

FLIGHT DATA FILE

Flight Plan

STS-63

BRANCH CHIEF
B. NUTE
DO4
BOND 1

(Pre-FRR Cycle Trajectory)

Mission Operations Directorate Operations Division

Final December 23, 1994

<u>EVENT</u>	<u>CST</u>		
Launch	23:51	Wed	Feb 1
ODERACS-2 Deploy	03:31	Thu	Feb 2
Mir VBAR Arrival	12:22	Sun	Feb 5
SPARTAN-204 Deploy	06:36	Mon	Feb 6
SPARTAN-204 Grapple	05:36	Wed	Feb 8
EVA (DTO 1210)	06:21	Wed	Feb 8
KSC Landing	06:04	Fri	Feb 10


National Aeronautics and
Space AdministrationLyndon B. Johnson Space Center
Houston, Texas

MISSION OPERATIONS DIRECTORATE

STS-63 FLIGHT PLAN


FINAL
December 23, 1994

PREPARED BY:

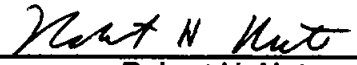


Tracy A. Calhoun
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**482#: FLT PLN-1694A
FLT PLN-1695**

Exemption #'s: 67, 68, 69

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FLIGHT PLAN
STS-63

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iv	* 63/FIN	3-22	63/FIN
v	* 63/FIN	3-23	63/FIN
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3-18	63/FIN	3-68	63/FIN

* - Omit from flight book

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 6-10 * 63/FIN

* - Omit from flight book

STS-63 FLIGHT PLAN FABRICATED ITEMS

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DAP A, DAP B TOC	5-7	FLT PLN-1a/63/O/B
(Blank)	5-7	FLT PLN-1b/63/O/A
DAP A	5-8	FLT PLN-2a/63/O/A
DAP A1	5-8	FLT PLN-2b/63/O/A
A1	5-8	FLT PLN-3a/63/O/A
DAP A2	5-8	FLT PLN-3b/63/O/A
A2	5-9	FLT PLN-4a/63/O/A
DAP A3	5-9	FLT PLN-4b/63/O/A
A3	5-9	FLT PLN-5a/63/O/A
DAP A4	5-9	FLT PLN-5b/63/O/A
A4	5-10	FLT PLN-6a/63/O/A
DAP A5	5-10	FLT PLN-6b/63/O/A
A5	5-10	FLT PLN-7a/63/O/A
DAP A6	5-10	FLT PLN-7b/63/O/B
A6	5-11	FLT PLN-8a/63/O/B
DAP A7	5-11	FLT PLN-8b/63/O/A
A7	5-11	FLT PLN-9a/63/O/A
DAP A8S	5-11	FLT PLN-9b/63/O/A
A8S	5-12	FLT PLN-10a/63/O/B
DAP A8M	5-12	FLT PLN-10b/63/O/A
A8M	5-12	FLT PLN-11a/63/O/A
DAP A9	5-12	FLT PLN-11b/63/O/A
A9	5-13	FLT PLN-12a/63/O/A
DAP A10	5-13	FLT PLN-12b/63/O/B
A10	5-13	FLT PLN-13a/63/O/B
DAP A11	5-13	FLT PLN-13b/63/O/B
A11	5-14	FLT PLN-14a/63/O/B
DAP A12	5-14	FLT PLN-14b/63/O/B
A12	5-14	FLT PLN-15a/63/O/B
DAP A13	5-14	FLT PLN-15b/63/O/B
A13	5-15	FLT PLN-16a/63/O/B
DAP A14	5-15	FLT PLN-16b/63/O/B
A14	5-15	FLT PLN-33a/63/O/A
(Blank)	5-15	FLT PLN-33b/63/O/A
DAP B	5-16	FLT PLN-17a/63/O/A
DAP B1	5-16	FLT PLN-17b/63/O/A
B1	5-16	FLT PLN-18a/63/O/A
DAP B2	5-16	FLT PLN-18b/63/O/A
B2	5-17	FLT PLN-19a/63/O/A
DAP B3	5-17	FLT PLN-19b/63/O/A
B3	5-17	FLT PLN-20a/63/O/A
DAP B4	5-17	FLT PLN-20b/63/O/A
B4	5-18	FLT PLN-21a/63/O/A
DAP B5	5-18	FLT PLN-21b/63/O/A
B5	5-18	FLT PLN-22a/63/O/A
DAP B6	5-18	FLT PLN-22b/63/O/B
B6	5-19	FLT PLN-23a/63/O/B
DAP B7	5-19	FLT PLN-23b/63/O/A
B7	5-19	FLT PLN-24a/63/O/A
DAP B8S	5-19	FLT PLN-24b/63/O/A
B8S	5-20	FLT PLN-25a/63/O/B

STS-63 FLIGHT PLAN FABRICATED ITEMS (Cont)

<u>Title</u>	<u>Ref. Page</u>	<u>Item No.</u>
DAP B8M	5-20	FLT PLN-25b/63/O/A
B8M	5-20	FLT PLN-26a/63/O/A
DAP B9	5-20	FLT PLN-26b/63/O/A
B9	5-21	FLT PLN-27a/63/O/B
DAP B10	5-21	FLT PLN-27b/63/O/B
B10	5-21	FLT PLN-28a/63/O/B
DAP B11	5-21	FLT PLN-28b/63/O/B
B11	5-22	FLT PLN-29a/63/O/B
DAP B12	5-22	FLT PLN-29b/63/O/B
B12	5-22	FLT PLN-30a/63/O/B
DAP B13	5-22	FLT PLN-30b/63/O/A
B13	5-23	FLT PLN-31a/63/O/B
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UNIV PTG	5-24	FLT PLN-32/63/O/A

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INTRODUCTION

The STS-63 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, EVA, Rendezvous, Deorbit Prep, and Entry Checklists. For continuity, the summary level timeline includes the entire flight.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive, and the requirements of the STS-63 Flight Requirements Document.

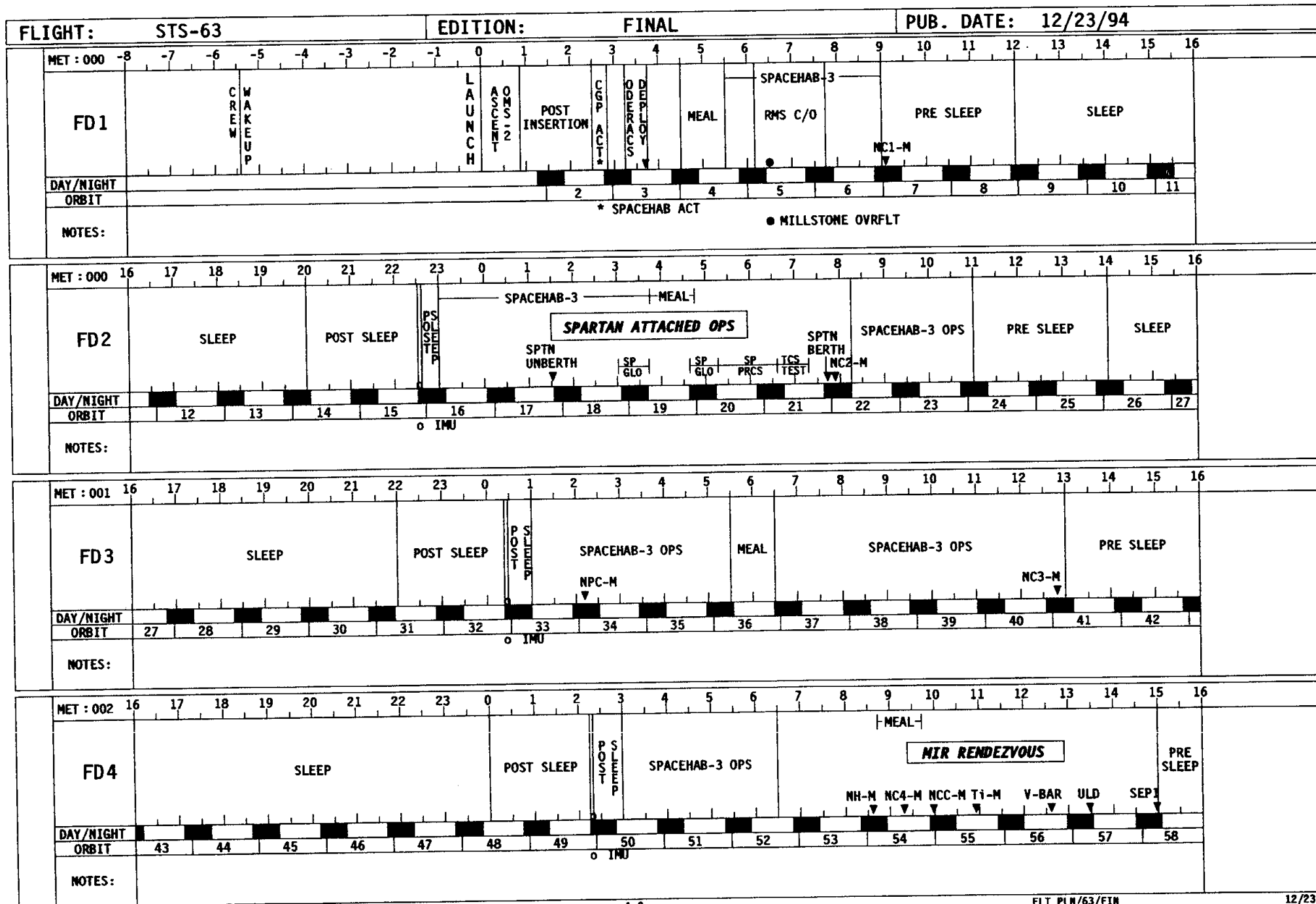
The Flight Plan, as part of the Flight Data File, is based upon the Pre-FRR Cycle version of the STS-63 Flight Initialization Data Pack. The only deviation from this trajectory cycle is that the SPARTAN release is scheduled on orbit 68 in the Flight Plan, rather than orbit 69, as reflected in the Pre-FRR Cycle. The Pre-FRR Cycle assumes a launch date of February 1, 1995, at 23:51 CST.

Orbiter inertial attitudes are expressed relative to a Mean of 1950 (M50) reference frame.

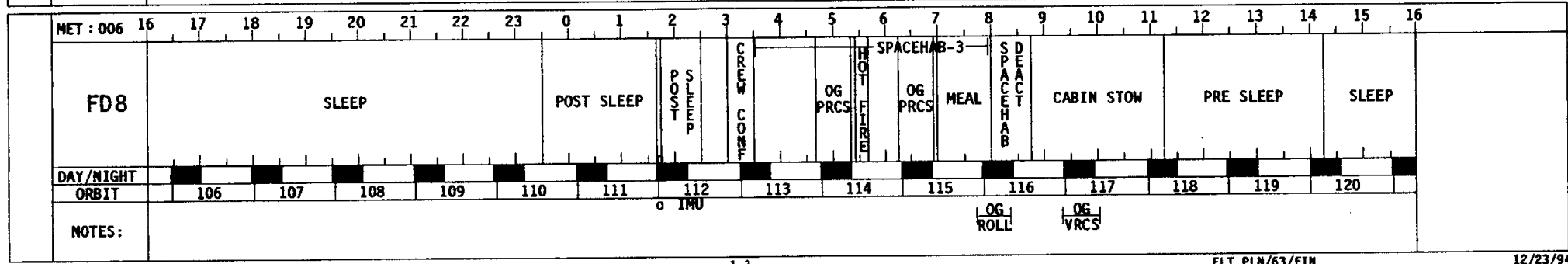
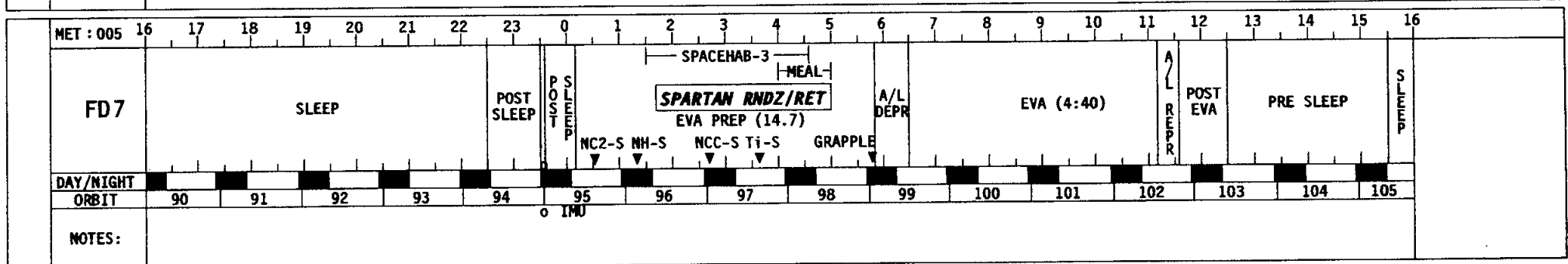
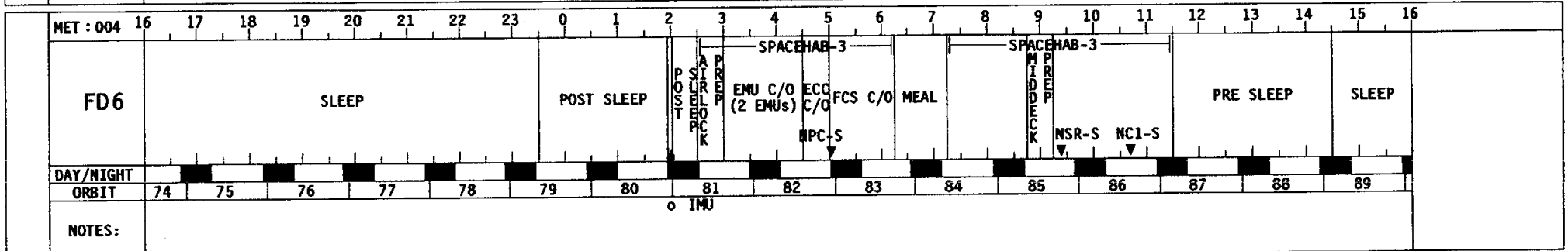
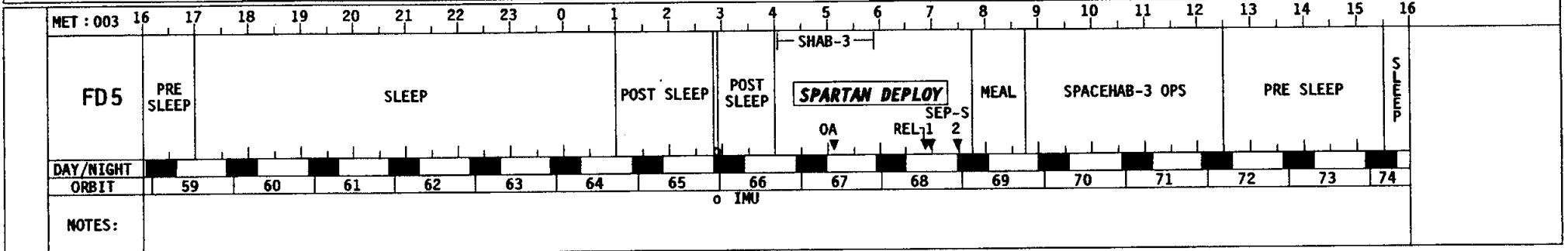
JSC-22359, Crew Scheduling Constraints (Appendix K, CPMP), Basic, Rev B, January 1992, has been used to build the timelines contained in this Flight Plan. The following three Appendix K Exemptions have been approved for this mission:

- #67 - Allows the post-sleep activity for the entire crew on Flight Day 7 to be scheduled for less than 2 hours.
- #68 - Approves scheduling greater than 16 hours of crew awake time on launch day.
- #69 - Allows several sleep shifting violations. Specifically, the sleep between Flight Days 4 and 5, and Flight Days 8 and 9 is shifted greater than 1 hour earlier; the sleep shift between Flight Days 1 and 4 is greater than 4 hours later.

STS-63 OVERVIEW



FLIGHT: STS-63 EDITION: FINAL PUB. DATE: 12/23/94



MET : 007	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
FD9	SLEEP					POST SLEEP					DEORBIT PREP					DEORBIT		K L A N D I N G		EDW B/U ▼ LANDING						
DAY/NIGHT																										
ORBIT	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136										
NOTES:																										

MET : 008	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
FD																										
DAY/NIGHT																										
ORBIT	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152										
NOTES:																										

MET : 009	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
FD																										
DAY/NIGHT																										
ORBIT	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167										
NOTES:																										

MET : 010	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
FD																										
DAY/NIGHT																										
ORBIT	168	169	170	171	172	173																				
NOTES:																										

SUMMARY TIMELINE

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GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
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CST :032	0	CST:033	1	2	3	4	5	6	7	8	9	10	11	12
FD :001	0		1	2	3	4	5	6	7	8	9	10	11	12
MET :000	0		1	2	3	4	5	6	7	8	9	10	11	12
CDR		POST INSERTION	POST INSERTION			MEAL	LOAD DAP			SETUP		OMS BURN	PRE SLEEP	PRE SLEEP
PLT	DIRECT LAUNCH	POST INSERTION	POST INSERTION			MEAL	PG WRP DOWN	3-DMA M2		SETUP		OMS BURN	PRE SLEEP	PRE SLEEP
MS1	INSERTION	POST INSERTION		SPACEHAB ACT		MEAL	PGM ACT	INIT LST	PCF-LST	SH MOD SETUP			PRE SLEEP	PRE SLEEP
MS2	INSERTION	POST INSERTION			P/TVO5 OPS	MEAL	PCGAM-STECS	NIH INIT	MASSCKDOS/U	IMMUNE CK		DSO 483	PRE SLEEP	PRE SLEEP
MS3		POST INSERTION		PCF-LST SETUP		MEAL	RMS PWRUP	RMS C/O	PAYLOAD BAY SURVEY		DSO 483	REP STR ENDED	PRE SLEEP	PRE SLEEP
MS4		POST INSERTION		SPACEHAB ACT		MEAL	RMS PWRUP	RMS C/O	PAYLOAD BAY SURVEY		DSO 483	REP STR ENDED	PRE SLEEP	PRE SLEEP
DAY/NIGHT														
ORBIT														
TDRS	E W													
ATTITUDE		ASCENT		+YLV, +ZVV				-XLV, +YVV (GLO)				-ZLV, +XVV		
CSE				SYS C/O				COOLDOWN						
NOTES:				⊙FES-OFF (ODERACS)		⊙BIASED -XLV, +YVV		■ APU HTR RECONFIG		⊙PRE CRADLE		⊙PRE-SLEEP CONFIG		
				⊙ SOO IMU ALIGN				■ APU HTR DEACT				⊙-ZLV, +XVV		
				⊙DSO 201B AUTONOMIC AND GASTRIC FUNCTION				⊙DSO 200B SPACE RADIATION DOSIMETRY				⊙DSO 483 BACK PAIN IN MICROGRAVITY		
				⊙RMS HTR ACT								⊙DT0 623 CAB AIR MON		

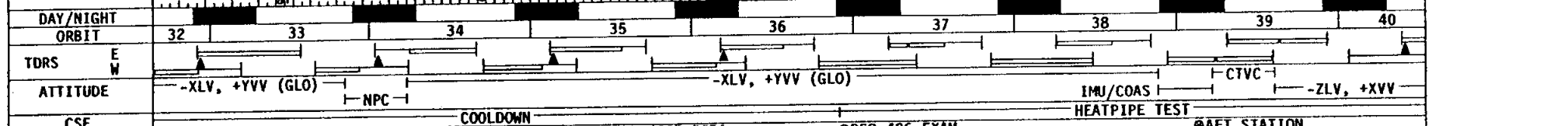
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CST	:033	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:001
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MET	:000									20	21	22	23		
										FD02					
CDR					SLEEP						POST SLEEP				SAMS ACT
PLT					SLEEP						POST SLEEP				ERGOMETER SETUP
MS1					SLEEP						POST SLEEP				MIDMOD ST CK
MS2					SLEEP						POST SLEEP	PSETUP			POST SLEEP
MS3					SLEEP						POST SLEEP				PCG-STES HHDC ACT
MS4					SLEEP						POST SLEEP				CGBA INIT
DAY/NIGHT	[Bar chart showing day/night cycles]														
ORBIT	[Bar chart showing orbit parameters]														
SAA	[Bar chart showing SAA parameters]														
TDRS	[Bar chart showing TDRS parameters]														
ATTITUDE	-ZLV, +XVV														
CSE	COOLDOWN														
NOTES:	@POST-SLEEP CONFIG @GAP's 1-5,7-18														

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																																																																																																							
034:05:51/ 034:17:51	001:00:00/ 001:12:00	033:23:51/ 034:11:51	02/033 CST	8.6		FEBRUARY 2, 1995	STS-63	FINAL	12/23/94																																																																																																							
CST :033	0	CST:034	1	2	3	4	5	6	7	8	9	10	11	12																																																																																																		
FD :002	0		1	2	3	4	5	6	7	8	9	10	11	12																																																																																																		
MET :001	0		1	2	3	4	5	6	7	8	9	10	11	12																																																																																																		
CDR	CMIDACT CREAM	CRDAM ACT	P/TVO1 CREAM	BPL ACT	BPL DEACT	BPL ACT	MEAL	EXERCISE	IMU ALIGN	TAT CPE SPS RT OS ACH	NC2-M RCS BURN	BPL DEACT	BPL DEACT	PAO EVENT	PRE SLEEP																																																																																																	
PLT		SGR APP TAN	SUN BERT TAN	SG PLA RR TP AG NS N	EXERCISE	SPARTAN GLOW TEST	MEAL	SPARTAN GLOW TEST	SP RCS T EST	SP RCS T EST	DSO 486	RCS BURN	GG MNV R	FILTER CLEANING	DSO 483	PAO EVENT	GG INIT	PRE SLEEP																																																																																														
MS1	CH R O M E L E X	CK O L O R I E S	P /T V O 3 S E T U P	P/TVO3 OPS	ACT I V E	P N U C L E A R I N G	MEAL	P/TVO3 OPS	DSO 608 EXERCISE	DSO 486	ACT I V E	ACT I V E	ACT I V E	ACT I V E	ACT I V E	ACT I V E	ACT I V E	PRE SLEEP																																																																																														
MS2	CH R O M E L E X	CK O L O R I E S	PGSC SETUP	RNDZ TOOLS C/O	SP RCS T EST	SPARTAN GLOW TEST	MEAL	SPARTAN GLOW TEST	SP RCS T EST	RT C N O O N Z L I G	SP RCS T EST	DSO 486	DSO 608 EXERCISE	DSO 483	PAO EVENT	ACT I V E	PRE SLEEP																																																																																															
MS3	PH C H G L S T E A S O H	SG R A P P L E	SUN BERT TAN	SG PLA RR TP AG NS N	RNDZ TOOLS C/O	EXERCISE	MEAL	SPARTAN GLOW TEST	SP RCS T EST	RT C N O O N Z L I G	SP RCS T EST	TAT CPE SPS RT OS ACH	SPARTAN BERTH	REP M X A S T R E K N D E D	CG B A C K	DSO 483	P /T V O 2 S E T U P	PAO EVENT	PRE SLEEP																																																																																													
MS4	CG B A T E R M	ASC DL	SG R A P P L E	SUN BERT TAN	SG PLA RR TP AG NS N	ASC DL	SPARTAN GLOW TEST	MEAL	SPARTAN GLOW TEST	SP RCS T EST	SP RCS T EST	TAT CPE SPS RT OS ACH	SPARTAN BERTH	REP M X A S T R E K N D E D	IMMUNE CK	EXERCISE	PAO EVENT	PRE SLEEP																																																																																														
DAY/NIGHT																																																																																																																
ORBIT	17														18														19														20														21														22														23														24													
SAA																																																																																																																
TDRS																																																																																																																
ATTITUDE	-ZLV, +XVV																												-ZLV, +YVV																												FNC2-1														GG, -XLV, +YVV														FREE DRIFT																											
CSE															COOLDOWN																																																																																																	
NOTES:	@GAP's 10 and 11														@BPM's 13-16, 5-8, 17-30														@DSO 486 PHYSICAL EXAM														@BPM's 1-4														@PRE-SLEEP CONFIG																																																							
															@BPM's 5-8														@DSO 486 BACK PAIN														@BPM's 9-12														@DSO 201B AGF														@DTO 623 CAB AIR MON																																									
															@BPM's 9-12																												@BPM's 31-40, 1-4																																																																					

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FD	:002	12	13	14	15	16	17	18	19	20	21	22	23		
MET	:001	12	13	14	15	16	17	18	19	20	21	22	23		
CDR	PRIV MED	PRE SLEEP	SLEEP										POST SLEEP		
PLT		PRE SLEEP	SLEEP										POST SLEEP WASTE DUMP INIT		
MS1		PRE SLEEP	SLEEP										POST SLEEP		
MS2		PRE SLEEP	SLEEP										POST SLEEP PS A DT M P PS OL SE TE P		
MS3		PRE SLEEP	SLEEP										POST SLEEP		
MS4		PRE SLEEP	SLEEP										POST SLEEP		
DAY/NIGHT															
ORBIT	24	25	26	27	28	29	30	31	32						
TDRS	E														
W															
ATTITUDE	FREE DRIFT														-XLV, +YVV (GLO)
CSE	COOLDOWN														
NOTES:															

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
035:05:51/ 035:17:51	002:00:00/ 002:12:00	034:23:51/ 035:11:51	03/034 CST	12.9		FEBRUARY 3, 1995	STS-63	FINAL	12/23/94

CST :034	0	CST:035	1	2	3	4	5	6	7	8	9	10	11	12							
FD :003																					
MET :002																					
CDR	POST SLEEP	POST SLEEP	NPC-BURN	RCS BURN	BPL DEACT	F-GBA OPS	DSO 492B PCBA	MEAL	DSO 486	EXERCISE	COMM SETUP	COMM ACT	COMM OPS	DTO 667 PILOT	IMU MNVR	COLS MNVR	TRK MNVR	CALL VIGN	ZLV MNVR	RNDZ PREP	RME
PLT	POST SLEEP		RCS BURN	F-GBA OPS				MEAL	PAO EVENT	DSO 486	DTO 667 PILOT			EXERCISE						RNDZ PREP	DSO 483
MS1	POST SLEEP	SHAB	MOD ST CK	MID ST CK	F-GBA OPS	AC/FU	DSO 492B PCBA	MEAL	DSO 486		DSO 608 EXERCISE			PSETUP	CALL VIGN				DSO 486	AP DSO 2018	
MS2	POST SLEEP		DSO 608 EXERCISE	SSCE BURN 1	SSCE BURN 2	WINDEX SETUP		MEAL	WINDEX GLOW OPS	DSO 486	WINDEX GLOW OPS		IMMUNE CK							RNDZ PREP	DSO 483
MS3	POST SLEEP	MOCK	PACTA	PHDT	EXERCISE		DRSCOR	MEAL	PAO EVENT		CHARLOTTE OPS			CHARLOTTE OPS					DSO 486		DSO 483
MS4	POST SLEEP	CGBA	CGBA	CHROMEX	ASC DL	ASC	ASC SAMPLE	EXERCISE	MEAL	PAO EVENT	CHARLOTTE OPS									AP DSO 2018	



NOTES:

- POST-SLEEP CONFIG - XLV, +YVV
- GAP's 1 and 2
- BPM's 13-20
- DSO 2018 AGF
- DSO 492B PCBA
- DSO 486 EXAM
- AFT STATION
- ZLV, +XVV
- DSO 2018 AP
- DSO 483 BACK PAIN


GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
035:17:51/ 036:05:51		002:12:00/ 003:00:00		035:11:51/ 035:23:51		03/035 CST	15.1		FEBRUARY 4, 1995	STS-63	FINAL	12/23/94			
CST	:035	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:003
FD	:003	12	13	14	15	16	17	18	19	20	21	22	23		
MET	:002	12	13	14	15	16	17	18	19	20	21	22	23		
CDR		CREAM MID	NC3-M RCS BURN	-XLV M NV OR	PRE SLEEP	CONFINED									
PLT			RCS BURN		PRE SLEEP										
MS1		A2 PO 1 DB S O	MIDMOD ST CK	SH BURN	PRE SLEEP										
MS2			WINDEX PLUME OPS		PRE SLEEP										
MS3			CHREPTLOITY	DS TR 0 1 2 3 4 5 6 7 8 9	PRE SLEEP										
MS4		A2 PO 1 DB S O		PS / TT VU 1 P 0	PRE SLEEP										
DAY/NIGHT															
ORBIT		40	41	42	43	44	45	46	47	48					
TDRS	E W														
ATTITUDE															
CSE															
NOTES:															

@DSO 2018 AP @PRE-SLEEP CONFIG
 @DTO 623 CAB AIR MON
 @-XLV, +YVV

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
036:05:51/ 036:17:51		003:00:00/ 003:12:00		035:23:51/ 036:11:51		04/035 CST	17.1		FEBRUARY 4, 1995	STS-63	FINAL	12/23/94			
CST	:035	CST	:036	0 1 2 3 4 5 6 7 8 9 10 11 12											
FD	:004														
MET	:003														
CDR	POST SLEEP		POST SLEEP	BPL DEACT	F-GBA OPS			COMM SETUP	MIR RENDEZVOUS				MEAL		
PLT	POST SLEEP				DSO 483	F-GBA OPS		PGWRP	MIR RENDEZVOUS				MEAL		
MS1	POST SLEEP		SHAB	MIDSTCK	MODSTCK	F-GBA OPS			DSO 486	DSO 608 EXERCISE	MEAL	AGF STOW	MIR RENDEZVOUS		
MS2	POST SLEEP	PSETUP	POST SLEEP	CREAMOD	WINDRXN	DSO 483	FILTER CLEANING	DSO 608 EXERCISE	DSO 486	PGSC SETUP	RNDZ TOOLS CONFIG	MEAL	TIPS ACT	P/TVO6 SETUP	MIR RENDEZVOUS
MS3	POST SLEEP		CHARLDTTE	STANDDOWN	DSO 483	EXERCISE	PHCDTCTVLD	RMS PWRDN	DSO 486				MEAL	P/TVO9 SETUP	MIR RENDEZVOUS
MS4	POST SLEEP		CGBA TERM	CGBA CK	AGFO	CHK	EXERCISE	RMS PWRDN	ASC DL	ASC PADM	IMMUNE CK	MEAL	AGF STOW	MIR RENDEZVOUS	
DAY/NIGHT	[Day/Night Cycle Diagram]														
ORBIT	48 49 50 51 52 53 54 55 56														
TDRS	[TDRS Coverage Diagram]														
RUSSIAN COVERAGE	-USK -PPK [Coverage Diagram]														
ATTITUDE	-XLV, +YVV (GLO) -Z TRK LVLH -Z TGT TRK														
NOTES:	@BPM's 21-25 @DSO 201B AGF @MPMs OUT @TIPS AUDIO CONFIG @POST-SLEEP CONFIG @DSO 486 EXAM @GAP's 3-5 @DSO 483 BACK PAIN														

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
036:17:51/ 037:05:51		003:12:00/ 004:00:00		036:11:51/ 036:23:51		04/036 CST	19.1		FEBRUARY 5, 1995	STS-63	FINAL	12/23/94			
CST	:036	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:004
FD	:004	12	13	14	15	16	17	18	19	20	21	22	23		
MET	:003	12	13	14	15	16	17	18	19	20	21	22	23		
CDR	V-BAR		ULD		SEP1	PRE SLEEP		SLEEP							
PLT	MIR RENDEZVOUS					PRE SLEEP		SLEEP							
MS1	MIR RENDEZVOUS				MID ST CK	MOD ST CK	PRE SLEEP	SLEEP							
MS2	MIR RENDEZVOUS				PRE SLEEP		SLEEP								
MS3	MIR RENDEZVOUS				PRE SLEEP		SLEEP								
MS4	MIR RENDEZVOUS				PRE SLEEP		SLEEP								
DAY/NIGHT															
ORBIT	56 57 58 59 60 61 62 63														
TDRS															
RUSSIAN COVERAGE	PPK	-USK -DJS PPK -KLP -ULD		-ULD -USK -DJS -KLP		-KLP -ULD -SHKUSK -DJS		-SPB -DJS -KLP -SHLD		-SPB -SHK -DJS		-SHK -DJS -SPB			
ATTITUDE	VBAR STATIONKEEP FLY AROUND SEP -ZLV, -YVV														
NOTES:	◎DT0 623 CAB AIR MON ◎-ZLV, -YVV ◎PRE-SLEEP CONFIG														

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
037:05:51/ 037:17:51	004:00:00/ 004:12:00	036:23:51/ 037:11:51	04/036 CST	21.0		FEBRUARY 5, 1995	STS-63	FINAL	12/23/94						
CST :036	0	CST:037	1	FD05	2	3	4	5	6	7	8	9	10	11	12
CDR	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP
PLT	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP
MS1	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP
MS2	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP
MS3	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP
MS4	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP
DAY/NIGHT	[Day/Night Cycle Diagram]														
ORBIT	64 65 66 67 68 69 70 71														
SAA	[SAA Diagram]														
TDRS	[TDRS Diagram]														
ATTITUDE	-ZLV, -YVV OA LVLH DEPLOY SEP BIAS +XLV, -YVV														
CSE	65k COOLER PERFORM														
NOTES:	@BPM's 26-30 o P/TV01 CREAM @BIASED +XLV, -YVV @DSO 486 EXAM @GAP's 7-9 @DSO 492B PCBA @RMS HTR ACT @DSO 201B AP o HTR CONFIG														

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
037:17:51/ 038:05:51		004:12:00/ 005:00:00		037:11:51/ 037:23:51		05/037 CST	22.8		FEBRUARY 6, 1995	STS-63	FINAL	12/23/94			
CST	:037	12	13	14	15	16	17	18	19	20	21	22	23	FD06 0	MET:005
FD	:005	12	13	14	15	16	17	18	19	20	21	22	23		
MET	:004	12	13	14	15	16	17	18	19	20	21	22	23		
CDR	F-GBA OPS	PRE SLEEP	PRONF MED	PRE SLEEP						SLEEP				POST SLEEP	
PLT	F-GBA OPS	PRE SLEEP	WASTE INIT	WD AU SM TPE	PRE SLEEP					SLEEP				POST SLEEP	
MS1	SH BRIEF		SH AB		PRE SLEEP					SLEEP				POST SLEEP	
MS2	SAMS DISK		DISK		PRE SLEEP					SLEEP				POST SLEEP	
MS3	CR HEAD PLOTTY				PRE SLEEP					SLEEP				POST SLEEP	
MS4	EXERCISE		PS VU IP		PRE SLEEP					SLEEP				POST SLEEP	
DAY/NIGHT															
ORBIT		72	73	74	75	76	77	78	79						
TDRS	E W														
ATTITUDE															
CSE															
NOTES:															

- o FGBA TEARDOWN
- o PRE-SLEEP CONFIG
- o DTO 623 CAB AIR MON

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE								
038:05:51/ 038:17:51		005:00:00/ 005:12:00		037:23:51/ 038:11:51		06/037 CST	24.6		FEBRUARY 6, 1995	STS-63	FINAL	12/23/94								
CST :037	0	CST:038	1	2	3	4	5	6	7	8	9	10	11	12						
FD :006																				
MET :005																				
CDR	POST SLEEP		POST SLEEP	F C PURGE	P/TVO1	CREAM MOD	CREAM STOW	DTO 667 PILOT	NPC-S RCS BURN	FCS C/O	MEAL	DSO 486	EXERCISE	NSR-S RCS BURN	RME	BPL DEACT	PAO EVENT	NC1-S RCS BURN	RNDZ PREP	PRE SLEEP
PLT	POST SLEEP			FILTER CLEANING	EXERCISE			RCS BURN	FCS C/O	MEAL	EP LER VKN	PAO EVENT	DSO 486	RCS BURN	DSO 483	RCS BURN	-ZLV MNV BR	RNDZ PREP	PRE SLEEP	
MS1	POST SLEEP			APR LOCK	EMU C/O			ECC C/O	DSO 608 EXERCISE	MEAL	DSO 486	PAO EVENT	DSO 486	MIDDECK PREP	MOD ST CK	MID ST CK	SH B R I E F	RNDZ PREP	PRE SLEEP	
MS2	POST SLEEP	PSETUP	POST SLEEP	APR LOCK	EMU C/O			ECC C/O	FCS C/O	MEAL	B R I C	PAO EVENT	DSO 608 EXERCISE	DSO 483	N I H P H O T O	SAMS DISK	RNDZ PREP	PSETUP	PRE SLEEP	
MS3	POST SLEEP			SHAB	CHTARLOTTE	MIDSTCK	MODSTCK	CGBA TERM	EXERCISE	MEAL	CGBA CK	PSETUP 2	PAO EVENT	IMMUNE CK	DSO 486	DSO 483	PHGDTCTVID	PSETUP 3	PRE SLEEP	
MS4	POST SLEEP			APR LOCK	EMU C/O			ECC C/O	ASC DLO	MEAL	ASC SAMPLE	PAO EVENT	ASC FDPM ACT	EXERCISE	ADSECACT	SH EXP PRE EVA	SPHRE SV A	PRE SLEEP		
DAY/NIGHT	79		80	81	82	83	84	85	86	87										
ORBIT	E		W																	
TORS	BIAS +XLV, -YVV		NPC				-ZLV, +YVV		LVLH		-ZLV, -YVV									
ATTITUDE							-NSR-		-NC1-											
CSE	HEATPIPE HI-LOAD																			
NOTES:	o MANUAL		o APU HTR ACT		o DSO 486 EXAM		o BPM's 31-35		o PRE-SLEEP CONFIG											
	o POST-SLEEP CONFIG		o DTO 672 EMU CUFF C/L		o DSO 483 BACK PAIN		o DTO 623 CAB AIR MON													
	o P/TVO1 CREAM		o -ZLV, +YVV		o -ZLV, -YVV															
	o GAP's 12-13																			

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
038:17:51/ 039:05:51		005:12:00/ 006:00:00		038:11:51/ 038:23:51		06/038 CST	26.3		FEBRUARY 7, 1995	STS-63	FINAL	12/23/94			
CST	:038	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:006
FD	:006	12	13	14	15	16	17	18	19	20	21	22	23		
MET	:005	12	13	14	15	16	17	18	19	20	21	22	23		
CDR	PRE SLEEP		PRON INF MED	PRE SLEEP	SLEEP								POST SLEEP	POST SLEEP	
PLT	PRE SLEEP	SLEEP								POST SLEEP					
MS1	PRE SLEEP	SLEEP								POST SLEEP					
MS2	PRE SLEEP	SLEEP								POST SLEEP					
MS3	PRE SLEEP	SLEEP								POST SLEEP					
MS4	PRE SLEEP	SLEEP								POST SLEEP					
DAY/NIGHT															
ORBIT	87	88	89	90	91	92	93	94	95						
TDRS															
ATTITUDE	-ZLV, -YVV														
CSE	HEATPIPE HI-LOAD														
NOTES:															
														PWR UP GRP B	

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
039:05:51/ 039:17:51	006:00:00/ 006:12:00	038:23:51/ 039:11:51	07/038 CST	27.9		FEBRUARY 7, 1995	STS-63	FINAL	12/23/94	
CST :038 FD :007 MET :006	0 1 2 3 4 5 6 7 8 9 10 11 12									
CDR	NC2-S NH-S		NCC-S T1-S		GRAPPLE	PSETUP 4	+ZSI MNR	EVA P/TV04 OPS (EVA)		ZLV MNR BR
PLT	SPARTAN RETRIEVE				A/L DEPRESS	EVA		POST EVA (W/O H2O)		
MS1	EVA PREP	EMU PURGE/PB			A/L DEPRESS	EVA (4:40)		POST EVA (W/O H2O)		
MS2	EVA PREP	EMU PURGE/PB			A/L DEPRESS	EVA (4:40)		POST EVA (W/O H2O)		
MS3	PCG-STES HHDC DCT	SH EXP PRE EVA	SH SYS PRE EVA	SPARTAN RETRIEVE		SPARTAN BERTH	EVA P/TV09 OPS (ICBC)		IMMUNE CK	
MS4	EVA PREP	EMU PURGE/PB		SPARTAN RETRIEVE	SPARTAN BERTH	EVA		CHROMEX	MID STCK	
DAY/NIGHT	[Day/Night Cycle]									
ORBIT	95 96 97 98 99 100 101 102									
SAA	[SAA Data]									
TDRS	[TDRS Data]									
ATTITUDE	-Z TGT TRK INRTL -XLV, -ZVV +ZSI -ZLV, +YVV									
CSE	HEATPIPE HI-LOAD TRP STABILIZE 63k									
NOTES:	POST SLEEP PRE CRADLE DSO 489 EVA DOSIMETRY GAP's 17-18 TIPS AUDIO CONFIG P/TV 09 SETUP P/TV 03 OPS P/TV 03 OPS SPARTAN BERTH -ZLV, +YVV									

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
039:17:51/ 040:05:51		006:12:00/ 007:00:00		039:11:51/ 039:23:51		07/039 CST	29.4		FEBRUARY 8, 1995	STS-63	FINAL	12/23/94			
CST	:039	12	13	14	15	16	17	18	19	20	21	22	23	FD08 0	MET:007
FD	:007	12	13	14	15	16	17	18	19	20	21	22	23		
MET	:006														
CDR	B P L D E A C T	PRE SLEEP	P R O N I F M E D	PRE SLEEP											POST SLEEP
PLT	POST EVA (W/O H2O)			PRE SLEEP											POST SLEEP
MS1	POST EVA (W/O H2O)	E M C H G A T		PRE SLEEP											POST SLEEP
MS2	POST EVA (W/O H2O)	E M C H G A T		PRE SLEEP											POST SLEEP
MS3	SH SYS POST EVA	E M C H G A T		PRE SLEEP											POST SLEEP
MS4	MOD ST CK	E M C H G A T		PRE SLEEP											POST SLEEP
DAY/NIGHT															
ORBIT	103 104 105 106 107 108 109 110														
SAA															
TDRS															
ATTITUDE	-ZLV, +YVV														
CSE	TRP STABILIZE 63k														
NOTES:	@ SH EXP POST EVA @BPM's 36-40 @DTO 623 CAB AIR MON @PRE-SLEEP CONFIG														


GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
040:05:51 / 040:17:51	007:00:00 / 007:12:00	039:23:51 / 040:11:51	08/039 CST	30.8		FEBRUARY 8, 1995	STS-63	FINAL	12/23/94					
CST :039	0	CST:040	1	2	3	4	5	6	7	8	9	10	11	12
FD :008	0		1	2	3	4	5	6	7	8	9	10	11	12
MET :007	0		1	2	3	4	5	6	7	8	9	10	11	12
CDR	POST SLEEP	POST SLEEP	POST SLEEP	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF
PLT	POST SLEEP	POST SLEEP	POST SLEEP	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF
MS1	POST SLEEP	POST SLEEP	POST SLEEP	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF
MS2	POST SLEEP	POST SLEEP	POST SLEEP	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF
MS3	POST SLEEP	POST SLEEP	POST SLEEP	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF
MS4	POST SLEEP	POST SLEEP	POST SLEEP	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF	CREW CONF
DAY/NIGHT	[Day/Night Cycle Diagram]													
ORBIT	[Orbit Cycle Diagram]													
TDRS	[TDRS Cycle Diagram]													
ATTITUDE	[Attitude Cycle Diagram]													
CSE	[CSE Cycle Diagram]													
NOTES:	<p>SSC EXTENDED TEST</p> <p>Δ PCF-LST EOM CHNG ⊕+ZLV, -YVV ⊕BIASED +XLV, -YVV ⊕+ZLV, -YVV</p> <p>⊕+ZLV, -YVV ■ APU HTR RECONFIG ⊕-ZLV, -YVV</p> <p>⊕POST-SLEEP CONFIG Δ CPDS DEACT</p> <p>⊕OSO 2008 SPACE RADIATION DOSIMETRY ⊕STOW</p> <p>Δ ASC DL - PADM</p>													

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
040:17:51/ 041:05:51	007:12:00/ 008:00:00	040:11:51/ 040:23:51	08/040 CST	32.2		FEBRUARY 9, 1995	STS-63	FINAL	12/23/94

CST :040	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:008
FD :008	12	13	14	15	16	17	18	19	20	21	22	23	0	
MET :007	12	13	14	15	16	17	18	19	20	21	22	23	0	

CDR	PRE SLEEP	PRE SLEEP	SLEEP										POST SLEEP
PLT		PRE SLEEP	SLEEP										POST SLEEP
MS1		PRE SLEEP	SLEEP										POST SLEEP
MS2		PRE SLEEP	SLEEP										POST SLEEP
MS3		PRE SLEEP	SLEEP										POST SLEEP
MS4		PRE SLEEP	SLEEP										POST SLEEP

DAY/NIGHT	
ORBIT	118 119 120 121 122 123 124 125 126
TORS	
ATTITUDE	-ZLV, -YVV
CSE	
NOTES:	

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
041:05:51 / 041:17:51		008:00:00 / 008:12:00		040:23:51 / 041:11:51		09/040 CST	33.4		FEBRUARY 9, 1995	STS-63	FINAL	12/23/94			
CST	:040	0	CST:041	1	2	3	4	5	6	7	8	9	10	11	12
FD	:009	0		1	2	3	4	5	6	7	8	9	10	11	12
MET	:008	0		1	2	3	4	5	6	7	8	9	10	11	12
CDR	POST SLEEP	PRIV MED	-XSI MNV R	DEORBIT PREP	IMU MNV R	IMU ALGN	PLBD ALGN	DEORBIT PREP							
PLT	POST SLEEP		PGWR UBP	DEORBIT PREP		IMU ALGN	PLBD ALGN	DEORBIT PREP							
MS1	POST SLEEP	IMMUNE CK	IN RELENTRY	DEORBIT PREP				DEORBIT							
MS2	POST SLEEP			DEORBIT PREP		IMU ALGN	PLBD ALGN	DEORBIT PREP	BURN*						
MS3	POST SLEEP			DEORBIT PREP											
MS4	POST SLEEP		CR CHECK	DEORBIT PREP											
DAY/NIGHT															
ORBIT	126	127	128	129	130	131	132	133	134						
TDRS	E														
W															
ATTITUDE	-ZLV, -YVV		-XSI	IMU		-XSI	BURN	ENTRY							
CSE															
NOTES:									* DEORBIT BURN 8/05:13						* KSC LANDING 8/06:13

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DETAILED TIMELINE

DETAILED
TIMELINE

DETAILED TIMELINE

STS-63 (FD 01) PLT

CDR

MS2

MCC

MET
DAY 000

00:00

01:00

02:00

03:00

04:00

Activities prior to 0/02:30 MET are in the ASCENT and POST INSERTION Checklists. The Orbiter should be in +YLV, +ZVV attitude upon entering this Flight Plan.

FD01 EZ ACTIVITIES:
PCS 1(2) CONFIG (ORB OPS, ECLS)
 Config Sys 1 (5 Min/2 Cmn)
LAMP TEST (ORB OPS, ECLS) (5 Min)
SMK DETN CKT TEST
 (ORB OPS, ECLS) (5 min)
CPA OPS (ORB OPS, CREW SYS) (15 Min)
AGE PROCEDURES (DSO 201B) MS1, MS4
 (BIOMED DSO/DTOs, DSO 201B)
 Symptom Checklists
BACK PAIN IN MICRO-G (DSO 483) PLT,MS2,MS3
 (BIOMED DSO/DTOs, DSO 483)
 Daily pain questionnaire
EFFECTS METABOLISM (DSO 608) - MS1,MS2
 (BIOMED DSO/DTOs, DSO 608)
 Start fluid loading 2hrs prior to
 exercise
 Record fluid intake

A6(B1)
AUTO/VERN

SM CKPT INIT (ORB OPS, DPS)

AFT CONTROLLER C/O
(ORB OPS, GNC)

P/TV05 SETUP (ODERACS)
(PHOTO/TV, P/TV SCENES)

CGP ACTIVATION
(PL OPS, CGP)

PGSC/BIA SETUP
(PL OPS, BIA)

UPLINK
TIPS TEST MSG
A/G2 HANDOVER
FROM MCC TO PCCC

TV (TDRW)
(GND CNTL-PLB)
UPDATE
ODERACS DEPLOY
PAD

ORB 3

ODERACS DEPLOY SETUP
(PL OPS, ODERACS)

ODERACS DOOR OPEN
(PL OPS, ODERACS)

ODERACS DEPLOY SETUP
(PL OPS, ODERACS)

ODERACS DOOR OPEN
(PL OPS, ODERACS)

HEATER ACTIVATION
(PL OPS, SPARTAN 204)

P/TV05 OPERATIONS (ODERACS)
(PHOTO/TV, P/TV SCENES)

INFORM CREW
GO FOR ODERACS
DOOR OPEN

TV (TDRE)
(CREW CNTL-PLB)

ODERACS DEPLOY
(PL OPS, ODERACS)

DEPLOY (03:40)

LOAD DAP A6 VERN ROT RATE

MNVR (TRK) BAISED -XLV, +YVV (GLO AIRGLOW)

TG=2 BV=2 OM=285

A/AUTO/ALT (03:45) Init TRK

When in ATT A/AUTO/VERN

ODERACS DEPLOY
(PL OPS, ODERACS)

ODERACS DOOR CLOSEOUT
(PL OPS, ODERACS)

TOPPING FES STARTUP
(ORB OPS, ECLS)

YTR ACT (Cue Cards, 8mm VTR)

INFORM CREW
GO FOR DEPLOY

INFORM CREW
GO FOR ODERACS
DOOR CLOSEOUT

A6(B1)
AUTO/ALT
A6(B1)
AUTO/VERN
04:00

T
D
R
E
W

MET
DAY 000

A
S
C
E
N
T

STS-63 (FD 01)
MS3

MS1

MS4

MCC

00:00

01:00

02:00

03:00

04:00

A
S
C
E
N
T

+
Y
L
V
,
+
Z
V
V

ORB
2

ORB
3

AGF PROCEDURES
(BIOMED DSO/DTO, DSO 201B)
Perform steps A and B
SPACEHAB ACT
(SH OPS, ACTIVATION)
INGRESS PREP
INGRESS
PGSC ACTIVATION

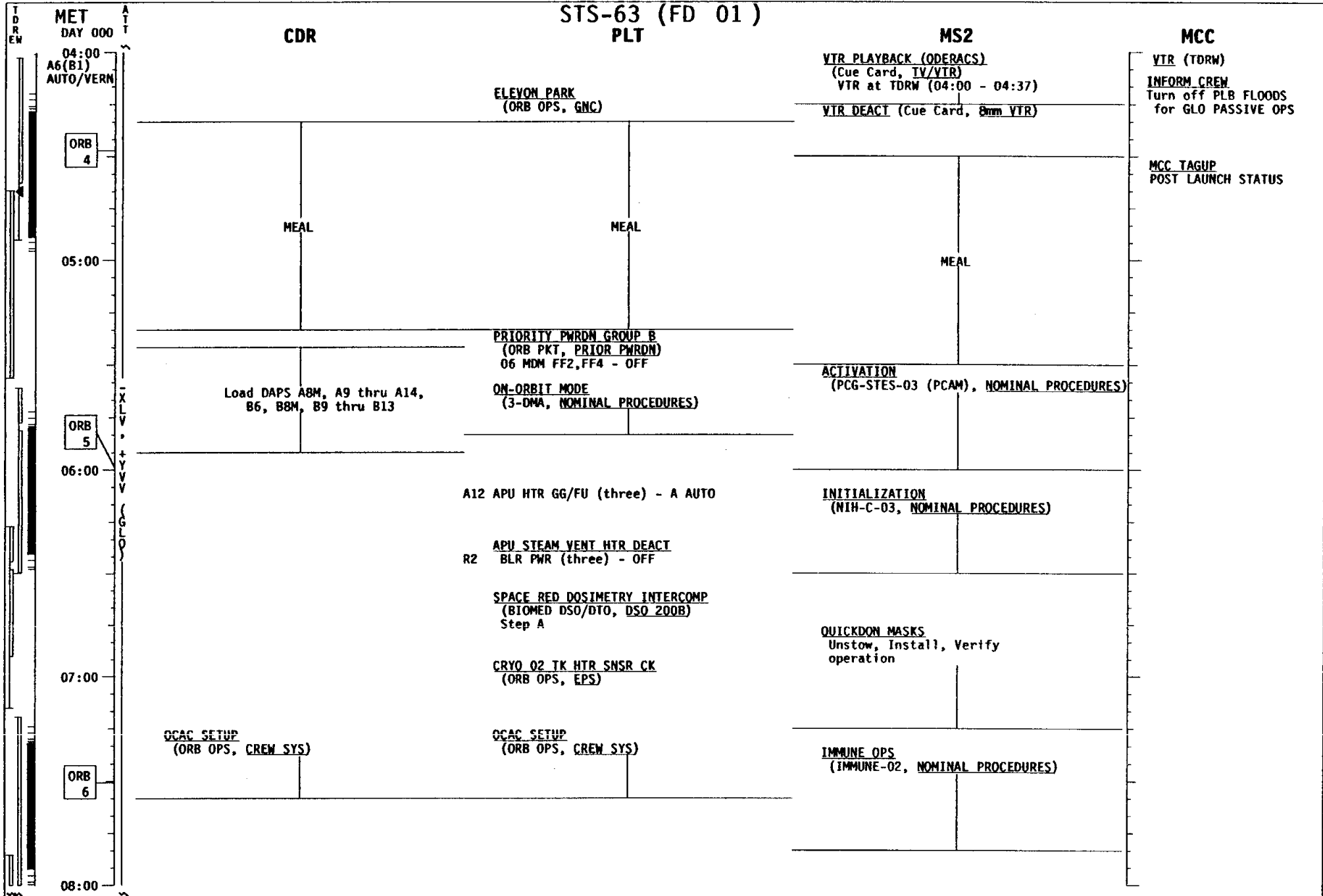
SETUP
(PCF-LST, NOMINAL PROCEDURES)

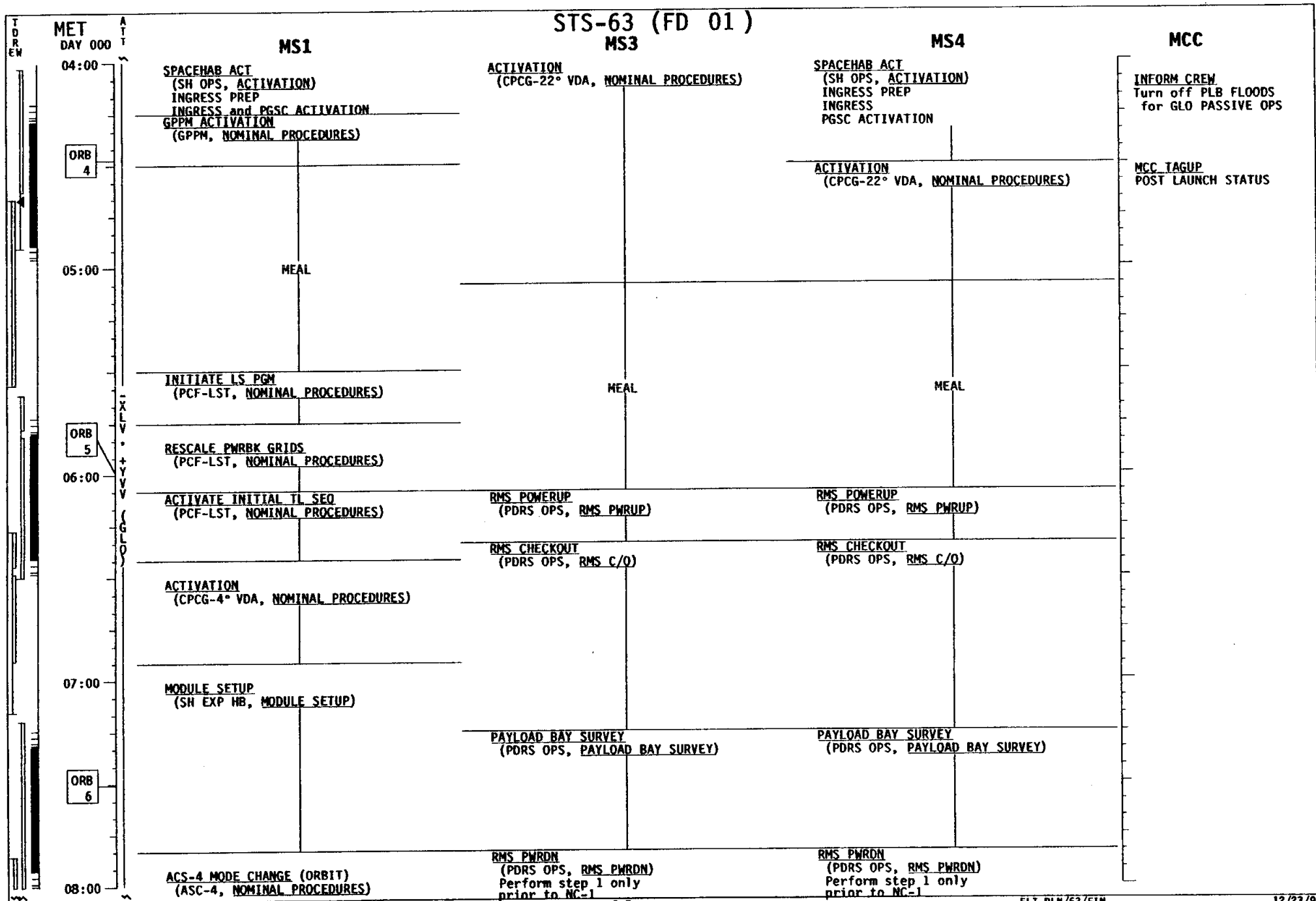
P/TV02 SETUP
(PHOTO/TV, P/TV SCENES)
Unstow camcorder for CPCG
ABL PORT RMS HTR (two)-AUTO

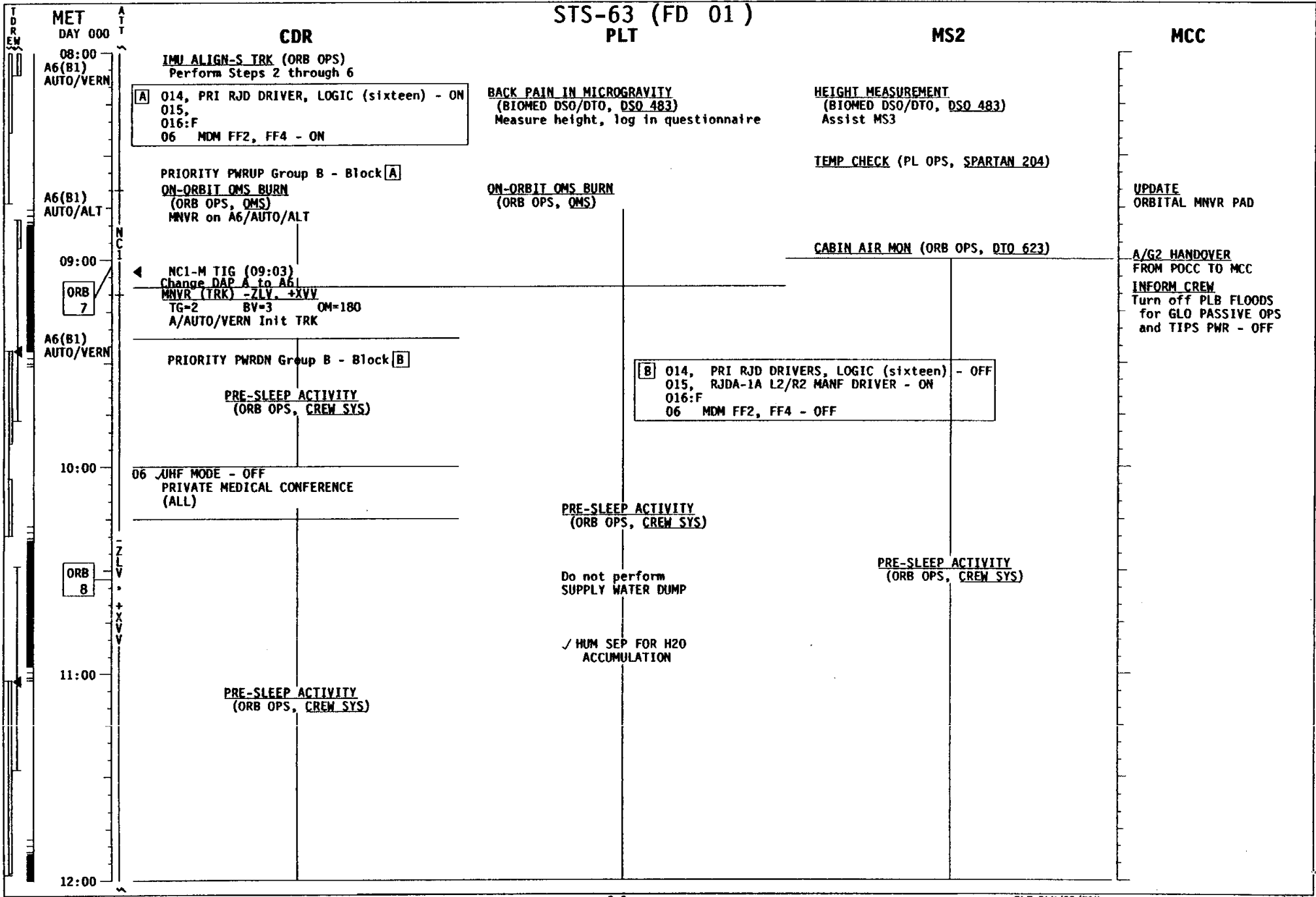
ACTIVATION
(CPCG-22° VDA, NOMINAL PROCEDURES)

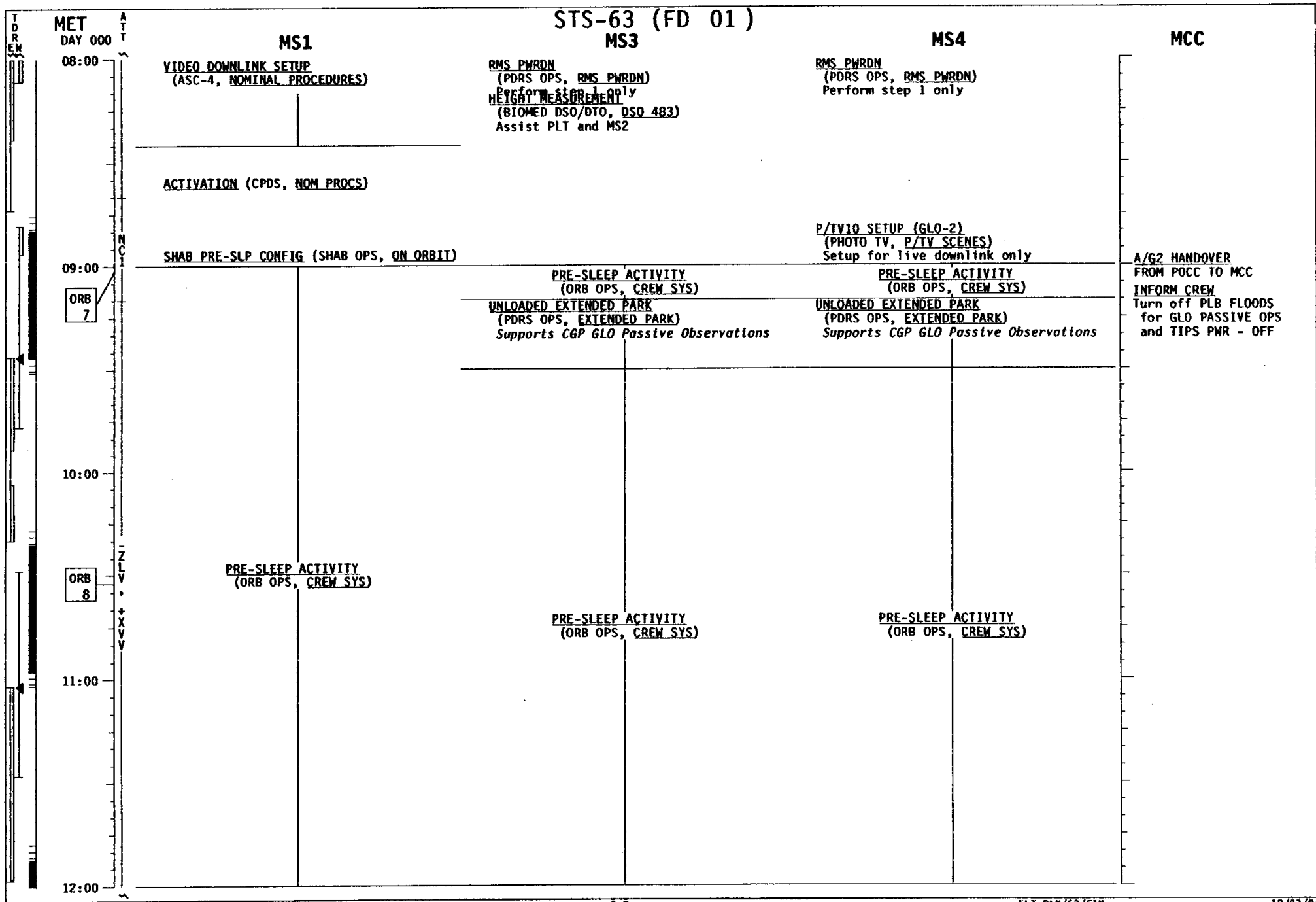
AGF PROCEDURES
(BIOMED DSO/DTO, DSO 201B)
Perform steps A and B
SPACEHAB ACT
(SH OPS, ACTIVATION)
INGRESS PREP
INGRESS
PGSC ACTIVATION
Perform P/TV 11 SETUP/OPS
as time permits

A/G2 HANDOVER
FROM MCC TO POCC









STS-63 (FD 01)

CDR

PLT

MS2

MCC

T
D
R
E
W

MET
DAY 000

12:00

ORB
9

A6(B1)
AUTO/VERN

13:00

ORB
10

14:00

15:00

ORB
11

16:00

ORB
12

17:00

18:00

ORB
13

19:00

ORB
14

20:00

Z
L
V
+
X
V
V

SLEEP

SLEEP

SLEEP

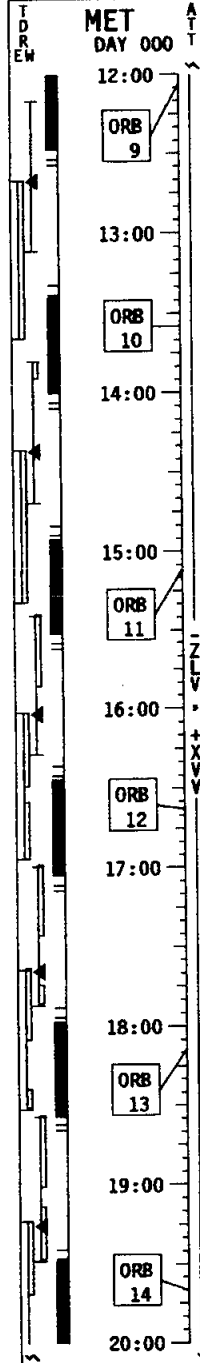
STS-63 (FD 01)

MS1

MS3

MS4

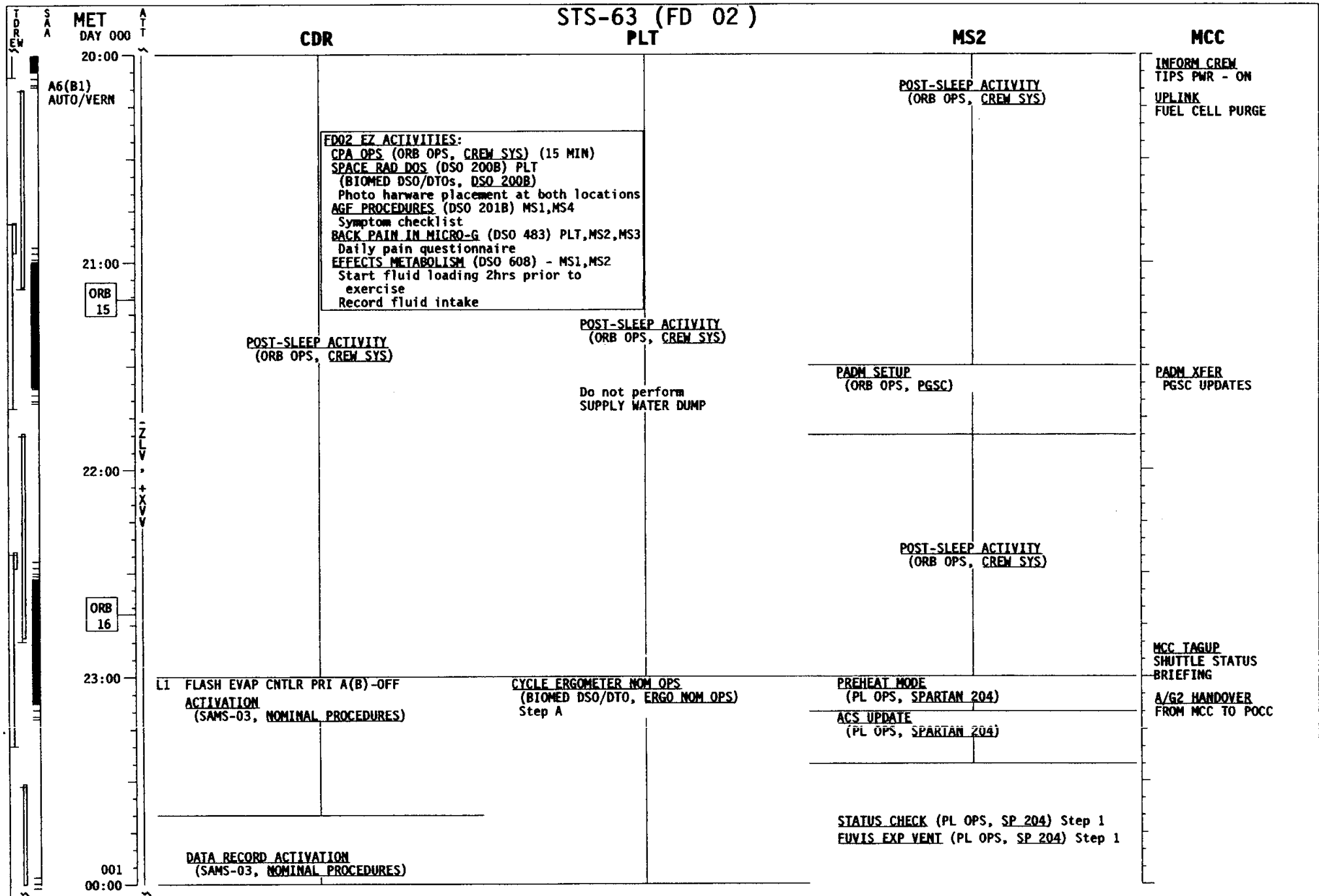
MCC



SLEEP

SLEEP

SLEEP



STS-63 (FD 02)

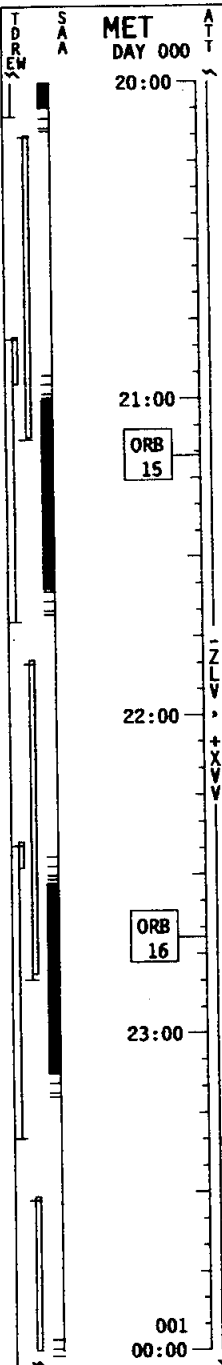
MS1

MS3

MS4

MCC

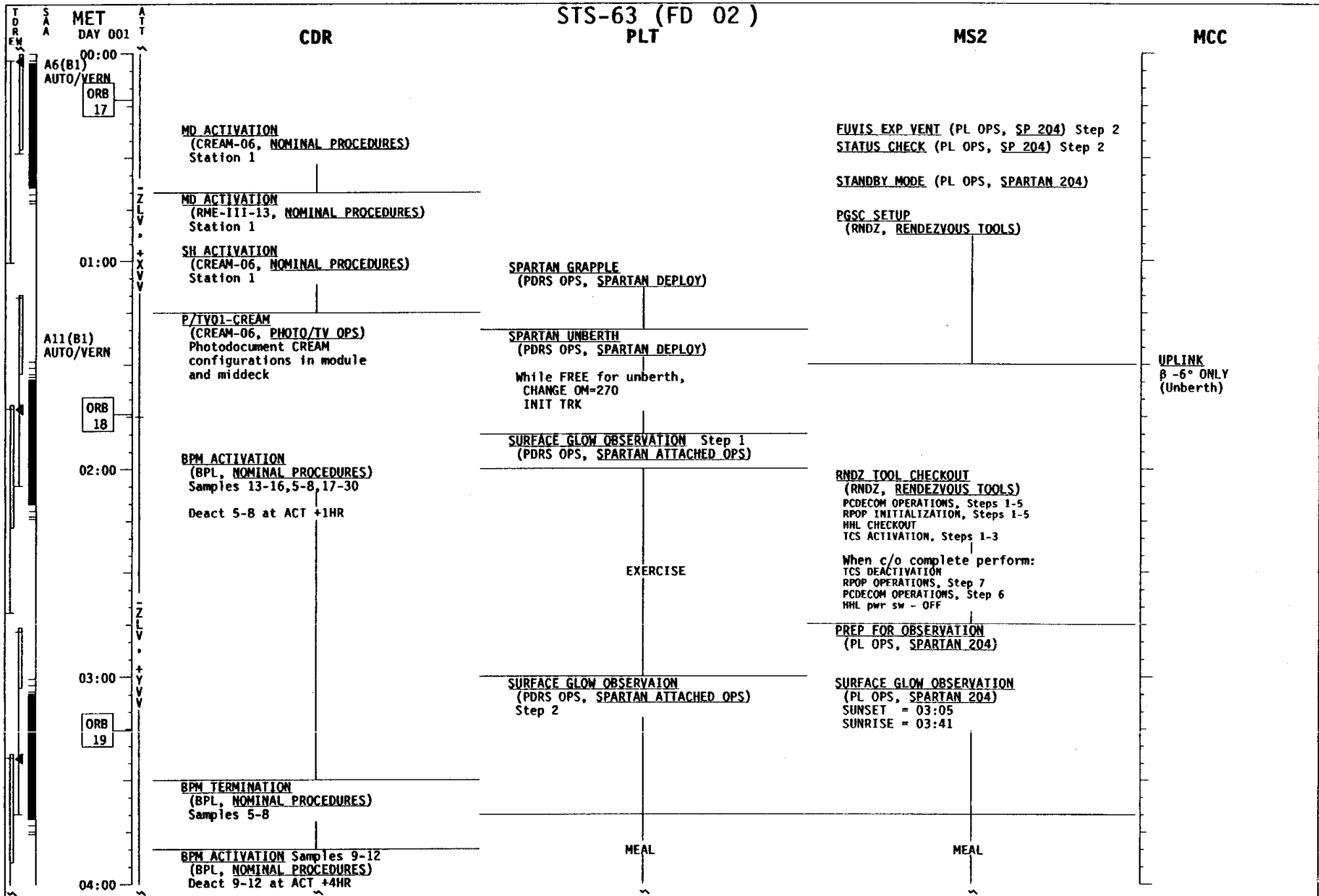
MET DAY 000

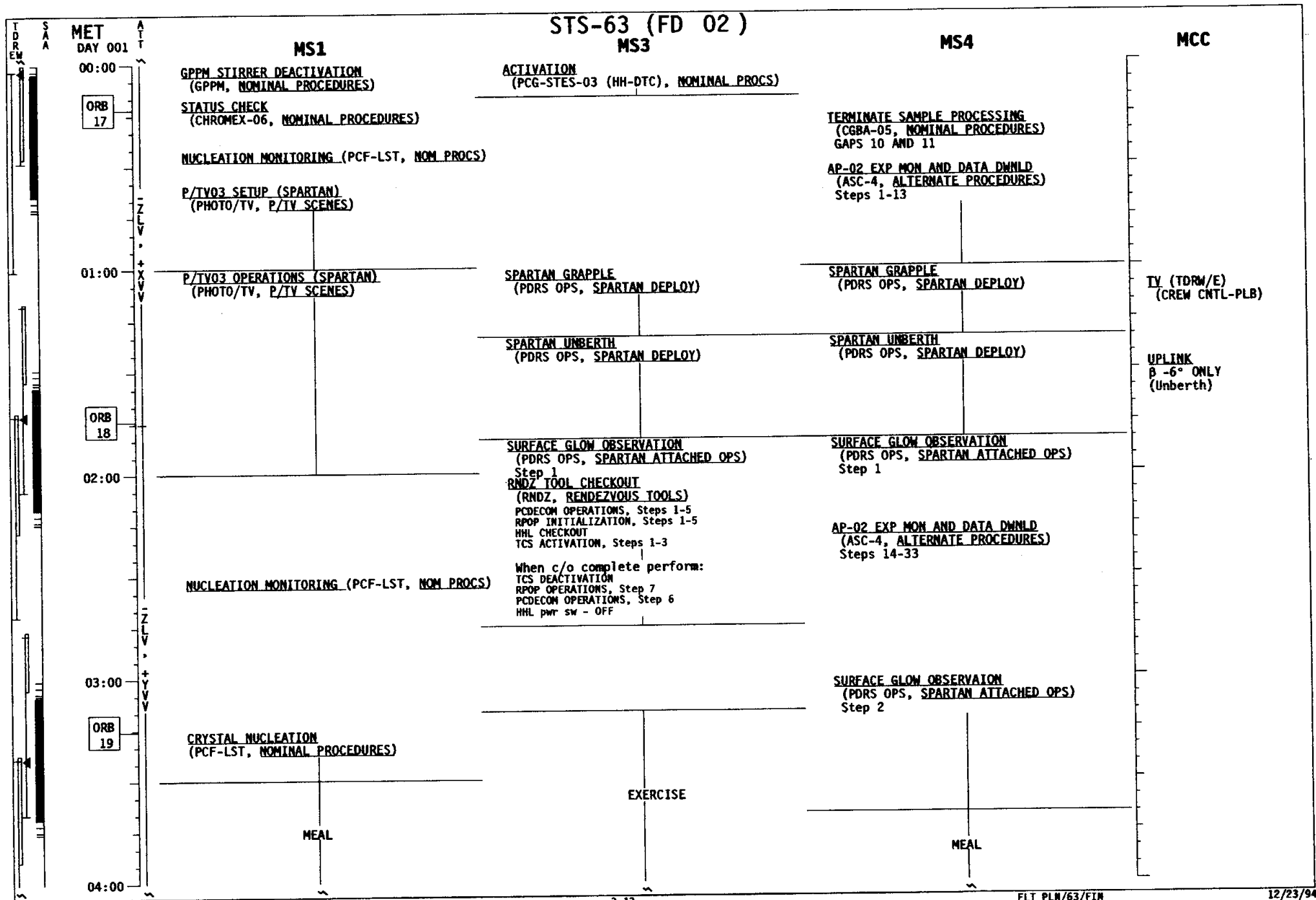


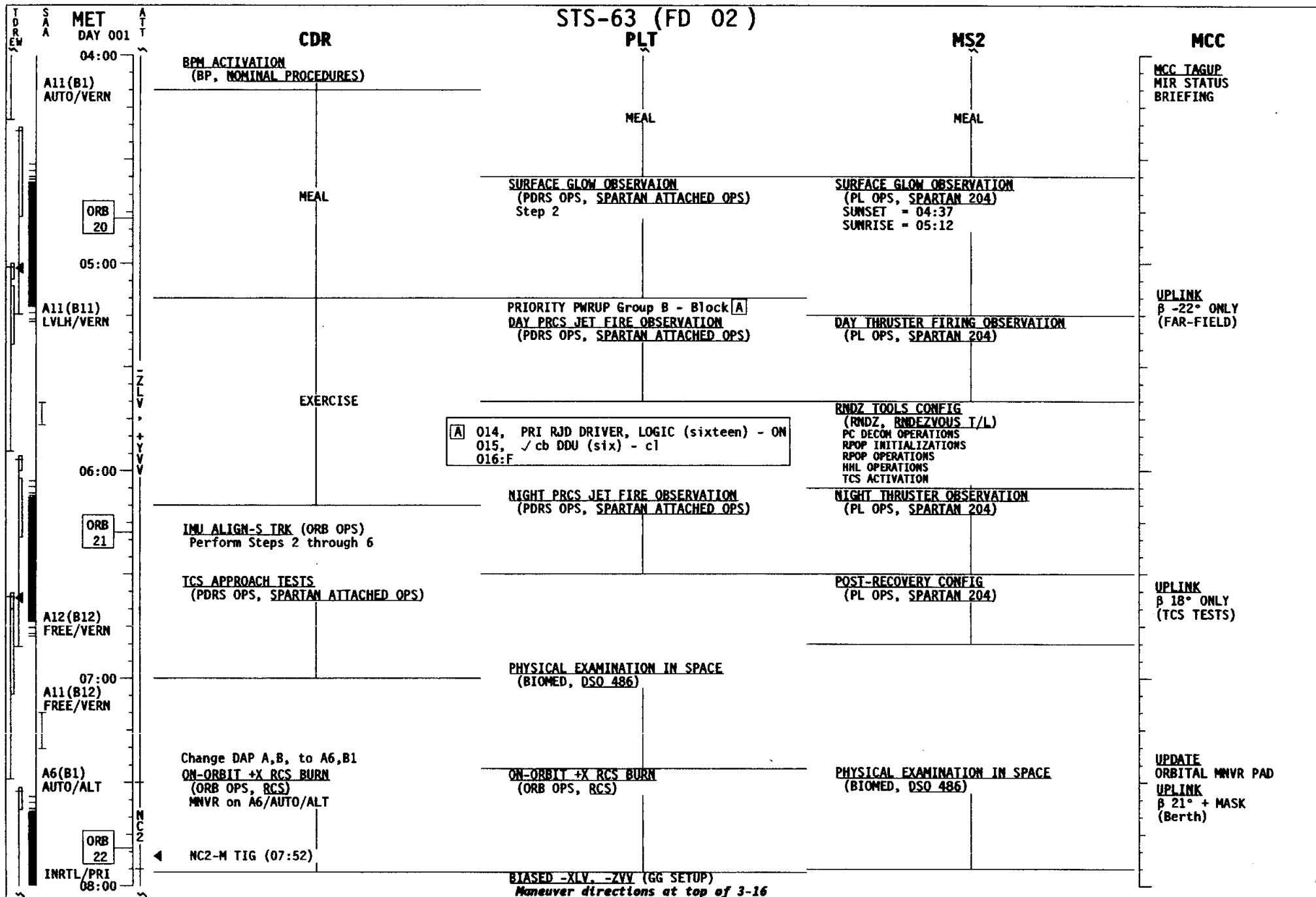
	POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)	POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)	POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)
23:00 SPACEHAB POST-SLEEP CONFIG (SPACEHAB OPS, ON ORBIT) NUCLEATION MONITORING (PCF-LST, NOM PROCS) MIDDECK DAILY STATUS CHECK (SH EXP HB, STATUS CHECKS) SPACEHAB DAILY STATUS CHECK (SH EXP HB, STATUS CHECKS) DAILY BRIEFING (SHAB)	ACTIVATION (PCG-STES-03 (HH-DTC), NOMINAL PROCS)	INITIATE SAMPLE PROCESSING (CGBA-05, NOMINAL PROCEDURES) GAPS 10,11,1-5,7-9,12-18 DEACT 10 and 11 at ACT +1HR	

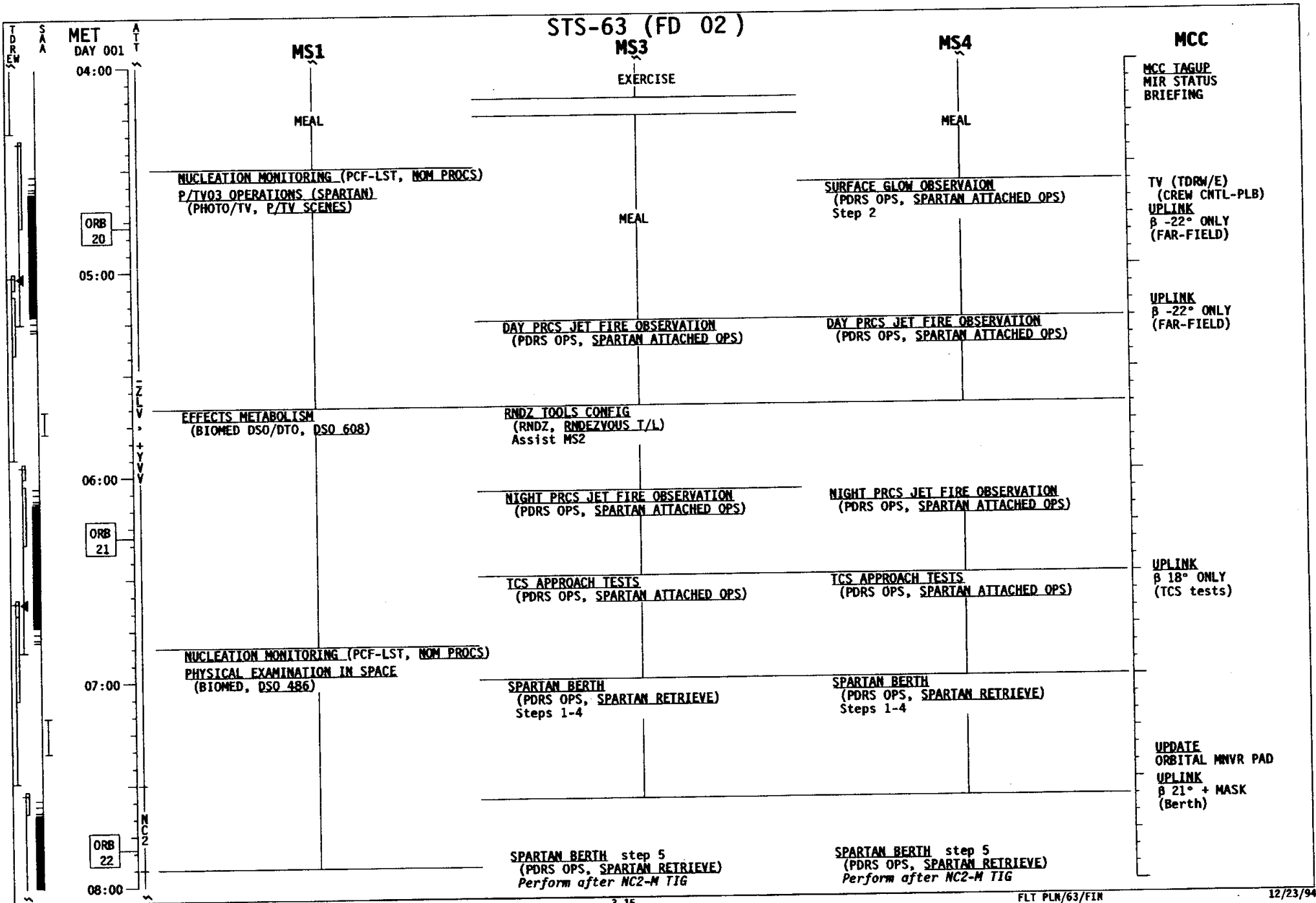
INFORM CREW
TIPS PWR - ON

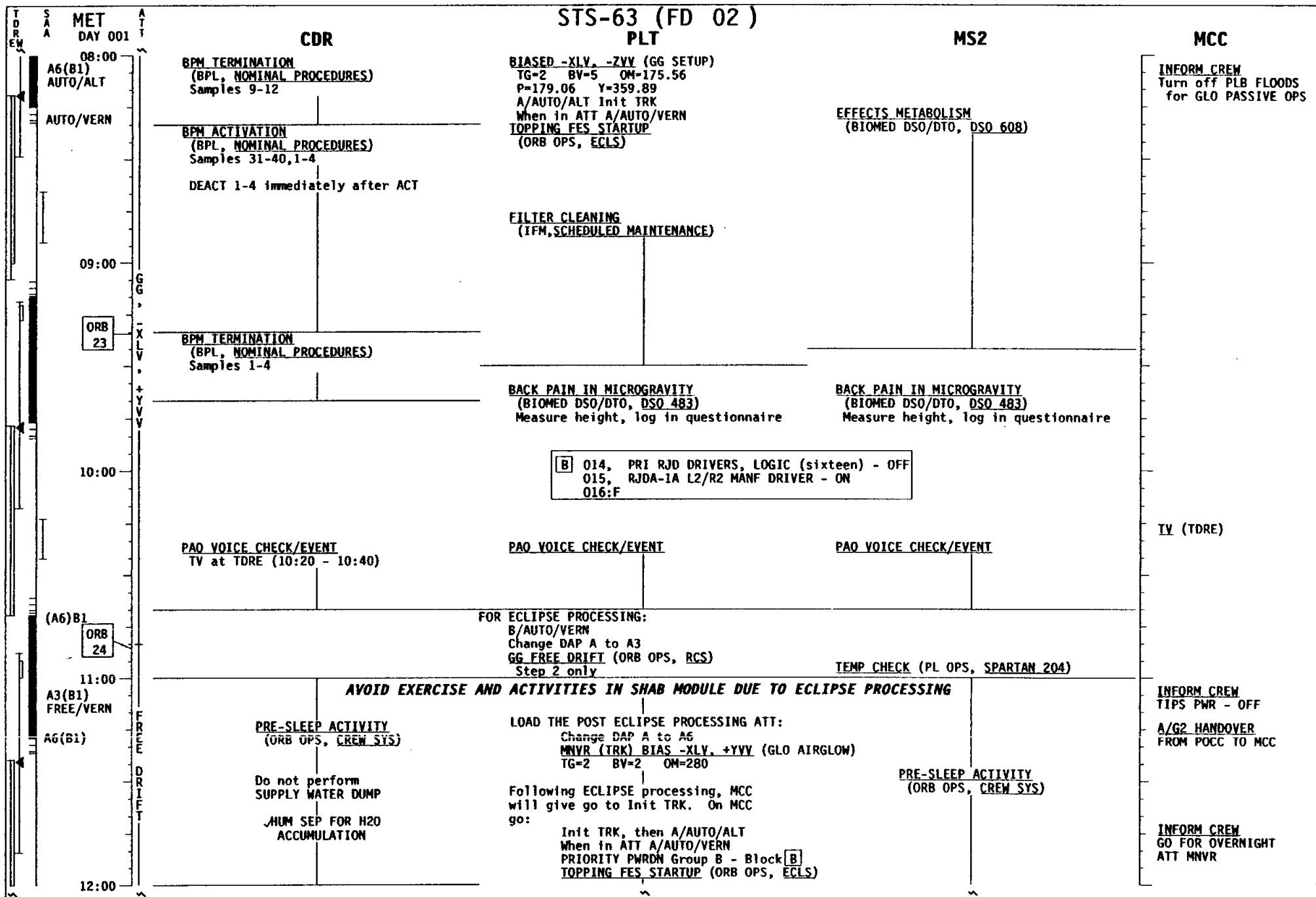
MCC TAGUP
SHUTTLE STATUS
BRIEFING
A/G2 HANDOVER
FROM MCC TO POCC









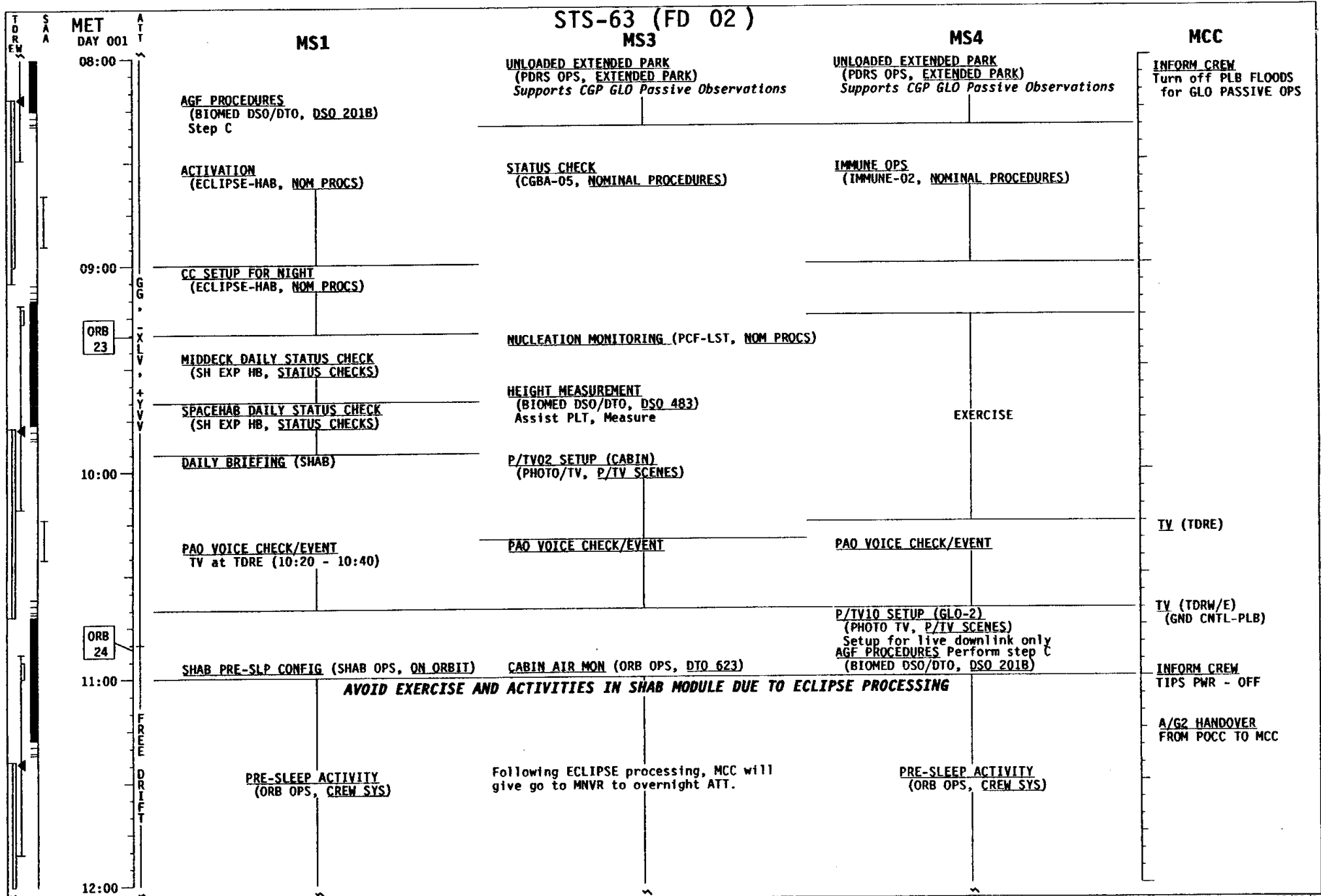


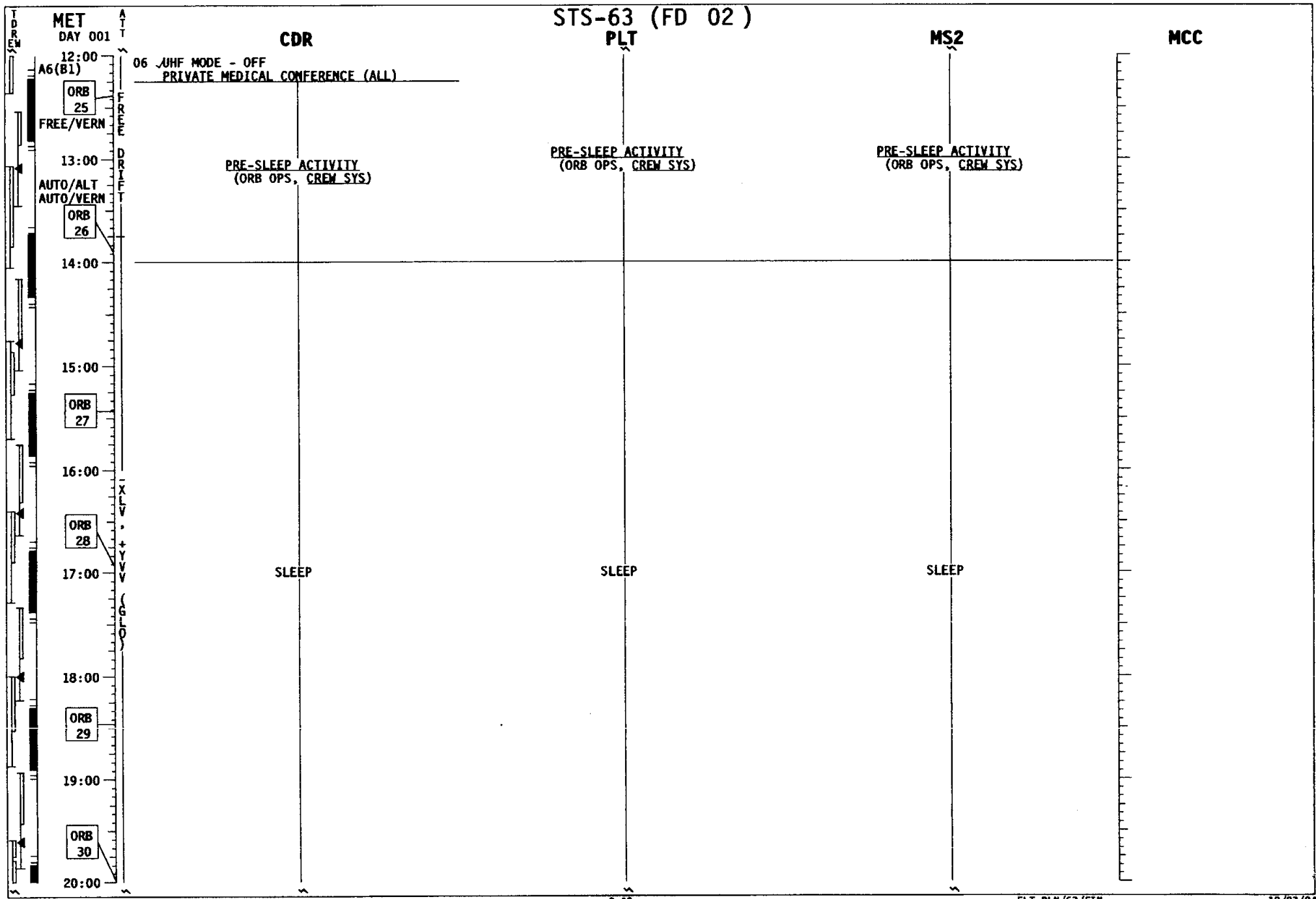
INFORM CREW
Turn off PLB FLOODS
for GLO PASSIVE OPS

TV (TDRE)

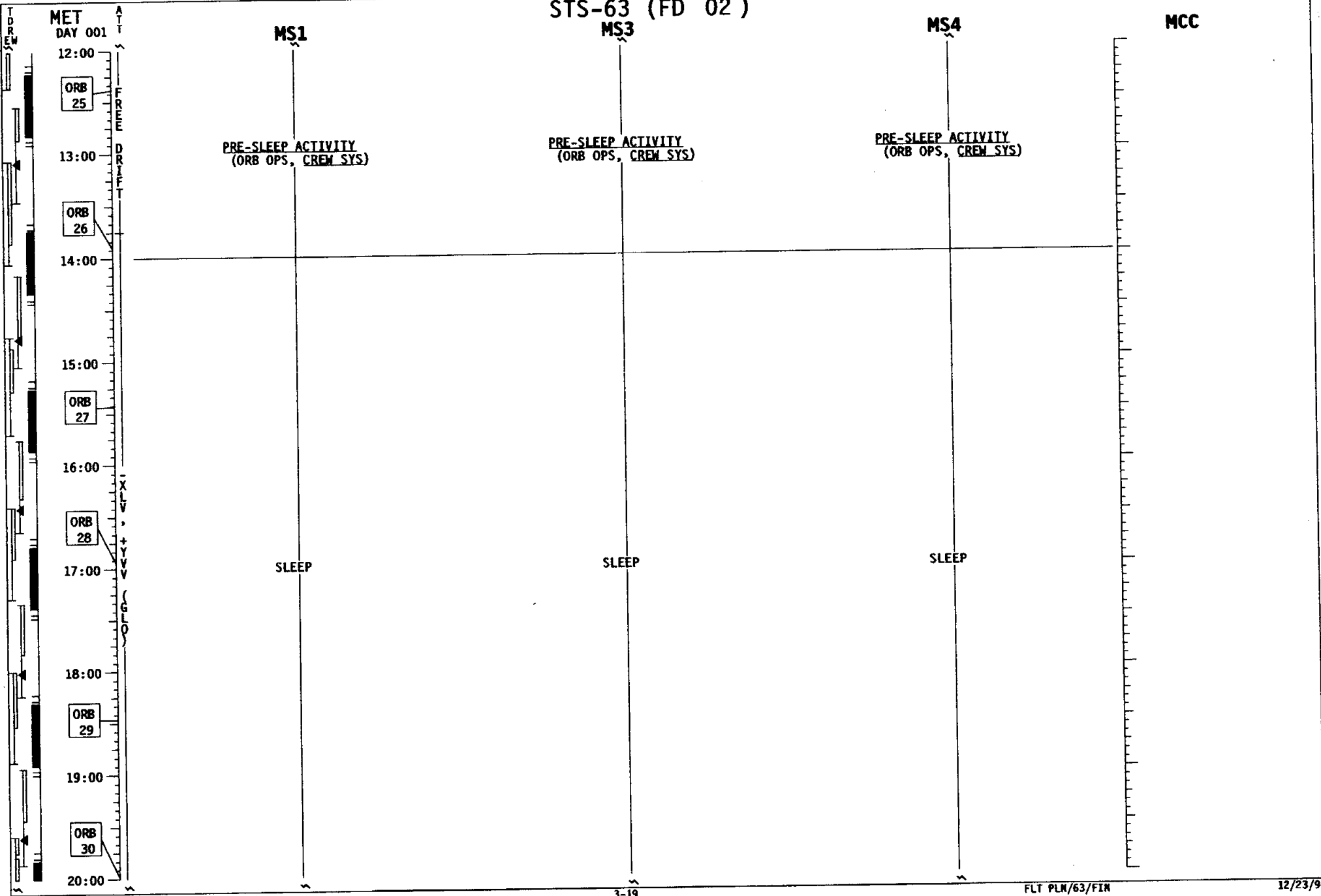
INFORM CREW
TIPS PWR - OFF
A/G2 HANDOVER
FROM POCG TO MCC

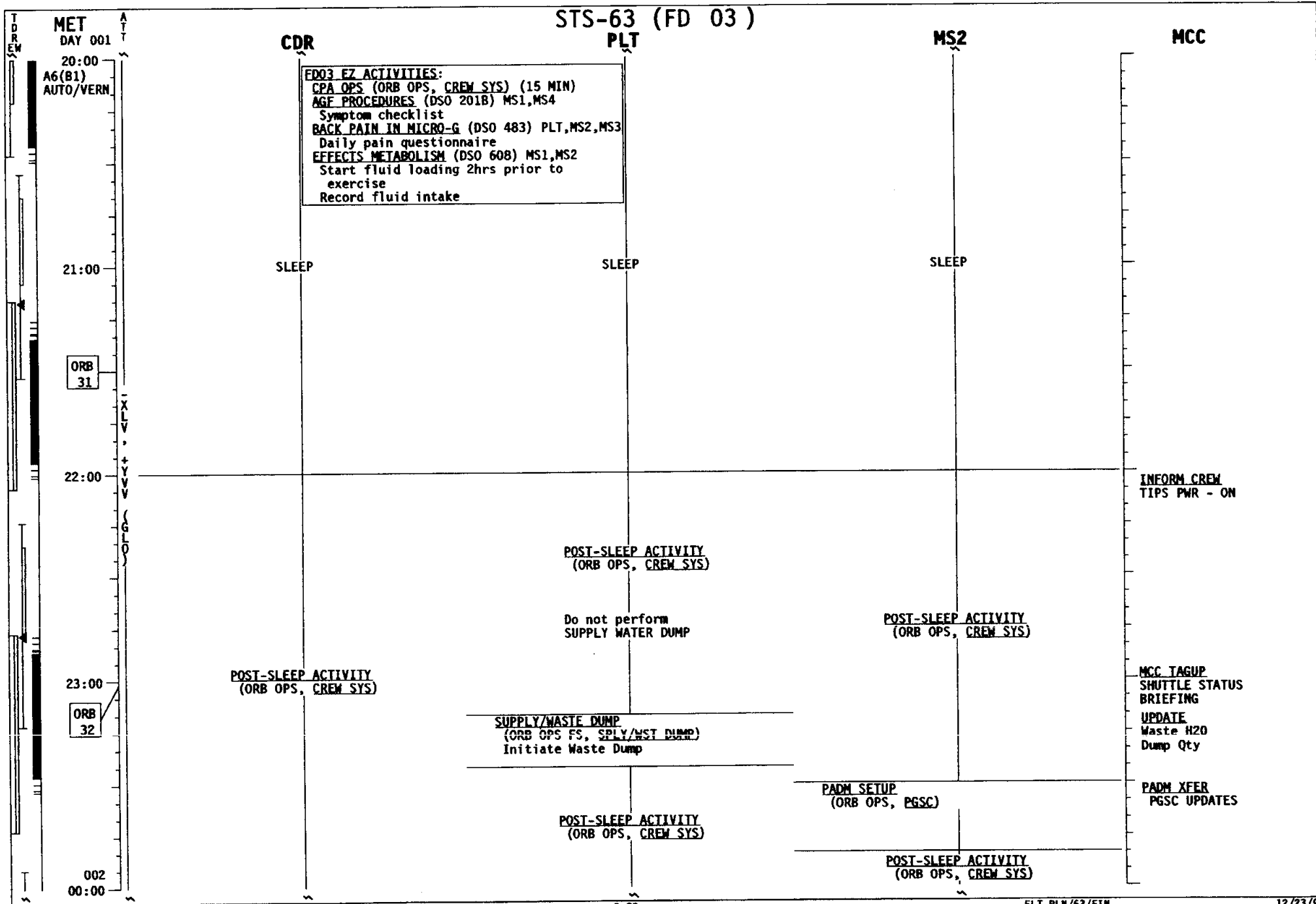
INFORM CREW
GO FOR OVERNIGHT
ATT MNVR



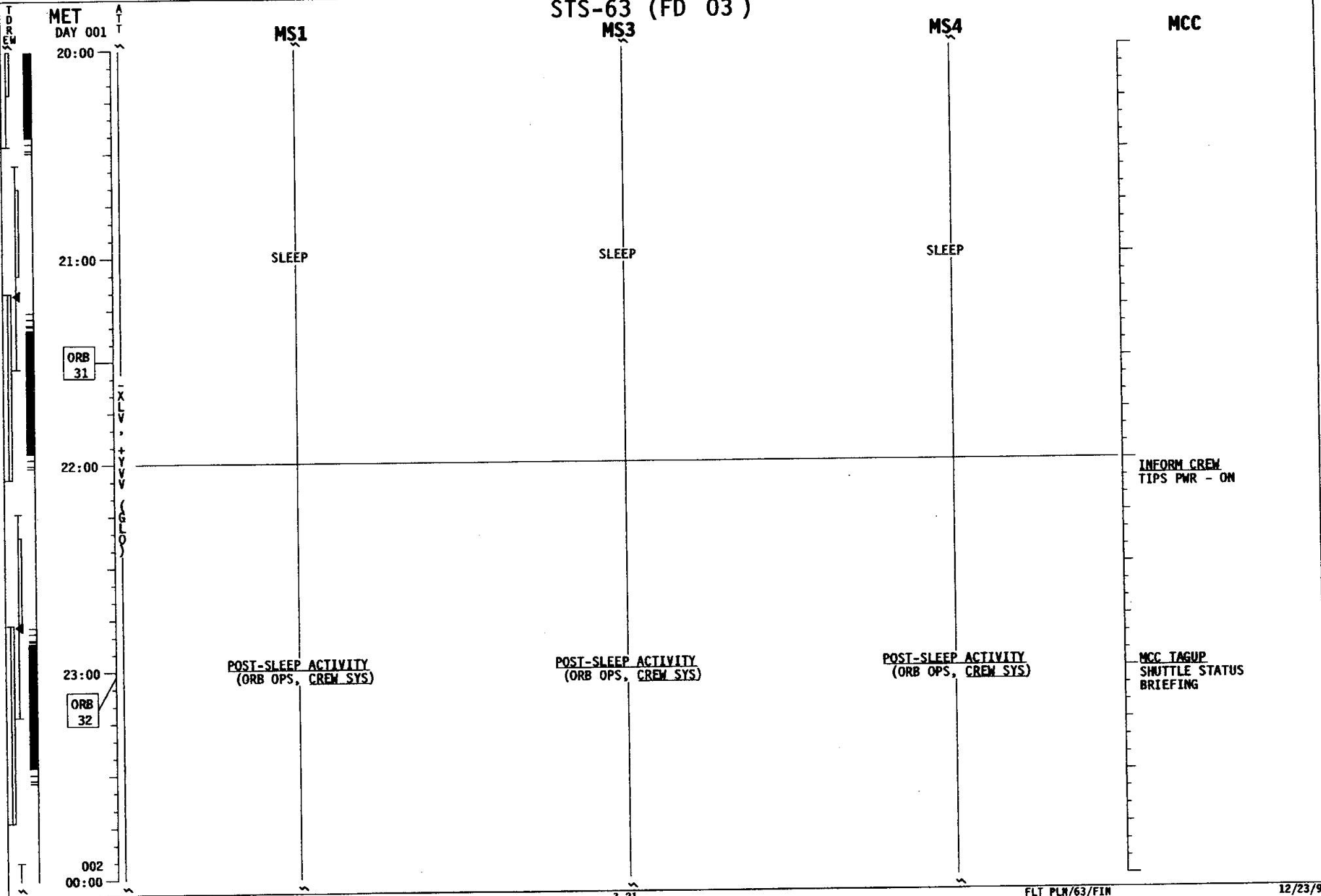


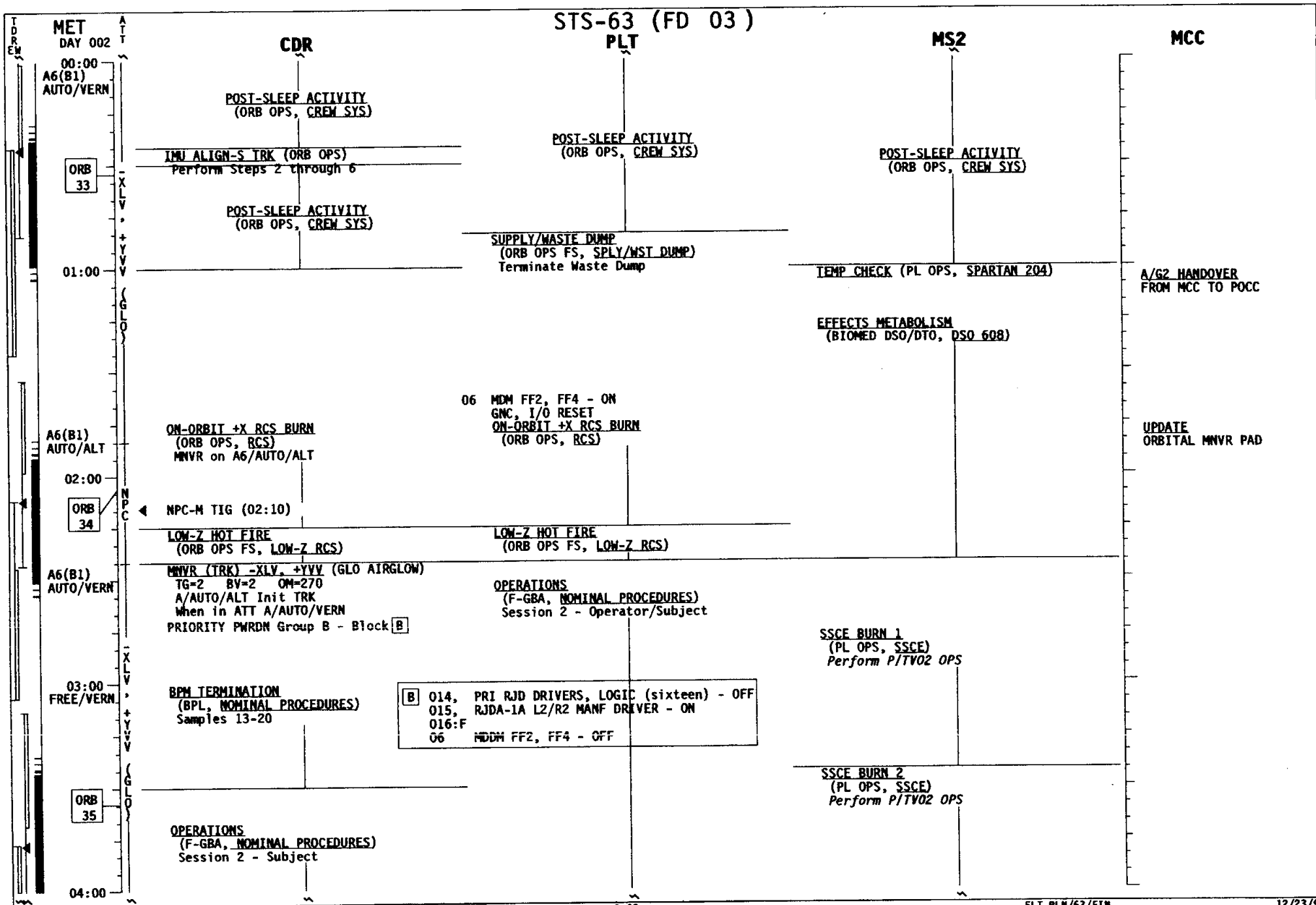
STS-63 (FD 02)

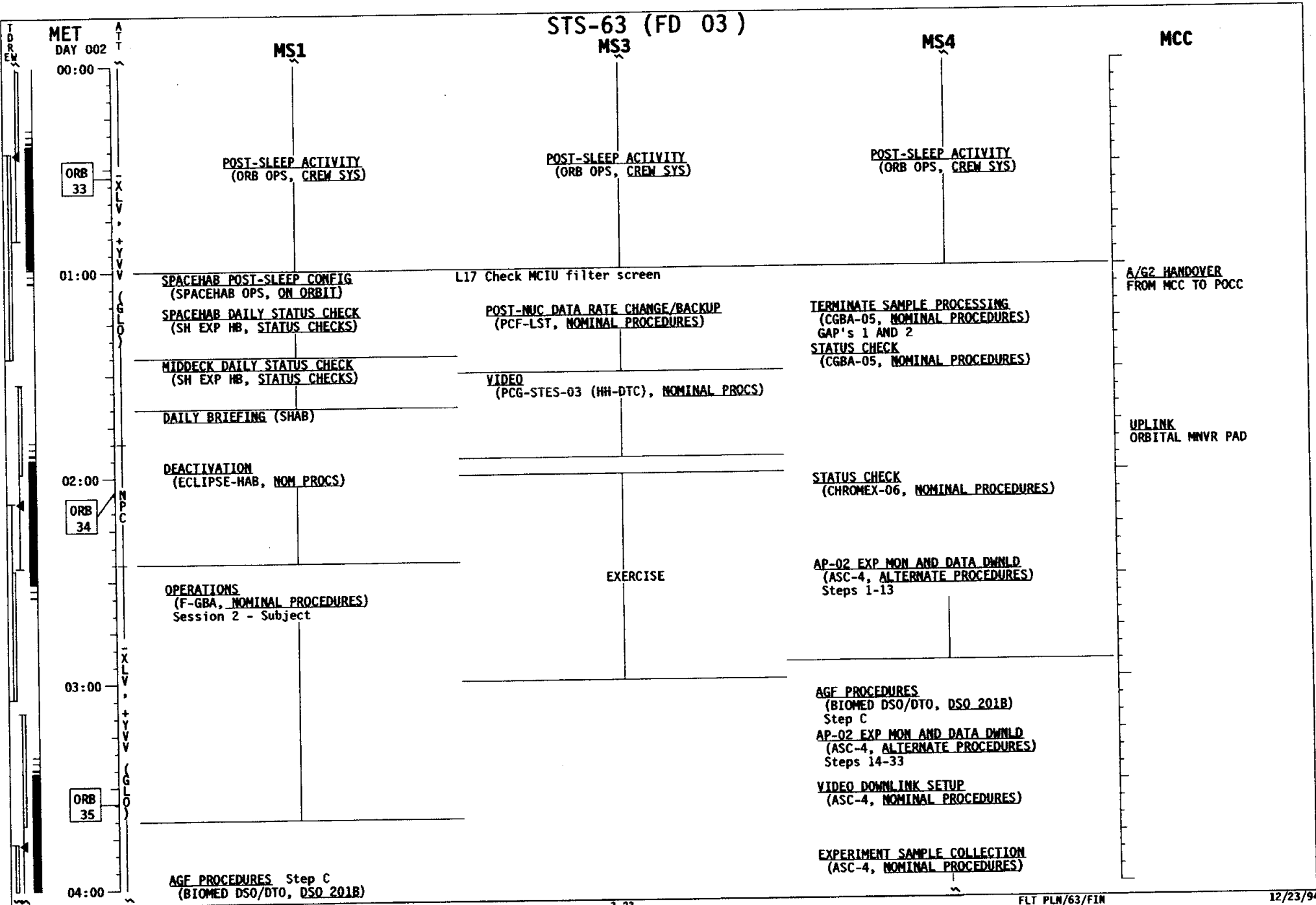




STS-63 (FD 03)







SECRET

MET
DAY 002

STS-63 (FD 03)

CDR

PLT

MS2

MCC

04:00
A6(B1)
AUTO/VERN

OPERATIONS
(F-GBA, NOMINAL PROCEDURES)
Session 2 - Subject

OPERATIONS
(F-GBA, NOMINAL PROCEDURES)
Session 2 - Operator/Subject

SETUP AND CHECKOUT
(WINDEX-01, NOMINAL PROCEDURES)

MCC TAGUP
MIR STATUS
BRIEFING

PORT CLINICAL BLOOD ANALYZER
(BIOMED DSO/DTO, DSO 492B)
Subject/Assist MS1
P/TV 02 OPERATIONS (CABIN)
(PHOTO/TV, P/TV SCENES)

05:00

ORB
36

INFORM CREW
PLB lights off
for WINDEX GLO ops

06:00

MEAL

MEAL

MEAL

PHYSICAL EXAMINATION IN SPACE
(BIOMED, DSO 486)

PAO VOICE CHECK/EVENT
TV at TDRW (06:30 to 07:13)

SHUTTLE GLOW OPS
(WINDEX-01, NOMINAL PROCEDURES)
SUNSET 06:29
SUNRISE 07:04
REF # 32

TV (TDRW)

ORB
37

07:00

EXERCISE

PHYSICAL EXAMINATION IN SPACE
(BIOMED, DSO 486)

PHYSICAL EXAMINATION IN SPACE
(BIOMED, DSO 486)

08:00

SHUTTLE GLOW OPS
Reference notes on page 3-26

XLV
+YVV
(GLO)

STS-63 (FD 03)

MET
DAY 002

MS1

MS4

MCC

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

ORB 36
ORB 37

AT T
X L V
+ Y V V
(G L O)

AGF PROCEDURES
(BIOMED DSO/DTO, DSO 201B)
Step C

PORT CLINICAL BLOOD ANALYZER
(BIOMED DSO/DTO, DSO 492B)
Operator/Subject

EXPERIMENT SAMPLE COLLECTION
(ASC-4, NOMINAL PROCEDURES)

MCC TAGUP
MIR STATUS
BRIEFING

PORT CLINICAL BLOOD ANALYZER
(BIOMED DSO/DTO, DSO 492B)
Subject
P/TY02 SETUP (CABIN)
(PHOTO/TV, P/TV SCENES)

EXERCISE

MEAL

MEAL

MEAL

PHYSICAL EXAMINATION IN SPACE
(BIOMED, DSO 486)

PAO VOICE CHECK/EVENT
TV at TDRW (06:30 to 07:00)

PAO VOICE CHECK/EVENT

TV (TDRW)

DEPLOYMENT
OPERATION
(CHARLOTTE, NOMINAL PROCEDURES)

DEPLOYMENT
OPERATION
(CHARLOTTE, NOMINAL PROCEDURES)

STS-63 (FD 03)
PLT

MS2

MCC

MET
DAY 002

08:00

ORB
38

A6(B1)
AUTO/VERN

VHF RADIO SETUP
(ORB OPS FS, COMM/INST)
Antenna in window W6

PHYSICAL EXAMINATION IN SPACE

SHUTTLE GLOW OPS
(WINDEX-01, NOMINAL PROCEDURES)
SUNSET 08:00
SUNRISE 08:35
REF # 30

A/G2 HANDOVER
FROM POCC TO MCC

COMM ACTIVATION
(ORB OPS, COMM INST)
Channel 1
Steps 1-3

PILOT TRAINING
(ORB OPS, DIO 667)
Steps 1-7

P/TV 02 WINDEX SETUP/OPS
(WINDEX-01, PHOTO/TV OPS)

IMU STAR PAIR

-Y: 57
-Z: 18

A/G2 HANDOVER
FROM MCC TO POCC

09:00

PILOT TRAINING
(ORB OPS, DIO 667)

019 COAS PWR-OFF Mount COAS-AFT

IMMUNE OPS
(IMMUNE-02, NOMINAL PROCEDURES)

A 014, PRI RJD DRIVER, LOGIC (sixteen) - ON
015,
016:F

A6(B1)
AUTO/ALT

ORB
39

AUTO/VERN
A1/B5

PRIORITY PWRUP Group B - Block A

MNVR IMU ALIGN ATT
R=112 P=313 Y=318
A/AUTO/ALT Init MNVR at SS
When in ATT A/AUTO/VERN
IMU ALIGN - S TRK (ORB OPS)

COAS CALIBRATION LOG

STAR ID: -Z 18, CAPELLA
STAR AVAIL: 09:26 TO 10:10

-Z Δ BIAS _____, _____

UPDATE TIME: ___ / ___ : ___ : ___

COAS CALIBRATION (ORB OPS)

Change DAP A,B, to A6,B9

MNVR CTVC ALIGN ATT (SOLAR)

TG=5 BV=3 OM=226

RA=-317.2 DEC=-16.4

Init TRK, then A/AUTO/ALT

When in ATT B/AUTO/VERN

CTVC ALIGN

Insert solar filter

Align crosshairs on center of sun

MNVR (TRK) -ZLV, +XVY

TG=2 BV=3 OM=180

A/AUTO/ALT (NLT 10:35) Init TRK

When in ATT A/AUTO/VERN

Keep logics/drivers ON to

support NC3-H

Change DAP B to B1

019 COAS PWR - OFF Stow COAS

EXERCISE

11:00

ORB
40

AUTO/VERN

RNDZ PREP

RNDZ PREP

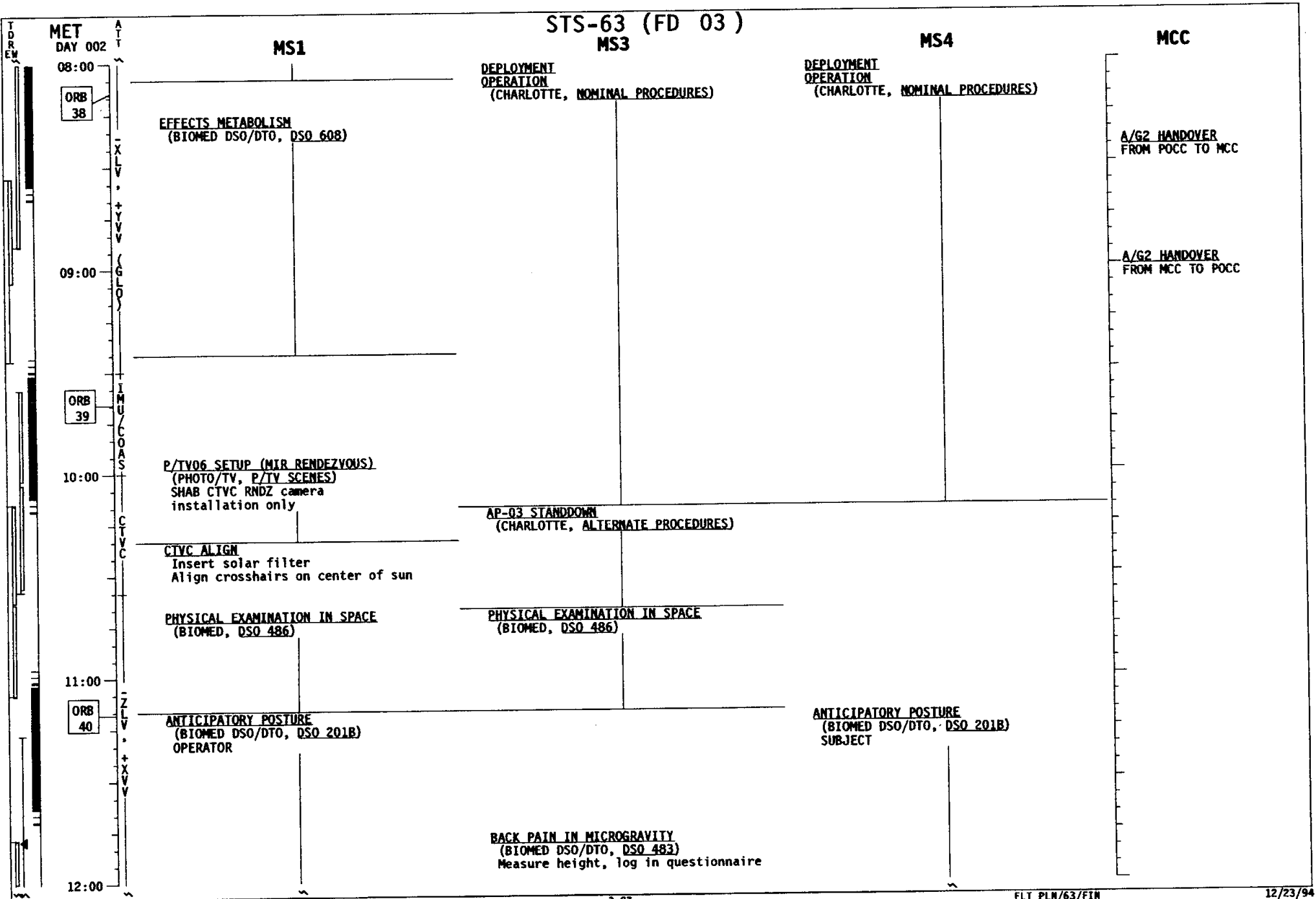
RNDZ PREP

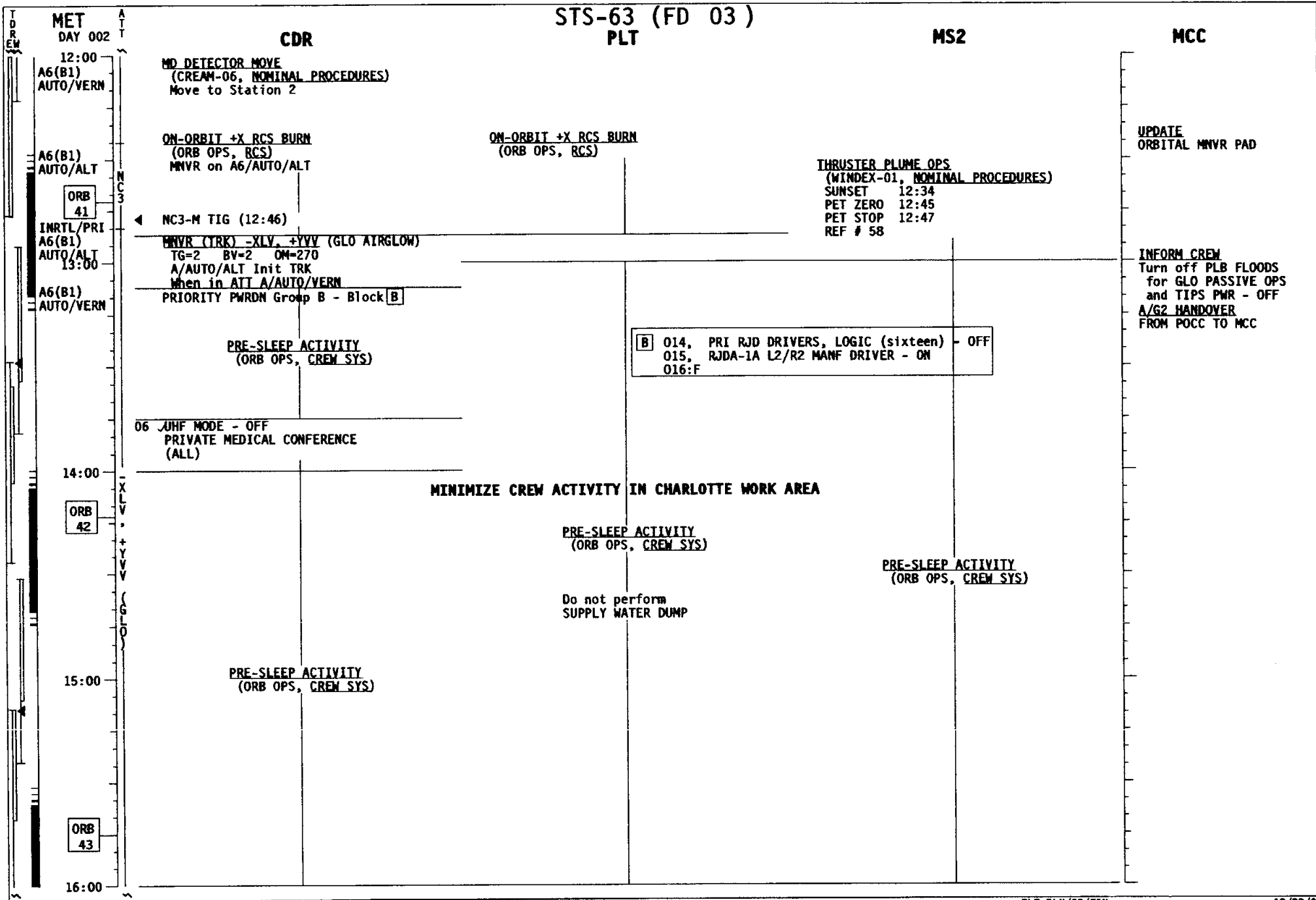
MD MEMORY MODULE REPLACEMENT
(RME-III-13, NOMINAL PROCEDURES)
Station 1

HEIGHT MEASUREMENT
(BIOMED DSO/DTO, DSO 483)

HEIGHT MEASUREMENT
(BIOMED DSO/DTO, DSO 483)

12:00





STS-63 (FD 03)
MS3

MS1

MS4

MCC

MET
DAY 002

12:00

ANTICIPATORY POSTURE
(BIOMED DSO/DTO, DSO 201B)
OPERATOR

ANTICIPATORY POSTURE
(BIOMED DSO/DTO, DSO 201B)
SUBJECT

MIDDECK DAILY STATUS CHECK
(SH EXP HB, STATUS CHECKS)

AP-04 REDEPLOY FROM STANDDOWN
(CHARLOTTE, ALTERNATE PROCEDURES)

UPDATE
ORBITAL MNVR PAD

SPACEHAB DAILY STATUS CHECK
(SH EXP HB, STATUS CHECKS)

P/TV10 SETUP (GLO-2)
(PHOTO TV, P/TV SCENES)
Setup for live downlink only

TV (TDRW/E)
(GND CNTL-PLB)
INFORM CREW
Turn off PLB FLOODS
for GLO PASSIVE OPS
and TIPS PWR - OFF
A/G2 HANDOVER
FROM POCC TO MCC

ORB
41

CABIN AIR MON (ORB OPS, DTO 623)
TEMP CHECK (PL OPS, SPARTAN 204)

13:00

DAILY BRIEFING (SHAB)

SHAB PRE-SLP CONFIG (SHAB OPS, ON ORBIT)
*For CHARLOTTE overnight OPS,
do not perform step 7*

14:00

MINIMIZE CREW ACTIVITY IN CHARLOTTE WORK AREA

ORB
42

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

15:00

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

ORB
43

16:00

STS-63 (FD 03)

CDR

PLT

MS2

MCC

MET
DAY 002

16:00
A6(B1)
AUTO/VERN

17:00

ORB
44

18:00

ORB
45

19:00

20:00

SLEEP

ORB
46

21:00

SLEEP

ORB
47

22:00

SLEEP

23:00

ORB
48

003

00:00

STS-63 (FD 03)

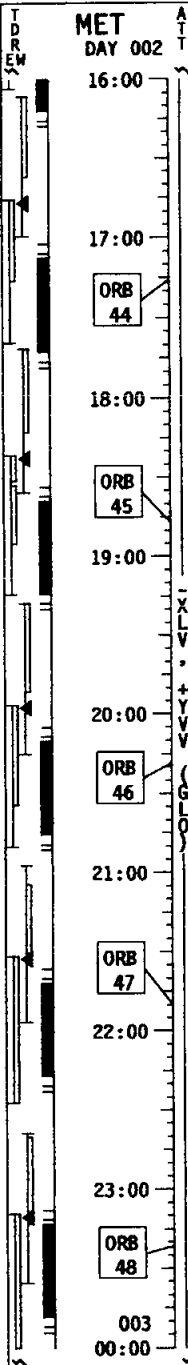
MET
DAY 002

MS1

MS3

MS4

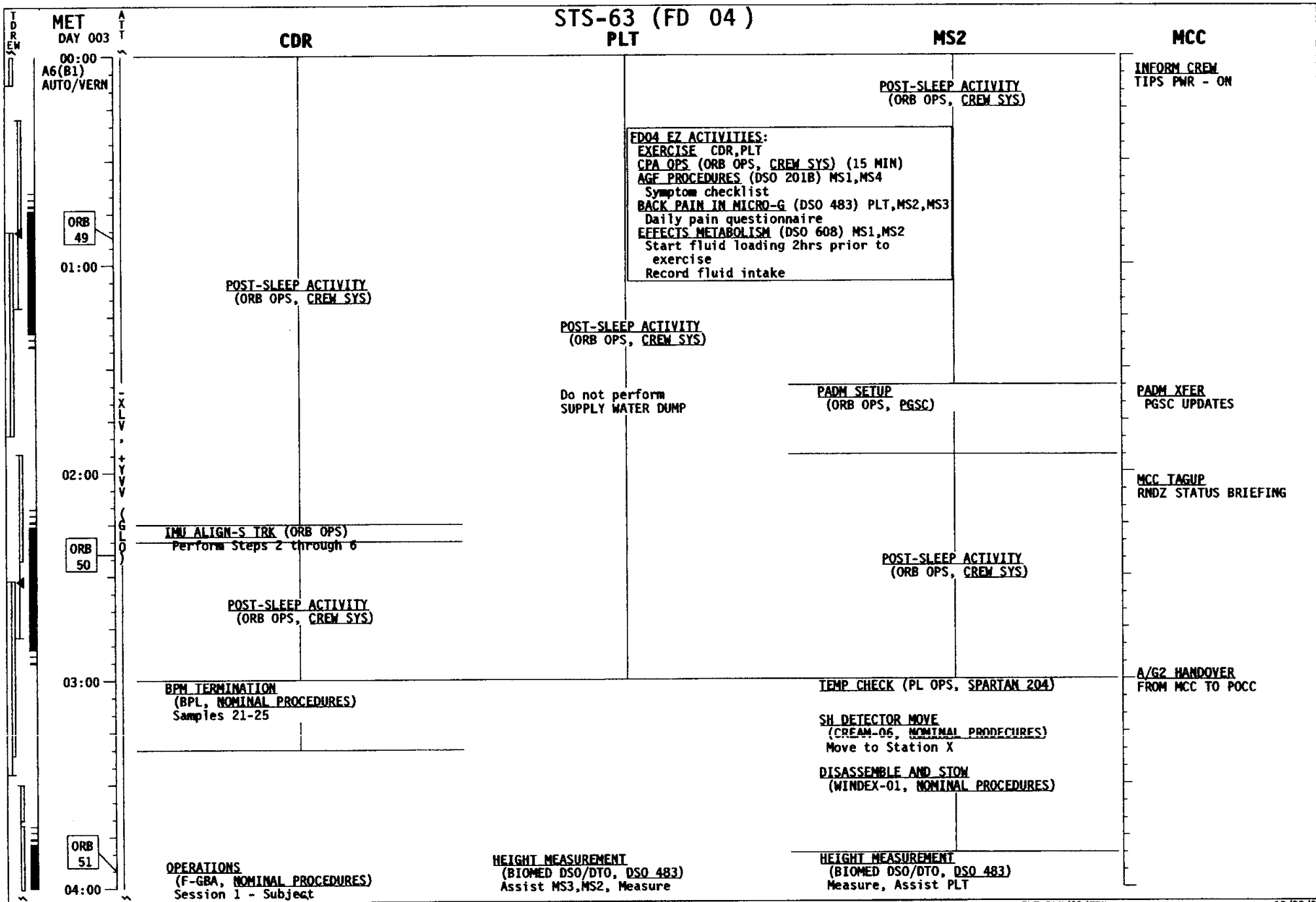
MCC



SLEEP

SLEEP

SLEEP



STS-63 (FD 04)

MET
DAY 003

MS1

MS3

MS4

MCC

00:00

INFORM CREW
TIPS PWR - ON

ORB
49

01:00

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

02:00

MCC TAGUP
RNDZ STATUS BRIEFING

ORB
50

03:00

SPACEHAB POST-SLEEP CONFIG
(SPACEHAB OPS, ON ORBIT)

MIDDECK DAILY STATUS CHECK
(SH EXP HB, STATUS CHECKS)

AP-03 STANDDOWN
(CHARLOTTE, ALTERNATE PROCEDURES)

TERMINATE SAMPLE PROCESSING
(CGBA-05, NOMINAL PROCEDURES)
GAPS 3-5

A/G2 HANDOVER
FROM MCC TO PCCC

SPACEHAB DAILY STATUS CHECK
(SH EXP HB, STATUS CHECKS)

STATUS CHECK
(CGBA-05, NOMINAL PROCEDURES)

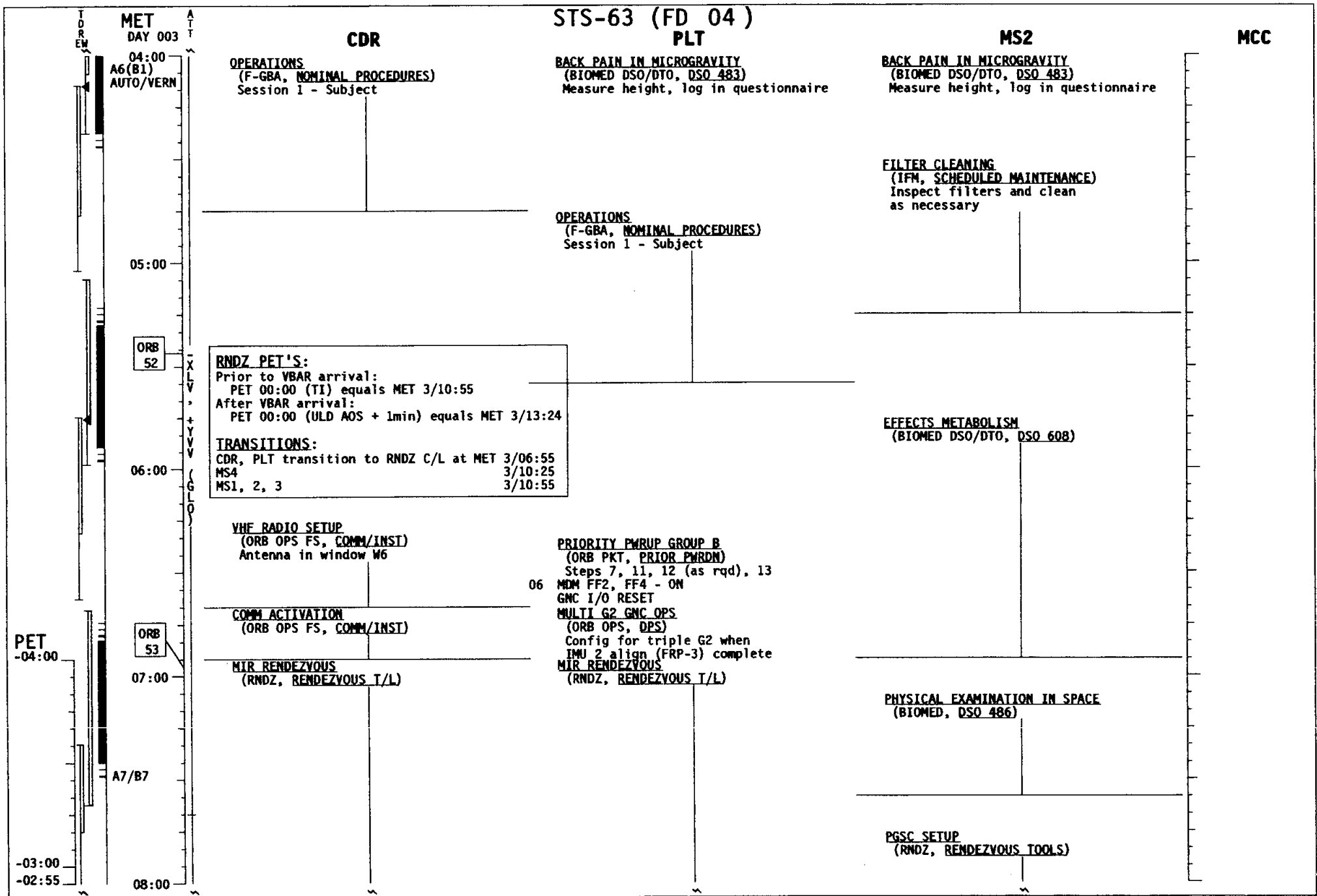
ORB
51

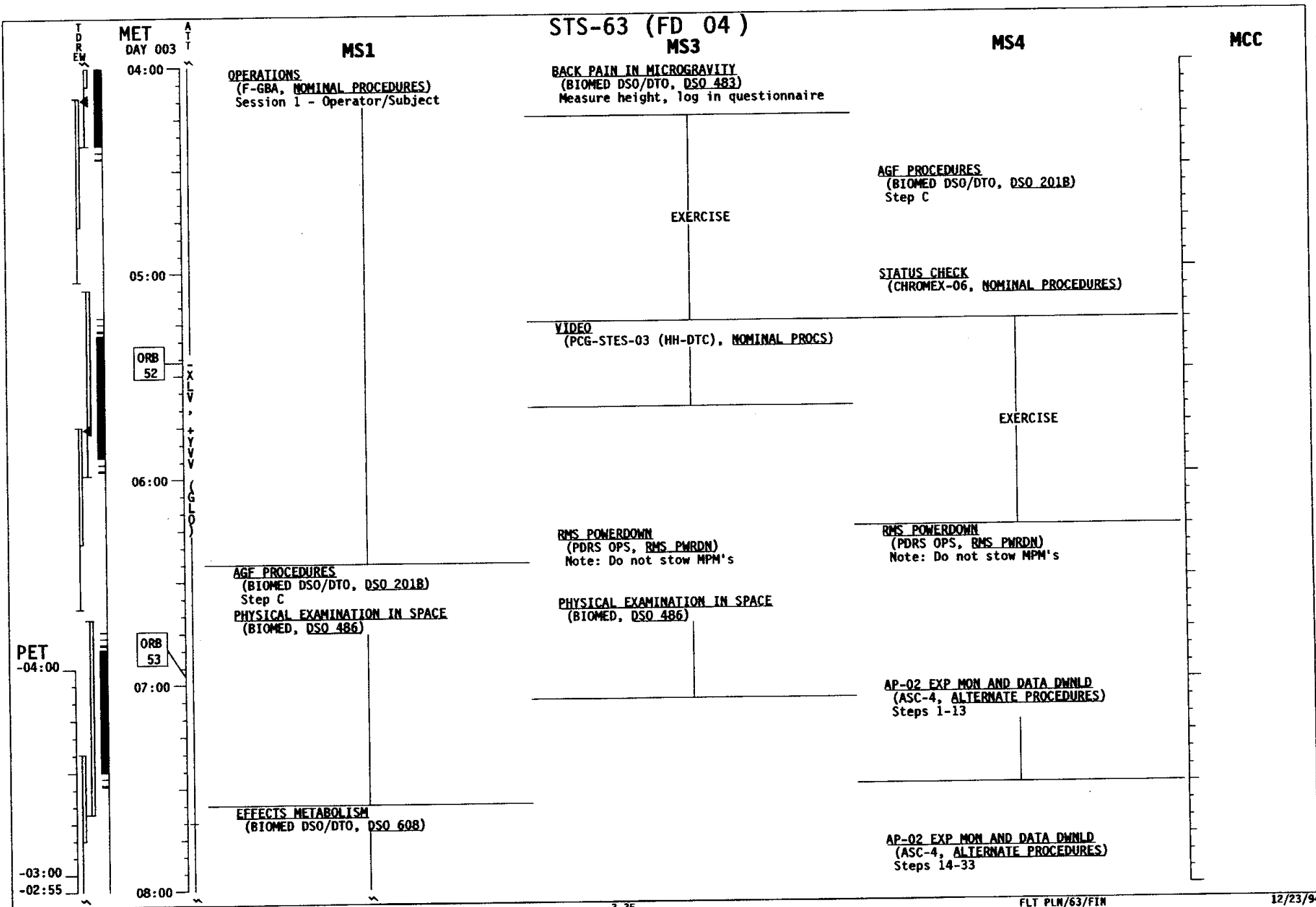
04:00

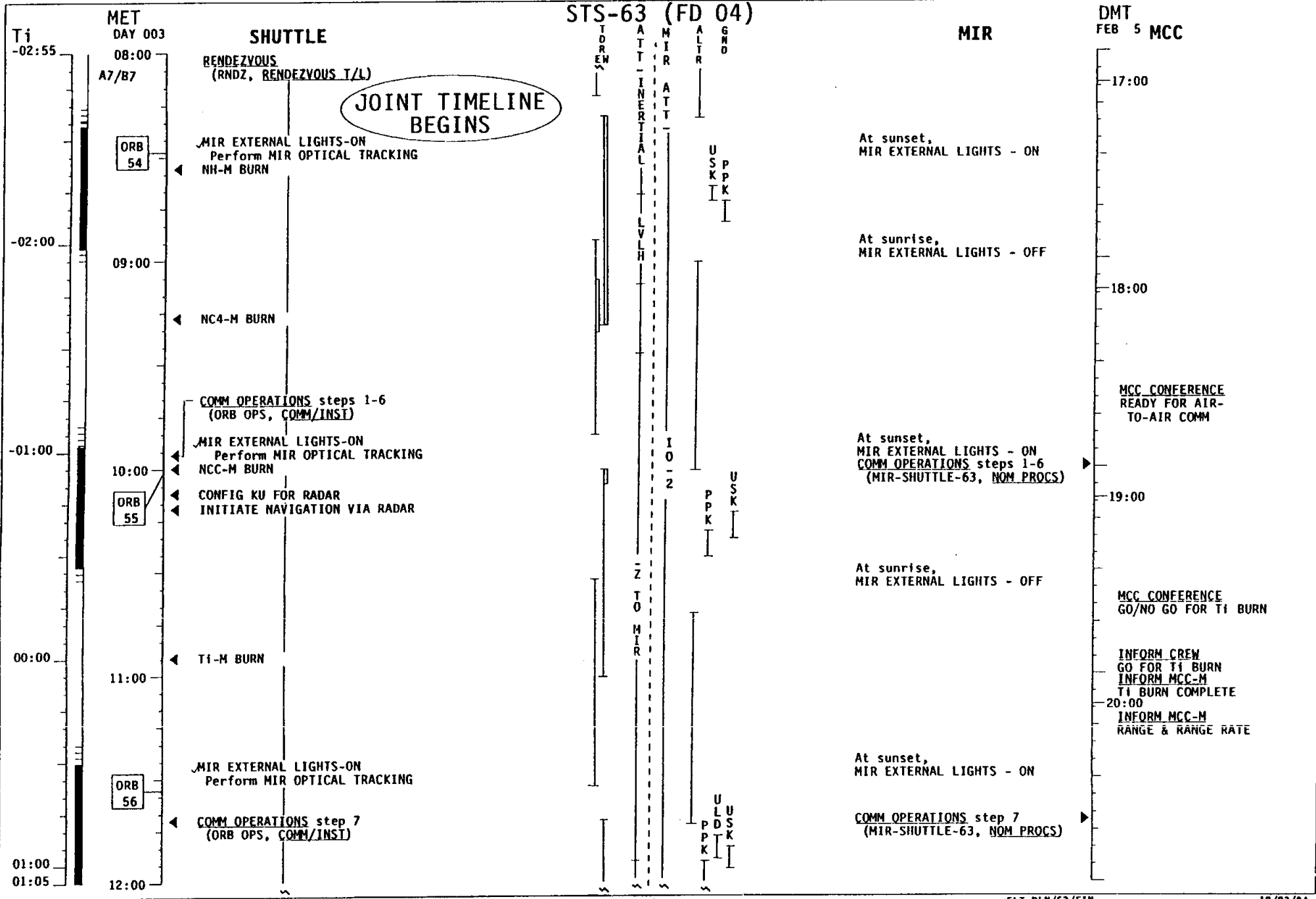
DAILY BRIEFING (SHAB)

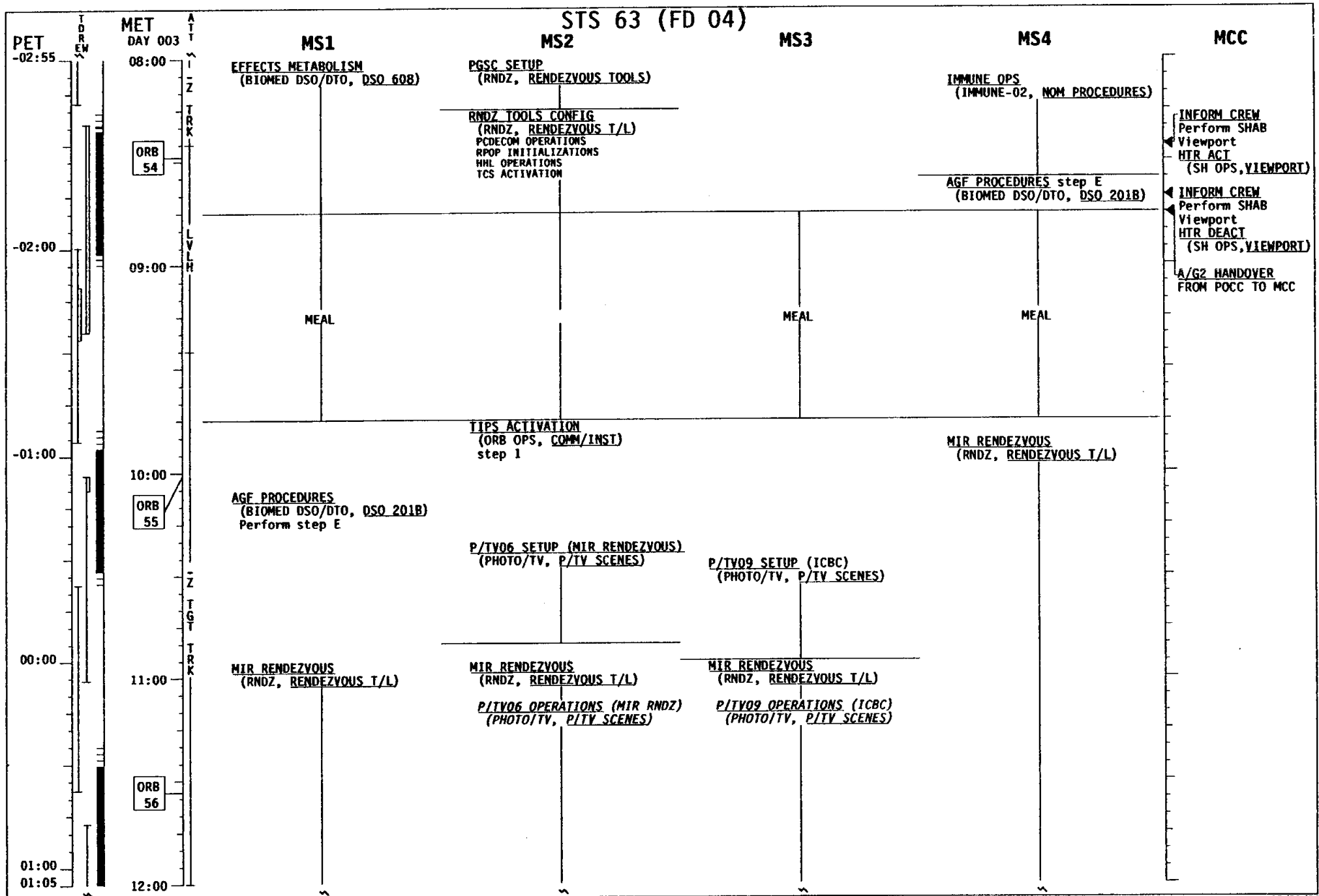
OPERATIONS
(F-GBA, NOMINAL PROCEDURES)
Session 1 - Operator/Subject

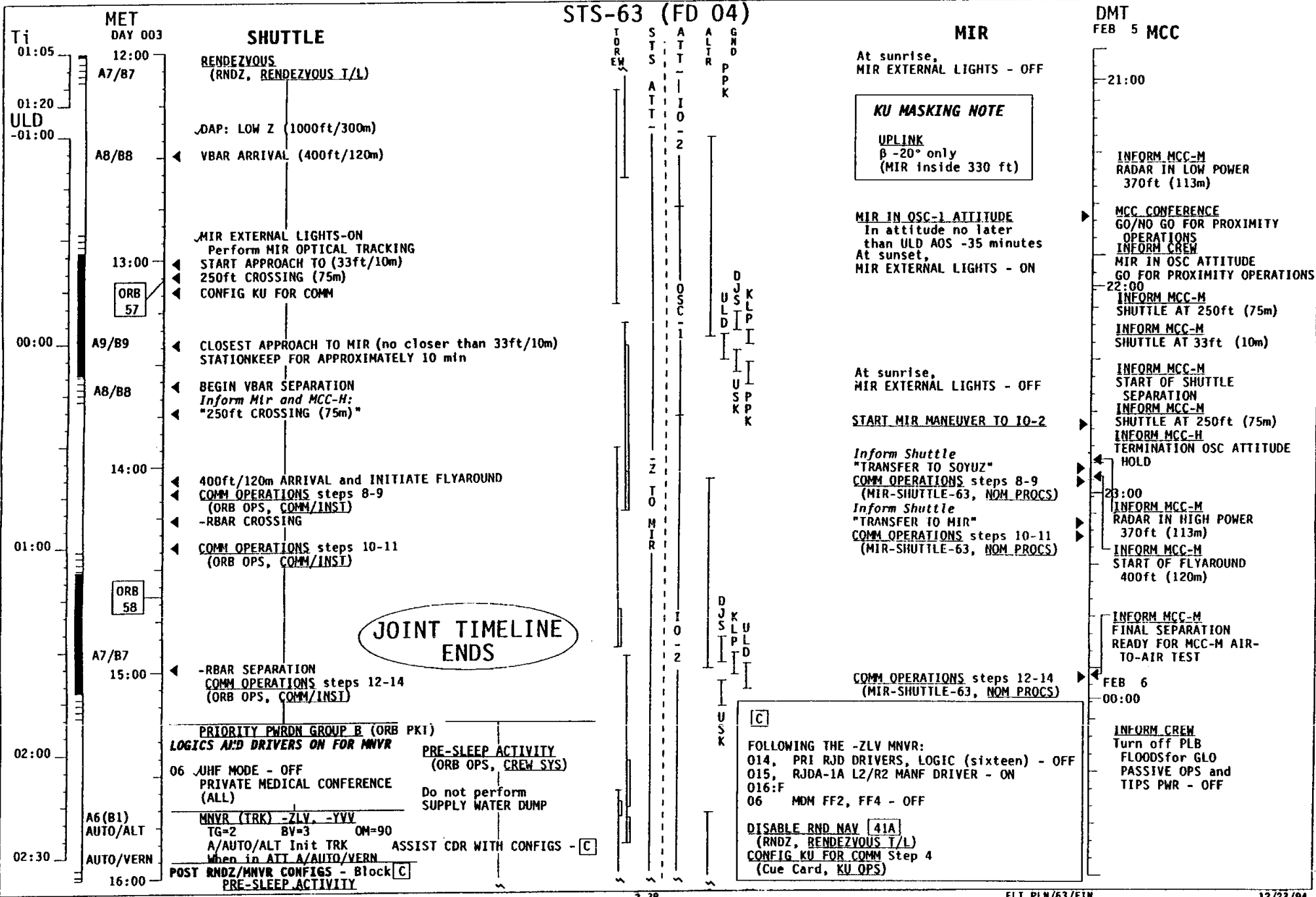
BACK PAIN IN MICROGRAVITY
(BIOMED DSO/DTO, DSO 483)
Measure height, log in questionnaire











STS-63 (FD 04)

MET
DAY 003

SHUTTLE

MIR

DMT
FEB 5 MCC

Ti
01:05
01:20
ULD
-01:00
00:00
01:00
02:00
02:30
16:00

A7/B7
A8/B8
A9/B9
A8/B8
A7/B7

ORB 57
ORB 58

A6(B1)
AUTO/ALT
AUTO/VERN

RENDEZVOUS
(RNDZ, RENDEZVOUS T/L)

JAP: LOW Z (1000ft/300m)

VBAR ARRIVAL (400ft/120m)

MIR EXTERNAL LIGHTS-ON
Perform MIR OPTICAL TRACKING
START APPROACH TO (33ft/10m)
250ft CROSSING (75m)
CONFIG KU FOR COMM

CLOSEST APPROACH TO MIR (no closer than 33ft/10m)
STATIONKEEP FOR APPROXIMATELY 10 min

BEGIN VBAR SEPARATION
Inform Mir and MCC-H:
"250ft CROSSING (75m)"

400ft/120m ARRIVAL and INITIATE FLYAROUND
COMM OPERATIONS steps 8-9
(ORB OPS, COMM/INST)
-RBAR CROSSING

COMM OPERATIONS steps 10-11
(ORB OPS, COMM/INST)

-RBAR SEPARATION
COMM OPERATIONS steps 12-14
(ORB OPS, COMM/INST)

PRIORITY PWRDN GROUP B (ORB PKT)
LOGICS AND DRIVERS ON FOR MNVR

06 JHF MODE - OFF
PRIVATE MEDICAL CONFERENCE (ALL)

MNVR (TRK) -ZLV, -YVV
TG=2 BV=3 OM=90
A/AUTO/ALT Init TRK
When in ATT A/AUTO/VERN

POST RNDZ/MNVR CONFIGS - Block C
PRE-SLEEP ACTIVITY

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

Do not perform
SUPPLY WATER DUMP

ASSIST CDR WITH CONFIGS - C

JOINT TIMELINE ENDS

TOR EM
STS ATT
ALT R
GND PPK
OSC-1
Z TO MIR
I O 2
D J S L K U P L D I
U L D I U S P P K
D J S L K U P L D I
U S K

At sunrise,
MIR EXTERNAL LIGHTS - OFF

KU MASKING NOTE

UPLINK
β -20° only
(MIR inside 330 ft)

MIR IN OSC-1 ATTITUDE
In attitude no later
than ULD AOS -35 minutes
At sunset,
MIR EXTERNAL LIGHTS - ON

At sunrise,
MIR EXTERNAL LIGHTS - OFF

START MIR MANEUVER TO IO-2

Inform Shuttle
"TRANSFER TO SOYUZ"
COMM OPERATIONS steps 8-9
(MIR-SHUTTLE-63, NOM.PROCS)

Inform Shuttle
"TRANSFER TO MIR"
COMM OPERATIONS steps 10-11
(MIR-SHUTTLE-63, NOM.PROCS)

COMM OPERATIONS steps 12-14
(MIR-SHUTTLE-63, NOM.PROCS)

C

FOLLOWING THE -ZLV MNVR:
014, PRI RJD DRIVERS, LOGIC (sixteen) - OFF
015, RJDA-1A L2/R2 MANF DRIVER - ON
016:F
06 MDM FF2, FF4 - OFF

DISABLE RND NAV 41A
(RNDZ, RENDEZVOUS T/L)
CONFIG KU FOR COMM Step 4
(Cue Card, KU OPS)

21:00
22:00
23:00
FEB 6
00:00

INFORM MCC-M
RADAR IN LOW POWER
370ft (113m)

MCC CONFERENCE
GO/NO GO FOR PROXIMITY
OPERATIONS
INFORM CREW
MIR IN OSC ATTITUDE
GO FOR PROXIMITY OPERATIONS

INFORM MCC-M
SHUTTLE AT 250ft (75m)
INFORM MCC-M
SHUTTLE AT 33ft (10m)

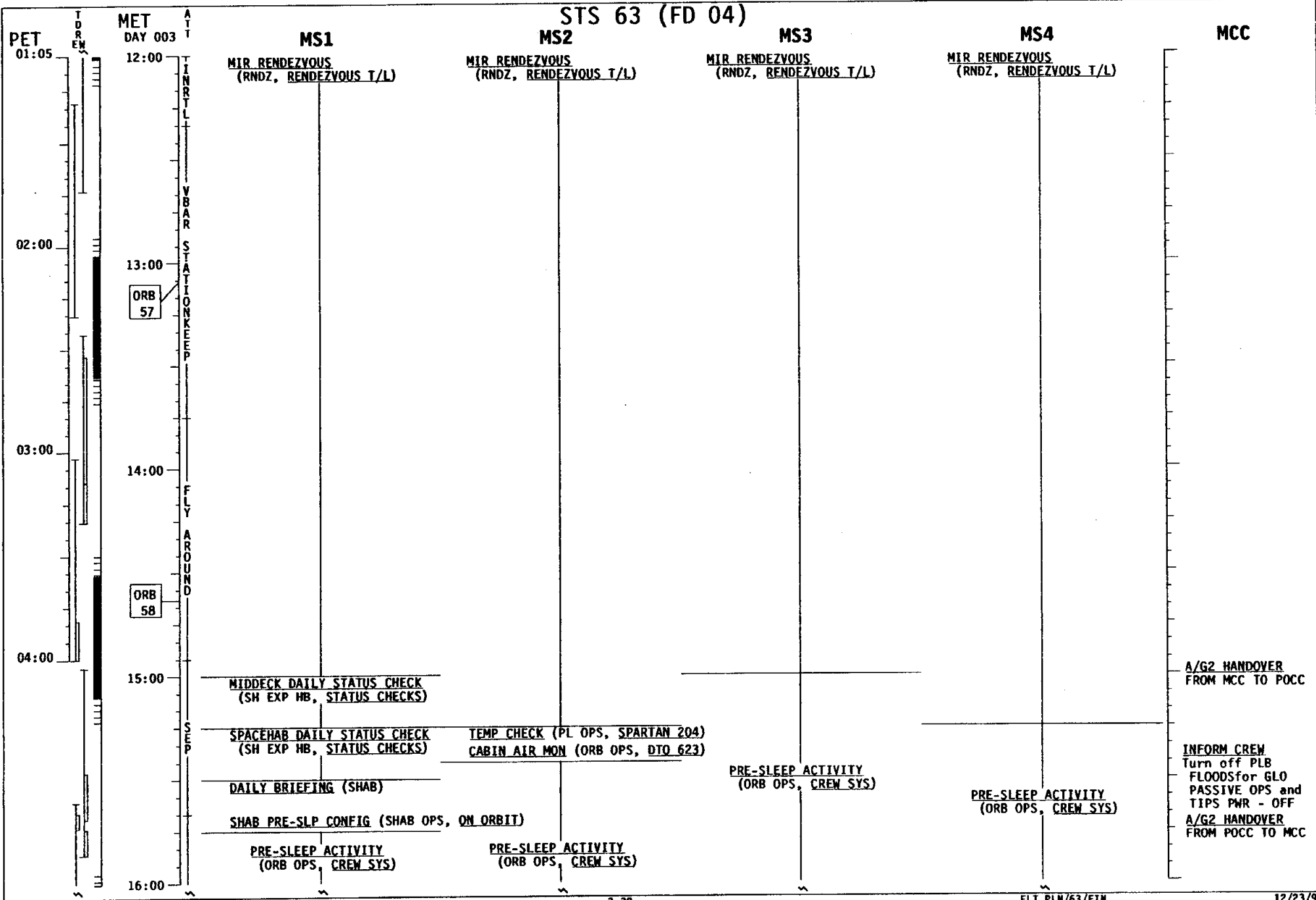
INFORM MCC-M
START OF SHUTTLE
SEPARATION
INFORM MCC-M
SHUTTLE AT 250ft (75m)
INFORM MCC-H
TERMINATION OSC ATTITUDE
HOLD

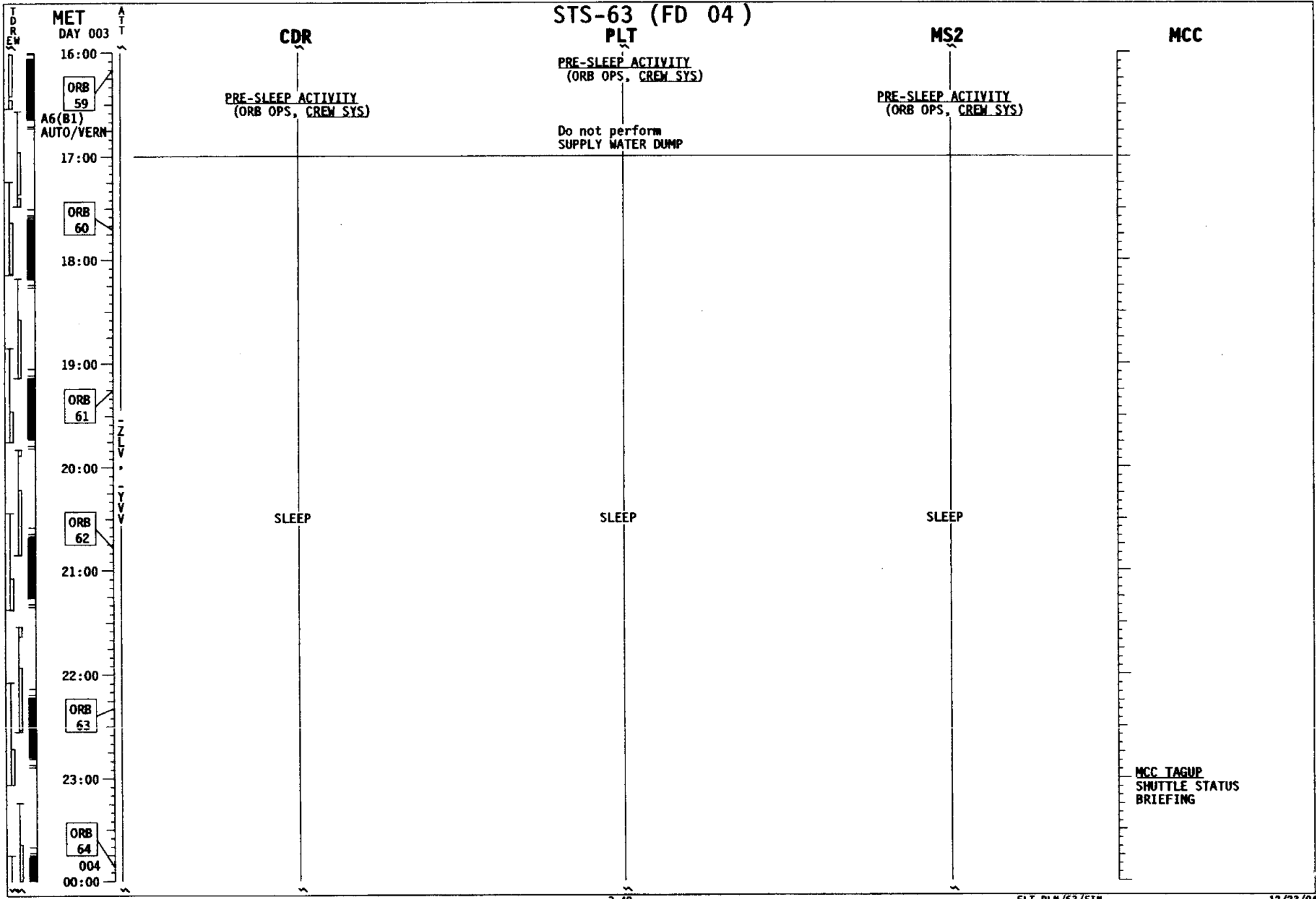
INFORM MCC-M
RADAR IN HIGH POWER
370ft (113m)
INFORM MCC-M
START OF FLYAROUND
400ft (120m)

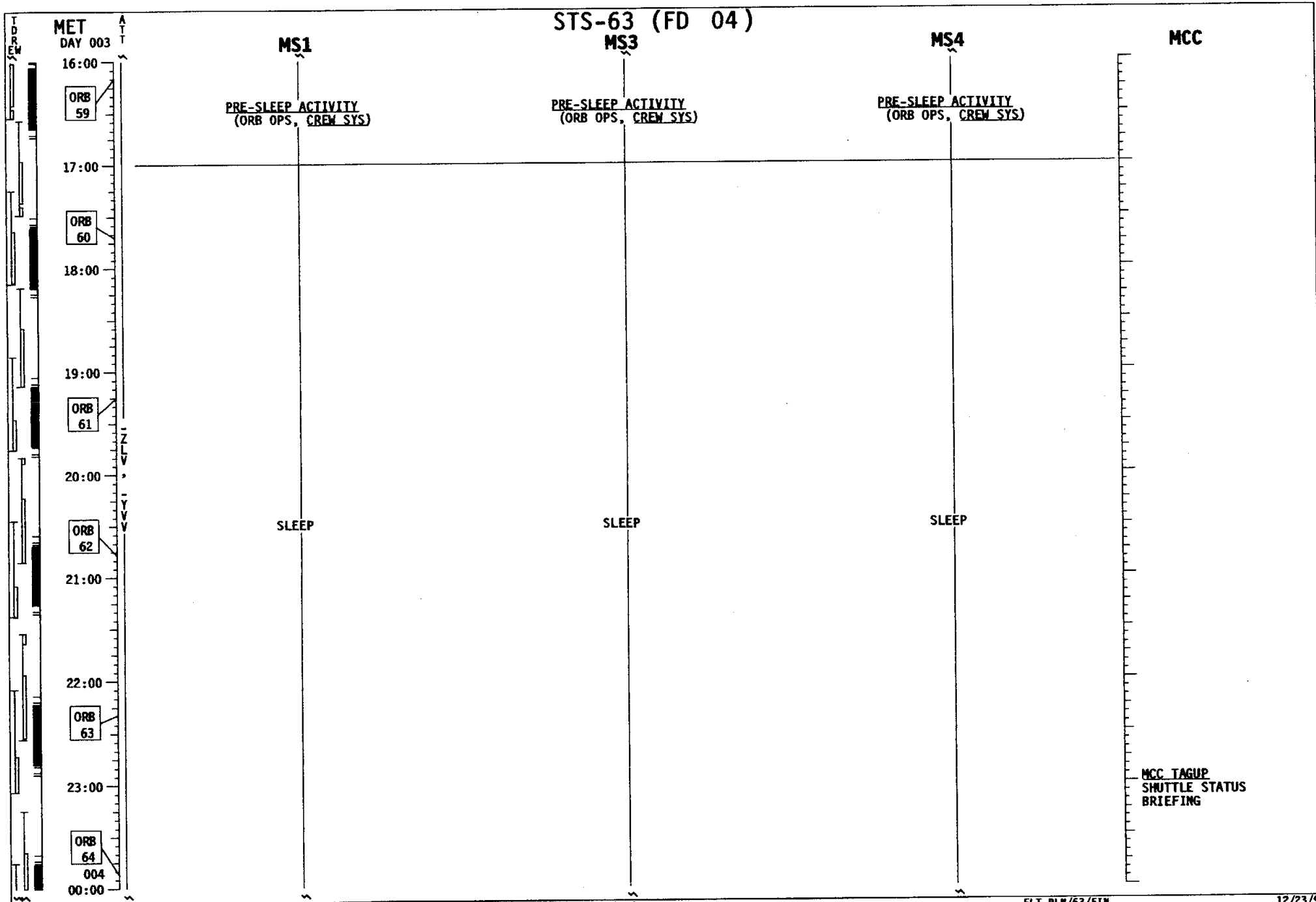
INFORM MCC-M
FINAL SEPARATION
READY FOR MCC-M AIR-
TO-AIR TEST

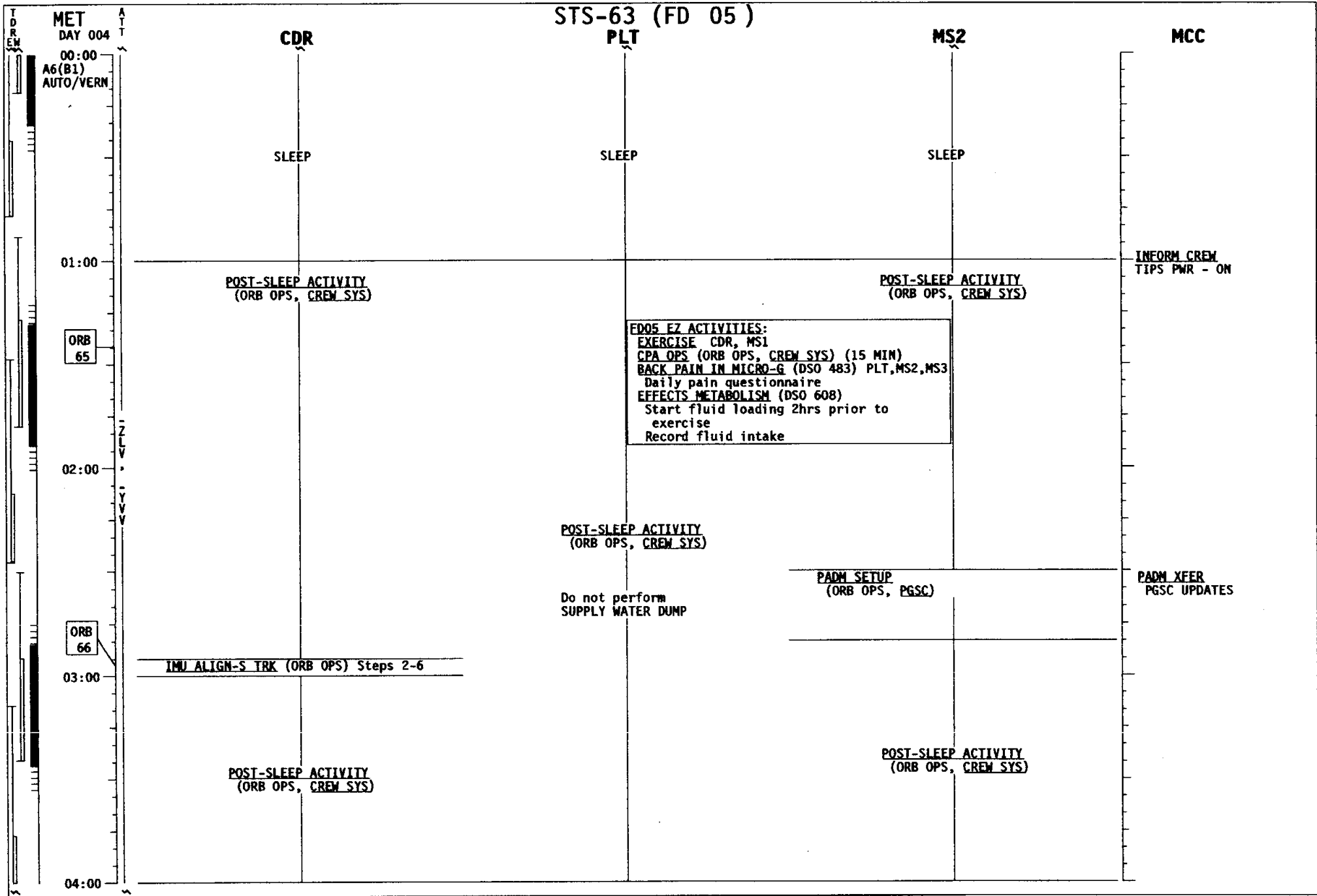
INFORM CREW
Turn off PLB
FLOODS for GLO
PASSIVE OPS and
TIPS PWR - OFF

STS 63 (FD 04)









STS-63 (FD 05)

MET
DAY 004

MS1

MS3

MS4

MCC

00:00

SLEEP

SLEEP

SLEEP

01:00

INFORM CREW
TIPS PWR - ON

ORB
65

02:00

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

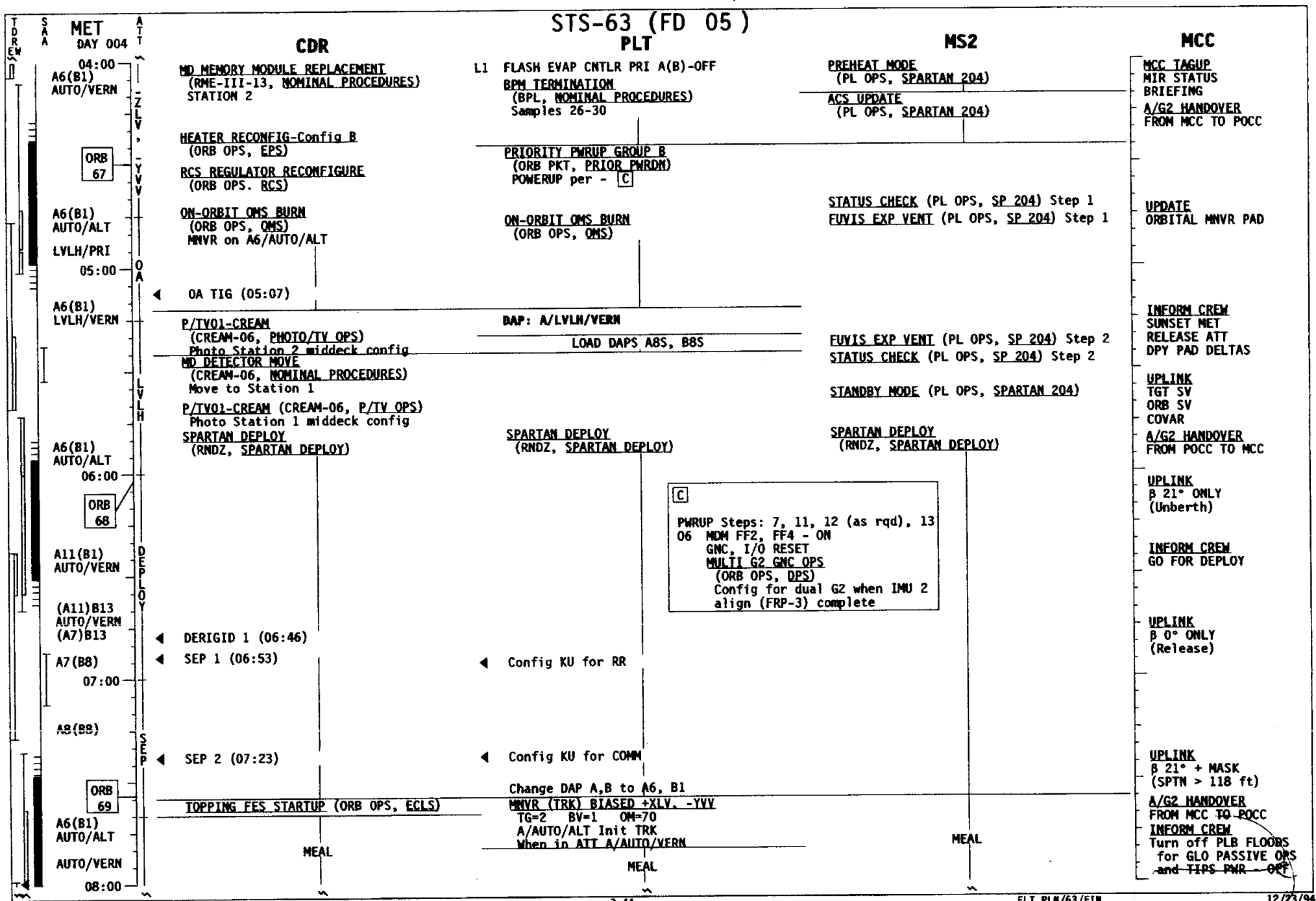
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

ORB
66

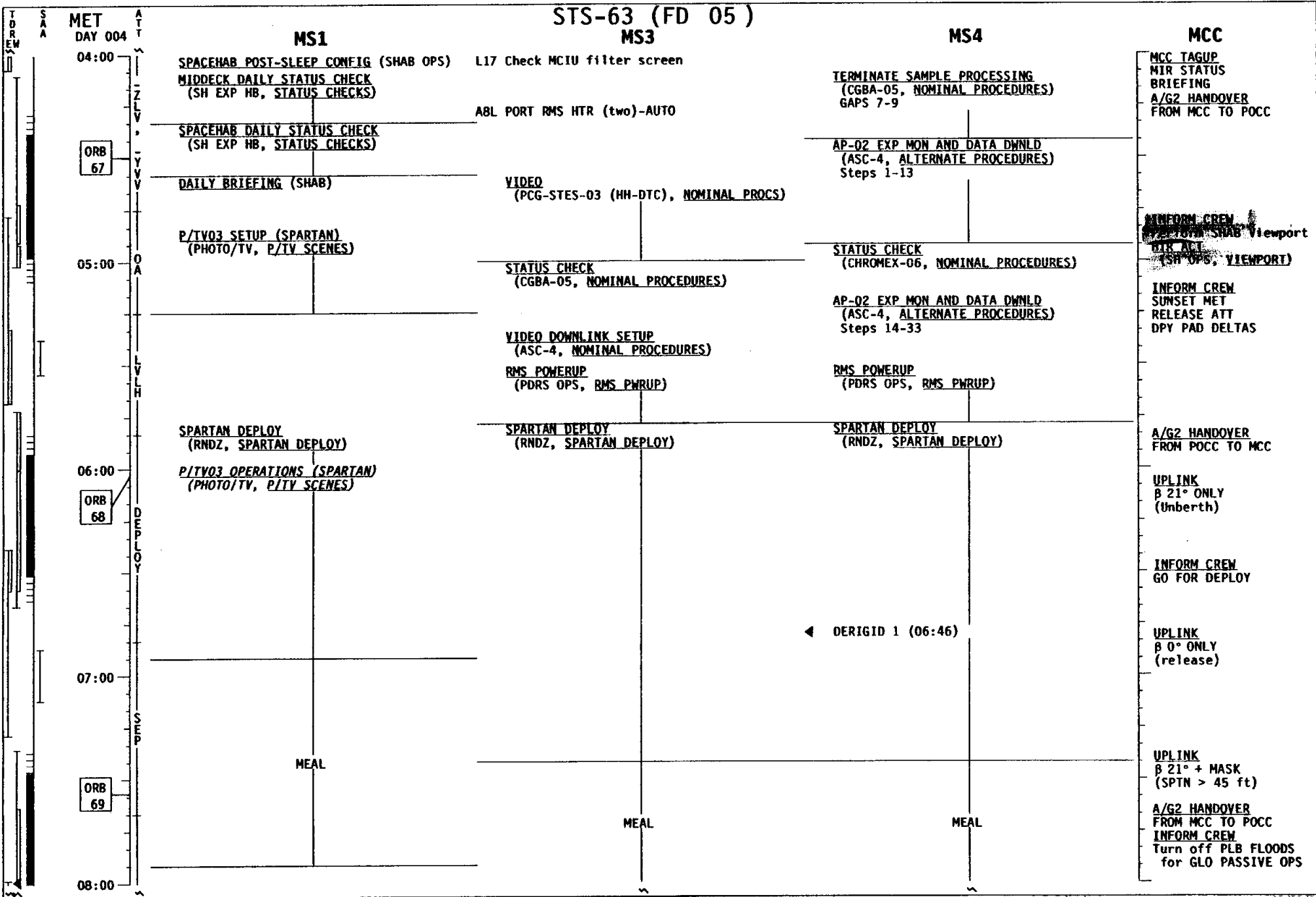
03:00

04:00

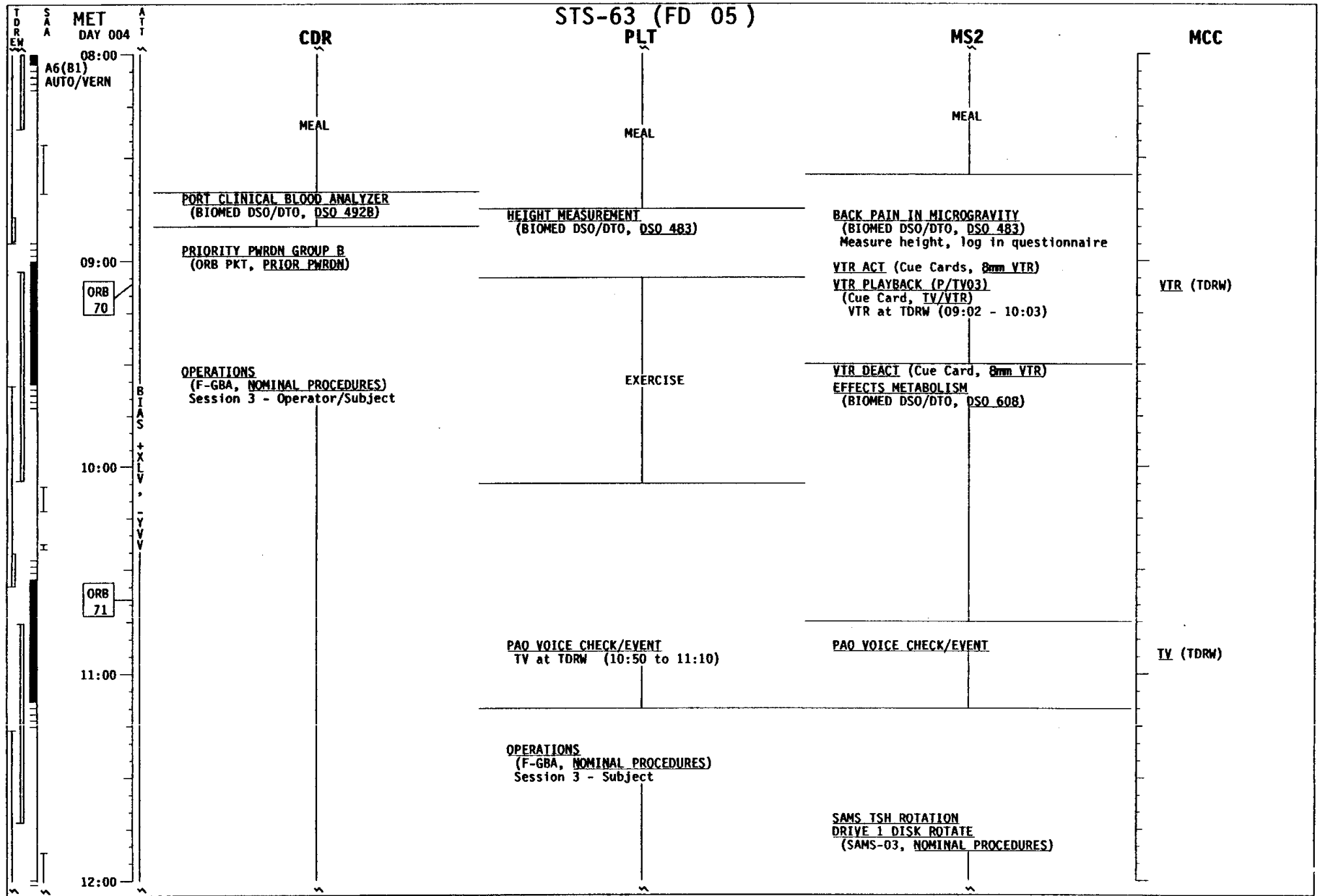
SPACEHAB POST-SLEEP CONFIG
(SPACEHAB OPS, ON ORBIT)

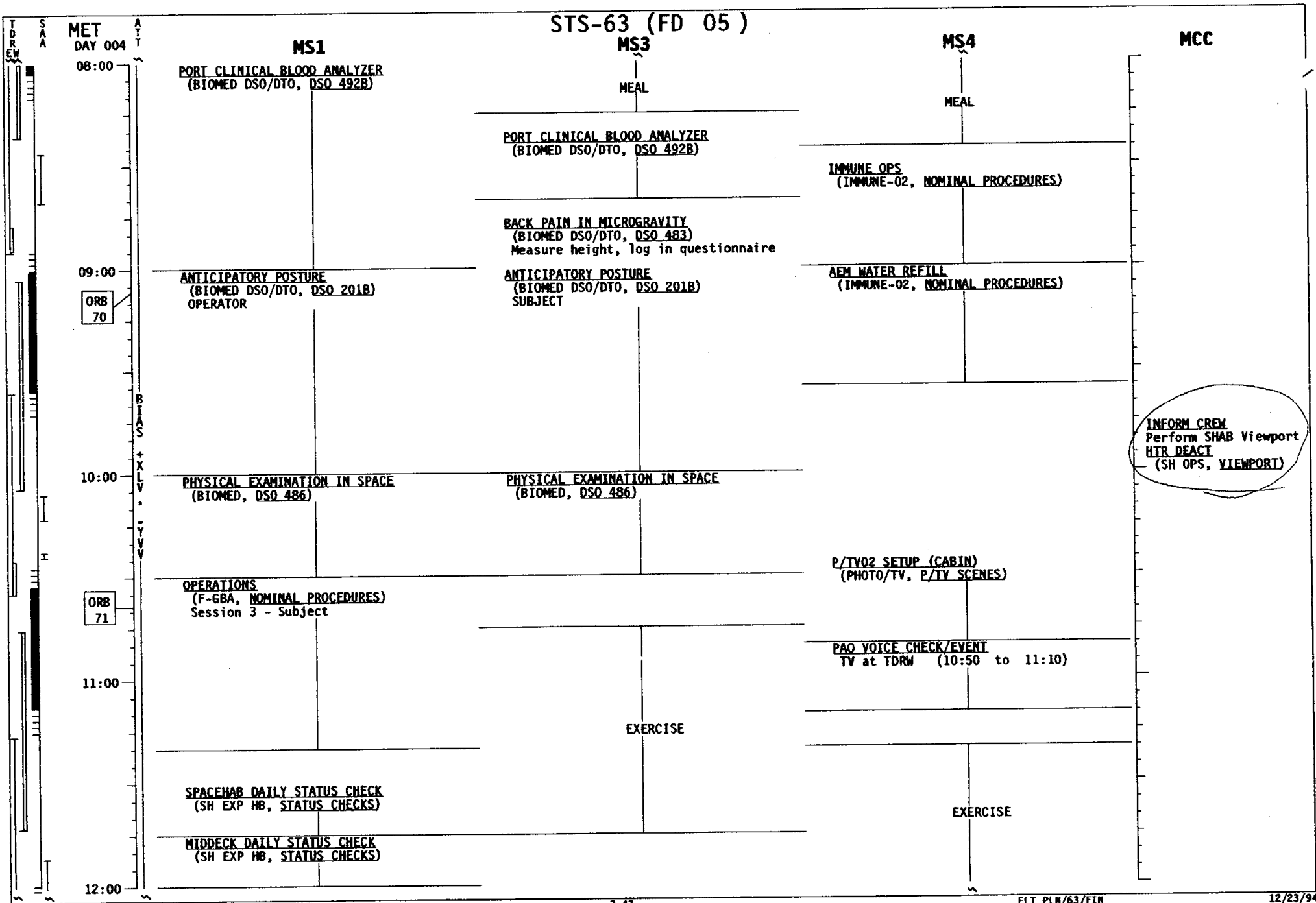


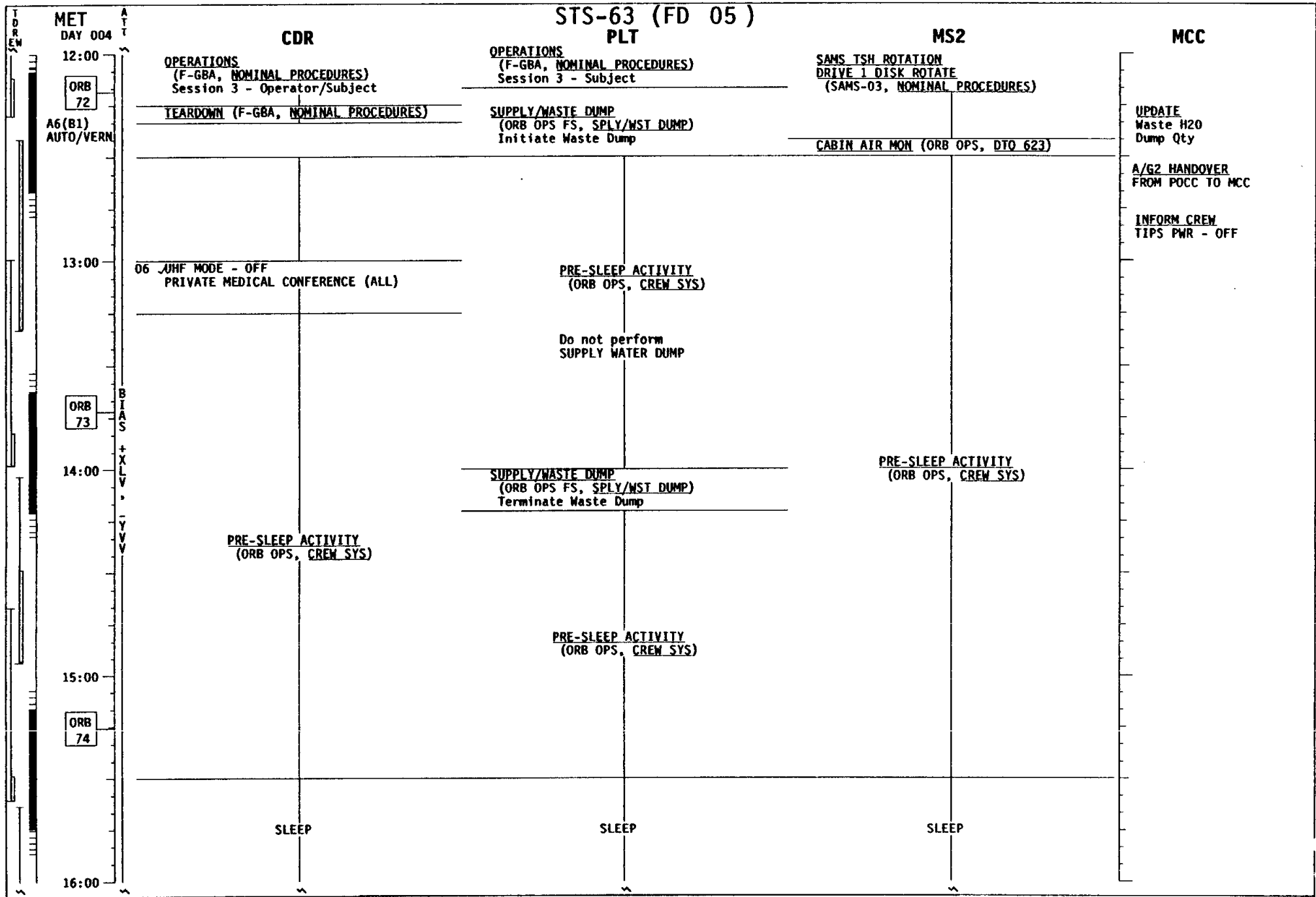
STS-63 (FD 05)

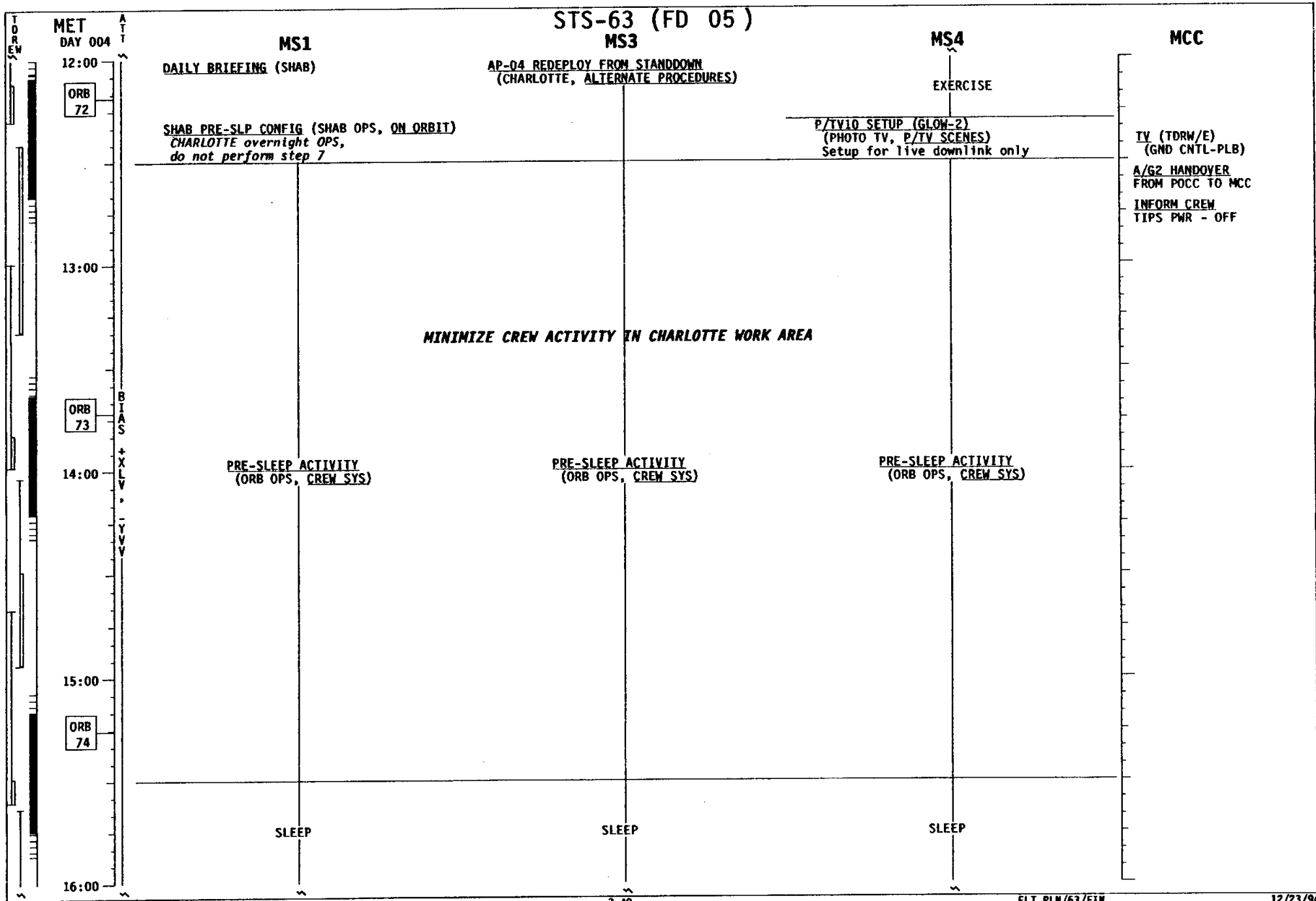


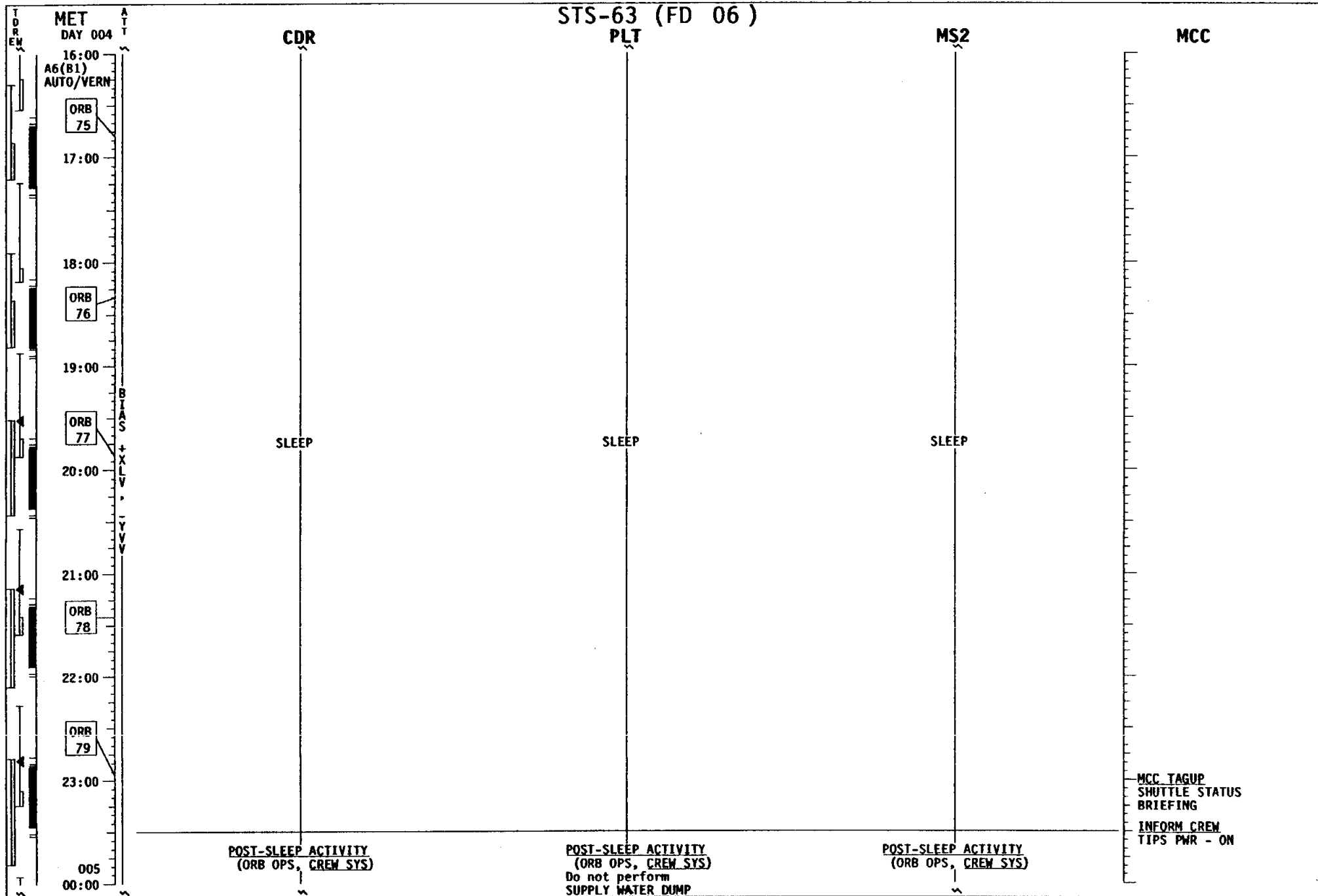
STS-63 (FD 05)



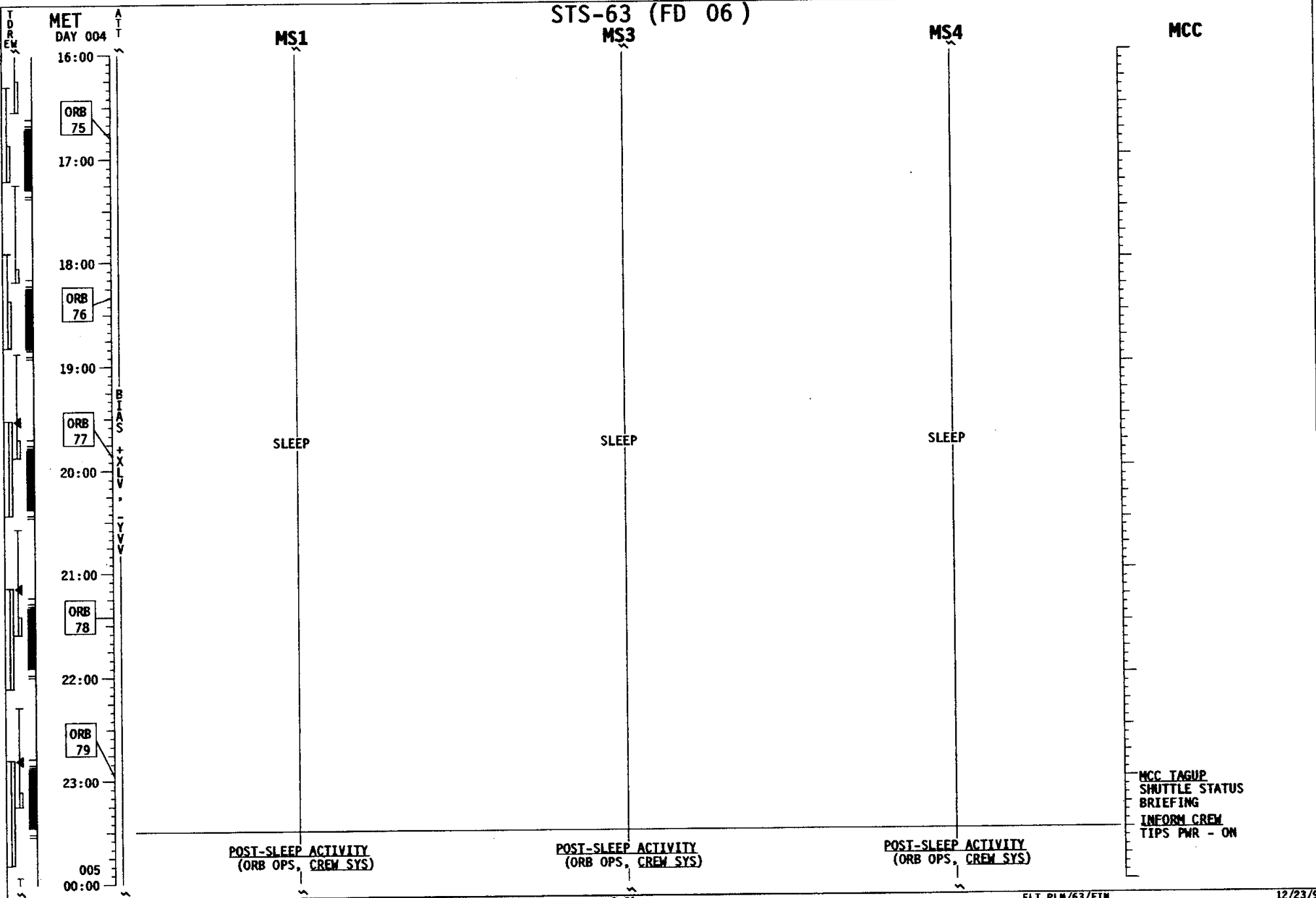


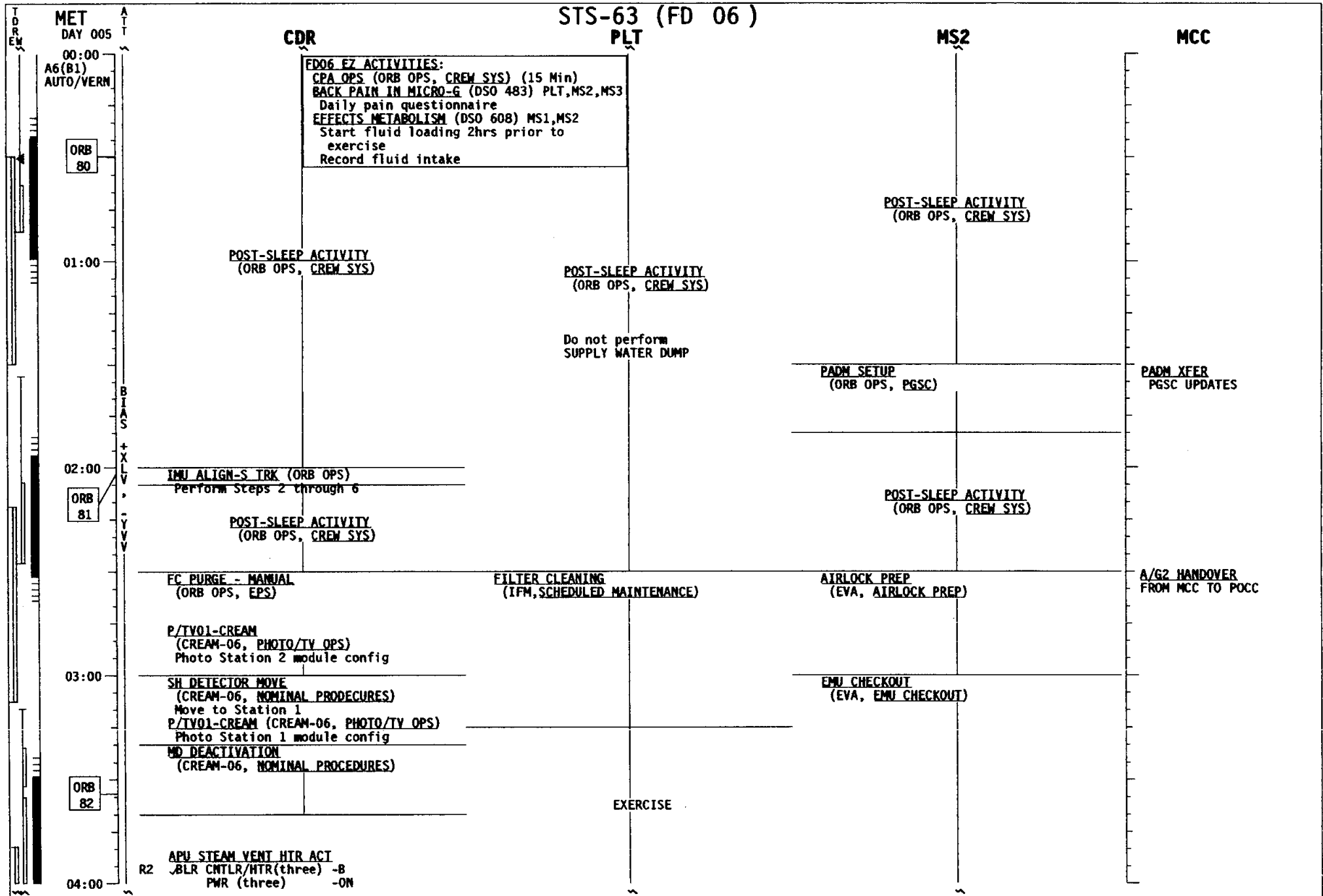


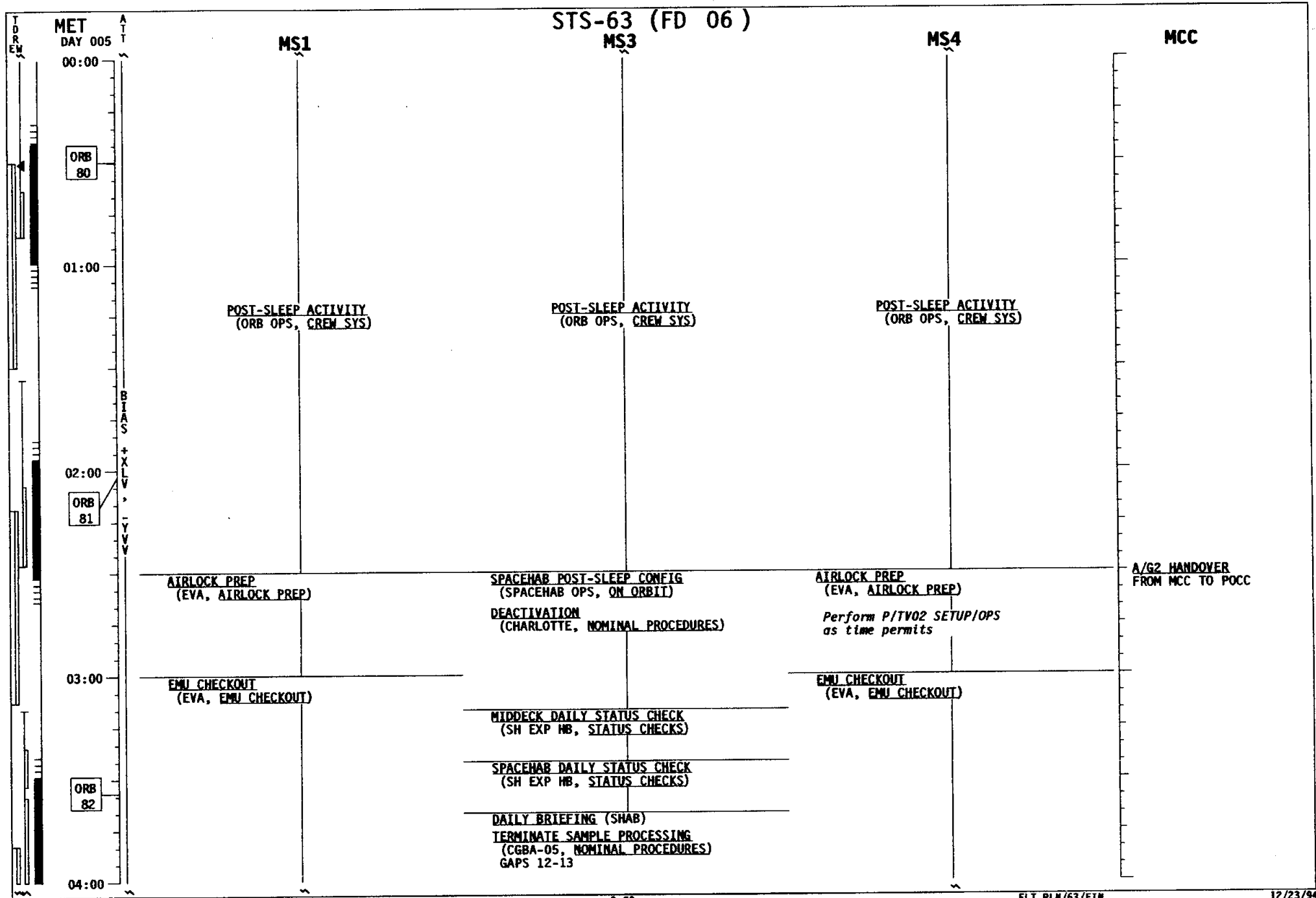


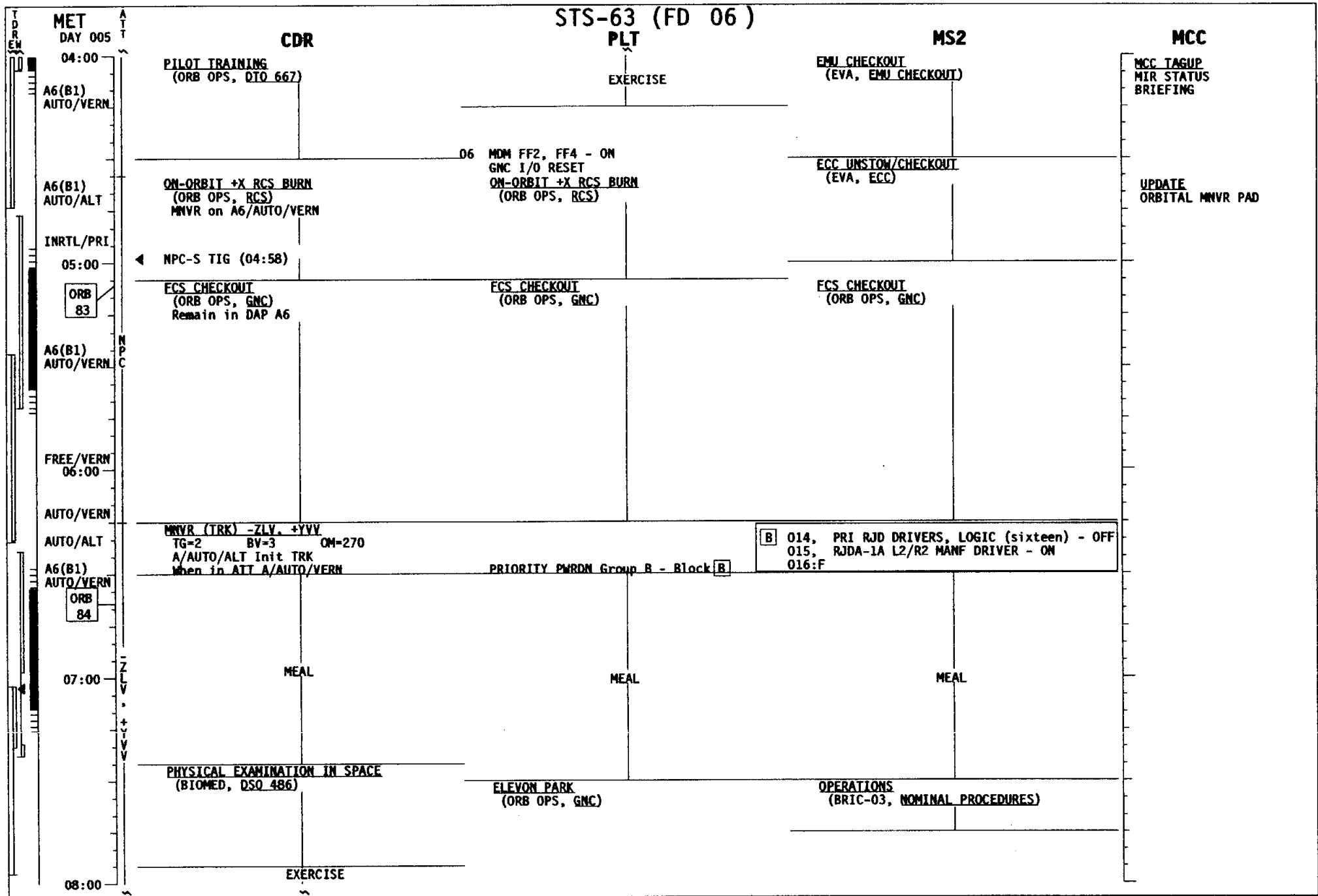


STS-63 (FD 06)

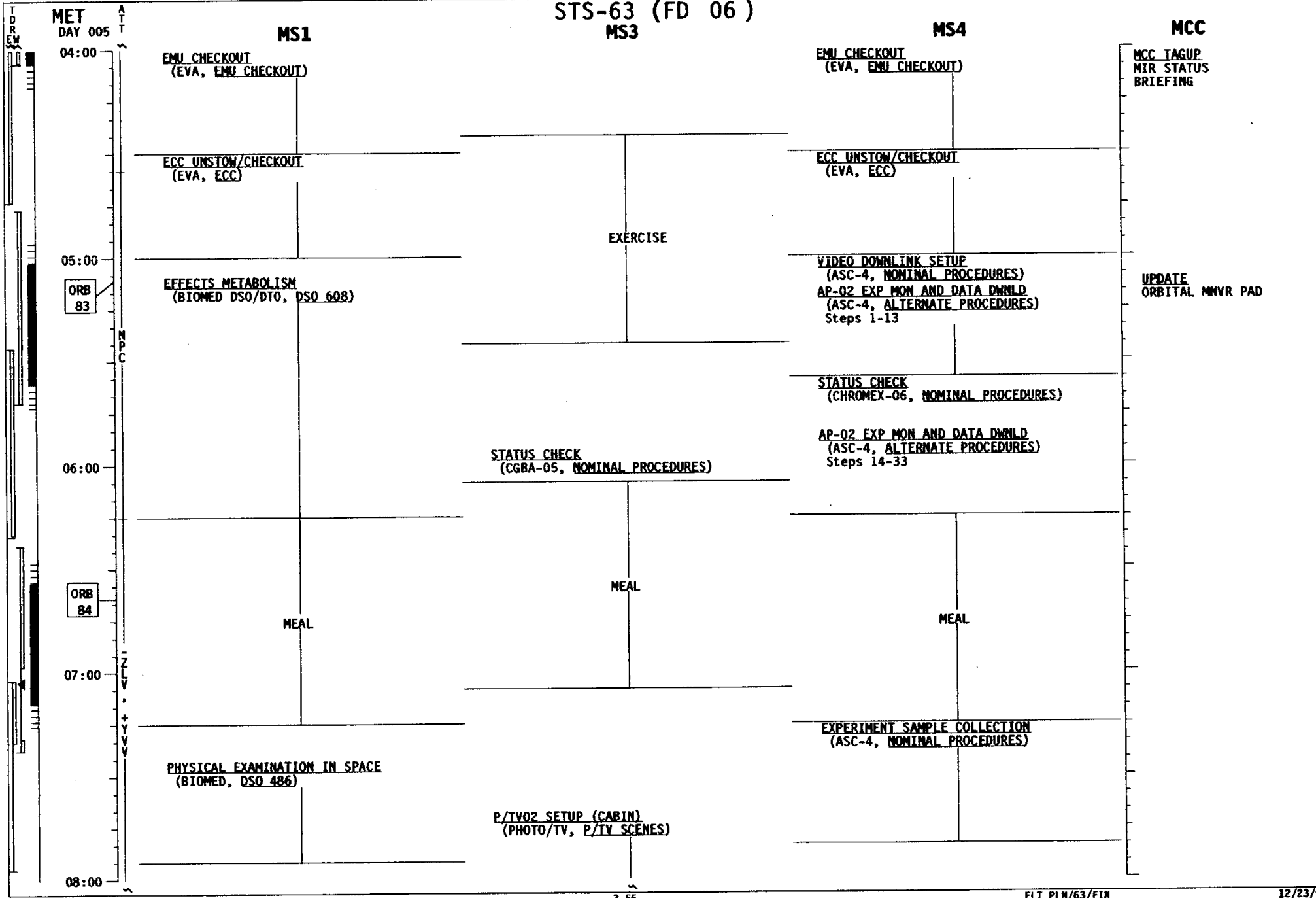








STS-63 (FD 06)



MET DAY 005

04:00

05:00

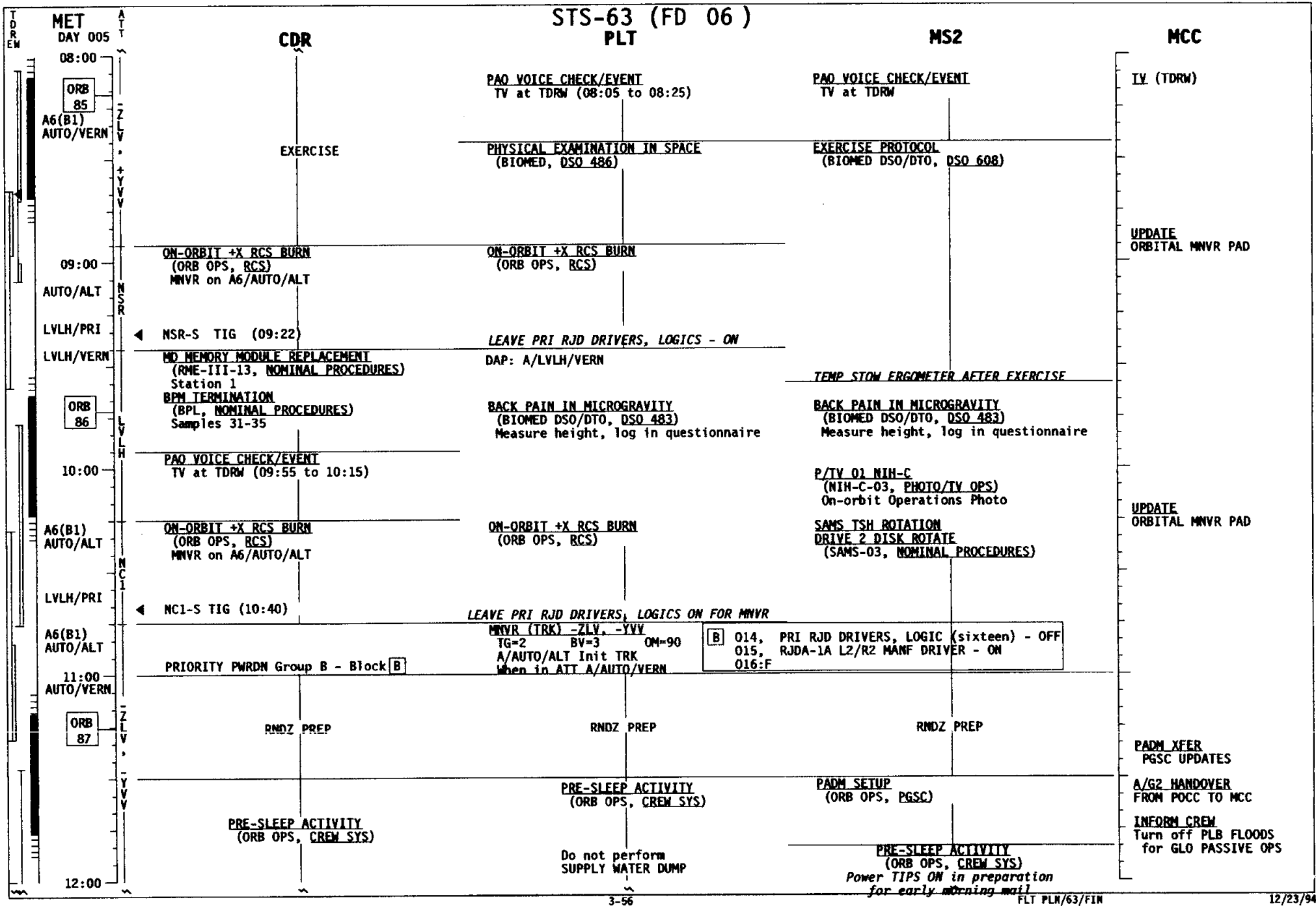
06:00

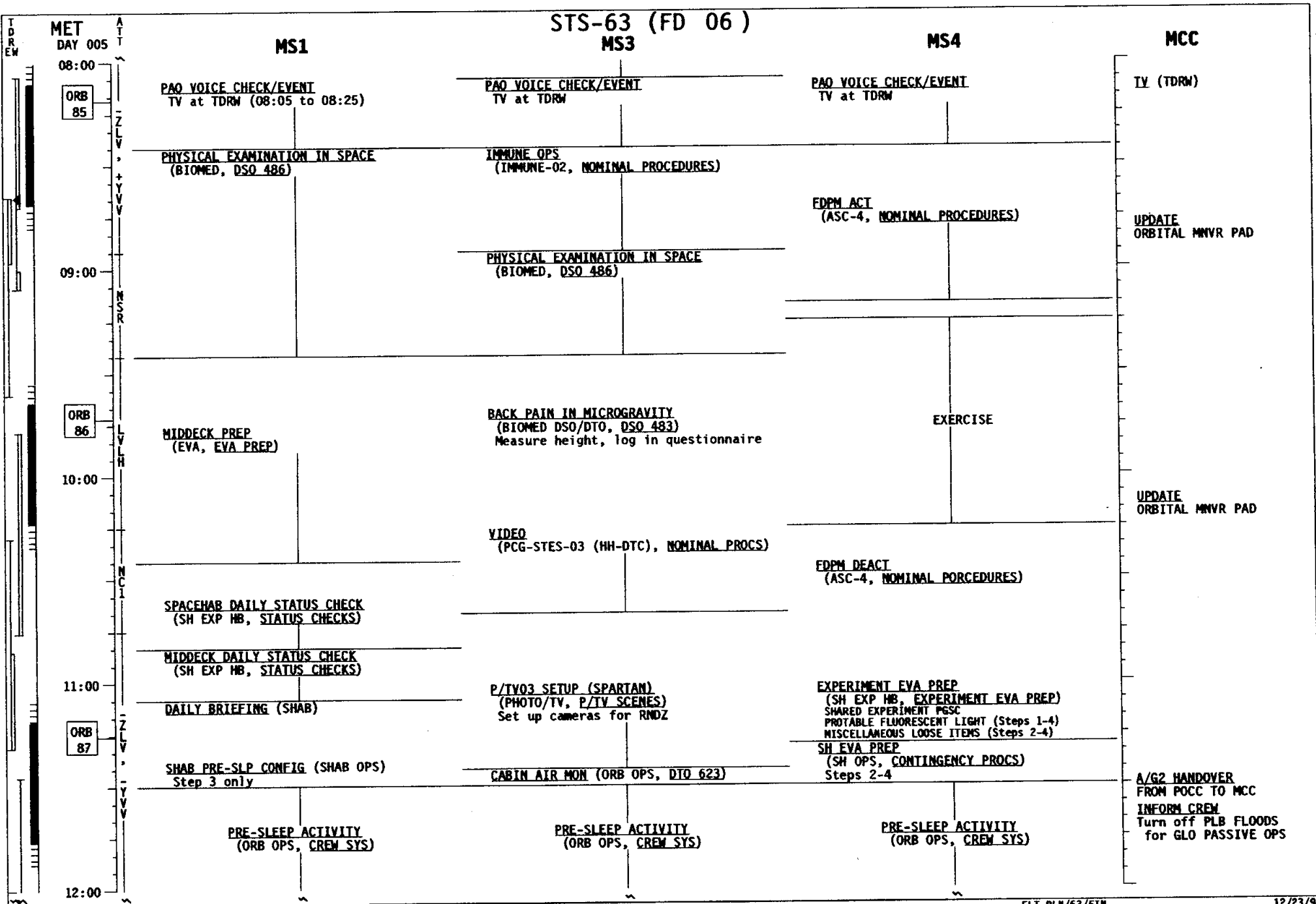
07:00

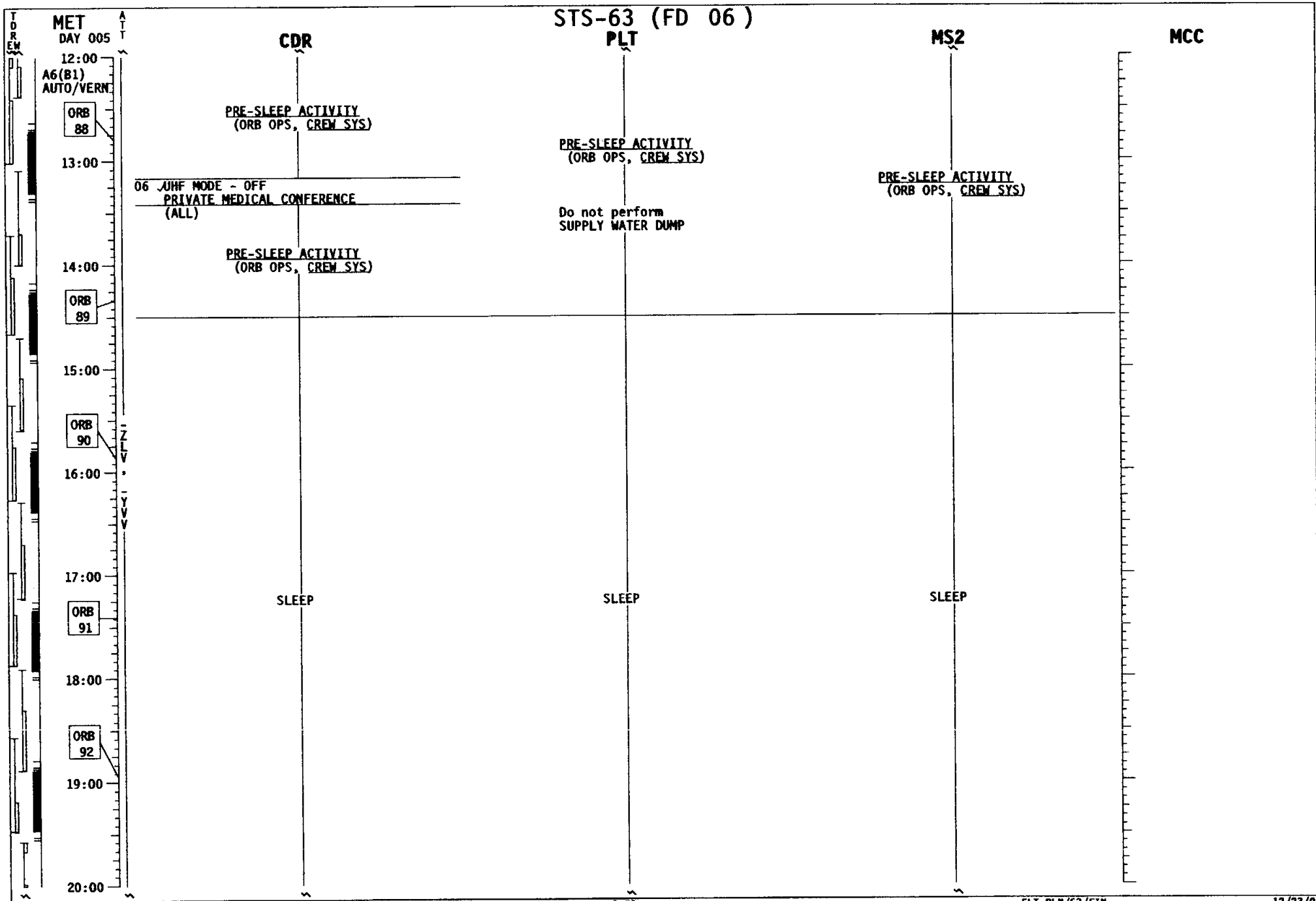
08:00

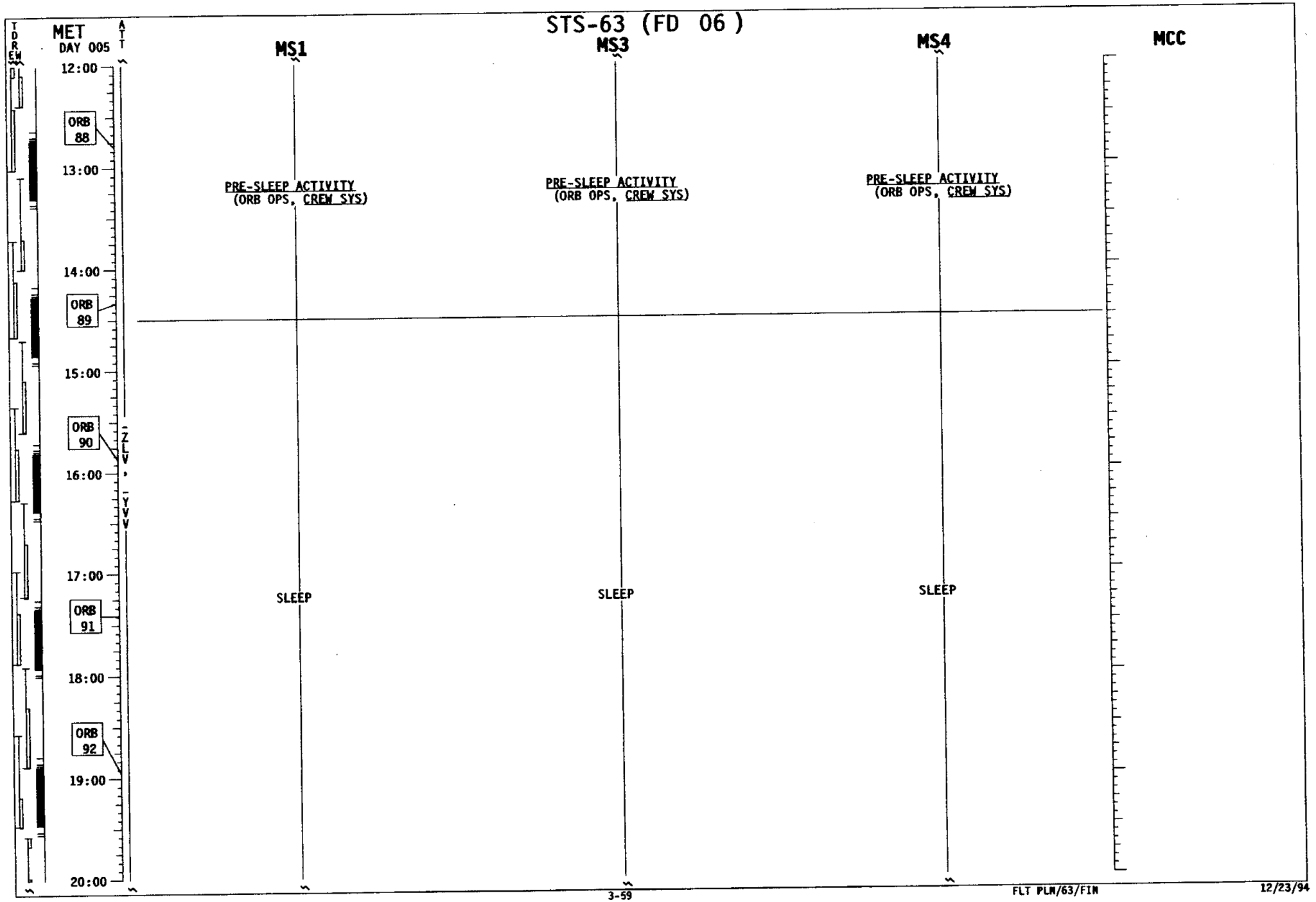
ORB 83

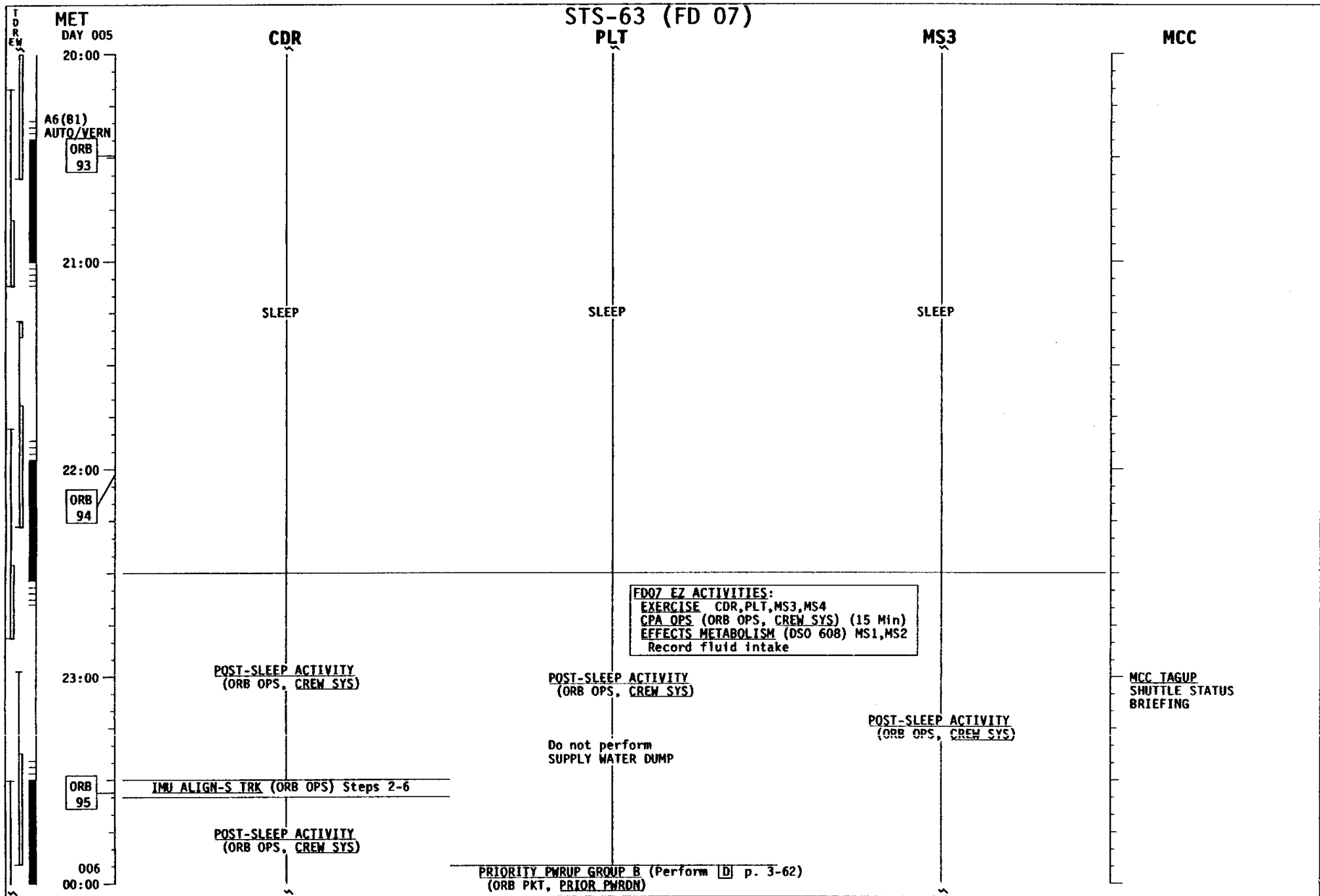
ORB 84











T
D
R
E
W

MET
DAY 005

STS-63 (FD 07)

MS1

MS2

MS4

MCC

20:00

21:00

22:00

23:00

006
00:00

ORB
93

ORB
94

ORB
95

SLEEP

SLEEP

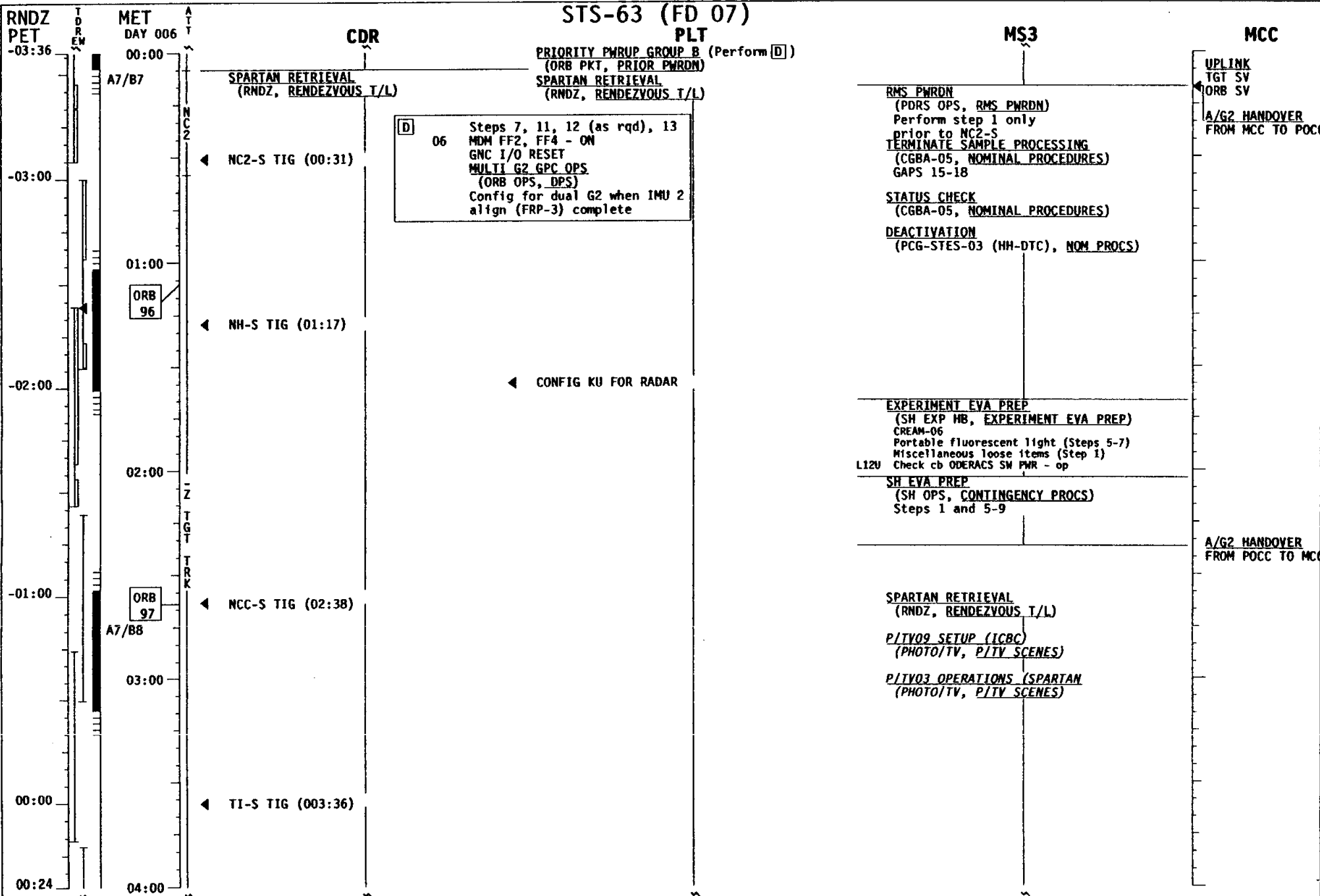
SLEEP

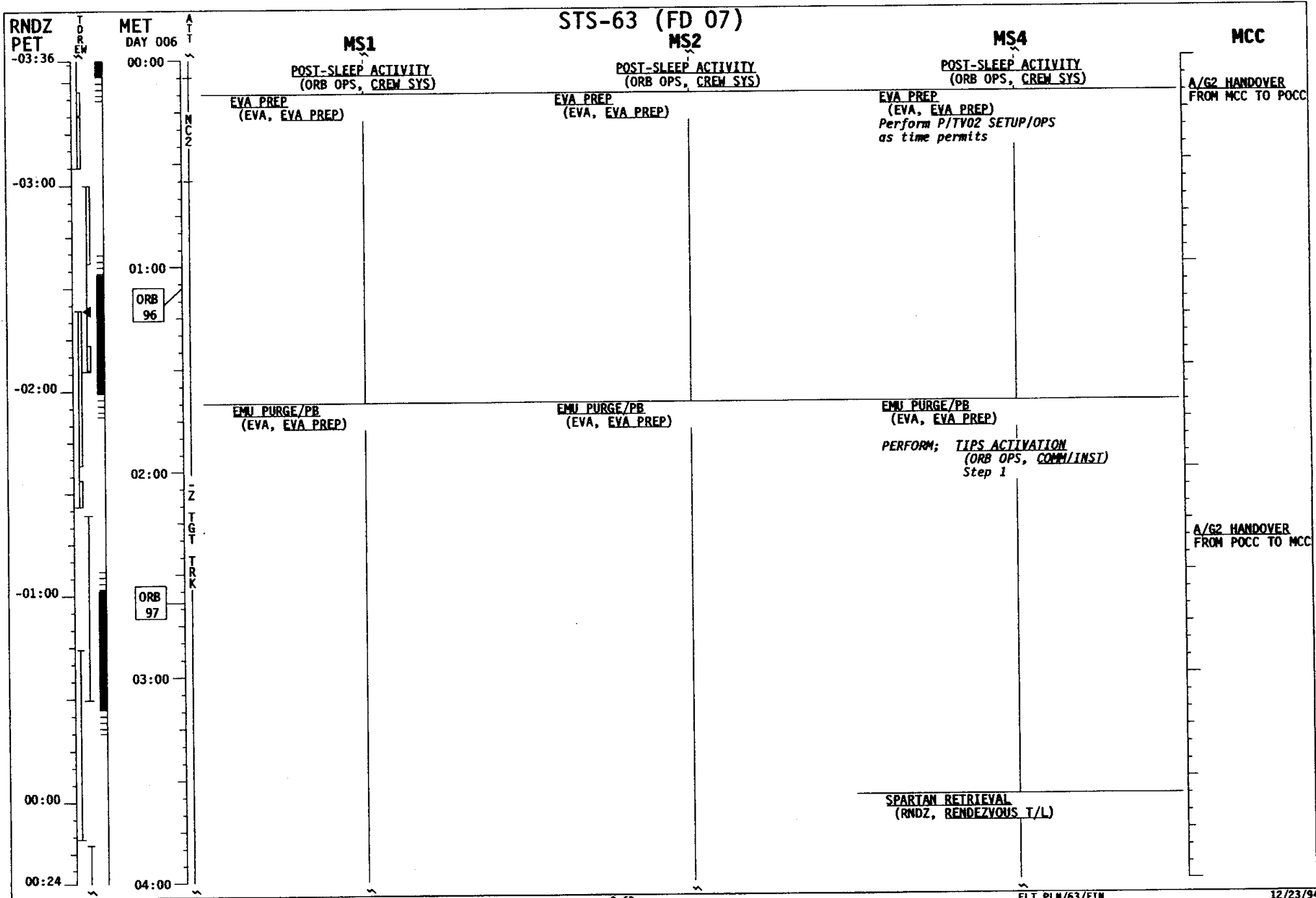
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

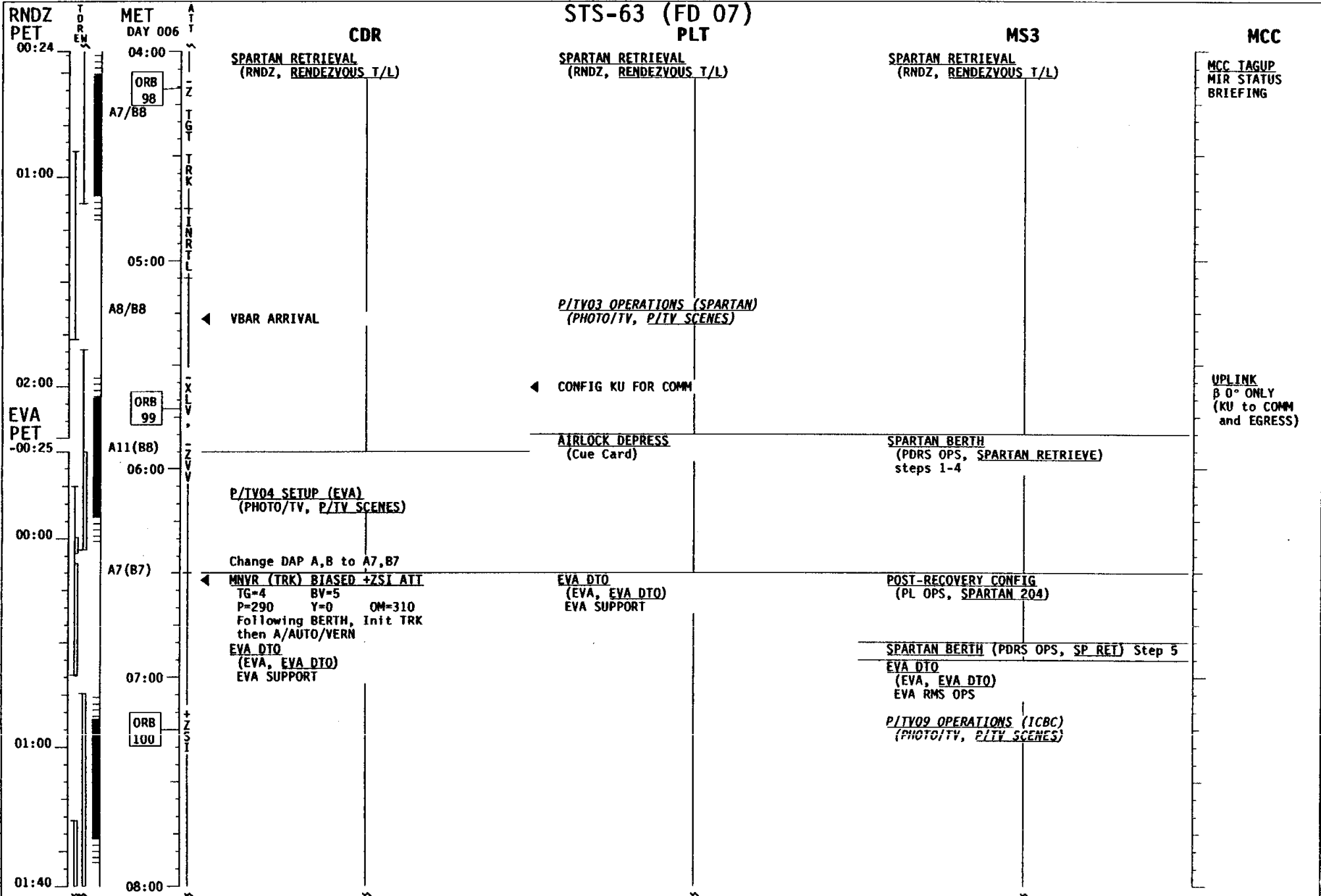
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

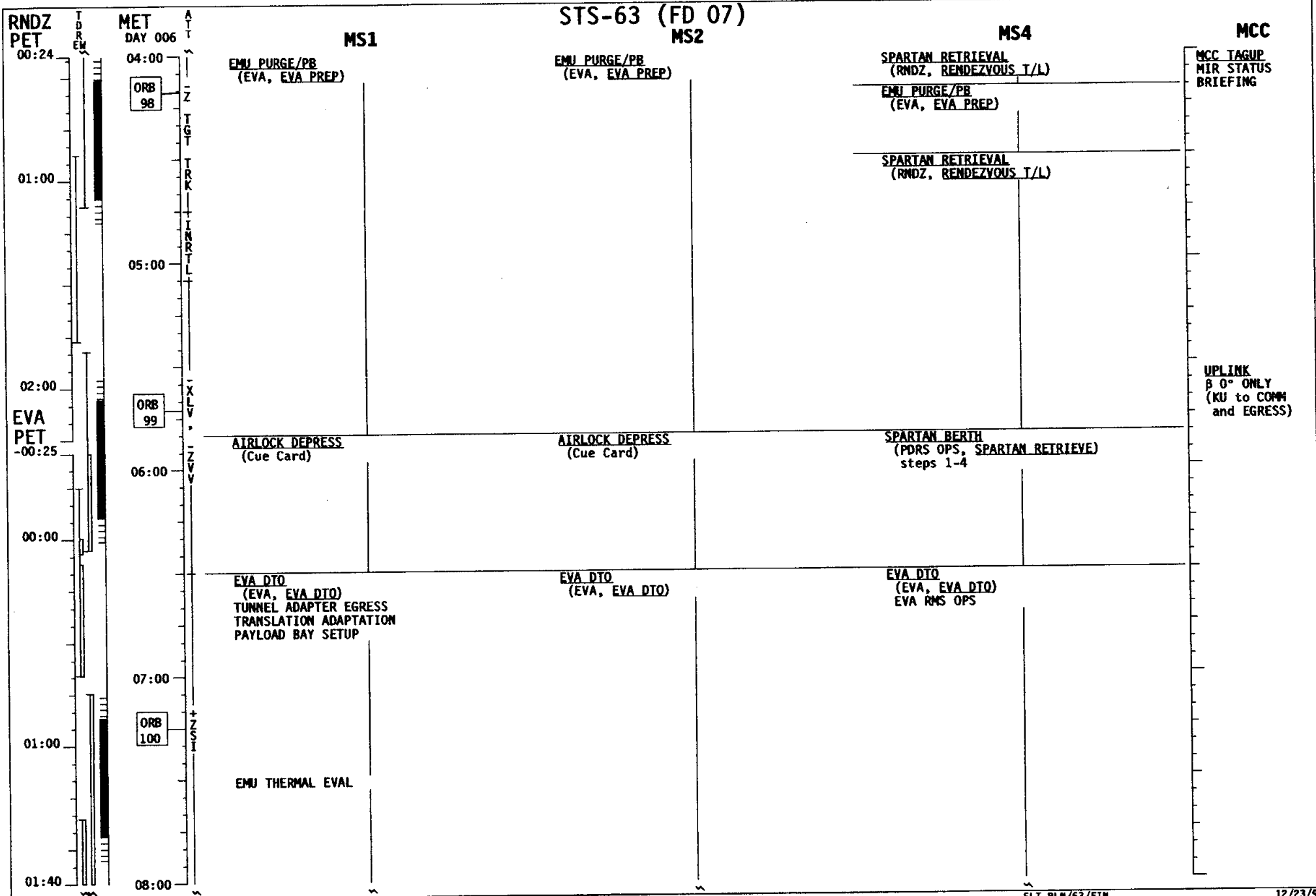
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MCC TAGUP
SHUTTLE STATUS
BRIEFING









PET
01:40
02:00
03:00
04:00
05:00
12:00

TRK EV
MET
DAY 006
08:00
A7(B7)
AUTO/VERN
A7/B12
A14/B12
ORB
101
09:00
10:00
ORB
102
11:00
A6(B1)
AUTO/ALT
A6(B1)
AUTO/VERN
ORB
103
12:00

ATT
+Z
-Z
+Y
-Y
+V
-V

STS-63 (FD 07)
PLT

EVA DTO
(EVA, EVA DTO)

EVA DTO
(EVA, EVA DTO)

EVA DTO
(EVA, EVA DTO)

Change DAP A,B to A6,B1
MNYR (TRK) -ZLV, +YVV
TG-2 BV-3 GM-270
Init TRK, then A/AUTO/ALT
When in ATT A/AUTO/VERN
PRIORITY PWRDN GROUP B
(ORB PKT, PRIOR PWRDN)

AIRLOCK REPRESS
(Cue Card)

IMMUNE OPS
(IMMUNE-02, NOMINAL PROCEDURES)

UPLINK
p Zi + MASK
(Ingress)

06 MDM FF2, FF4 - OFF

POST EVA
(EVA, POST EVA)
Without H2O recharge

TEMP CHECK (PL OPS, SPARTAN 204)

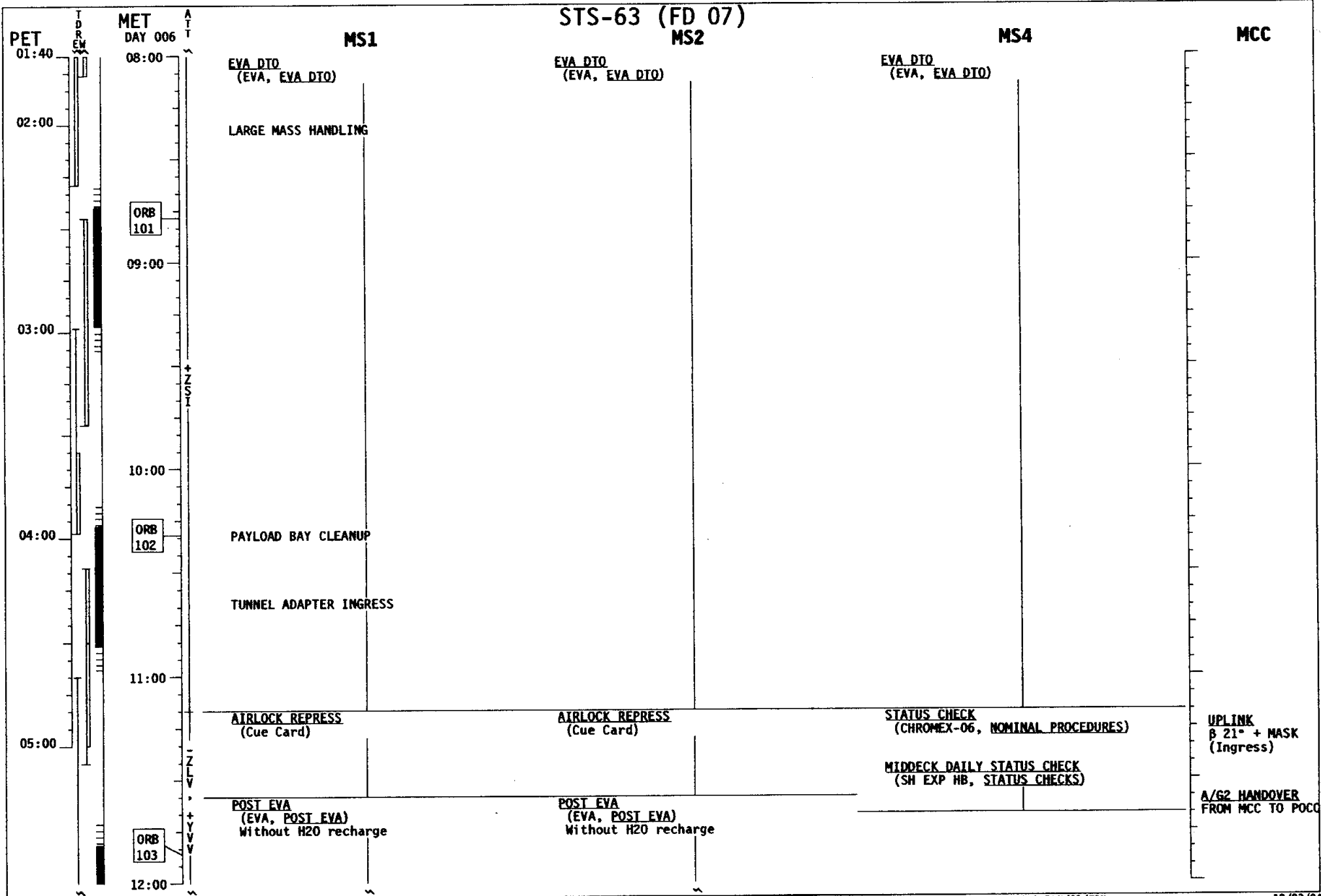
A/G2 HANDOVER
FROM MCC TO PCCC

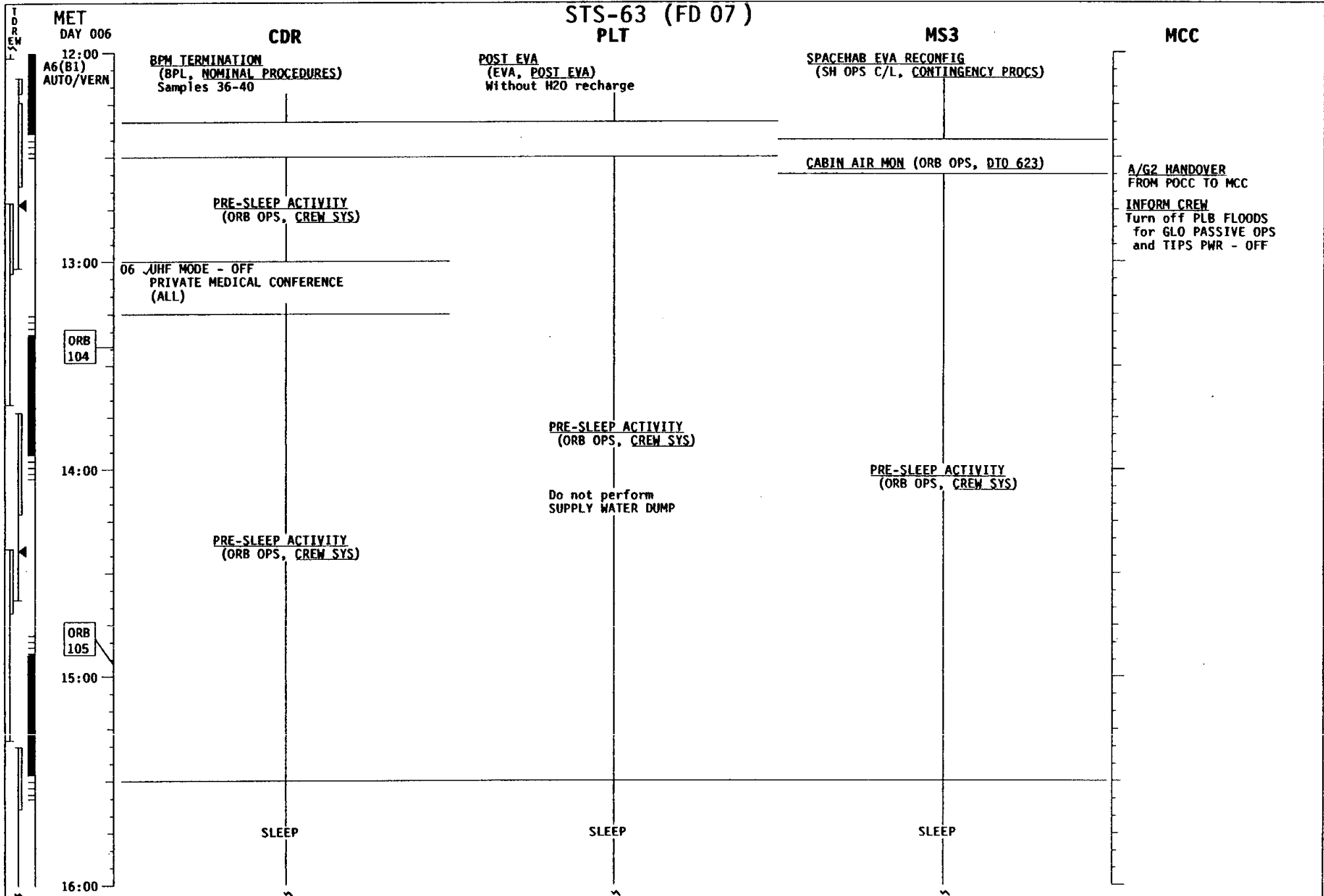
SPACEHAB EVA RECONFIG
(SH OPS C/L, CONTINGENCY PROCS)

CDR

MS3

MCC





T
SEW

MET
DAY 006

STS-63 (FD 07)

MS1

MS2

MS4

MCC

12:00
13:00
14:00
15:00
16:00

POST EVA
(EVA, POST EVA)
Without H2O recharge

POST EVA
(EVA, POST EVA)
Without H2O recharge

EXPERIMENT EVA RECONFIG (CREAM-06)
(SH EXP HB, EXPERIMENT EVA RECONFIG)
SPACEHAB DAILY STATUS CHECK
(SH EXP HB, STATUS CHECKS)

EMU BATT RCHG/CHARGE VERIF
(EMU, EMU MAINT/RECHARGE)
Perform Initiate

EMU BATT RCHG/CHARGE VERIF
(EMU, EMU MAINT/RECHARGE)
Perform Initiate

DAILY BRIEFING (SHAB)

SHAB PRE-SLP CONFIG (SHAB OPS, ON ORBIT)

A/GZ HANDOVER
FROM POCC TO MCC

INFORM CREW
Turn off PLB FLOODS
for GLO PASSIVE OPS
and TIPS PWR - OFF

ORB
104

ORB
105

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

SLEEP

SLEEP

STS-63 (FD 08)

CDR

PLT

MS2

MCC

SLEEP

SLEEP

SLEEP

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MCC TAGUP
SHUTTLE STATUS
BRIEFING
INFORM CREW
TIPS PWR - ON

T
D
R
E
W

MET
DAY 006

A
T

16:00
A6 (B1)
AUTO/YERN

ORB
106

17:00

18:00
ORB
107

19:00

ORB
108

20:00

21:00
ORB
109

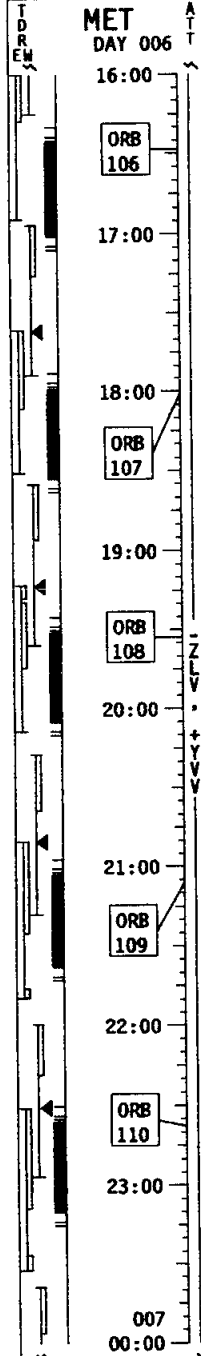
22:00

ORB
110

23:00

007
00:00

STS-63 (FD 08)



MS1

MS3

MS4

MCC

SLEEP

SLEEP

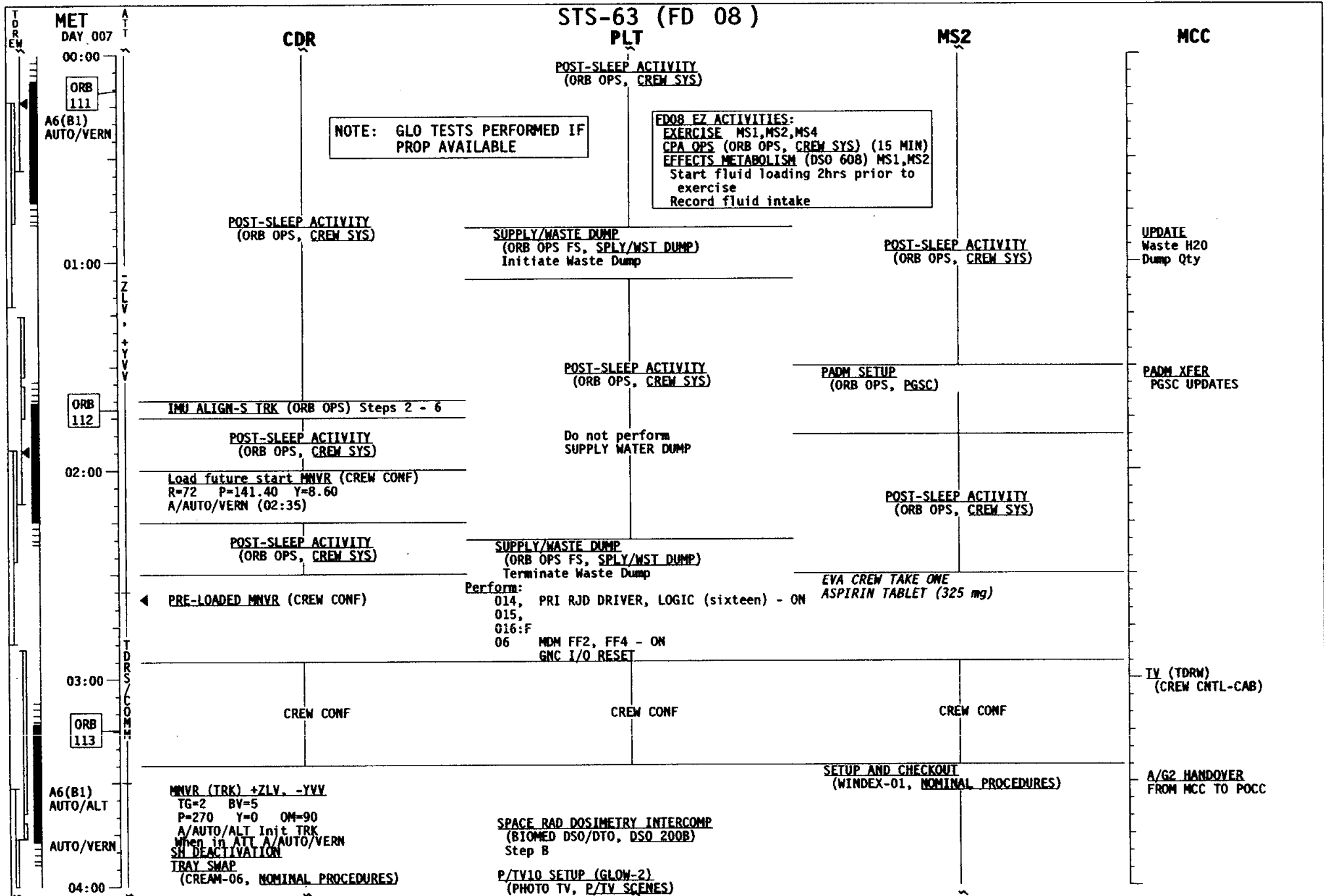
SLEEP

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

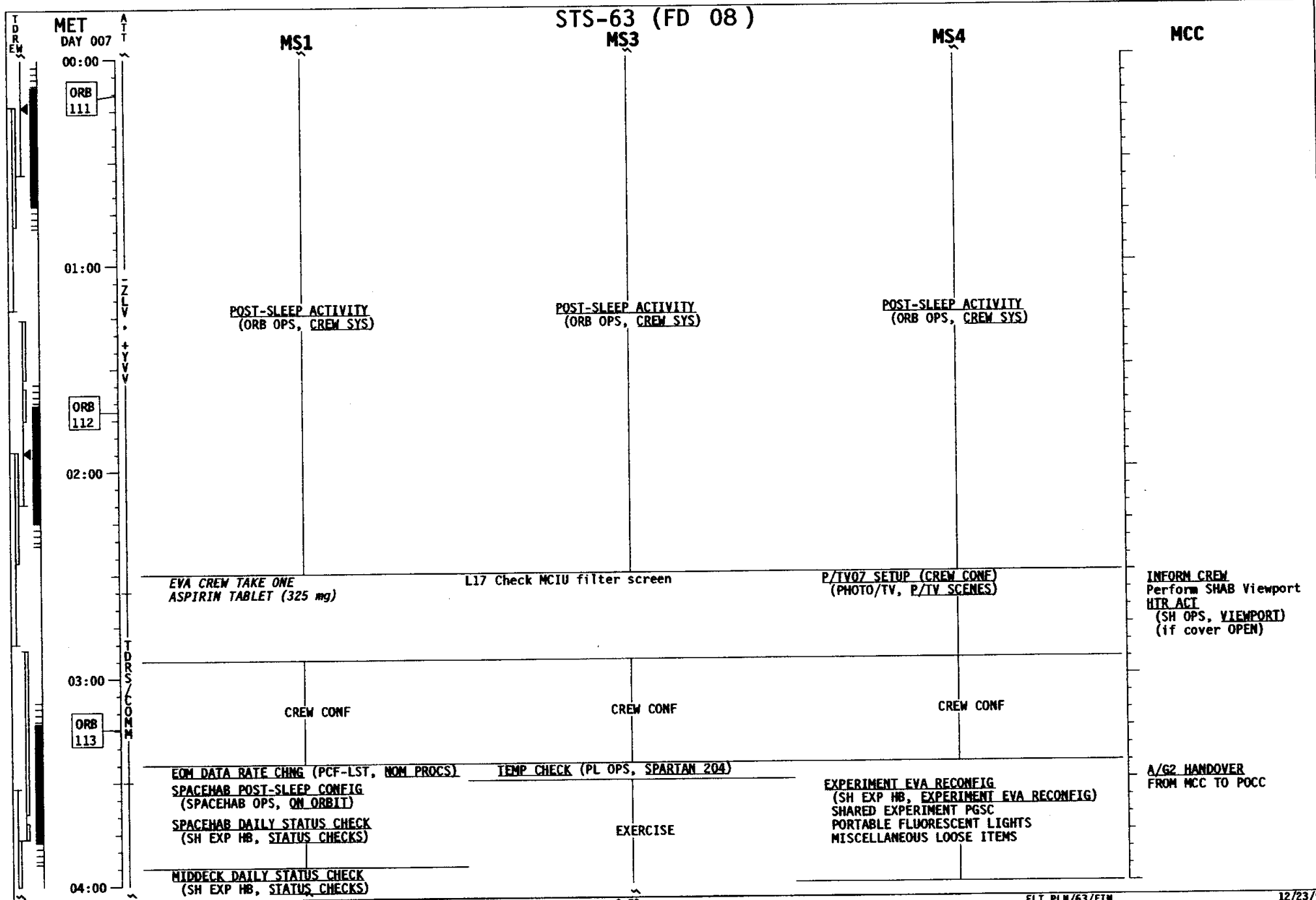
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MCC TAGUP
SHUTTLE STATUS
BRIEFING
INFORM CREW
TIPS PWR - ON



STS-63 (FD 08)



STS-63 (FD 08)

CDR

PLT

MS2

MCC

TDR

MET DAY 007

04:00
A6(B1)
AUTO/VERN

ORB 114

A13(B2)
05:00
AUTO/VERN

LVLH/VERN

A1(B2)

+ZLV

YVV

(A13)B2
06:00
AUTO/VERN

ORB 115

LVLH/VERN

A6(B1)
07:00
AUTO/VERN

+XLV

ROT

ORB 116
(A6)B6
08:00

SH DEACTIVATION
TRAY SWAP
(CREAM-06, NOMINAL PROCEDURES)

P/TV10 SETUP (GLOW-2)
(PHOTO TV, P/TV SCENES)

SETUP AND CHECKOUT
(WINDEX-01, NOMINAL PROCEDURES)

MCC TAGUP
MIR STATUS
BRIEFING

GLO PRCS TEST
(ORB OPS, CGP)
Start time = 04:46

EXERCISE

THRUSTER PLUME OPS
(WINDEX-01, NOMINAL PROCEDURES)
SUNSET 04:46
PET ZERO 04:46
PET STOP 05:18
REF # 56

GMC UNIVERSAL POINTING
Item 21 EXECUTE (CANCEL)
RCS HOT FIRE TEST
(ORB OPS, RCS)
Change DAP A to A13
MNVR (TRK) +ZLV, -YVV
TG=2 BV=5
P=270 Y=0 OM=90
B/AUTO/ALT Init TRK
When in ATT B/AUTO/VERN

RCS HOT FIRE TEST
(ORB OPS, RCS)

DEACTIVATION
(SAMS-03, NOMINAL PROCEDURES)

APU HTR RECONFIG (ORB OPS)

DISASSEMBLE AND STOW
(WINDEX-01, NOMINAL PROCEDURES)

RE-ENTRY MODE
(3-DMA, NOMINAL PROCEDURES)

GLO PRCS TEST
(ORB OPS, CGP)
Start time = 06:20

EXERCISE

Change DAP A to A6
MNVR (TRK) BIASED +XLV, +YVV
TG=2 BV=1 OM=240
A/AUTO/ALT Init TRK
When in ATT A/AUTO/VERN

MEAL

MEAL

C GNC 20 DAP CONFIG
Item 4 + 6 EXEC
Item 63 + 0.08 EXEC
Item 5 EXEC

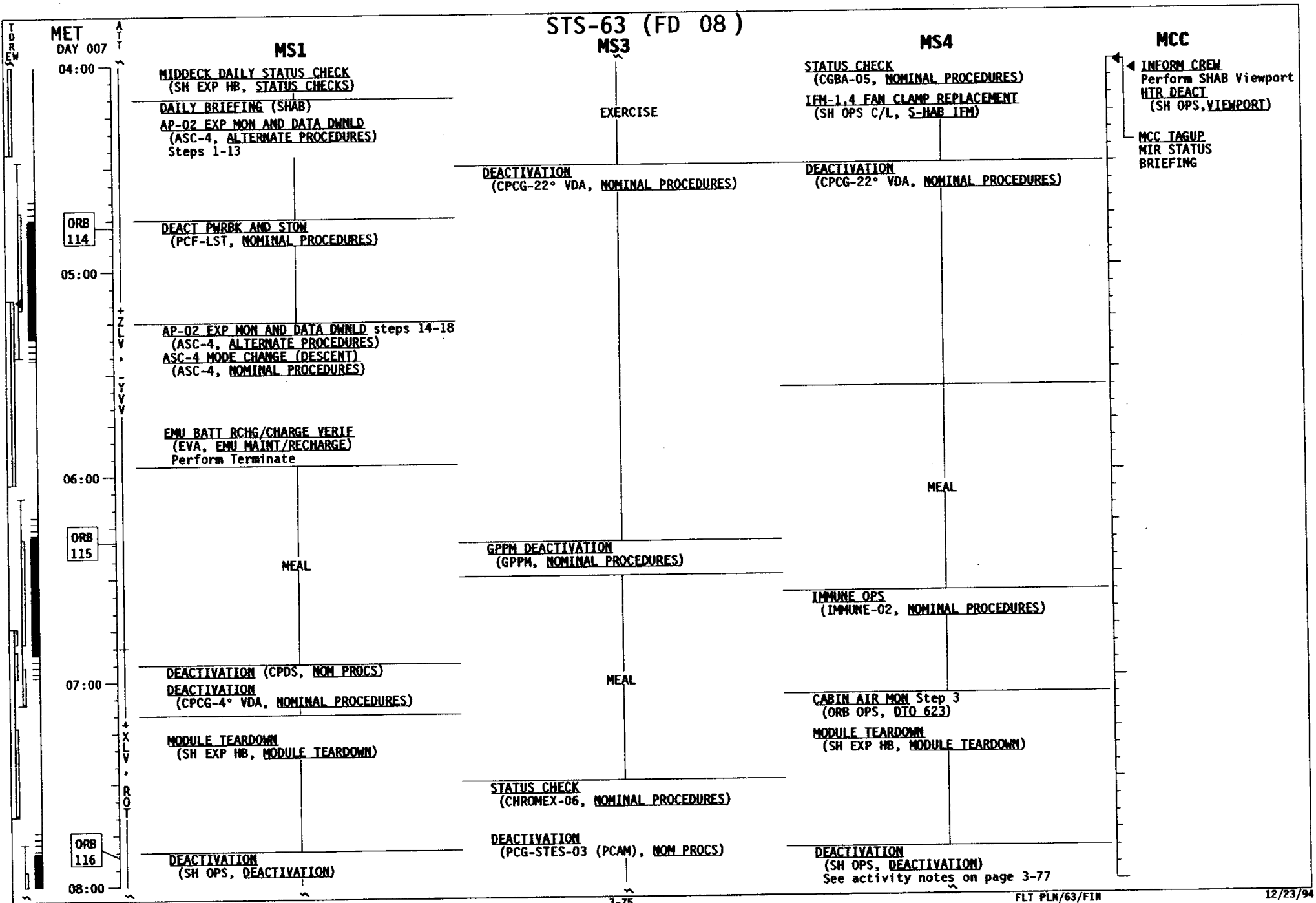
MEAL

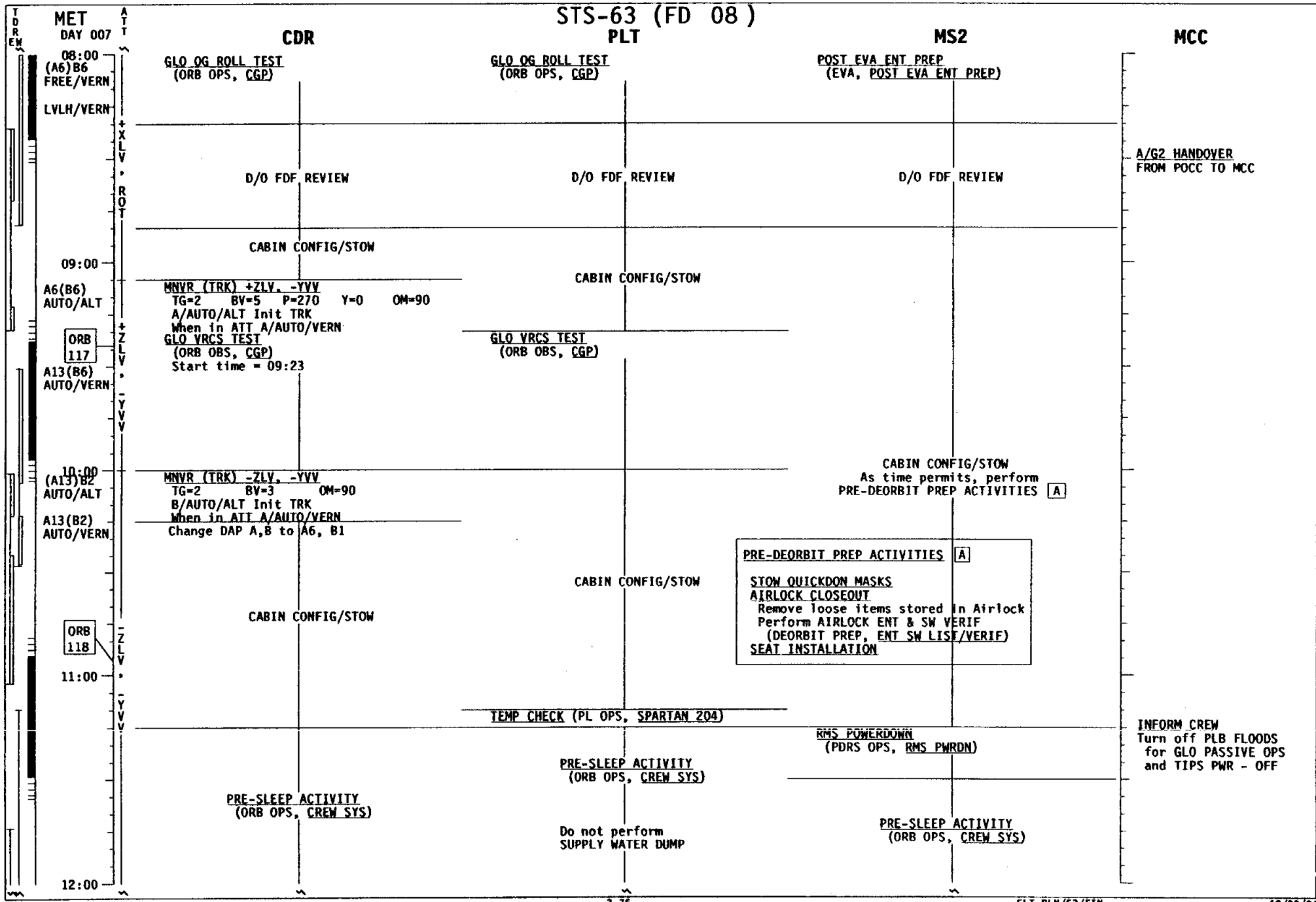
Prior to OG ROLL TEST:
Change DAP B6 ROT RATE - **C**

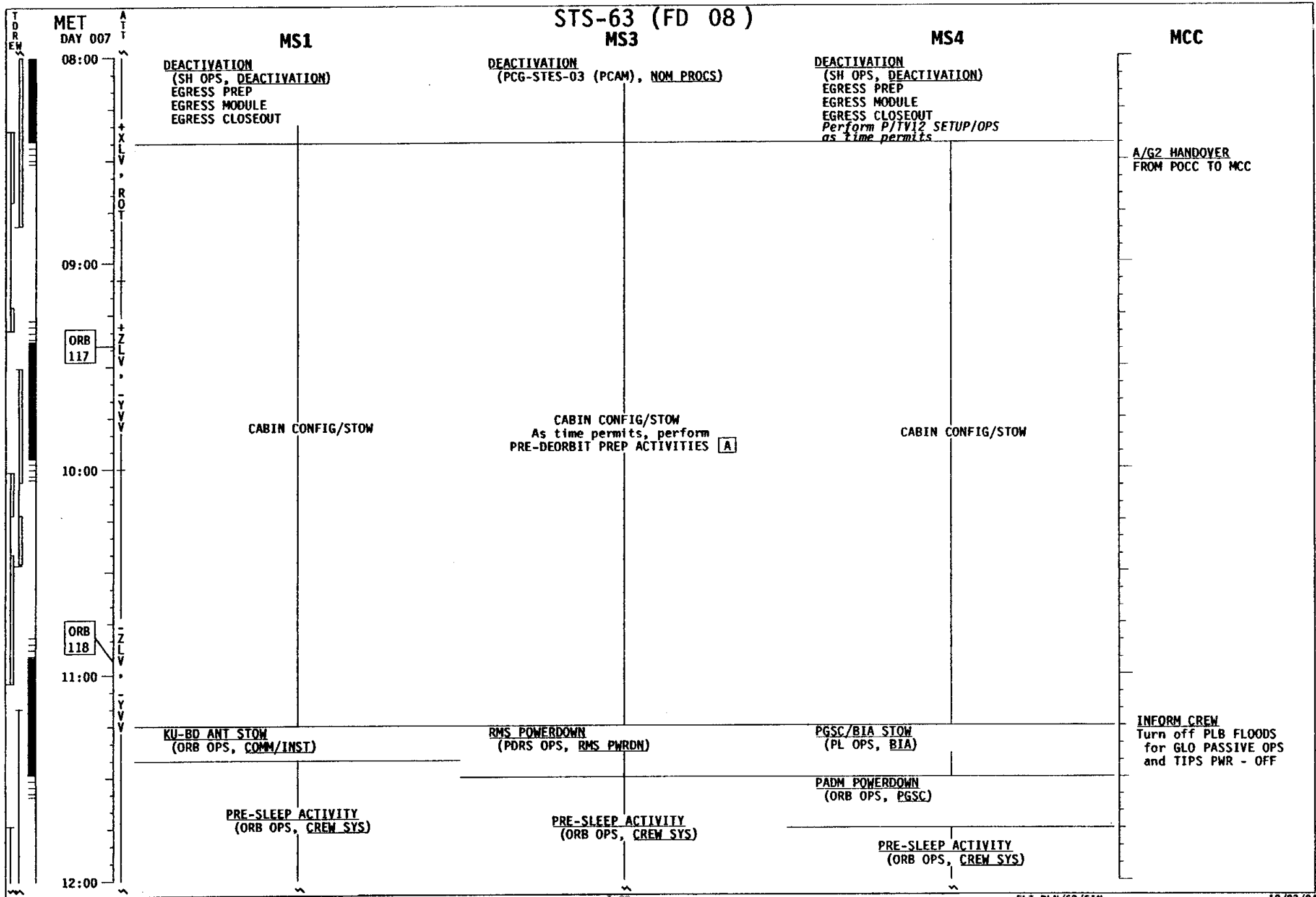
GLO OG ROLL TEST
(ORB OPS, CGP)
Start time = 07:50

GLO OG ROLL TEST
(ORB OPS, CGP)

POST EVA ENT PREP
(EVA, POST EVA ENT PREP)







STS-63 (FD 08)

CDR

PLT

MS2

MCC

MET
DAY 007

12:00

A6(B1)
AUTO/VERM

ORB
119

06 JHF MODE - OFF
PRIVATE MEDICAL CONFERENCE
(ALL)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

Do not perform
SUPPLY WATER DUMP

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

13:00

14:00

ORB
120

15:00

SLEEP

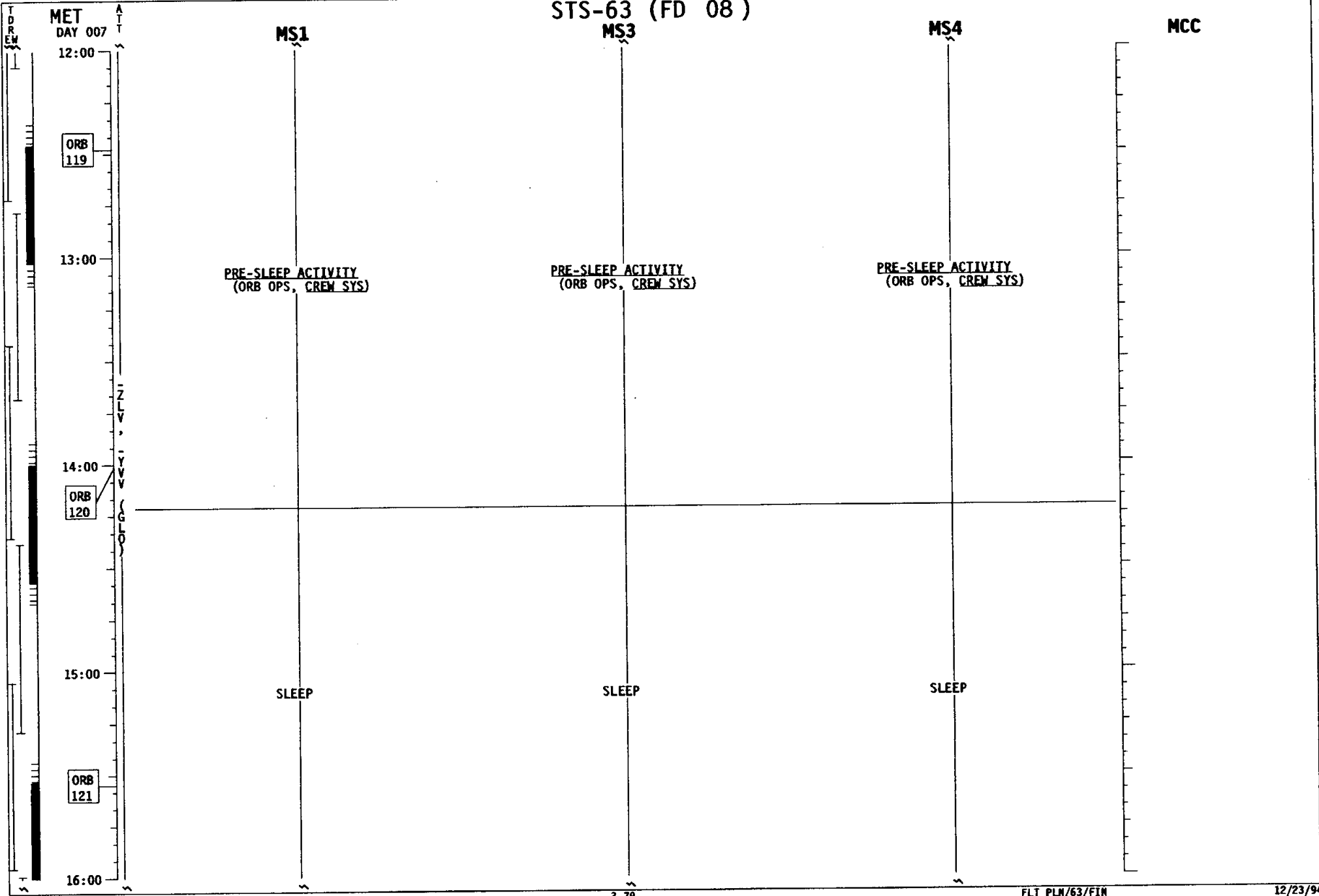
SLEEP

SLEEP

ORB
121

16:00

STS-63 (FD 08)



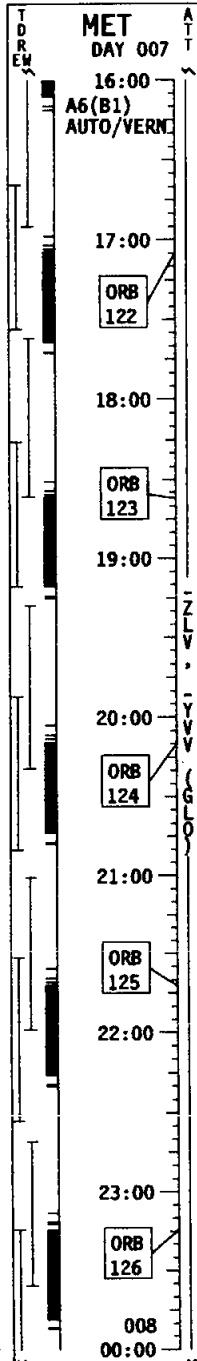
STS-63 (FD 09)

CDR

PLT

MS2

MCC



SLEEP

SLEEP

SLEEP

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

Do not perform
SUPPLY WATER DUMP

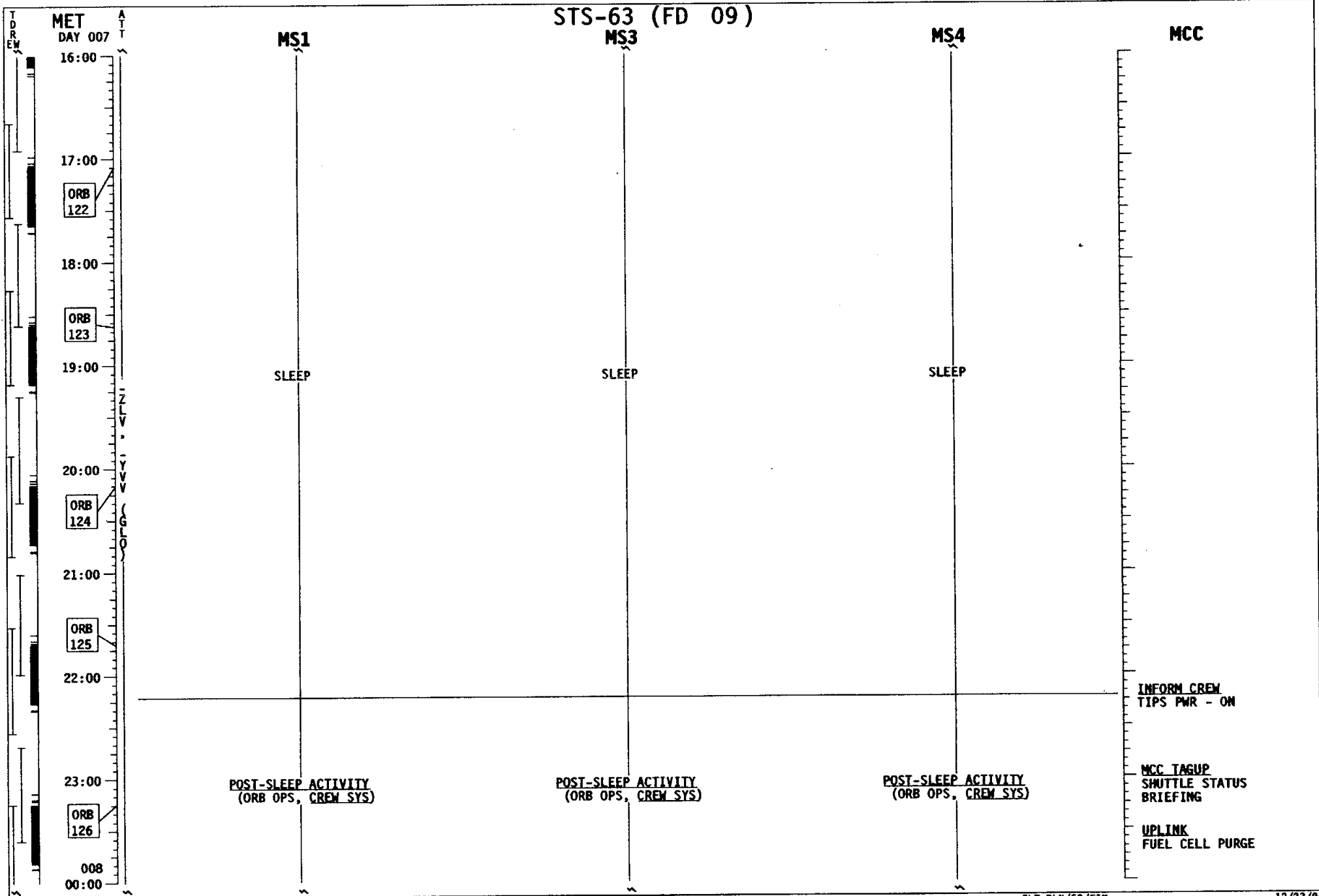
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

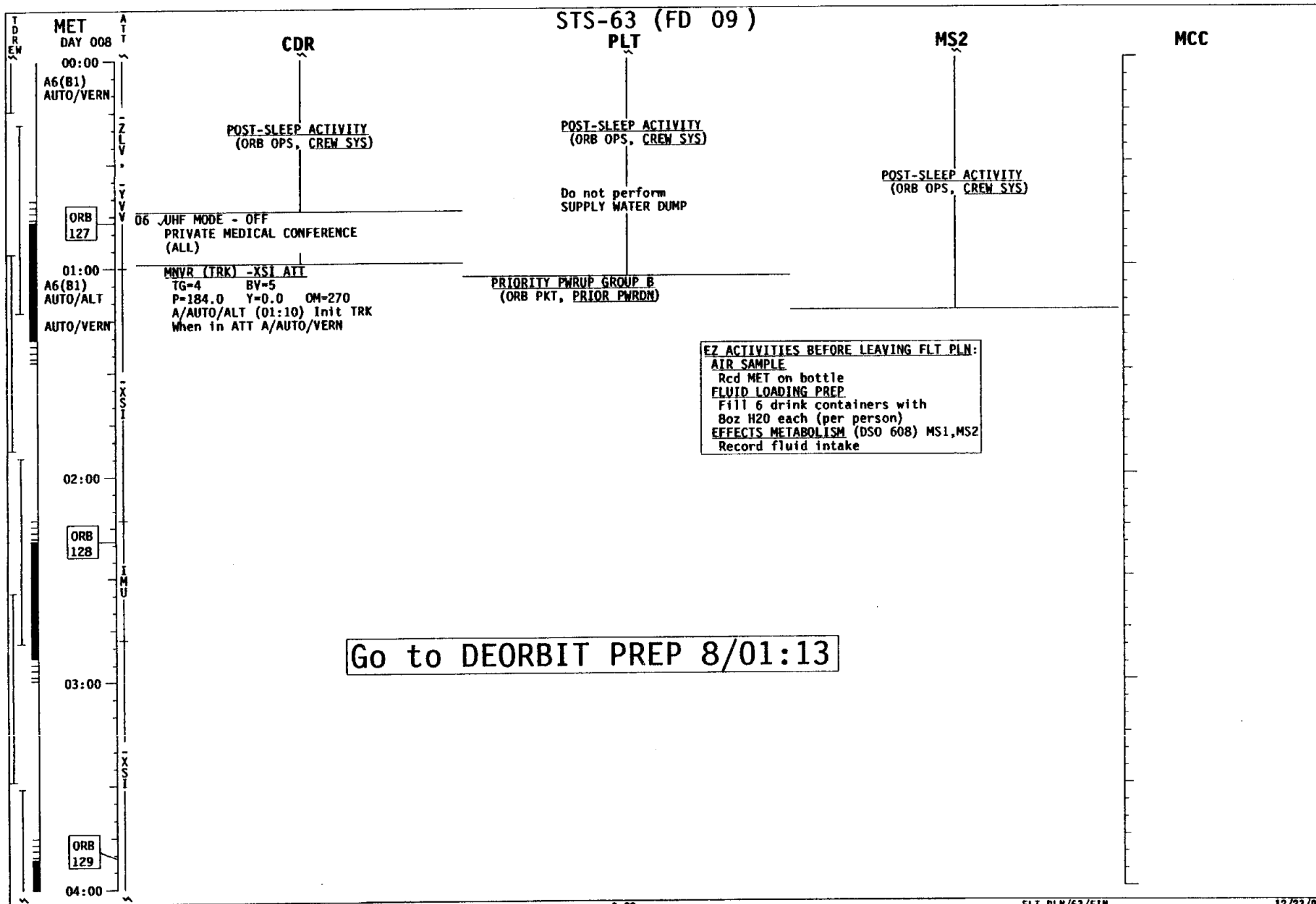
INFORM CREW
TIPS PWR - ON

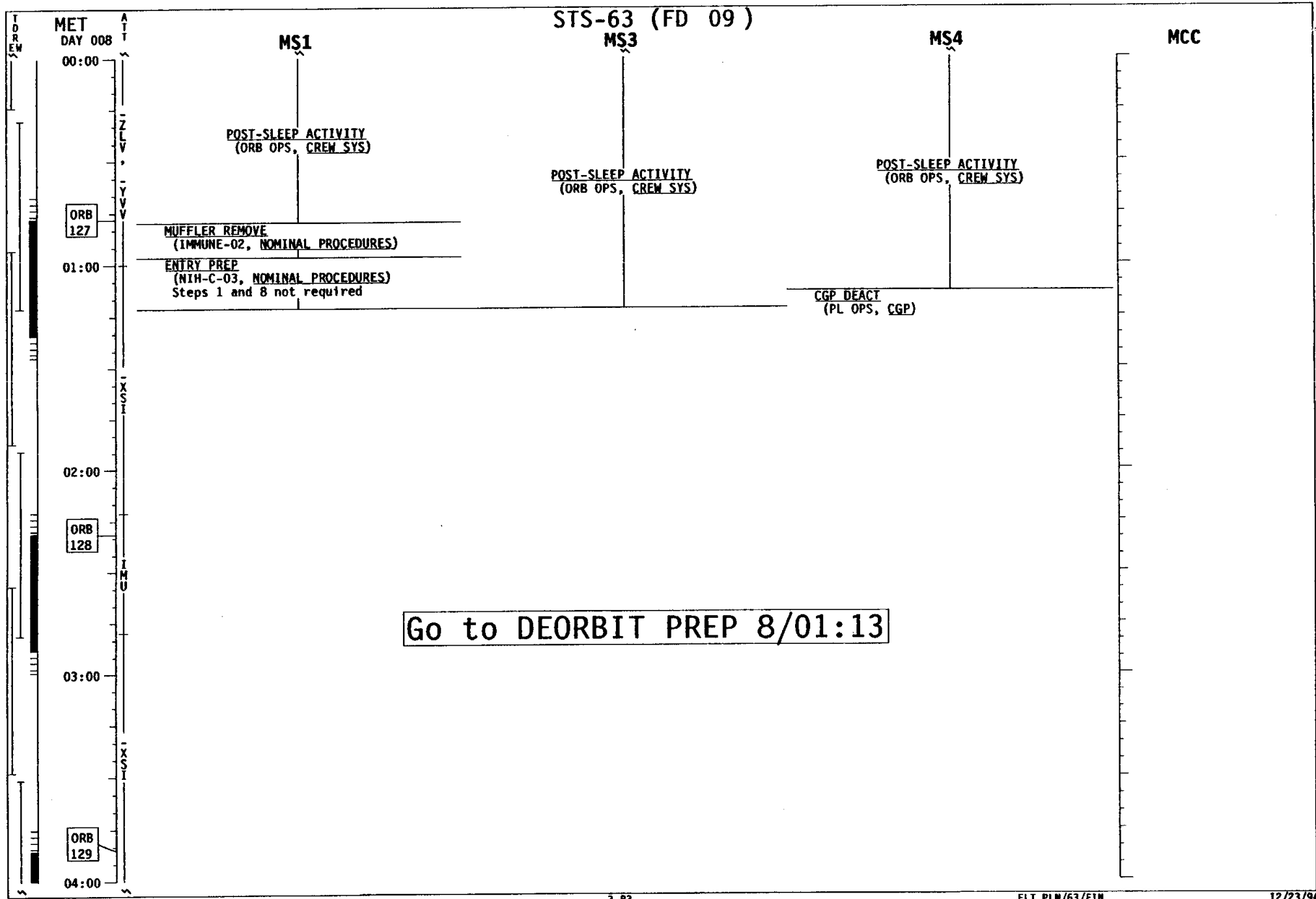
MCC TAGUP
SHUTTLE STATUS
BRIEFING

UPLINK
FUEL CELL PURGE

STS-63 (FD 09)







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ATTITUDE TIMELINE

ATTITUDE
TIMELINE

Attitude Timeline

MET	MNVR OPTION	DAF	E/S	REF ATT/REMARKS	EVENT	
1 000/01:12:00 MET 21:30	TGT=2 BV=5 P= 0.00 Y= 90.00 OM= 90.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 90 P 90	LVLH R= 0.00 P= 90.00 Y= 90.00	PLBD Opening ODERACS Deploy
2 000/03:45:00 MET 54:19	TGT=2 BV=2 P=180.00 Y= 0.00 OM=285.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 34 P 180	LVLH R= 75.00 P= 90.00 Y= 0.00	-XLV PLB South GLO EarthLimb
3 000/08:45:00 MET 59:31	INRTL R=291.00 MNVR P=240.00 Y=331.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 6 P 101		NC1-M TIG 00/09:03
4 000/09:10:00 MET 11:29	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV Nose Fwd
5 001/01:30:00 MET 37:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A11 AUTO VERN	RATE 0.2000 DB AT 3.000 DB RT 0.200	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV Nose South SPTN attached Load in FREE
6 001/07:30:00 MET 40:18	INRTL R=288.00 MNVR P=241.00 Y=323.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 10 P 94		NC2-M TIG 01/07:52
7 001/08:00:00 MET 06:04	TGT=2 BV=5 P=179.06 Y=359.89 OM=175.56	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 353 P 179	LVLH R=184.44 P= 89.05 Y= 0.04	GG ATT ID F -XLV PLB Fwd
8 001/13:45:00 MET 53:42	TGT=2 BV=2 P=180.00 Y= 0.00 OM=280.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 357 P 180	LVLH R= 80.00 P= 90.00 Y= 0.00	-XLV PLB South GLO EarthLimb
9 002/01:50:00 MET 02:04:57	INRTL R=285.00 MNVR P=242.00 Y=317.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 14 P 89		NPC-M TIG 02/02:10
10 002/02:25:00 MET 33:03	TGT=2 BV=2 P=180.00 Y= 0.00 OM=270.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 304 P 180	LVLH R= 90.00 P= 90.00 Y= 0.00	-XLV PLB South
11 002/09:30:00 MET 42:35	INRTL R=112.00 MNVR P=313.00 Y=318.00	A6 AUTO PRI	RATE 0.2000 DB AT 5.00 DB RT 0.20	SUN R 225 P 50	Special Star PR -Z: 18 -Y: 57	IMU -Z COAS Cal Cal Star ID: 18
12 002/10:00:00 MET 10:15	TGT=5 BV=3 P= 90.00 Y= 0.00 OM=226.00 RA= 317.200 DEC= -16.400S	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 360 P 90	INRTL R=249.67 P=174.59 Y=314.04	CTVC Align -ZSI

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

ATTITUDE
TIMELINE

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
13 002/10:30:00 MET 43:13	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-ZLV Nose Fwd
14 002/12:25:00 MET 32:43	INRTL R=281.00 MNVR P=237.00 Y=328.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 15 P 100		NC3-M TIG 02/12:46
15 002/12:50:00 MET 59:42	TGT=2 BV=2 P=180.00 Y= 0.00 OM=270.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 297 P 180	LVLH R= 90.00 P= 90.00 Y= 0.00	-XLV PLB South
16 003/07:40:00 MET 46:00	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B7 AUTO PRI	RATE 0.5000 DB AT 2.00 DB RT 0.20	EARTH R 279 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	-Z MIR Track
17 003/08:24:00 MET 29:45	INRTL R= 96.00 MNVR P=233.00 Y=352.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 203 P 124		NH-M OMS TVR=0 TIG: 3/08:34
18 003/08:36:00 MET		A7 LVLH VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 181 P 116	LVLH R=359.71 HOLD P= 26.28 Y=359.54	DAP: LVLH Post NH
19 003/09:05:00 MET 09:15	INRTL R=264.00 MNVR P= 51.00 Y=353.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 331 P 42		NC4-M OMS TVR=0 TIG: 3/09:15
20 003/09:18:00 MET 21:52	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B7 AUTO PRI	RATE 0.5000 DB AT 2.00 DB RT 0.20	EARTH R 270 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	-Z MIR Track
21 003/10:45:00 MET 50:04	INRTL R=264.00 MNVR P= 55.00 Y= 27.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 340 P 74		Ti-M OMS TVR=0 TIG: 7/10:55
22 003/10:57:00 MET 11:00:35	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B7 AUTO PRI	RATE 0.5000 DB AT 2.00 DB RT 0.20	EARTH R 76 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	-Z MIR Track
23 003/11:28:00 MET 29:40	TGT=2 BV=5 P=340.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 20	LVLH R= 0.00 P=290.00 Y= 0.00	-Z MIR Track
24 003/11:45:00 MET 50	TGT=2 BV=5 P=330.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 30	LVLH R=360.00 P=300.00 Y=360.00	-Z MIR Track

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

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
25 003/11:55:00 MET 50	TGT=2 BV=5 P=320.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 40	LVLH R= 0.00 P=310.00 Y= 0.00	-Z MIR Track
26 003/11:59:00 MET 12:00:40	TGT=2 BV=5 P=300.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 60	LVLH R= 0.00 P=330.00 Y= 0.00	-Z MIR Track
27 003/12:06:00 MET 39	INRTL R=264.00 MNVR P= 50.00 Y=336.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 316 P 29		Inert Man Phase Vbar arrival @ Noon + ~5 min
28 003/12:35:00 MET 04	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 347 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	Vbar Approach PET=0 @ ULD AOS + 5 min = 13:27:20
29 003/14:07:20 MET PET + 00:40	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=0.130	A10 LVLH VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020		LVLH R= 0.00 P= 90.00 Y= 0.00	MIR Flyaround 450 deg in LVLH
30 003/15:05:00 MET		A10 INRT PRI	RATE 0.2000 DB AT 5.00 DB RT 0.20	SUN R 319 P 149	INRTL R=104.44 HOLD P=218.18 Y= 69.22	MIR Sep 1 TIG: 3/15:05:00
31 003/15:10:00 MET 46	TGT=2 BV=5 P= 80.00 Y= 0.00 OM= 0.00	A10 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 360 P 80	LVLH R= 0.00 P=190.00 Y= 0.00	-Z MIR Track
32 003/15:15:00 MET	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=0.150	A10 LVLH VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020		LVLH R= 0.00 P=190.00 Y= 0.00	-Z MIR Track Post Sep Fly around
33 003/15:35:00 MET	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=0.166	A10 LVLH VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020		LVLH R= 0.00 P= 10.00 Y= 0.00	-Z MIR Track Post Sep Fly around
34 003/15:45:00 MET 54:07	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North
35 004/04:50:00 MET 58:35	INRTL R= 94.00 MNVR P=229.00 Y= 42.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 264 P 158		MIR Final Sep TIG 04/05:07
36 004/05:12:00 MET		A6 LVLH VERN	RATE 0.0650 DB AT 1.000 DB RT 0.020	EARTH R 360 P 60	LVLH R= 0.01 HOLD P=209.69 Y= 0.29	POST BURN LVLH

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

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
37 004/05:49:00 MET 53:03	INRTL R=297.60 MNVR P= 96.00 Y=323.80	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 270 P 58	D1 Window Open Noon - 13 min = 04/06:46	SPARTAN Deploy GF at Sun +Z in plane Fwd
38 004/07:05:00 MET 17:23	TGT=2 BV=5 P= 80.00 Y= 0.00 OM=180.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 360 P 80	LVLH R=180.00 P=350.00 Y= 0.00	Sep 2 Setup
39 004/07:22:00 MET		A7 INRT VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 70 P 156	INRTL R=272.95 HOLD P=230.17 Y= 35.46	Sep 2 Burn IH @ TIG-00:30
40 004/07:30:00 MET 41:51	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 70.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 225 P 0	LVLH R= 70.00 P=270.00 Y= 0.00	H2O DUMP W SPTN FR 2-44 REGION D
41 005/04:40:00 MET 52:58	INRTL R=272.00 MNVR P= 53.00 Y=316.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 266 P 25		NPC-S + FCS C-0 TIG 05/04:58
42 005/06:15:00 MET 23:21	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV Nose South
43 005/09:00:00 MET 09:19	INRTL R= 70.00 MNVR P=211.00 Y=275.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 210 P 57		NSR-S TIG 05/09:22
44 005/09:25:00 MET		A6 LVLH ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 359 P 69	LVLH HOLD R= 0.96 P=201.44 Y=359.93	
45 005/10:20:00 MET 27:27	INRTL R= 88.00 MNVR P=231.00 Y=331.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 207 P 107		NC1-S TIG 05/10:40
46 005/10:45:00 MET 52:47	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North
47 006/00:08:00 MET 17:05	INRTL R= 85.00 MNVR P=230.00 Y=342.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 212 P 117		NC2 - SPARTAN TIG: 6/00:28
48 006/00:30:00 MET 32:24	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B7 AUTO PRI	RATE 0.5000 DB AT 2.00 DB RT 0.20	EARTH R 135 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	-Z SPARTAN Trk

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

Attitude Timeline

MET	MNVR OPTION	DAF	E/S	REF ATT/REMARKS	EVENT	
49 006/04:00:00 MET 01:15	TGT=2 BV=5 P=345.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 15	LVLH R= 0.00 P=285.00 Y= 0.00	-Z SPARTAN Trk
50 006/04:15:00 MET 17:05	TGT=2 BV=5 P=320.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 40	LVLH R= 0.00 P=310.00 Y= 0.00	-Z SPARTAN Trk
51 006/04:30:00 MET 31:15	TGT=2 BV=5 P=305.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 55	LVLH R= 0.00 P=325.00 Y= 0.00	-Z SPARTAN Trk
52 006/04:46:00 MET 59	INRTL R=275.00 MNVR P= 54.00 Y=338.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 300 P 34		Inert Man Phase Vbar arrival @ Noon + ~5 min
53 006/05:15:00 MET 03	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 108 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	Vbar Approach
54 006/06:30:00 MET 35:22	TGT=4 BV=5 P=290.00 Y= 0.00 OM=310.00	RA= 321.073 DEC= -15.2435 A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 180 P 70	INRTL R=147.69 P=292.33 Y=329.71	+ZSI EVA Post Spartan Berth
55 006/11:10:00 MET 21:54	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV Nose South
56 007/02:35:00 MET 01	INRTL R= 72.00 MNVR P=141.40 Y= 8.60	A6 AUTO VERN	RATE 0.0650 DB AT 1.000 DB RT 0.020	SUN R 146 P 121	INERTIAL EQUIV OF PRIOR LVLH AT TIME OF MNVR	CREW CONF
57 007/03:30:00 MET 32:52	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 90.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 90.00	GLO PRCS ATT 1
58 007/04:51:00 MET 53:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 45.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 45.00	GLO PRCS ATT 2
59 007/04:57:30 MET 05:00:00	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 0.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 0.00	GLO PRCS ATT 3
60 007/05:04:00 MET 06:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM=315.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=315.00	GLO PRCS ATT 4

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

Attitude Timeline

	MET	MNVR OPTION	DAP		E/S	REF ATT/REMARKS	EVENT
61	007/05:10:30 MET 13:00	TGT=2 BV=5 P=270.00 Y= 0.00 OM=270.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=270.00	GLO PRCS ATT 5
62	007/05:20:00 MET		B2 INRT ALT	RATE 0.2000 DB AT 3.00 DB RT 0.070	SUN R 111 P 59	INRTL R=211.33 HOLD P=321.34 Y=350.95	RCS HOT FIRE
63	007/05:40:00 MET 55:00	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 90.00	B2 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.070	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 90.00	GLO PRCS ATT 1
64	007/06:24:00 MET 26:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 45.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 45.00	GLO PRCS ATT 2
65	007/06:30:30 MET 33:00	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 0.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 0.00	GLO PRCS ATT 3
66	007/06:37:00 MET 39:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM=315.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=315.00	GLO PRCS ATT 4
67	007/06:43:30 MET 46:00	TGT=2 BV=5 P=270.00 Y= 0.00 OM=270.00	A13 AUTO ALT	RATE 0.3000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=270.00	GLO PRCS ATT 5
68	007/06:50:00 MET 07:03:15	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=120.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 351 P 0	LVLH R=120.00 P=270.00 Y= 0.00	OG ROLL Setup
69	007/07:53:00 MET 08:13:00	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B6 AUTO VERN	RATE 0.1000 DB AT 1.000 DB RT 0.020	EARTH R 311 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	OG ROLL Mnvr
70	007/09:05:00 MET 15:00	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 90.00	B6 AUTO ALT	RATE 0.2000 DB AT 1.00 DB RT 0.070	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 90.00	GLO VRCS Att 1
71	007/09:27:00 MET 29:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 60.00	A13 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 60.00	GLO VRCS Att 2
72	007/09:32:00 MET 34:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 30.00	A13 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 30.00	GLO VRCS Att 3

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

Attitude Timeline

MET	MNVR OPTION	DAF	E/S	REF ATT/REMARKS	EVENT	
73 007/09:37:00 MET 39:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 0.00	A13 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 0.00	GLO VRCS Att 4
74 007/09:42:00 MET 44:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM=330.00	A13 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=330.00	GLO VRCS Att 5
75 007/09:47:00 MET 49:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM=300.00	A13 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=300.00	GLO VRCS Att 6
76 007/09:52:00 MET 54:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM=270.00	A13 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.200	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=270.00	GLO VRCS Att 7
77 007/10:00:00 MET 15:00	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	B2 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.070	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North
78 008/01:00:00 MET 14:27	TGT=4 BV=5 P=184.00 Y= 0.00 OM=270.00 RA= 322.835 DEC= -14.6825	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 180 P 176	INRTL R=186.55 P=203.10 Y= 36.32	-XSI Rad Coldsk
79 008/02:15:00 MET 24:33	INRTL R=101.00 MNVR P=255.00 Y=325.00	A1 AUTO PRI	RATE 0.2000 DB AT 5.00 DB RT 0.20	SUN R 212 P 92		IMU Align
80 008/02:33:00 MET 37:48	INRTL R=339.00 MNVR P=190.00 Y= 39.00	B1 AUTO PRI	RATE 0.5000 DB AT 3.00 DB RT 0.20	SUN R 177 P 173		IMU VERIF
81 008/02:48:00 MET 52:57	INRTL R=187.00 MNVR P=202.00 Y= 6.00	B1 AUTO PRI	RATE 0.5000 DB AT 3.00 DB RT 0.20	SUN R 89 P 150		D/O COMM
82 008/04:58:00 MET 05:03:27	INRTL R=300.00 MNVR P= 78.00 Y=296.00	B1 AUTO PRI	RATE 0.5000 DB AT 3.00 DB RT 0.20	SUN R 231 P 45		D/O BURN
83 008/05:18:00 MET 21:33	INRTL R= 77.00 MNVR P=229.00 Y=354.00	B1 AUTO PRI	RATE 0.5000 DB AT 3.00 DB RT 0.20	SUN R 226 P 129		EI-5
84 008/05:38:00 MET		B1 LVLH PRI	RATE 0.5000 DB AT 3.00 DB RT 0.20	EARTH R 180 P 129	LVLH R= 0.06 HOLD P= 39.46 Y= 0.33	EI-5 LVLH

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

STS-63 DAP BOOK

GENERIC DAP A CONFIGURATION (A6 STS-63 SPECIFIC)

	ITEM #	A1	A2	A3	A4	A5	A6	A7	A8S
PRI									
ROT RATE	10 (50)	0.2000	0.4000	0.2000	0.5000	0.2000	0.2000	0.2000	0.2000
ATT DB	11 (51)	5.00	1.00	1.00	3.00	5.00	5.00	2.00	2.00
RATE DB	12 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	13 (53)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
COMP	14 (54)	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	15 (55)	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
Y OPTION	16 (56)	ALL	ALL	TAIL	ALL	ALL	TAIL	ALL	ALL
TRAN PLS	17 (57)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05
ALT									
RATE DB	18 (58)	0.200	0.200	0.200	0.200	0.070	0.070	0.200	0.200
JET OPT	19 (59)	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
# JETS	20 (60)	2	2	2	2	1	1	2	2
ON TIME	21 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	22 (62)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VERN									
ROT RATE	23 (63)	0.2000	0.4000	0.0080	0.2000	0.2000	0.0650	0.2000	0.2000
ATT DB	24 (64)	1.000	1.000	0.070	1.000	1.000	1.000	1.000	1.000
RATE DB	25 (65)	.020	.020	.010	.020	.020	.020	.020	.020
ROT PLS	26 (66)	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
COMP	27 (67)	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28 (68)	0	0	0	0	0	0	0	0
PURPOSE		NOMINAL	PTC	GG	PRE/POST DEPLOY	LOSS OF VERN (NOSE & TAIL)	TAIL ONLY ALT MIN PROP VERN	RNDZ	SPARTAN PROX OPS

Note: **BOLD/ITALICS** indicate a change from the I-load

5-2

FLT PLN/63/FIN

STS-63 DAP A CONFIGURATION

	ITEM #	A8M	A9	A10	A11	A12	A13	A14
PRI								
ROT RATE	10 (50)	0.2000	0.0500	0.0650	0.1000	0.1000	0.3000	0.1000
ATT DB	11 (51)	1.00	0.50	1.00	3.00	3.00	3.00	3.00
RATE DB	12 (52)	0.10	0.10	0.10	0.20	0.20	0.20	0.20
ROT PLS	13 (53)	0.10	0.10	0.10	0.60	0.04	1.00	0.04
COMP	14 (54)	.000	.000	.000	.000	.000	.000	.000
P OPTION	15 (55)	TAIL	TAIL	TAIL	ALL	ALL	TAIL	ALL
Y OPTION	16 (56)	TAIL	TAIL	TAIL	TAIL	ALL	TAIL	ALL
TRAN PLS	17 (57)	0.05	0.05	0.05	0.05	0.05	0.25	0.10
ALT								
RATE DB	18 (58)	0.200	0.200	0.200	0.200	0.200	0.200	0.200
JET OPT	19 (59)	ALL	ALL	ALL	ALL	ALL	TAIL	ALL
# JETS	20 (60)	2	2	2	2	2	2	2
ON TIME	21 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	22 (62)	0.00	0.00	0.00	4.40	3.80	0.00	6.80
VERN								
ROT RATE	23 (63)	0.2000	0.0500	0.0650	0.2000	0.2000	0.2000	0.2000
ATT DB	24 (64)	1.000	0.500	1.000	3.000	3.000	1.000	3.000
RATE DB	25 (65)	.020	.020	.020	.200	.200	.020	.200
ROT PLS	26 (66)	0.010	0.050	0.050	0.010	0.010	0.050	0.010
COMP	27 (67)	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28 (68)	0	0	0	1	1	0	1
PURPOSE		MIR CORRIDOR	MIR DOCKING	MIR FLYAROUND	ALL SPARTAN RMS POSN EXCEPT TCS	TCS #2-5, 7-8	CGP VRCS, PRCS, GE, FE	EVA TRANSLATION START POSN

Note: **BOLD/ITALICS** indicate a change from the I-load

GENERIC DAP B CONFIGURATION

	ITEM #	B1	B2	B3	B4	B5	B7	B8S
PRI								
ROT RATE	30 (50)	0.5000	0.2000	0.2000	0.2000	0.2000	0.5000	0.2000
ATT DB	31 (51)	3.00	3.00	3.00	0.30	3.00	2.00	2.00
RATE DB	32 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	33 (53)	0.04	0.04	0.04	0.04	0.04	0.04	0.04
COMP	34 (54)	.000	.000	.000	.000	.000	.000	.000
P OPTION	35 (55)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL
Y OPTION	36 (56)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL
TRAN PLS	37 (57)	0.10	0.02	0.02	0.02	0.02	0.05	0.01
ALT								
RATE DB	38 (58)	0.200	0.070	0.070	0.200	0.200	0.200	0.200
JET OPT	39 (59)	ALL	TAIL	ALL	ALL	ALL	ALL	ALL
# JETS	40 (60)	2	1	1	2	2	2	2
ON TIME	41 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42 (62)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VERN								
ROT RATE	43 (63)	0.2000	0.2000	0.2000	0.0080	0.0160	0.2000	0.2000
ATT DB	44 (64)	1.000	1.000	1.000	0.100	0.033	1.000	1.000
RATE DB	45 (65)	.020	.020	.020	.010	.020	.020	.020
ROT PLS	46 (66)	0.002	0.002	0.002	0.002	0.002	0.002	0.002
COMP	47 (67)	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	48 (68)	0	0	0	0	0	0	0
PURPOSE		NOM OMS & RCS BURNS	LOSS OF VERNS (TAIL ONLY)	LOSS OF VERN (NOSE & TAIL)	SSUS DEPLOY	COAS CAL	RNDZ	SPARTAN PROX OPS

Note: DAP B6 is not used in the generic set

STS-63 DAP B CONFIGURATION

	ITEM #	B6	B8M	B9	B10	B11	B12	B13
PRI								
ROT RATE	30 (50)	0.1000	0.2000	0.0500	0.0650	0.1000	0.1000	0.0500
ATT DB	31 (51)	1.00	1.00	0.50	1.00	3.00	3.00	1.00
RATE DB	32 (52)	0.20	0.10	0.10	0.10	0.20	0.20	0.20
ROT PLS	33 (53)	0.04	0.04	0.04	0.04	0.04	0.04	0.04
COMP	34 (54)	.000	.000	.000	.000	.000	.000	.000
P OPTION	35 (55)	ALL	TAIL	TAIL	TAIL	ALL	ALL	ALL
Y OPTION	36 (56)	ALL	TAIL	TAIL	TAIL	ALL	ALL	ALL
TRAN PLS	37 (57)	0.10	0.01	0.01	0.01	0.02	0.05	0.02
ALT								
RATE DB	38 (58)	0.070	0.200	0.200	0.200	0.100	0.100	0.100
JET OPT	39 (59)	TAIL	ALL	ALL	ALL	TAIL	ALL	ALL
# JETS	40 (60)	2	2	2	2	2	2	2
ON TIME	41 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42 (62)	0.00	0.00	0.00	0.00	4.40	4.80	4.40
VERN								
ROT RATE	43 (63)	0.1000	0.2000	0.0500	0.0650	0.2000	0.2000	0.1000
ATT DB	44 (64)	1.000	1.000	0.500	1.000	2.000	3.000	1.000
RATE DB	45 (65)	.020	.020	.020	.020	.040	.200	.020
ROT PLS	46 (66)	0.002	0.002	0.020	0.020	0.002	0.002	0.002
COMP	47 (67)	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	48 (68)	0	0	0	0	1	1	1
PURPOSE		CGP OG ROLL	MIR CORRIDOR	MIR DOCKING	MIR FLYAROUND	SPARTAN EXTENDED PARK	TCS #1&6, EVA MASS HAND, TRANS END POSN	DB COLLAPSE FOR REL

Note: **BOLD/ITALICS** indicates a change from the I-load

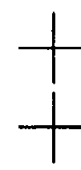
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<u>DAP</u>	<u>PURPOSE</u>	<u>DAP</u>	<u>PURPOSE</u>
A1	- NOMINAL	B1	- NOMINAL
A2	- PTC		OMS & RCS BURNS
A3	- GG	B2	- LOSS OF VERN
A4	- PRE/POST DEPLOY		(TAIL ONLY)
A5	- LOSS OF VERN	B3	- LOSS OF VERN
	(NOSE AND TAIL)		(NOSE & TAIL)
A6	- TAIL ONLY ALT	B4	- SSUS DEPLOY
	MIN PROP VERN	B5	- COAS CAL
A7	- RENDEZVOUS	B6	- CGP OG ROLL
A8S	- SPARTAN PROX OPS	B7	- RENDEZVOUS
A8M	- MIR CORRIDOR	B8S	- SPARTAN PROX OPS
A9	- MIR DOCKING	B8M	- MIR CORRIDOR
A10	- MIR FLYAROUND	B9	- MIR DOCKING
A11	- ALL SPARTAN RMS	B10	- MIR FLYAROUND
	POSNs EXCEPT	B11	- SPARTAN
	TCS		EXTENDED PARK
A12	- TCS #2-5, 7-8	B12	- TCS #1 & 6, EVA
A13	- CGP VRCS,		MASS HAND, TRAN
	PRCS,		END POSN
	GE,	B13	- DB COLLAPSE FOR
	FE		RELEASE
A14	- EVA TRANSLATION		
	START POSN		

CNT ACC = 0 UNLOADED RMS
 = 1 ALL SPARTAN RMS POSN
 = 2-5 NOT USED

FLT PLN-1a/63/O/B



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FLT PLN-1b/63/O/A



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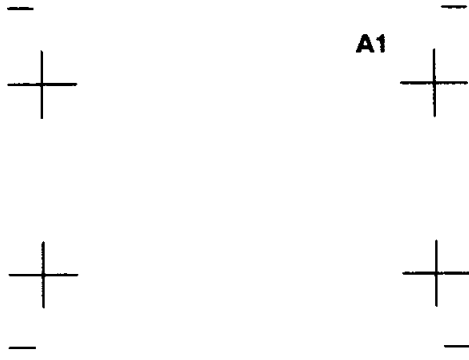
DAP A

DAP A1

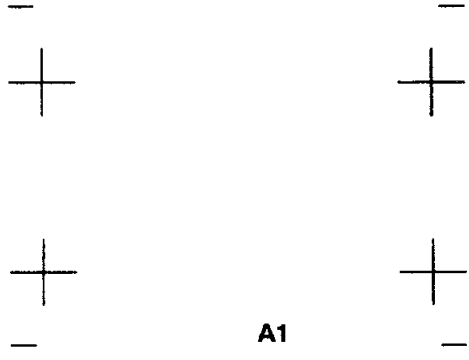
PURPOSE:
NOMINAL

FLT PLN-2a/63/O/A

FLT PLN-2b/63/O/A



A1



A1

A1

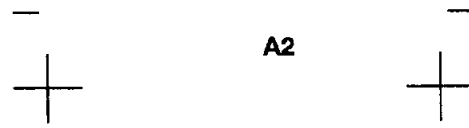
DAP A2

PURPOSE:
PTC

DAP A 0 1	1	PRI
0.2 0 0 0	10	ROT RATE
- 5.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
0 0 0	14	COMP
ALL	15	P OPTION
ALL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.2 0 0	18	RATE DB
ALL	19	JET OPT
2	20	#JETS
0.0 8	21	ON TIME
0 0 0 0	22	DELAY
		VERN
0.2 0 0 0	23	ROT RATE
- 1.0 0 0	24	ATT DB
0.2 0	25	RATE DB
0.0 1 0	26	ROT PLS
0 0 0	27	COMP
0	28	CNTL ACC

FLT PLN-3a/63/O/A

FLT PLN-3b/63/O/A



A2



(reduced copy)



A2

DAP A 0 2	1	PRI
0.4 0 0 0	10	ROT RATE
- 1.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
0.0 0 0	14	COMP
ALL	15	P OPTION
ALL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.2 0 0	18	RATE DB
ALL	19	JET OPT
2	20	#JETS
0.0 8	21	ON TIME
- 0.0 0	22	DELAY
		VERN
0.4 0 0 0	23	ROT RATE
- 1.0 0 0	24	ATT DB
0.2 0	25	RATE DB
0.0 1 0	26	ROT PLS
0.0 0 0	27	COMP
0	28	CNTL ACC

FLT PLN-4a/63/O/A

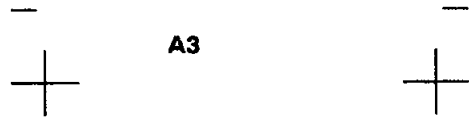
A2

DAP A3

PURPOSE:

GG

FLT PLN-4b/63/O/A



A3



A3

DAP A 0 3	1	PRI
0.2 0 0 0	10	ROT RATE
- 1.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
0.0 0 0	14	COMP
ALL	15	P OPTION
TAIL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.2 0 0	18	RATE DB
ALL	19	JET OPT
2	20	#JETS
- 0.0 8	21	ON TIME
0.0 0	22	DELAY
		VERN
0.0 0 8 0	23	ROT RATE
- 0.0 7 0	24	ATT DB
0.1 0	25	RATE DB
0.0 1 0	26	ROT PLS
0.0 0 0	27	COMP
0	28	CNTL ACC

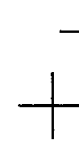
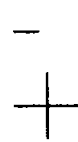
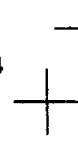
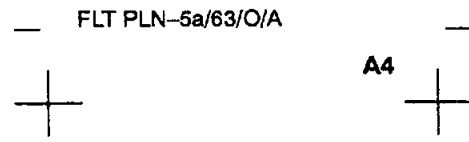
FLT PLN-5a/63/O/A

DAP A4

PURPOSE:

PRE/POST DEPLOY

FLT PLN-5b/63/O/A



A4

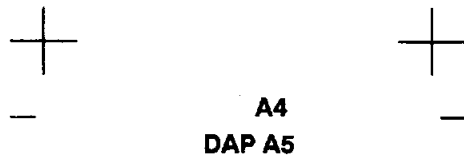
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A4

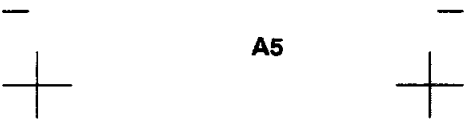
DAP A 0 4	1	PRI
0.5 0 0 0	10	ROT RATE
- 3.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
.0 0 0	14	COMP
ALL	15	P OPTION
ALL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.2 0 0	18	RATE DB
ALL	19	JET OPT
2	20	#JETS
0.0 8	21	ON TIME
- 0.0 0	22	DELAY
		VERN
0.2 0 0 0	23	ROT RATE
- 1.0 0 0	24	ATT DB
.0 2 0	25	RATE DB
0.0 1 0	26	ROT PLS
.0 0 0	27	COMP
0	28	CNTL ACC

FLT PLN-6a/63/O/A



**A4
DAP A5**

PURPOSE:
LOSS OF VERN
(NOSE AND TAIL)



A5



A5

DAP A 0 5	1	PRI
0.2 0 0 0	10	ROT RATE
- 5.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
.0 0 0	14	COMP
ALL	15	P OPTION
ALL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.0 7 0	18	RATE DB
ALL	19	JET OPT
1	20	#JETS
0.0 8	21	ON TIME
- 0.0 0	22	DELAY
		VERN
0.2 0 0 0	23	ROT RATE
- 1.0 0 0	24	ATT DB
.0 2 0	25	RATE DB
0.0 1 0	26	ROT PLS
.0 0 0	27	COMP
0	28	CNTL ACC

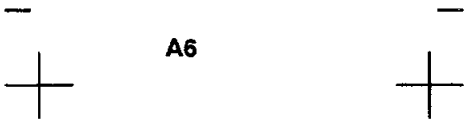
FLT PLN-7a/63/O/A



A5

DAP A6

PURPOSE:
TAIL ONLY ALT,
MIN PROP VERN



A6



(reduced copy)



A6

DAP A7

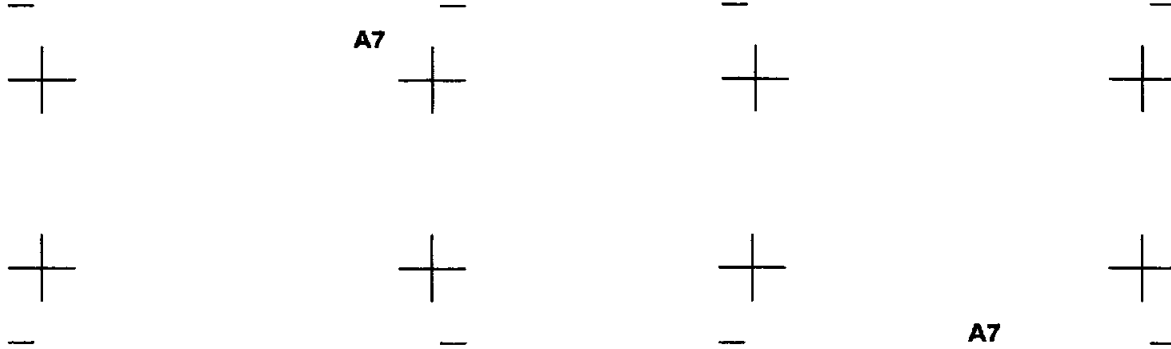
A6

DAP A 0 6	1/3	PRI
0.2 0 0 0	10	ROT RATE
- 5.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
0.0 0	14	COMP
TAIL	15	P OPTION
TAIL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.0 7 0	18	RATE DB
TAIL	19	JET OPT
1	20	#JETS
0.0 8	21	ON TIME
- 0.0 0	22	DELAY
		VERN
0.0 6 5 0	23/63	ROT RATE
- 1.0 0 0	24	ATT DB
0.2 0	25	RATE DB
0.0 1 0	26	ROT PLS
0.0 0	27	COMP
0	28	CNTL ACC

PURPOSE:
RENDEZVOUS

FLT PLN-8a/63/O/B

FLT PLN-8b/63/O/A



A7

A7
DAP A8S

A7

DAP A 0 7	1	PRI
0.2 0 0 0	10	ROT RATE
- 2.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
0.0 0	14	COMP
ALL	15	P OPTION
ALL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.2 0 0	18	RATE DB
ALL	19	JET OPT
2	20	#JETS
0.0 8	21	ON TIME
- 0.0 0	22	DELAY
		VERN
0.2 0 0 0	23	ROT RATE
- 1.0 0 0	24	ATT DB
0.2 0	25	RATE DB
0.0 1 0	26	ROT PLS
0.0 0	27	COMP
0	28	CNTL ACC

PURPOSE:
SPARTAN PROX OPS

FLT PLN-9a/63/O/A

FLT PLN-9b/63/O/A



A8S

(reduced copy)



A8S

DAP A Q 8	1/3	PRI
0.2 0 0 0	10/50	ROT RATE
- 2.0 0	11/51	ATT DB
0.2 0	12/52	RATE DB
0.1 0	13/53	ROT PLS
.0 0 0	14/54	COMP
ALL	15/55	P OPTION
ALL	16/56	Y OPTION
0.0 5	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 0.0 0	22/62	DELAY
		VERN
0.2 0 0 0	23/63	ROT RATE
- 1.0 0 0	24/64	ATT DB
0.2 0	25/65	RATE DB
0.0 1 0	26/66	ROT PLS
.0 0 0	27/67	COMP
0	28/68	CNTL ACC

FLT PLN-10a/63/O/B



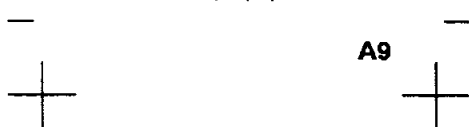
A8M



A8M

DAP A Q 8	1/3	PRI
0.2 0 0 0	10/50	ROT RATE
- 1.0 0	11/51	ATT DB
0.1 0	12/52	RATE DB
0.1 0	13/53	ROT PLS
.0 0 0	14/54	COMP
TAIL	15/55	P OPTION
TAIL	16/56	Y OPTION
0.0 5	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 0.0 0	22/62	DELAY
		VERN
0.2 0 0 0	23/63	ROT RATE
- 1.0 0 0	24/64	ATT DB
0.0 2 0	25/65	RATE DB
0.0 1 0	26/66	ROT PLS
.0 0 0	27/67	COMP
0	28/68	CNTL ACC

FLT PLN-11a/63/O/A



A9

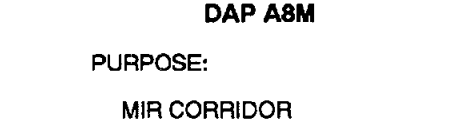


A8S

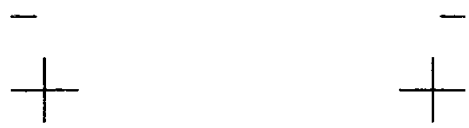
DAP A8M

PURPOSE:

MIR CORRIDOR



FLT PLN-10b/63/O/A



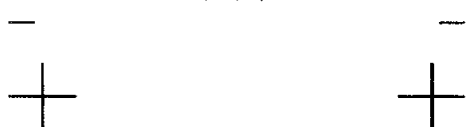
A8M

DAP A9

PURPOSE:

MIR DOCKING

FLT PLN-11b/63/O/A



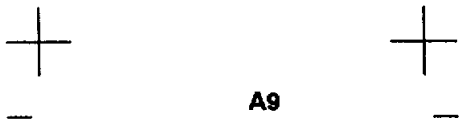
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A9

DAP A 9	1/3	PRI
0.0 5 0 0	10/50	ROT RATE
- 0.5 0	11/51	ATT DB
0.1 0	12/52	RATE DB
0.1 0	13/53	ROT PLS
0.0 0	14/54	COMP
TAIL	15/55	P OPTION
TAIL	16/56	Y OPTION
0.0 5	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 0.0 0	22/62	DELAY
		VERN
0.0 5 0 0	23/63	ROT RATE
- 0.5 0 0	24/64	ATT DB
0.2 0	25/65	RATE DB
0.0 5 0	26/66	ROT PLS
0.0 0	27/67	COMP
0	28/68	CNTL ACC

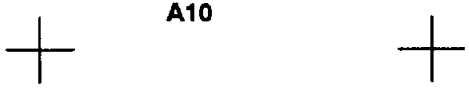
FLT PLN-12a/63/O/A



A9
DAP A10

PURPOSE:
MIR FLYAROUND

FLT PLN-12b/63/O/B



A10



A10

DAP A11

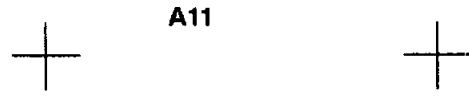
PURPOSE:
ALL SPARTAN RMS POSNs
EXCEPT TCS

DAP A 1 0	1/3	PRI
0.0 6 5 0	10/50	ROT RATE
- 1.0 0	11/51	ATT DB
0.1 0	12/52	RATE DB
0.1 0	13/53	ROT PLS
0.0 0	14/54	COMP
TAIL	15/55	P OPTION
TAIL	16/56	Y OPTION
0.0 5	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 0.0 0	22/62	DELAY
		VERN
0.0 6 5 0	23/63	ROT RATE
- 1.0 0 0	24/64	ATT DB
0.2 0	25/65	RATE DB
0.0 5 0	26/66	ROT PLS
0.0 0	27/67	COMP
0	28/68	CNTL ACC

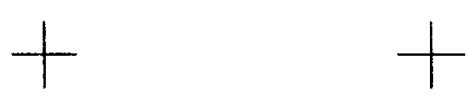
FLT PLN-13a/63/O/B



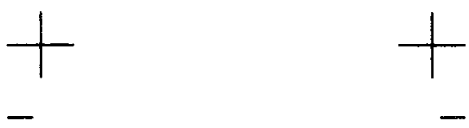
FLT PLN-13b/63/O/B



A11



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A11

DAP A12

DAP A 1 1	1/3	PRI
<u>0.1 0 0 0</u>	10/50	ROT RATE
- <u>3.0 0</u>	11/51	ATT DB
<u>0.2 0</u>	12/52	RATE DB
<u>0.6 0</u>	13/53	ROT PLS
<u>0.0 0</u>	14/54	COMP
ALL	15/55	P OPTION
TAIL	16/56	Y OPTION
<u>0.0 5</u>	17/57	TRAN PLS
		ALT
<u>0.2 0 0</u>	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
<u>0.0 8</u>	21/61	ON TIME
- <u>4.4 0</u>	22/62	DELAY
		VERN
<u>0.2 0 0 0</u>	23/63	ROT RATE
- <u>3.0 0 0</u>	24/64	ATT DB
<u>0.2 0 0</u>	25/65	RATE DB
<u>0.0 1 0</u>	26/66	ROT PLS
<u>0.0 0</u>	27/67	COMP
1	28/68	CNTL ACC

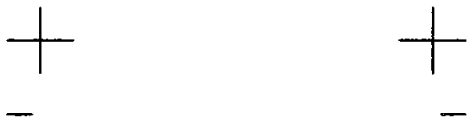
PURPOSE:
TCS #2-5, 7-8

FLT PLN-14a/63/O/B

FLT PLN-14b/63/O/B



A12



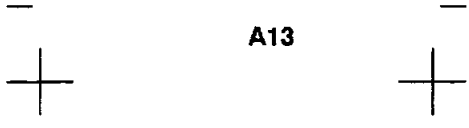
A12

DAP A 1 2	1/3	PRI
<u>0.1 0 0 0</u>	10/50	ROT RATE
- <u>3.0 0</u>	11/51	ATT DB
<u>0.2 0</u>	12/52	RATE DB
<u>0.0 4</u>	13/53	ROT PLS
<u>0.0 0</u>	14/54	COMP
ALL	15/55	P OPTION
ALL	16/56	Y OPTION
<u>0.0 5</u>	17/57	TRAN PLS
		ALT
<u>0.2 0 0</u>	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
<u>0.0 8</u>	21/61	ON TIME
- <u>3.8 0</u>	22/62	DELAY
		VERN
<u>0.2 0 0 0</u>	23/63	ROT RATE
- <u>3.0 0 0</u>	24/64	ATT DB
<u>2.0 0</u>	25/65	RATE DB
<u>0.0 1 0</u>	26/66	ROT PLS
<u>0.0 0</u>	27/67	COMP
1	28/68	CNTL ACC

PURPOSE:
CGP VRCS
PRCS
GE
FE

FLT PLN-15a/63/O/B

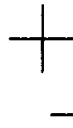
FLT PLN-15b/63/O/B



A13



(reduced copy)



A13

DAP A 1 3	1/3	PRI
0.3 0 0 0	10/50	ROT RATE
- 3.0 0	11/51	ATT DB
- 0.2 0	12/52	RATE DB
1.0 0	13/53	ROT PLS
.0 0 0	14/54	COMP
TAIL	15/55	P OPTION
TAIL	16/56	Y OPTION
0.2 5	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
TAIL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 0.0 0	22/62	DELAY
		VERN
0.2 0 0 0	23/63	ROT RATE
- 1.0 0 0	24/64	ATT DB
0.0 2 0	25/65	RATE DB
0.0 5 0	26/66	ROT PLS
.0 0 0	27/67	COMP
0	28/68	CNTL ACC

FLT PLN-16a/63/O/B

A13

DAP A14

PURPOSE:
EVA TRANSLATION START
POSN

FLT PLN-16b/63/O/B

B14



A14

A14

DAP A 1 4	1/3	PRI
0.1 0 0 0	10/50	ROT RATE
- 3.0 0	11/51	ATT DB
- 0.2 0	12/52	RATE DB
0.0 4	13/53	ROT PLS
.0 0 0	14/54	COMP
ALL	15/55	P OPTION
ALL	16/56	Y OPTION
0.1 0	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 6.8 0	22/62	DELAY
		VERN
0.2 0 0 0	23/63	ROT RATE
- 3.0 0 0	24/64	ATT DB
.2 0 0	25/65	RATE DB
0.0 1 0	26/66	ROT PLS
.0 0 0	27/67	COMP
1	28/68	CNTL ACC

FLT PLN-33a/63/O/A

FLT PLN-33b/63/O/A



(reduced copy)



DAP B

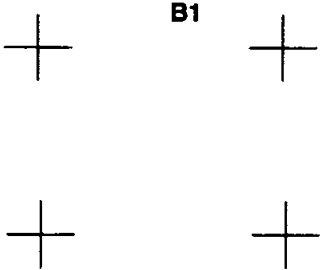


DAP B1

PURPOSE:

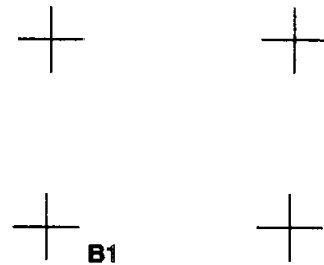
NOMINAL
OMS &
RCS BURNS

FLT PLN-17a/63/O/A



B1

FLT PLN-17b/63/C/A



B1

B1

2	DAP B 0 1
30	0.5 0 0 0
31	- 3.0 0
32	0.2 0
33	0.0 4
34	-0.0 0
35	ALL
36	ALL
37	0.1 0
38	0.2 0 0
39	ALL
40	2
41	0.0 8
42	- 0.0 0
43	0.2 0 0 0
44	- 1.0 0 0
45	-0.2 0
46	0.0 0 2
47	-0.0 0
48	0

DAP B2

PURPOSE:

LOSS OF VERN
(TAIL ONLY)

FLT PLN-18a/63/O/A

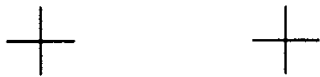


B2

FLT PLN-18b/63/O/A



(reduced copy)



B2

2	DAP B 0 2
30	0.2 0 0 0
31	- 3.0 0
32	0.2 0
33	0.0 4
34	.0 0 0
35	TAIL
36	TAIL
37	0.0 2
38	0.0 7 0
39	TAIL
40	1
41	0.0 8
42	- 0.0 0
43	0.2 0 0 0
44	- 1.0 0 0
45	.0 2 0
46	0.0 0 2
47	.0 0 0
48	0

FLT PLN-19a/63/O/A



B3



B3

2	DAP B 0 3
30	0.2 0 0 0
31	- 3.0 0
32	0.2 0
33	0.0 4
34	.0 0 0
35	ALL
36	ALL
37	0.0 2
38	0.0 7 0
39	ALL
40	1
41	0.0 8
42	- 0.0 0
43	0.2 0 0 0
44	- 1.0 0 0
45	.0 2 0
46	0.0 0 2
47	.0 0 0
48	0

FLT PLN-20a/63/O/A



B4



B2

DAP B3

PURPOSE:
LOSS OF VERN
(NOSE & TAIL)

FLT PLN-19b/63/O/A



B3

DAP B4

PURPOSE:
SSUS DEPLOY

FLT PLN-20b/63/O/A



(reduced copy)



B4

2	DAP B 0 4
30	0.2 0 0 0
31	- 0.3 0
32	0.2 0
33	0.0 4
34	.0 0 0
35	TAIL
36	TAIL
37	0.0 2
38	0.2 0 0
39	ALL
40	2
41	0.0 8
42	- 0.0 0
43	0.0 0 8 0
44	- 0.1 0 0
45	.0 1 0
46	0.0 0 2
47	.0 0 0
48	0

FLT PLN-21a/63/O/A



B5



B5

2	DAP B 0 5
30	0.2 0 0 0
31	- 3.0 0
32	0.2 0
33	0.0 4
34	.0 0 0
35	TAIL
36	TAIL
37	0.0 2
38	0.2 0 0
39	ALL
40	2
41	0.0 8
42	- 0.0 0
43	0.0 1 6 0
44	- 0.0 3 3
45	.0 2 0
46	0.0 0 2
47	.0 0 0
48	0

FLT PLN-22a/63/O/A



B6



B4

DAP B5

PURPOSE:

COAS CAL

FLT PLN-21b/63/O/A



B5

DAP B6

PURPOSE:

CGP
OG ROLL

FLT PLN-22b/63/O/B



(reduced copy)



B6

2/4	DAP B 0 6
30/50	0.1 0 0 0
31/51	- 1.0 0
32/52	0.2 0
33/53	0.0 4
34/54	.0 0 0
35/55	ALL
36/56	ALL
37/57	0.1 0
38/58	0.0 7 0
39/59	TAIL
40/60	2
41/61	0.0 8
42/62	- 0.0 0
43/63	0.1 0 0 0
44/64	- 1.0 0 0
45/65	.0 2 0
46/66	0.0 0 2
47/67	.0 0 0
48/68	0

FLT PLN-23a/63/O/B



B7



B7

2/4	DAP B 0 7
30/50	0.5 0 0 0
31/51	- 2.0 0
32/52	0.2 0
33/53	0.0 4
34/54	.0 0 0
35/55	ALL
36/56	ALL
37/57	0.0 5
38/58	0.2 0 0
39/59	ALL
40/60	2
41/61	0.0 8
42/62	- 0.0 0
43/63	0.2 0 0 0
44/64	- 1.0 0 0
45/65	.0 2 0
46/66	0.0 0 2
47/67	.0 0 0
48/68	0

FLT PLN-24a/63/O/A



B8S



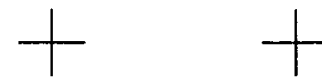
B6

DAP B7

PURPOSE:

RENDEZVOUS

FLT PLN-23b/63/O/A



B7

DAP B8S

PURPOSE:

SPARTAN
PROX OPS

FLT PLN-24b/63/O/A



(reduced copy)



B8S

2/4	DAP B 0 8
30/50	0.2 0 0 0
31/51	- 2.0 0
32/52	0.2 0
33/53	0.0 4
34/54	.0 0 0
35/55	ALL
36/56	ALL
37/57	0.0 1
38/58	0.2 0 0
39/59	ALL
40/60	2
41/61	0.0 8
42/62	- 0.0 0
43/63	0.2 0 0 0
44/64	- 1.0 0 0
45/65	.0 2 0
46/66	0.0 0 2
47/67	.0 0 0
48/68	0

FLT PLN-25a/63/O/B



B8M



B8M

2/4	DAP B 0 8
30/50	0.2 0 0 0
31/51	- 1.0 0
32/52	0.1 0
33/53	0.0 4
34/54	.0 0 0
35/55	TAIL
36/56	TAIL
37/57	0.0 1
38/58	0.2 0 0
39/59	ALL
40/60	2
41/61	0.0 8
42/62	- 0.0 0
43/63	0.2 0 0 0
44/64	- 1.0 0 0
45/65	.0 2 0
46/66	0.0 0 2
47/67	.0 0 0
48/68	0

FLT PLN-26a/63/O/A



B9



B8S

DAP B8M

PURPOSE:

MIR CORRIDOR

FLT PLN-25b/63/O/A



B8M

DAP B9

PURPOSE:

MIR DOCKING

FLT PLN-26b/63/O/A



(reduced copy)



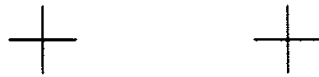
B9

2/4	DAP B 0 0
30/50	0.0 5 0 0
31/51	- 0.5 0
32/52	0.1 0
33/53	0.0 4
34/54	.0 0 0
35/55	TAIL
36/56	TAIL
37/57	0.0 1
38/58	0.2 0 0
39/59	ALL
40/60	2
41/61	0.0 8
42/62	- 0.0 0
43/63	0.0 5 0 0
44/64	- 0.5 0 0
45/65	.0 2 0
46/66	0.0 2 0
47/67	.0 0 0
48/68	0

FLT PLN-27a/63/O/B



B10



B10

2/4	DAP B 1 0
30/50	0.0 6 5 0
31/51	- 1.0 0
32/52	0.1 0
33/53	0.0 4
34/54	.0 0 0
35/55	TAIL
36/56	TAIL
37/57	0.0 1
38/58	0.2 0 0
39/59	ALL
40/60	2
41/61	0.0 8
42/62	- 0.0 0
43/63	0.0 6 5 0
44/64	- 1.0 0 0
45/65	.0 2 0
46/66	0.0 2 0
47/67	.0 0 0
48/68	0

FLT PLN-28a/63/O/B



B11



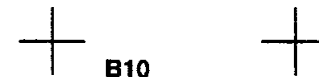
B9

DAP B10

PURPOSE:

MIR FLYAROUND

FLT PLN-27b/63/O/B



B10

DAP B11

PURPOSE:

SPARTAN
EXTENDED
PARK

FLT PLN-28b/63/O/B



(reduced copy)



B11

2/4	DAP B 1 1
30/50	0.1 0 0 0
31/51	- 3.0 0
32/52	0.2 0
33/53	0.0 4
34/54	- 0 0 0
35/55	ALL
36/56	ALL
37/57	0.0 2
38/58	0.1 0 0
39/59	TAIL
40/60	2
41/61	0.0 8
42/62	- 4.4 0
43/63	0.2 0 0 0
44/64	- 2.0 0 0
45/65	- 0 4 0
46/66	0.0 0 2
47/67	- 0 0 0
48/68	1

FLT PLN-29a/63/O/B



B12



B12

2/4	DAP B 1 2
30/50	0.1 0 0 0
31/51	- 3.0 0
32/52	0.2 0
33/53	0.0 4
34/54	- 0 0 0
35/55	ALL
36/56	ALL
37/57	0.0 5
38/58	0.1 0 0
39/59	ALL
40/60	2
41/61	0.0 8
42/62	- 4.8 0
43/63	0.2 0 0 0
44/64	- 3.0 0 0
45/65	- 2 0 0
46/66	0.0 0 2
47/67	- 0 0 0
48/68	1

FLT PLN-30a/63/O/B



B13



B11

DAP B12

PURPOSE:

TCS #1 & 6, EVA
MASS HAND,
TRANS END
POSN

FLT PLN-29b/63/O/B



B12

DAP B13

PURPOSE:

DB COLLAPSE
FOR RELEASE

FLT PLN-30b/63/O/A



(reduced copy)



B13

B13

2/4	DAP B 1 3
30/50	0.0 5 0 0
31/51	- 1.0 0
32/52	0.2 0
33/53	0.0 4
34/54	.0 0 0
35/55	ALL
36/56	ALL
37/57	0.0 2
38/58	0.1 0 0
39/59	ALL
40/60	2
41/61	0.0 8
42/62	- 4.4 0
43/63	0.1 0 0 0
44/64	- 1.0 0 0
45/65	.0 2 0
46/66	0.0 0 2
47/67	.0 0 0
48/68	1

FLT PLN-31a/63/O/B

FLT PLN-31b/63/O/A



UNIV PTG	
TGT ID	= 1 Orbiting Vehicle = 2 Earth ctr = 3 Earth tgt Input LAT (± 90) LON (± 180 , + = East) ALT (-3444.0 to 20000.0 nm) = 4 Sun ctr = 5 Celestial tgt Input RA (0-359.99) DEC (± 90) = 11-110 Nav Stars
BODY VECT	= 1 +X* = 2 -X* = 3 -Z* = 4 -Y Star Tracker* = 5 Optional Input P (0-359.99) Y (270-359.99, 0-90) * input OM \rightarrow OM (0-359.99)
MON AXIS	= 1 +X = 2 -X

FLT PLN-32/63/O/A

FLT PLN-32/63/O/A is mounted on the back of the DAP Book

**STS-63
FLIGHT PLAN NOTES**

FLIGHT PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION

Orbiter: OV103/Discovery
 Inclination: 51.6°
 Insertion Altitude: 170/189nm
 Duration: 8 + 2

B. MAJOR EVENTS

"M" after a burn title indicates a trajectory event in support of Mir rendezvous planned on FD04. Likewise, "S" after a burn title indicates an event in support of the Spartan-204 retrieval on FD07.

<u>EVENT</u>	<u>MET</u>	<u>DATE</u>	<u>CST</u>	<u>GMT</u>	<u>ΔV</u>	<u>ORBIT</u>
Launch	00/00:00	02/01/95	23:51	05:51	--	--
OMS-2	00/00:43	02/02/95	00:34	06:34	258.3	171/188
ODERACS-2 Deploy	00/03:40	02/02/95	03:31	09:31	--	171/188
NC1-M	00/09:03	02/02/95	08:55	14:55	8.0	175/188
NC2-M	01/07:52	02/03/95	07:43	13:43	4.0	178/187
NPC-M	02/02:10	02/04/95	02:01	08:01	1.3	178/187
NC3-M	02/12:46	02/04/95	12:37	18:37	4.0	180/187
NH-M	03/08:34	02/05/95	08:26	14:26	55.5	187/212
NC4-M	03/09:16	02/05/95	09:08	15:08	40.8	207/214
NCC-M	03/09:57	02/05/95	09:49	15:49	0.0	207/214
Ti-M	03/10:55	02/05/95	10:46	16:46	9.2	211/217
MIR Vbar	03/12:31	02/05/95	12:22	18:22	--	211/218
ULD Acquisition	03/13:24	02/05/95	13:15	19:15	--	211/218
SEP-M	03/15:00	02/05/95	14:51	20:51	2.0	211/218
Orbit Adjust	04/05:07	02/06/95	04:59	10:59	11.9	209/211
Spartan-204 Release	04/06:36	02/06/95	06:27	12:27	--	209/211
SEP1-S	04/06:42	02/06/95	06:33	12:33	1.0	209/211
SEP2-S	04/07:12	02/06/95	07:03	13:03	1.0	209/212
NPC-S	05/04:58	02/07/95	04:49	10:49	0.0	209/212
NSR-S	05/09:22	02/07/95	09:13	15:13	1.2	209/211
NC1-S	05/10:40	02/07/95	10:31	16:31	2.8	209/211
NC2-S	06/00:31	02/08/95	00:22	06:22	3.8	208/210
NH-S	06/01:17	02/08/95	01:08	07:08	0.1	208/210
NCC-S	06/02:38	02/08/95	02:29	08:29	0.0	208/210
Ti-S	06/03:36	02/08/95	03:27	09:27	3.1	209/211
Spartan-204 Grapple	06/05:45	02/08/95	05:36	11:36	--	209/211
D/O Burn	08/05:13	02/10/95	05:04	11:04	--	--
Landing	08/06:13	02/10/95	06:04	12:04	--	--

FLIGHT PLAN NOTES

C. LANDING OPPORTUNITIES

		<u>Landing Orbit</u>	<u>Site</u>	<u>Local Time</u>	<u>MET</u>
		<u>No.</u>			
Nominal	Primary	130	KSC	04:05 EST	08/06:13
	1 Rev Late	131	EDW	02:34 PST	08/07:42
1 Day Late	Primary	144	KSC	01:31 EST	09/03:40
	1 Rev Late	145	KSC	03:08 EST	09/05:16
2 Days Late	Primary	160	KSC	02:10 EST	10/04:19
	1 Rev Late	161	KSC	03:47 EST	10/05:55

D. CREW

CDR - Jim Wetherbee
 PLT - Eileen Collins (Primary IV)
 MS1 - Bernard Harris (EV2)
 MS2 - Mike Foale (EV1)
 MS3 - Janice Voss (RMS)
 MS4 - Vladimir Titov (RMS, Secondary IV)

E. COMMUNICATIONS

SHUTTLE

TDRS Support: East (41° W), West (174° W)
 Backup Real-Time TV: GDS(GDX), MIL(MLX)
 Contingency GSTDN: DFR*, MIL(MLX)*, BDA(BDX), GDS(GDX) and WLP
 Contingency RTS: HTS, GTS, VTS, IOS*, CTS, DGS, OTS*, and NHS

*UHF capability

Lead time for site call-up: GSTDN - 2 hr, RTS - 4 hr

MIR

Altair (SRT): 16° W
 Ground Sites: SHK, DJS, KLP, ULD, USK, PPK, and SPB

F. PAYLOADS

1. Mir Rendezvous and Stationkeeping

STS-63 will serve as a dress rehearsal of the STS-71 Shuttle-Mir docking mission planned in 1995. Control center interfaces, crew equipment, and crew procedures will be evaluated in preparation for the STS-71 docking. For STS-63, the orbiter will arrive on the Vbar at 400 feet and then perform an approach to 33 feet from Mir. This will occur on Mir daily orbit 15. After stationkeeping at 33 feet for 10 min, the orbiter will back out to 400 feet and perform a 450° flyaround of the Mir. An extensive photographic and video survey, including ICBC coverage, will be performed. The orbiter will then separate away from the Mir.

2. SPACEHAB-03

STS-63 is the third in a series of flights for Spacehab, a pressurized module which is crew-accessible from the middeck via an airlock tunnel adapter. Subsystems which require orbiter support include AC/DC power, cooling via the Freon heat exchanger, O₂/N₂, humidity control, and CO₂ scrubbing.

Payloads are mounted in middeck-type lockers or a limited number of spacelab-type racks. Spacehab-03 will contain 20 experiments which are primarily microgravity-oriented with emphasis on material and life sciences. Due to operational and late stowage requirements, nine Spacehab-03 experiments and/or samples are flown in the orbiter middeck. A short description of each of the 20 experiments follows:

- a. Astroculture-IV (ASC-IV) – evaluates the ability to supply water and nutrients to plants.
- b. Biological Research In Canisters-03 (BRIC-03) – investigates small arthropod animal and plant specimens.
- c. Bioprocessing Pilot Laboratory-3 (BPL-3) – evaluates the response of cells to various hormones and stimulating agents.
- d. Charged Particle Directional Spectrometer (CPDS) – investigates radiation particle effects on space hardware.
- e. CHARLOTTE – evaluates the use of a robotic device to assist flight crew support of experiment operations.
- f. Chromosome and Plant Cell Division in Space-06 (CHROMEX-06) – studies plant root growth, root tip chromosome partitioning, and root cell division patterns.
- g. Commercial Generic Bioprocessing Apparatus-5 (CGBA-5) – studies biological fluids mixing.
- h. Commercial Protein Crystal Growth-Vapor Diffusion Apparatus (CPCG-VDA) – produces protein crystals for protein crystallographic analysis of molecular structures via X-ray diffraction and computer modelling.
- i. Cosmic Radiation Effects and Activation Monitor-06 (CREAM-06) – collects data on cosmic ray energy loss spectra, neutron fluxes, and induced radioactivity as a function of geomagnetic location.
- j. 3-Dimensional Microgravity Accelerometer (3-DMA) – measures three axis accelerations during launch, on-orbit, and entry.
- k. Equipment for Controlled Liquid Phase Sintering Experiment-Spacehab (ECLIPSE-HAB) – examines the influence of microgravity on the liquid phase sintering of metallic systems, which form either ideal solutions or alloy phases.
- l. Fluids Generic Bioprocessing Apparatus (FGBA) – investigates the dispensing of chilled two-phase liquids.
- m. Gas Permeable Polymer Membrane-2 (GPPM-2) – grows gas permeable polymer materials.

- n. IMMUNE-2 - studies several rats for a commercial pharmaceutical study.
- o. National Institutes of Health-C-03 (NIH-C-03) - validates a model for muscle, bone, and endothelial cell biochemical and functional loss.
- p. Protein Crystal Growth-Single Locker Thermal Enclosure System-03 (PCG-STES-03) - produces protein crystals under controlled conditions.
- q. Protein Crystallization Facilities-Light Scattering Thermal Controlled (PCF-LST) - grows crystals at constant temperatures over an extended period of time.
- r. Radiation Monitoring Experiment-III (RME-III) - measures the radiation environment at a specified sample rate.
- s. Space Acceleration Measurement System-03 (SAMS-03) - measures on-orbit low level accelerations with three triaxial heads and stores the data on optical disks.
- t. Window Experiment-01 (WINDEX-01) - obtains spectrally isolated images of thruster plumes.

3. SPARTAN-204

Spartan will be deployed and retrieved via the remote manipulator system (RMS) and carries only one instrument, the Naval Research Laboratory Far Ultraviolet Imaging Spectrograph (FUVIS). FUVIS will observe diffuse sources of far UV radiation while attached to the RMS and during the free-flying portion of the Spartan mission. All housekeeping and science data will be recorded onboard the deployed hardware. Following the retrieval and berthing, the Spartan spacecraft will be used during the EVA DTO to perform mass handling evaluations.

4. Cryo Systems Experiment (CSE)/GLO-2 Experiment (GLO-2)/Orbital Debris Radar Calibration Spheres - 2 (ODERACS-2) [jointly referred to as CGP/ODERACS-2]

This payload, mounted on a cross-bay Hitchhiker carrier, includes the following experiments and instruments:

- a. ODERACS-2 - Three metal spheres and three metal dipoles ranging in size from two to six inches in diameter and length will be deployed from a Get-Away-Special (GAS) canister. Observation and tracking by ground-based radar and telescopes will enable calibration of these imaging facilities. Additionally, the radar signatures of the ODERACS objects with known physical properties will be compared to the signatures of orbital debris.
- b. CSE - Cryogenic system components housed in a GAS canister will be ground operated to demonstrate and characterize their performance in a space environment. The experiment has no attitude or crew activity requirements.

- c. GLO-2 – An Extreme Ultraviolet (EUV) imager and spectrograph will make glow measurements in the 115 to 1159 nanometer spectral range. The sensors, in addition to a coaligned video camera, can pivot and observe orbiter surfaces, contaminating events and air glow in a plane parallel to the orbiter's X-Y plane. GLO will obtain data passively throughout the mission. After the Mir rendezvous, maneuver tests will be performed if propellant is available.
- d. Stand Alone Acceleration Measurements Devices (SAAMDs) – Two SAAMDs will passively collect acceleration data.

5. Solid Surface Combustion Experiment (SSCE)

SSCE is a middeck payload that will study flame propagation and physics in a microgravity environment.

6. IMAX Cargo Bay Camera (ICBC)

The ICBC is a 65mm color motion picture camera system consisting of a camera, a 60mm lens, and a film magazine containing approximately 10.5 minutes of film at 24 frames per second. The camera is housed in an insulated, pressurized enclosure with a movable lens cover. The ICBC is mounted on the Hitchhiker bridge, canted forward 15° from the orbiter -Z axis toward the +X axis. The ICBC is controlled from the aft flight deck with the autonomous payload controller (APC). The primary objectives of ICBC on STS-63 are to film MIR during the MIR rendezvous and close approach, and film the planned EVA. Following these activities, if any film is remaining, ICBC would like to film Earth scenes.

7. Air Force Maui Optical Site Calibration Test (AMOS)

AMOS uses the orbiter during cooperative overflights of Maui to obtain imagery and/or signature data to support the calibration of the ground based sensors and to observe plume phenomenology. No tests are planned for AMOS on STS-63 due to propellant limitations. Should propellant become available, a PRCS test may be performed which will include crew and orbiter support.

G. ON-ORBIT DTOs:

1. Cabin Air Monitoring (DTO 623)

This DTO will use the solid sorbent sampler to continuously sample the orbiter atmosphere throughout the flight.

2. Portable Inflight Landing Operations Trainer (PILOT) (DTO 667)

This DTO consists of a laptop PC with landing software and a spare rotational hand controller (essentially a landing simulator). The DTO will attempt to verify that the simulator can assist the CDR and PLT in maintaining a high level of proficiency for approach and landing on EDO missions. The CDR and PLT will perform PILOT as the timeline permits.

3. EVA Hardware for Future Scheduled EVA Missions (DTO 671)

The scheduled EVA (DTO 1210) on STS-63 will include Test 9 of this DTO which evaluates improved restraint systems hardware.

4. EMU Electronic Cuff Checklist (DTO 672)

DTO 672 tests an electronic version of the EVA Cuff Checklist. The unit provides a high resolution display that will allow EVA crewmembers access to a larger amount of information than is possible with the current paper version. On STS-63 two units will be tested during the scheduled EVA (DTO 1210). The hardware that allows transfer of files from the PGSC to the ECC is not being flown on STS-63 so PADM operations will not be required.

5. Laser Range and Range Rate Device (DTO 700-2)

DTO 700-2 will provide the crew with range and range rate data during Spartan deploy/retrieval and the Mir rendezvous using hand-held laser devices.

6. Payload Bay Mounted Rendezvous Laser (DTO 700-5)

The trajectory control sensor (TCS) will be used during the Mir rendezvous and Spartan deploy/retrieval. A TCS test is planned during the Spartan RMS attached operations which will use the spacecraft on the RMS to simulate orbiter approaches to Mir.

7. Orbiter Data for Real-Time Navigation Evaluation (DTO 700-7)

DTO 700-7 provides orbiter PCMMU data to the PGSCs (Payload General Support Computers) running RPOP (Rendezvous and Proximity Ops Program) software in support of the handheld lasers (DTO 700-2) and TCS (DTO 700-5).

8. Target of Opportunity Navigation Sensors (DTO 832)

DTO 832, also referred to as TONS, will use a light on the exterior of Mir to track the vehicle via the star tracker during the FD04 rendezvous. The DTO results will be applied to future orbiter dockings with Mir and the International Space Station Alpha.

9. EMU Thermal Comfort Evaluations (DTO 833)

Thermal modifications to the Extravehicular Mobility Unit (EMU) will be evaluated using a cold attitude during the planned EVA (DTO 1210).

10. Mir Approach Demonstration (DTO 835) (objectives 2, 4, and 5)

DTO 835 outlines the proximity operations objectives which should be evaluated during rendezvous demonstration missions in preparation for Mir docking missions.

11. Tools for Rendezvous and Docking (DTO 836) (tests 1, 3, and 4)

This DTO, referred to as TRAD, evaluates the performance and integration of sensors, PGSCs, software, and support equipment used during Spartan deploy/retrieval and Mir rendezvous. TRAD encompasses the tools provided via DTOs 700-2, 700-5, and 700-7.

12. Near Field Targeting and Reflective Alignment System (DTO 838)

For the Charlotte robot being operated in the Spacehab, a modified version of the Targeting and Reflective Alignment Concept (TRAC) will be used to perform near field measurements of the robot's position. The TRAC is an external device which will provide independent data of the robot's position in order to measure and verify the accuracy of a robot. These TRAC measurements will be performed on-line on the ground by downlinking video images and using ground computer systems to calculate Charlotte's position. Crew activities associated with this DTO are reflected in the Spacehab procedures.

13. Photographic and Video Survey of Mir Space Station (DTO 1118)

The primary objectives of the DTO are to conduct a photographic and video survey of the Mir Space Station from the shuttle to verify the configuration and assess the overall condition of the Mir, inspect Mir for micrometeoroid or orbital impact debris or other damage, document the shuttle approach and separation views, assess relative motion of the Mir and shuttle, and analyze plume impingement. Downlink of recorded video will be accomplished on a time available basis.

14. EVA Operations Procedures/Training (DTO 1210)

Differences between training facilities/techniques and the actual EVA environment will be captured and applied with this DTO by performing dedicated EVAs with special scenarios and equipment. On STS-63 an EVA is planned which will evaluate thermal effects on task performance, large mass handling using the Spartan spacecraft, the Electronic Cuff Checklist (ECC) and improved EVA hardware. The EVA will use the 14.7 PSI protocol to minimize the impact to Spacehab operations.

H. ON-ORBIT DSOs

1. Joint U.S./Russian Investigations

a. Radiobiological Effects (DSO 200B)

The primary objectives of this DSO are to compare and correlate the measurements, techniques, and calculations of space radiation exposure performed by the two space programs and to assess the radiobiological effects of high charge/high energy particles on actively metabolizing biological samples. Participating crewmembers will wear one U.S. passive dosimeter and one Russian passive dosimeter for the duration of the mission. Passive radiation dosimeters will be deployed in the crew compartment. Area passive dosimeters will collect data and remain stowed in a middeck locker. A seed container and active area dosimeters, which will be attached to the middeck walls, will also be used for data collections.

b. Sensory Motor Investigations (DSO 201B)

The overall goal of the DSO is to enhance the understanding of adaption to space flight on various aspects of human spatial orientation, neurosensory, sensory-motor, physiological, and perceptual functions, and autonomic gastric functions associated with space motion sickness.

c. Visual Observations from Space (DSO 204)

The purpose of this DSO is to visually observe Earth features using remote imaging and recording. A modified set of optical equipment is being manifested for these observations, as well as for studies of the solar terminator and stars. This investigation can be accomplished in concert with ongoing Earth observations.

2. Shuttle–Mir VHF Voice Link Verification (DSO 327)

The compatibility of the orbiter VHF voice communications system with the Mir VHF system will be evaluated during the Mir rendezvous in preparation for shuttle/Mir docking missions.

3. Back Pain Pattern in Microgravity (DSO 483)

This study will collect information about the back pain pattern and height changes experienced by astronauts during flight. Participating crewmembers record height measurements and log back pain symptoms daily.

4. Physical Examination in Space (DSO 486)

A physician astronaut (MS1) will conduct a standardized physical examination of participating crewmembers to identify physiological adaptations to the microgravity environment and to provide a baseline for differentiation of normal changes from pathological changes.

5. EVA Dosimetry Evaluation (DSO 489)

The current location of the Crew Passive Dosimeter (CPD) in the EMU may be shielded by the upper torso portion of the liquid cooled garment and may not give accurate exposure measurements. For this investigation, dosimeters will be placed at other areas of the body to determine the reliability of the CPD measurements. The placement of these dosimeters will be referenced from the EVA prep procedure in the EVA checklist.

6. In–Flight Evaluation of a Portable Clinical Blood Analyzer (DSO 492)

A portable clinical blood analyzer (PCBA) will be assessed for functionality and the ability to accurately measure certain clinical parameters in the microgravity environment.

7. Effects of Space Flight on Aerobic and Anaerobic Metabolism During Exercise (with Cycle Ergometer) (DSO 608)

Changes in energy metabolism, shifts in fuel utilization, and decreases in muscle mass after extended duration space flight will be evaluated with this DSO. On orbit, participating crewmembers will log fluid intake and perform a special, yet optional, exercise protocol.

8. Documentary Television (DSO 901)

DSO 901 provides guidelines for scheduling live television or VTR dumps of on–orbit activities.

9. Documentary Motion Picture Photography (DSO 902)

DSO 902 provides guidelines for scheduling documentary and public affairs motion picture photography of on–orbit activities.

10. Documentary Still Photography (DSO 903)

DSO 903 provides guidelines for scheduling still photography of on-orbit activities.

FLIGHT DATA FILE
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63 FLT PLN FSP FIN

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