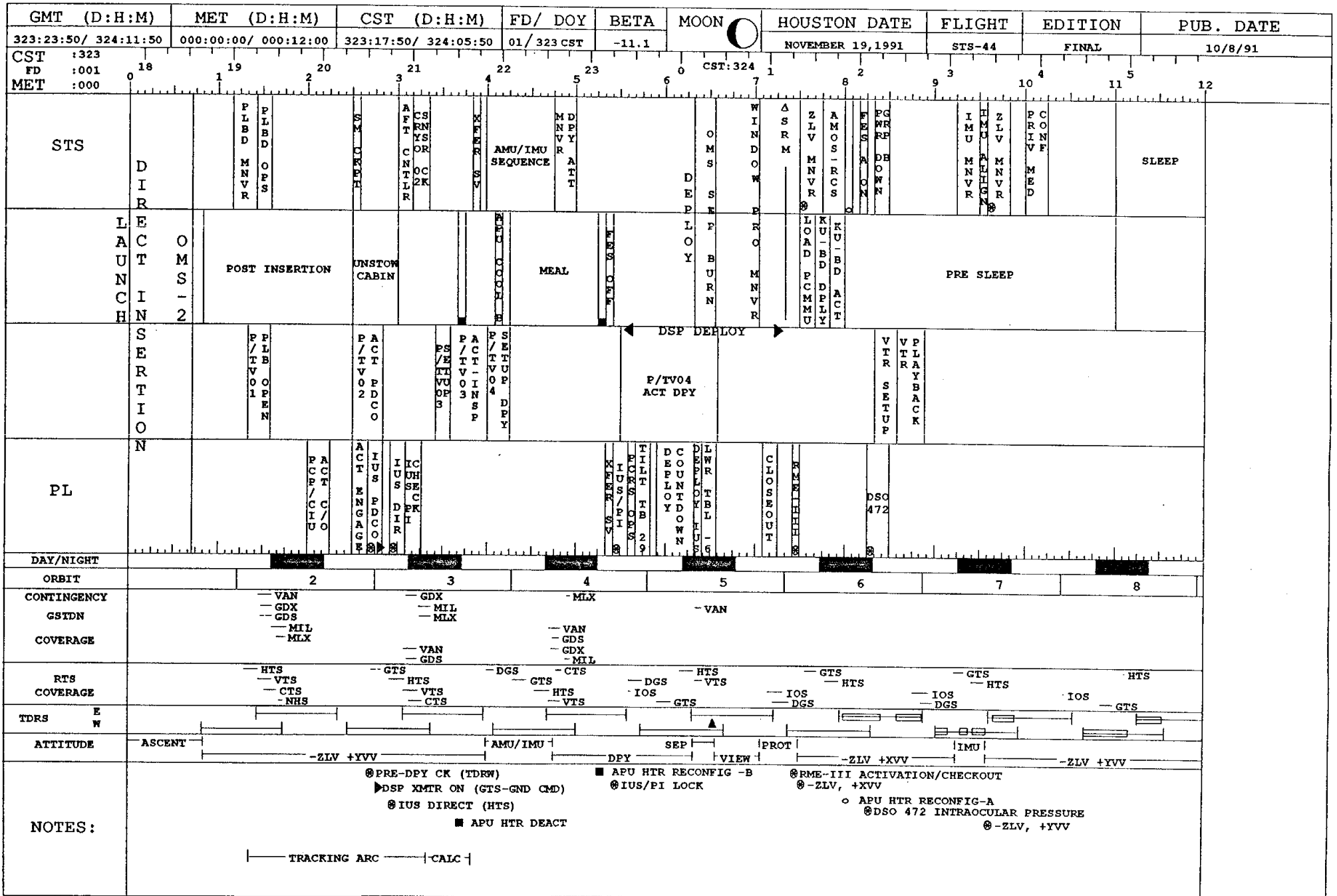
FD 8												FLIGHT STS-44												EDITION FINAL												PUB. DATE 10/8/91											
MET :006	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12																						
FD 8	SLEEP				POST SLEEP				IMU	M O S E S N O	TERRA SCOUT OBS	VFT-1	LBNP	SOAK	BATT LEV W	MEAL	BATT LEV W	TERRA SCOUT OBS	M O S T L E N V O W	LBNP	BATT LEV W	PRE SLEEP	IMU	PRE SLEEP	SLEEP																						
DAY/NIGHT	[Day/Night Cycle]												[Day/Night Cycle]																																		
ORBIT	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118																															
S/C/R	BGO-8 STA 4												NAI-8 STA 1																																		
NOTES:	@RME MEM MOD												@DTO 645																																		

FD	FLIGHT	STS-44	EDITION	FINAL	PUB. DATE											
MET :007	12 13 14 15 16 17 18 19 20 21 22 23	0 1 2 3 4 5 6 7 8 9 10 11 12			10/8/91											
FD 9	SLEEP POST SLEEP IMU	LENP BATTLEW FILE TRAINING LENP BATTLEW VFT-1 TERRA SCOUT OBS MEAL	LENP BATTLEW LENP BATTLEW	TERRA SCOUT OBS	MOSES PRE SLEEP IMU PRE SLEEP SLEEP											
DAY/NIGHT	[Day/Night Cycle]															
ORBIT	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134
S/C/R	NAI-8 STA 1						S-STA 1, C/R-STA2									
NOTES:	@RME MEM MOD @DTC 645															
MET :008	12 13 14 15 16 17 18 19 20 21 22 23	0 1 2 3 4 5 6 7 8 9 10 11 12														
FD 10	SLEEP POST SLEEP IMU	POST SLEEP SAMA/CT/RMSTOW FCS C/O	LENP BATTLEW VFT-1	TERRA SCOUT OBS	BATTLEW TERRA SCOUT OBS MEAL	CABIN STOW	PRE SLEEP	IMU PRE SLEEP	SLEEP (6.5)				POST SLEEP			
DAY/NIGHT	[Day/Night Cycle]															
ORBIT	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	
S/C/R	S-STA 1, C/R-STA2				RME-III 8 STA 2											
NOTES:	@DSO 472 @MOSES SO @DSO 604 VVI-3,1 @RME STOW @DTC 645 @PWRUP GRP B @RME STOW @DTC 645 @M88-1 STOW @DSO 611															
MET :009	12 13 14 15 16 17 18 19 20 21 22 23	0 1 2 3 4 5 6 7 8 9 10 11 12														
FD 11	POST SLEEP IMU	POST SLEEP	DEORBIT PREP				DEBURN	BUSS	LANCING							
DAY/NIGHT	[Day/Night Cycle]															
ORBIT	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165
S/C/R	@DSO ENTRY PREP															
NOTES:																
MET :010	12 13 14 15 16 17 18 19 20 21 22 23	0 1 2 3 4 5 6 7 8 9 10 11 12														
FD																
DAY/NIGHT	[Day/Night Cycle]															
ORBIT	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181
S/C/R																
NOTES:																

SUMMARY TIMELINE



# SUMMARY TIMELINE



GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
324:11:50/ 324:23:50	000:12:00/ 001:00:00	324:05:50/ 324:17:50	02/ 324 CST	-12.9		NOVEMBER 20, 1991	STS-44	FINAL	10/8/91
CST :324									
FD :001									
MET :000									MET:001
STS	SLEEP								
PL									
DAY/NIGHT									
ORBIT	9	10	11	12	13	14	15	16	
SAA									
CONTINGENCY RTS COVERAGE	- GTS - GTS - IOS - DGS - IOS - DGS - VTS - IOS - DGS								
TDRS									
ATTITUDE	-ZLV +YVV -ZLV +XVV								
SAM/CREAM RME-III	RME-III @ STA 1 IMU/COAS								
NOTES:	@AFT STATION @-ZLV, +XVV @DSO 478 LOWER BODY NEGATIVE PRESSURE @DSO 611 MICROBIAL AIR SAMPLER @DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM								

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
324:23:50/ 325:11:50	001:00:00/ 001:12:00	324:17:50/ 325:05:50	02/ 324 CST	-14.9		NOVEMBER 20, 1991	STS-44	FINAL	10/8/91		
CST :324											
FD :002											
MET :001											
STS	EXERCISE (PLT)	MEAL	EXERCISE (CDR)	AFT RCS BURN	ZLV	FWD RCS BURN	ZLV	IMMU	ZLV	PRE SLEEP	SLEEP
	PAC TV OF 6L DK		FILTER CLEANING								
	BIOSRT EAL CHOC	LBNP PREP	LBNP RAMP (MS3)	LBNP PREP	LBNP RAMP (MS1)	DON MON	DON MON				
PL	TS SYS CHAR	TS SYS CHAR	VIS VEST DATA	TS SETUP	TS ACT	TS OBS	TS OBS	TS OBS	TS OBS	V DATA VEST	
DAY/NIGHT											
ORBIT	17	18	19	20	21	22	23	24			
SAA											
CONTINGENCY RTS COVERAGE	-HTS -VTS -CTS -NHS	-GTS -HTS -VTS -CTS	-DGS -CTS -HTS -VTS	-DGS -GTS -HTS -VTS	-VTS -DGS -GTS -HTS	-IOS -DGS -GTS -HTS	-IOS -DGS -GTS -HTS	-IOS -DGS -GTS -HTS	-IOS -DGS -GTS -HTS	-GTS	
TDRS											
ATTITUDE		-ZLV +XVV		ARCS		-ZLV +XVV	FRCS		IMU		-ZLV +YVV
SAM/CREAM RME-III		RME-III @ STA 1								NAI @ STA 1	
NOTES:	<p>           @DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM            @DSO 316 BIOREACTOR FLOW AND PARTICLE TRAJECTORY IN MICROGRAVITY            @DSO 478 LOWER BODY NEGATIVE PRESSURE            @TS SYS CHAR SITE: LEARMOUTH            @TERRA SCOUT: FORD ISLAND            @DSO 604 VISUAL VESTIBULAR INTEGRATION OI-3            @DSO 463 INFLIGHT HOLTER MONITORING            @DSO 608 @DSO 478 @PRE RCS BURN CONFIG            @-ZLV, +XVV            @TERRA SCOUT: PRETORIA CITY            @TERRA SCOUT: DIEGO GARCIA            @DSO 463 @TERRA SCOUT: KAMPONG            @DSO 604 VISUAL VESTIBULAR INTEGRATION OI-1            @TERRA SCOUT: HARARE            @-ZLV, +YVV            @TERRA SCOUT: DIEGO GARCIA            @DSO 463 @TERRA SCOUT: KAMPONG            @DSO 645 COMBUSTION PRODUCTS ANALYZER            @INIT TRK @ AMOS TCA            @-ZLV, +XVV            @POST RCS BURN CONFIG         </p>										

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
325:11:50/ 325:23:50	001:12:00/ 002:00:00	325:05:50/ 325:17:50	03/ 325 CST	-16.9	☉	NOVEMBER 21, 1991	STS-44	FINAL	10/8/91				
CST :325													
FD :002	12 <sup>6</sup>	13 <sup>7</sup>	14 <sup>8</sup>	15 <sup>9</sup>	16 <sup>10</sup>	17 <sup>11</sup>	18 <sup>12</sup> FD: 03	19 <sup>13</sup>	20 <sup>14</sup>	21 <sup>15</sup>	22 <sup>16</sup>	23 <sup>17</sup>	0 <sup>18</sup> MET:002
MET :001													
STS	SLEEP												
	POST SLEEP												
	LBNP RAMP (MS2)												
PL	M88-1 CCD CAMR S/U												
DAY/NIGHT	[Bar chart showing day/night cycle]												
ORBIT	24	25	26	27	28	29	30	31	32				
SAA	[Bar chart]												
CONTINGENCY RTS COVERAGE	-GTS -GTS -DGS -DGS -DGS -DGS -DGS -DGS -DGS -DGS -DGS -DGS -DGS -DGS												
TDRS E W	[Bar chart]												
ATTITUDE	-ZLV +YVV												
SAM/CREAM RME-III	NAI @ STA 1												
NOTES:	@FWD STATION @-ZLV, +YVV @TERRA SCOUT: BRISBANE 2 @DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM @TERRA SCOUT: CAPE CANAVERAL @DSO 316 BIOREACTOR FLOW AND PARTICLE TRAJECTORY IN MICROGRAVITY @DSO 478 LOWER BODY NEGATIVE PRESSURE												

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
325:23:50/ 326:11:50	002:00:00/ 002:12:00	325:17:50/ 326:05:50	03/ 325 CST	-19.0	☉	NOVEMBER 21, 1991	STS-44	FINAL	10/8/91
CST :325 FD :003 MET :002									
STS		MEAL							SLEEP
PL									
DAY/NIGHT									
ORBIT	32	33	34	35	36	37	38	39	40
SAA									
CONTINGENCY RTS COVERAGE									
TDRS									
ATTITUDE									
SAM/CREAM RME-III									
NOTES:									

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
326:11:50/ 326:23:50	002:12:00/ 003:00:00	326:05:50/ 326:17:50	04/ 326 CST	-21.0		NOVEMBER 22, 1991	STS-44	FINAL	10/8/91		
CST :326											
FD :003											
MET :002									MET:003		
STS	SLEEP				SD FU LM YF I M H T	SD FU LM YF T E R R M	I M U M N V R	I M U M N V R	Z L V M N V R	EXERCISE (CDR)	M E A L
	POST SLEEP										
PL											
DAY/NIGHT	[Day/Night Cycle]										
ORBIT	40	41	42	43	44	45	46	47	48		
SAA	[SAA Coverage]										
CONTINGENCY RTS COVERAGE	[Contingency Coverage]										
TDRS	[TDRS Coverage]										
ATTITUDE	[Attitude Profile]										
SAM/CREAM RME-III	[SAM/CREAM RME-III]										
NOTES:	<ul style="list-style-type: none"> <li>⊗ -ZLV, +XVV</li> <li>⊗ TERRA SCOUT: BRISBANE</li> <li>⊗ DSO 316 BIOREACTOR FLOW AND PARTICLE TRAJECTORY IN MICROGRAVITY</li> <li>⊗ DIRECT COMM</li> <li>⊗ M88-1 : YUCATAN</li> <li>⊗ TERRA SCOUT: CHRISTMAS ISLAND</li> <li>⊗ DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM</li> <li>⊗ NO COMM</li> <li>⊗ M88-1 : CHASE FIELD</li> <li>⊗ TERRA SCOUT: USELESS LOOP</li> </ul>										

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
326:23:50/ 327:11:50	003:00:00/ 003:12:00	326:17:50/ 327:05:50	04/ 326 CST	-23.1		NOVEMBER 22, 1991	STS-44	FINAL	10/8/91			
CST :326 FD :004 MET :003												
STS	MEAL	EXERCISE (PLT)		CPA OPS	IMU	ZLV		AMOS-YES	ZLV	PROINF	SLEEP	
			F/TV05 SETUP MD DK	F/TV05 ACT MD DK				PRE SLEEP				
			CHN	CHN	CHN	CHN	CHN	CHN	CHN	CHN	CHN	
PL	MSS-1	BATT LEV W	BATT LEV W	HICKAM STATION	MBS-1	MBS-1	TS PREP	TS ACT	TS OBS	TS OBS	TS OBS	
DAY/NIGHT												
ORBIT	48	49	50	51	52	53	54	55				
SAA												
CONTINGENCY RTS COVERAGE	NHS	GTS	CTS	DGS	VTS	GTS	HTS	DGS	GTS	DGS	GTS	HTS
TDRS	E	W										
ATTITUDE												
SAM/CREAM RME-III	NAI @ STA 2					BGO @ STA 1						
NOTES:	<ul style="list-style-type: none"> <li>⊙ NETWORK/DIRECT COMM</li> <li>⊙ MSS-1 : DARWIN AIRPORT</li> <li>⊙ MSS-1 : HICKAM AFB</li> <li>⊙ DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM</li> </ul>					<ul style="list-style-type: none"> <li>⊙ NO COMM</li> <li>⊙ MSS-1 : STRAIT OF MALACCA</li> <li>⊙ DTO 645 COMBUSTION PRODUCTS ANALYZER</li> <li>⊙ -ZLV, +XVV</li> <li>⊙ TERRA SCOUT: GABORONE AFLD</li> <li>⊙ TERRA SCOTT: SATTAHIP</li> </ul>						

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
327:11:50/ 327:23:50	003:12:00/ 004:00:00	327:05:50/ 327:17:50	05/ 327 CST	-25.2	☉	NOVEMBER 23, 1991	STS-44	FINAL	10/8/91
CST :327			FD:05						MET:004
FD :004									
MET :003									
STS	SLEEP								MEAL
									EXERCISE (PLT)
PL									
DAY/NIGHT	[Day/Night Cycle Diagram]								
ORBIT	56	57	58	59	60	61	62	63	
SAA	[SAA Coverage Diagram]								
CONTINGENCY RTS COVERAGE	[Contingency Coverage Diagram]								
TDRS	[TDRS Coverage Diagram]								
ATTITUDE	[Attitude Diagram]								
SAM/CREAM RME-III	[SAM/CREAM RME-III Diagram]								
NOTES:	<p>IMU</p> <p>BGO @ STA 1</p> <p>⊛ NO COMM</p> <p>⊛ MEMORY MODULE REPLACEMENT ⊛ M88-1 : PT VILLA BAUREFIELD</p> <p>⊛ -ZLV, +XVV ⊛ NO COMM</p> <p>⊛ CABIN TEMP CNTL RECONFIG ⊛ M88-1 : MACDILL AFB</p> <p>⊛ DSO 316 BIOREACTOR FLOW AND PARTICLE TRAJECTORY IN MICROGRAVITY</p> <p>⊛ DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM</p> <p>⊛ TERRA SCOUT: MANAGUA 2</p> <p>⊛ TERRA SCOUT: ALICE SPRINGS 1</p> <p>⊛ DSO 478 LOWER BODY NEGATIVE PRESSURE</p>								



GMT (D:H:M)	MET (D:H:M)		CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE														
327:23:50/ 328:11:50	004:00:00/ 004:12:00		327:17:50/ 328:05:50	05/ 327 CST	-27.2		NOVEMBER 23, 1991	STS-44	FINAL	10/8/91														
CST :327 FD :005 MET :004	18	19	20	21	22	23	0	1	2	3	4	5	12											
STS	ZLV MNV R	WD AU SM PP I N H H	WD AC SM TF E M M N H	HC QQ MQ FE H E L S H I G H P E R F O R M A N C E	IMU MNV R	ZLV MNV R	AMOS- NOSS M N V R	ZLV MNV R	ZLV MNV R	PRO V M E D C I N E	SLEEP													
		P/IVOSE/IVOS SETUP ACT MD DK MD DK	EXERCISE (CDR)	PRE SLEEP																				
	LBNP PREP	LBNP RAMP (MS1)	L B E R S E R V I C E S R E S U R E S E N S O R S E N S O R S E N S O R S E N S O R	D E T E R M I N E D C O N D I T I O N S R E S U L T S R E S U L T S R E S U L T S R E S U L T S	M E A S U R E M E N T S R E S U L T S R E S U L T S R E S U L T S	T S A C T S R E S U L T S	X O S E N S O R S E N S O R																	
PL	H S E R V I C E S R E S U L T S	VFT-1		M E A S U R E M E N T S R E S U L T S R E S U L T S	T S A C T S R E S U L T S	T S A C T S R E S U L T S	X O S E N S O R S E N S O R																	
DAY/NIGHT	[Day/Night cycle indicators]																							
ORBIT	64			65			66			67			68			69			70			71		
SAA	[SAA coverage indicators]																							
CONTINGENCY RTS COVERAGE	[Contingency coverage indicators]																							
TDRS	[TDRS coverage indicators]																							
ATTITUDE	[Attitude indicators]																							
SAM/CREAM RME-III	[SAM/CREAM RME-III indicators]																							
NOTES:	©TERRA SCOUT: LUALUALEI ©DSO 478 LOWER BODY NEGATIVE PRESSURE ©-ZLV, +YVV ©DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM ©NO COMM ©M88-1 : SAIPAN AIRFIELD ©M88-1 : MIDWAY NAS ©TERRA SCOUT: PRETORIA SAT ©-ZLV, +YVV ©DTO 645 COMBUSTION PRODUCTS ANALYZER ©-ZLV, +XVV ©PRE RCS BURN CONFIG ©POST RCS BURN CONFIG																							


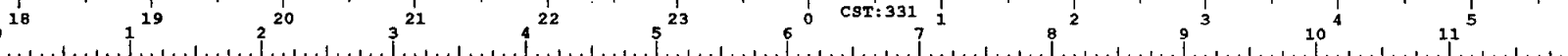
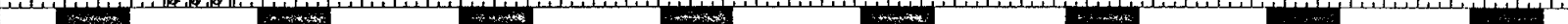
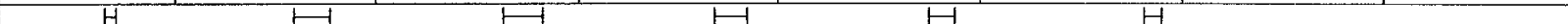

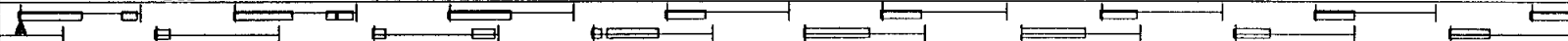
GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
328:11:50/ 328:23:50	004:12:00/ 005:00:00	328:05:50/ 328:17:50	06/ 328 CST	-29.3	☉	NOVEMBER 24, 1991	STS-44	FINAL	10/8/91					
CST :328														
FD :005	12 <sup>6</sup>	13 <sup>7</sup>	14 <sup>8</sup>	15 <sup>9</sup> FD:06	16 <sup>10</sup>	17 <sup>11</sup>	18 <sup>12</sup>	19 <sup>13</sup>	20 <sup>14</sup>	21 <sup>15</sup>	22 <sup>16</sup>	23 <sup>17</sup>	0 MET:005	
MET :004														
STS	SLEEP			SD PULM YP	SD PULM YP	IM UC	ZL V						MEAL	A U T O C A O U N D / T V C K
			POST SLEEP				EXERCISE (MS1)							
PL														
DAY/NIGHT														
ORBIT	72	73	74	75	76	77	78	79						
SAA														
CONTINGENCY RTS COVERAGE	-GTS		-DGS											
TDRS														
ATTITUDE			-ZLV +XVV											
SAM/CREAM RME-III														
NOTES:														


GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE												
328:23:50/ 329:11:50	005:00:00/ 005:12:00	328:17:50/ 329:05:50	06/ 328 CST	-31.3	☉	NOVEMBER 24, 1991	STS-44	FINAL	10/8/91												
CST :328					CST:329																
FD :006	0 18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12		
MET :005																					
STS		CREW CONF ZLV MNV R		CPA OPS		IMU MNV R														SLEEP	
			EXERCISE (PLT, CDR)			PRE SLEEP															
		FILTER CLEANING																			
PL	VFT-1																				
DAY/NIGHT																					
ORBIT	79	80	81	82	83	84	85	86	87												
SAA																					
CONTINGENCY RTS COVERAGE	--GTS		-DGS		-GTS		-IOS		-VTS		-DGS		-HTS		-IOS		-HTS		-IOS		-GTS
TDRS	E																				
ATTITUDE																					
SAM/CREAM RME-III		BGO @ STA 2																		BGO @ STA 3	
NOTES:																					

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
329:11:50/ 329:23:50	005:12:00/ 006:00:00	329:05:50/ 329:17:50	07/ 329 CST	-33.3	☉	NOVEMBER 25, 1991	STS-44	FINAL	10/8/91					
CST :329														
FD :006	12 <sup>6</sup>	13 <sup>7</sup>	14 <sup>8</sup> FD:07	15 <sup>9</sup>	16 <sup>10</sup>	17 <sup>11</sup>	18 <sup>12</sup>	19 <sup>13</sup>	20 <sup>14</sup>	21 <sup>15</sup>	22 <sup>16</sup>	23 <sup>17</sup>	0 <sup>18</sup>	MET:006
STS	SLEEP		SD PC LM YF HHH	SD PC LM YF T E R M	I M U M M V R V	H H H C K H H R V V		MEAL					Z L V M N V R	
		POST SLEEP			EXERCISE (MS3)		H H H O R I Z O N A L E X E R C I S E							
							L B N P P R E P		L B N P S O A K (MS1)			L E G N D P R E S S		
PL							V F T - 1							
DAY/NIGHT														
ORBIT	87	88	89	90	91	92	93	94	95					
SAA														
CONTINGENCY RTS COVERAGE				-IOS -DGS		-NHS	-IOS -DGS	-VTS -CTS -NHS	-HTS -VTS -CTS -NHS		-GTS	-HTS -VTS -CTS		
TDRS E W														
ATTITUDE		-ZLV +YVV			IMU			-ZLV +XVV						
SAM/CREAM RME-III		BGO @ STA 3						BGO @ STA 4						-ZLV +YVV
NOTES:														

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE											
329:23:50/ 330:11:50	006:00:00/ 006:12:00	329:17:50/ 330:05:50	07/ 329 CST	-35.2		NOVEMBER 25, 1991	STS-44	FINAL	10/8/91											
CST :329																				
FD :007																				
MET :006																				
	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	
STS	WASG STP E	WASG STP E	ZLV MNV R	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	CPA OPS	SLEEP
	EXERCISE 3 CREWMEN			PRE SLEEP																
	P/TV05 SETUP MD DK	P/TV05 ACT MD DK																		
PL																				
DAY/NIGHT																				
ORBIT	95	96	97	98	99	100	101	102												
SAA																				
CONTINGENCY RTS COVERAGE	-DGS	-CTS	-DGS	-HTS	-GTS	-HTS	-GTS	-HTS	-GTS	-HTS	-GTS	-HTS	-GTS	-HTS	-GTS	-HTS	-GTS	-HTS	-GTS	-HTS
TDRS																				
ATTITUDE	-ZLV +YVV	-ZLV +YVV	IMU																	
SAM/CREAM RME-III																				
NOTES:	(CDR,FLT,MS1) @-ZLV, +XVV @DTO 645 COMBUSTION PRODUCTS ANALYZER @TERRA SCOUT: LABUAN @-ZLV, +YVV																			

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE										
330:11:50/ 330:23:50	006:12:00/ 007:00:00	330:05:50/ 330:17:50	08 / 330 CST	-37.1		NOVEMBER 26, 1991	STS-44	FINAL	10/8/91										
CST :330																			
FD :007	12 <sup>6</sup>	13 <sup>7</sup> FD:08	14 <sup>8</sup>	15 <sup>9</sup>	16 <sup>10</sup>	17 <sup>11</sup>	18 <sup>12</sup>	19 <sup>13</sup>	20 <sup>14</sup>										
MET :006																			
STS	SLEEP	SD PULM YP  INIT	SD PULM YP  TERM	I MU  M NV R  M NV R  Z LV V  M NV R	P/TVO5 SETUP MD DR	P A C T I V O M D  D K	MEAL												
		POST SLEEP			D E M O T I V E S E T U P O T R A I	D E H I N G C E T T O N R A I			E 4 X C R E C E I V E M E E N										
					L B N P P R E P		L B N P S O A K (M S 2)	L E B N P P R E P  L B N P R A M P (M S 1)	L E B N P P R E P  G P /T V O 6 S E T U P F L D K C H O I C E										
PL			M 8 8 - 1 P R E P	M O S E S  N O	T S S E T U P	T S A C C E S S O R I E S	V F T - 1	M 8 8 - 1 P R E V	M 8 8 - 1 P R E V	B A T T L E V E W	B A T T L E V E W	M 8 8 - 1 P R E V	B A T T L E V E W	T S S E T U P	T S A C T	M 8 8 - 1 P R E V	M O S E S  N O	B A T T L E V E W	
DAY/NIGHT																			
ORBIT	103	104	105	106	107	108	109	110											
SAA																			
CONTINGENCY RTS COVERAGE	-GTS		-DGS		-NHS	-IOS -DGS	-CTS -NHS	-HTS -VTS -CTS	-HTS -VTS -CTS										
TDRS E W																			
ATTITUDE		-ZLV +XVV		IMU			-ZLV +XVV												
SAM/CREAM RME-III		BGO @ STA 4					NAI @ STA 1												
NOTES:			@ -ZLV, +XVV @ NETWORK/DIRECT COMM @ M88-1 : ROOSEVELT ROADS	@ DSO 478 LOWER BODY NEGATIVE PRESSURE @ TERRA SCOUT: MANAGUA 1		@ MEMORY MODULE REPLACEMENT @ NO COMM @ M88-1 : PT VILLA BAUREFIELD @ NO COMM @ M88-1 : HOMESTEAD	@ DSO 478 LOWER BODY NEGATIVE PRESSURE @ TERRA SCOUT: TINDALL @ NETWORK COMM @ M88-1 : PEARL HARBOR	@ NO COMM @ M88-1 : LAUGHLIN AFB @ (MS3, MS1, PLT, CDR)											

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
330:23:50/ 331:11:50	007:00:00/ 007:12:00	330:17:50/ 331:05:50	08/ 330 CST	-38.9		NOVEMBER 26, 1991	STS-44	FINAL	10/8/91	
CST :330	FD :008	MET :007								
STS	CPA OPS	PROIMF	IMU	ELV	SLEEP					
	EXERCISE 4 CREWMEN	PRE SLEEP								
	P/TV06 ACT FL DK CHOICE									
PL	M88-1 PRE	BATT LEV W								
DAY/NIGHT										
ORBIT	111	112	113	114	115	116	117	118		
SAA										
CONTINGENCY RTS COVERAGE										
TDRS										
ATTITUDE	-ZLV +XVV									
SAM/CREAM RME-III	IMU									
NOTES:	NAI @ STA 1 @ DTO 645 COMBUSTION PRODUCTS ANALYZER @ (MS3, MS1, FLT, CDR) @ -ZLV, +YVV @ NO COMM @ M88-1 : SAIPAN AIRFIELD @ M88-1 : MIDWAY NAS									

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
331:11:50 / 331:23:50	007:12:00 / 008:00:00	331:05:50 / 331:17:50	09 / 331 CST	-40.6		NOVEMBER 27, 1991	STS-44	FINAL	10/8/91				
CST :331													
FD :008	12 <sup>6</sup>	13 <sup>7</sup> FD:09	14 <sup>8</sup>	15 <sup>9</sup>	16 <sup>10</sup>	17 <sup>11</sup>	18 <sup>12</sup>	19 <sup>13</sup>	20 <sup>14</sup>	21 <sup>15</sup>	22 <sup>16</sup>	23 <sup>17</sup>	0 MET:008

STS	SLEEP	INIT	SD PULM YF	SD PULM YF	IMU	ZLV	FILTER CLEANING	MEAL	

POST SLEEP	PSM /ED TT VUD OPK 5	P/TV05 ACT MD DK	EXERCISE (MS3)

LBNP PREP	LBNP RAMP (MS2)	LBNP PREP	LBNP RAMP (MS3)	LBNP PREP	LBNP RAMP (MS1)	LBNP PREP	LBNP RAMP (PLT)

PL	IS	M	B	VFT-1	TS	TS	TS	TS	TS

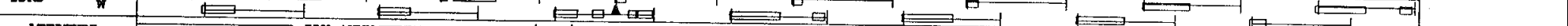
DAY/NIGHT												
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ORBIT	119	120	121	122	123	124	125	126
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SAA								
-----	--	--	--	--	--	--	--	--

CONTINGENCY RTS COVERAGE		-DGS		-DGS	-CTS	-DGS	-NHS	-NHS	-CTS
--------------------------	--	------	--	------	------	------	------	------	------

TDRS			-IOS	-IOS	-NHS	-IOS	-HTS	-VTS	-CTS					
------	--	--	------	------	------	------	------	------	------	--	--	--	--	--



ATTITUDE		-ZLV +XVV							
----------	--	-----------	--	--	--	--	--	--	--

SAM/CREAM RME-III		NAI @ STA 1							
-------------------	--	-------------	--	--	--	--	--	--	--

NOTES:  
 -ZLV, +XVV      ©NO COMM      ©TERRA SCOUT: CAPE CANAVERAL  
 ©DSO 478      ©M88-1 : MACDILL AFB      ©DSO 478  
 ©NETWORK/DIRECT COMM      ©TERRA SCOUT: PTA  
 ©M88-1 : TEGUCIGALPA      ©NO COMM  
 ©DSO 478      ©M88-1 : PATRICK  
 ©NO COMM  
 ©M88-1 : KWAJALEIN  
 ©DSO 478



GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
331:23:50 / 332:11:50	008:00:00 / 008:12:00	331:17:50 / 332:05:50	09 / 331 CST	-42.2		NOVEMBER 27, 1991	STS-44	FINAL	10/8/91							
CST :331 FD :009 MET :008																
STS	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">CPA OPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PRONV DE</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">IUM U</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">ZHEH CMH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">RVNM VLN</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">WDUM F</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">IUM F</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SUSM TE</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">IUM TE</div> </div>															
	EXERCISE 3 CREWMEN			PRE SLEEP						SLEEP						
	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">LE PSF BC /EL NE TT PE VUD S OFK S</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">P/TVO6 ACT FL DK CHOICE</div> </div>															
PL	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TS ACT</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SBO SH</div> </div>															
DAY/NIGHT																
ORBIT	127		128		129		130		131		132		133		134	
SAA																
CONTINGENCY RTS COVERAGE	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">GTS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">HTS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">DGS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">IOS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">VTS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">HTS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">IOS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">DGS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">GTS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">HTS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">IOS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">GTS</div> </div>															
TDRS																
ATTITUDE	-ZLV +XVV				IMU				-ZLV +YVV							
SAM/CREAM RME-III	C, R-STA 2 / S-STA 1															
NOTES:	<ul style="list-style-type: none"> <li>⊙ (CDR, PLT, MS1)</li> <li>⊙ TERRA SCOUT: ANDERSON</li> <li>⊙ DTO 645 COMBUSTION PRODUCTS ANALYZER</li> <li>⊙ NO COMM</li> <li>⊙ M88-1 : STRAIT OF MALACCA</li> <li>⊙ -ZLV, +YVV</li> <li>⊙ MEMORY MODULE REPLACEMENT</li> </ul>															

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
332:11:50/ 332:23:50	008:12:00/ 009:00:00	332:05:50/ 332:17:50	10 332 CST	-43.8		NOVEMBER 28, 1991	STS-44	FINAL	10/8/91
CST :332									
FD :009									
MET :008									
STS	SLEEP				FCS C/O			EXERCISE (CDR, PLT)	MEAL
		POST SLEEP				LBNP PREP	LBNP RAMP (MS2)		
									CABIN STOW
PL									
DAY/NIGHT									
ORBIT	134	135	136	137	138	139	140	141	142
SAA									
CONTINGENCY RTS COVERAGE									
TDRS									
ATTITUDE									
SAM/CREAM RME-III									
NOTES:	<p>           @-ZLV, +XVV @PRE RCS BURN CONFIG @POST RCS BURN CONFIG @DSO 608 EFFECTS OF AEROBIC AND ANAEROBIC METABOLISM            @APU HTR ACT @NO COMM @M88-1 : CHASE FIELD @-ZLV, +YVV            @DSO 472 INTRAOCULAR PRESSURE @DSO 604 VISUAL VESTIBULAR INTEGRATION OI-3 @NO COMM @DSO 611 MICROBIAL AIR SAMPLER            @DIRECT COMM @DSO 478 LOWER BODY @NO COMM @RME-III STOW            @M88-1 : YUCATAN NEGATIVE PRESSURE @M88-1 : HOMESTEAD            @DSO 604 VISUAL VESTIBULAR INTEGRATION OI-1 @TERRA SCOUT: BROOME            @TERRA SCOUT: BAUREFIELD            @APU HTR RECONFIG            @TERRA SCOUT: CHRISTMAS ISLAND         </p>								

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
332:23:50/ 333:11:50	009:00:00/ 009:12:00	332:17:50/ 333:05:50	10/ 332 CST	-45.2		NOVEMBER 28, 1991	STS-44	FINAL	10/8/91		
CST :332	FD :010	MET :009									
STS	18 19 20 21 22 23 0 1 2 3 4 5 6 7 8 9 10 11 12		SLEEP (6.5)								
	CABIN STOW		PRE SLEEP							POST SLEEP	
PL											
DAY/NIGHT											
ORBIT	142	143	144	145	146	147	148	149	150		
SAA											
CONTINGENCY RTS COVERAGE	-DGS -GTS -HTS -VTS    -IOS -DGS -GTS -HTS    -IOS -DGS -GTS -HTS    -IOS -GTS -HTS    -GTS    -GTS										
TDRS E W											
ATTITUDE	-ZLV +YVV    IMU    -ZLV +YVV										
SAM/CREAM RME-III											
NOTES:	◎ DTO 645 COMBUSTION PRODUCTS ANALYZER ◎ -ZLV, +YVV										

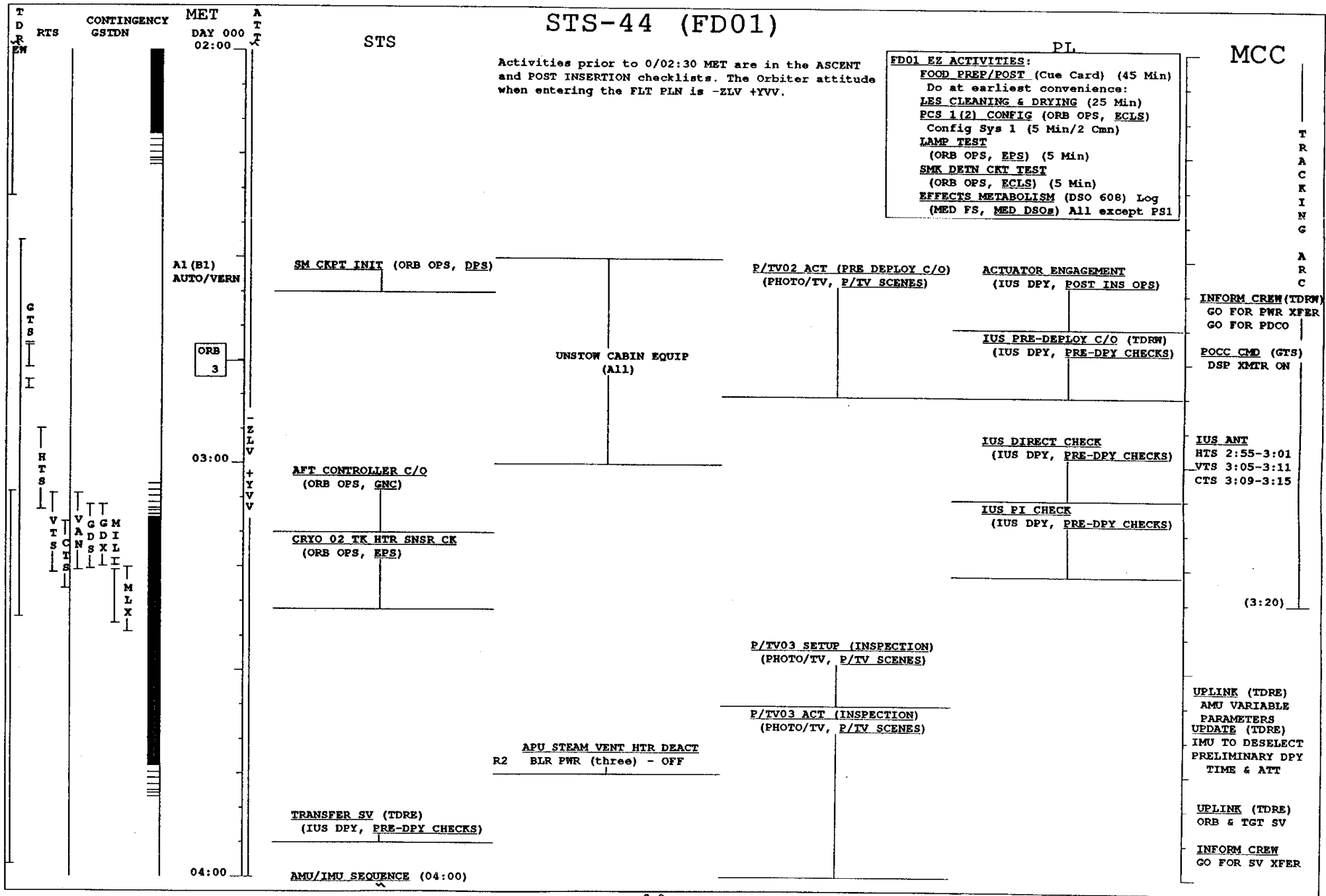
GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
333:11:50/ 333:23:50	009:12:00/ 010:00:00	333:05:50/ 333:17:50	11 / 333 CST	-46.5		NOVEMBER 29, 1991	STS-44	FINAL	10/8/91
CST :333									
FD :010	12 <sup>6</sup>	13 <sup>FD:11</sup>	14 <sup>8</sup>	15 <sup>9</sup>	16 <sup>10</sup>	17 <sup>11</sup>	18 <sup>12</sup>	19 <sup>13</sup>	20 <sup>14</sup>
MET :009									
									0 MET:010
STS	IMU MNVVR	IMU MNVVR							
	POST SLEEP					DEORBIT BURN	KSC LANDING		
PL		DSO ENTRY PREP							
DAY/NIGHT									
ORBIT	150	151	152	153	154	155	156	157	
SAA									
CONTINGENCY RTS COVERAGE		-DGS	-IOS -DGS	-IOS -DGS	-NHS -VTS -CTS	-IOS -DGS	-VTS -CTS -NHS	-VTS -CTS	-VTS -CTS
TDRS E W			-NHS			-HTS	-HTS	-HTS	-DGS -CTS
ATTITUDE	-ZLV +YVV	IMU	-XSI		DEORBIT		ENTRY		
SAM/CREAM RME-III				IMU/VERIF					
		@DSO 463, 603, 604							
NOTES:						* DEORBIT BURN 9/18:31	* KSC LANDING 9/19:36		

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DETAILED TIMELINE

DETAILED  
TIMELINE

# DETAILED TIMELINE



# STS-44 (FD01)

T D R E W	RTS	CONTINGENCY GSTDN	MET DAY 000 04:00	A T T
D C S			A1 (B1) FREE/VERN AUTO/VERN	
G T S			ORB 4	A M U / I M U
H T S			A1 (B1) FREE/VERN AUTO/VERN	
C T S			A1 (B1) FREE/VERN AUTO/VERN	
V T S			FREE/VERN (A9) B1 AUTO/VERN	
V A S			05:00 A9 (B1) AUTO/VERN	
T A S				
G D S				
T G D S				
M I L L X				
I O S				
D C S				
S M G				
			ORB 5	
			06:00	D P Y

**STS**  
**AMU/IMU SEQUENCE**  
 (IUS DPY, PRE-DPY CHECKS)  
 MNVR TO AMU #1 ATT (04:00)

AMU DATA TAKE #1

MNVR TO AMU #2 ATT

AMU DATA TAKE #2

MNVR TO AMU #3/  
 IMU ALIGN ATT

AMU DATA TAKE #3  
 IMU ALIGN (STAR PAIR A1)

AMU DATA TAKE #4  
 MNVR TO DEPLOY ATTITUDE  
 (IUS DPY, DPY OPS)

APU COOL OFF (On MCC Cue)  
 R2 APU FUEL PUMP/VLV COOL B-OFF

P/TV04 SETUP (DEPLOY OPS - DSP)  
 (PHOTO/TV, P/TV SCENES)

**IMU ALIGN LOG**  
 REQD ID:

-Y \_\_\_\_ , -Z \_\_\_\_ ANG ERR \_\_\_\_ . \_\_\_\_  
 1 2 3

ANG:  
 ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
 ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
 ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:  
 \_ \_ / \_ \_ : \_ \_ : \_ \_

MEAL  
 (All)

A12 APU HTR GAS GEN/FUEL  
 PUMP (three) - B AUTO

L1 FLASH EVAP CNTLR PRI A(B) -OFF

P/TV04 ACT (DEPLOY OPS - DSP)  
 (PHOTO/TV, P/TV SCENES)

TRANSFER SV (TDRE)  
 (IUS DPY, PRE-DPY CHECKS)

IUS/PI LOCK  
 (IUS DPY, DPY OPS)

PCRS OPS  
 (IUS DPY, DPY OPS)

TILT TABLE ELEV TO 29  
 (IUS DPY, DPY OPS)

DEPLOY COUNTDOWN  
 (IUS DPY, DPY OPS)  
 XFER TO INT PWR

PL

**MCC**  
 INFORM CREW  
 GO FOR APU  
 COOL OFF

UPLINK (TDRE)  
 ORB & TGT SV

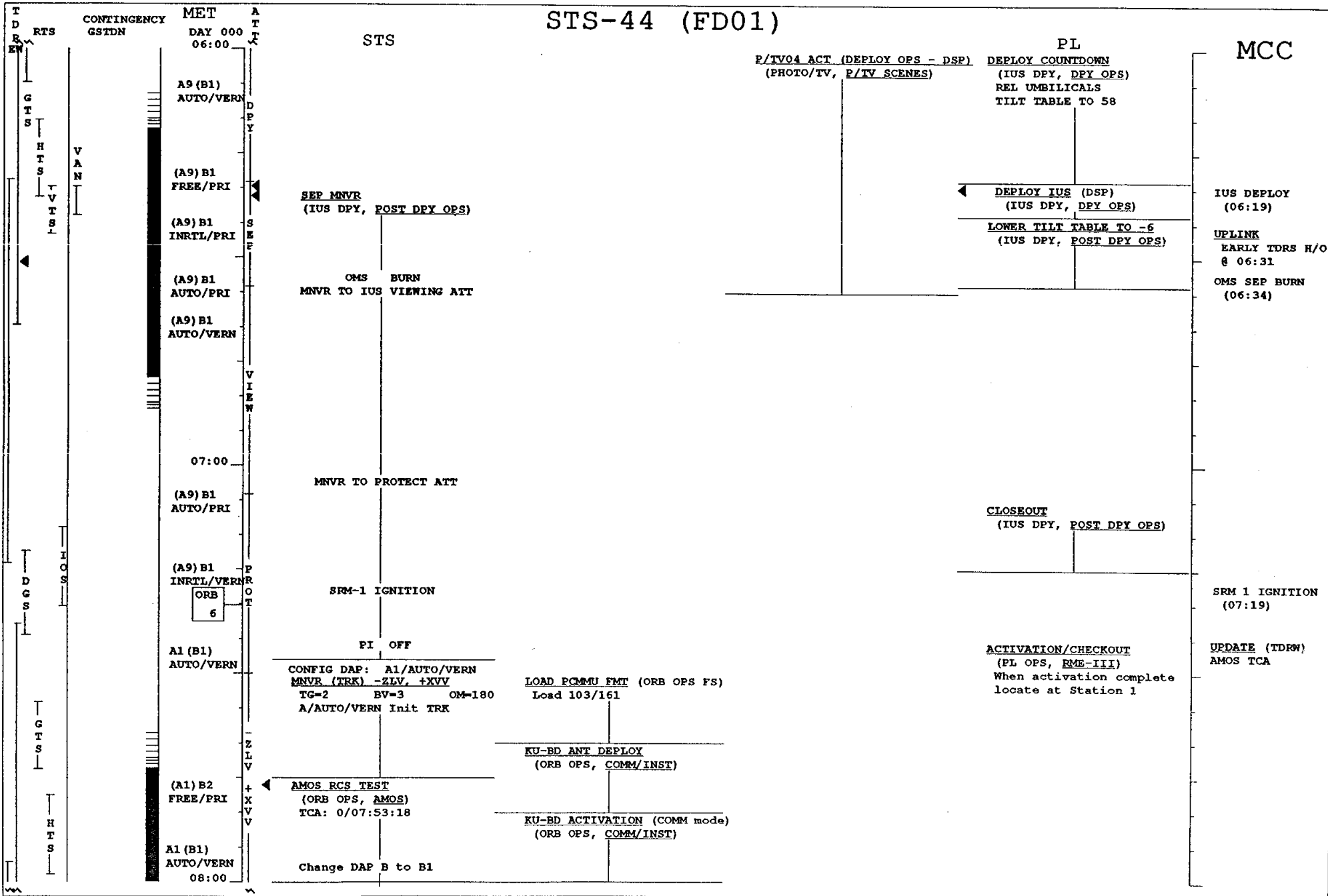
INFORM CREW  
 GO FOR SV XFER

UPDATE (TDRE)  
 DPY/BURN PADS

INFORM CREW  
 GO FOR DEPLOY



# STS-44 (FD01)



# STS-44 (FD 01)

PL

MCC

UPLINK  
FC PURGE

VTR (TDRE)

CONTINGENCY  
GSTDN

MET

DAY 000  
08:00

A  
T  
T

STS

A1 (B1)  
AUTO/VERN

A12 APU HTR GG/FU (three) - A AUTO  
TR/FU/H2O SYS 1A, 2A, 3A - AUTO  
1B, 2B, 3B - OFF

TOPPING FES STARTUP  
(ORB OPS, ECLS)

PRIORITY PWRDN GROUP B  
(ORB PKT, PRIOR PWRDN)

VTR SETUP (04-DEPLOY OPS)  
(Cue Card, TV/VTR)

IOP (DSO 472)  
(MED FS, MED DSOa)  
(MS2, MS3)

VTR PLAYBACK (04-DEPLOY OPS)  
(Cue Card, TV/VTR)  
VTR at TDRE (08:36-08:53)

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

◀ MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

Check HUM SEP for  
water accumulation

IMU ALIGN-S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +YVV  
TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

Do not perform  
SUPPLY WATER DUMP

IMU ALIGN LOG  
REQD ID:

-Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
1 2 3

ANG:

ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:

\_ \_ / \_ \_ : \_ \_ : \_ \_

09:00

10:00

11:00

12:00

ORB  
7

ORB  
8

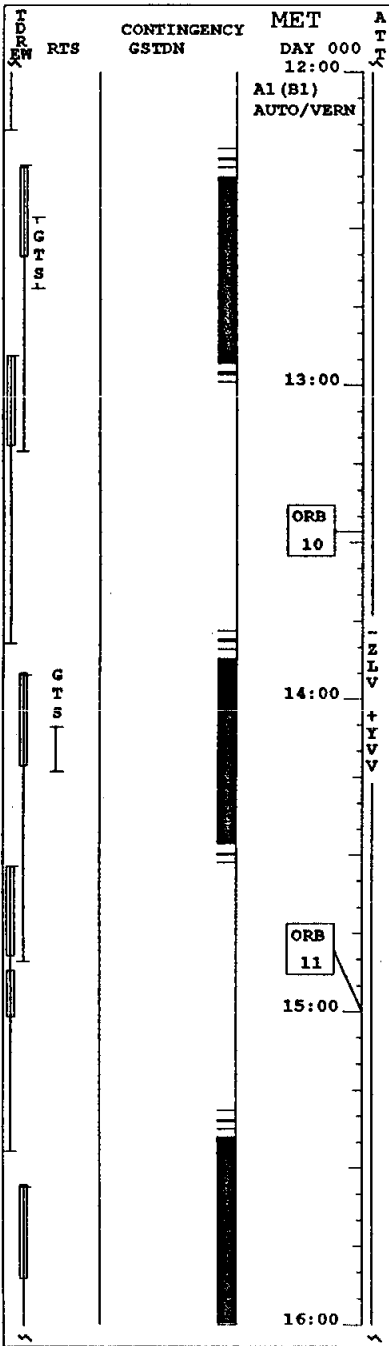
ORB  
9

SLEEP

# STS-44 (FD 01)

PL

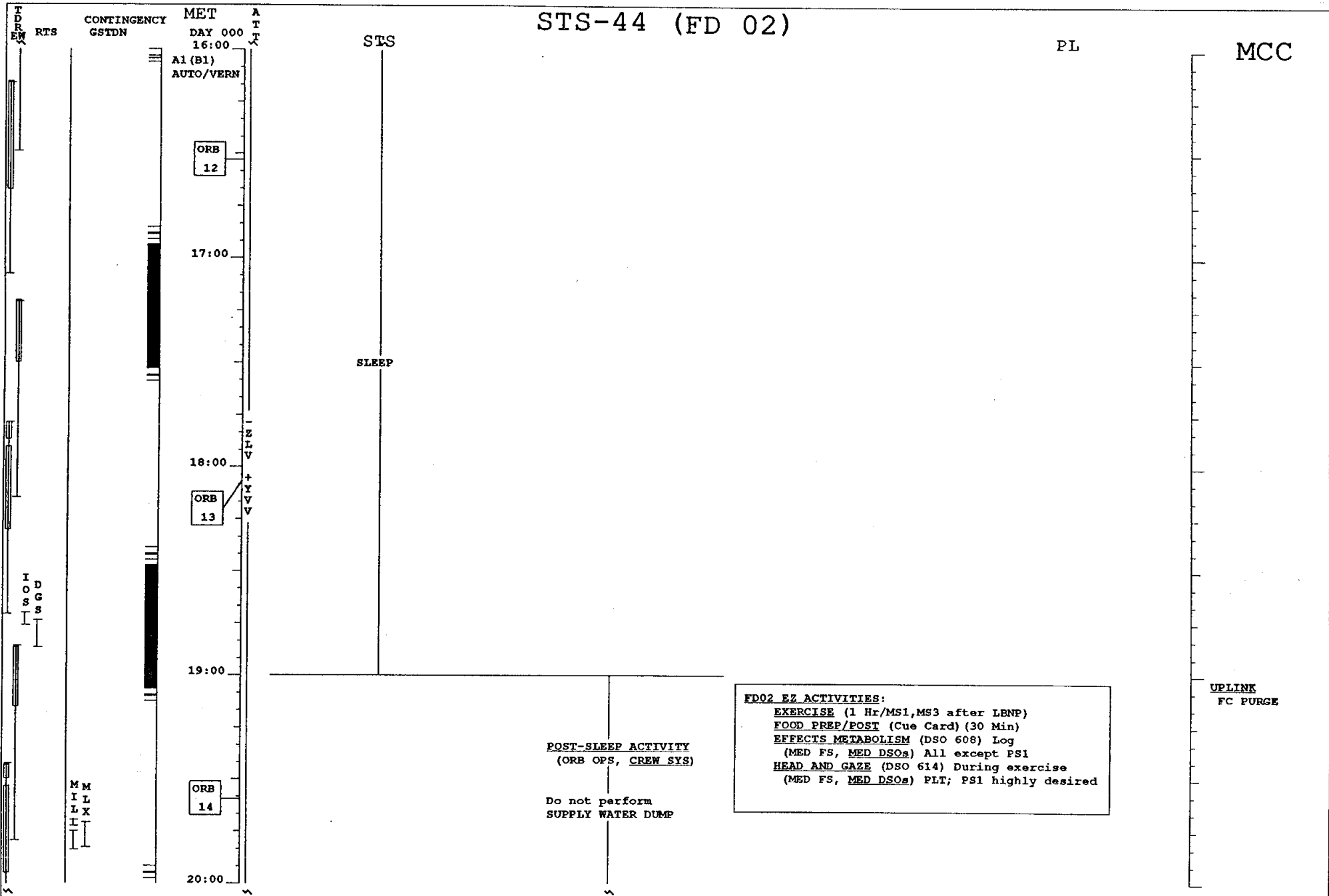
MCC



# STS-44 (FD 02)

PL

MCC



DRW  
 RTS  
 CONTINGENCY  
 GSTDN  
 MET  
 DAY 000  
 20:00  
 A1 (B1)  
 AUTO/VERN  
 I O S  
 D D T  
 S S  
 M M I L L  
 N H S I  
 H S O H  
 D G S  
 V T S  
 N H S  
 V A G G  
 N X S I  
 H X S I L  
 M L X I L  
 D G S  
 H S O H  
 001  
 00:00

# STS-44 (FD 02)

## STS

COAS CALIBRATION LOG  
 STAR ID: -Z 18, CAPELLA  
 STAR AVAIL: 21:28 TO 22:12  
 -Z Δ BIAS \_\_\_\_\_  
 UPDATE TIME: \_\_\_\_ / \_\_\_\_ : \_\_\_\_ : \_\_\_\_

IMU ALIGN LOG  
 REQD ID:  
 -Y \_\_\_\_\_, -Z \_\_\_\_\_ ANG ERR \_\_\_\_\_  
 1 2 3  
 ANG:  
 ΔX ( ) \_\_\_\_\_ ( ) \_\_\_\_\_ ( ) \_\_\_\_\_  
 ΔY ( ) \_\_\_\_\_ ( ) \_\_\_\_\_ ( ) \_\_\_\_\_  
 ΔZ ( ) \_\_\_\_\_ ( ) \_\_\_\_\_ ( ) \_\_\_\_\_  
 EXECUTION TIME:  
 \_\_\_\_ / \_\_\_\_ : \_\_\_\_ : \_\_\_\_

PL MCC

+YVV  
 21:00  
 ORB  
 15  
 (A1)B5  
 INRTL/VERN  
 22:00  
 A1 (B1)  
 AUTO/VERN  
 ORB  
 16  
 ZLV  
 +XVV  
 23:00  
 +XVV

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

014:E, cb DDU AFT(two)-cl  
 016:E  
 019 √COAS PWR-OFF Mount COAS-AFT  
 ◀ MNVR IMU ALIGN/COAS CAL ATT  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at SS  
 IMU ALIGN - S TRK (ORB OPS)  
 COAS CALIBRATION (ORB OPS)  
 MNVR (TRK) -ZLV, +XVV  
 TG-2 BV-3 OM-180  
 A/AUTO/VERN Init TRK  
 Change DAP B to B1  
 019 √COAS PWR - OFF Stow COAS  
 014:E, cb DDU AFT(two)-op  
 016:E

P/TV05 SETUP (MD DK)  
 (PHOTO/TV, P/TV SCENES)

P/TV05 ACT (MD DK)  
 (PHOTO/TV, P/TV SCENES)

LBNE SETUP (DSO 478)  
 (MED FS, MED DSOs)  
 (CDR, MS2)

VFT-1 OPS  
 (PL OPS, VFT-1)  
 (PS1, PLT)

AIR MON INST EVAL (DSO 611)  
 (MED, MED DSOs)  
 MICROBIAL AIR SAMPLER

SETUP (TERRA SCOUT)  
 (FL OPS, SpadVOS)

ACTIVATION (TERRA SCOUT)  
 (FL OPS, SpadVOS)

SYSTEM CHAR (TERRA SCOUT)  
 (PL OPS, SpadVOS)

P/TV06 SETUP (FL DK)  
 (PHOTO/TV, P/TV SCENES)

P/TV06 ACT (FL DK)  
 (PHOTO/TV, P/TV SCENES)

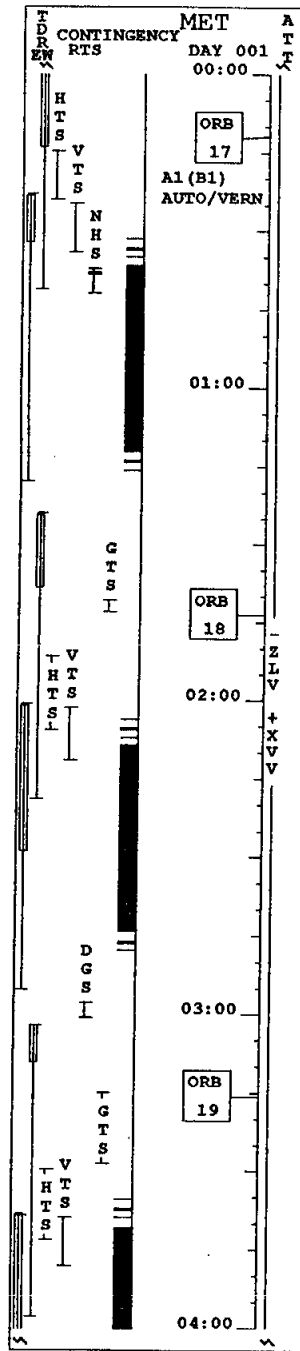
EFFECTS METABOLISM (DSO 608)  
 (MED FS, MED DSOs)  
 (PLT) (EXERCISE)  
 Perform DSO 614 during  
 exercise

UPLINK  
 REFSMMAT  
 NORMALIZAT'N

TV (TDRW)  
 (GND CNTL-CAB)

TV (TDRW)  
 (GND CNTL-CAB)

# STS-44 (FD 02)



**STS**  
EFFECTS METABOLISM (DSO 608)  
 (MED FS, MED DSOs)  
 (PLT) (EXERCISE)  
 Perform DSO 614 during  
 exercise

P/TV06 ACT (FL DK)  
 (PHOTO/TV, P/TV SCENES)

BIOREACTOR TEST (DSO 316)  
 (MED FS, MED DSOs)  
 TEST 1

LBNP TEST PREP (DSO 478)  
 (MED FS, MED DSOs)  
 (MS3, CDR)

LBNP RAMP OPS (DSO 478)  
 (MED FS, MED DSOs)  
 (MS3, CDR)

LBNP RECONFIG/STOW (DSO 478)  
 (MED FS, MED DSOs)

**PL**  
SYSTEM CHAR (TERRA SCOUT)  
 (PL OPS, SpADVOS)

SYSTEM CHAR (TERRA SCOUT)  
 (PL OPS, SpADVOS)

LEARMOUTH\*

OBSERVATIONS (FORD ISLAND)  
 (PL OPS, SpADVOS)  
TEMP STOW (TERRA SCOUT)  
 (PL OPS, SpADVOS)

MEAL  
 (ALL)

FD2 TERRA SCOUT OPFS					
ORB	SITE	TCA	XTRACK	ALT	VEL
*17	LEARMOUTH	1/01:30:44	9.7	209	14923
18	FORD ISLAND	1/01:56:52	11.4	212	14912
20	PRETORIA CITY	1/06:02:41	- 2.8	201	14947
20	DIEGO GARCIA	1/06:15:06	-13.4	201	14943
21	KAMPONG	1/06:24:46	-15.0	201	14942
21	HARARE	1/07:41:19	9.4	197	14955

\*SYS CHAR SITE

FILTER CLEANING  
 (IFM, SCHEDULED MAINTENANCE)

DON HOLTER MONITOR (DSO 463)  
 (MED FS, MED DSOs)  
 (MS3)

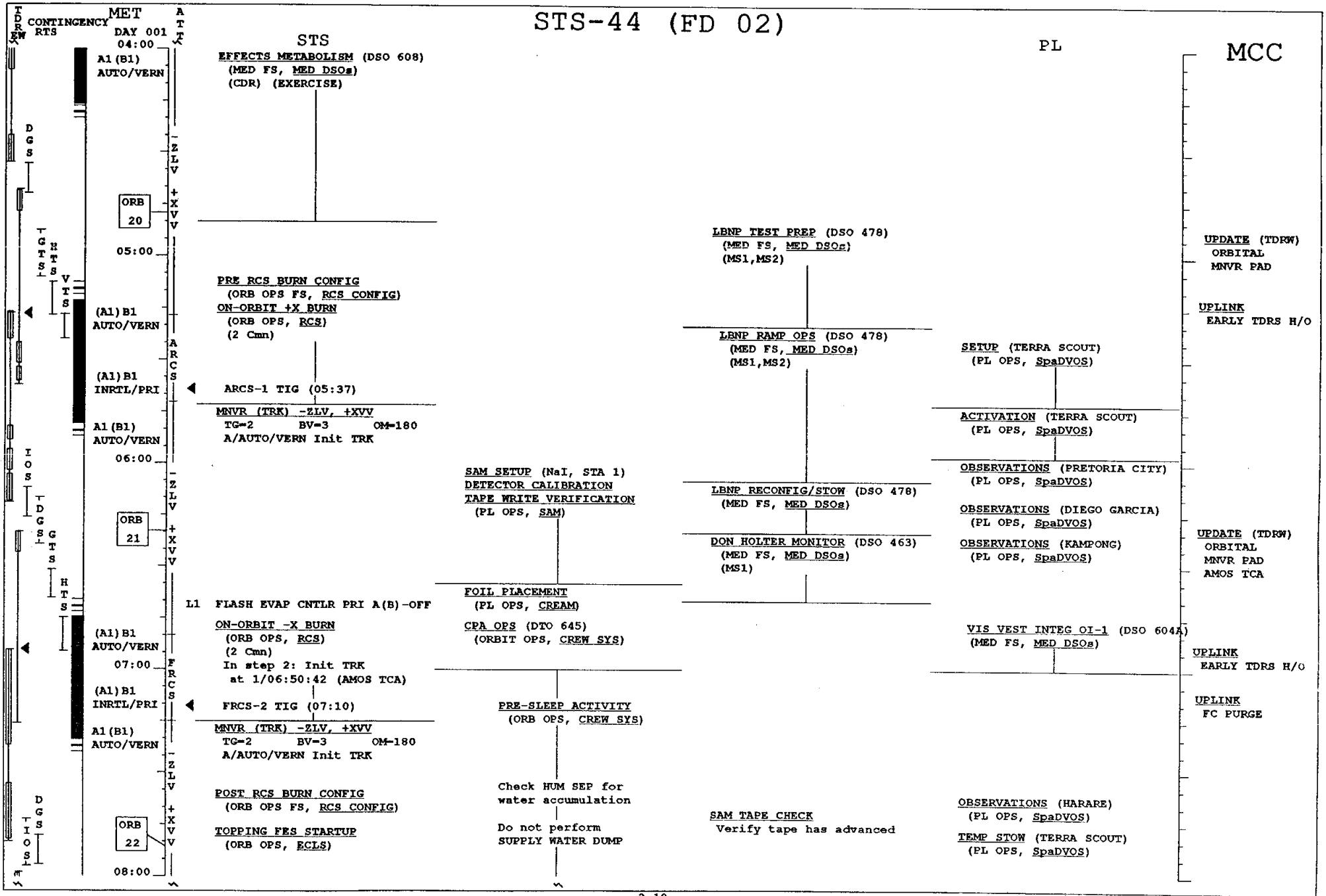
VIS VEST INTEG OI-3 (DSO 604C)  
 (MED FS, MED DSOs)

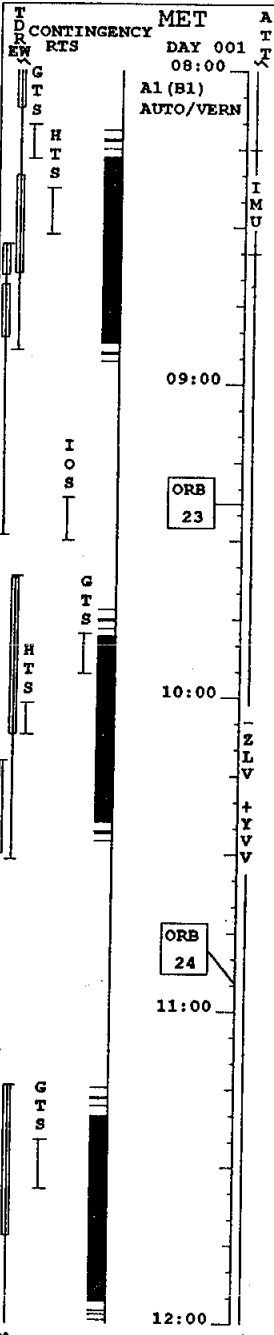
IOP (DSO 472)  
 (MED FS, MED DSOs)  
 (MS2, MS3)

EFFECTS METABOLISM (DSO 608)  
 (MED FS, MED DSOs)  
 (CDR) (EXERCISE)

**MCC**

# STS-44 (FD 02)





STS

# STS-44 (FD 02)

PL

MCC

← MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +YVV  
TG-2 BV=3 OM=270  
A/AUTO/VERN Init TRK

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

06 UHF MODE - OFF  
PRIVATE MEDICAL CONFERENCE

UHF MODE - SELX (or as reqd)

Check HUM SEP for  
water accumulation

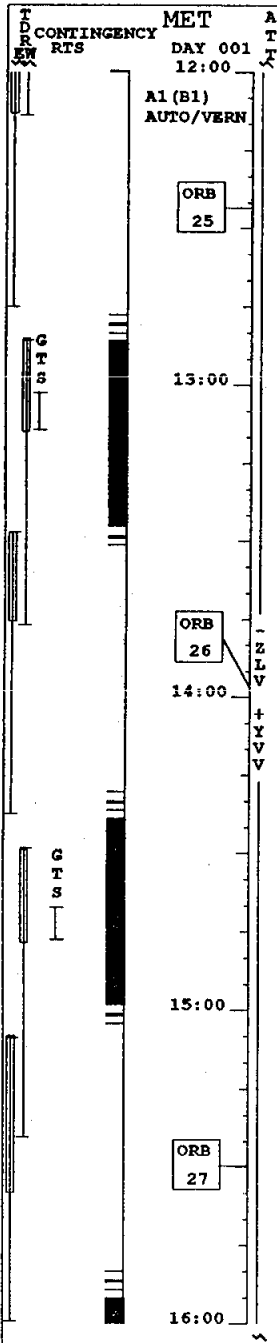
Do not perform  
SUPPLY WATER DUMP

SLEEP

<u>IMU ALIGN LOG</u>		
REQD ID:		
-Y _____	-Z _____	ANG ERR _____
1	2	3
ANG:		
ΔX ( ) _____	( ) _____	( ) _____
ΔY ( ) _____	( ) _____	( ) _____
ΔZ ( ) _____	( ) _____	( ) _____
EXECUTION TIME:		
-- / -- : -- : --		



# STS-44 (FD 02)



PL

MCC

# STS-44 (FD 03)

PL

MCC

**TERRA SCOUT**  
**CONTINGENCY**  
**RTS**  
**EW**

**MET**  
**DAY 001**  
**16:00**  
**A1 (B1)**  
**AUTO/VERN**

**D G S**  
**I O D S G S**

**17:00**  
**ORB 28**

**18:00**  
**ORB 29**

**19:00**

**20:00**

STS

SLEEP

SUPPLY WATER DUMP, steps 1&2  
(ORB OPS, ECLS)

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

SUPPLY WATER DUMP, step 3  
(ORB OPS, ECLS)

**FD03 EZ ACTIVITIES:**

FOOD PREP/POST (Cue Card) (30 Min)  
EFFECTS METABOLISM (DSO 608) Log  
 (MED FS, MED DSOs) All except PS1

**FD3 TERRA SCOUT OPPTS**

ORB	SITE	TCA	XTRACK	ALT	VEL
30	BRISBANE2	1/21:18:42	17.5	198	14955
31	CAPE CANAVERAL	1/21:54:53	-17.0	198	14953
35	ANDERSON	2/03:50:31	14.4	196	14957
35	MAPUTO CITY	2/04:56:33	-13.4	198	14954
36	US EBSY MANILA	2/05:22:10	- 4.7	196	14957
36	BULAWAYO	2/06:33:18	-22.3	197	14956

UPLINK  
FC PURGE

UPDATE  
H2O SPLY DUMP  
QTY TK A & B

# STS-44 (FD 03)

STS

PL

MCC

CONTINGENCY MET DAY 001  
RTS 20:00

A1 (B1) AUTO/VERN ORB 30

(A1) B5 INRTL/VERN 21:00

A1 (B5) AUTO/VERN

A1 (B1) AUTO/VERN ORB 31

22:00

I O S D G S

23:00

A1 (B1) AUTO/VERN ORB 32

002 00:00

014:E, cb DDU L(two)-ci  
015:E

01 /COAS - OFF Mount COAS - FWD  
 MNVR IMU ALIGN ATT  
 STAR PAIR (A2)  
 A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)  
 MNVR COAS CAL ATT  
 R-178 P-122 Y-70  
 A/AUTO/VERN Init MNVR  
 COAS CALIBRATION (ORB OPS)  
 MNVR (TRK) -ZLV, +XVY  
 TG=2 BV=3 OM=180  
 A/AUTO/VERN Init TRK

Change DAP B to B1  
 01 /COAS-OFF Stow COAS  
 014:E, cb DDU L(two)-op  
 015:E

EFFECTS METABOLISM (DSO 608)  
 (MED FS, MED DSOs)  
 (CDR) (EXERCISE)

22:00

BIOREACTOR TEST (DSO 316)  
 (MED FS, MED DSOs)  
 TEST 2  
 P/TV06 SETUP (FL DK)  
 (PHOTO/TV, P/TV SCENES)

23:00

MNVR (TRK) -ZLV, +YVY  
 TG=2 BV=3 OM=270  
 A/AUTO/VERN Init TRK

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

IMU ALIGN LOG  
REQD ID:

-Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
1 2 3

ANG:  
 ΔX ( ) ( ) ( )  
 ΔY ( ) ( ) ( )  
 ΔZ ( ) ( ) ( )

EXECUTION TIME:  
 \_\_\_\_ / \_\_\_\_ : \_\_\_\_ : \_\_\_\_

COAS CALIBRATION LOG

STAR ID: +X 11, SIRIUS  
 STAR AVAIL: 20:36 TO 21:25

+X Δ BIAS \_\_\_\_ , \_\_\_\_

UPDATE TIME: \_\_\_\_ / \_\_\_\_ : \_\_\_\_ : \_\_\_\_

SAM TAPE TURNOVER  
(PL OPS, SAM)

PAM POWER OFF  
(PL OPS, SAM)

BIOREACTOR TEST (DSO 316)  
(MED FS, MED DSOs)  
 TEST 2  
P/TV06 SETUP (FL DK)  
(PHOTO/TV, P/TV SCENES)

SAM TAPE CHECK  
Verify tape has advanced

P/TV06 ACT (FL DK)  
(PHOTO/TV, P/TV SCENES)

PAM POWER ON  
(PL OPS, SAM)

LBNE TEST PREP (DSO 478)  
(MED FS, MED DSOs)  
(MS2, CDR)

LBNE RAMP OPS (DSO 478)  
(MED FS, MED DSOs)  
(MS2, CDR)

SETUP (TERRA SCOUT)  
(PL OPS, SpadVOS)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpadVOS)

OBSERVATIONS (BRISBANE 2)  
(PL OPS, SpadVOS)

OBSERVATIONS (CAPE CANAVERAL)  
(PL OPS, SpadVOS)

TEMP STOW (TERRA SCOUT)  
(PL OPS, SpadVOS)

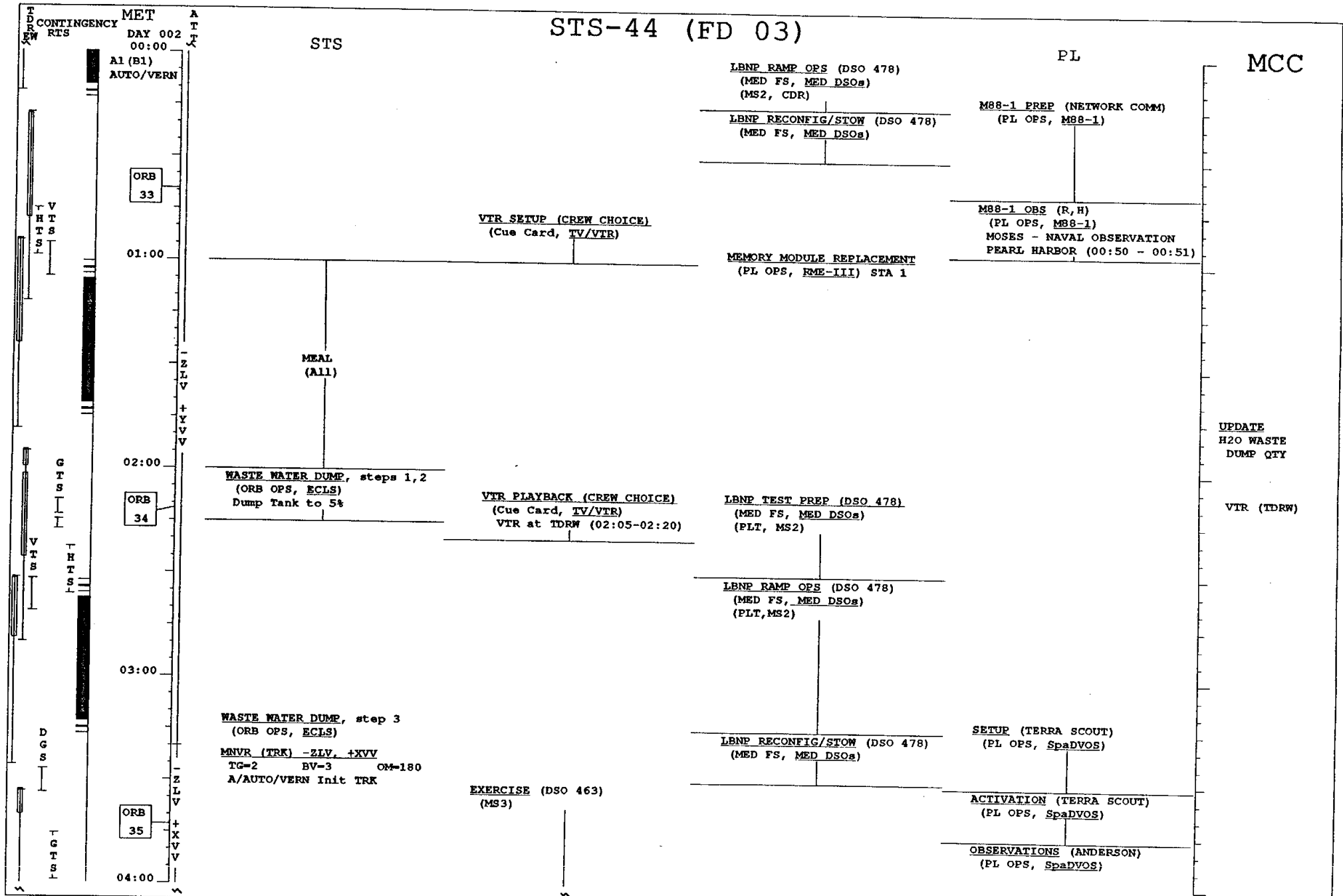
VFT-1 OPS  
(PL OPS, VFT-1)  
(PS1, PLT)

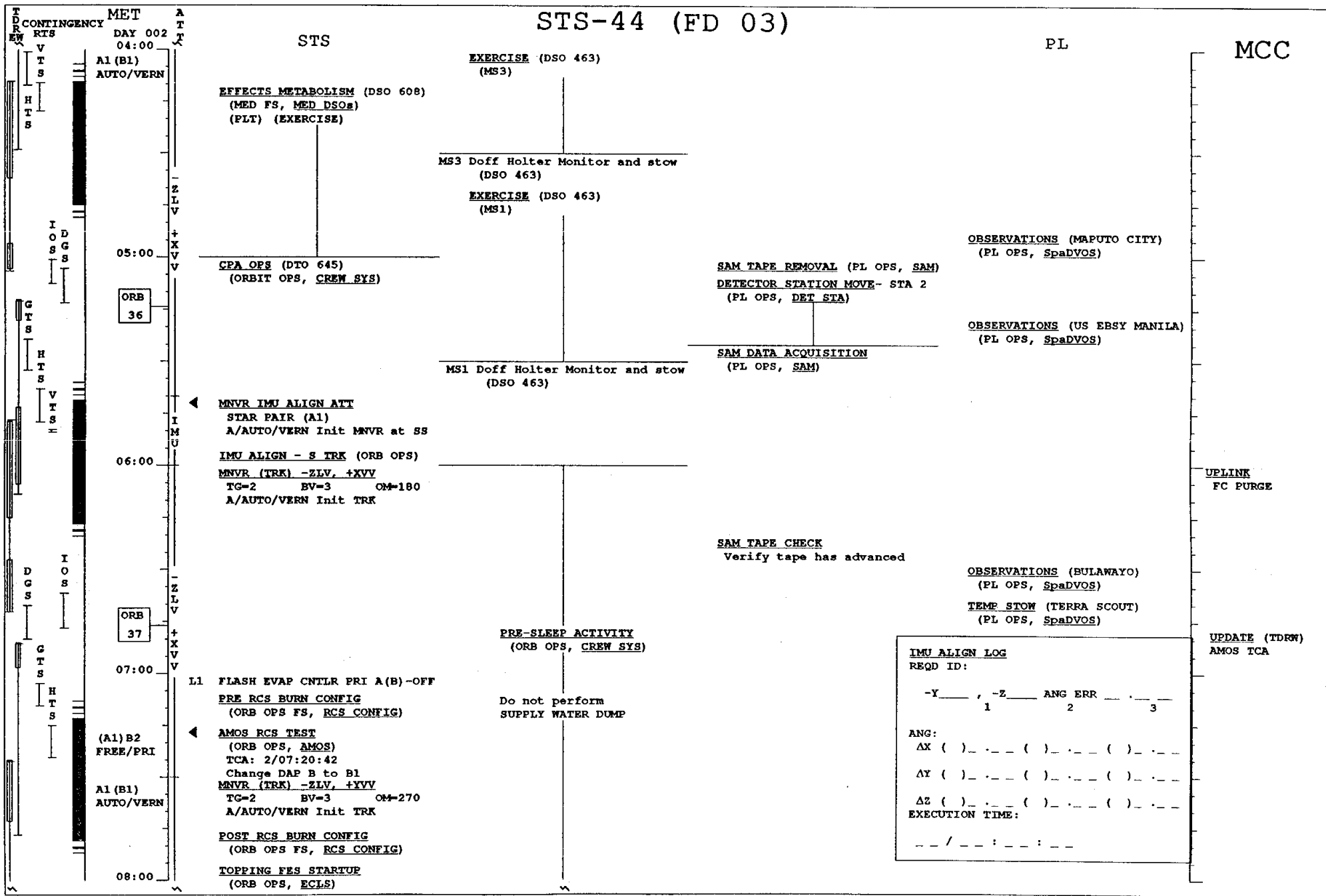
CCD CAMR SETUP  
(PL OPS, M88-1)

RADIO SETUP  
(PL OPS, M88-1)

TV (TDRW)  
(GND CNTL-CAB)

UPLINK  
EARLY TDRS H/O





CONTINGENCY MET  
 SW RTS DAY 002  
 08:00  
 A1 (B1)  
 AUTO/VERN  
 ORB  
 38  
 I  
 O  
 S  
 D  
 G  
 S  
 I  
 G  
 T  
 S  
 H  
 T  
 S  
 09:00  
 ORB  
 39  
 10:00  
 Z  
 L  
 V  
 +  
 Y  
 V  
 V  
 11:00  
 ORB  
 40  
 12:00  
 S  
 T  
 S  
 I  
 S  
 T  
 S

# STS-44 (FD 03)

STS

PL

MCC

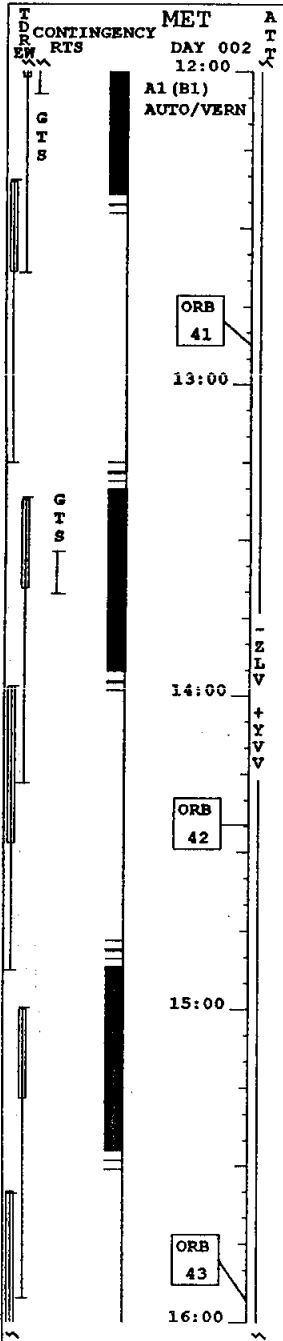
06 UHF MODE - OFF  
 PRIVATE MEDICAL CONFERENCE  
 UHF MODE - SPLX (or as reqd)

PRE-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

Do not perform  
 SUPPLY WATER DUMP

SLEEP

# STS-44 (FD 03)



PL

MCC

# STS-44 (FD 04)

PL

MCC

CONTINGENCY MET  
 RW RTS DAY 002  
 16:00  
 A1 (B1)  
 AUTO/VERN  
 I O D S S  
 I M U  
 17:00  
 18:00  
 19:00  
 20:00

STS  
 SLEEP

ORB 44

ORB 45

SUPPLY WATER DUMP, steps 1&2  
 (ORB OPS, ECLS)

POST-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

SUPPLY WATER DUMP, step 3  
 (ORB OPS, ECLS)

MNVR IMU ALIGN ATT  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at SS

IMU ALIGN - s TRK (ORB OPS)

MNVR (TRK) -ZLV, +XV  
 TG-2 BV-3 OM-180  
 A/AUTO/VERN Init TRK

**FD04 EZ ACTIVITIES:**  
 EXERCISE (1 Hr/MS1)  
 (1 Hr/MS3: before 00:30)  
 FOOD PREP/POST (Cue Card) (30 Min)  
 REHYDRATABLE FOOD (DTO 649)  
 EFFECTS METABOLISM (DSO 608) Log  
 (MED FS, MED DSOs) All except PS1

**IMU ALIGN LOG**  
 REQ ID:  
 -Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
           1          2          3  
 ANG:  
 ΔX ( )\_ . . . . ( )\_ . . . . ( )\_ . . . .  
 ΔY ( )\_ . . . . ( )\_ . . . . ( )\_ . . . .  
 ΔZ ( )\_ . . . . ( )\_ . . . . ( )\_ . . . .  
 EXECUTION TIME:  
 - - / - - : - - : - -

UPLINK  
 FC PURGE

UPDATE  
 H2O SPLY DUMP  
 QTY TR A & B

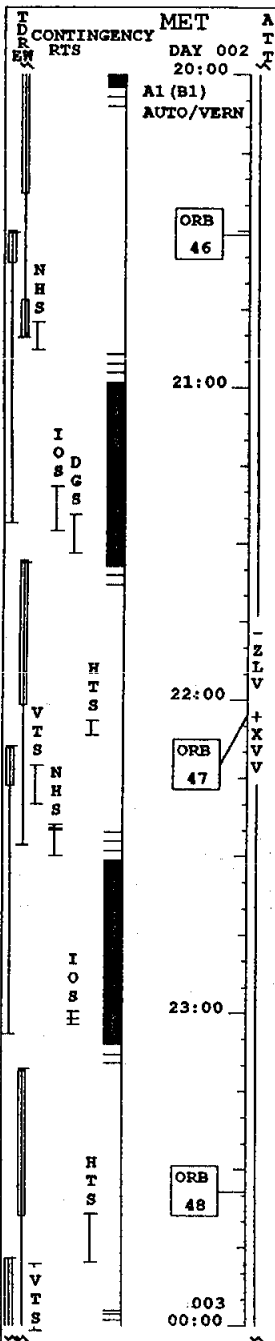
SETUP (TERRA SCOUT)  
 (PL OPS, SpADVOS)

ACTIVATION (TERRA SCOUT)  
 (PL OPS, SpADVOS)



# STS-44 (FD 04)

MCC



STS  
MNVR (TRK) -ZLV, +XVV

SAM TAPE TURNOVER  
(PL OPS, SAM)

PL  
ACTIVATION (TERRA SCOUT)  
(PL OPS, SpaDVOS)  
OBSERVATIONS (BRISBANE)  
(PL OPS, SpaDVOS)  
TEMP STOW (TERRA SCOUT)  
(PL OPS, SpaDVOS)

BIOREACTOR TEST (DSO 316)  
(MED FS, MED DSOs)  
TEST 3

M88-1 PREP (DIRECT COMM)  
(PL OPS, M88-1)

SAM TAPE CHECK  
Verify tape has advanced

M88-1 OBS (R,V)  
(PL OPS, M88-1)  
MOSES - SITES OF OPPORTUNITY  
YUCATAN (20:42 - 20:50)

VFT-1 OPS  
(PL OPS, VFT-1)  
(PS1, PLT)

RADIO TEMP STOW  
(PL OPS, M88-1)

FD4 TERRA SCOUT OPSS						
ORB	SITE	TCA	XTRACE	ALT	VEL	
45	BRISBANE	2/20:11:41	1.2	198	14955	
47	CHRISTMAS ISL	2/22:03:53	15.9	195	14959	
47	USELESS LOOP	2/23:16:50	- 5.8	198	14955	
51	GABORONE AFLD	3/05:25:02	- 6.1	198	14955	
52	SATTAHIP	3/05:47:01	-13.5	196	14959	

SETUP (TERRA SCOUT)  
(PL OPS, SpaDVOS)

EFFECTS METABOLISM (DSO 608)  
(MED FS, MED DSOs)  
(CDR) (EXERCISE)

M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpaDVOS)

M88-1 OBS (R,H)  
(PL OPS, M88-1)  
BATTLEVIEW  
CHASE FIELD (22:20 - 22:22)

OBSERVATIONS (CHRISTMAS ISLAND)  
(PL OPS, SpaDVOS)

TEMP STOW (TERRA SCOUT)  
(PL OPS, SpaDVOS)

SETUP (TERRA SCOUT)  
(PL OPS, SpaDVOS)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpaDVOS)

OBSERVATIONS (USELESS LOOP)  
(PL OPS, SpaDVOS)

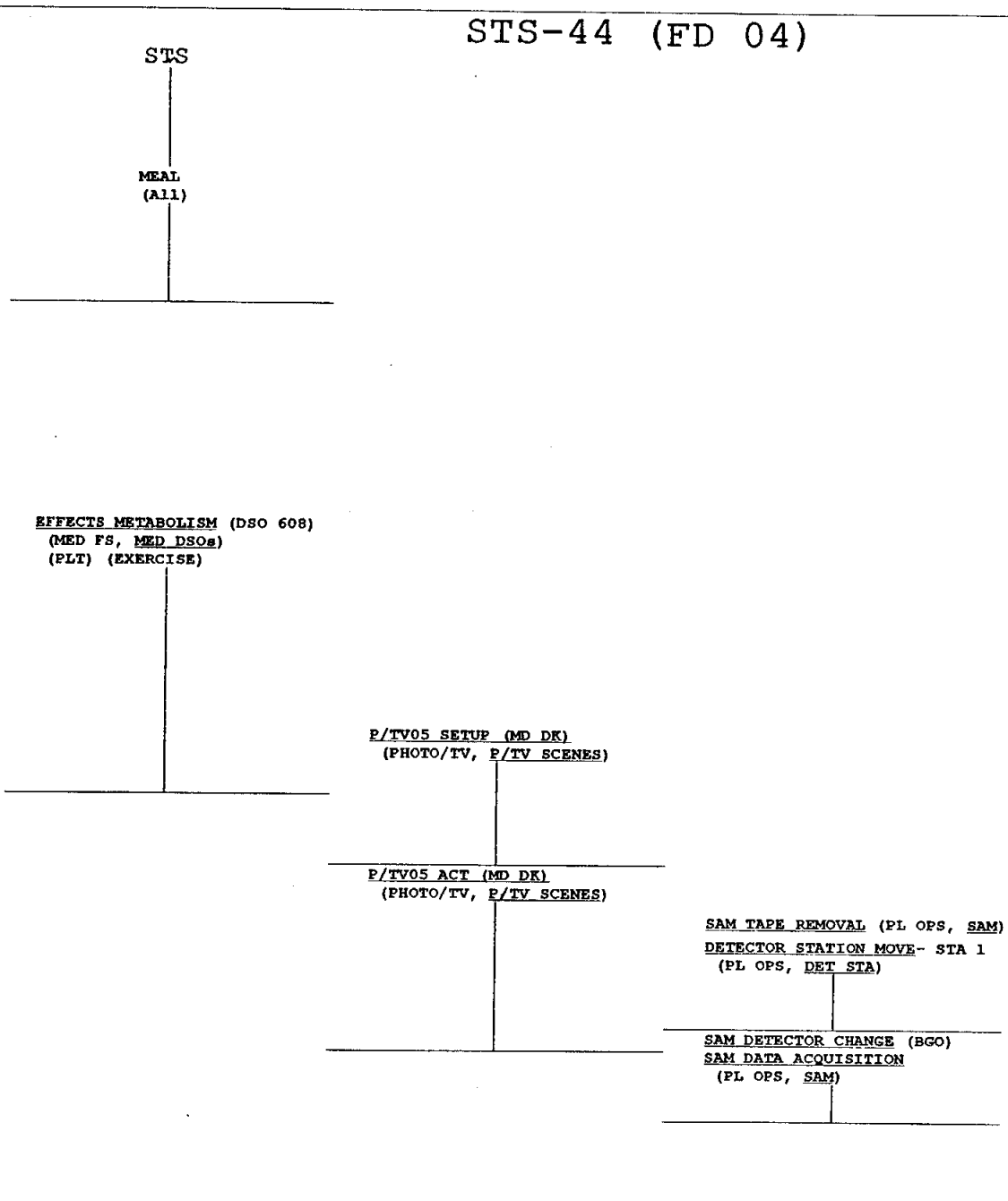
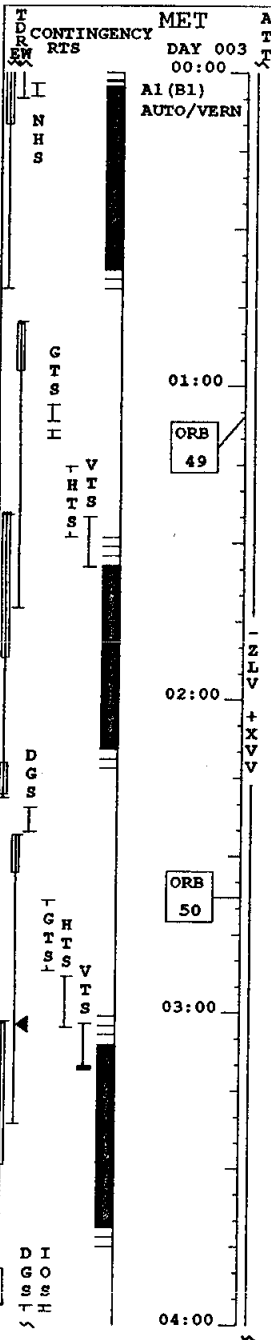
TEMP STOW (TERRA SCOUT)  
(PL OPS, SpaDVOS)

MEAL  
(ALL)

# STS-44 (FD 04)

PL

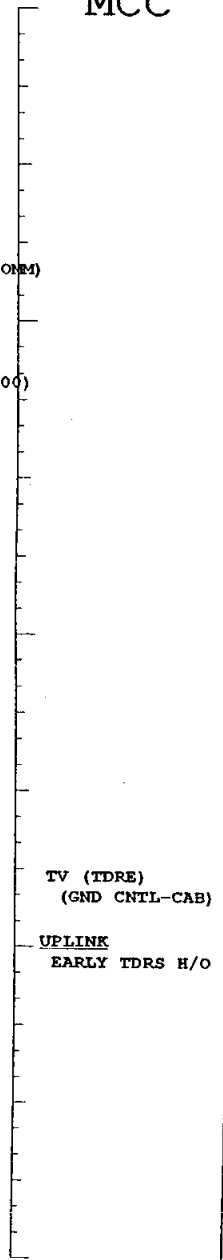
MCC



M88-1 PREP (NETWORK/DIRECT COMM)  
(PL OPS, M88-1)

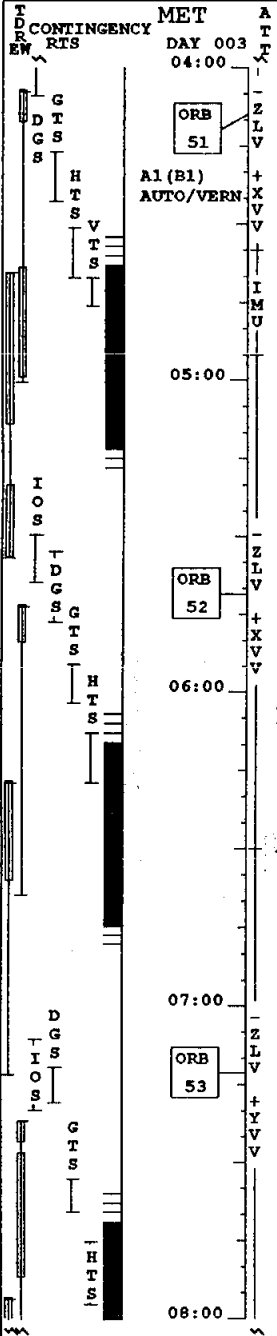
M88-1 OBS (H,R)  
(PL OPS, M88-1)  
BATTLEVIEW (NO COMM)  
DARWIN AIRPORT (00:59 - 01:00)  
BATTLEVIEW (NETWORK/DIRECT)  
HICKAM AFB (01:16 - 01:24)

RADIO TEMP STOW  
(PL OPS, M88-1)



M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

# STS-44 (FD 04)



MET DAY 003  
04:00  
ORB 51  
A1 (B1)  
AUTO/VERN  
05:00  
ORB 52  
06:00  
ORB 53  
07:00  
08:00

**STS**  
CPA OPS (DTO 645)  
(ORBIT OPS, CREW SYS)

MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +XVV  
TG-2 BV-3 OM-180  
A/AUTO/VERN Init TRK

L1 FLASH EVAP CNTLR PRI A(B)-OFF

A7U ✓ PL BAY FLOOD (eight) - OFF  
 ◀ SUPPLY WATER DUMP USING FES  
 (ORB OPS, ECLE) (AMOS)  
 Perform all steps  
 Begin Step 2 at 3/06:12:07  
 Step 3 after 3/06:18:31  
 with FES req'd

A7U PL BAY FLOOD (eight) - as req'd  
 MNVR (TRK) -ZLV, +YVV  
 TG-2 BV-3 OM-270  
 A/AUTO/VERN Init TRK

06 UHF MODE - OFF  
 PRIVATE MEDICAL CONFERENCE

~~UHF MODE - SPLX (or as req'd)~~

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

SAM TAPE CHECK  
Verify tape has advanced

**IMU ALIGN LOG**  
REQD ID:

-Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_ . \_\_\_\_  
 1 2 3

ANG:  
 ΔX ( )\_ . . . ( )\_ . . . ( )\_ . . .  
 ΔY ( )\_ . . . ( )\_ . . . ( )\_ . . .  
 ΔZ ( )\_ . . . ( )\_ . . . ( )\_ . . .

EXECUTION TIME:  
 \_\_\_ / \_\_\_ : \_\_\_ : \_\_\_

PL  
M88-1 PREP (NO COMM) (PL OPS)  
M88-1 OBS (R,H)  
(PL OPS, M88-1)  
MOSES - SITES OF OPPORTUNITY  
STRAIT OF MALACCA  
(04:08 - 04:10)  
SETUP (TERRA SCOUT)  
(PL OPS, SpaDVOs)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpaDVOs)

OBSERVATION (GABORONE AFLD)  
(PL OPS, SpaDVOs)

OBSERVATIONS (SATTAHIP)  
(PL OPS, SpaDVOs)

TEMP STOW (TERRA SCOUT)  
(PL OPS, SpaDVOs)

MCC

UPLINK  
FC PURGE

UPDATE (TDRW)  
AMOS FES  
DUMP TIMES

# STS-44 (FD 04)

PL

MCC

STS

SLEEP

ORDER CONTINGENCY MET A  
RTS DAY 003 T  
08:00  
A1 (B1)  
AUTO/VERN

SOI

ORB 54

09:00

SHS

ORB 55

10:00

SHS

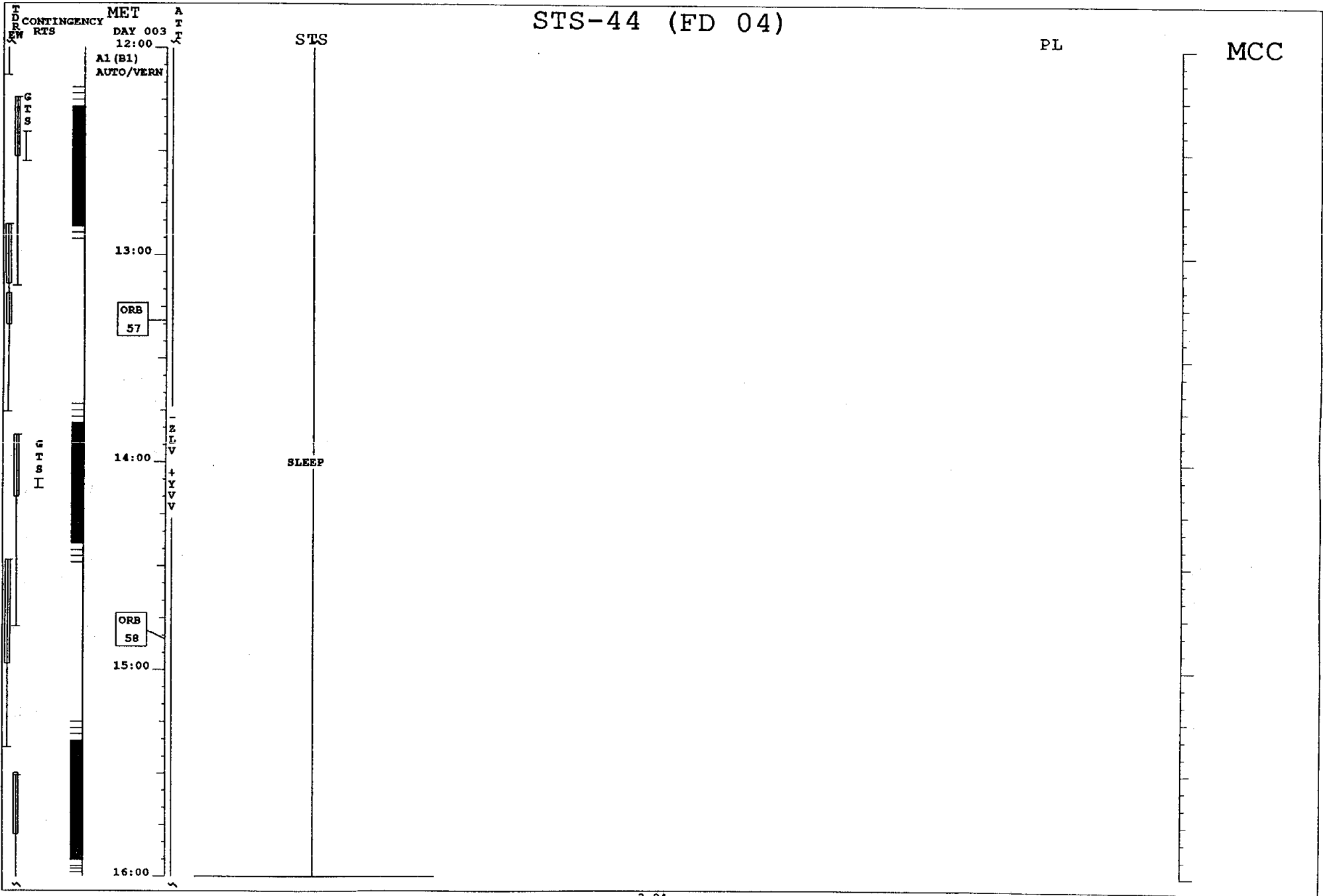
ORB 56

11:00

12:00

FIN

# STS-44 (FD 04)



T D CONTINGENCY MET A  
 RW RTS DAY 003 T  
 16:00  
 A1 (B1)  
 AUTO/VERN  
 ORB  
 59  
 I O C S S  
 17:00  
 Z L V  
 + Y V V  
 ORB  
 60  
 18:00  
 I O S  
 I M U  
 19:00  
 Z L V  
 + X V V  
 N H S  
 20:00

STS

# STS-44 (FD 05)

PL

MCC

SUPPLY WATER DUMP, steps 1&2  
(ORB OPS, ECLS)

SUPPLY WATER DUMP, step 3  
(ORB OPS, ECLS)

MNVR IMU ALIGN ATT  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at SS  
 IMU ALIGN - S TRK (ORB OPS)  
 MNVR (TRK) -ZLV, +XVV  
 TG=2 BV=3 OM=180  
 A/AUTO/VERN Init TRK

HUM SEPs for H2O  
 accumulation, then  
 HUMIDITY SEP RECONFIG  
 L1 HUMIDITY SEP B - OFF  
 A - ON

RCS REGULATOR RECONFIGURE  
 07/08 He PRESS A (three) -OP (tb-OP)  
 B (three) -OP (tb-OP)  
 then GPC  
 A (three) -CL (tb-CL)

HEATER RECONFIG-Config B  
(ORB OPS, EPS)

PCS 1(2) CONFIG (ORB OPS) (2Cmn)

ECLSS REDUND COMPONENT C/O  
(ORB OPS, ECLS)

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do FC PURGE MANUAL (CUE CARD)

CABIN TEMP CNTL RECONFIG  
 MD44F Pin CAB TEMP CNTL act link  
 to secondary act  
 L1 CABIN TEMP CNTLR - 2

BIOREACTOR TEST (DSO 316)  
 (MED FS, MED DSOs)  
 TEST 4

IMU ALIGN LOG  
REQD ID:

-Y \_\_\_\_\_, -Z \_\_\_\_\_ ANG ERR \_\_\_\_\_  
1 2 3

ANG:

ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:

\_\_ / \_\_ : \_\_ : \_\_

FD05 EZ ACTIVITIES:

EXERCISE (1 Hr/MS1, MS3 after LBNP)  
 FOOD PREP/POST (Cue Card) (30 Min)  
 REHYDRATABLE FOOD (DTO 649)  
 EFFECTS METABOLISM (DSO 608) Log  
 (MED FS, MED DSOs) ALL except PS1

UPDATE

H2O SPLY DUMP  
QTY TK A & B

FD5 TERRA SCOUT OPSS

ORB	SITE	TCA	XTRACK	ALT	VEL
61	MANAGUA2	3/19:39:35	6.1	197	14957
62	ALICE SPRINGS1	3/22:14:46	-3.2	197	14956
63	LEARMOUTH	3/23:47:12	0.7	197	14957
64	LUALUALEI	4/00:13:04	0.3	196	14958
66	PRETORIASAT	4/04:18:04	-8.8	198	14954

MEMORY MODULE REPLACEMENT  
 (PL OPS, RME-III) STA 1

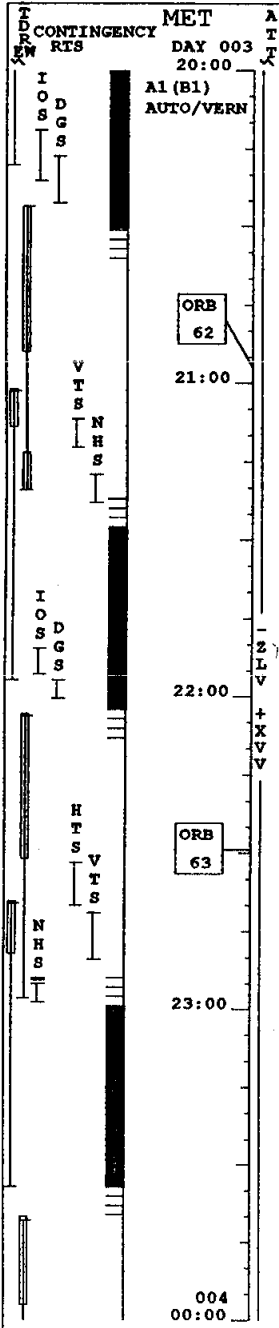
SAM TAPE TURNOVER  
 (PL OPS, SAM)

SETUP (TERRA SCOUT)  
 (PL OPS, SpaDVOS)

ACTIVATION (TERRA SCOUT)  
 (PL OPS, SpaDVOS)

OBSERVATIONS (MANAGUA 2)  
 (PL OPS, SpaDVOS)

TEMP STOW (TERRA SCOUT)  
 (PL OPS, SpaDVOS)



STS

STS-44 (FD 05)

PL

MCC

SAM TAPE CHECK  
Verify tape has advanced

LBNP TEST PREP (DSO 478)  
(MED FS, MED DSOs)  
(MS3, CDR)

LBNP RAMP OPS (DSO 478)  
(MED FS, MED DSOs)  
(MS3, CDR)

LBNP RECONFIG/STOW (DSO 478)  
(MED FS, MED DSOs)

EFFECTS METABOLISM (DSO 608)  
(MED FS, MED DSOs)  
(PLT) (EXERCISE)

M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

M88-1 OBS (V, H)  
(PL OPS, M88-1)  
BATTLEVIEW  
PT VILLA BAUREFIELD  
(20:45 - 20:47)

M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

M88-1 OBS (H, V)  
(PL OPS, M88-1)  
BATTLEVIEW  
MACDILL AFB (21:16 - 21:18)

SETUP (TERRA SCOUT)  
(PL OPS, SpADVOS)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpADVOS)

OBSERVATIONS (ALICE SPRINGS 1)  
(PL OPS, SpADVOS)

MEAL  
(ALL)

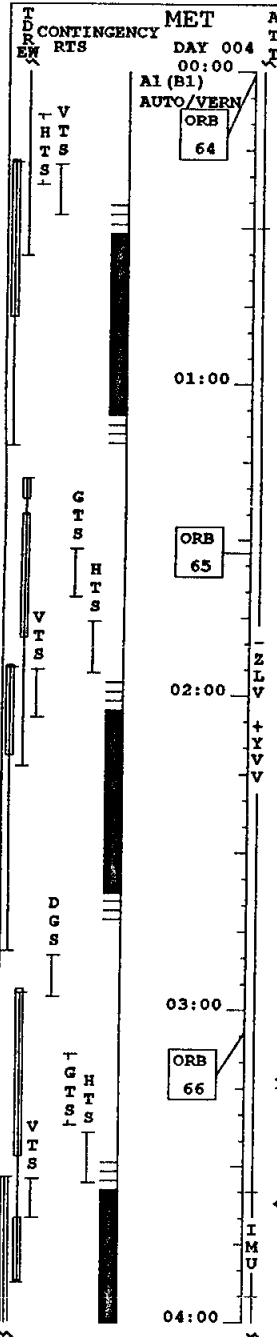
OBSERVATIONS (LEARMOUTH)  
(PL OPS, SpADVOS)

# STS-44 (FD 05)

STS

PL

MCC



MNVR (TRK) -ZLV, +YVV  
TG-2 BV-3 CM-270  
A/AUTO/VERN Init TRK

WASTE WATER DUMP, steps 1,2  
(ORB OPS, ECLS)  
Dump Tank to 5%

P/TV05 SETUP (MD DR)  
(PHOTO/TV, P/TV SCENES)

LBNP TEST PREP (DSO 478)  
(MED FS, MED DSOs)  
(MS1, MS2)

OBSERVATIONS (LUALUALEI)  
(PL OPS, SpaDVOS)

TEMP STOW (TERRA SCOUT)  
(PL OPS, SpaDVOS)

VFT-1 OPS  
(PL OPS, VFT-1)  
(PS1, PLT)

UPDATE  
H2O WASTE  
DUMP QTY

01:00

LBNP RAMP OPS (DSO 478)  
(MED FS, MED DSOs)  
(MS1, MS2)

P/TV05 ACT (MD DR)  
(PHOTO/TV, P/TV SCENES)

ORB 65

LBNP RECONFIG/STOW (DSO 478)  
(MED FS, MED DSOs)

WASTE WATER DUMP, step 3  
(ORB OPS, ECLS)

EFFECTS METABOLISM (DSO 608)  
(MED FS, MED DSOs)  
(CDR) (EXERCISE)

SAM TAPE REMOVAL (PL OPS, SAM)  
DETECTOR STATION MOVE- STA 2  
(PL OPS, DET STA)

SAM DATA ACQUISITION  
(PL OPS, SAM)

TV (TDRW)  
(GND CNTRL-CAB)

02:00  
ZLV  
+YVV

03:00

√ HUM SEPS for H2O accumulation, then HUMIDITY SEP RECONFIG  
HUMIDITY SEP A-OFF B-ON  
CPA OPS (DTC 645)  
(ORBIT OPS, CREW SYS)

IMU ALIGN LOG  
REQD ID:  
-Y \_\_\_\_ , -Z \_\_\_\_ ANG ERR \_\_\_\_  
1 2 3  
ANG:  
ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
EXECUTION TIME:  
\_ \_ / \_ \_ : \_ \_ : \_ \_

SAM TAPE CHECK  
Verify tape has advanced

M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

M88-1 OBS BATTLEVIEW (R,H)  
(PL OPS, M88-1)  
SAIPAN AIRFIELD (03:13 - 03:14)  
MIDWAY NAS (03:22 - 03:24)

SETUP (TERRA SCOUT)  
(PL OPS, SpaDVOS)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpaDVOS)

MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +XVV  
See next page



# STS-44 (FD 05)

**DCONTINGENCY**  
**RTS**  
**MET**  
**DAY 004**  
**04:00**  
**A1 (B1)**  
**AUTO/VERN**  
**ORB 67**  
**A1 (B1)**  
**AUTO/PRI**  
**05:00**  
**A1 (B1)**  
**AUTO/VERN**  
**ORB 68**  
**06:00**  
**ORB 69**  
**07:00**  
**08:00**

**STS**  
**MNVR (TRK) -ZLV, +XVV**  
**TG-2 BV-3 OM-180**  
**A/AUTO/VERN Init TRK**

**L1 FLASH EVAP CNTLR PRI A(B)-OFF**  
**PRE RCS BURN CONFIG**  
**(ORB OPS FS, RCS CONFIG)**  
**AMOS NOSE TRACKING TEST**  
**(ORB OPS, AMOS)**  
**TCA: 4/05:06:05**

**MNVR (TRK) -ZLV, +YVV**  
**TG-2 BV-3 OM-270**  
**A/AUTO/VERN Init TRK**

**POST RCS BURN CONFIG**  
**(ORB OPS FS, RCS CONFIG)**  
**TOPPING FES STARTUP**  
**(ORB OPS, ECLS)**

**06 UHF MODE - OFF**  
**PRIVATE MEDICAL CONFERENCE**  
**UHF MODE - ~~SPLX (or as reqd)~~**

**SLEEP**

**PRE-SLEEP ACTIVITY**  
**(ORB OPS, CREW SYS)**

**Do not perform**  
**SUPPLY WATER DUMP**

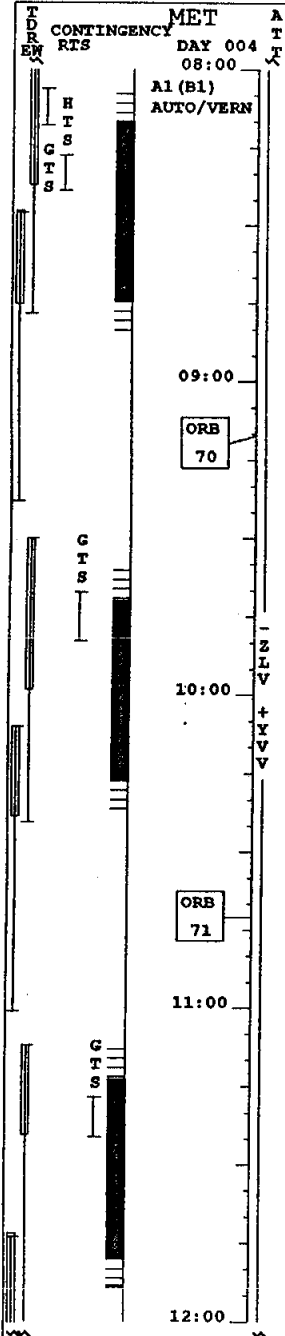
**PL**  
**ACTIVATION (TERRA SCOUT)**  
**(PL OPS, SpaDVOS)**  
**OBSERVATIONS (PRETORIA SAT)**  
**(PL OPS, SpaDVOS)**  
**TEMP STOW (TERRA SCOUT)**  
**(PL OPS, SpaDVOS)**

**MCC**  
**UPLINK**  
**FC PURGE**  
**UPDATE (TDRE)**  
**AMOS TCA**

# STS-44 (FD 05)

PL

MCC



# STS-44 (FD 06)

PL

MCC

MET  
 CONTINGENCY DAY 004  
 RTS 12:00  
 A1 (B1)  
 AUTO/VERN  
 ORB  
 72  
 13:00  
 ORB  
 73  
 14:00  
 ORB  
 74  
 15:00  
 16:00

A  
 T  
 X  
 Z  
 L  
 V  
 +  
 Y  
 V  
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 D  
 S  
 I  
 S  
 C  
 D

STS

SLEEP

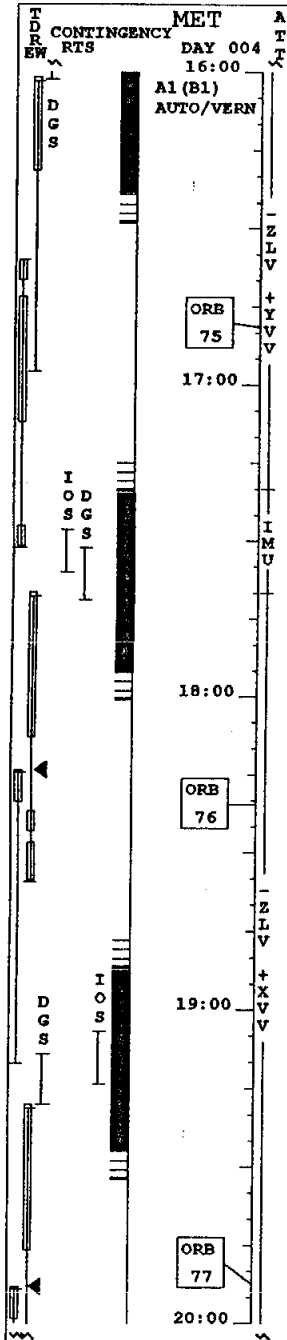
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POST-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

SUPPLY WATER DUMP, steps 1&2  
 (ORB OPS, ECLS)

**FD06 EZ ACTIVITIES:**  
EXERCISE (1 Hr/MS3)  
FOOD PREP/POST (Cue Card) (30 Min)  
EFFECTS METABOLISM (DSO 608) Log  
 (MED FS, MED DSOs) All except PS1  
SAM MCA FAN SCREEN CLEANING

UPLINK  
 FC PURGE  
UPDATE  
 H2O SPLY DUMP  
 QTY TK A & B



CONTINGENCY MET  
 DAY 004  
 16:00  
 A1 (B1)  
 AUTO/VERN  
 17:00  
 18:00  
 19:00  
 20:00

STS

# STS-44 (FD 06)

PL

MCC

SUPPLY WATER DUMP, step 3  
 (ORB OPS, ECLS)

POST-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

MNVR IMU ALIGN ATT  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +XVV  
 TG=2 BV=3 OM=180  
 A/AUTO/VERN Init TRK

EXERCISE  
 (MS1)

SAM TAPE CHECK  
 Verify tape has advanced

AIR MON INST EVAL (DSO 611)  
 (MED, MED DSOs)  
 MICROBIAL AIR SAMPLER

IMU ALIGN LOG  
 REQD ID:  
 -Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
 1 2 3  
 ANG:  
 ΔX ( ) ( ) ( )  
 ΔY ( ) ( ) ( )  
 ΔZ ( ) ( ) ( )  
 EXECUTION TIME:  
 -- / -- : -- : --

FD6 TERRA SCOUT OPFS

ORB	SITE	TCA	XTRACK	ALT	VEL
76	BRISBANE	4/19:34:15	18.2	198	14955
81	MAPUTO AFLD	5/03:11:52	-18.8	198	14954
82	CAVITE	5/03:37:20	-18.4	195	14962

SAM TAPE TURNOVER  
 (PL OPS, SAM)

BIOREACTOR DEACT/STOW (DSO 316)  
 (MED FS, MED DSOs)

LBNE TEST PREP (DSO 478)  
 (MED FS, MED DSOs)  
 (MS2, CDR)

LBNE RAMP OPS (DSO 478)  
 (MED FS, MED DSOs)  
 (MS2, CDR)

M88-1 PREP (NETWORK/DIRECT COMM)  
 (PL OPS, M88-1)

M88-1 OBS (R,H)  
 (PL OPS, M88-1)  
 MOSES - NAVAL OBSERVATION  
 GUANTANAMO BAY (18:30 - 18:38)

RADIO TEMP STOW  
 (PL OPS, M88-1)

SETUP (TERRA SCOUT)  
 (PL OPS, SpADVOS)

ACTIVATION (TERRA SCOUT)  
 (PL OPS, SpADVOS)

OBSERVATIONS (BRISBANE)  
 (PL OPS, SpADVOS)

TEMP STOW (TERRA SCOUT)  
 (PL OPS, SpADVOS)

M88-1 PREP (NO COMM) (PL OPS)

UPLINK  
 EARLY TDRS H/O

UPLINK  
 EARLY TDRS H/O

CONTINGENCY MET  
 RTS DAY 004  
 20:00  
 A1 (B1)  
 AUTO/VERN  
 H N  
 V H  
 T S  
 S I  
 I O  
 S D  
 S G  
 S S  
 21:00  
 ORB  
 78  
 H N  
 V H  
 T S  
 S I  
 H N  
 V H  
 T S  
 S I  
 22:00  
 ORB  
 79  
 H N  
 V H  
 T S  
 S I  
 23:00  
 H N  
 V H  
 T S  
 S I  
 005  
 00:00

STS

STS-44 (FD 06)

P/TV05 SETUP (MD DK)  
 (PHOTO/TV, P/TV SCENES)

P/TV05 ACT (MD DK)  
 (PHOTO/TV, P/TV SCENES)

MEAL  
 (All)

MNVR CREW CONF ATT  
 R-137 P-118 Y-306  
 A/AUTO/VERN Init MNVR

CREW CONF AUDIO/TV CK

LBNP RAMP OPS (DSO 478)

LBNP RECONFIG/STOW (DSO 478)  
 (MED FS, MED DSOs)

LBNP TEST PREP (DSO 478)  
 (MED FS, MED DSOs)  
 (PLT, MS2)

LBNP RAMP OPS (DSO 478)  
 (MED FS, MED DSOs)  
 (PLT, MS2)

LBNP RECONFIG/STOW (DSO 478)  
 (MED FS, MED DSOs)

PL  
M88-1 PREP (NO COMM)  
 (PL OPS, M88-1)  
M88-1 OBS (R,V)  
 (PL OPS, M88-1)  
 BATTLEVIEW  
 PATRICK (20:09 - 20:11)

M88-1 PREP (NO COMM)  
 (PL OPS, M88-1)  
M88-1 OBS (R,V)  
 (PL OPS, M88-1)  
 BATTLEVIEW  
 KINGSVILLE NAS (21:42 - 21:44)

M88-1 PREP (NETWORK/DIRECT COMM)  
 (PL OPS, M88-1)  
M88-1 OBS (H,R)  
 (PL OPS, M88-1)  
 BATTLEVIEW  
 HICKAM AFB (23:02 - 23:10)

RADIO TEMP STOW  
 (PL OPS, M88-1)

MCC

TV (TDRW)  
 (GND CNTL-CAB)

# STS-44 (FD 06)

STS

PL

MCC

CONTINGENCY RIS  
MET DAY 005  
00:00  
A1 (B1)  
AUTO/VERN

ORB 60

01:00

ORB 81

02:00

ORB 82

03:00

04:00

Vertical axis labels: A T T, T D R S, Z L V, + X V V, I O S, G T S, H T S

**CREW CONF (All)**

**MNVR (TRK) -ZLV, +XVV**  
TG=2 BV=3 CM=180  
A/AUTO/VERN Init TRK

**EFFECTS METABOLISM (DSO 608)**  
(MED FS, MED DSOs)  
(PLT, CDR) (EXERCISE)

**CPA OPS (DTO 645)**  
(ORBIT OPS, CREW SYS)

**PRE-SLEEP ACTIVITY**  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

**MEMORY MODULE REPLACEMENT**  
(PL OPS, RME-III) STA 3

**SAM TAPE REMOVAL** (PL OPS, SAM)

**DETECTOR STATION MOVE- STA 3**  
(PL OPS, DET STA)

**SAM DATA ACQUISITION**  
(PL OPS, SAM)

**SAM TAPE CHECK**  
Verify tape has advanced

**FILTER CLEANING**  
(IFM, SCHEDULED MAINTENANCE)

**VFT-1 OPS**  
(PL OPS, VFT-1)  
(PS1, PLT)

**MB8-1 PREP (NO COMM)**  
(PL OPS, MB8-1)

**MB8-1 OBS (R,V)**  
(PL OPS, MB8-1)  
BATTLEVIEW  
ANDERSON AFB (02:05 - 02:07)

**MIDWAY NAS (02:15 - 02:17)**  
SETUP (TERRA SCOUT)  
(PL OPS, SpADVOS)

**ACTIVATION (TERRA SCOUT)**  
(PL OPS, SpADVOS)

**OBSERVATIONS (MAPUTO AFLD)**  
(PL OPS, SpADVOS)

**OBSERVATION (CAVITE)**  
(PL OPS, SpADVOS)

**TEMP STOW (TERRA SCOUT)**  
(PL OPS, SpADVOS)

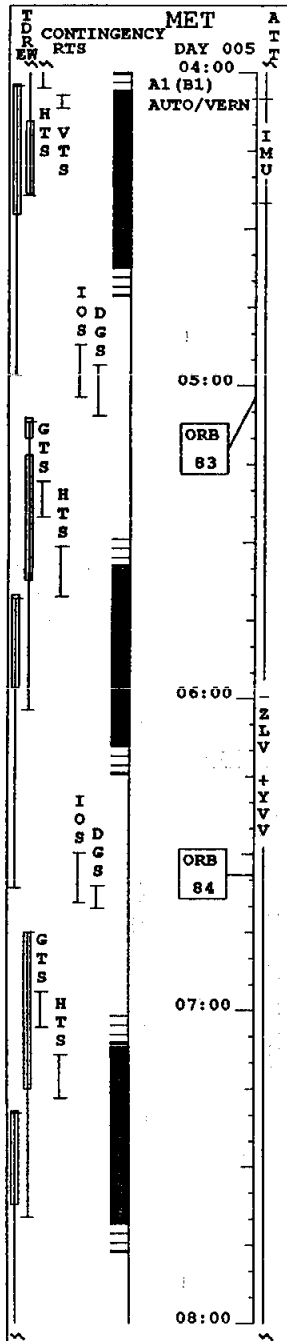
UPLINK  
EARLY TDRS  
H/O

UPLINK  
FC PURGE

# STS-44 (FD 06)

PL

MCC



MET DAY 005  
04:00  
A1 (B1)  
AUTO/VERN  
05:00  
ORB 83  
06:00  
ORB 84  
07:00  
08:00

STS  
MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS  
IMU ALIGN - S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +YVV  
TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

06 UHF MODE - OFF  
PRIVATE MEDICAL CONFERENCE  
UHF MODE - SPLX (or as reqd)

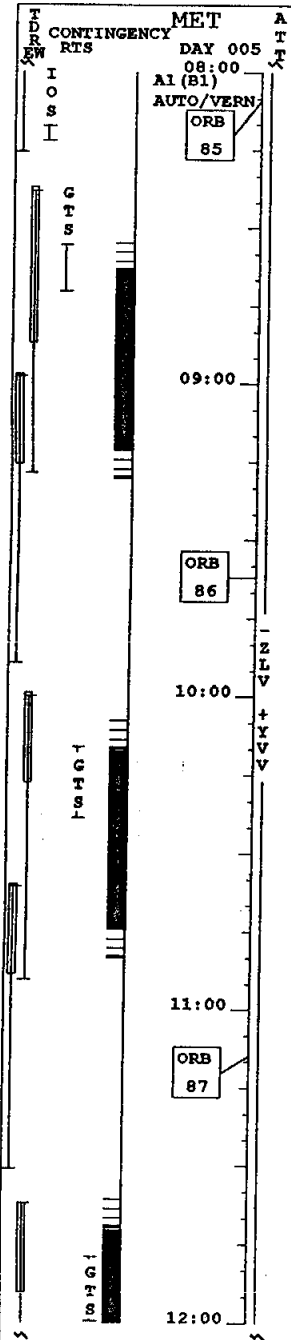
PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

SLEEP

<u>IMU ALIGN LOG</u>	
REQD ID:	
-Y	-Z ANG ERR
1	2 3
ANG:	
ΔX	( ) ( ) ( )
ΔY	( ) ( ) ( )
ΔZ	( ) ( ) ( )
EXECUTION TIME:	
-- / -- : -- : --	

# STS-44 (FD 06)



PL

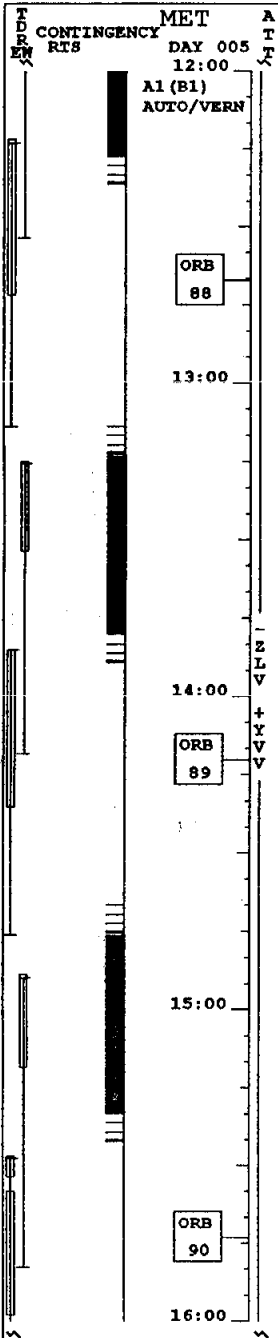
MCC



# STS-44 (FD 07)

PL

MCC



STS

SLEEP

SUPPLY WATER DUMP, steps 1&2  
(ORB OPS, ECLS)

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

SUPPLY WATER DUMP, step 3  
(ORB OPS, ECLS)

**FD07 EZ ACTIVITIES:**  
FOOD PREP/POST (Cue Card) (30 Min)  
EFFECTS METABOLISM (DSO 608) Log  
(MED FS, MED DSOg) All except PS1

UPLINK  
FC PURGE

UPDATE  
H2O SPLY DUMP  
QTY TK A & B

# STS-44 (FD 07)

STS

PL

MCC

**IMU ALIGN LOG**  
REQD ID:

-Y \_\_\_\_\_, -Z \_\_\_\_\_ ANG ERR \_\_\_\_\_  
1 2 3

ANG:  
ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:  
\_ \_ / \_ \_ : \_ \_ : \_ \_

**MNVR IMU ALIGN ATT**  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

**IMU ALIGN - S TRK (ORB OPS)**  
**MNVR (TRK) -ZLV, +XVY**  
TG=2 BV=3 CM=180  
A/AUTO/VERN Init TRK

**POST-SLEEP ACTIVITY**  
(ORB OPS, CREW SYS)

**EXERCISE**  
(MS3)

**SAM TAPE REMOVAL (PL OPS, SAM)**

**DETECTOR STATION MOVE- STA 4**  
(PL OPS, DET STA)

**SAM DATA ACQUISITION**  
(PL OPS, SAM)

**PAM POWER OFF**  
(PL OPS, SAM)

**LBNP TEST PREP (DSO 478)**  
(MED FS, MED DSOs)  
(MS1, MS2)

**LBNP SOAK OPS (DSO 478)**  
(MED FS, MED DSOs)  
(MS1, MS2)

**SAM TAPE CHECK**  
Verify tape has advanced

**PAM POWER ON**  
(PL OPS, SAM)

**SETUP (TERRA SCOUT)**  
(PL OPS, SpADVOS)

**ACTIVATION (TERRA SCOUT)**  
(PL OPS, SpADVOS)

**OBSERVATION (SANTIAGO)**  
(PL OPS, SpADVOS)

**TEMP STOW (TERRA SCOUT)**  
(PL OPS, SpADVOS)

**VFT-1 OPS**  
(PL OPS, VFT-1)  
(PS1, PLT)

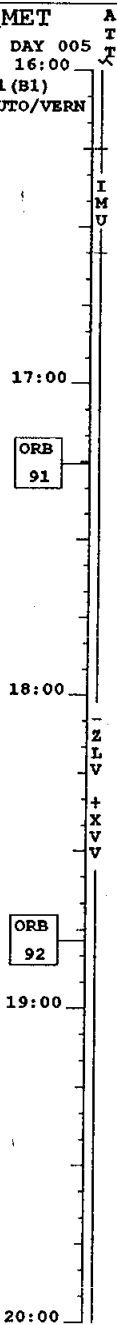
**M88-1 PREP (DIRECT COMM)**  
(PL OPS, M88-1)

**M88-1 OBS (R,H)**  
(PL OPS, M88-1)  
MOSES - SITES OF OPPORTUNITY  
YUCATAN (18:57 - 19:05)

**RADIO TEMP STOW**  
(PL OPS, M88-1)

**SETUP (TERRA SCOUT)**  
(PL OPS, SpADVOS)

**ACTIVATION (TERRA SCOUT)**  
(PL OPS, SpADVOS)



**FD7 TERRA SCOUT OPPTS**

ORB	SITE	TCA	XTRACK	ALT	VEL
91	SANTIAGO	5/17:26:08	-6.4	195	14962
92	BAUREFIELD	5/20:08:34	14.2	196	14960
93	CHRISTMAS ISL	5/20:19:06	-1.7	194	14964
*93	CAPE CAN	5/20:40:00			
94	DARWIN	5/23:14:41	2.5	195	14961
95	KWAJALEIN	5/23:25:59	-9.3	194	14964
95	BARKING SANDS	5/23:35:13	15.9	196	14961
97	LABUAN	6/02:27:35	4.2	194	14964

\*ALTERNATE OPTICS SITE

T D R W  
 CONTINGENCY MET  
 RTS DAY 005  
 20:00  
 A I (B1)  
 AUTO/VERN  
 H T S V T S  
 H T S V T S  
 N H S H  
 I O S  
 H T S V T S  
 H T S V T S  
 N H S H  
 H T S V T S  
 H T S V T S  
 N H S H  
 H T S V T S  
 H T S V T S  
 N H S H  
 006  
 00:00

STS

# STS-44 (FD 07)

PL

MCC

LBNP SOAK OPS (DSO 478)  
 (MED FS, MED DSOs)  
 (MS1, MS2)

OBSERVATION (CAPE CAN) \*  
 Use Terra Scout Alternate  
 Optics during Cape Canaveral  
 M88-1 Battleview Obs

OBSERVATIONS (BAUREFIELD)  
 (PL OPS, SpaDVOS)  
OBSERVATIONS (CHRISTMAS ISLAND)  
 (PL OPS, SpaDVOS)  
TEMP STOW (TERRA SCOUT)  
 (PL OPS, SpaDVOS)  
M88-1 PREP (NO COMM)  
 (PL OPS, M88-1)  
M88-1 OBS (R,H)  
 (PL OPS, M88-1)  
 BATTLEVIEW  
 CAPE CAN (20:39 - 20:41)

21:00

MEAL  
(All)

22:00

M88-1 PREP (NO COMM)  
 (PL OPS, M88-1)

M88-1 OBS (R,H)  
 (PL OPS, M88-1)  
 BATTLEVIEW  
 KELLY AFB (22:12 - 22:14)

23:00

SETUP (TERRA SCOUT)  
 (PL OPS, SpaDVOS)

ACTIVATION (TERRA SCOUT)  
 (PL OPS, SpaDVOS)

LBNP RECONFIG/STOW (DSO 478)  
 (MED FS, MED DSOs)

OBSERVATIONS (DARWIN)  
 (PL OPS, SpaDVOS)

OBSERVATIONS (KWAJALEIN)  
 (PL OPS, SpaDVOS)

OBSERVATIONS (BARKING SANDS)  
 (PL OPS, SpaDVOS)

TEMP STOW (TERRA SCOUT)  
 (PL OPS, SpaDVOS)

MNVR (TRK) -ZLV, +YVV  
 TG=2 BV=3 OM=270  
 A/AUTO/VERN Init TRK

# STS-44 (FD 07)

STS

PL

MCC

CONTINGENCY MET  
RTS DAY 006  
00:00  
A1 (B1)  
AUTO/VERN

01:00  
ORB 96

02:00  
ORB 97

03:00  
ORB 98

04:00

DCSS  
GSTS  
HTSV  
DGO  
HSS  
GSTS  
HTSV  
VTS  
IMU  
SGT

WASTE WATER DUMP, steps 1,2  
(ORB OPS, ECLS)  
Dump Tank to 5%

P/TV05 SETUP (MD DK)  
(PHOTO/TV, P/TV SCENES)

UPDATE  
H2O WASTE  
DUMP QTY

TV (TDRW)  
(GND CNTL-CAB)

EXERCISE  
(CDR, PLT) - DSO 608  
(MS1)

P/TV05 ACT (MD DK)  
(PHOTO/TV, P/TV SCENES)

WASTE WATER DUMP, step 3  
(ORB OPS, ECLS)

MNVR (TRK) -ZLV, +XVV  
TG-2 BV-3 OM-180  
A/AUTO/VERN Init TRK

SETUP (TERRA SCOUT)  
(PL OPS, SpadVOS)

CPA OPS (DTO 645)  
(ORBIT OPS, CREW SYS)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpadVOS)

SAM TAPE TURNOVER  
(PL OPS, SAM)

UPLINK  
FC PURGE

06 UHF MODE - OFF  
PRIVATE MEDICAL CONFERENCE

UHF MODE - SPLX (or as reqd)

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

SAM TAPE CHECK  
Verify tape has advanced

OBSERVATIONS (LABUAN)  
(PL OPS, SpadVOS)

TEMP STOW (TERRA SCOUT)  
(PL OPS, SpadVOS)

MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

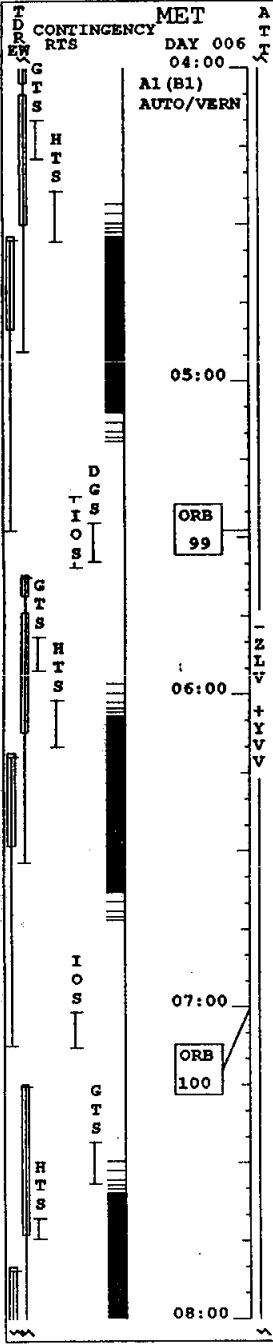
IMU ALIGN - S TRK (ORB OPS)

MNVR (TRK) -ZLV, +XVV  
TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

Do not perform  
SUPPLY WATER DUMP

IMU ALIGN LOG  
REQD ID:  
-Y \_\_\_\_ , -Z \_\_\_\_ ANG ERR \_\_\_\_  
1 2 3

ANG:  
AX ( ) \_ . . . ( ) \_ . . . ( ) \_ . . .  
AY ( ) \_ . . . ( ) \_ . . . ( ) \_ . . .  
AZ ( ) \_ . . . ( ) \_ . . . ( ) \_ . . .  
EXECUTION TIME:  
\_ / \_ : \_ : \_



# STS-44 (FD 07)

STS

PL

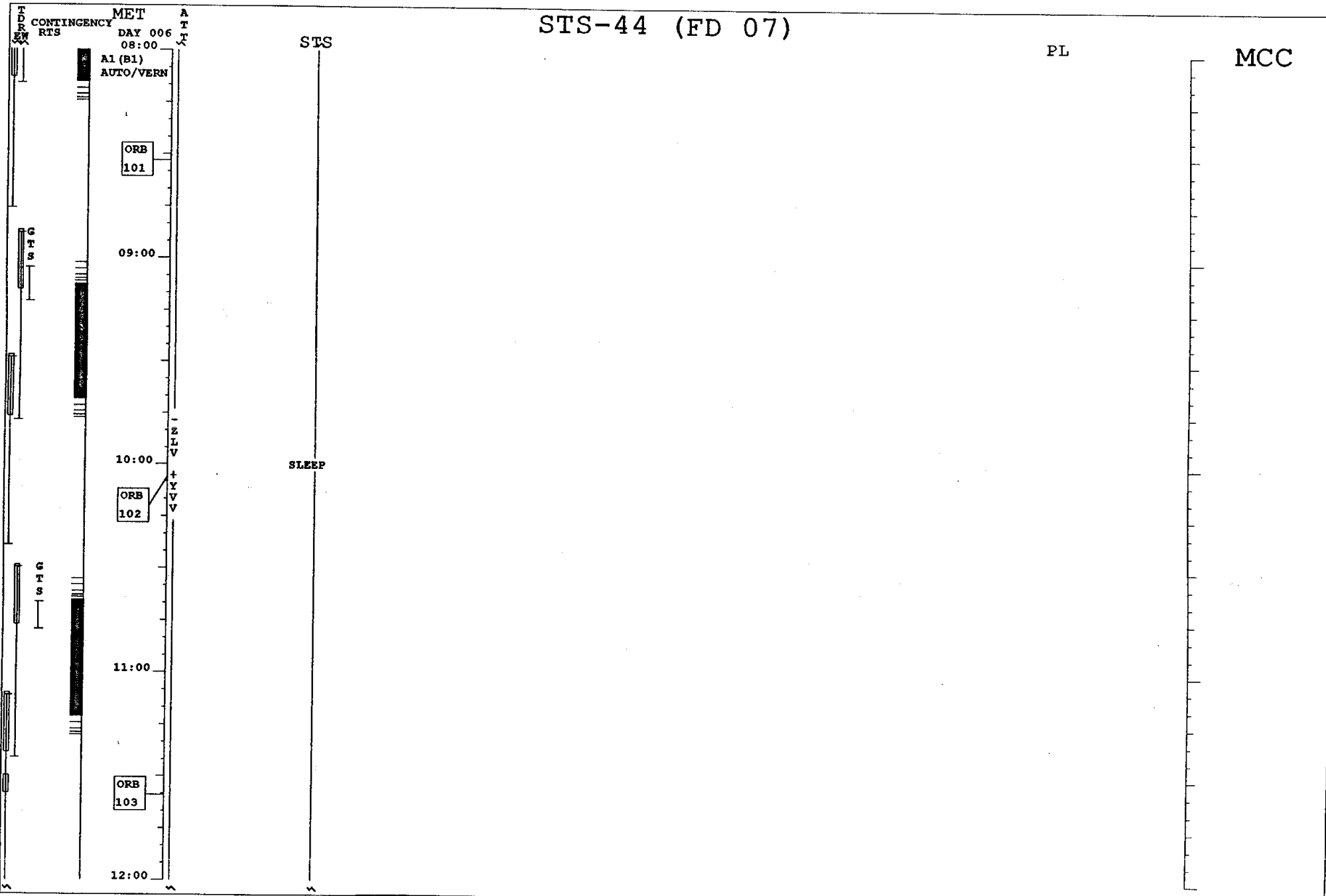
MCC

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

SLEEP

# STS-44 (FD 07)



# STS-44 (FD 08)

PL

MCC

**CONTINGENCY**  
**RES**  
**MET**  
**DAY 006**  
**12:00**  
**A1 (B1)**  
**AUTO/VERN**

**GTS**  
**ELV**  
**+YVV**  
**IMU**

**ORB 104**  
**ORB 105**

**13:00**  
**14:00**  
**15:00**  
**16:00**

**DCS**

STS  
SLEEP

**SUPPLY WATER DUMP, steps 1&2**  
(ORB OPS, ECLS)

**SUPPLY WATER DUMP, step 3**  
(ORB OPS, ECLS)

**MNVR IMU ALIGN ATT**  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at SS  
**IMU ALIGN - S TRK** (ORB OPS)  
**MNVR (TRK) -ZLV, +XVV**  
 TG=2 BV=3 OM=180  
 A/AUTO/VERN Init TRK

**POST-SLEEP ACTIVITY**  
(ORB OPS, CREW SYS)

**FDOS EE ACTIVITIES:**  
 FOOD PREP/POST (Cue Card) (30 Min)  
 EFFECTS METABOLISM (DSO 608) Log  
 (MED FS, MED DSOS) All except PS1

**IMU ALIGN LOG**  
 REQD ID:  
 -Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
           1          2          3  
 ANG:  
 ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
 ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
 ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
 EXECUTION TIME:  
 \_ \_ / \_ \_ : \_ \_ : \_ \_

**UPLINK**  
FC PURGE

**UPDATE**  
H2O SPLY DUMP  
QTY TRK A & B

**UPLINK**  
M88-1 PREP (NETWORK/DIRECT COMM) EARLY TDRS H/O

# STS-44 (FD 08)

STS

PL

MCC

CONTINGENCY  
RTS

MET  
DAY 006  
16:00

ORB  
106

A1 (B1)  
AUTO/VERN

I  
D  
S  
S

N  
H  
S

Z  
L  
V

+  
X  
V  
V

ORB  
107

I  
D  
S  
S

D  
G  
S

V  
T  
S

N  
H  
S

ORB  
108

20:00

P/TV05 SETUP (MD DK)  
(PHOTO/TV, P/TV SCENES)

SAM TAPE REMOVAL (PL OPS, SAM)  
DETECTOR STATION MOVE- STA 1  
(PL OPS, DET STA)

LBNP TEST PREP (DSO 478)  
(MED FS, MED DSOs)  
(MS2, CDR)

RADIO TEMP STOW  
(PL OPS, M88-1)

P/TV05 ACT (MD DK)  
(PHOTO/TV, P/TV SCENES)

SAM DETECTOR CHANGE (NAI)  
PAM REMOVAL  
(PL OPS, SAM)

LBNP SOAK OPS (DSO 478)  
(MED FS, MED DSOs)  
(MS2, CDR)

TV (IDRW)  
(GND CNTRL-CAB)

SETUP (TERRA SCOUT)  
(PL OPS, SpADVOS)

ACTIVATION (TERRA SCOUT)  
(PL OPS, SpADVOS)

OBSERVATIONS (MANAGUA 1)  
(PL OPS, SpADVOS)

TEMP STOW (TERRA SCOUT)  
(PL OPS, SpADVOS)

VFT-1 OPS  
(PL OPS, VFT-1)  
(PS1, PLT)

SAM TAPE CHECK  
Verify tape has advanced

MEMORY MODULE REPLACEMENT  
(PL OPS, RME-III) STA 1

M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

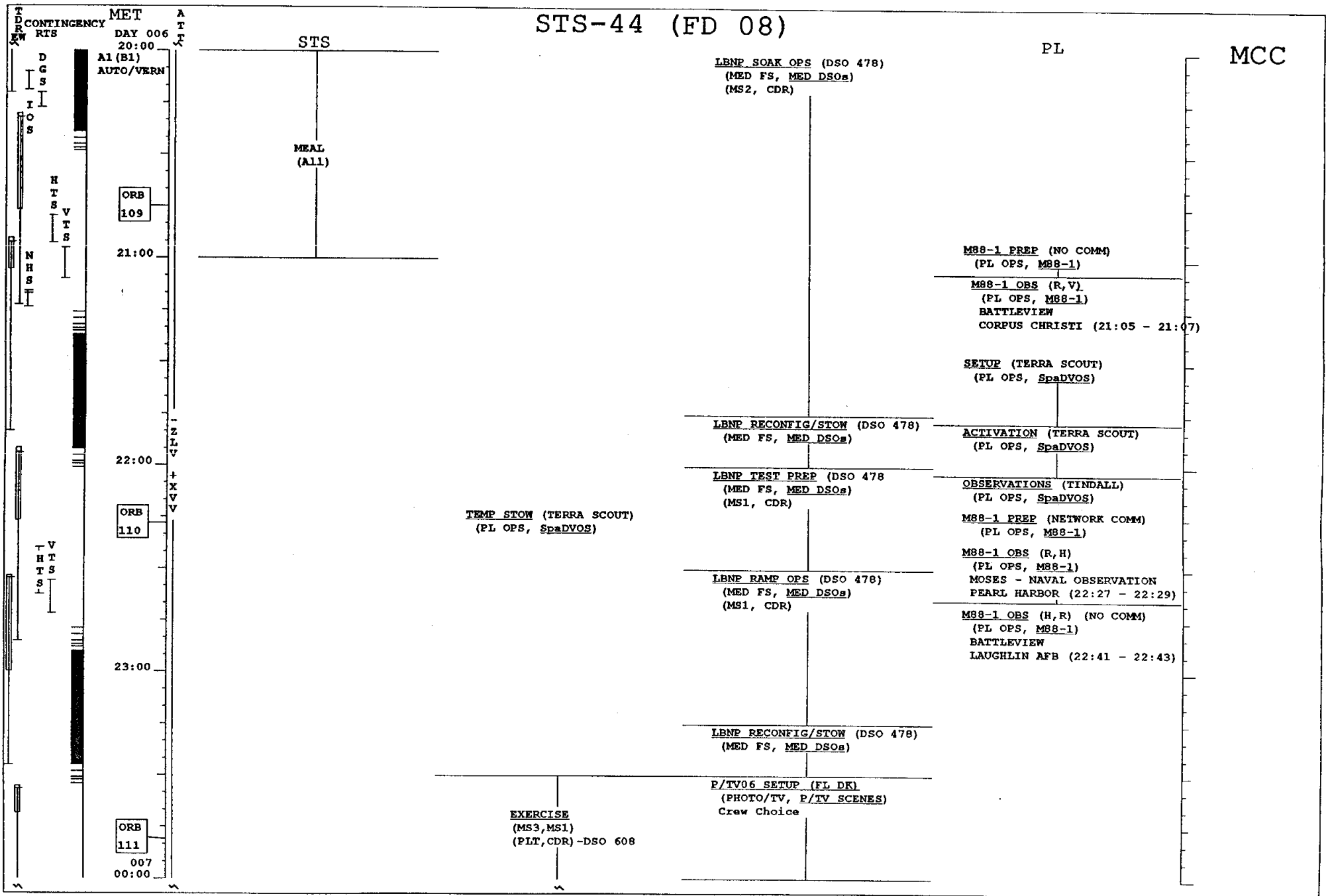
M88-1 OBS (V,H)  
(PL OPS, M88-1)  
BATTLEVIEW  
PT VILLA BAUREFIELD  
(19:01 - 19:02)

M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

M88-1 OBS (H,R)  
(PL OPS, M88-1)  
BATTLEVIEW  
HOMESTEAD (19:32 - 19:33)

FD8 TERRA SCOUT OPSS					
ORB	SITE	TCA	XTRACK	ALT	VEL
107	MANAGUA 1	6/17:54:40	-5.6	195	14962
109	TINDALL	6/22:07:23	-17.8	196	14960





# STS-44 (FD 08)

STS

PL

MCC

TV (TDRE)  
(GND CNTL-CAB)

UPLINK  
EARLY TDRS H/O

UPLINK  
FC PURGE

P/TV06 ACT (FL DK)  
(PHOTO/TV, P/TV SCENES)  
Crew Choice

EXERCISE  
(MS3, MS1)  
(PLT, CDR) - DSO 608

M88-1 PREP (NO COMM)  
(PL OPS, M88-1)

M88-1 OBS (R, V)  
(PL OPS, M88-1)  
BATTLEVIEW  
SAIPAN AIRFIELD (01:28 - 01:29)

BATTLEVIEW  
MIDWAY NAS (01:38 - 01:39)

SAM TAPE TURNOVER  
(PL OPS, SAM)

SAM TAPE CHECK  
Verify tape has advanced

IMU ALIGN LOG  
REQD ID:

-Y \_\_\_\_ , -Z \_\_\_\_ ANG ERR \_\_\_\_  
1 2 3

ANG:

ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:

\_ \_ / \_ \_ : \_ \_ : \_ \_

CPA OPS (DIO 645)  
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

06 UHF MODE - OFF  
PRIVATE MEDICAL CONFERENCE

UHF MODE - SPLX (or as reqd)

← MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)

MNVR (TRK) -ZLV, +YVV

TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

MET

CONTINGENCY

RTS

DAY 007

00:00

A1 (B1)  
AUTO/VERN

01:00

ORB  
112

02:00

ORB  
113

03:00

04:00

CONTINGENCY MET  
DAY 007  
04:00  
A1 (B1)  
AUTO/VERN

DRW RTS

D  
I O S  
G S S  
G S S  
H S T S

I O S

I O S  
G S S  
H S T S

I O S  
G S S

04:00  
05:00  
06:00  
07:00  
08:00

A  
P  
T

# STS-44 (FD 08)

STS  
MNVR (TRK) -ZLV, +YVV

PL

MCC

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

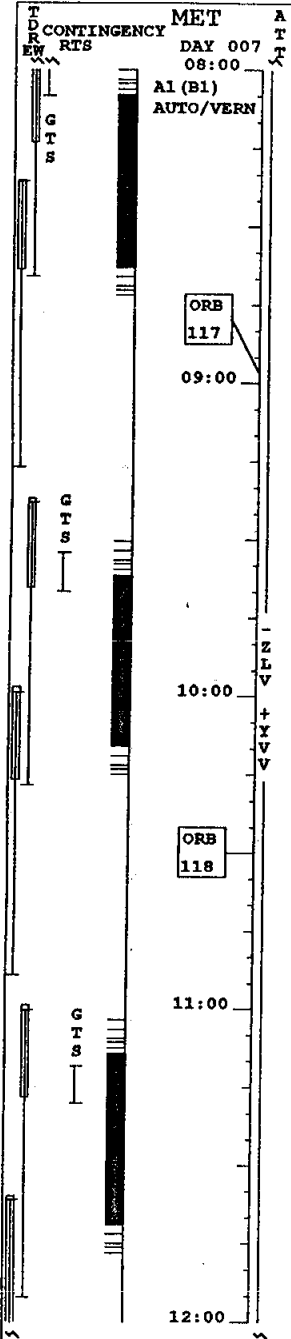
ORB  
114

ORB  
115

ORB  
116

SLEEP

# STS-44 (FD 08)



PL

MCC

# STS-44 (FD 09)

PL

MCC

MET DAY 007  
 CONTINGENCY RTS  
 12:00  
 ORB 119  
 A1 (B1)  
 AUTO/VERN  
 13:00  
 ORB 120  
 Z  
 L  
 V  
 +  
 Y  
 V  
 14:00  
 D  
 G  
 S  
 S  
 15:00  
 ORB 121  
 I  
 O  
 S  
 I  
 G  
 D  
 I  
 S  
 16:00  
 I  
 M  
 U

STS

SLEEP

14:00  
 SUPPLY WATER DUMP, steps 1&2  
 (ORB OPS, ECLS)

POST-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

15:00  
 SUPPLY WATER DUMP, step 3  
 (ORB OPS, ECLS)

16:00  
 MNVR IMU ALIGN ATT  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at SS

**FD09 EZ ACTIVITIES:**  
 FOOD PREP/POST (Cue Card) (30 Mln)  
 EFFECTS METABOLISM (DSO 608) Log  
 (MED FS, MED DSO) All except FS1

UPLINK  
FC PURGE

UPDATE  
H2O SPLY DUMP  
QTY TK A & B

SAM TAPE REMOVAL (PL OPS, SAM)

# STS-44 (FD 09)

## STS

IMU ALIGN - S TRK (ORB OPS)  
 MNVR (TRK) -ZLV, +XVV  
 TG-2 BV-3 OM-180  
 A/AUTO/VERN Init TRK

### FD9 TERRA SCOUT OPSS

ORB	SITE	TCA	XTRACK	ALT	VEL
124	CAPE CAN	7/20:02:19	2.6	197	14959
125	PTA	7/21:21:08	-21.0	194	14966
127	ANDERSON	8/00:20:44	-16.7	194	14967

P/TV05 SETUP (MD DK)  
 (PHOTO/TV, P/TV SCENES)

FILTER CLEANING  
 (IFM, SCHEDULED MAINTENANCE)  
 Inspect filters and clean  
 as necessary

P/TV05 ACT (MD DK)  
 (PHOTO/TV, P/TV SCENES)

LBNP TEST PREP (DSO 478)  
 (MED FS, MED DSOs)  
 (MS2, CDR)

LBNP RAMP OPS (DSO 478)  
 (MED FS, MED DSOs)  
 (MS2, CDR)

LBNP RECONFIG/STOW (DSO 478)  
 (MED FS, MED DSOs)

LBNP TEST PREP (DSO 478)  
 (MED FS, MED DSOs)  
 (MS3, CDR)

LBNP RAMP OPS (DSO 478)  
 (MED FS, MED DSOs)  
 (MS3, CDR)

LBNP RECONFIG/STOW (DSO 478)  
 (MED FS, MED DSOs)

EXERCISE  
 (MS3)

## PL

CATS INSTALLATION  
 (PL OPS, SAM)

M88-1 PREP (NETWORK/DIRECT COMM)  
 (PL OPS, M88-1)

M88-1 OBS (V,H)  
 (PL OPS, M88-1)  
 BATTLEVIEW  
 TEGUCIGALPA (16:41 - 16:49)

RADIO TEMP STOW  
 (PL OPS, M88-1)

SAM TAPE CHECK  
 Verify tape has advanced

M88-1 PREP (NO COMM)  
 (PL OPS, M88-1)

M88-1 OBS (H,V)  
 (PL OPS, M88-1)  
 BATTLEVIEW  
 MACDILL AFB (18:24 - 18:25)

VFT-1 OPS  
 (PL OPS, VFT-1)  
 (PS1, PLT)

SETUP (TERRA SCOUT)  
 (PL OPS, SpADVOS)

ACTIVATION (TERRA SCOUT)  
 (PL OPS, SpADVOS)

OBSERVATIONS (CAPE CANAVERAL)  
 (PL OPS, SpADVOS)

## MCC

UPLINK  
 EARLY TDRS H/O

TV (TDRW)  
 (GND CNTRL-CAB)

UPLINK  
 EARLY TDRS H/O

MET  
 DAY 007  
 16:00  
 A1 (B1)  
 AUTO/VERN

ORB 122

17:00

ORB 123

18:00

ORB 124

19:00

20:00

TDRS CONTINGENCY  
 I O D G S  
 N H S  
 I O S  
 D G S S  
 H T S V T S

T D CONTINGENCY MET A  
 R R RTS DAY 007 T T  
 EN 20:00  
 A1 (B1)  
 AUTO/VERN  
 N H S  
 H T S  
 V T S  
 N H S  
 H  
 Z L V  
 + X V V  
 G T S  
 I  
 V T S  
 H T S  
 I  
 D G S  
 T  
 008  
 00:00

# STS-44 (FD 09)

STS

EXERCISE  
(MS3)

MEAL  
(ALL)

PL

OBSERVATIONS (CAPE CANAVERAL)  
(PL OPS, SpaDVOS)

MCC

21:00

ORB  
125

LBNP TEST PREP (DSO 478)  
(MED FS, MED DSOs)  
(MS1, MS2)

OBSERVATIONS (PTA)  
(PL OPS, SpaDVOS)

TEMP STOW (TERRA SCOUT)  
(PL OPS, SpaDVOS)  
MB8-1 PREP (NO COMM)  
(PL OPS, MB8-1)

22:00

LBNP RAMP OPS (DSO 478)  
(MED FS, MED DSOs)  
(MS1, MS2)

MB8-1 OBS (H, R)  
(PL OPS, MB8-1)  
BATTLEVIEW  
PATRICK (21:39 - 21:40)

23:00

ORB  
126

LBNP RECONFIG/STOW (DSO 478)  
(MED FS, MED DSOs)

MB8-1 PREP (NO COMM)  
(PL OPS, MB8-1)

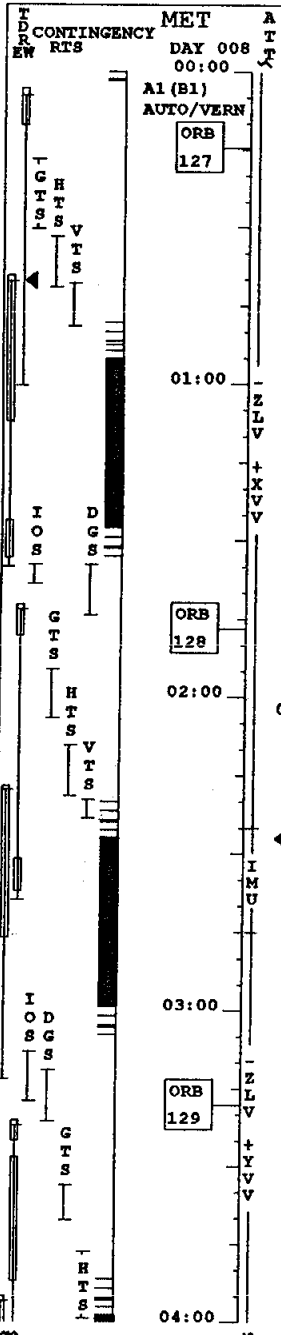
LBNP TEST PREP (DSO 478)  
(MED FS, MED DSOs)  
(PLT, MS2)

MB8-1 OBS (V, R)  
(PL OPS, MB8-1)  
BATTLEVIEW  
KWAJALEIN (22:48 - 22:49)

LBNP RAMP OPS (DSO 478)  
(MED FS, MED DSOs)  
(PLT, MS2)

SETUP (TERRA SCOUT)  
(PL OPS, SpaDVOS)

LBNP RECONFIG/STOW (DSO 478)  
(MED FS, MED DSOs)



# STS-44 (FD 09)

**IMU ALIGN LOG**  
 REQD ID:  
 -Y \_\_\_ , -Z \_\_\_ ANG ERR \_\_\_  
 1 2 3

ANG:  
 ΔX ( ) \_\_\_ ( ) \_\_\_ ( ) \_\_\_  
 ΔY ( ) \_\_\_ ( ) \_\_\_ ( ) \_\_\_  
 ΔZ ( ) \_\_\_ ( ) \_\_\_ ( ) \_\_\_

EXECUTION TIME:  
 \_\_\_ / \_\_\_ : \_\_\_ : \_\_\_

CPA OPS (DTO 645)  
 (ORBIT OPS, CREW SYS)

EXERCISE  
 (CDR, PLT) - DSO 608  
 (MS1)

LBNE RECONFIG/STOW (DSO 478)  
 (MED FS, MED DSOs)

P/TV06 SETUP (FL DK)  
 (PHOTO/TV, P/TV SCENES)  
 Crew Choice

P/TV06 ACT (FL DK)  
 (PHOTO/TV, P/TV SCENES)  
 Crew Choice

PL  
ACTIVATION (TERRA SCOUT)  
 (PL OPS, SpaDVOS)

OBSERVATIONS (ANDERSON)  
 (PL OPS, SpaDVOS)

TEMP STOW (TERRA SCOUT)  
 (PL OPS, SpaDVOS)

MCC  
UPLINK  
 EARLY TDRS H/O  
 TV (TDRE)  
 (GND CNTL-CAB)

06 UHF MODE - OFF  
 PRIVATE MEDICAL CONFERENCE  
 UHF MODE - SPLX (or as reqd)

SAM TAPE TURNOVER  
 (PL OPS, SAM)

MS8-1 PREP (NO COMM)  
 (PL OPS, MS8-1)

MS8-1 OBS (R,V)  
 (PL OPS, MS8-1)  
 MOSES - SITES OF OPPORTUNITY  
 STRAIT OF MALACCA  
 (01:46 - 01:47)

UPLINK  
 FC PURGE

MNVR IMU ALIGN ATT  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +YVV  
 TG-2 BV-3 CM-270  
 A/AUTO/VERN Init TRK

PRE-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

WASTE WATER DUMP, steps 1,2  
 (ORB OPS, ECLS)  
 Dump Tank to 5%

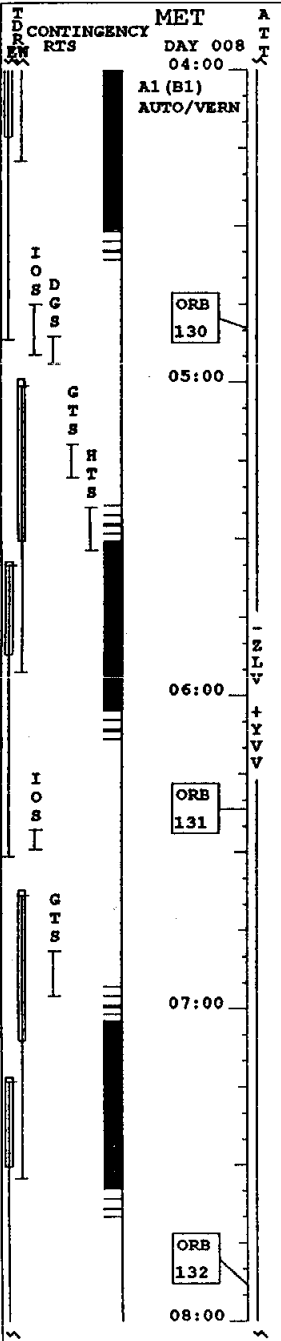
Do not perform  
 SUPPLY WATER DUMP

SAM TAPE CHECK  
 Verify tape has advanced

MEMORY MODULE REPLACEMENT  
 (PL OPS, RME-III) STA 2

UPDATE  
 H2O WASTE  
 DUMP QTY





STS

STS-44 (FD 09)

PL

MCC

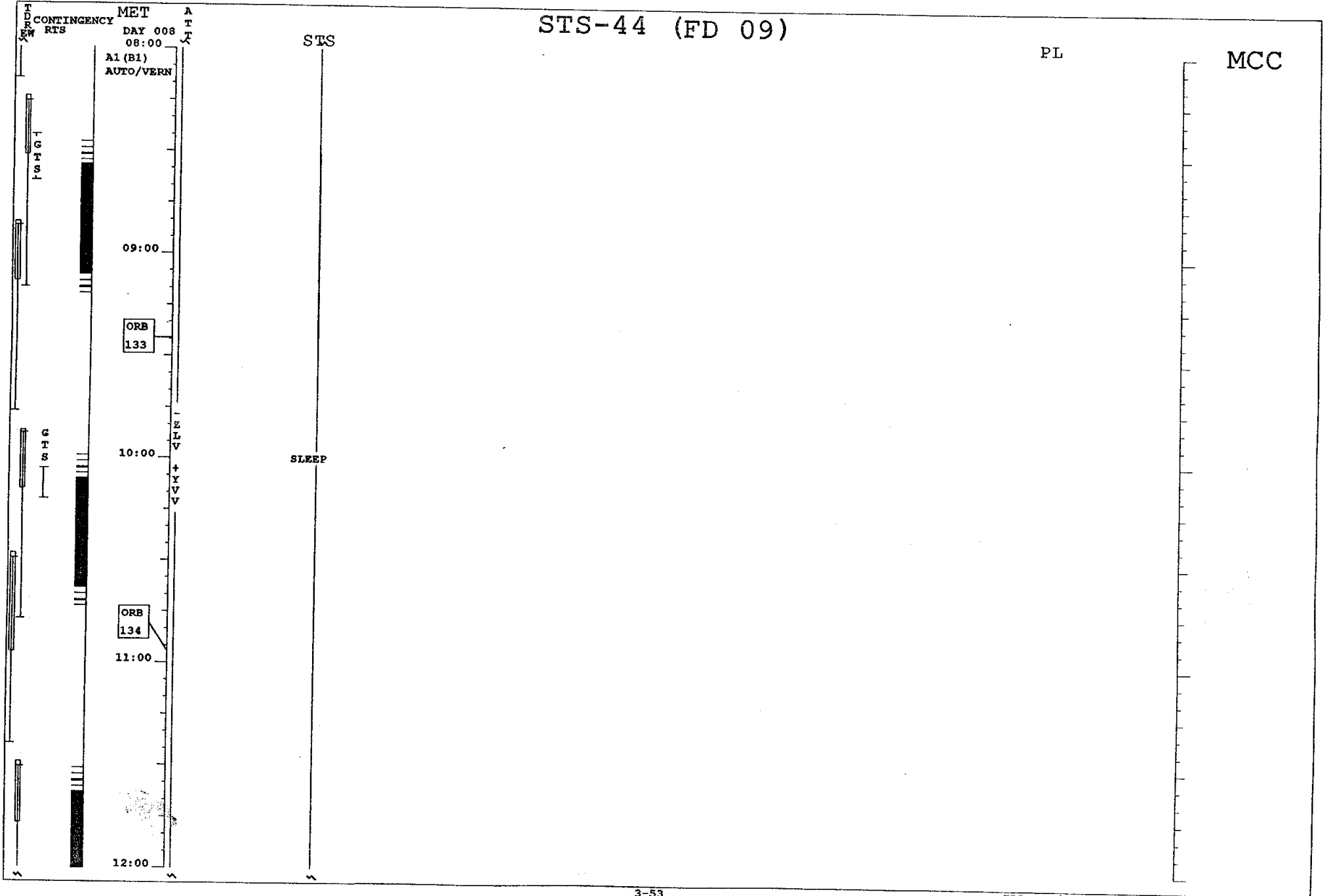
WASTE WATER DUMP, step 3  
 (ORB OPS, ECLS)

PRE-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

Do not perform  
 SUPPLY WATER DUMP

SLEEP

# STS-44 (FD 09)



# STS-44 (FD 10)

PL

MCC

**CONTINGENCY**  
**RTS**  
**MET**  
**DAY 008**  
**12:00**  
**A1 (B1)**  
**AUTO/VERN**  
**ORB 135**  
**13:00**  
**ORB 136**  
**14:00**  
**ORB 137**  
**15:00**  
**16:00**

STS

SLEEP

SUPPLY WATER DUMP, steps 1&2  
(ORB OPS, ECLS)

SUPPLY WATER DUMP, step 3  
(ORB OPS, ECLS)

MNVR IMU ALIGN ATT  
STAR PAIR (A1)  
A/AUTO/VERN Init MNVR at SS

IMU ALIGN - S TRK (ORB OPS)  
MNVR (TRK) -ZLV, +XVV  
TG-2 BV-3 OM-180  
A/AUTO/VERN Init TRK

APU STEAM VENT HTR ACT  
R2 BLR PWR (three) -ON

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

**FD10 EZ ACTIVITIES:**

EXERCISE (1 Hr/MS1, MS3)  
FOOD PREP/POST (Cue Card) (30 Min)  
EFFECTS METABOLISM (DSO 608) Log  
 (MED FS, MED DSOs) All except PS1  
HEAD AND GAZE (DSO 614) During exercise  
 (MED FS, MED DSOs) PLT;PS1 highly desired

IMU ALIGN LOG

REQD ID:

-Y \_\_\_\_\_, -Z \_\_\_\_\_ ANG ERR \_\_\_\_\_  
1 2 3

ANG:

$\Delta X$  ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

$\Delta Y$  ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

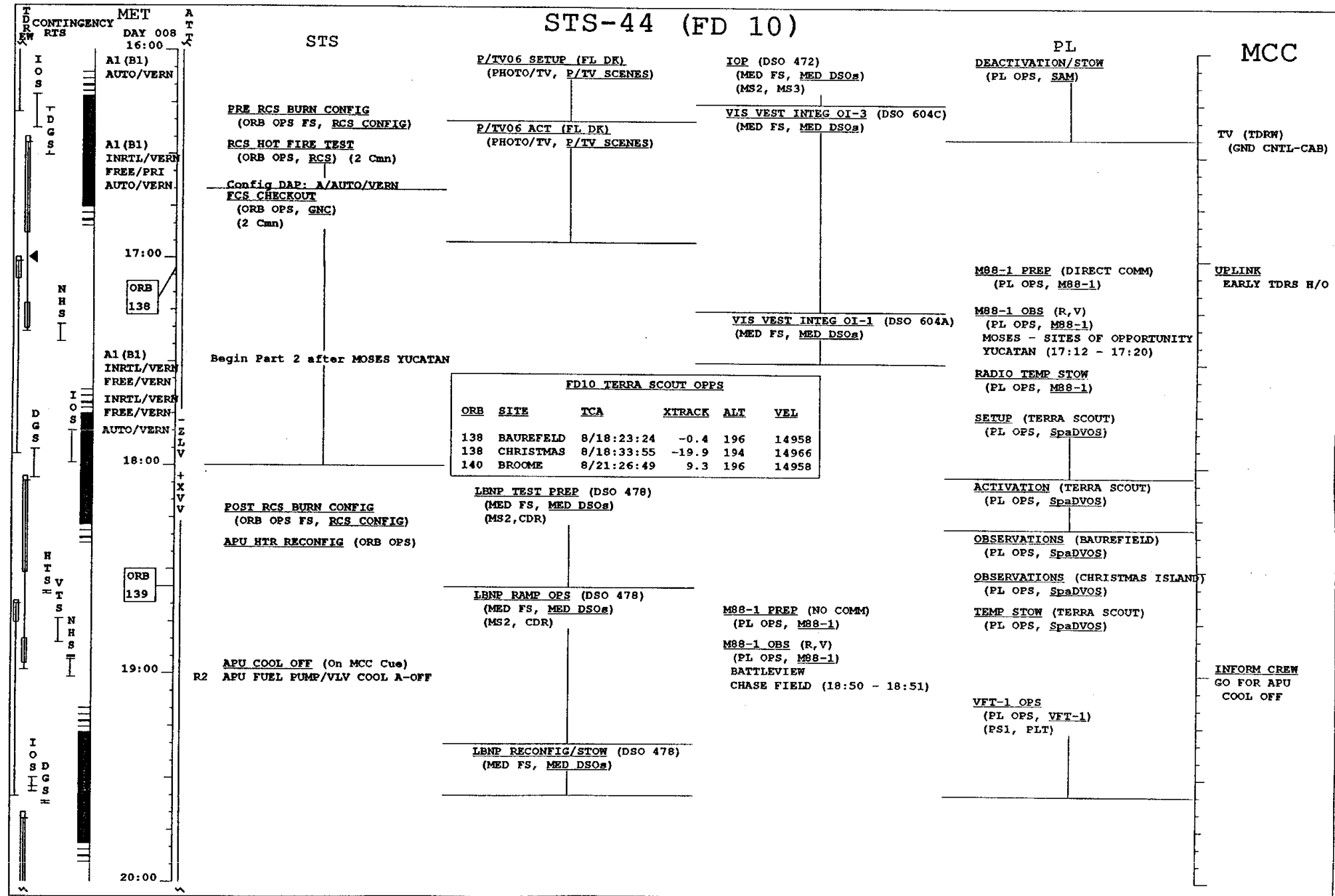
$\Delta Z$  ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:

\_ \_ / \_ \_ : \_ \_ : \_ \_

UPDATE  
 H2O SPLY DUMP  
 QTY TRK A & B  
UPLINK  
 FC PURGE

DEACTIVATION/STOW  
 (PL OPS, SAM)



**STS**

**PL**

**MCC**

**STS**

**PL**

**MCC**

**FD10 TERRA SCOUT OPSS**

ORB	SITE	TCA	XTRACK	ALT	VEL
138	BAUREFELD	8/18:23:24	-0.4	196	14958
138	CHRISTMAS	8/18:33:55	-19.9	194	14966
140	BROOME	8/21:26:49	9.3	196	14958

**TV (TDRW)**  
(GND CNTL-CAB)

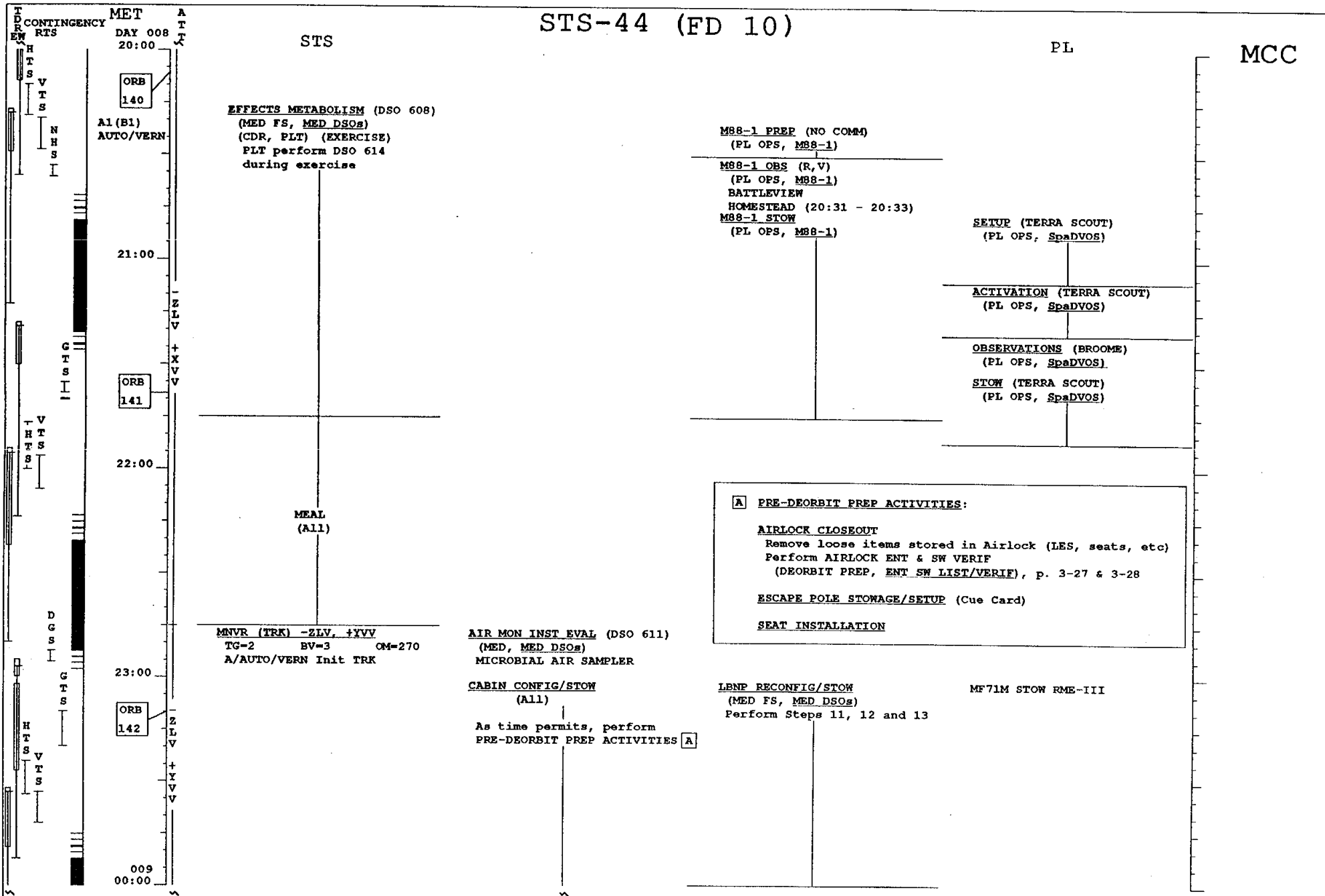
**UPLINK**  
EARLY TDRS H/O

**INFORM CREW**  
GO FOR APU  
COOL OFF

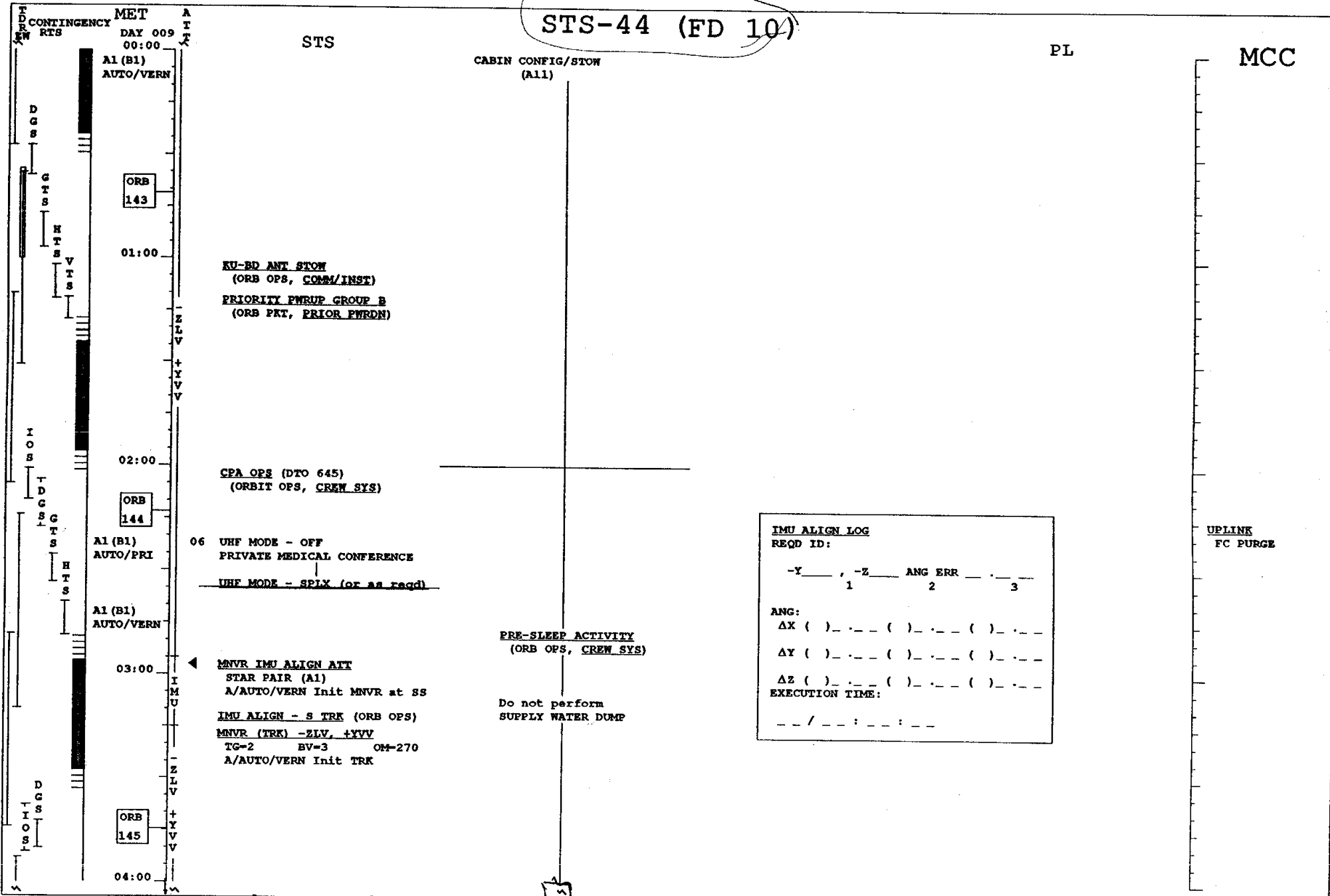
3-55

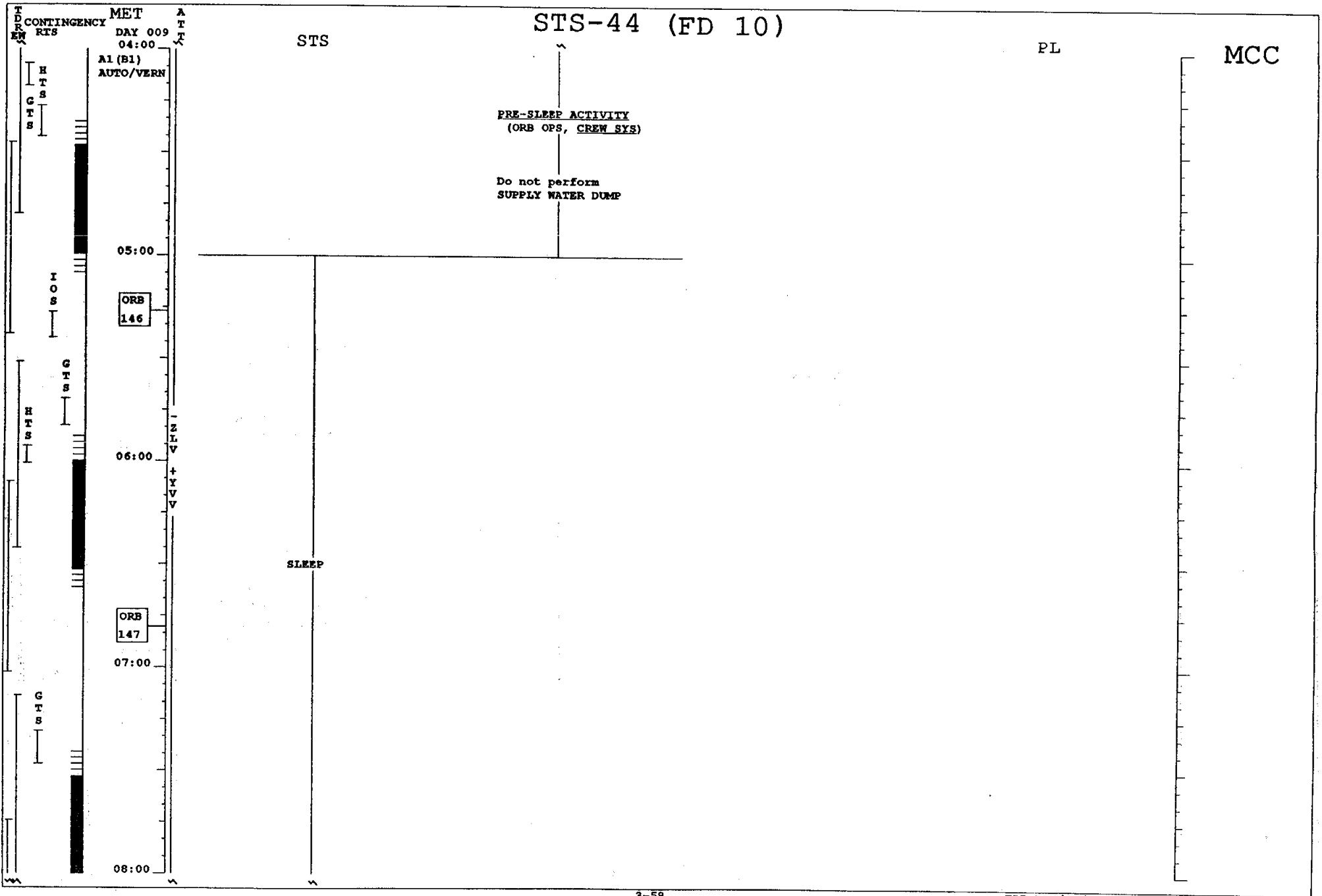
FLT PLN/44/FIN
10/8/91

# STS-44 (FD 10)



# STS-44 (FD 10)

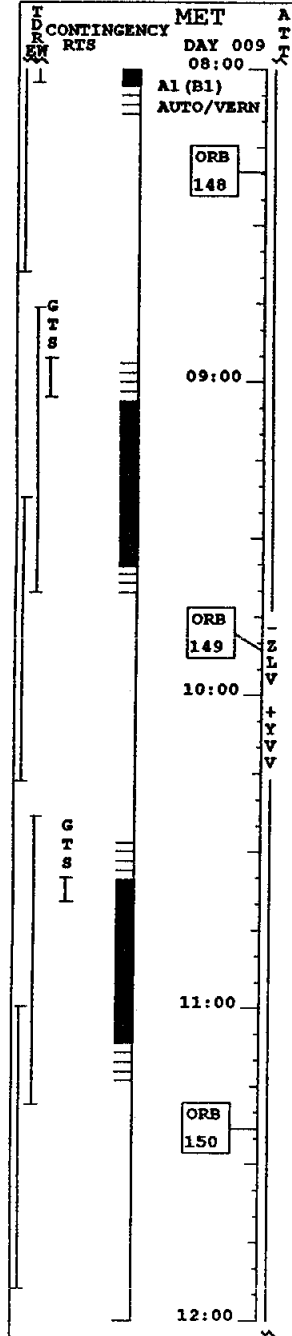




# STS-44 (FD 10)

PL

MCC



STS

SLEEP

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

Do not perform  
SUPPLY WATER DUMP

UPLINK  
FC PURGE



T D CONTINGENCY MET  
 R EW RTS DAY 009  
 12:00  
 A1 (B1)  
 AUTO/VERN  
 13:00  
 ORB 151  
 14:00  
 ORB 152  
 15:00  
 ORB 153  
 16:00

# STS-44 (FD 11)

STS

PL

MCC

**IMU ALIGN LOG**  
 REQD ID:  
 -Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
           1          2          3  
 ANG:  
 ΔX ( ) \_ . \_ . ( ) \_ . \_ . ( ) \_ . \_ .  
 ΔY ( ) \_ . \_ . ( ) \_ . \_ . ( ) \_ . \_ .  
 ΔZ ( ) \_ . \_ . ( ) \_ . \_ . ( ) \_ . \_ .  
 EXECUTION TIME:  
 \_ / \_ : \_ : \_

**POST-SLEEP ACTIVITY**  
 (ORB OPS, CREW SYS)

Do not perform  
 SUPPLY WATER DUMP

**EE ACTIVITIES BEFORE LEAVING FLT PLN:**  
**AIR SAMPLE**  
 Red MET on bottle  
**CPA OPS** (DTC 645)  
 (ORB OPS, CREW SYS)  
**FLUID LOADING PREP**  
 Fill 6 drink containers with  
 8 oz H2O each (per person)

**MNVR IMU ALIGN ATT**  
 STAR PAIR (A1)  
 A/AUTO/VERN Init MNVR at 13:30  
 IMU ALIGN - S TRK (ORB OPS)  
**MNVR (TRK) -XSI ATT**  
 TG-4 BV-5  
 P-184 Y-0 OM-270  
 A/AUTO/VERN Init TRK

**HOLTER MONITOR** (DSO 463)  
**PRIOR TO DEORBIT PREP**  
**ORTHOSTATIC FUNC** (DSO 603)  
**BEFORE DE-ORBIT PREP**  
**VIS VEST INTEG OI-3** (DSO 604C)  
**ENTRY PREP PROCEDURE**  
 (MED CL, MED DSOs)

Update: CRT TIMER SETUP PAD  
 in **NOMINAL DEORBIT PREP**

UPDATE  
 CRT TIMER  
 SETUP PAD

**GO TO DEORBIT PREP AT 9/14:31**

UPLINK  
 EARLY TDRS  
 H/O

CONTINGENCY TIMELINES

16A DSP INSERTION..... 4A-1  
19A DSP (EVA) INSERTION..... 4B-1

CONTINGENCY  
TIMELINES

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## 16A DSP INSERTION

The 16A DSP Insertion timeline is designed to accommodate delaying deployment of DSP until the 16A Insertion opportunity. The timeline assumes an attempt at 6A Insertion failed at the GO/NO-GO decision point in the deploy countdown procedure. The timeline assumes the tilt table is at 29 degrees at the waveoff decision. Additional assumptions are shown on the timeline. The trajectory shown is correct for 16A injection including deploy and OMS SEP.

16A  
INSERTION

# 16A INSERTION

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
323:23:51/ 324:11:51	000:00:00/ 000:12:00	323:17:51/ 324:05:51	01 /23 CST	-11.1		NOVEMBER 19, 1991	STS-44	FIN	10/08/91				
CST :323													
FD :001													
MET :000													
0	18	19	20	21	22	23	0	1	2	3	4	5	12
0	1	2	3	4	5	6	7	8	9	10	11	12	
STS													
L A U N C H	<p><b>THE 16A INSERTION TIMELINE IS BASED ON THESE ASSUMPTIONS:</b></p> <ul style="list-style-type: none"> <li>•THE 6A INSERTION TIMELINE IS USED UNTIL 0/06:04 MET.</li> <li>•THE PCRS ACTIVITY HAS BEEN ACCOMPLISHED OR ATTEMPTED.</li> <li>•THE TILT TABLE IS AT 29 DEGREES PRIOR TO ENTERING THE 16A TIMELINE.</li> <li>•THE -Z COAS CAL WILL BE ADDED TO THE FD2 EVENING IMU ALIGN.</li> <li>•THE SCHEDULED AMU SEQUENCES OBIATE THE NEED FOR ATTITUDE BALANCING, ALTHOUGH THE ATTITUDE TIMELINE PROTECTS IT.</li> <li>•SECONDARY PAYLOADS AND DTOS/DSOS WILL BE RESCHEDULED REALTIME.</li> </ul>												
	PL												
DAY/NIGHT													
ORBIT													
CONTINGENCY GSTDN	2: -GDX 3: -MLX 4: -GDS, -GDX 5: -GDS, -GDX, -MIL, -MLX 6: -GDS, -GDX, -MIL, -MLX 7: -GDS, -GDX, -MIL, -MLX												
COVERAGE	2: -HTS, -VTS, -CTS, -NHS 3: -GTS, -HTS, -VTS, -CTS 4: -DGS, -GTS, -HTS, -VTS 5: -DGS, -GTS, -HTS, -VTS, -IOS, -GTS 6: -HTS, -VTS, -IOS, -DGS 7: -GTS, -HTS, -IOS, -DGS 8: -IOS, -GTS												
RTS COVERAGE	2: -HTS, -VTS, -CTS, -NHS 3: -GTS, -HTS, -VTS, -CTS 4: -DGS, -GTS, -HTS, -VTS 5: -DGS, -GTS, -HTS, -VTS, -IOS, -GTS 6: -HTS, -VTS, -IOS, -DGS 7: -GTS, -HTS, -IOS, -DGS 8: -IOS, -GTS												
TDRS													
ATTITUDE	-ZLV +YVV AMU/IMU -ZLV +YVV -ZLV -YVV												
NOTES:	<p><b>16A INSERTION</b></p> <ul style="list-style-type: none"> <li>•ZLV, +YVV</li> <li>•ZLV, +YVV</li> <li>•ZLV, -YVV (FUTURE START)</li> <li>•UPLINK TWTA INH-ENA</li> <li>•IUS THRUPT CMD HDLN (RF)</li> <li>(IUS DPY, CONT OPS)</li> <li>HDLN 64K CONFIG</li> <li>• GND CMD</li> <li>•UPLINK DELTA QUATERNION</li> </ul> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>CRT SM 62 PCMMU/PL COMM            DECOM ENA            FDA 1 - ITEM 14 EXEC (no *)            2 - ITEM 15 EXEC (no *)            3 - ITEM 16 EXEC (no *)            4 - ITEM 17 EXEC (no *)</p> </div>												

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
324:11:51/ 324:23:51	000:12:00/ 001:00:00	324:05:51/ 324:17:51	02 /24 CST	-12.9	☉	NOVEMBER 20, 1991	STS-44	FIN	10/08/91							
CST :324	FD :001	MET :000	12 <sup>6</sup>	13 <sup>7</sup>	14 <sup>8</sup>	15 <sup>9</sup>	16 <sup>10</sup>	17 <sup>11</sup>	18 <sup>12</sup> FD: 02	19 <sup>13</sup>	20 <sup>14</sup>	21 <sup>15</sup>	22 <sup>16</sup>	23 <sup>17</sup>	0 MET:001	
STS	SLEEP					AMU/IMU SEQUENCE	DEPLOY	WIPRO	ASRM	ZLV	KUBD	FEES	RETURN			
	POST SLEEP						LO	BURN					TONOMI			
						P/TV04 SETUP DPY							NAL			
							P/TV04 ACT DPY						TIME			
PL													ELINE			
DAY/NIGHT	[Day/Night Cycle]															
ORBIT	9	10	11	12	13	14	15	16								
CONTINGENCY GSTDN COVERAGE	-MIL -MLX -MLX -MIL -MLX															
RTS COVERAGE	-GTS -GTS -IOS -DGS -DGS -NHS -IOS -DGS -GDX -GDS -MIL															
TDRS E W	[TDRS Coverage]															
ATTITUDE	-ZLV -YVW -ZLV +YVW AMU/IMU DPY SEP VIEW -ZLV -YVW															
NOTES:	<p><b>16A INSERTION</b></p> <p>① CRT SM 62 PCMMU/PL COMM          DECOM ENA          FDA 1 - ITEM 14 EXEC (*)          2 - ITEM 15 EXEC (*)          3 - ITEM 16 EXEC (*)          4 - ITEM 17 EXEC (*)</p> <p>② PRE-DPY CK      ③ IUS/PI LOCK</p> <p>④ UPLINK DELTA QUATERNION      ⑤ UPLINK TWTA INH-DIS          ⑥ -ZLV, -YVW</p>															

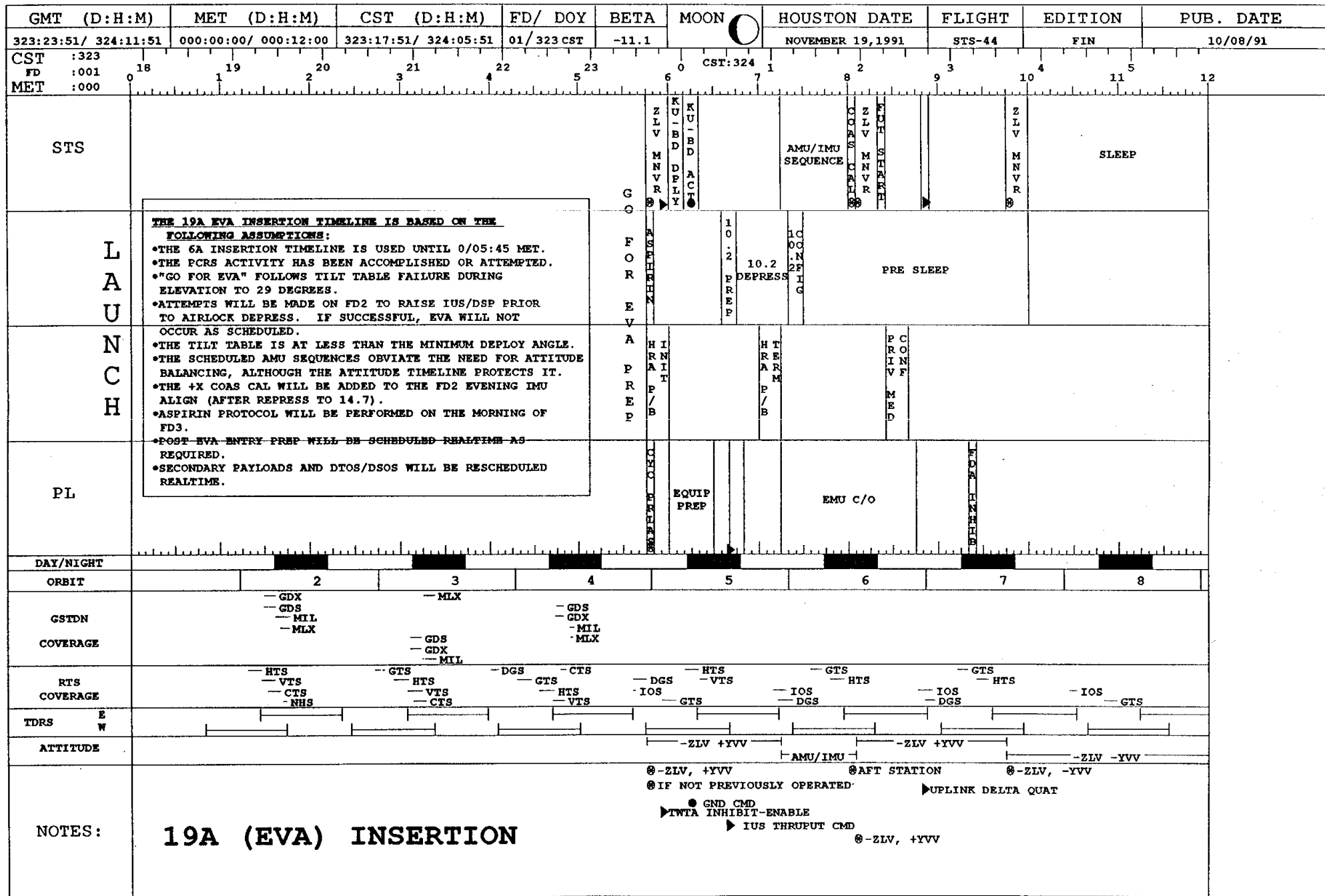
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## 19A DSP (EVA) INSERTION

The 19A DSP Insertion timeline is designed to accommodate delaying deployment of DSP until the 19A Insertion opportunity following an EVA to manually raise the tilt table. The decision to perform an EVA must be made by 0/05:30 MET in order to meet EVA preparation and equipment constraints. The 10.2 psi Cabin EVA protocol is used. There will be no Flight Day 1 EVA. The Contingency EVA Operations STS-44 Flight Supplement, Contingency EVA for Payload Failures section, is the source document for the 19A Insertion timeline. Additional assumptions are shown on page 4B-2. The trajectory shown is correct for 19A injection, including deploy and OMS SEP.

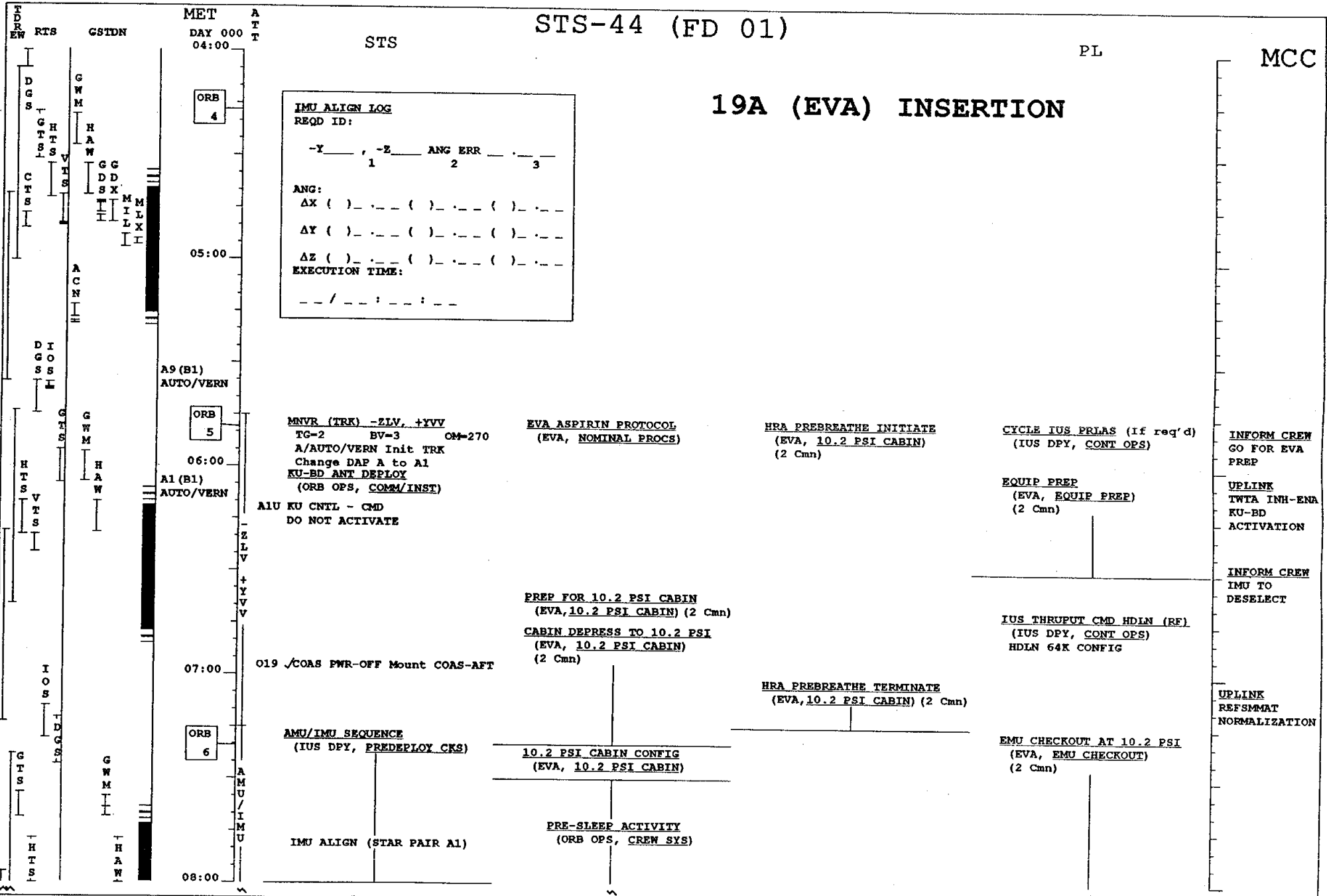
19A  
INSERTION





GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
324:11:51/ 324:23:51	000:12:00/ 001:00:00	324:05:51/ 324:17:51	02 /24 CST	-12.9		NOVEMBER 20, 1991	STS-44	FIN	10/08/91	
CST :324										
FD :001										
MET :000									MET:001	
STS	SLEEP					PC RO INF VF M E D	AMU/IMU SEQUENCE	Z L V M N V R		
								E/TV04 SETUP DPY		
						1 0 2 M A I N T	EVA PREP	75 MIN SUIT P/B	A D E L P R E S S	
PL								I U S D C O S	E S U P P O R T	
DAY/NIGHT										
ORBIT	9	10	11	12	13	14	15	16		
GSTDN COVERAGE				-MAX	-CAN	-MAX	-CAN	-MLX -MIL	-CAN	-MLX
RTS COVERAGE	-GTS	-GTS				-MIL -MLX	-MAX	-DGS	-CAN	-GDX -GDS -MIL
TDRS E W						-IOS -DGS		-NHS	-IOS	-VTS -CTS -NHS
ATTITUDE				-ZLV -YVV			AMU/IMU			-ZLV +YVV
NOTES:	<p>19A (EVA) INSERTION</p> <p>⊙ -ZLV, +YVV ▶ UPLINK DELTA QUAT ⊙ PRE-DEPLOY CR</p>									

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
324:23:51/ 325:11:51	001:00:00/ 001:12:00	324:17:51/ 325:05:51	02 124 CST	-14.9		NOVEMBER 20, 1991	STS-44	FIN	10/08/91
CST :324									
FD :002									
MET :001									
STS									
PL									
DAY/NIGHT									
ORBIT									
GSTDN COVERAGE									
RTS COVERAGE									
TDRS									
ATTITUDE									
NOTES:	<p>           @EVA (IUS MAN ELEV) (EVA, EVA CUFF C/L) @-ZLV, +YVV @-ZLV, +YVV @-ZLV, +YVV @-ZLV, +YVV            @IUS/PI LOCK @EVA (IUS MAN ELEV) (EVA, EVA CUFF C/L) ▶TWTA INHIBIT-DISABLE         </p>								
<h1>19A (EVA) INSERTION</h1>									



IMU ALIGN LOG  
 REQD ID:  
 -Y \_\_\_\_\_ -Z \_\_\_\_\_ ANG ERR \_\_\_\_\_  
           1          2          3

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 ΔY ( ) \_\_\_\_\_ ( ) \_\_\_\_\_ ( ) \_\_\_\_\_  
 ΔZ ( ) \_\_\_\_\_ ( ) \_\_\_\_\_ ( ) \_\_\_\_\_

EXECUTION TIME:  
 - - / - - : - - : - -

MNRV (TRK) -ZLV, +YV  
 TC-2 BV-3 OM-270  
 A/AUTO/VERN Init TRK  
 Change DAP A to A1  
KU-BD ANT DEPLOY  
 (ORB OPS, COMM/INST)

EVA ASPIRIN PROTOCOL  
 (EVA, NOMINAL PROCS)

HRA PREBREATHE INITIATE  
 (EVA, 10.2 PSI CABIN)  
 (2 Cmn)

CYCLE IUS PRIAS (if req'd)  
 (IUS DPY, CONT OPS)

INFORM CREW  
 GO FOR EVA  
 PREP

EQUIP PREP  
 (EVA, EQUIP PREP)  
 (2 Cmn)

UPLINK  
 TWIA INH-ENA  
 KU-BD  
 ACTIVATION

A1U KU CNTL - CMD  
 DO NOT ACTIVATE

PREP FOR 10.2 PSI CABIN  
 (EVA, 10.2 PSI CABIN) (2 Cmn)

CABIN DEPRESS TO 10.2 PSI  
 (EVA, 10.2 PSI CABIN)  
 (2 Cmn)

IUS THRUPT CMD HDLN (RF)  
 (IUS DPY, CONT OPS)  
 HDLN 64K CONFIG

INFORM CREW  
 IMU TO  
 DESELECT

019 /COAS PWR-OFF Mount COAS-AFT

HRA PREBREATHE TERMINATE  
 (EVA, 10.2 PSI CABIN) (2 Cmn)

AMU/IMU SEQUENCE  
 (IUS DPY, PREDEPLOY CKS)

10.2 PSI CABIN CONFIG  
 (EVA, 10.2 PSI CABIN)

EMU CHECKOUT AT 10.2 PSI  
 (EVA, EMU CHECKOUT)  
 (2 Cmn)

UPLINK  
 REFSMMAT  
 NORMALIZATION

IMU ALIGN (STAR PAIR A1)

PRE-SLEEP ACTIVITY  
 (ORB OPS, CREW SYS)

# STS-44 (FD 01)

PL

MCC

STS

COAS CALIBRATION (ORB OPS)

MNVR (TRK) -ZLV, +YVV

TC=2 BV=3 OM=270

A/AUTO/VERN Init TRK

CHANGE DAP B TO B1

LOAD FUTURE MNVR -ZLV -YVV

TC=2 BV=3 OM=90

A/AUTO/VERN (09:45) Init TRK

EMU CHECKOUT AT 10.2 PSI

(EVA, EMU CHECKOUT)

(2 Cmn)

## 19A (EVA) INSERTION

06 UHF MODE - OFF  
PRIVATE MEDICAL CONFERENCE

UHF MODE - SPLX (or aa reqd)

### COAS CALIBRATION LOG

STAR ID: -Z \_\_\_\_\_ , \_\_\_\_\_

STAR AVAIL: \_\_\_\_ : \_\_\_\_ TO \_\_\_\_ : \_\_\_\_

-Z Δ BIAS \_\_\_\_\_ , \_\_\_\_\_

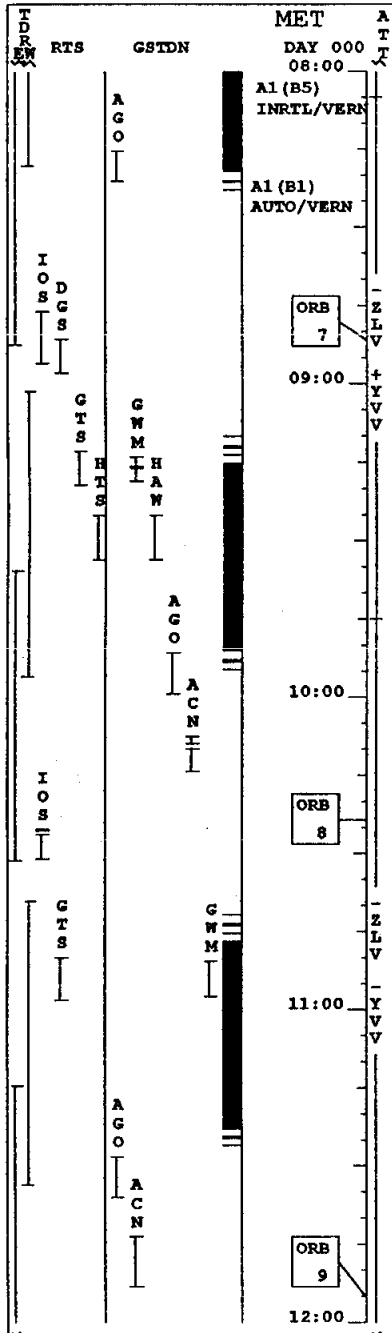
UPDATE TIME: \_\_\_\_ / \_\_\_\_ : \_\_\_\_ : \_\_\_\_

PRE-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

PRELOADED -ZLV -YVV MNVR

### FDA SLEEP CONFIG

CRT	SM 62 PCMMU/PL COMM
	DECOM ENA
FDA 1	- ITEM 14 EXEC (no *)
2	- ITEM 15 EXEC (no *)
3	- ITEM 16 EXEC (no *)
4	- ITEM 17 EXEC (no *)



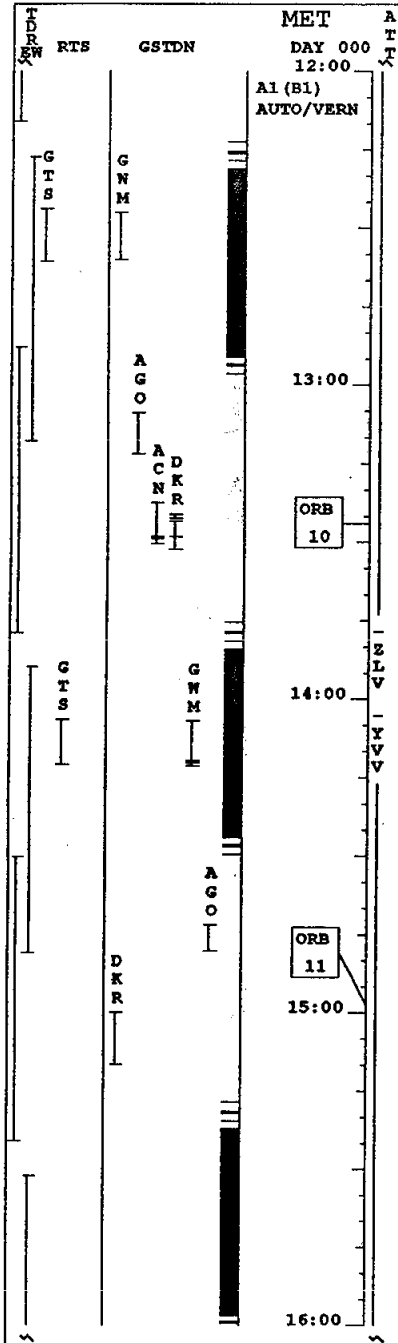
UPLINK (TDRE)  
DELTA  
QUATERNION

# STS-44 (FD 01)

PL

MCC

## 19A (EVA) INSERTION

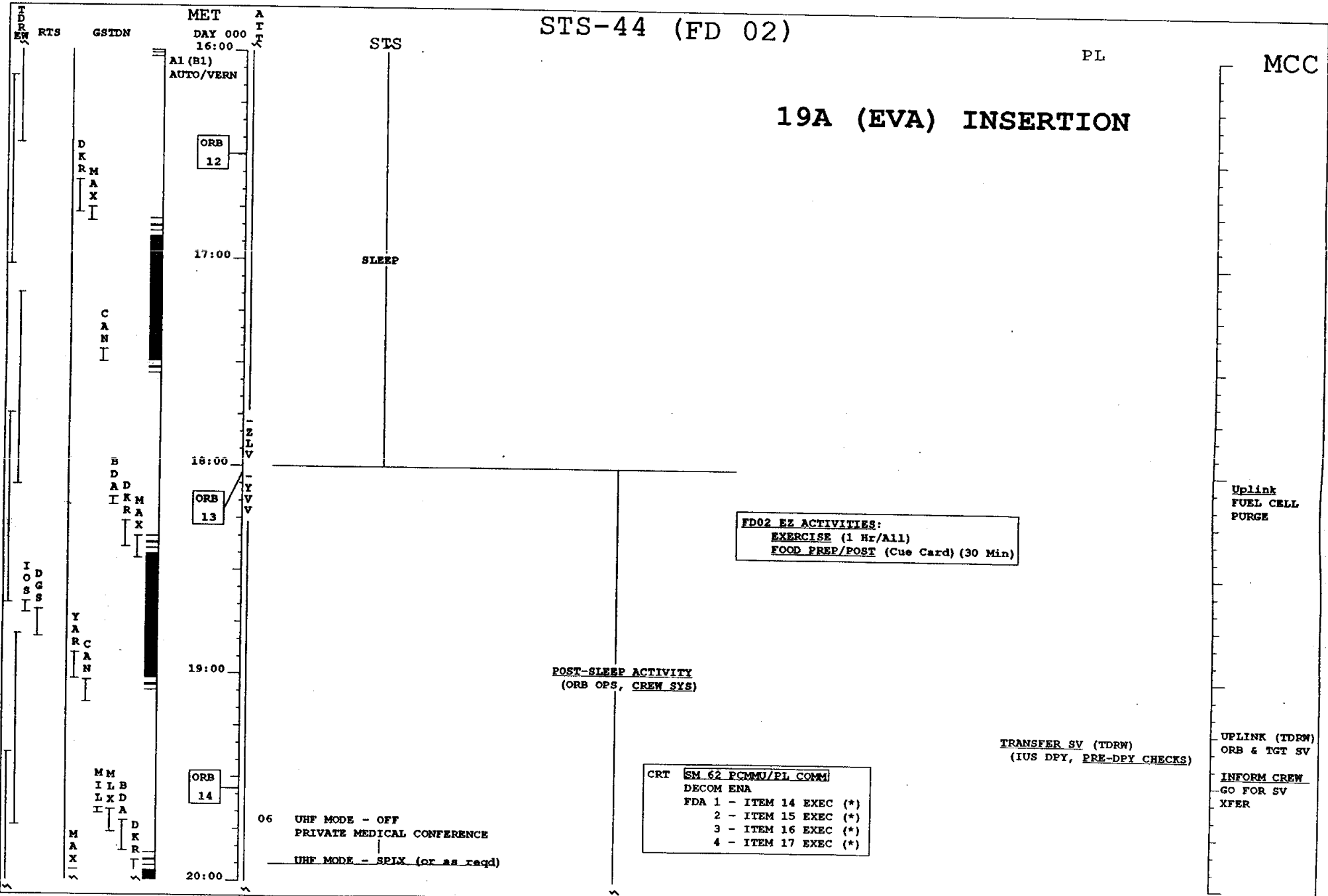


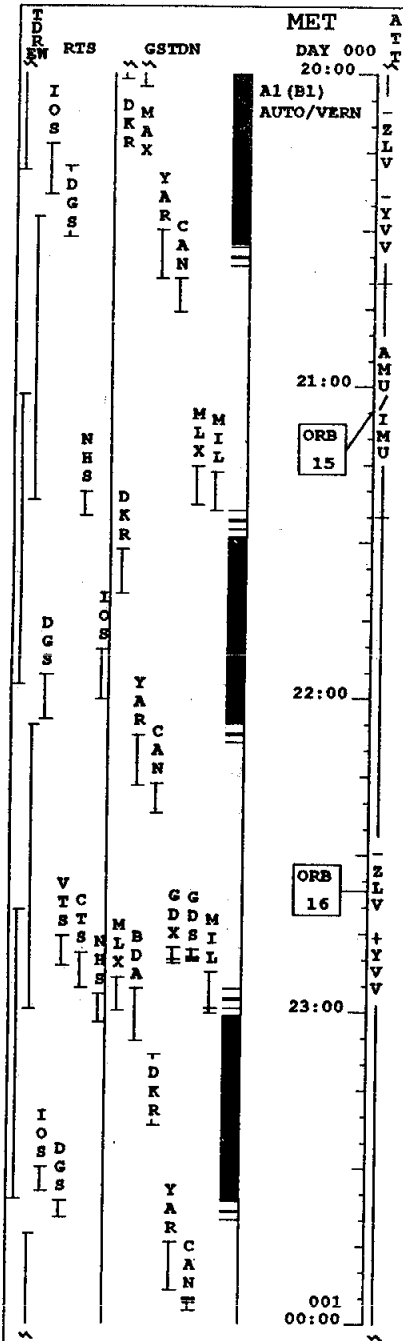
# STS-44 (FD 02)

PL

MCC

## 19A (EVA) INSERTION





# STS-44 (FD 02)

PL

MCC

10.2 PSI MAINTENANCE  
(EVA, 10.2 PSI CABIN)

## 19A (EVA) INSERTION

UPLINK (TDRE)  
AMU VARIABLE  
PARAMETERS  
UPDATE (TDRE)  
IMU TO  
DESELECT

POST-SLEEP ACTIVITY  
(ORB OPS, CREW SYS)

AMU/IMU SEQUENCE  
(IUS DPY, PRE-DPY CHECKS)

IMU ALIGN (STAR PAIR A1)

MNVR (TRK) -ZLV, +YVU  
TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

EVA PREP  
(EVA, EVA PREP)  
(3 Cmn)

IMU ALIGN LOG

REQD ID:

-Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
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EXECUTION TIME:

\_\_\_ / \_\_\_ : \_\_\_ : \_\_\_

P/TVO4 SETUP (DEPLOY OPS-DSP)  
(PHOTO/TV, P/TV SCENES)

← BEGIN 75 MIN IN-SUIT PREBREATHE

IUS PREDEPLOY C/O (TDRE)  
(IUS DPY, PRE-DPY CHECKS)

UPLINK  
DELTA  
QUATERNION

INFORM CREW  
GO FOR PWR  
XFER  
GO FOR PDCCO  
IUS ANT  
VTS AOS \_\_\_ :  
VTS LOS \_\_\_ :

TRANSFER SV (TDRE)  
(IUS DPY, PRE-DPY CHECKS)

UPLINK (TDRE)  
ORB SV

EVA PREP FOR IUS  
MANUAL ELEVATION  
(C EVA, CONTINGENCY EVA)  
(BLOCK 1)

INFORM CREW  
GO FOR SV  
XFER

AIRLOCK DEPRESS  
(Cue Card)  
(3 Cmn)

IUS MANUAL ELEV  
(C EVA, CONTINGENCY EVA)  
(BLOCK 2)

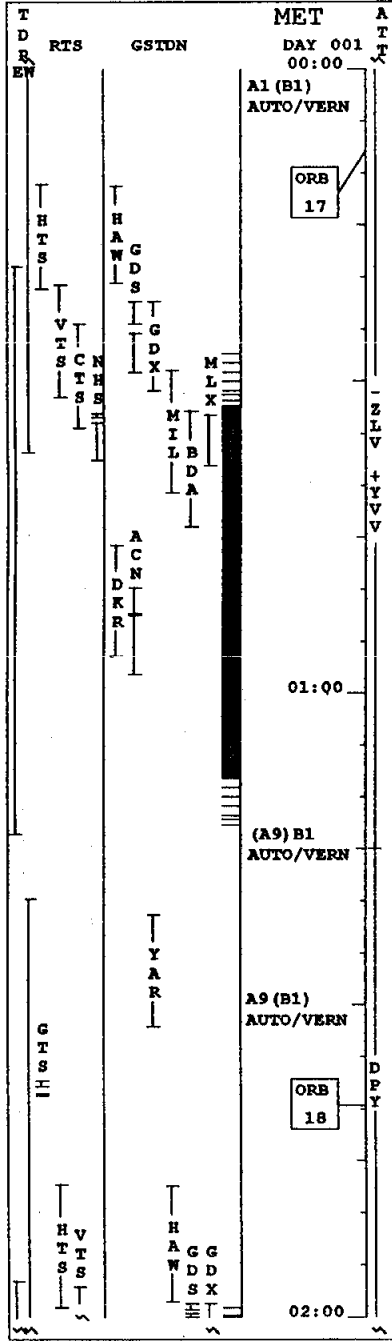


# STS-44 (FD 02)

STS

MCC

## 19A (EVA) INSERTION



L1 FLASH EVAP CNTRL PRI A(B)-OFF

MNR TO DEPLOY ATTITUDE  
(IUS DPY, DEPLOY OPS)

TRANSFER SV (TDRW)  
(IUS DPY, PRE-DEY CHECKS)

P/TV04 ACT (DEPLOY OPS - DSP)  
(PHOTO/TV, P/TV SCENES)

EVA (IUS MANUAL ELEV)  
(EVA, EVA CUFF C/L)

egress

IUS MANUAL ELEV  
(C EVA, CONTINGENCY EVA)  
(BLOCK 2)

IUS/PI LOCK  
(IUS DPY, LATE CHECKS)

DEPLOY COUNTDOWN  
(IUS DPY, DEPLOY OPS)  
XFER TO INT PWR  
REL UMBILICALS  
TILT TABLE TO 58

UPDATE (TDRW)  
DPY/BURN PADS

UPLINK (TDRW)  
ORB & TGT SV  
INFORM CREW  
GO FOR SV XFER

INFORM CREW  
GO FOR DEPLOY

ingress

# STS-44 (FD 02)

STS

MCC

## 19A (EVA) INSERTION

MET DAY 001 02:00  
 A9 (B1) AUTO/VERN  
 (A9) B1 FREE/PRI  
 (A9) B1 AUTO/PRI  
 (A9) B1 INRTL/PRI  
 (A9) B1 AUTO/PRI  
 (A1) B1 AUTO/VERN  
 A9 (B1) AUTO/PRI  
 03:00 (A9) B1 AUTO/VERN  
 (A9) B1 INRTL/VERN  
 ORB 19  
 A1 (B1) AUTO/VERN  
 04:00

SEP MNVR  
 (IUS DPLY, POST DPLY OPS)

OMS BURN  
 MNVR TO IUS VIEWING ATT

PI OFF

MNVR TO PROTECT ATT

CHANGE DAP A TO A1

MNVR (TRK) -ZLV, +YVV  
 TG-2 BV-3 OM-270  
 A/AUTO/VERN Init TRK

SNACK

EVA (IUS MANUAL ELEV)  
 (EVA, EVA CUFF C/L)

ingress

PL  
 DEPLOY COUNTDOWN  
 (IUS DPLY, DEPLOY OPS)  
 XFER TO INT PWR  
 REL UMBILICALS  
 TILT TABLE TO 58  
 DEPLOY IUS/DSP  
 (IUS DPLY, DEPLOY OPS)  
 LOWER TILT TABLE TO -6  
 (IUS DPLY, POSTDEPLOY OPS)

IUS DEPLOY (02:09)

OMS SEP BURN (02:24)

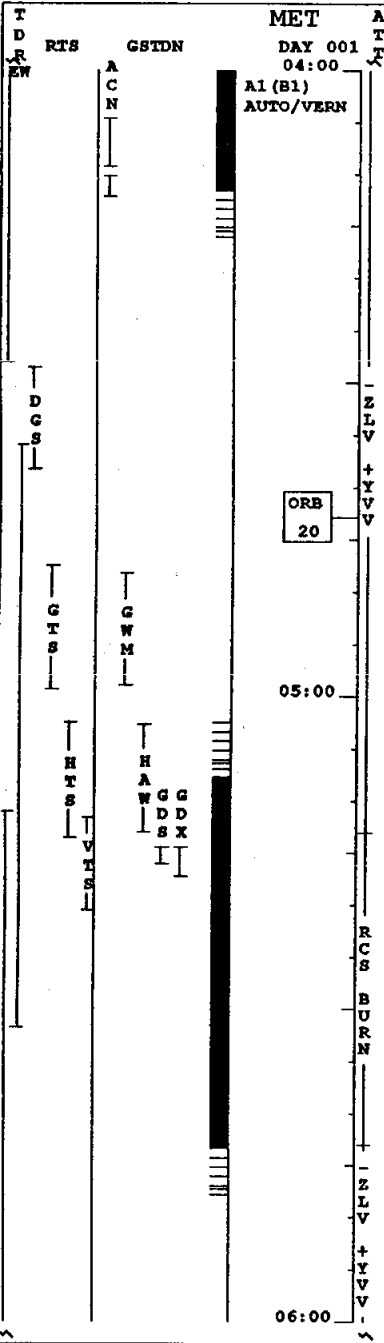
EVA (MANUAL LOWERING, ASE)  
 (EVA, EVA CUFF C/L)  
 IF REQUIRED

egress

TILT TABLE STOWAGE  
 (C EVA, CONTINGENCY EVA)  
 (BLOCK 6)

SRM 1 IGNITION (03:09)

# STS-44 (FD 02)



STS  
SNACK

## 19A (EVA) INSERTION

KU-BD ACTIVATION (COMM mode)  
(ORB OPS, COMM/INST)

ORB  
20

05:00

06:00

CLOSEOUT  
(IUS DPLY, POST DPLY OPS)

LOAD PCMMU FMT (ORB OPS FS)  
Load 103/161

VTR SETUP (04-DPLY OPS)  
(Cue Card, TV/VTR)

ON-ORBIT +X BURN  
(ORB OPS, RCS)  
(2 Cmn)

◀ ARCS-TIG ( : )

MNVR (TRK) -ZLV, +YVV  
TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

VTR PLAYBACK (04-DPLY OPS)  
(Cue Card, TV/VTR)  
VTR at TDRE (08:25-08:40)

EVA (IUS MANUAL ELEV)  
(EVA, EVA CUFF C/L)

PL  
TILT TABLE STORAGE  
(C EVA, CONTINGENCY EVA)  
(BLOCK 6)

MCC

Ingress

AIRLOCK REPRESS  
(Cue Card)  
(3 Cmn)

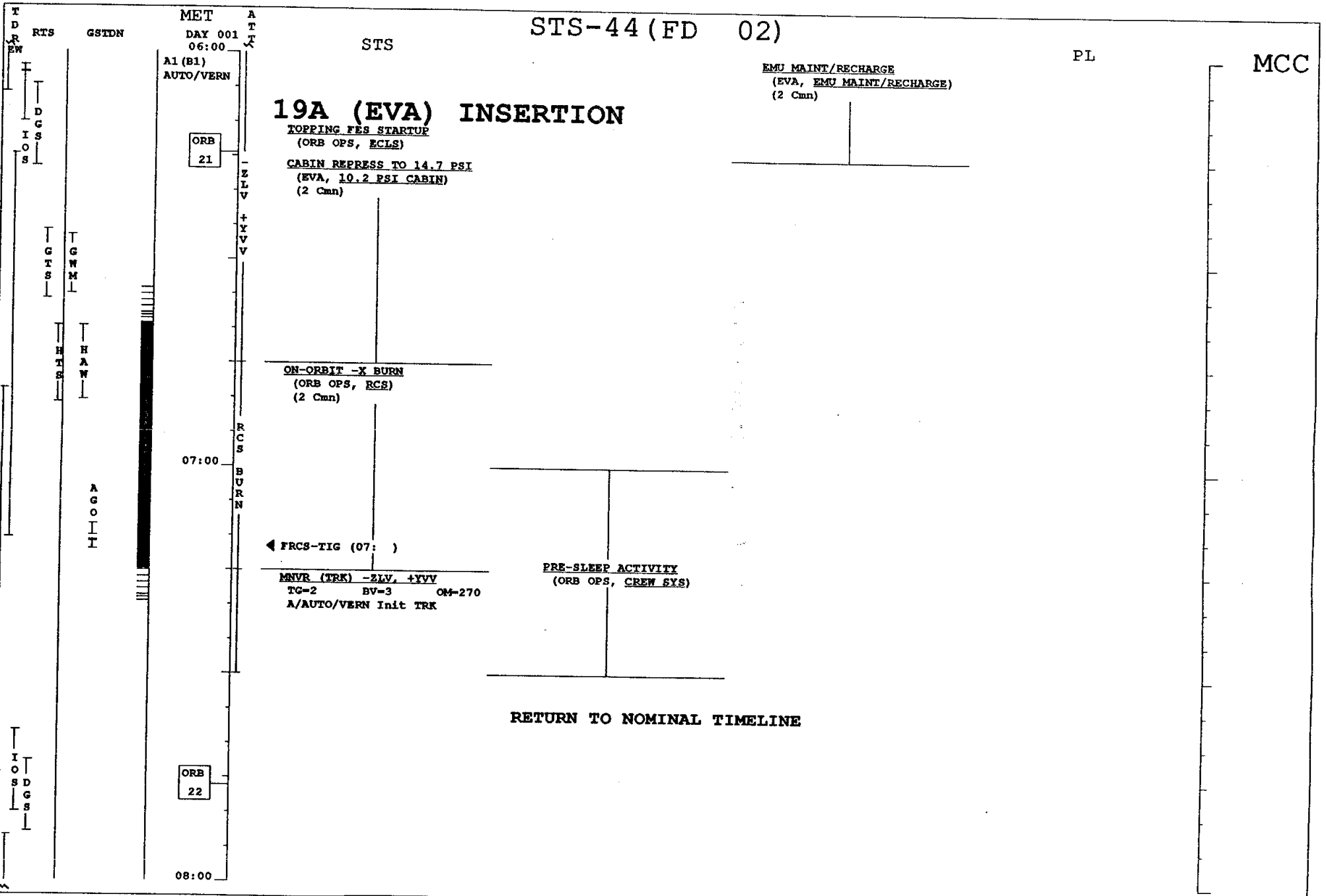
POST EVA  
(EVA, POST EVA)  
(3 Cmn)

EMU MAINT/RECHARGE  
(EVA, EMU MAINT/RECHARGE)  
(2 Cmn)

UPLINK  
TWTA INH-DIS

VTR ( )

VTR ( )



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will not be included in flight copies.**

ATTITUDE TIMELINE

ATTITUDE  
TIMELINE

Attitude Timeline

GMT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 324/01:03:00 GMT 12:55 000/01:12:00 MET 21:55	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO PRI	DSC 0.200 DB AT 5.00 DB RT 0.20	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH PLBD OPENING IUS DIR CHECK
2 324/03:51:00 GMT 04:03:52 000/04:00:00 MET 12:52	INRTL R= 15.00 MNVR P=285.00 Y= 45.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 191 P 150	SLM DTO -Y ST: 27	AMU ATT #1
3 324/04:06:00 GMT 16:01 000/04:15:00 MET 25:01	INRTL R= 12.00 MNVR P=188.00 Y=323.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 206 P 31	SLM DTO -Y ST: 22	AMU ATT #2
4 324/04:18:00 GMT 28:00 000/04:27:00 MET 37:00	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 151 P 107	STAR PAIR A1 -Y ST: 57 -Z ST: 18	AMU ATT #3 IMU ALIGN AMU ATT #4
5 324/04:36:00 GMT 45:55 000/04:45:00 MET 54:55	TGT=4 RA= 234.465 BV=5 DEC= -19.4395 P=273.00 Y= 0.00 OM=270.00 DEPLOY 0/06:18:54	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 180 P 87	INRTL R= 50.20 P=234.30 Y=359.80	IUS/DSP-16 DEPLOY ATT
6 324/06:10:54 GMT 000/06:19:54 MET  DPLY +01:00	INRTL BV=5 ROTR P= 0.00 Y=270.00	B1 FREE PRI	DSC 0.420 DB AT 3.00 DB RT 0.20		ROT R= 50.25 START P=234.21 ATT Y=359.81	-2.2 FPS SEP BEGIN -70 DEG PITCH
7 324/06:11:02 GMT 000/06:20:02 MET	INRTL BV=5 ROTR P= 0.00 Y=270.00	B1 FREE PRI	DSC 0.840 DB AT 3.00 DB RT 0.20		ROT R= 50.19 START P=232.06 ATT Y=357.23	SEP CUTOFF
8 324/06:12:21 GMT 000/06:21:21 MET		B1 INRT PRI	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN R 180 P 17	INRTL R= 22.39 HOLD P=174.06 Y=313.76	NULL PITCH RATES
9 324/06:16:54 GMT 18:49 000/06:25:54 MET 27:49  DPLY +07:00	INRTL R= 9.00 MNVR P=168.00 Y= 10.00	B1 AUTO PRI	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN R 247 P 62	TIG: 0/06:33:54	OMS SEP ATT
10 324/06:26:54 GMT 35:33 000/06:35:54 MET 44:33	TGT=1 BV=3 P= 90.00 Y= 0.00 OM= 0.00	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02			IUS VIEWING
11 324/06:54:54 GMT 59:14 000/07:03:54 MET 08:14  DPLY +45:00	TGT=1 BV=5 P=320.00 Y= 0.00 OM= 0.00	B1 AUTO PRI	DSC 0.500 DB AT 3.00 DB RT 0.20			WINDOW PROTECT
12 324/07:09:54 GMT 000/07:18:54 MET  DPLY +60:00		B1 INRT VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 12 P 90	INRTL R=255.11 HOLD P=324.65 Y=320.47	IUS SRM-1

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
\*\*\* PYR EULER SEQUENCE \*\*\*



Attitude Timeline

GMT/MET	MNVR OPTION	DAF	E/S	REF ATT/REMARKS	EVENT	
1 324/07:21:00 GMT 36:00 000/07:30:00 MET 45:00	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00 AMOS TCA 0/07:53:18	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD AMOS RCS TEST VTR DUMP
2 324/09:06:00 GMT 14:36 000/09:15:00 MET 23:36	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 151 P 107	STAR PAIR A1	IMU ALIGN
3 324/09:26:00 GMT 38:51 000/09:35:00 MET 47:51	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH
4 324/21:21:00 GMT 32:39 000/21:30:00 MET 41:39	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 151 P 106	STAR PAIR A1 -2 COAS: 18 CAPELLA	IMU ALIGN COAS CAL
5 324/21:46:00 GMT 22:00:37 000/21:55:00 MET 22:09:37	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT
6 325/05:11:00 GMT 26:00 001/05:20:00 MET 35:00	INRTL R=255.00 MNVR P=329.00 Y=338.00	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 16 P 107		ARCS-1 BURN TIG: 1/05:37:26
7 325/05:36:00 GMT 50:57 001/05:45:00 MET 59:57	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT
8 325/06:41:42 GMT 42:12 001/06:50:42 MET 51:12 AMOS TCA	TGT=2 BV=5 P= 96.00 Y= 0.00 OM=180.00	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 96	LVLH R=180.00 P= 6.00 Y= 0.00	FRCS-2 BURN LVLH EQUIVALENT
9 325/07:00:08 GMT 001/07:09:08 MET TIG -00:30		B1 INRT PRI	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN R 343 P 70	INRTL R=285.33 HOLD P=150.39 Y= 18.83	FRCS-2 BURN TIG: 1/07:09:38
10 325/07:06:00 GMT 08:25 001/07:15:00 MET 17:25	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT
11 325/08:06:00 GMT 14:32 001/08:15:00 MET 23:32	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 151 P 106	STAR PAIR A1	IMU ALIGN
12 325/08:26:00 GMT 38:48 001/08:35:00 MET 47:48	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH SUPPLY H2O DUMP

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
\*\*\* PYR EULER SEQUENCE \*\*\*

Attitude Timeline

GMT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 325/20:21:00 GMT 34:22 001/20:30:00 MET 43:22	INRTL R=140.00 MNVR P=166.00 Y= 38.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 118 P 91	STAR PAIR A2 -Y ST: 18 -Z ST: 57	IMU ALIGN
2 325/20:41:00 GMT 44:17 001/20:50:00 MET 53:17	INRTL R=178.00 MNVR P=122.00 Y= 70.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 110 P 123	+X COAS: 11 SIRIUS	COAS CAL
3 325/20:51:00 GMT 21:03:02 001/21:00:00 MET 12:02	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT
4 325/22:36:00 GMT 43:30 001/22:45:00 MET 52:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH WASTE DUMP M88-1
5 326/03:11:00 GMT 18:30 002/03:20:00 MET 27:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT
6 326/05:31:00 GMT 39:42 002/05:40:00 MET 48:42	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 151 P 105	STAR PAIR A1	IMU ALIGN
7 326/05:51:00 GMT 06:05:18 002/06:00:00 MET 14:18	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00 AMOS TCA 2/07:20:42	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD AMOS RCS TEST
8 326/07:21:00 GMT 28:30 002/07:30:00 MET 37:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH SUPPLY H2O DUMP
9 326/19:16:00 GMT 28:10 002/19:25:00 MET 37:10	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 152 P 104	STAR PAIR A1	IMU ALIGN
10 326/19:36:00 GMT 50:02 002/19:45:00 MET 59:02	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
11 327/04:26:00 GMT 34:25 003/04:35:00 MET 43:25	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 152 P 104	STAR PAIR A1	IMU ALIGN
12 327/04:46:00 GMT 59:53 003/04:55:00 MET 05:08:53	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00 AMOS EL=30 3/06:12:07	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT AMOS FES TEST

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
\*\*\* PYR EULER SEQUENCE \*\*\*

Attitude Timeline

GMT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 327/06:21:00 GMT 28:30 003/06:30:00 MET 37:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH SUPPLY H2O DUMP
2 327/18:16:00 GMT 29:18 003/18:25:00 MET 38:18	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 152 P 103	STAR PAIR A1	IMU ALIGN
3 327/18:36:00 GMT 50:58 003/18:45:00 MET 59:58	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
4 328/00:21:00 GMT 28:30 004/00:30:00 MET 37:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH WASTE DUMP M88-1
5 328/03:26:00 GMT 39:14 004/03:35:00 MET 48:14	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 152 P 103	STAR PAIR A1	IMU ALIGN
6 328/03:46:00 GMT 04:00:52 004/03:55:00 MET 04:09:52	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT
7 328/04:40:00 GMT 42:52 004/04:49:00 MET 51:52 -TCA -17:00	TGT=3 BV=1 P= 0.00 Y= 0.00 OM=180.00 AMOS TCA 4/05:06:05	A1 AUTO PRI	DSC 0.200 DB AT 5.00 DB RT 0.20			AMOS NOSE TRK
8 328/04:59:05 GMT 004/05:08:05 MET TCA +02:00		A1 INRT PRI	DSC 0.200 DB AT 5.00 DB RT 0.20	SUN R 247 P 5	INRTL R=275.84 HOLD P=152.65 Y=304.97	AMOS NOSE TRK TERMINATION
9 328/05:06:00 GMT 17:15 004/05:15:00 MET 26:15	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH SUPPLY H2O DUMP
10 328/17:11:00 GMT 24:09 004/17:20:00 MET 33:09	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 152 P 103	STAR PAIR A1	IMU ALIGN
11 328/17:31:00 GMT 45:36 004/17:40:00 MET 54:36	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
12 328/23:06:00 GMT 16:34 004/23:15:00 MET 25:34	INRTL R=137.00 MNVR P=118.00 Y=306.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 213 P 15		CREW CONFERENCE

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
\*\*\* PYR EULER SEQUENCE \*\*\*

Attitude Timeline

GHT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 329/01:06:00 GMT 19:59 005/01:15:00 MET 28:59	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
2 329/03:56:00 GMT 04:05:55 005/04:05:00 MET 14:55	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 152 P 102	STAR PAIR A1	IMU ALIGN
3 329/04:16:00 GMT 27:07 005/04:25:00 MET 36:07	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH SUPPLY H2O DUMP
4 329/16:06:00 GMT 19:01 005/16:15:00 MET 28:01	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 153 P 102	STAR PAIR A1	IMU ALIGN
5 329/16:26:00 GMT 40:11 005/16:35:00 MET 49:11	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
6 329/23:36:00 GMT 43:30 005/23:45:00 MET 52:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH WASTE DUMP
7 330/01:26:00 GMT 33:30 006/01:35:00 MET 42:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT
8 330/02:51:00 GMT 03:00:36 006/03:00:00 MET 09:36	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 153 P 101	STAR PAIR A1	IMU ALIGN
9 330/03:11:00 GMT 22:20 006/03:20:00 MET 31:20	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH SUPPLY H2O DUMP
10 330/15:06:00 GMT 20:07 006/15:15:00 MET 29:07	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 153 P 101	STAR PAIR A1	IMU ALIGN
11 330/15:26:00 GMT 40:52 006/15:35:00 MET 49:52	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
12 331/03:21:00 GMT 31:05 007/03:30:00 MET 40:05	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 153 P 100	STAR PAIR A1	IMU ALIGN

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
\*\*\* PYR EULER SEQUENCE \*\*\*

Attitude Timeline

GMT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 331/03:41:00 GMT 51:48 007/03:50:00 MET 04:00:48	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH SUPPLY H2O DUMP
2 331/15:36:00 GMT 50:47 007/15:45:00 MET 59:47	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 153 P 100	STAR PAIR A1	IMU ALIGN
3 331/15:56:00 GMT 16:10:26 007/16:05:00 MET 19:26	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
4 332/02:16:00 GMT 25:46 008/02:25:00 MET 34:46	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 153 P 99	STAR PAIR A1	IMU ALIGN
5 332/02:36:00 GMT 47:02 008/02:45:00 MET 56:02	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH WASTE DUMP SUPPLY H2O DUMP
6 332/14:31:00 GMT 45:38 008/14:40:00 MET 54:38	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 154 P 99	STAR PAIR A1	IMU ALIGN
7 332/14:51:00 GMT 15:05:51 008/15:00:00 MET 14:51	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD
8 332/16:16:00 GMT 008/16:25:00 MET		A1 INRT VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 315 P 98	INRTL R=309.26 HOLD P=149.17 Y= 41.36	RCS HOT FIRE
9 332/16:31:00 GMT 35:54 008/16:40:00 MET 44:54	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD FCS C/O PART 1 M88-1
10 332/17:21:00 GMT 008/17:30:00 MET		A1 INRT VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 245 P 130	INRTL R= 58.93 HOLD P= 11.01 Y= 23.02	FCS C/O PART 2
11 332/17:51:00 GMT 18:00:48 008/18:00:00 MET 09:48	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV NOSE FWD TERRA SCOUT M88-1
12 332/22:36:00 GMT 43:30 008/22:45:00 MET 52:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
\*\*\* PYR EULER SEQUENCE \*\*\*

Attitude Timeline

GMT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 333/02:46:00 GMT 03:00:57 009/02:55:00 MET 03:09:57	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 154 P 98	STAR PAIR A1	IMU ALIGN
2 333/03:06:00 GMT 16:36 009/03:15:00 MET 25:36	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV NOSE SOUTH
3 333/13:21:00 GMT 34:21 009/13:30:00 MET 43:21	INRTL R=132.00 MNVR P=348.00 Y=339.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 154 P 98	STAR PAIR A1	IMU ALIGN
4 333/13:41:00 GMT 52:19 009/13:50:00 MET 14:01:19	TGT=4 BV=5 P=184.00 Y= 0.00 OM=270.00 RA= 244.373 DEC= -21.358S	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 180 P 176	INRTL R= 26.49 P=311.28 Y= 55.50	TAIL SUN COLDSOAK
5 333/15:24:00 GMT 34:39 009/15:33:00 MET 43:39	INRTL R=154.00 MNVR P=189.00 Y=344.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 85 P 56	-Y ST: 31 -Z ST: 50	D/O IMU ALIGN
6 333/15:40:00 GMT 43:12 009/15:49:00 MET 52:12	INRTL R=271.00 MNVR P=347.00 Y=288.00	B1 AUTO PRI	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN R 19 P 49	-Y ST: 49 -Z ST: 19	ALIGN VERIF
7 333/15:48:00 GMT 52:23 009/15:57:00 MET 16:01:23	INRTL R=125.00 MNVR P= 91.00 Y=332.00	B1 AUTO PRI	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN R 180 P 44		TDRS COMM ATT
8 333/18:07:00 GMT 12:18 009/18:16:00 MET 21:18 -TIG -15:00	INRTL R=241.00 MNVR P=359.00 Y=354.00	TRNS AUTO PRI	DSC 0.500 DB AT 3.50 DB RT 0.30	SUN R 51 P 108	TIG: 9/18:30:52	D/O BURN ATT

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
\*\*\* PYR EULER SEQUENCE \*\*\*

STS-44 DAP BOOK

## DAP A CONFIGURATIONS

	ITEM #	A1*	A2	A3	A4	A5	A6	A7	A8	A9
<u>TRANSLATION</u>										
PULSE ft/sec	1	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.25
<u>ROTATION</u>										
DSC RT NORM °/sec	2	0.200	0.400	0.200	0.500	0.200	0.200	0.200	0.200	0.200
VERN °/sec	3	0.200	0.400	0.008	0.200	0.200	0.200	0.200	0.200	0.200
PULSE NORM °/sec	4	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05
VERN °/sec	5	0.010	0.010	0.010	0.010	0.050	0.010	0.010	0.010	0.010
COMP NORM °/sec	6	.00	.00	.00	.00	.00	.00	.00	.00	.00
VERN °/sec	7	.000	.000	.000	.000	.000	.000	.000	.000	.000
<u>DEADBAND</u>										
ATT NORM (deg)	8	5.00	1.00	1.00	3.00	5.00	5.00	2.00	2.00	1.00
VERN (deg)	9	1.000	1.000	0.070	1.000	1.000	1.000	1.000	1.000	1.000
RATE NORM °/sec	10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
VERN °/sec	11	.020	.020	.010	.020	.020	.020	.020	.020	.010
<u>JET OPT</u>										
P	12	1	1	1	1	1	3	1 or 3	1	3
Y	13	1	1	3	1	1	3	1 or 3	1	3
<u>CNTL ACCEL</u>	14	0	0	0	0	0	0	0	0	0

\*I-LOADED OPS-2 DAP Configuration



ALT DAP CONFIGURATIONS

	ITEM #	ALT1*
RATE DEADBAND	32	0.200
JET OPTION	33	1
NUMBER OF JETS	34	2
ON TIME	35	0.08
DELAY	36	0.00

\*I-LOADED OPS-2 DAP  
Configuration

DAP B CONFIGURATIONS

	ITEM #	B1*	B2	B3	B4	B5	B6	B7	B8
<u>TRANSLATION</u>									
PULSE ft/sec	15	0.02	0.02	0.02	0.02	0.02		0.05	0.01
<u>ROTATION</u>									
DSC RT NORM °/sec	16	0.500	0.200	0.200	0.200	0.200		0.500	0.200
VERN °/sec	17	0.200	0.200	0.200	0.008	0.016		0.200	0.200
PULSE NORM °/sec	18	0.04	0.04	0.04	0.04	0.04		0.04	0.04
VERN °/sec	19	0.002	0.002	0.002	0.002	0.002		0.002	0.002
COMP NORM °/sec	20	.00	.00	.00	.00	.00		.00	.00
VERN °/sec	21	.000	.000	.000	.000	.000		.000	.000
<u>DEADBAND</u>									
ATT NORM (deg)	22	3.00	3.00	3.00	0.30	3.00		2.00	2.00
VERN (deg)	23	1.000	1.000	1.000	0.100	0.033		1.000	1.000
RATE NORM °/sec	24	0.20	0.20	0.20	0.20	0.20		0.20	0.20
VERN °/sec	25	.020	.020	.020	.010	.020		.020	.020
<u>JET OPT</u>									
P	26	1	3	1	3	3		1 or 3	1
Y	27	1	3	1	3	3		1 or 3	1
<u>CNTL ACCEL</u>									
	28	0	0	0	0	0		0	0

\*I-LOADED OPS-2 DAP Configuration

# DAP BOOK

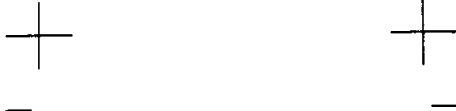
HOOK  
VELCRO

FLT PLN-1a/44/0/B

UNIV PTG	
<p>TGT ID = 1 Orbiting Vehicle                      = 2 Earth ctr                      = 3 Earth tgt                          Input LAT (<math>\pm 90</math>)                                  LON (<math>\pm 180</math>, + = East)                                  ALT (-3444.0 to                                      20000.0 nm)                      = 4 Sun ctr                      = 5 Celestial tgt                          Input RA (0-359.99)                              DEC (<math>\pm 90</math>)                      = 11-110 Nav Stars</p>	<p>CNTL ACCEL = 0 Orbiting alone                                  = 1-5 Not used</p> <p>PRI JET OPT = 1 Normal                                  = 2 Nose only                                  = 3 Tail only</p> <p>Alt JET OPT = 1 Normal                                  = 2 Illegal entry                                  = 3 Tail only</p>
<p>BODY VECT = 1 +X*                                  = 2 -X*                                  = 3 -Z*                                  = 4 PTC (<math>\sim 2^\circ</math> below +X)*                                  = 5 Optional                                      Input P (0-359.99)                                          Y (270-359.99, 0-90)                                          OM (0-359.99)</p>	
<p>* input OM +                      MON AXIS = 1 +X                                  2 -X</p>	

FLT PLN-1b/44/0/B

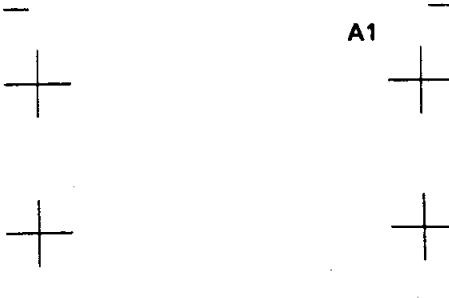
TOP



DAP                      PURPOSE

- A1 - NOMINAL  
IMU ALIGN  
LOSS OF VERN  
(NOSE & TAIL)
- A2 - PTC
- A3 - GG
- A4 - PRE/POST DEPLOY
- A5 - IMU ROTATION
- A6 - LOSS OF VERN  
(TAIL ONLY)
- A7 - RENDEZVOUS
- A8 - PROX OPS
- A9 - IUS DEPLOY

FLT PLN-2a/44/0/A



A1

**DAP A1**

PURPOSE:

- NOMINAL
- IMU ALIGN
- LOSS OF VERN  
(NOSE & TAIL)

TOP



**A1**

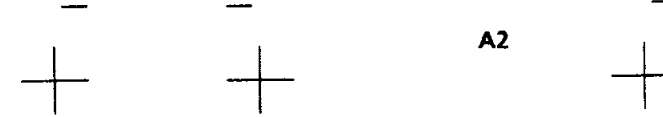
- 0.1 0 1 TRANSLATION PULSE
- 0.2 0 0 2 ROTATION DSC RT NORM
- 0.2 0 0 3 VERN
- 0.1 0 4 PULSE NORM
- 0.0 1 0 5 VERN
- .0 0 0 6 COMP NORM
- .0 0 0 7 VERN
- 5.0 0 8 DEADBAND ATT NORM
- 1.0 0 0 9 VERN
- 0.2 0 10 RATE NORM
- .0 2 0 11 VERN
- 1 12 JET OPT P
- 1 13 Y
- 0 14 CNTL ACCEL

FLT PLN-2b/44/0/A

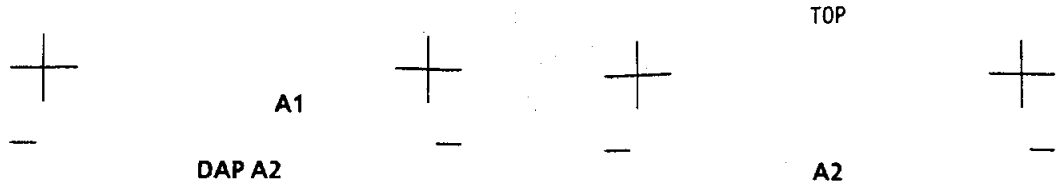


TOP

FLT PLN-3a/44/0/A



**A2**



**DAP A2**

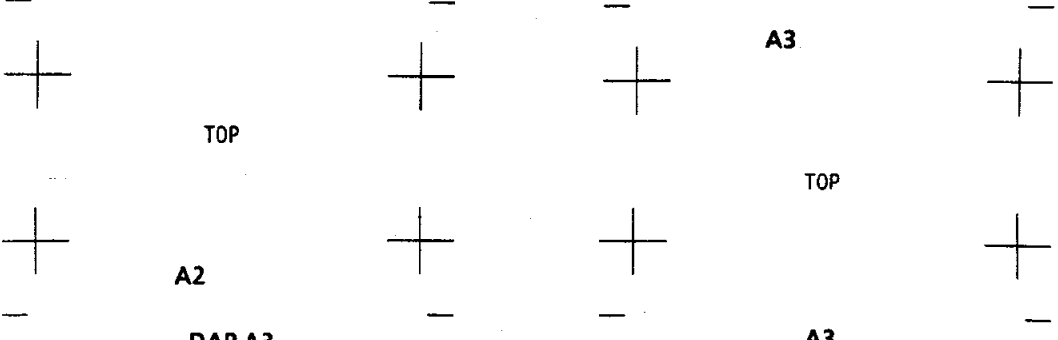
PURPOSE:  
PTC

**A2**

- 0.1 0 1 TRANSLATION PULSE
- 0.4 0 0 2 ROTATION DSC RT NORM
- 0.4 0 0 3 VERN
- 0.1 0 0 4 PULSE NORM
- 0.0 1 0 5 VERN
- .0 0 0 6 COMP NORM
- .0 0 0 7 VERN
- 1.0 0 8 DEADBAND ATT NORM
- 1.0 0 0 9 VERN
- 0.2 0 10 RATE NORM
- .0 2 0 11 VERN
- 1 12 JET OPT P
- 1 13 Y
- 0 14 CNTL ACCEL

FLT PLN-3b/44/0/A

FLT PLN-4a/44/0/A



**TOP**

**TOP**

**A2**

**A3**

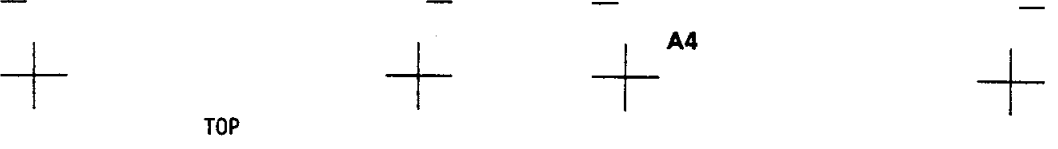
**DAP A3**

PURPOSE:  
GG

- 0.1 0 1 TRANSLATION PULSE
- 0.2 0 0 2 ROTATION DSC RT NORM
- 0.0 0 8 3 VERN
- 0.1 0 0 4 PULSE NORM
- 0.0 1 0 5 VERN
- .0 0 0 6 COMP NORM
- .0 0 0 7 VERN
- 1.0 0 8 DEADBAND ATT NORM
- 0.0 7 0 9 VERN
- 0.2 0 10 RATE NORM
- .0 1 0 11 VERN
- 1 12 JET OPT P
- 3 13 Y
- 0 14 CNTL ACCEL

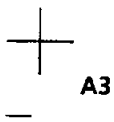
FLT PLN-4b/44/0/A

FLT PLN-5a/44/0/A



**TOP**

**A4**



A3

**DAP A4**

PURPOSE:  
PRE/POST DEPLOY

TOP



**A4**

0.1 0	1	TRANSLATION PULSE	
0.5 0 0	2	ROTATION DSC RT	NORM
0.2 0 0	3		VERN
0.1 0 0	4	PULSE	NORM
0.0 1 0	5		VERN
.0 0 0	6	COMP	NORM
.0 0 0	7		VERN
3.0 0	8	DEADBAND ATT	NORM
1.0 0 0	9		VERN
0.2 0	10	RATE	NORM
0.0 2 0	11		VERN
1	12	JET OPT	P
1	13		Y
0	14	CNTL ACCEL	

FLT PLN-5b/44/0/A

FLT PLN-6a/44/0/A



TOP



A5



**DAP A5**

PURPOSE:  
IMU ROTATION

TOP

A4



**A5**

0.1 0	1	TRANSLATION PULSE	
0.2 0 0	2	ROTATION DSC RT	NORM
0.2 0 0	3		VERN
0.1 0 0	4	PULSE	NORM
0.0 5 0	5		VERN
.0 0 0	6	COMP	NORM
.0 0 0	7		VERN
5.0 0	8	DEADBAND ATT	NORM
1.0 0 0	9		VERN
0.2 0	10	RATE	NORM
.0 2 0	11		VERN
1	12	JET OPT	P
1	13		Y
0	14	CNTL ACCEL	

FLT PLN-6b/44/0/A

FLT PLN-7a/44/0/A



TOP



A6





TOP



A5

DAP A6

PURPOSE:

LOSS OF VERN  
(TAIL ONLY)

A6

0.1 0

1 TRANSLATION  
PULSE

ROTATION

0.2 0 0

2 DSC RT NORM

0.2 0 0

3 VERN

0.1 0 0

4 PULSE NORM

0.0 1 0

5 VERN

.0 0 0

6 COMP NORM

.0 0 0

7 VERN

DEADBAND

5.0 0 0

8 ATT NORM

1.0 0 0

9 VERN

0.2 0 0

10 RATE NORM

.0 2 0

11 VERN

3

12 JET OPT P

3

13 Y

0

14 CNTL ACCEL

FLT PLN-7b/44/0/A

FLT PLN-8a/44/0/A



A7



TOP

TOP



A6

DAP A7

PURPOSE:

RENDEZVOUS

A7

0.1 0

1 TRANSLATION  
PULSE

ROTATION

0.2 0 0

2 DSC RT NORM

0.2 0 0

3 VERN

0.1 0 0

4 PULSE NORM

0.0 1 0

5 VERN

.0 0 0

6 COMP NORM

.0 0 0

7 VERN

DEADBAND

2.0 0 0

8 ATT NORM

1.0 0 0

9 VERN

0.2 0 0

10 RATE NORM

.0 2 0

11 VERN

1 or 3

12 JET OPT P

1 or 3

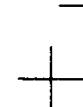
13 Y

0

14 CNTL ACCEL

FLT PLN-8b/44/0/A

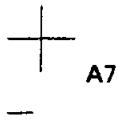
FLT PLN-9a/44/0/A



A8



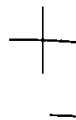
TOP



A7

DAP A8

PURPOSE:  
PROX OPS



TOP



A8

0.0	5	1	TRANSLATION	
			PULSE	
ROTATION				
0.2	0	0	2	DSC RT NORM
0.2	0	0	3	VERN
0.1	0		4	PULSE NORM
0.0	1	0	5	VERN
.0	0		6	COMP NORM
.0	0		7	VERN
DEADBAND				
2.0	0		8	ATT NORM
1.0	0		9	VERN
RATE				
0.2	0		10	NORM
.0	2	0	11	VERN
1			12	JET OPT P
1			13	Y
0			14	CNTL ACCEL

FLT PLN-9b/44/0/A

FLT PLN-10a/44/0/A



TOP



A9



DAP A9

PURPOSE:  
IUS DEPLOY

A8



TOP



A9

0.2	5	1	TRANSLATION	
			PULSE	
ROTATION				
0.2	0	0	2	DSC RT NORM
0.2	0	0	3	VERN
0.0	5		4	PULSE NORM
0.0	1	0	5	VERN
.0	0		6	COMP NORM
.0	0		7	VERN
DEADBAND				
1.0	0		8	ATT NORM
1.0	0		9	VERN
RATE				
0.2	0		10	NORM
.0	1	0	11	VERN
3			12	JET OPT P
3			13	Y
0			14	CNTL ACCEL

FLT PLN-10b/44/0/A

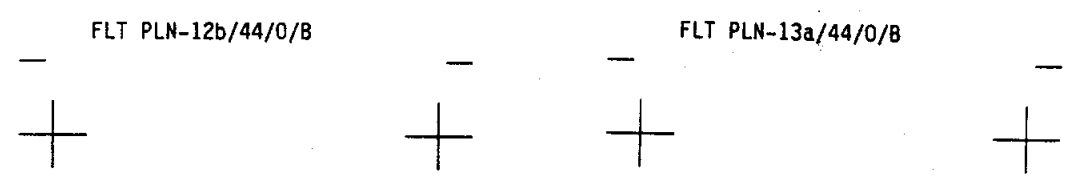
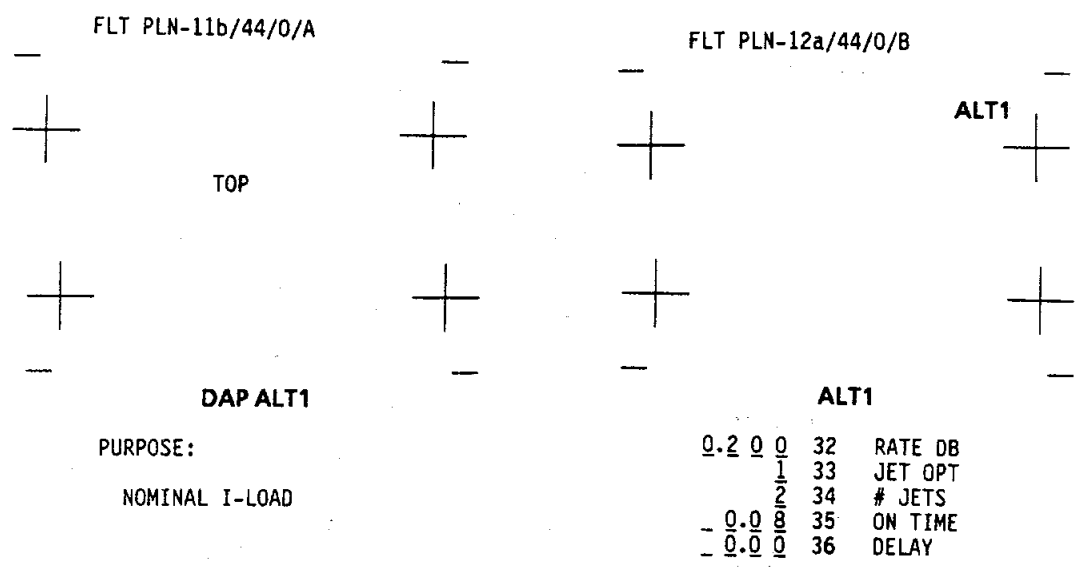
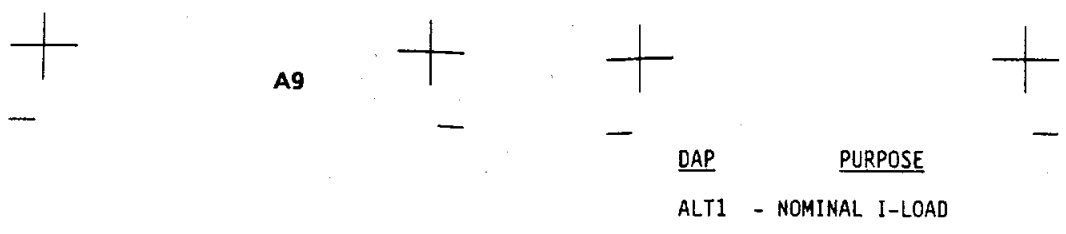
FLT PLN-11a/44/0/A



TOP







TOP



ALT1



DAP                    PURPOSE

- B1 - NOMINAL  
      PRCS IMU ALIGN  
      OMS & RCS BURNS
- B2 - LOSS OF VERN  
      (TAIL ONLY)
- B3 - LOSS OF VERN  
      (NOSE & TAIL)  
      GG MNVR
- B4 - SSUS DEPLOY
- B5 - COAS CAL
- B6 - (Blank)
- B7 - RENDEZVOUS
- B8 - PROX OPS

FLT PLN-13b/44/0/B



B1



TOP



DAP B1

PURPOSE:

NOMINAL  
PRCS IMU ALIGN  
OMS & RCS BURNS

B1

TRANSLATION  
PULSE            15        0.0 2

ROTATION

DSC RT	NORM	16	0.5	0	0
	VERN	17	0.2	0	0
PULSE	NORM	18	0.0	4	
	VERN	19	0.0	0	2
COMP	NORM	20	.0	0	0
	VERN	21	.0	0	0

DEADBAND

ATT	NORM	22	3.0	0	0
	VERN	23	1.0	0	0

RATE	NORM	24	0.2	0	0
	VERN	25	.0	2	0

JET OPT	P	26	1		
	Y	27	1		

CNTL ACCEL        28        0

FLT PLN-14b/44/0/B



B2



TOP

FLT PLN-15a/44/0/B

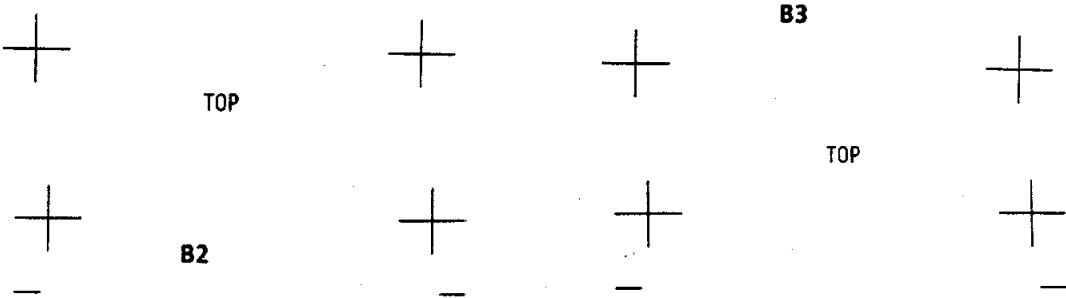


B1

DAP B2

PURPOSE:  
LOSS OF VERN  
(TAIL ONLY)

FLT PLN-15b/44/0/B



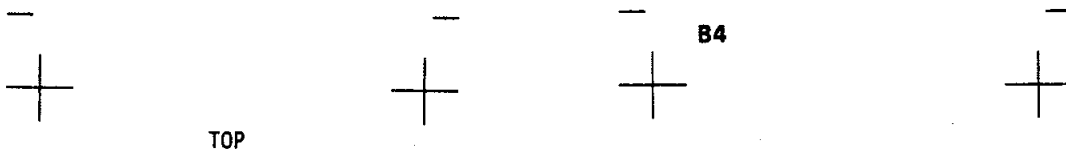
TOP

B2

DAP B3

PURPOSE:  
LOSS OF VERN  
(NOSE & TAIL)  
GG MNVR

FLT PLN-16b/44/0/B



B3

TOP

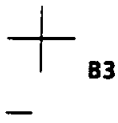
B3

TRANSLATION				
PULSE	15	0.0	2	
ROTATION				
DSC RT	NORM 16	0.2	0	0
	VERN 17	0.2	0	0
PULSE	NORM 18	0.0	4	
	VERN 19	0.0	2	
COMP	NORM 20	0.0	0	
	VERN 21	0.0	0	
DEADBAND				
ATT	NORM 22	3.0	0	
	VERN 23	1.0	0	
RATE				
	NORM 24	0.2	0	
	VERN 25	0.2	0	
JET OPT				
	P 26		3	
	Y 27		3	
CNTL ACCEL				
	28		0	

FLT PLN-17a/44/0/B

B4

TOP



B3

DAP B4

PURPOSE:

SSUS DEPLOY

FLT PLN-17b/44/0/B



TOP



DAP B5

PURPOSE:

COAS CAL

FLT PLN-18b/44/0/B



TOP



TOP



B4

TRANSLATION			
PULSE	15	0.0	2

ROTATION			
DSC RT	NORM	16	0.2 0 0
	VERN	17	0.0 0 8
PULSE	NORM	18	0.0 0 4
	VERN	19	0.0 0 2
COMP	NORM	20	.0 0 0
	VERN	21	.0 0 0

DEADBAND			
ATT	NORM	22	0.3 0
	VERN	23	0.1 0 0

RATE	NORM	24	0.2 0
	VERN	25	0.0 1 0

JET OPT	P	26	3
	Y	27	3

CNTL ACCEL 28 0

FLT PLN-18a/44/0/B



B5

TOP



B5

TRANSLATION			
PULSE	15	0.0	2

ROTATION			
DSC RT	NORM	16	0.2 0 0
	VERN	17	0.0 1 6
PULSE	NORM	18	0.0 0 4
	VERN	19	0.0 0 2
COMP	NORM	20	.0 0 0
	VERN	21	.0 0 0

DEADBAND			
ATT	NORM	22	3.0 0
	VERN	23	0.0 3 3

RATE	NORM	24	0.2 0
	VERN	25	0.0 2 0

JET OPT	P	26	3
	Y	27	3

CNTL ACCEL 28 0

FLT PLN-19a/44/0/B



B6



85  
**DAP B6**  
 PURPOSE: (Blank)

FLT PLN-19b/44/0/B

TOP  
 B6  
**DAP B7**

PURPOSE:  
 RENDEZVOUS

FLT PLN-20b/44/0/B

TOP

TOP  
 B6

TRANSLATION  
 PULSE 15    . . . .  
 ROTATION  
 DSC RT NORM 16    . . . .  
           VERN 17    . . . .  
 PULSE NORM 18    . . . .  
           VERN 19    . . . .  
 COMP NORM 20    . . . .  
           VERN 21    . . . .  
 DEADBAND  
 ATT NORM 22    . . . .  
           VERN 23    . . . .  
 RATE NORM 24    . . . .  
           VERN 25    . . . .  
 JET OPT P 26    . . . .  
           Y 27    . . . .  
 CNTL ACCEL 28    . . . .

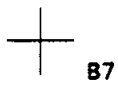
FLT PLN-20a/44/0/B

B7  
 TOP  
 B7

TRANSLATION  
 PULSE 15    0.0 5  
 ROTATION  
 DSC RT NORM 16    0.5 0 0  
           VERN 17    0.2 0 0  
 PULSE NORM 18    0.0 0 4  
           VERN 19    0.0 0 2  
 COMP NORM 20    .0 0 0  
           VERN 21    .0 0 0  
 DEADBAND  
 ATT NORM 22    2.0 0  
           VERN 23    1.0 0 0  
 RATE NORM 24    0.2 0  
           VERN 25    .0 2 0  
 JET OPT P 26    1 or 3  
           Y 27    1 or 3  
 CNTL ACCEL 28    0

FLT PLN-21a/44/0/B

B8



B7



TOP



DAP B8

B8

PURPOSE:

PROX OPS

TRANSLATION			
PULSE	15	0.0	1

ROTATION			
DSC RT	NORM	16	0.2 0 0
	VERN	17	0.2 0 0
PULSE	NORM	18	0.0 4
	VERN	19	0.0 0 2
COMP	NORM	20	.0 0
	VERN	21	.0 0 0

DEADBAND			
ATT	NORM	22	2.0 0
	VERN	23	1.0 0 0

RATE	NORM	24	0.2 0
	VERN	25	.0 2 0

JET OPT	P	26	1
	Y	27	1

CNTL ACCEL 28 0

FLT PLN-21b/44/0/B

FLT PLN-22a/44/0/B



TOP



B8



FLT PLN-22b/44/0/B



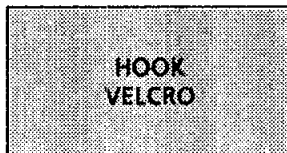
TOP



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FLT PLN-23a/44/0/B

## DAP BOOK



FLT PLN-23b/44/0/B

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FLIGHT PLAN NOTES

FLIGHT PLAN NOTES

FLIGHT PLAN NOTES  
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION

The STS-44 (OV-104) will launch from KSC on November 19, 1991, with a direct insertion into a 195 nm orbit at an inclination of 28.5 degrees. The mission duration will be 10 days. Nominal landing occurs at KSC on November 29, 1991.

Landing opportunities are:

		<u>Landing Orbit No.</u>	<u>Site</u>	<u>Landing Site Time</u>
Nominal	Primary	155	KSC	14:27 EST
	Backup	156	KSC	16:04 EST
	Weather Alt.	155	EDW	11:18 PST
1 Day Late	Primary	171	KSC	14:56 EST
	Backup	172	KSC	16:33 EST
	Weather Alt.	171	EDW	11:48 PST
2 Days Late	Primary	186	KSC	13:49 EST
	Backup	187	KSC	15:26 EST
	Weather Alt.	186	EDW	10:40 PST

MAJOR EVENTS

<u>LAUNCH (KSC)</u>	November 19, 1991
MET (DD/HH:MM)	0/00:00
Day of year	323
CST/GMT	17:51/23:51

<u>OMS-2 CUTOFF</u>	
MET (DD/HH:MM)	00/00:44
DV (fps)	284.4
ORBIT ha/hp (nm)	195/196

<u>DSP/IUS DEPLOY</u>	
MET (DD/HH:MM)	0/06:19

<u>FRCS-1</u>	
MET (DD/HH:MM)	0/06:20
DV (fps)	2.2
ORBIT ha/hp (nm)	195/196

<u>OMS-3</u>	
MET (DD/HH:MM)	0/06:34
DV (fps)	31.0
ORBIT ha/hp (nm)	196/213

<u>DSP/IUS SRM</u>	
MET (DD/HH:MM)	0/07:20 (NODE 6A)

<u>ARCS-1</u>	
MET (DD/HH:MM)	1/05:38
DV(fps)	20.0
ORBIT ha/hp (nm)	196/201

FLT PLAN NOTES

FRCS-2  
MET (DD/HH:MM) 1/07:10  
DV (fps) 8.2  
ORBIT ha/hp (nm) 196/196

DEORBIT BURN  
MET (DD/HH:MM) 09/18:31

LANDING (KSC)  
MET (DD/HH:MM) 09/19:36  
Day of year 333  
CST/GMT 13:27/19:27

B. CREW

1. The six crewmembers flying this mission are:

CDR - Frederick D. Gregory  
PLT - Terence T. Henricks  
MS1 - James S. Voss  
MS2 - F. Story Musgrave  
MS3 - Mario Runco, Jr.  
PS1 - Tom Hennen

2. The crewmembers responsible for performing an EVA, should one become necessary, are: MS3 will be EV1, MS1 will be EV2, and PLT will be IV1.

C. ORBITER SYSTEMS

1. Communications and Instrumentation

- a. The Operational Instrumentation (OI) system will nominally be managed from the ground through uplink real-time commands (RTCs) coordinated with the crew.
- b. TDRS coverage is supported by TDRS-E (41 degrees W) and TDRS-W (171 degrees W) and is the prime mode of communication coverage.
- c. TDRS Ku-band is the prime mode of real-time TV. There are also three GSTDN sites available as backup for TV (90-minute lead time required): GDS (GDX), MIL (MLX), VAN.
- d. TDRS-E and TDRS-W are available to support Ku-band uplink (e.g., TAGS).
- e. HDR uplink (e.g., Teleprinter) is available through TDRS-E and TDRS-W.
- f. GSTDN sites available during the first 25 minutes of the mission are MIL (MLX), PDL, BDA, DKR, and IOS. IOS can be used for UHF voice during ascent.
- g. There are five GSTDN sites available on-orbit through DSP deploy, or for deorbit: VAN, GDS (GDX), MIL (MLX), and DFR. (Note: DFR is not shown in the Flight Plan). CAN and MAD can be called up for emergencies.

- h. After DSP deploy, there are four GSTDN sites which are available or can be called up to support as bailout sites: VAN, GDS (GDX), MIL (MLX) and BDA (BDX). One GSTDN site will be available per orbit.
- i. RTS sites are available predeploy to support IUS activities. They are also available for contingency support or when scheduled in advance. HTS, GTS, VTS, NHS, IOS, and DGS are certified for orbiter support; CTS is available only for direct communication to the IUS.

## 2. Guidance and Navigation

- a. The orbiter state vector must be uplinked whenever downtrack error in the on-board vector is predicted to be greater than 20 nm at the next PLS entry interface, but is usually uplinked when errors are greater than 5 nm. These are real-time calls. In addition, state vectors must be uplinked for specified targets when utilizing an orbiting vehicle as a TGT ID with Universal Pointing.
- b. IMU alignments occur approximately every 12 hours in the pre-sleep and postsleep activities and prior to major events requiring low navigation uncertainty.

## 3. Environmental Control and Life Support Subsystem (ECLSS)

- a. Two CO<sub>2</sub> absorbers are installed prior to launch. On orbit, the canisters are alternately replaced as required per the cue card.
- b. There are four supply water tanks and one waste water tank which are loaded for launch with volumes sufficient to meet an orbit 3 launch day deorbit with PLBDs failed closed. There are four waste water dumps scheduled in the Flight Plan. Provision is made for nine supply water dumps are scheduled each day in the post sleep timeframe. A real-time call will be made prior to the scheduled dump time to inform the crew whether a dump is required and to what level. Tanks A and B will be dumped to a level that will allow the tanks to be full prior to the next daily group of deorbit opportunities. One additional FES dump has been scheduled to support an AMOS test.

## D. TEXT UPLINK SYSTEM

- 1. The Text and Graphics System (TAGS) is a high-resolution facsimile system that scans text or graphics material and converts the analog SCAN data into serial digital data. This data is transmitted via a telemetry link to the cathode-ray tube hardcopier. Transmission time for an 8-1/2 by 11-inch page can vary from just over 1 minute to just over 16 minutes depending on the hardcopy resolution desired. The TAGS can only uplink images using Ku-band. This Flight Plan assumes Ku-band forward link is available for both TDRS-E and TDRS-W, and TAGS is the primary mode of text uplink. Instrumentation has the capability to uplink onboard hardcopier control commands via S-band or Ku-band for power on, advance, ready, standby, and off.

2. The teleprinter (TPR) will provide a backup on-orbit capability to receive and reproduce text-only data from MCC. The TPR uses S-band and is not dependent on TDRS Ku-band. TPR requires 1 to 2.5 minutes per page, depending on the number of lines (up to 66).

#### E. TELEVISION/PHOTOGRAPHY

1. The CCTV systems provide one color, wide-angle lens camera and one Canon A1 camcorder for in-cabin coverage. There will also be four PLB TV cameras. There are three different lens assemblies for the PLB cameras (color lens assembly, monochrome lens assembly, and wide-angle lens assembly). The type of lens assembly for each PLB camera is documented in the Flight Requirements Document.
2. There is a video tape recorder available with 30-minute cassettes.
3. Three camera systems are available: 35mm, 16mm, and 70mm.

#### F. PAYLOADS

1. Defense Support Program/Inertial Upper Stage (DSP/IUS)

The DSP/IUS Cargo Element (CE) is comprised of the DSP satellite, a DSP satellite-to-IUS mounting adapter, and a DOD two-stage solid motor IUS, associated Airborne Support Equipment (ASE) and Advanced RADEC I (AR I) sensor covers. The DSP satellite contains a three-axis inertially stabilized platform maintaining position by means of Earth sensors and a reaction wheel. It uses a hydrazine propulsion attitude control system (ACS). Satellite electrical power is provided by means of solar arrays and storage batteries. Satellite communication is provided by a variety of transmitters/receivers/antennas.

2. Interim Operational Contamination Monitor (IOCM)

The IOCM measures molecular and particulate contamination in the orbiter cargo bay during all mission phases and uses a variety of optional sensor modules that allow it to be tailored for each shuttle mission. The IOCM is a totally automated system, with powered components that are sound-activated or activated at selected altitudes by barometric switches. It is designed for minimal crew involvement, for no command and control support, and employs no propulsion or control systems. The only crew involvement is photo documentation that the coupon doors have closed.

3. TERRA SCOUT

Terra Scout is a specially trained payload specialist (PS) whose ability is to detect specific objects at predefined targets using spaceborne Earth observation tools. The quality of the spacebound PS observations will be compared to an earthbound observer examining the same targets using conventional techniques. The Terra Scout PS uses the Spaceborne Direct View Optical System (SpaDVOS) hardware.

4. Military Man in Space (M88-1)

M88-1 will evaluate the capability of man in space to enhance terrestrial air, naval, and ground force operations. M88-1 consists of two experiments: Maritime Observation Experiments in Space (MOSES), and Battle Surveillance from Space (Battleview). Moses will be an experiment designed to establish direct and indirect communication between the orbiter and selected sites or naval units, conduct maritime observations, and observe ocean phenomenon relating to ship detection. Battleview will also establish communication between the orbiter and a ground site but the observations will be of ground site operations.

5. Air Force Maui Optical Site (AMOS)

The primary objective of AMOS is to use the orbiter during cooperative overflights of Maui to obtain imagery and/or signature data to support the calibration of the AMOS ground-based sensors and to observe orbiter plume phenomenology. No unique onboard hardware is associated with the AMOS test.

6. Cosmic Radiation Effects and Activation Monitor A (CREAM)

A detector will be used to collect data on cosmic ray energy loss spectra, neutron fluxes, and induced radioactivity as a function of geomagnetic coordinates and detector location within the orbiter.

7. Shuttle Activation Monitor (SAM)

A detector will be used to collect gamma ray data as a function of geomagnetic coordinates and detector location within the orbiter.

8. Radiation Monitoring Equipment III (RME III)

The RME III measures the radiation at different locations throughout the orbiter. The experiment contains a liquid crystal display (LCD) for real time data display and a keyboard for controlling its functions.

9. Visual Function Tester-1 (VFT-1)

VFT is a handheld battery-powered testing device the crew looks into to measure changes in a number of vision parameters affected by microgravity.

10. Ultraviolet Plume Instrument (UVPI)

UVPI is an instrument located on the Low-Power-Atmospheric Compensation Experiment (LACE) satellite in orbit at 43 deg. inclination and approximately 260 nm in altitude at the time of STS-44 launch November 19. The primary objectives of the UVPI activity are to use the orbiter during cooperative encounters of the LACE satellite to obtain imagery and/or signature data for UVPI sensor calibration and to observe orbiter events. UVPI is manifested as a payload of opportunity. A UVPI test will be scheduled late in the flight if a conjunction opportunity meets crew scheduling constraints and prop margins allow it.

## G. ON-ORBIT DTOs

### 1. Combustion Products Analyzer (CPA) (DTO 645)

The CPA will sample the cabin air during the mission to detect the concentration of targeted compounds indicative of a thermodegradation event. This configuration 1 of the instrument tests the calibration, stability, and operation of the CPA. Pre- and postflight calibrations (daily baseline readings and collected air samples) will verify the ability of the CPA to remain calibrated during on-orbit operations.

### 2. Shuttle Extended Duration Orbiter (EDO) Rehydratable Food Package Evaluation (DTO 649)

The EDO Rehydratable Food Package was developed to reduce stowage volume, stowage weight, and trash volume of the shuttle food system for EDO flights. There are two main objectives of this evaluation: (1) to determine the impact on crew time required for meal preparation using the new package, and (2) to obtain astronaut inputs on the performance of the package in the microgravity environment.

### 3. Star Line Maneuver Validation (SLM) (DTO 797)

The SLM is a technique to align the inertial reference system of a payload directly using the orbiter star trackers with orbiter calibration maneuvers. The procedure is needed to update the inertial alignment of the IMU in the Aeroassist Flight Experiment (AAFE) to provide the required navigation accuracy. The SLM is performed by collecting orbiter star tracker data and payload attitude data at three different orbiter attitudes separated by two maneuvers about near-orthogonal eigen axes. The SLM DTO requirements are satisfied through design of the DSP/IUS Attitude Match Update Sequence.

## H. ON-ORBIT DSOs

### 1. Bioreactor/Flow and Particle Trajectory in Microgravity (DSO 316)

Development of a Bioreactor system for use in the Space Station Freedom Biotechnology Facility depends on understanding the fluid dynamics of such a system in microgravity. This equipment test will permit comparison of actual microgravity particle trajectories with the calculated trajectories which will provide data to improve or modify the current systems.

### 2. Inflight Holter Monitoring (DSO 463)

Inflight electrocardiography will be used to document the presence of irregular beats during nominal activity and while undergoing treadmill exercises to determine if their frequency is due to elevated exertion levels in microgravity, or simply a function of the space environment itself.

3. Intraocular Pressure (DSO 472)

Pressure measurements 20-25% above normal/preflight levels were observed in bedrest studies, during 0-G on the KC-135, and on the D-1 shuttle mission. The deleterious effects of sustained deviations in intraocular pressure are difficult to predict since no statistically valid in-flight data exists. Even though a few days or weeks of elevated intraocular pressure would be harmless, months or years of sustained pressures, due to microgravity, could cause ocular disturbances. Significant baseline data is needed to define normal intraocular pressure ranges in microgravity and to determine the magnitude of pressure rises to be expected in crewmembers. A tonopener is used to measure IOP among the crewmembers.

4. In Flight Lower Body Negative Pressure (LBNP) (DSO 478)

Fluid loading via ingestion of salt tablets and water in association with lower body negative pressure (LBNP) treatment will protect tolerance to orthostasis (simulated inflight by LBNP). The objective of this study is to evaluate the effectiveness of fluid loading during LBNP in improving tolerance of a LBNP stress protocol.

5. Orthostatic Function During Entry, Landing and Egress (DSO 603)

The purpose is to document the orthostatic function of crewmembers during the actual stresses of entry, landing, egress from the seat and from the cabin as mission duration increases. These data will be used to determine whether precautions and countermeasures are needed to protect crewmembers in the event of an emergency egress. It will also be used to determine the effectiveness of proposed inflight countermeasures. Crewmembers will don equipment prior to donning the LES during deorbit preparation. The crewmember wears the equipment and records verbal comments through entry.

6. Visual Vestibular Integration as a Function of Adaption (DSO 604)

The objective of this DSO is to investigate visual vestibular and perceptual adaptive responses as a function of longer missions and to determine the operational impact on performance of entry, landing and egress procedures. DSO procedures OI-1 and 3 will be performed on STS-44. Crewmembers will report their sensations in OI-1 and sensors will be used for OI-3 to record vestibular-ocular reflex (VOR) and head movement rates.

7. Metabolism/Exercise Testing (DSO 608)

This DSO will quantify the changes in aerobic and anaerobic metabolism during graded treadmill exercise performed pre- and postflight, and relate those changes to alterations in total body water, dry lean tissue, fat mass, and fluid volume intake. The data obtained will be used to develop nutrition, fluid, and exercise countermeasures for use on extended missions. On STS-44 the on-orbit exercise will be scheduled for two crewmembers, two will exercise as scheduled and the remaining subject (control) will not exercise.



8. Air Monitoring Instrument Evaluation and Atmosphere Characterization (DSO 611)

DSO 611 is designed to evaluate and verify air monitoring equipment to ensure proper function and operation in flight. Data will be collected on contaminant levels during missions of varying durations to be used to establish baseline levels and to evaluate potential risks to crew health and safety. Only the Microbial Air Sampler (MAS) configuration will be flown on STS-44.

9. Changes in the Endocrine Regulation of Orthostatic Tolerance Following Spaceflight (DSO 613)

DSO 613 will characterize the extent and pattern of changes in plasma volume during space flight of up to 16 days duration. It will also determine whether resting levels of catecholamines are elevated immediately after flight, and whether catecholamine release in response to varying degrees of orthostatic and cardiovascular stresses is impaired after spaceflight. On-orbit activities consist of maintaining a dietary log. This information will be taken from the dietary log kept for DSO 608.

10. The Effect of Prolonged Spaceflight on Head and Gaze Stability During Locomotion (DSO 614)

The purpose of DSO 614 is to characterize preflight and postflight head and body movement along with gaze stability during walking, running, and jumping, all of which are relevant to egress from the shuttle. During exercise on the treadmill, crewmembers will read the Landholt Cs Chart mounted on the middeck wall.

11. Documentary Television (DSO 901)

This DSO requires live television transmission or VTR dumps of crew activities and spacecraft functions which include: Payload Bay Views, DSP Predeploy, Deploy and Separation Activities, views of PLB attached payloads, In-Flight Crew Conference, views of Middeck Payload Sessions, and unscheduled TV Activities.

12. Documentary Motion Picture Photography (DSO 902)

This DSO requires documentary and public affairs motion picture photography of significant activities which best depicts the basic capabilities of the space shuttle and key objectives. This DSO includes motion picture photography of IUS Predeploy and Deploy Activities, Middeck Activities, and any unscheduled Motion Picture Photography.

13. Documentary Still Photography (DSO 903)

This DSO requires still photography of crew activities in the orbiter, spacecraft accommodations, and mission related scenes of general public and historical interest. Still photography with 70mm format for exterior photography and 35mm format for interior photography is required.

## I. TIMELINE FORMATS

1. The timeline formats used in this Flight Plan are based on JSC-19933: Timeline Format Definitions and Standard Notes, Revision C, May 1990.

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