

*Pink*

# Flight Plan

## STS-85

(FRR Trajectory)

Mission Operations Directorate  
Operations Division

Final  
June 18, 1997

<u>EVENT</u>	<u>CDT</u>		
Launch	09:41	Thursday	Aug 07
CRISTA-SPAS Deploy	16:57	Thursday	Aug 07
CRISTA-SPAS Grapple	10:02	Saturday	Aug 16
KSC Landing	06:05	Monday	Aug 18

National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas




MISSION OPERATIONS DIRECTORATE

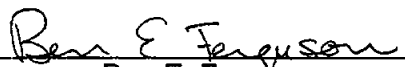
STS-85 FLIGHT PLAN

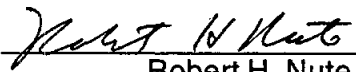
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June 18, 1997

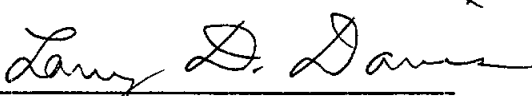
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Book Manager

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	FLT PLN-1861	

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Lead Timeliner	DO4/R. Hayhurst	244-1027
Lead Pointer	DO4/K. Lawson	244-1222

FLIGHT PLAN  
STS-85

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STS-85 FLIGHT PLAN FABRICATED ITEMS

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A2	7-4	FLT PLN-4a/85/O/A
DAP A3	7-4	FLT PLN-4b/85/O/A
A3	7-4	FLT PLN-5a/85/O/A
DAP A4	7-4	FLT PLN-5b/85/O/B
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DAP A6	7-5	FLT PLN-7b/85/O/A
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## INTRODUCTION

The STS-85 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, Rendezvous, Deorbit Prep, and Entry Checklists. The detailed rendezvous timelines and procedures are contained in the Rendezvous Checklist. The Detailed Timeline pages of this Flight Plan show high-level, bulleted comments for general insight during the rendezvous. The deploy procedures required during the deploy timeframe are in the STS-85 Deploy Checklist. For continuity, the summary level timeline includes the entire flight.

The format of the enclosed timelines is different from those in past Flight Plans because the Consolidated Planning System (CPS) was used in the generation of the timeline pages.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive, and the requirements of the STS-85 Flight Requirements Document. The Flight Plan, as part of the Flight Data File, meets the specifications of the STS-85 Flight Initialization Data Pack.

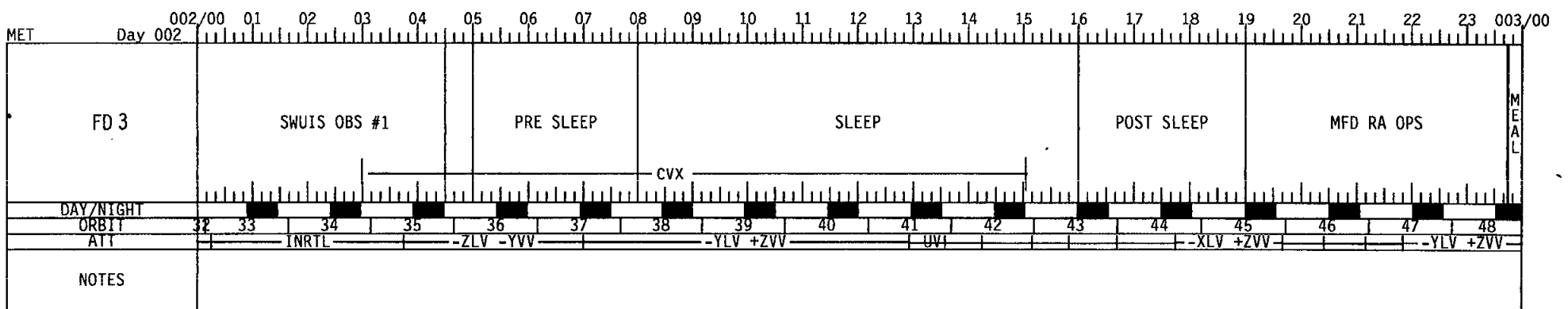
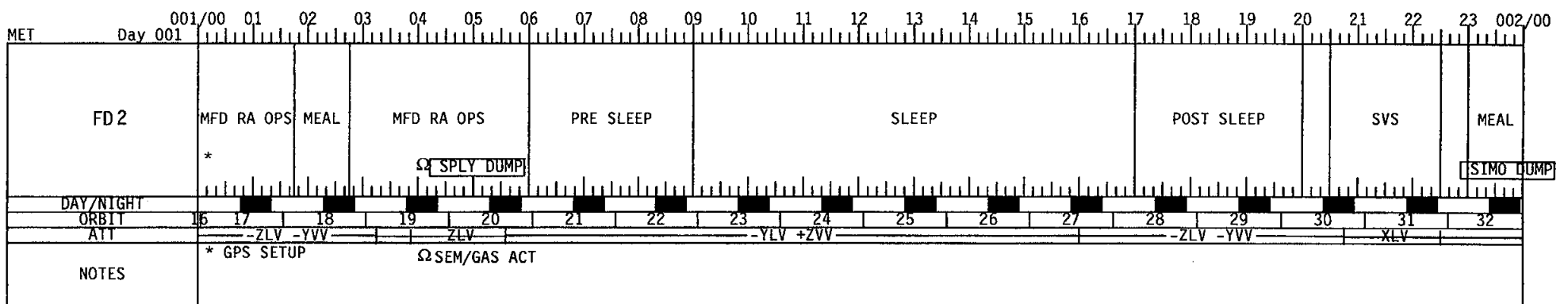
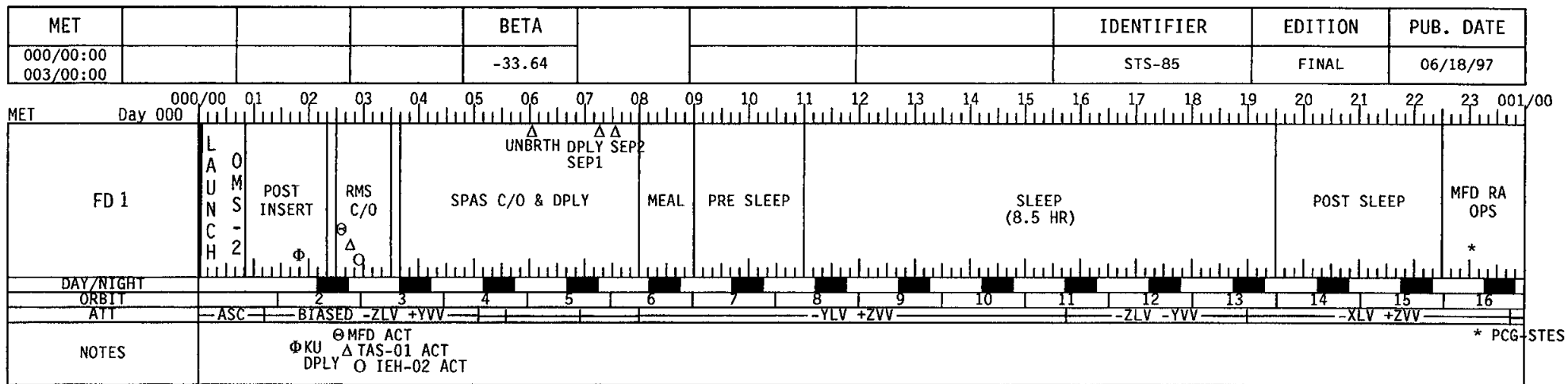
The STS-85 FRR was used for the timeline trajectory. The flight profile used in this Flight Plan is for a launch date of August 7, 1997 at 14:41 GMT. Orbiter inertial attitudes are expressed relative to a Mean of 1950 (M50) reference frame.

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 timeline formats used in the Flight Plan are based on JSC-19933, Timeline Format Definitions and Standards Notes, Rev C, May 1990.

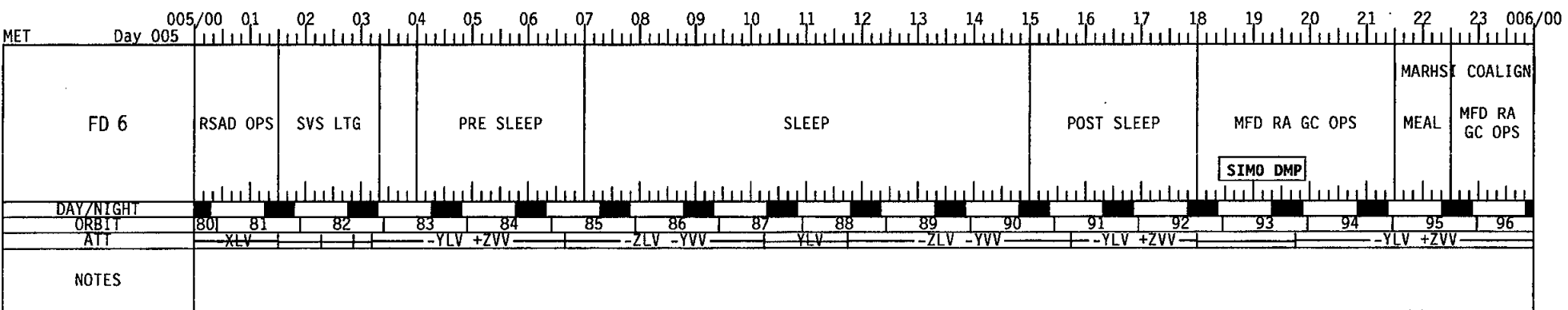
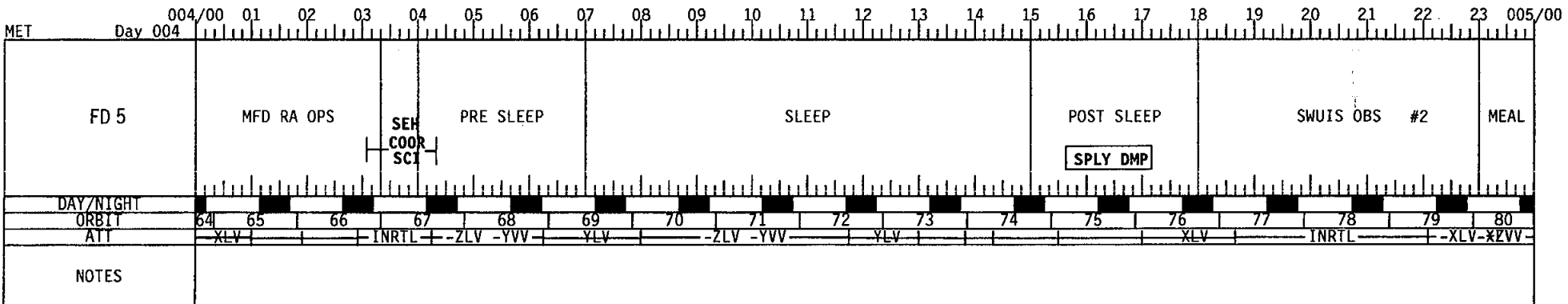
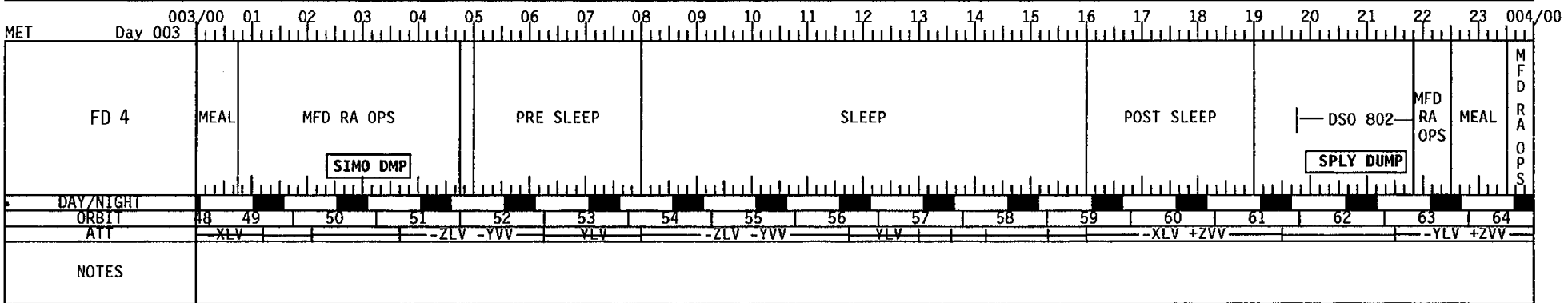
**OVERVIEW TIMELINE**

# OVERVIEW TIMELINE



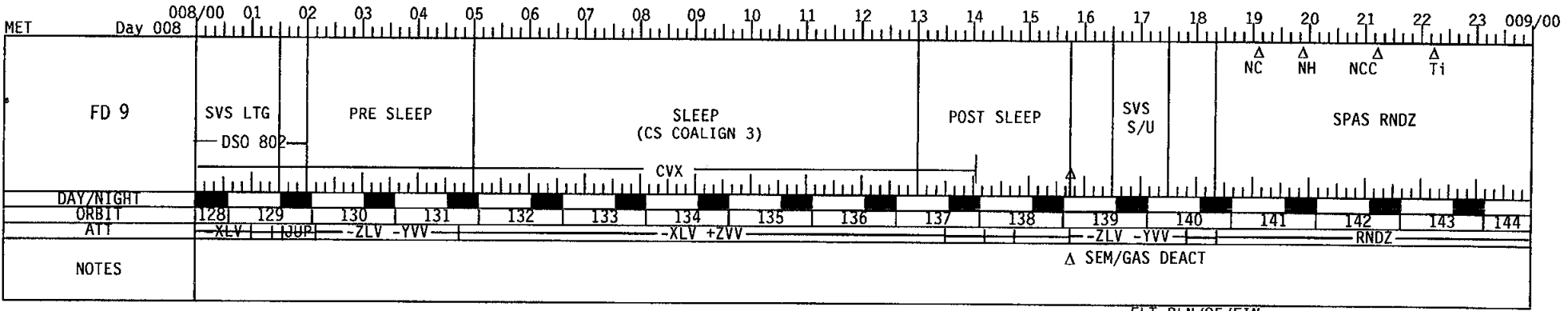
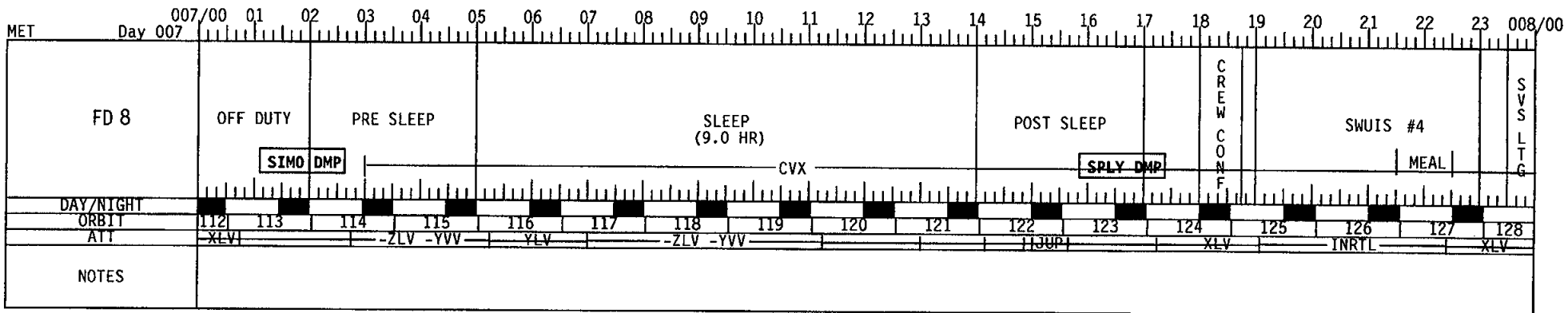
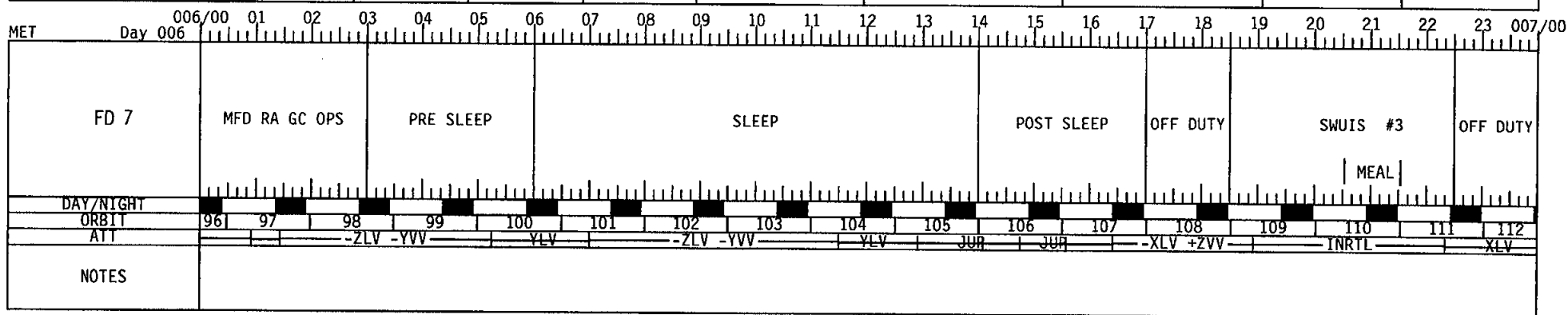
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006/00:00										



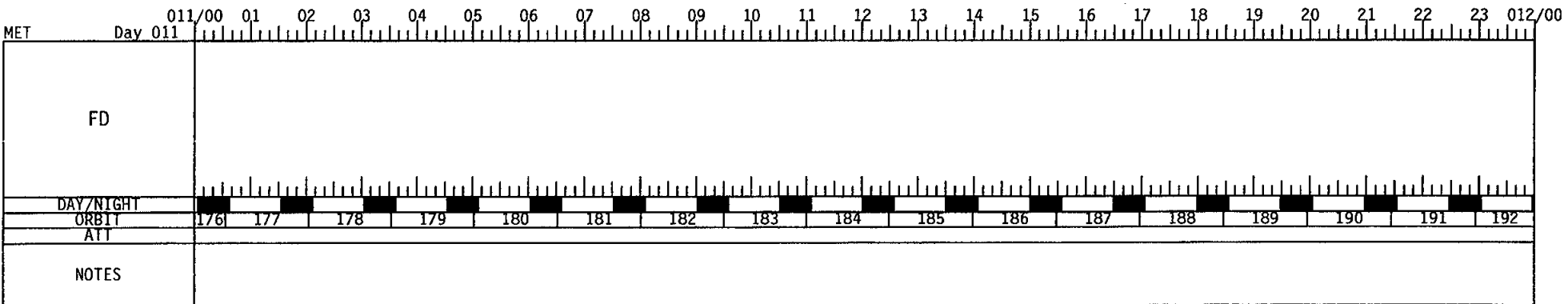
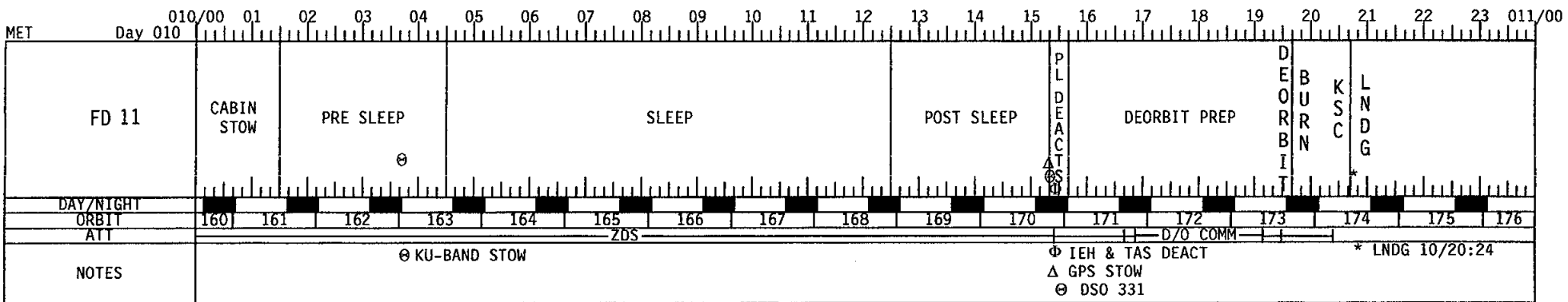
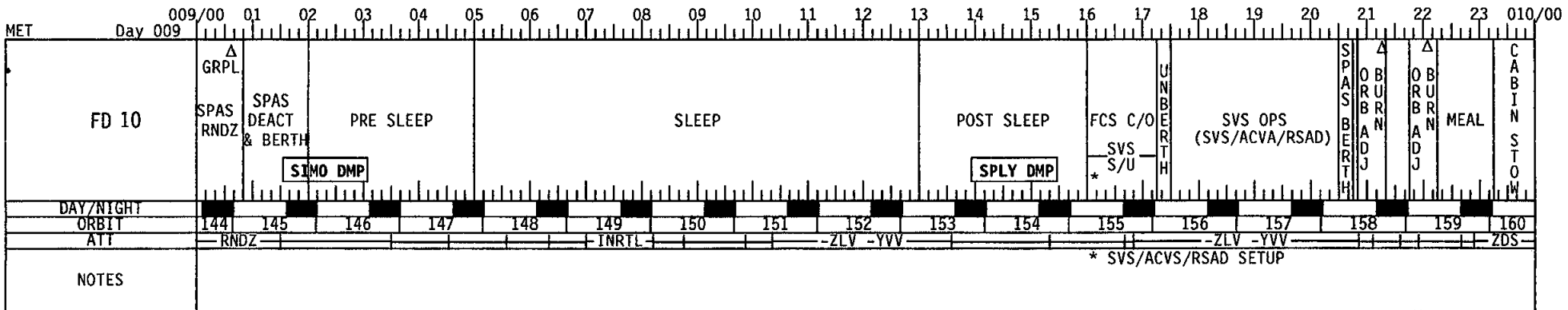
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009/00:00										



FLT PLN/85/FIN

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012/00:00										




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**SUMMARY TIMELINE**



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CT Date 08/07/97 10 000/00 01 11 12 13 14 15 16 17 18 19 20 21 12  
MET Day 000

Crew	Phase	Activities																	
		AFT CNR	ELEVON	LOAD DAPS	IMU	SEES/U	LAMP TST	IMU DES	FES OFF	INVRTL	GNVR	IMURES	SEP1	SEP2	MEAL	PSLEEP	MULT AXIS RCS BURN	PRE SLEEP	SLEEP
CDR BROWN	POST INSERTION																		
PLT ROMINGER	POST INSERTION					P/TVO6 S/U						POPS							
MS1 DAVIS	POST INSERTION			RMS C/O		P/TVO6 S/U				TACT	UNBERTH	REL POS							
MS2 CURBEAM	POST INSERT			P/TVO6 S/U		PGSC S/U													
MS3 ROBINSON	POST INSERTION			RMS C/O															
PS1 TRYGGVASON	POST INSERTION					MIM EXP OPS													

DAY/NIGHT ORBIT



TDRS E W

ASC BIASED -ZLV +YVV GYRO SCALE DEPLOY -YLV +ZVV  
ATT IEH-02 MFD TAS-01 STANDBY

NOTES \* RMS INIT/HTR ACT @P/TVO3 OPS \*SMOKE TST ▲APU HTR RECONFG ◆PWR DOWN GRP B  
⊖APU HTR DEACT ▼MIM DEACT

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
000/12:00 001/00:00	220/02:41 220/14:41	219/21:41 220/09:41	219 CT	-34.90		01	07 Aug 1997	STS-85	FINAL	06/18/97

CT Date 08/07/97 22 23 14 08/08 01 02 03 04 05 06 07 08 09 001/00  
MET Day 000 12 13 14 15 16 17 18 19 20 21 22 23 001/00

CDR BROWN	SLEEP	POST SLEEP	MULTI AXIS RCS BURN	POST SLEEP	ERGOM SETUP	M-NZLRV
PLT ROMINGER	SLEEP	POST SLEEP	MULTI AXIS RCS BURN	POST SLEEP	PCAM ACT	
MS1 DAVIS	SLEEP	POST SLEEP		PARALLEL	ARM REL	ARM C/O
MS2 CURBEAM	SLEEP	POST SLEEP		PS/TU VO 8	BDS MEDIA	GCPSNF IG
MS3 ROBINSON	SLEEP	POST SLEEP		MACT&C/O	MFD SPT	
PS1 TRYGGVASON	SLEEP	POST SLEEP	EXERCISE		MIM EXP OPS	

DAY/NIGHT ORBIT 9 10 11 12 13 14 15 16



TDRS	E W					
ATT		-YLV +ZVV		-ZLV -YVV		-XLV +ZVV
IEH-02						
MFD			STANDBY			RA OPS
TAS-01						

NOTES ΔTPFLEX DEACT

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001/12:00	221/02:41	220/21:41								

CT Date 08/08/97 001/00 10 01 02 03 04 05 06 07 08 09 10 11 12  
MET Day 001 01 02 03 04 05 06 07 08 09 10 11 12

CDR BROWN	Φ	FILTER CLEANING	CRYO 02 SNSR CK	MEAL	ALTR PHSG BURN	PS/TU 04	MS/VL R	PEAV ENT	MH2O INT	H2O INT	PRE SLEEP	H2O INT	CNOV M	EXERCISE	MULT AXIS RCS BURN	PMO	PRE SLEEP	SLEEP
PLT ROMINGER	PBSA GIEC SCAM /SGA /US	FILTER CLEANING	MEAL	ALTR PHSG BURN	EXERCISE								PVTGR MACT	PRE SLEEP	MULT AXIS RCS BURN		PRE SLEEP	SLEEP
MS1 DAVIS	S/R /J C/O	ORU DETACH	ORU ATTACH 1	MEAL							MFD SPT		SYS S/D		PRE SLEEP			SLEEP
MS2 CURBEAM	GPS CONFIG		MEAL	EXERCISE	BDS CELL						BDS MEDIA	PS/TU 17	POPTS 17	OCCAS/U	PRE SLEEP			SLEEP
MS3 ROBINSON		MFD SPT		MEAL	ARM REL	DOOR OPS 2	ARM COM PERFM					ARM S/TW	SYS S/D	TPFT LEX	PRE SLEEP			SLEEP
PS1 TRYGGVASON	MIM EXP OPS	MIM DAT ANALYS	MIPMS EXR	MIPMS EXP	MIPMS EXP	MIPMS EXP	MIPMS EXP	MIPMS EXP	MIPMS EXP	MIPMS EXP	MIM EXP OPS	MEAL			PRE SLEEP			SLEEP

DAY/NIGHT ORBIT 16 17 18 19 20 21 22 23 24



TDRS	E W																		
ATT																			
IEH-02																			
MFD																			
TAS-01																			

NOTES  
▲WSB CNTRL  
ΦFC PURGE MANUAL  
◊MIM DAT ANALYS  
SUPPLY DUMP INIT  
\*MIM DEACT  
\*PRE SLEEP  
\*VTPFLEX DEACT  
\*SIMO DUMP TERM  
\*FILE XFER

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CT Date 08/08/97 22 23 08/09 01 02 03 04 05 06 07 08 09 002/00  
MET Day 001 12 13 14 15 16 17 FD03 18 19 20 21 22 23

CDR BROWN	SLEEP	POST SLEEP	MULT AXIS RCS BURN	EXERCISE	MEAL
PLT ROMINGER	SLEEP	POST SLEEP	MULT AXIS RCS BURN	SSCE OPS	MEAL
MS1 DAVIS	SLEEP	POST SLEEP	SVS PWRUP	SVS C/O	EXERCISE MEAL
MS2 CURBEAM	SLEEP	POST SLEEP	VTR PLBK	BDS MEDIA	MEAL EXERCISE
MS3 ROBINSON	SLEEP	POST SLEEP	⊕ POST SLEEP	EXERCISE	SVS C/O MEAL SWUIS UNSTOW & S/U
PS1 TRYGGVASON	SLEEP	POST SLEEP	MIM EXP OPS	MIM EXP OPS	MIM EXP OPS MEAL

DAY/NIGHT ORBIT 24 25 26 27 28 29 30 31 32



TDRS	E W				
ATT		-YLV +ZVV	-ZLV -YVV	-XLV +ZVV	BIAS -ZLV +YVV
IEH-02					
MFD		STANDBY	HEATUP 1	RUN 1 COOLDOWN	
TAS-01					

NOTES ⊕TPFLEX EXP. RUN SIMO DUMP INIT

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
002/00:00	221/14:41	221/09:41	221 CT	-38.44		03	09 Aug 1997	STS-85	FINAL	06/18/97
002/12:00	222/02:41	221/21:41								

CT Date 08/09/97 002/00 10 11 12 13 14 15 16 17 18 19 20 21 12  
MET Day 002

CDR BROWN	MEAL MNVLR S RCS					MNVLR	PRE SLEEP		MULT AXIS RCS BURN		PRE SLEEP	PMC	PRE SLEEP	MCF NOL VMM RMM CS	PRE SLEEP	SLEEP
PLT ROMINGER	H2O MEAL LRM	FP EC SG OM FC FN					PRE SLEEP	EXERCISE	MULT AXIS RCS BURN		PRE SLEEP					SLEEP
MS1 DAVIS	SUN W S IT SO W	SUN W S IT SO W	SUN W S IT SO W	SWUIS OBS		GLOR EXT							PRE SLEEP			SLEEP
MS2 CURBEAM	EX ERC S E	PS // TU V 1 1	PO P /TS V 1 1			BC DN FI G	PO P /TS V 1 7	VTR ACT	VTR PLBK	BDS MEDIA		OD CN LK		PRE SLEEP		SLEEP
MS3 ROBINSON	SUN W S IT SO W	SUN W S IT SO W	SUN W S IT SO W	SWUIS OBS					SW T-STOW				PRE SLEEP			SLEEP
PS1 TRYGGVASON		MIM EXP OPS	⊙ MIM EXP OPS	▼ MIM EXP OPS					FILE ARCHIVE	▲			PRE SLEEP			SLEEP

DAY/NIGHT ORBIT 32 33 34 35 36 37 38 39 40



TDRS	E W															
ATT																
IEH-02																
MFD																
TAS-01																

NOTES SIMO DUMP TERM ⊙MIM DAT ANALYS ▼MIM DAT ANALYS ▲MIM FILE XFER ▲MIM DEACT ▲MIM DAT ANALYS

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
002/12:00	222/02:41	221/21:41	221 CT	-39.39		03	09 Aug 1997	STS-85	FINAL	06/18/97
003/00:00	222/14:41	222/09:41								

CT Date 08/09/97 22 23 08/10 01 02 03 04 05 06 07 08 09 003/00  
MET Day 002 12 13 14 15 16 FD04 17 18 19 20 21 22 23

CDR BROWN	SLEEP	DSO 484C	POST SLP	MULT AXIS RCS BURN	POST SLEEP	MEAL
PLT ROMINGER	SLEEP	DSO 493	POST SLEEP	MULT AXIS RCS BURN	EXERCISE	MEAL
MS1 DAVIS	SLEEP	DSO 493	POST SLEEP	EXERCISE	MFD SPT	MEAL
MS2 CURBEAM	SLEEP	DSO 493	POST SLEEP	EXERCISE	BDS CELL	MEAL
MS3 ROBINSON	SLEEP	DSO 484C	POST SLEEP	ORU DETACH	ORU ATTACH 3	MEAL
PS1 TRYGGVASON	SLEEP		POST SLEEP	GORPE OPS	BUB OPS	ISCAP OPS
DAY/NIGHT ORBIT	[Orbit diagram showing day/night cycle]					
GROUND TRACK	[Ground track map showing orbital path]					
TDRS	[TDRS coverage diagram]					
ATT IEH-02	-YLV +ZVV + INRTL + INRTL + INRTL + INRTL + INRTL + INRTL + XLV +ZVV + INRTL + INRTL + INRTL + -YLV +ZVV					
MFD	STANDBY					
TAS-01	CVX - RA OPS					
NOTES	ΦTPFLEX DEACT					

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
003/00:00 003/12:00	222/14:41 223/02:41	222/09:41 222/21:41	222 CT	-40.21		04	10 Aug 1997	STS-85	FINAL	06/18/97

CT Date 08/10/97 10 11 12 13 14 15 16 17 18 19 20 21 12  
 MET Day 003 01 02 03 04 05 06 07 08 09 10 11 12

CDR BROWN		M N E V L R S T L		M H N V O R		PRE SLEEP	M N Z L R V	Δ MULT AXIS RCS BURN	EXERCISE	PRE SLEEP	P M C	M C F N O L V M R M C S	PRE SLEEP		SLEEP	
PLT ROMINGER				H 2 0 I N T			H 2 0 T R M	P F C S M O D E M					PRE SLEEP		SLEEP	
MS1 DAVIS	MEAL	DOOR OPS 1				MFD SPT		S Y S S / D	T P F L E X	E R P C L			PRE SLEEP		SLEEP	
MS2 CURBEAM							B D S M E D I A	V T R A C T	V T R P L B K	O D C W A N L K			PRE SLEEP		SLEEP	
MS3 ROBINSON	MEAL	MFD SPT	ORU DETACH	ORU ATTACH 2			C P A R M P S / J C S U L	A R M S T W	S Y S S / D	T P F L E X			PRE SLEEP	◇	PRE SLEEP	
PS1 TRYGGVASON	* MEAL			DIF OPS		FILE ARCHIVE							EXERCISE		PRE SLEEP	SLEEP

DAY/NIGHT ORBIT 48 49 50 51 52 53 54 55 56



TDRS	E W															
ATT		-YLV +ZVV	INRTL	BIAS	-ZLV +YVV					-ZLV -YVV					-YLV +ZVV	
IEH-02																
MFD				RA OPS						INIT						
TAS-01																RUN 2 COOLDOWN

NOTES \*ISCAP OPS SUPPLY DUMP INIT •TPFLEX DEACT ◊TPFLEX EXP. RUN  
 \*MIM DEACT ◊MIM FILE XFER  
 @MIM FILE XFER



MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
003/12:00	223/02:41	222/21:41	222 CT	-40.91		04	10 Aug 1997	STS-85	FINAL	06/18/97
004/00:00	223/14:41	223/09:41								

CT Date 08/10/97 22 23 08/11 01 02 03 04 05 06 07 08 09 004/00  
MET Day 003 12 13 14 15 16 FD05 17 18 19 20 21 22 23

CDR BROWN	SLEEP DEM DEM DEM DEM	DSO 484C DEM CS	POST SLEEP	MULT AXIS RCS BURN	POST SLEEP	MNVR H2O INT	POST SLEEP	EXERCISE	MNOV H2O TRMS	MEAL
PLT ROMINGER	SLEEP CEL SOL JUP SOL	DSO 493	POST SLEEP	MULT AXIS RCS BURN	POST SLEEP	ESAO	DSO 802		PS/TU 04	EXERCISE MEAL
MS1 DAVIS	SLEEP	DSO 493	POST SLEEP		ERPC		DSO 802	EXERCISE		MEAL ARM REL DOPOR 3
MS2 CURBEAM	SLEEP	DSO 493	POST SLEEP		VTR ACT	VTR PLBK BDS MEDIA	DSO 802		BEXCHG POPS PAVENT	PS/TU 08 MEAL
MS3 ROBINSON	SLEEP	DSO 484C	POST SLEEP				DSO 802		MACTV TAPCT ACT&C/O	MEAL MFD SPT
PS1 TRYGGVASON	SLEEP		POST SLEEP		MIM ACT	BWN OPS		MANALYDAS MIM EXP OPS EXERCISE	PAVENT MIM EXP OPS	MEAL MANALYDAS
DAY/NIGHT ORBIT	56 57 58 59 60 61 62 63 64									
GROUND TRACK										
TDRS	E W									
ATT	+XLV +ZVV   INRTL   INRTL   INRTL   -XLV +ZVV   BIAS -ZLV +YVV   -YLV +ZVV									
IEH-02										
MFD	-RUN 2 COOLDOWN   STANDBY   RA OPS									
TAS-01										
NOTES	SIMO DUMP INIT      ◆TPFLEX DEACT SIMO DUMP TERM									



MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
004/12:00	224/02:41	223/21:41	223 CT	-41.89		05	11 Aug 1997	STS-85	FINAL	06/18/97
005/00:00	224/14:41	224/09:41								

CT Date 08/11/97 22 23 08/12 01 02 03 04 05 06 07 08 09 005/00  
MET Day 004 12 13 14 15 FD06 16 17 18 19 20 21 22 23

CDR BROWN	SLEEP DEM JUP DEM SOL DEM JUP	POST SLEEP	MH20 N20 V0R	POST SLP	M20 N20 V0R	POST SLEEP	MULT AXIS RCS BURN	MS NW UIS	FILTER CLEANING	CABIN TEMP	M20 N20 V0R	MEAL		
PLT ROMINGER	SLEEP	POST SLP	D4 S0 493	POST SLP	H20 INT	POST SLP	MULT AXIS RCS BURN	POST SLP	FILTER CLEANING		H20 INT	MEAL		
MS1 DAVIS	SLEEP	POST SLEEP	D4 S0 493	POST SLEEP		POST SLEEP	MULT AXIS RCS BURN	SR WUIS POS	SUN SIT U	SWUIS OBS	R4 M4 S4 D4 P4 L4 E4	MEAL		
MS2 CURBEAM	SLEEP	POST SLEEP	D4 S0 493	POST SLEEP		POST SLEEP	PS /TU V11	BDS CELL	PO /P TS V11	BE DX CHG	BDS MEDIA V17	VTR ACT	VTR PLBK	MEAL
MS3 ROBINSON	SLEEP	POST SLEEP		POST SLEEP		POST SLEEP	SUN SIT U	SR WUIS POS	SUN SIT U	SWUIS OBS	SW T-STOW	MEAL		
PS1 TRYGGVASON	SLEEP	POST SLEEP		POST SLEEP		POST SLEEP	GORPE OPS		MAN AL DYS	BUB OPS	MAN AL DYS	ISCAP OPS	MIM DAT ANALYS EXERCISE	
DAY/NIGHT ORBIT	72	73	74	75	76	77	78	79	80					
GROUND TRACK														
TDRS	E W													
ATT IEH-02	-YLV +ZVV - INRTL - INRTL - BIAS -ZLV +YVV - -XLV +ZVV - INRTL - -XLV +ZVV													
MFD TAS-01	-RUN 3 COOLDOWN - -STANDBY													
NOTES	SUPPLY DUMP TERM SIMO DUMP INIT HTR CNFG CABIN TEMP CNTL RECONFIG PCS CONFIG EXERCISE													

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
005/00:00 005/12:00	224/14:41 225/02:41	224/09:41 224/21:41	224 CT	-42.17		06	12 Aug 1997	STS-85	FINAL	06/18/97

CT Date 08/12/97 10 005/00 01 02 03 04 05 06 07 08 09 10 11 12  
MET Day 005

CDR BROWN	EXERCISE	MNVR ST L	BRIC OPS	MSNOVLR AR	*	MNVR M CS	PRE SLEEP	MULTI AXIS RCS BURN	PRE SLEEP	PMO	PRE SLEEP	MNVR ST L	SLEEP	FLM	DEM
PLT ROMINGER	EXERCISE	PS/TU V04	PS/TU V04	PRE SLEEP	PRE SLEEP	MULTI AXIS RCS BURN	PRE SLEEP	PFC	PRE SLEEP				SLEEP	CS	ZLV
MS1 DAVIS	RSAD OPS	RSAD OPS	CC NIGHT INT VIDEO	ER PCL			PRE SLEEP						SLEEP		
MS2 CURBEAM		PS/TU V04	PS/TU V12	EXERCISE	BDS MEDIA		PRE SLEEP						SLEEP		
MS3 ROBINSON	RSAD PWRUP	RSAD OPS	RSAD OPS	CC NIGHT INT VIDEO	PEVENT	OD CW LK	PRE SLEEP						SLEEP		
PS1 TRYGGVASON	DIF OPS	MAINALD YAST	BWN OPS	PEVENT	BWN OPS	MAINALD YAST	FILE ARCHIVE						PRE SLEEP		

DAY/NIGHT ORBIT 80 81 82 83 84 85 86 87 88



TDRS E W

ATT IEH-02 -XLV +ZVV INRTL -YLV +ZVV -ZLV -YVV -YLV +ZVV

MFD TAS-01 STANDBY

NOTES ⊕EXERCISE \*MNVR ISIR -ZLV ♣PRE SLEEP ♦MIM DEACT ⊙MIM FILE XFER

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
005/12:00	225/02:41	224/21:41	224 CT	-42.29		06	12 Aug 1997	STS-85	FINAL	06/18/97
006/00:00	225/14:41	225/09:41								

CT Date 08/12/97 22 23 08/13 01 02 03 04 05 06 07 08 09 006/00  
MET Day 005 12 13 14 15 FD07 16 17 18 19 20 21 22 23

CDR BROWN	SLEEP	POST SLEEP	MNOV RMC S	POST SLEEP	MULT AXIS RCS BURN	PS/TV 04	MH20 VOR	POST SLEEP	PEVENT	MNOV RMC S	MARSHI COALIGN	ALTR PHSG BURN	MEAL
PLT ROMINGER	SLEEP	POST SLEEP	DSO 493	POST SLEEP	MULT AXIS RCS BURN	PS/TV 04	H20 INT	POST SLEEP	O C A S / U	H20 TRM		ALTR PHSG BURN	MEAL
MS1 DAVIS	SLEEP	POST SLEEP	DSO 493	POST SLEEP	O C A S / U	EXP S / U	EXP S / U	POST SLEEP	ACT & C / O	ARM REL	EXP S / U	GC EXP2 FCERA 1 ID25	MEAL
MS2 CURBEAM	SLEEP	POST SLEEP	DSO 493	POST SLEEP	EXERCISE	PS/TV 08	BDS MEDIA	POST SLEEP					MEAL
MS3 ROBINSON	SLEEP	POST SLEEP		POST SLEEP	EXP S / U	MAFCT TV	TAPFLEX	ACT & C / O	ARM REL	EXP S / U	GC EXP2 FCERA 1 ID25	GC EXP3	MEAL
PS1 TRYGGVASON	SLEEP	POST SLEEP		POST SLEEP	MIM EXP OPS	EXERCISE		MIM EXP OPS	MIM EXP OPS	MIM EXP OPS		GORPE OPS	

DAY/NIGHT ORBIT 88 89 90 91 92 93 94 95 96



TDRS	E W												
ATT													
IEH-02													
MFD													
TAS-01													

NOTES  
ATPFLX DEACT •MIM DAT ANALYS ▼EXP2 INSP2 ID30  
◊MIM DAT ANALYS ▲EXP2 INSP2 ID30  
SIMO DUMP INIT SIMO DUMP TERM ◃MIM DAT ANALYS

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
006/00:00	225/14:41	225/09:41	225 CT	-42.27		07	13 Aug 1997	STS-85	FINAL	06/18/97
006/12:00	226/02:41	225/21:41								

CT Date 08/13/97 10 11 12 13 14 15 16 17 18 19 20 21 22  
 MET Day 006 01 02 03 04 05 06 07 08 09 10 11 12

CDR BROWN	MNLSRSTL	MSNOLRAR	MNZLVR	EXERCISE	MULT AXIS RCS BURN	PMC	PRE SLEEP	MNOLRAR	PRE SLEEP	SLEEP
PLT ROMINGER		PS/TU V12		EXERCISE	MULT AXIS RCS BURN		PRE SLEEP			SLEEP
MS1 DAVIS	ASYS/D	WSDASS	EXERCISE	RSMPRIITE	OVHD WDW CHAR	SGVLSORK D * PFC	PRE SLEEP			SLEEP
MS2 CURBEAM			GPS HD C/O	VTRACT V17	BDS MEDIA	ODCWLK VTR PLBK	PRE SLEEP			SLEEP
MS3 ROBINSON	ASYS/D	WSDASS	TAPFLEX	EXERCISE	SVSPWR	OVHD WDW CHAR	PRE SLEEP			SLEEP
PS1 TRYGGVASON		BUB OPS		MANALDYS	FARLCHEIVE		PRE SLEEP			SLEEP

DAY/NIGHT ORBIT 96 97 98 99 100 101 102 103 104



TDRS E W INRTL -ZLV -YVV -YLV +ZVV -ZLV -YVV

ATT IEH-02 MFD TAS-01 INIT STANDBY HEATUP 4 RUN 4 COOLDOWN

NOTES \*TPFLEX DEACT @MIM DEACT ◊TPFLEX EXP. RUN \*PRE SLEEP  
 ♦MIM FILE XFER

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
006/12:00	226/02:41	225/21:41	225 CT	-42.10		07	13 Aug 1997	STS-85	FINAL	06/18/97
007/00:00	226/14:41	226/09:41								

CT Date 08/13/97 22 23 08/14 01 02 03 04 05 06 07 08 09 007/00  
 MET Day 006 12 13 14 FD08 15 16 17 18 19 20 21 22 23

CDR BROWN	SLEEP DEM	POST SLEEP DEM	MNVRITER POST SLEEP	MNVLARR POST SLEEP	MNVRMCS POST SLEEP	MNOVMT POST SLEEP	MNOVMT POST SLEEP	MULTIAXIS RCS BURN	EXERCISE	MNVRIS	MEAL	OFF DUTY	MNOVMTCS OFF DUTY
PLT ROMINGER	SLEEP JUP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	MULTIAXIS RCS BURN	PS/TU PAVENT	EXERCISE	OFF DUTY	MEAL	OFF DUTY
MS1 DAVIS	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	OFF DUTY	SRWSUS OFF DUTY	SRWSUS OFF DUTY	SWUIS OBS	GLOR OFF DUTY	MEAL OFF DUTY
MS2 CURBEAM	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	BDS MEDIA	BDS CELL	PHASE II S/U	MEAL	OFF DUTY	VTR OFF DUTY
MS3 ROBINSON	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	OFF DUTY	SU&S OFF DUTY	SRWSUS OFF DUTY	SWUIS OBS	SW OFF DUTY	MEAL OFF DUTY
PS1 TRYGGVASON	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	DIF OPS	MAN OFF DUTY	MEAL	GORPE OPS	MAN OFF DUTY	FILE OFF DUTY

DAY/NIGHT ORBIT 104 105 106 107 108 109 110 111 112



TDRS	E W	INRTL	INRTL	INRTL	INRTL	-XLV +ZVV	INRTL	-XLV +ZVV
ATT								
TEH-02								
MFD								
TAS-01						STANDBY		

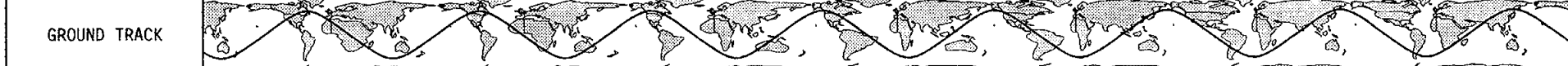
NOTES ©MIM DEACT OFF DU  
 ΔMIM FILE XFER

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
007/00:00	226/14:41	226/09:41	226 CT	-41.78		08	14 Aug 1997	STS-85	FINAL	06/18/97
007/12:00	227/02:41	226/21:41								

CT Date 08/14/97 10 11 12 13 14 15 16 17 18 19 20 21 12  
 MET Day 007 00 01 02 03 04 05 06 07 08 09 10 11 12

CDR BROWN	OFF DUTY	MH NVO R	OFF DUTY	PMO	MULT AXIS RCS BURN	M N Z L M R	PRE SLEEP	FLM CS	DEM -ZLV	DEM CS	SLEEP (9.0 HR)
PLT ROMINGER	OFF DUTY			PS L E E P	MULT AXIS RCS BURN		PRE SLEEP				SLEEP (9.0 HR)
MS1 DAVIS	OFF DUTY			PER G C L			PRE SLEEP				SLEEP (9.0 HR)
MS2 CURBEAM	OFF DUTY	H 2 0 I N T	OFF D U T Y	B D S T	P O C A N K	H 2 0 T R M	PS L E E P	PFC			SLEEP (9.0 HR)
MS3 ROBINSON	OFF DUTY				PRE S L E E P	φ	PRE SLEEP				SLEEP (9.0 HR)
PS1 TRYGGVASON	OFF DUTY						PRE SLEEP				SLEEP (9.0 HR)

DAY/NIGHT ORBIT 112 113 114 115 116 117 118 119 120



TDRS	E W										
ATT											
TEH-02											
MFD											
TAS-01											

NOTES  
 ▲OFF DUTY φPFLEX EXP. RUN  
 SIMO DUMP INIT SIMO DUMP TERM  
 RUN 5 COOLDOWN  
 CVX



MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
007/12:00 008/00:00	227/02:41 227/14:41	226/21:41 227/09:41	226 CT	-41.32		08	14 Aug 1997	STS-85	FINAL	06/18/97

CT Date 08/14/97 22 23 08/15 01 02 03 04 05 06 07 08 09 008/00  
 MET Day 007 12 13 14 15 16 17 18 19 20 21 22 23

CDR BROWN	SLEEP DEM	POST SLEEP DEM	MNVR JUPITER PSLPT MN2VOR	POST SLEEP	MNVR MULTI AXIS RCS BURN	CPH REWTO	CREW CONF	MS NWVRS	MEAL	MNVR MULTI AXIS RCS BURN	PS /TV 12	▽
PLT ROMINGER	SLEEP JUP	POST SLEEP DNOON 493	H20 INT	POST SLEEP H20 TERM	MNVR MULTI AXIS RCS BURN	CPH REWTO	CREW CONF	MS NWVRS	MEAL	EXERCISE WCS COMP	P/TV16 OPS/MIM OPS	
MS1 DAVIS	SLEEP	POST SLEEP			MNVR MULTI AXIS RCS BURN	CPH REWTO	CREW CONF	MS NWVRS	SWUIS OBS	MEAL	EXERCISE	SP VKS EXT
MS2 CURBEAM	SLEEP	POST SLEEP			MNVR MULTI AXIS RCS BURN	CPH REWTO	CREW CONF	MS NWVRS	MEAL	EXERCISE		
MS3 ROBINSON	SLEEP	POST SLEEP		EXERCISE	MNVR MULTI AXIS RCS BURN	CPH REWTO	CREW CONF	MS NWVRS	SWUIS OBS	MEAL		
PS1 TRYGGVASON	SLEEP	POST SLEEP		EXERCISE	MNVR MULTI AXIS RCS BURN	CPH REWTO	CREW CONF	MS NWVRS	GORPE OPS	MIM DAT ANALYS	P/TV16 OPS/MIM OPS	

DAY/NIGHT ORBIT 120 121 122 123 124 125 126 127 128



TDRS	E W											
ATT		-YLV +ZVV	INRTL	INRTL	INRTL	BIAS -ZLV +YVV	-XLV +ZVV		INRTL			-XLV +ZVV
IEH-02												
MFD												
TAS-01												

NOTES  
 •MNVR -Z MOON  
 ○POST SLP  
 SUPPLY DUMP INIT  
 SUPPLY DUMP TERM  
 \*RMS PRE CRADLE VEXERCISE

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
008/00:00 008/12:00	227/14:41 228/02:41	227/09:41 227/21:41	227 CT	-40.72		09	15 Aug 1997	STS-85	FINAL	06/18/97

CT Date 08/15/97 10 11 12 13 14 15 16 17 18 19 20 21 12  
MET Day 008 008/00 01 02 03 04 05 06 07 08 09 10 11 12

CDR BROWN	MULT AXIS RCS BURN	MNOVORN-Z	MNEVLSL	PMO	MNZLVRV	MULT AXIS RCS BURN	PRE SLEEP	MNOVORMCS	SLEEP
PLT ROMINGER	MULT AXIS RCS BURN	DSO 802		PRE SLEEP	MULT AXIS RCS BURN	PRE SLEEP	PRE SLEEP	SLEEP	
MS1 DAVIS	TARGET EVAL	CC FOV CHAR	GLORK EXT	PCG MON		PRE SLEEP	PRE SLEEP	SLEEP	
MS2 CURBEAM		VTRVTR PLBK ACT	BDSI ST	ODCNLK		PRE SLEEP	PRE SLEEP	SLEEP	
MS3 ROBINSON	TARGET EVAL	CC FOV CHAR	ERPECL	PSLEEP PFC		PRE SLEEP	PRE SLEEP	SLEEP	
PS1 TRYGGVASON	DSO 802/MIM EXP OPS		FIRLCHIVE			PRE SLEEP	PRE SLEEP	SLEEP	

DAY/NIGHT ORBIT 128 129 130 131 132 133 134 135 136



TDRS	E	W
ATT IEH-02	-XLV +ZVV	INRTL
MFD TAS-01		-ZLV -YVV
		-XLV +ZVV

STANDBY - CVX

NOTES  
⊕EXERCISE      ▲MNVR -Z MOON  
♦P/TV16 OPS/MIM OPS      ⊕MIM DEACT  
                                 ▼MIM FILE XFER

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
008/12:00	228/02:41	227/21:41			☉					
009/00:00	228/14:41	228/09:41	227 CT	-39.99		09	15 Aug 1997	STS-85	FINAL	06/18/97

CT Date 08/15/97 22 23 08/16 01 02 03 04 05 06 07 08 09  
MET Day 008 12 13 FD10 14 15 16 17 18 19 20 21 22 23 009/00

CDR BROWN	SLEEP	POST SLEEP	MCE NVL RST L	POST SLEEP	MS NVL R	PS LSE P	MJ NVL R	PS LSE P	MULT AXIS RCS BURN	M- NVL RV	POST SLP	PS LSE P	EXERCISE	M C N O M V M C S	Δ NC	Δ NH	Δ NCC	Δ Ti	SPAS RNDZ
PLT ROMINGER	SLEEP	DSO 4 9 3	POST SLEEP			MULT AXIS RCS BURN			EXERCISE	FILTER CLEANING		SPAS RNDZ							
MS1 DAVIS	SLEEP	DSO 4 9 3	POST SLEEP			P/TV07 S/U		EXERCISE		SPAS RNDZ									
MS2 CURBEAM	SLEEP	DSO 4 9 3	POST SLEEP			EXERCISE		SPAS RNDZ											
MS3 ROBINSON	SLEEP	POST SLEEP			P/TV07 S/U		EXERCISE *		SPAS RNDZ										
PS1 TRYGGVASON	SLEEP	POST SLEEP			MIM EXP OPS		BDS EXP SHTDN	MIM DAT ANALYS	EXERCISE		SPAS RNDZ								

DAY/NIGHT ORBIT 136 137 138 139 140 141 142 143 144



TDRS	E	W	-XLV +ZVV	-INRTL	-INRTL	-ZLV -YVV	RNDZ
ATT							
IEH-02							
MFD							
TAS-01	CVX	STANDBY				HEATUP 6	RUN 6 COOLDOWN

NOTES ○PWR UP GRP B \*TPFLEX EXP. RUN

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
009/00:00	228/14:41	228/09:41	228 CT	-39.12		10	16 Aug 1997	STS-85	FINAL	06/18/97
009/12:00	229/02:41	228/21:41								

CT Date 08/16/97 10 11 12 13 14 15 16 17 18 19 20 21 12  
MET Day 009 01 02 03 04 05 06 07 08 09 10 11 12

	GRAPPL		MH		PMCE		MCNE		MCNE		FMN		DEM		DEM		DEM		DEM		
	SPAS RNDZ	SPAS RNDZ	20	00	PRE SLEEP	SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	SLEEP	FLM	DEM	DEM	DEM	DEM	DEM	DEM	DEM	DEM	DEM	
CDR BROWN	GRAPPL	SPAS RNDZ	20	00	PRE SLEEP	SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	SLEEP	FLM	DEM	DEM	DEM	DEM	DEM	DEM	DEM	DEM	DEM	
PLT ROMINGER	SPAS RNDZ	SPAS RNDZ	20	00	PRE SLEEP	SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	SLEEP	CEL	SOL	CEL	SOL	CEL	SOL	CEL	SOL	-ZLV		
MS1 DAVIS	SPAS RNDZ	SPAS DEACT	SPAS BERTH	GLOR			PRE SLEEP													SLEEP	
MS2 CURBEAM	SPAS RNDZ	P/TV13 S/U	RNDZ TOOLS DEACT	OD			PRE SLEEP													SLEEP	
MS3 ROBINSON	SPAS RNDZ	SPAS DEACT	SPAS BERTH	S			PRE SLEEP													SLEEP	
PS1 TRYGGVASON	SPAS RNDZ	P/TV13 S/U			PRE SLEEP	PFC	PRE SLEEP													SLEEP	
DAY/NIGHT ORBIT																					
GROUND TRACK																					
TDRS	E	W																			
ATT IEH-02	RNDZ	BIA5	-ZLV	+YVV	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	INRTL	-ZLV	-YVV
MFD TAS-01	RUN 6 COOLDOWN										STANDBY										
NOTES	⊕PWR DOWN GRP B SIMO DUMP INIT										⊕PRE SLEEP SIMO DUMP TERM										

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
009/12:00 010/00:00	229/02:41 229/14:41	228/21:41 229/09:41	228 CT	-38.13	☉	10	16 Aug 1997	STS-85	FINAL	06/18/97

CT Date 08/16/97 22 23 08/17 01 02 03 04 05 06 07 08 09 010/00  
 MET Day 009 12 13 FD11 14 15 16 17 18 19 20 21 22 23 010/00

CDR BROWN	SLEEP	POST SLEEP	MH N2 VO R	POST SLP	PSU D SLP	POST SLP	M-NZ VL RV	FCS C/O	POST SLP	CABIN STOW	LNDG COMM C/O	EXERCISE	CABIN STOW	OAB R D B J R UN ST	OAB R D B J R UN ST	M-NZ VL RV	MEAL	S L A C A L	M N V R	CABIN STOW
PLT ROMINGER	SLEEP	POST SLEEP	H20 S A I O N T	POST SLP	H20 S T R M	PS / TV 03	FCS C/O	PCAM DEACT	EXERCISE	POST SLP	CABIN STOW	OAB R D B J R UN ST	OAB R D B J R UN ST	MEAL	CABIN STOW					
MS1 DAVIS	SLEEP	POST SLEEP	SVS S/U	SVS S/U	SVS S/U	SVS S/U	2A FGB OPS	3A PMA3 OPS	3A Z1 OPS	BERTH WITH ACVS	SVS STOW	MEAL	EXERCISE	CABIN STOW						
MS2 CURBEAM	SLEEP	POST SLEEP	FCS C/O	POST SLP	P O / P T S V 1 3	CABIN STOW	EXERCISE	CABIN STOW	MEAL	CABIN STOW										
MS3 ROBINSON	SLEEP	POST SLEEP	SVS S/U	SVS S/U	SVS S/U	2A FGB OPS	3A PMA3 OPS	3A Z1 OPS	BERTH WITH ACVS	SVS STOW	MEAL	CABIN STOW								
PS1 TRYGGVASON	SLEEP	POST SLEEP	MIM ACT	MIM EXP OPS	2A FGB OPS	MIM EXP OPS	MIM TEAR DOWN	CABIN STOW	MEAL	CABIN STOW										

DAY/NIGHT ORBIT 152 153 154 155 156 157 158 159 160



TDRS	E W	-ZLV -YVV	BIAS -ZLV +YVV	-ZLV -YVV	-ZLV -YVV	ZDS
ATT						
TEH-02						
MFD		STANDBY		HEATUP 7		RUN 7 COOLDOWN
TAS-01						

NOTES	VAPU HTR ACT	TPFLEX EXP. RUN	APU HTR RECONFIG	SEM GAS DEACT	EXERCISE
	SUPPLY DUMP INIT	APU HTR RECONFIG	MIM DEACT		
	SUPPLY DUMP TERM	P/TV03 OPS	MIM FILE XFER		

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
010/00:00	229/14:41	229/09:41	229 CT	-37.03	☉	11	17 Aug 1997	STS-85	FINAL	06/18/97
010/12:00	230/02:41	229/21:41								

CT Date 08/17/97  
MET Day 010

Activity	01	02	03	04	05	06	07	08	09	10	11	12
CDR BROWN	MNV R CABIN STOW	MNV R DB OR REF FIT	MNV R PMO	PRE SLEEP	MNV R PRE SLEEP	MNV R PRE SLEEP	FLM	DEM	DEM	DEM	DEM	DEM
PLT ROMINGER	CABIN STOW	DB OR REF FIT	PRE SLEEP				ZDS	ZDS	ZDS	ZDS	ZDS	ZDS
MS1 DAVIS	CABIN STOW	DB OR REF FIT	PRE SLEEP	K S U T - O B W D	PRE SLEEP							
MS2 CURBEAM	CABIN STOW ERGOM STOW	DB OR REF FIT	PRE SLEEP									
MS3 ROBINSON	φ ERGOM STOW	DB OR REF FIT	PRE SLEEP	• ▽								
PS1 TRYGGVASON	CABIN STOW	DB OR REF FIT	PRE SLEEP									

DAY/NIGHT ORBIT



TDRS E W

ATT IEH-02

MFD TAS-01

NOTES  
 ΔCABIN STOW  
 φEXERCISE  
 ▲PRE SLEEP  
 •PRE SLEEP  
 ▽TPFLEX EXP. RUN

RUN 7 COOLDOWN | HEATUP 8 | RUN 8 COOLDOWN | STANDBY

MET	GMT	CT	DOY	BETA	MOON	FLIGHT DAY	HOUSTON DATE	IDENTIFIER	EDITION	PUB. DATE
010/12:00	230/02:41	229/21:41	229 CT	-35.80	☉	12	17 Aug 1997	STS-85	FINAL	06/18/97
011/00:00	230/14:41	230/09:41								

CT Date 08/17/97 22 23 08/18 01 02 03 04 05 06 07 08 09 011/00  
MET Day 010 12 FD12 13 14 15 16 17 18 19 20 21 22 23

CDR BROWN	SLEEP	POST SLEEP	PMCS PS SLEEP	DSO 331	-M XN SV IR	DEORBIT PREP	DC OMM	DEORBIT PREP		
PLT ROMINGER	SLEEP	POST SLEEP			OST AOCW			DEORBIT PREP		
MS1 DAVIS	SLEEP	POST SLEEP						DEORBIT PREP *	DEORBIT	LANDING
MS2 CURBEAM	SLEEP	POST SLEEP		IT EAS HS	DSO 331			DEORBIT PREP	*	*
MS3 ROBINSON	SLEEP	POST SLEEP			GPS PGSC STOW			DEORBIT PREP		
PS1 TRYGGVASON	SLEEP	POST SLEEP			OST AOCW			DEORBIT PREP		

DAY/NIGHT ORBIT 168 169 170 171 172 173 174 175 176



TDRS	E	W								
ATT	ZDS		RAD COLD SOAK		D/O COMM		ENTRY			
IEH-02										
MFD	STANDBY									
TAS-01										

NOTES	OPWR UP GRP B		VIMU MNVR		* DEORBIT BURN 10/19:24		* KSC LANDING 10/20:24			
	IEH DEACT		* TPFLEX DEACT							
	TAS DEACT									

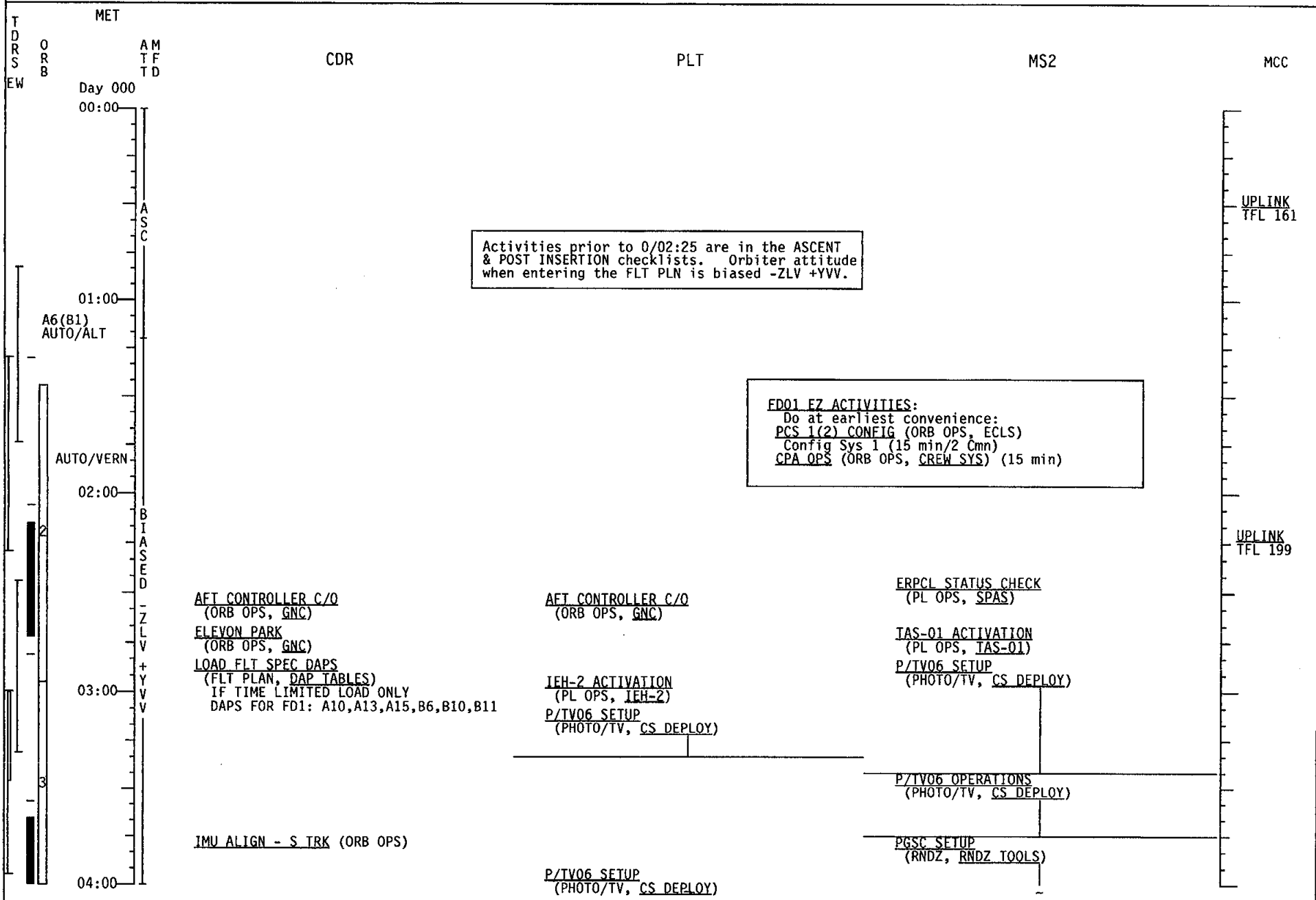
DETAILED TIMELINE

DETAILED  
TIMELINE

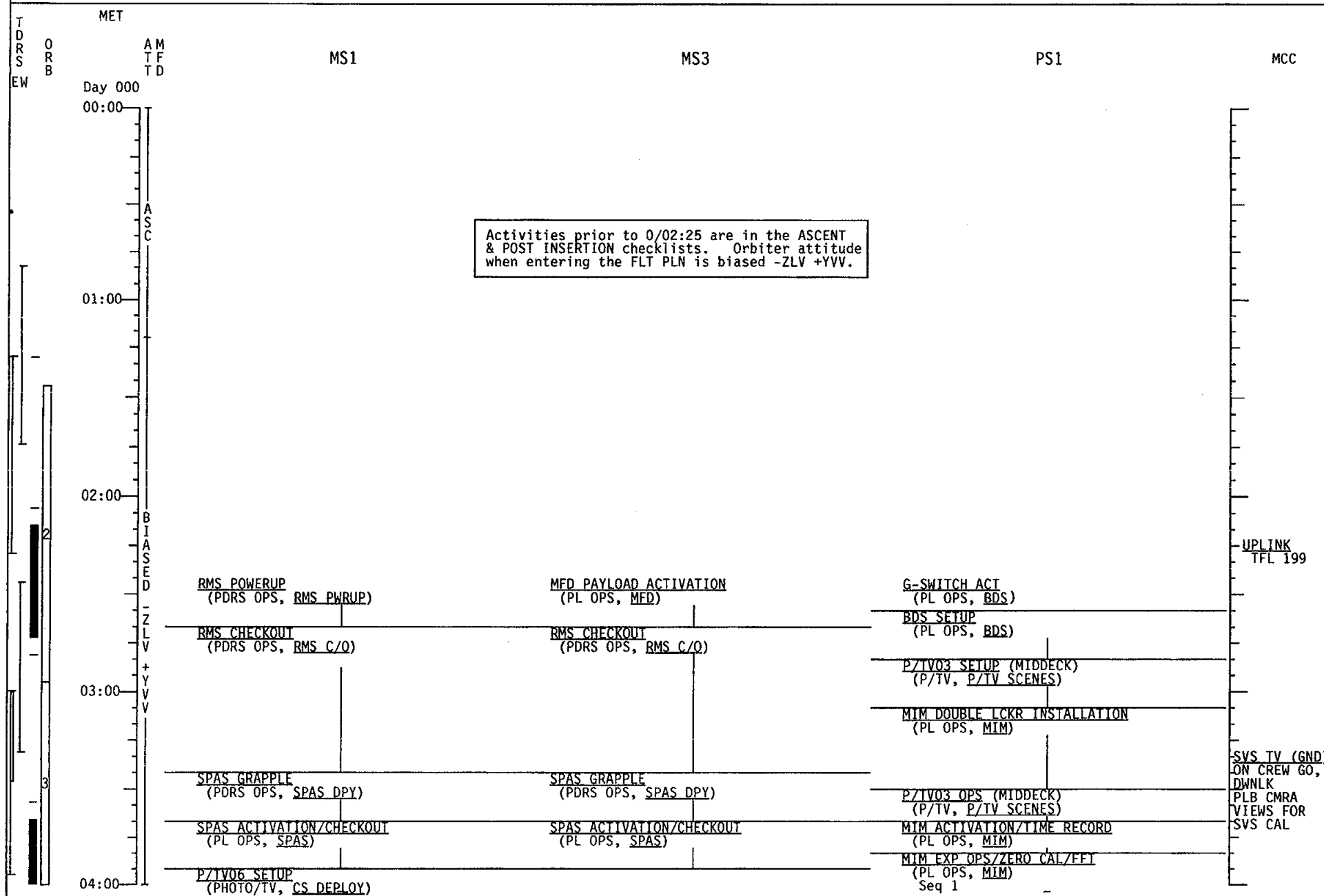


# DETAILED TIMELINE

## STS-85 (FD 01)



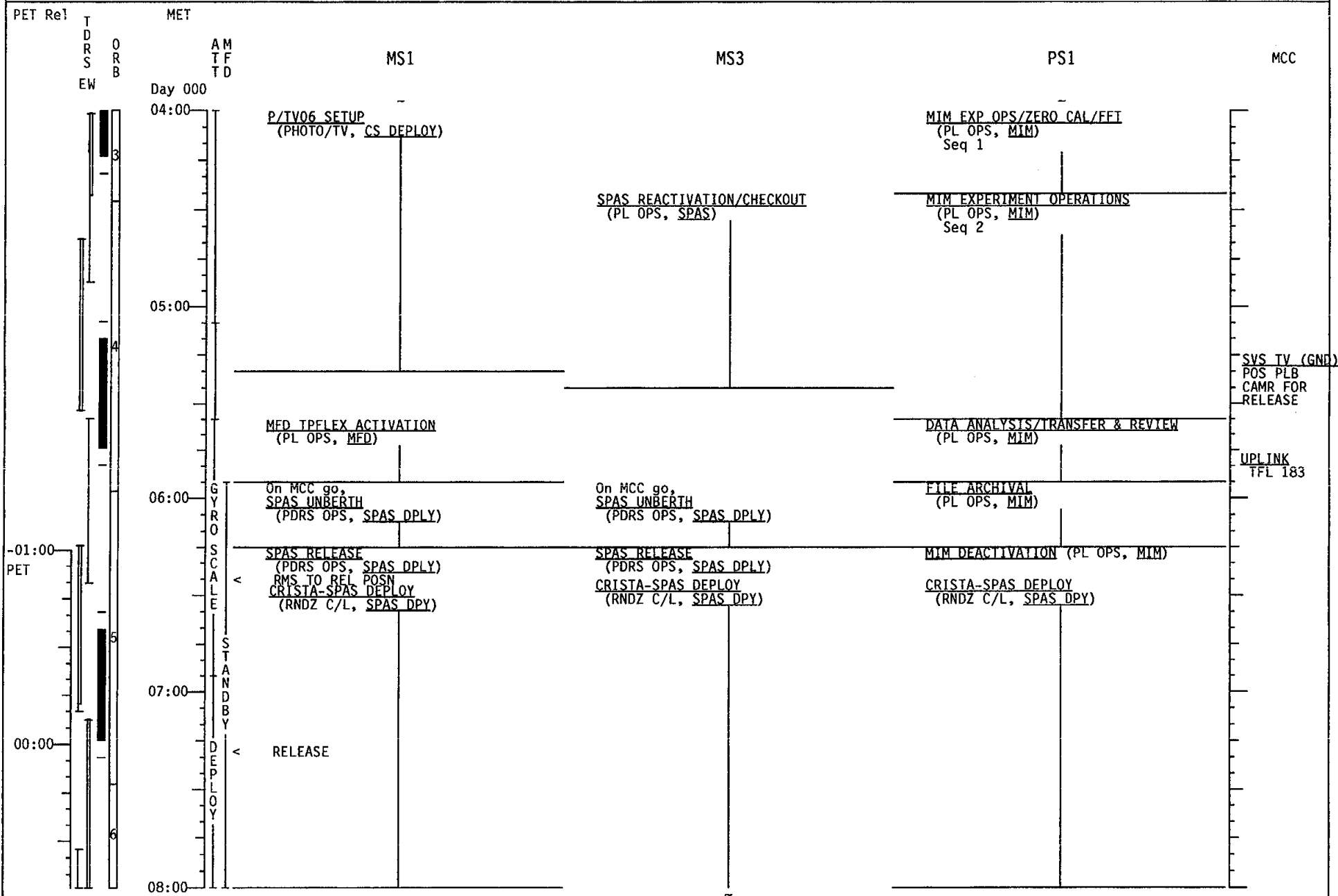
# STS-85 (FD 01)



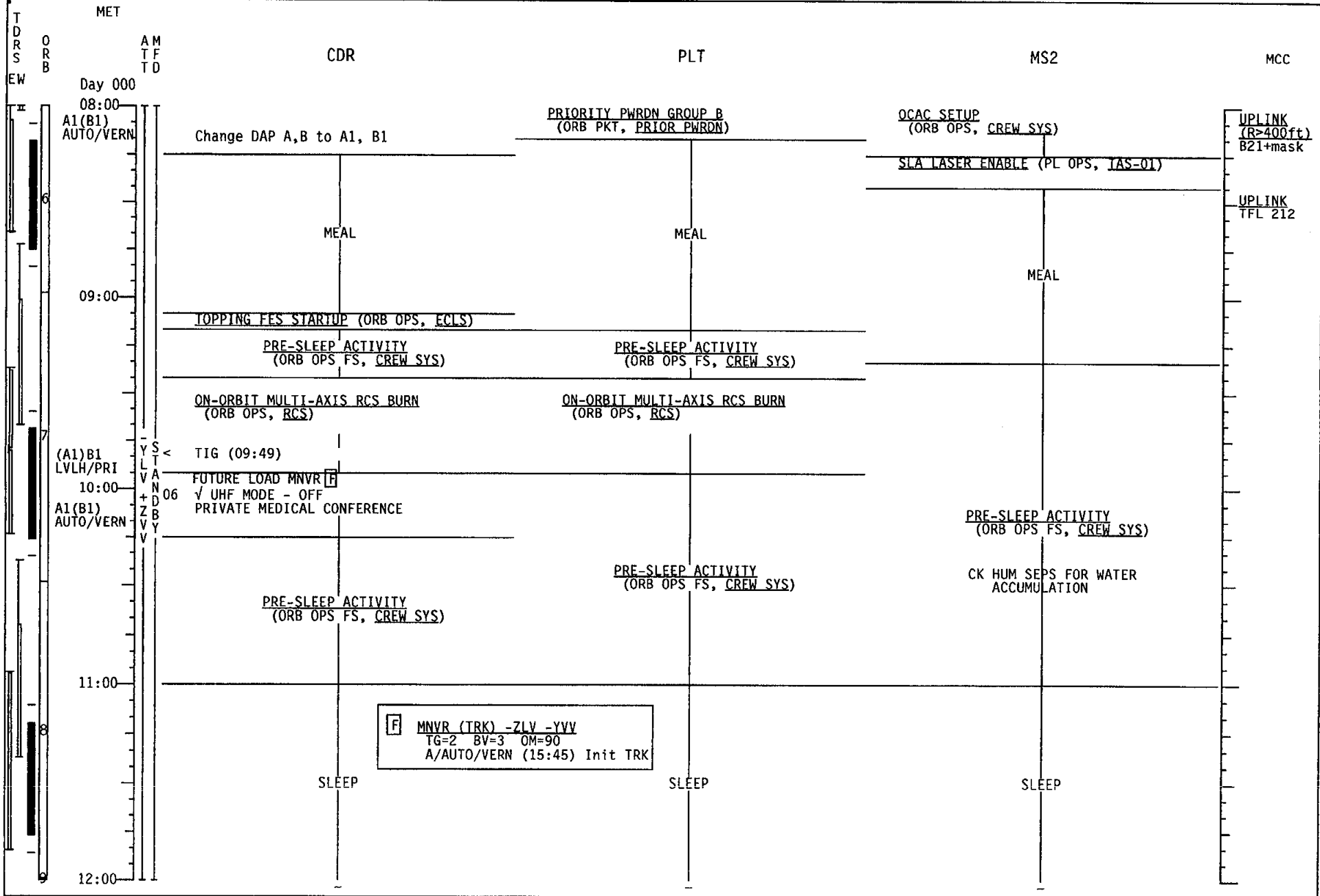
# STS-85 (FD 01)

PET Rel	TDRS ORB EW	MET Day 000	AMTFD	CDR	PLT	MS2	MCC
		04:00		<u>SHUTTLE EMERGENCY EYEWASH</u> Unstow, attach on or near galley. Fill drink container(s) & attach near appropriate experiment locations. <u>LAMP TEST</u> (ORB OPS, EPS) <u>SMOKE DETN CKT TEST</u> (ORB OPS, ECLS)	<u>P/TV06 SETUP</u> (PHOTO/TV, CS DEPLOY)	<u>PGSC SETUP</u> (RNDZ, RNDZ TOOLS) <u>LOCKER STORAGE UPDATE</u> Update PGSC Locker Stowage with disk carried on board <u>PCDECOM OPS, ACT</u> (ORB OPS, PGSC)	
		A6(B1) AUTO/VERN		Change DAP B to B6 <u>GNC 21 IMU ALIGN</u> DES-ITEM 7(8,9) EXEC (*)		<u>RPOP INITIALIZATION</u> (RNDZ, RNDZ TOOLS) Boot up RPOP PGSCs with Update disk (RPOP U/D only) <u>HHL CHECKOUT</u> (RNDZ C/L, RNDZ TOOLS) <u>RPOP OPERATIONS</u> (RNDZ, RNDZ TOOLS)	NOTIFY CREW IMU DESELECT
		05:00		L1 <u>FLASH EVAP CNTLR PRI A(B)-OFF</u> <u>MNVR GYRO DRIET COMP</u> R=238.31 P=87.57 Y=59.26 A/AUTO/VERN Init MNVR (0/05:05) When in att, B/AUTO/VERN			UPLINK TFL 183
		(A6)B6		<u>GYRO SCALING MNVR</u> R=229 P=301 Y=10 A/AUTO/VERN Init MNVR (On MCC go) When in att, B/AUTO/VERN On MCC go, A/AUTO/VERN On MCC go for Unberth: DAP: A <u>GNC 21 IMU ALIGN</u> DES-ITEM 7(8,9) EXEC (no *)	A12 APU HTR GG/FU (three) - A AUTO R2 <u>APU STEAM VENT HTR DEACT</u> BLR PWR (three) - OFF <u>P/TV06 OPERATIONS</u> (PHOTO/TV, CS DEPLOY)		NOTIFY CREW GO FOR UNBERTH
		06:00		<u>CRISTA-SPAS DEPLOY</u> (RNDZ C/L, SPAS DPY)	<u>CRISTA-SPAS DEPLOY</u> (RNDZ C/L, SPAS DPY)	<u>P/TV06 OPERATIONS</u> (PHOTO/TV, CS DEPLOY)	UPLINK (UNBERTH) B21+MASK & BOX 80>AZ>0 -20>EL>-89
		A10(B6) AUTO/VERN					
		07:00					
		(A7)B10					
		00:00		A7(B10) <u>RELEASE (07:16)</u> SEP-1 (07:17)			UPLINK GO FOR RELEASE) B-5 ONLY
		A7(B7)		SEP-2 (07:33)			
		08:00		MNVR -YLV +ZVV			

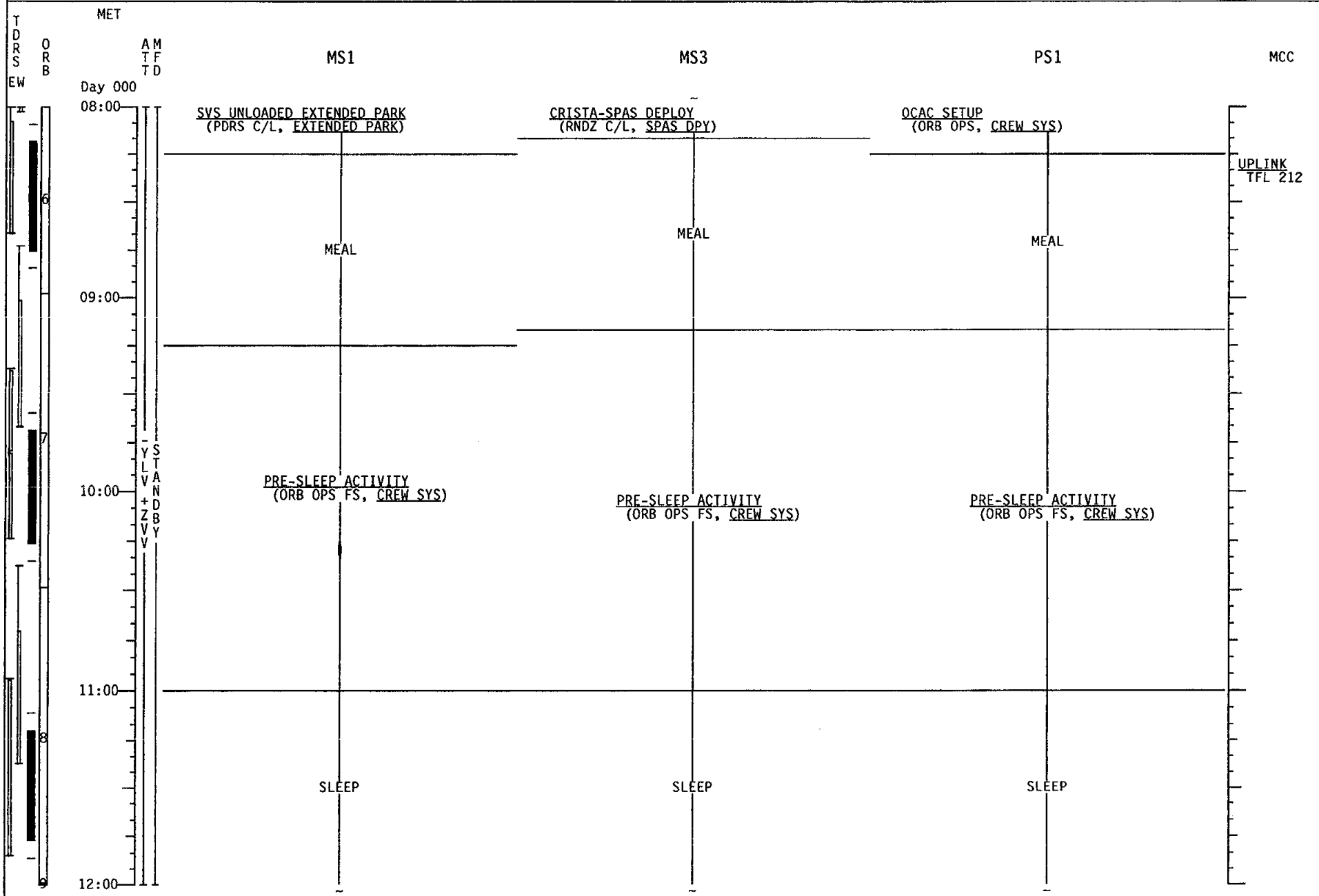
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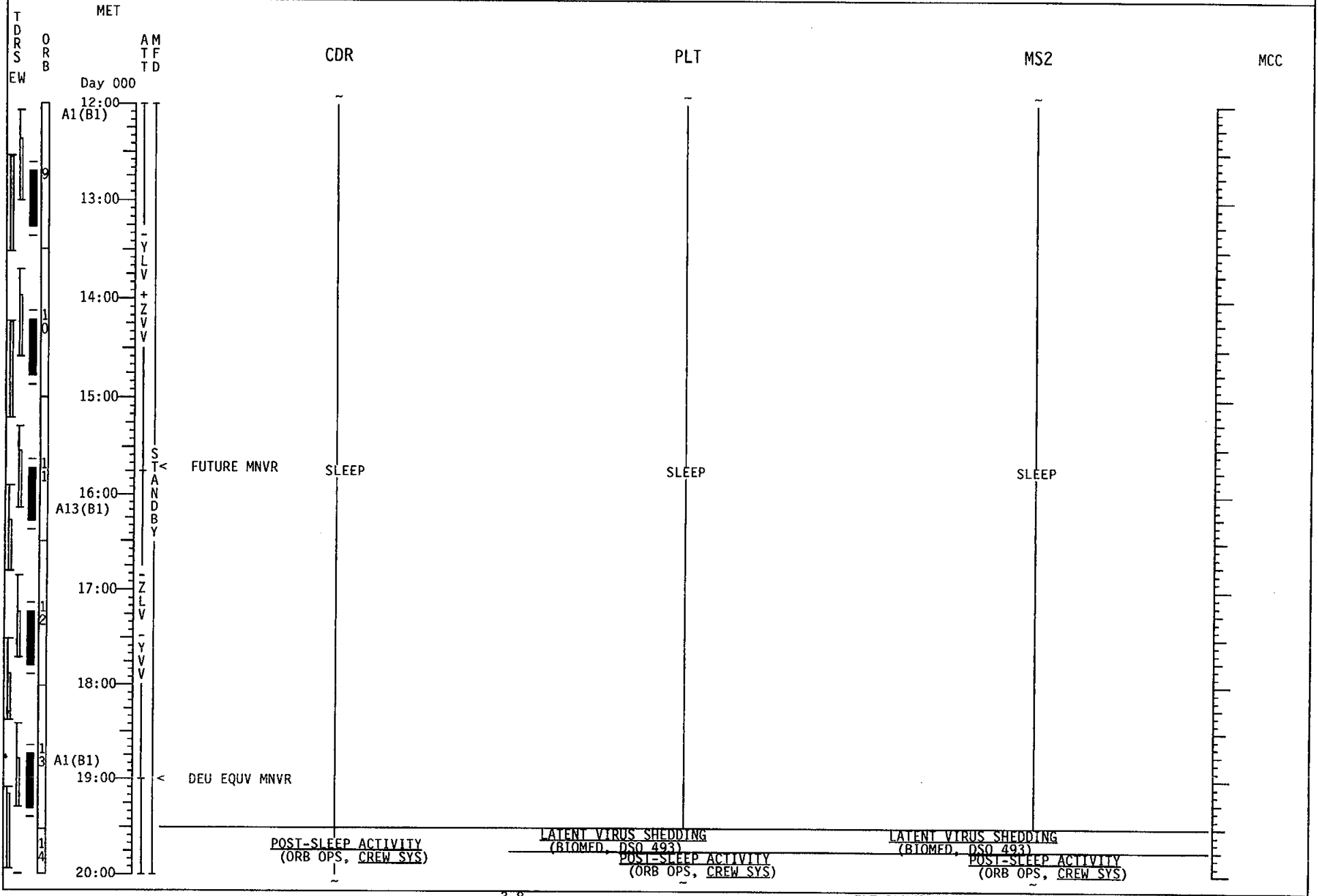
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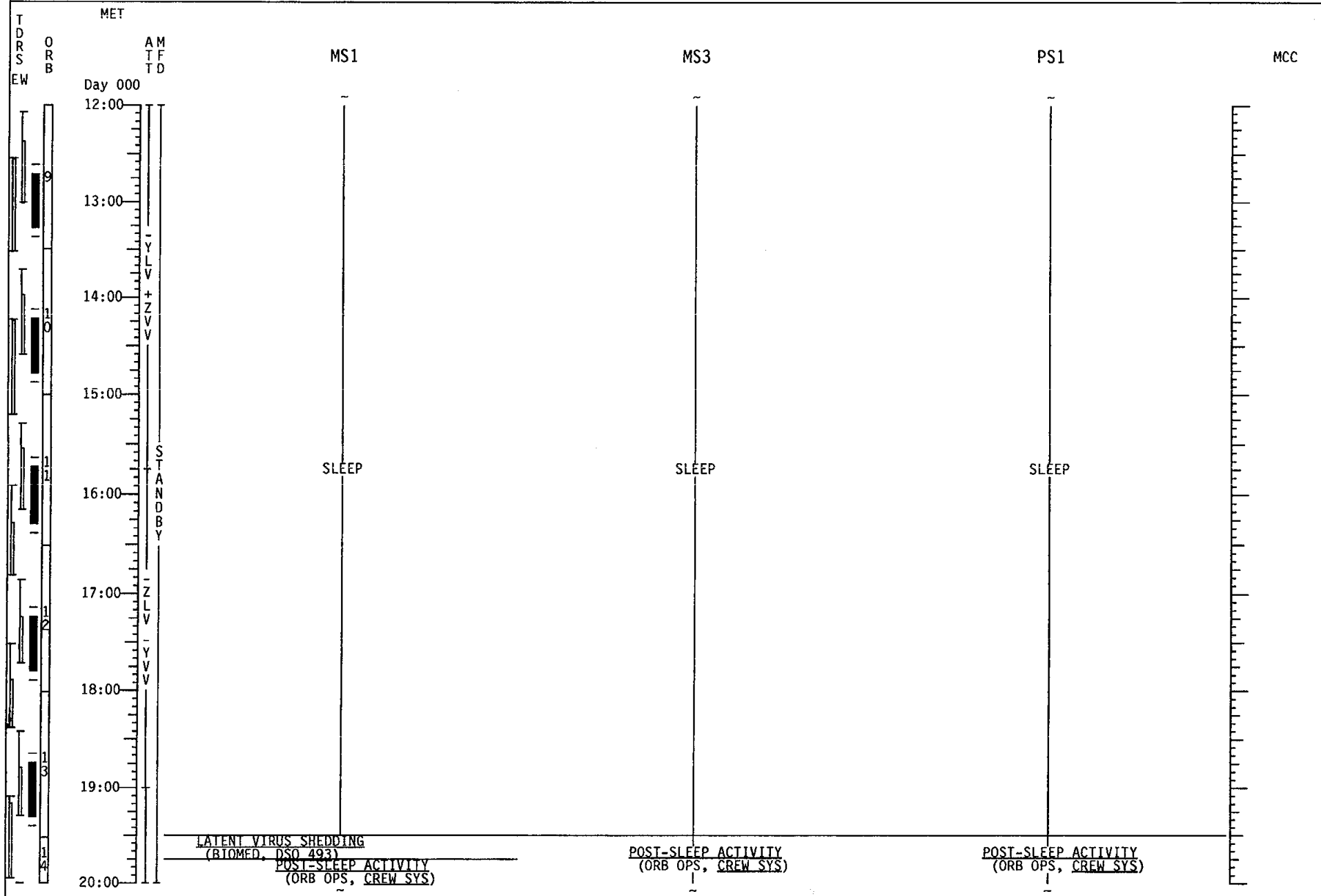
# STS-85 (FD 01)



# STS-85 (FD 01)

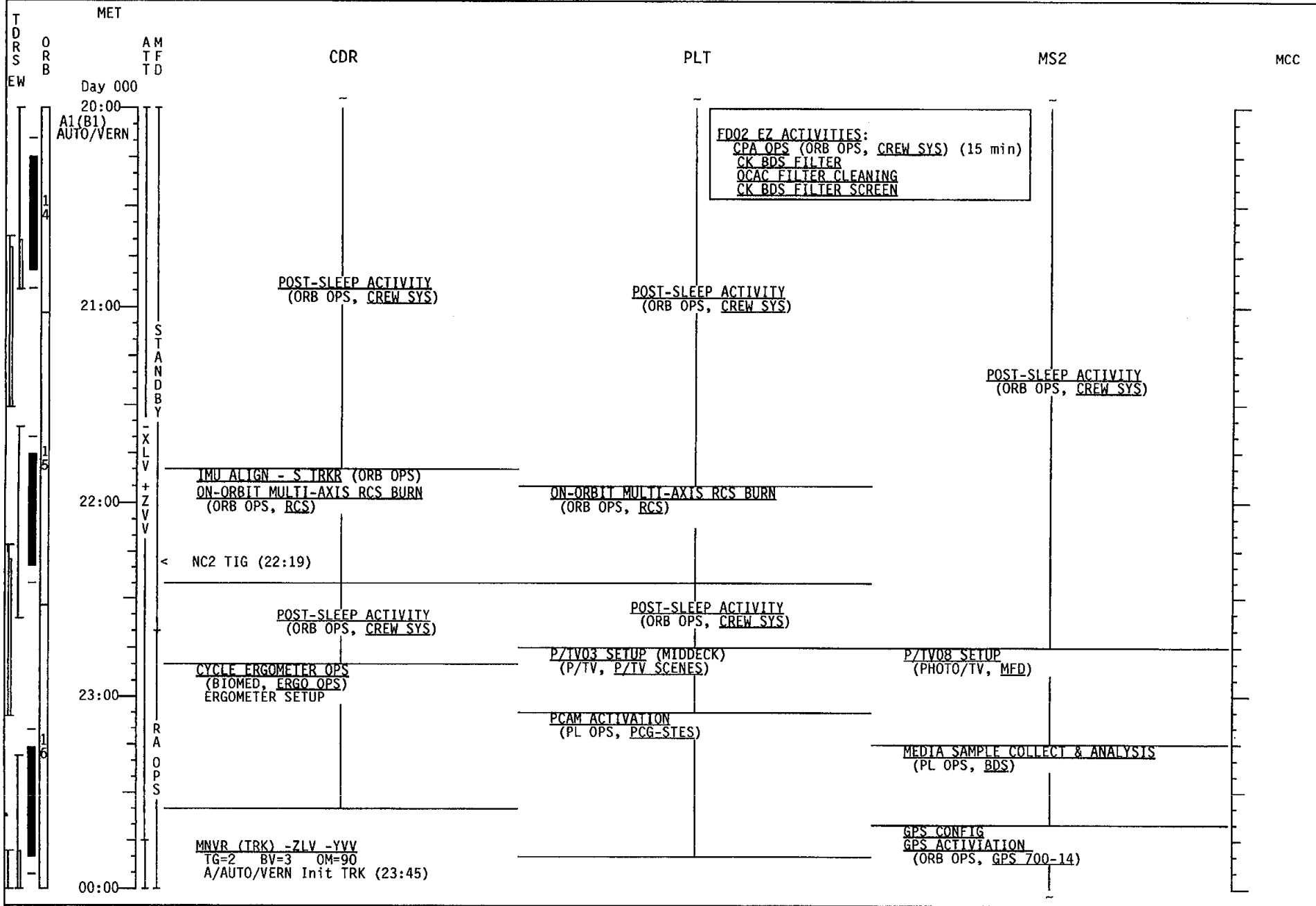


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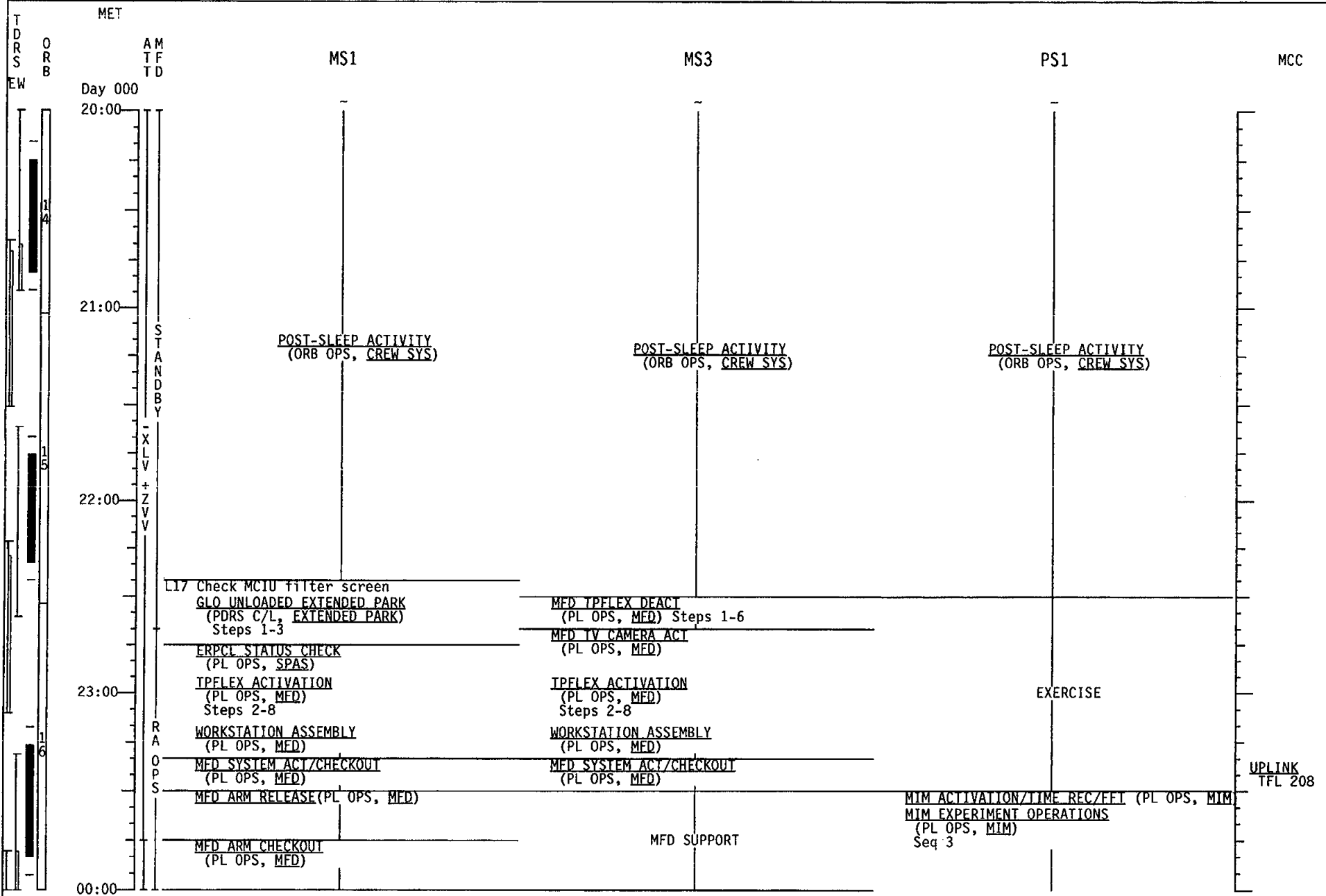




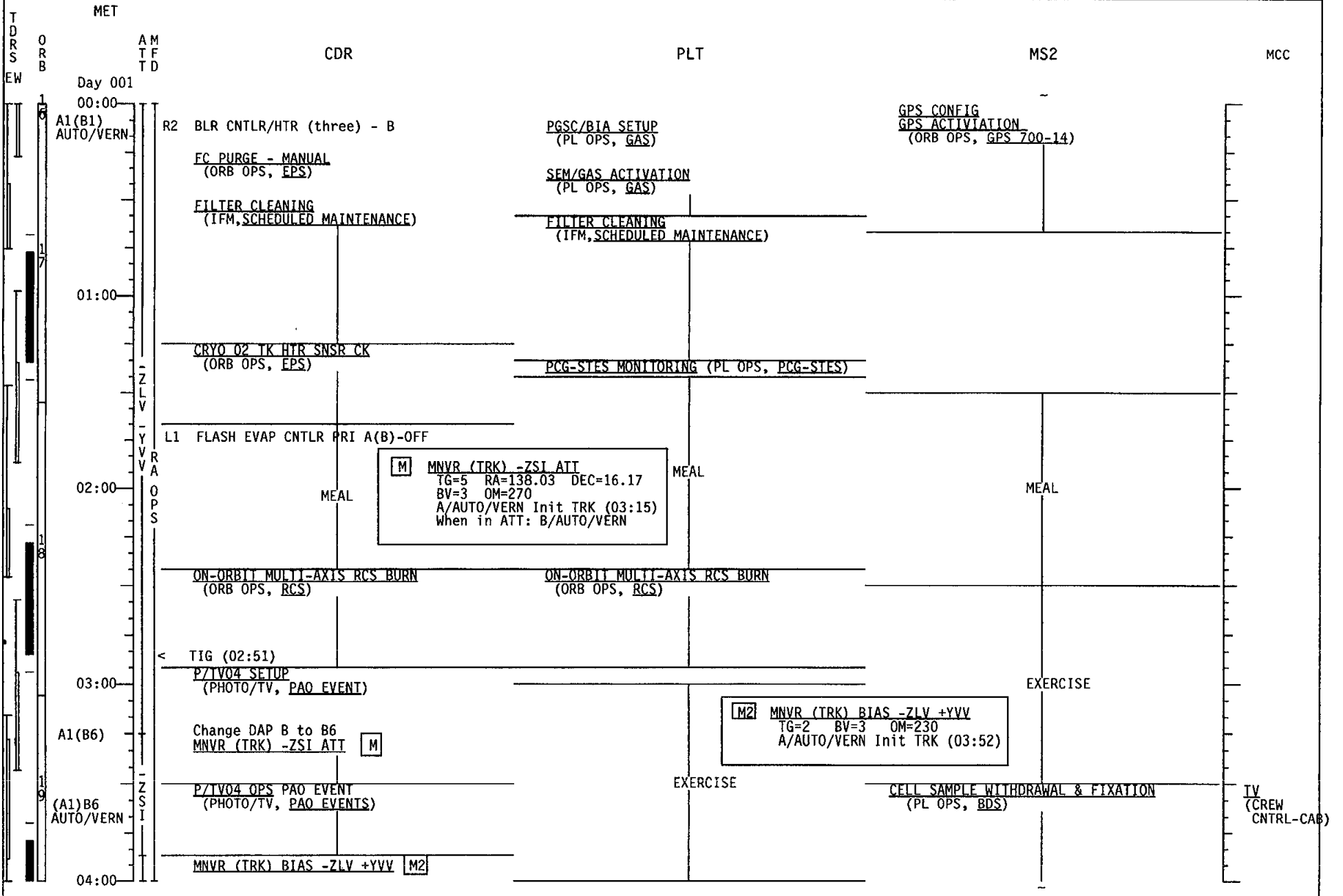
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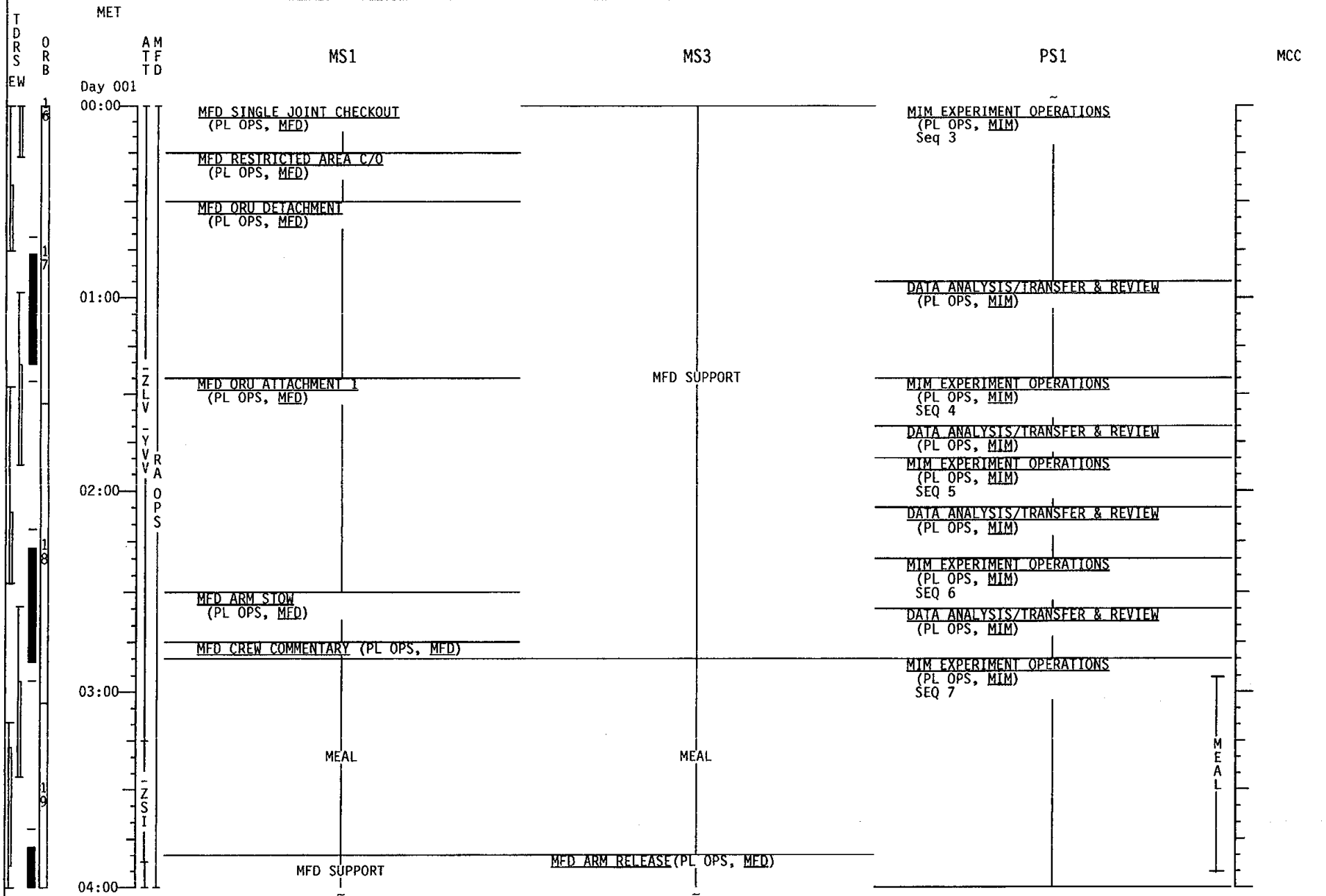
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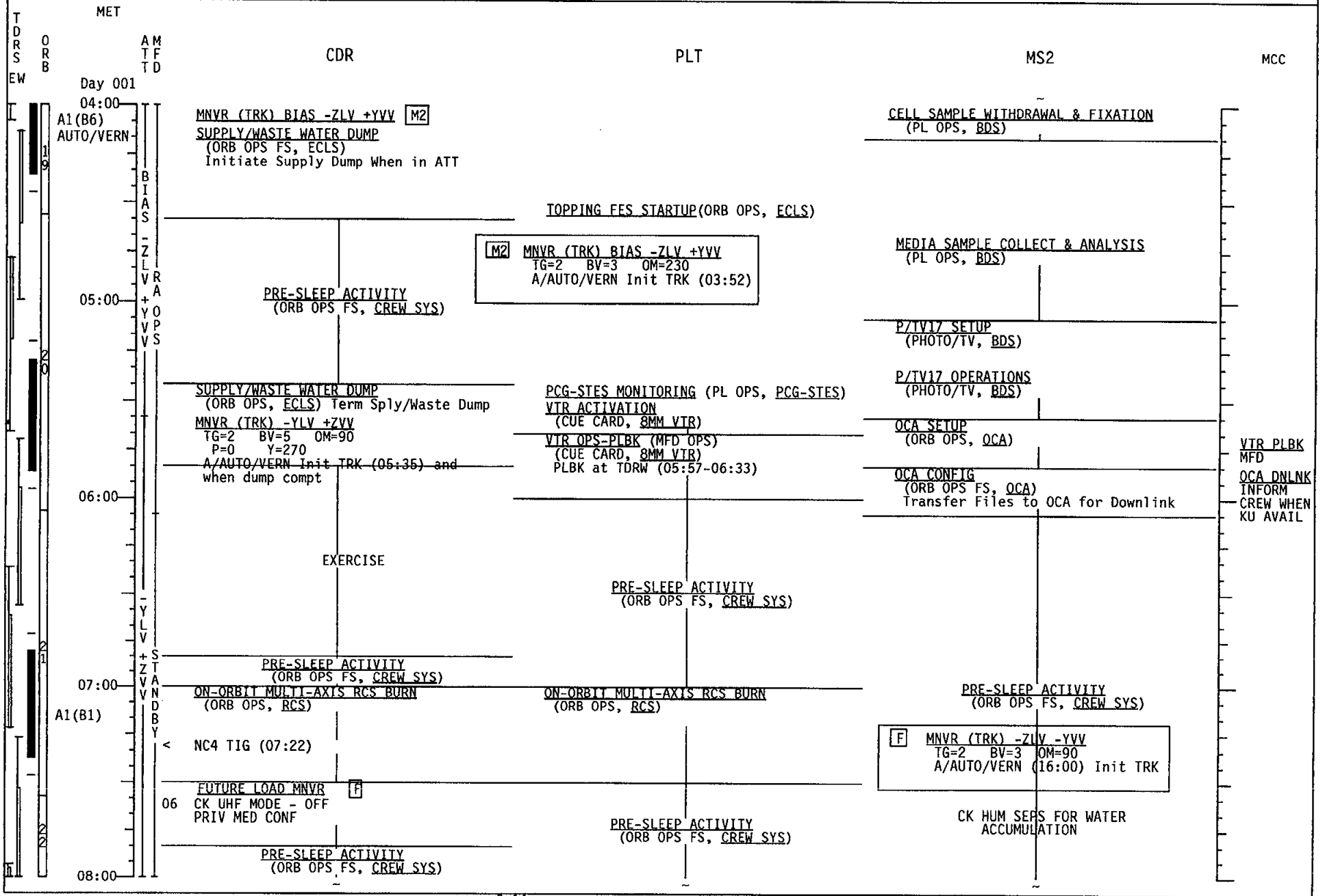
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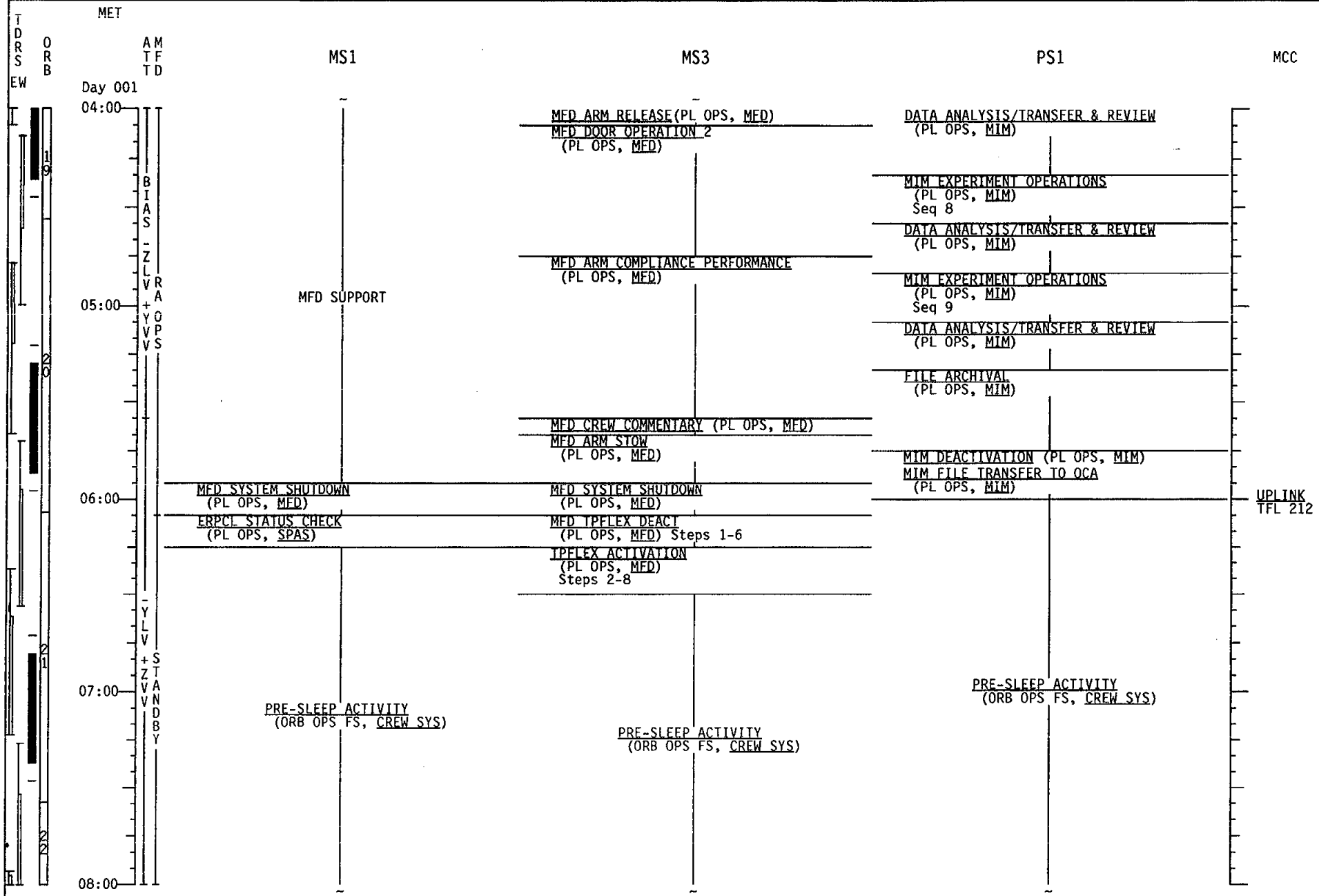
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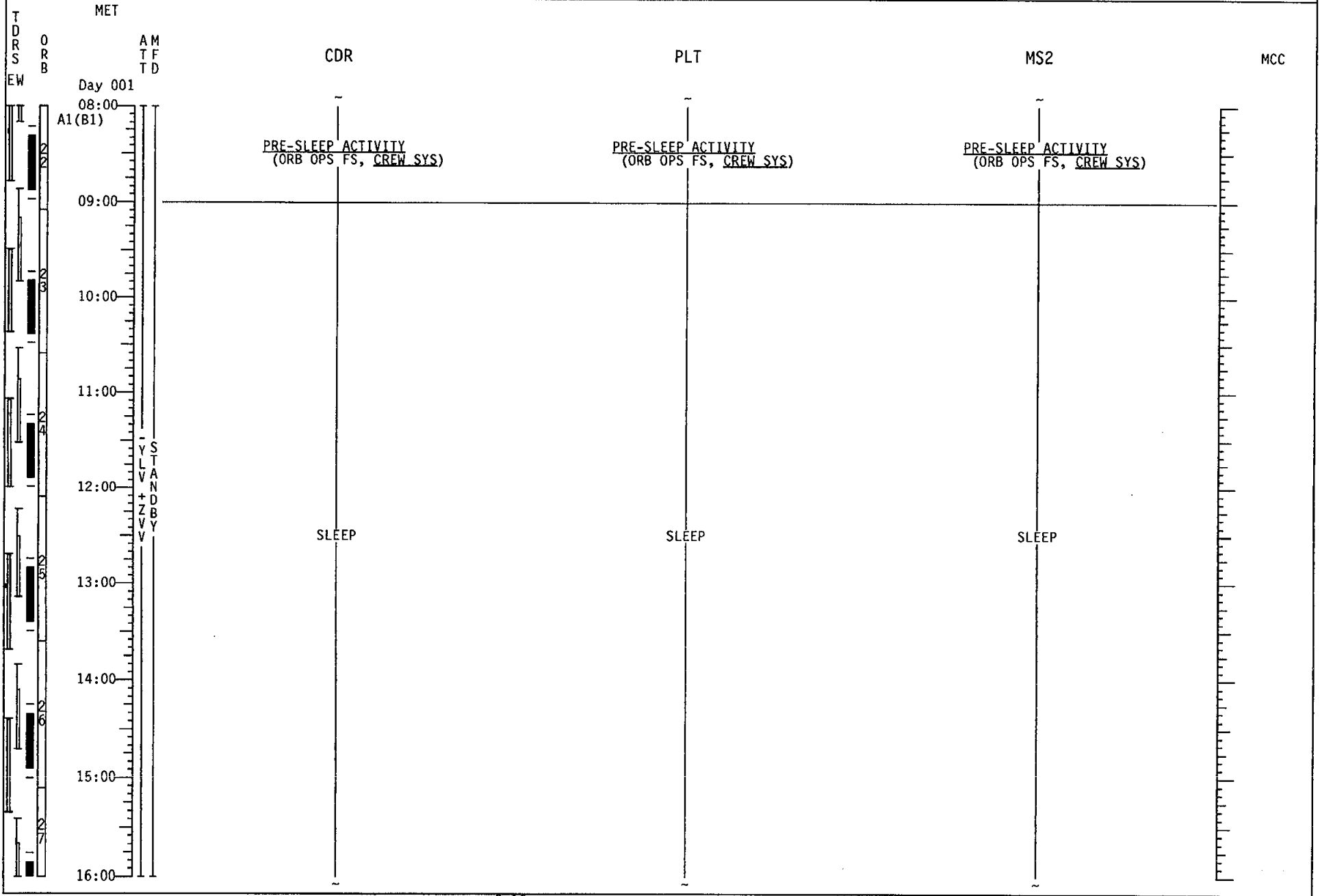
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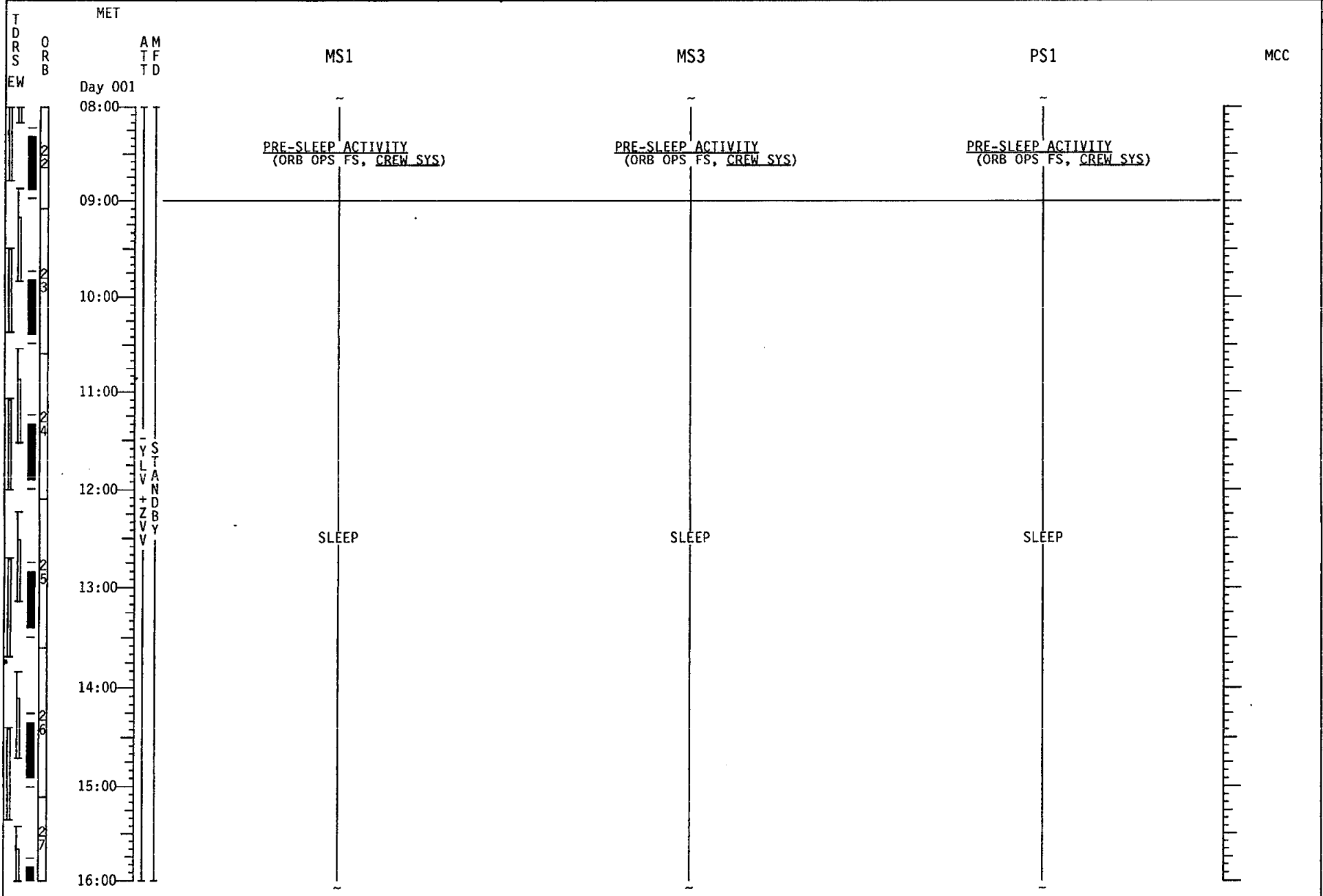
# STS-85 (FD 02)



# STS-85 (FD 02)

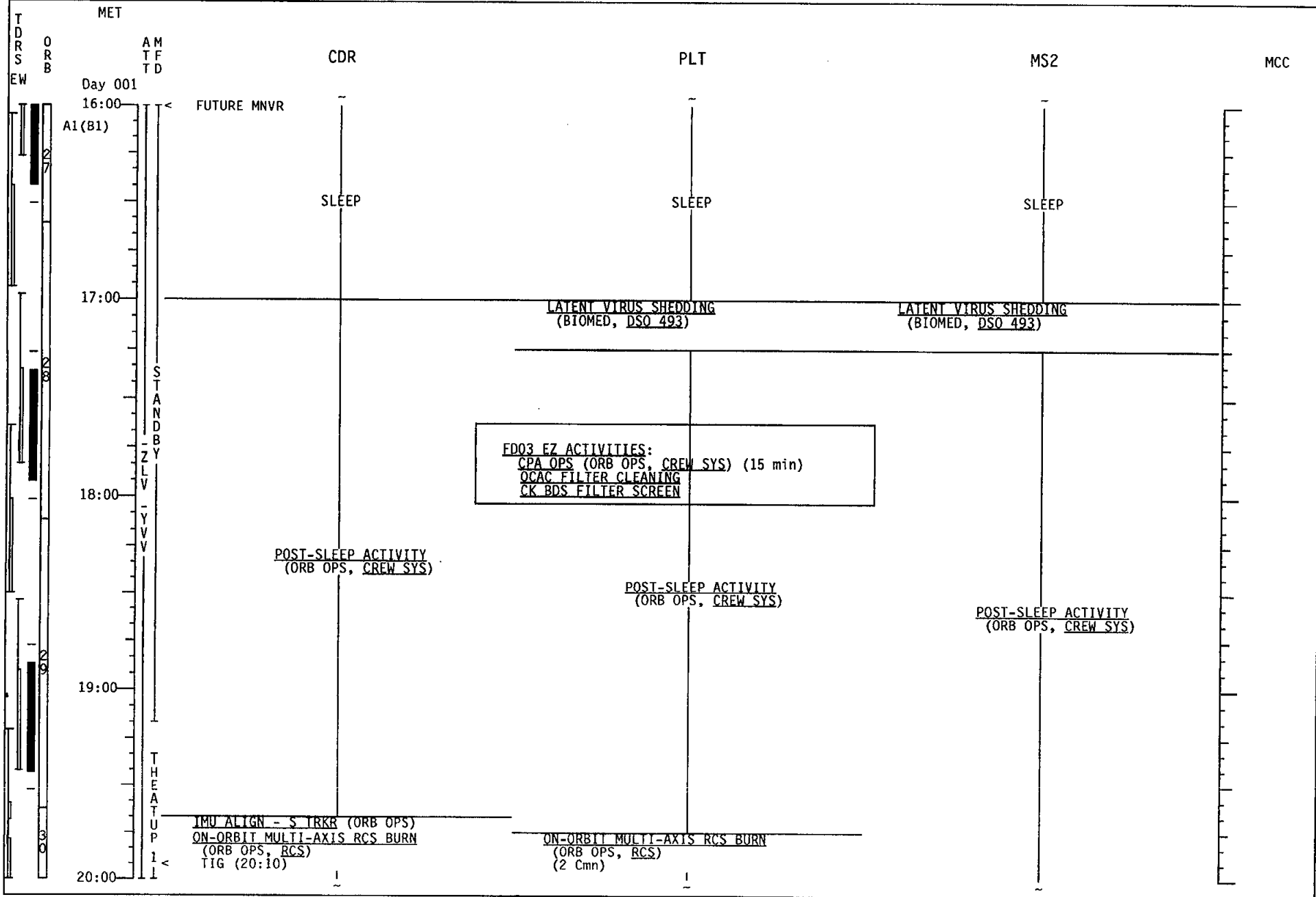


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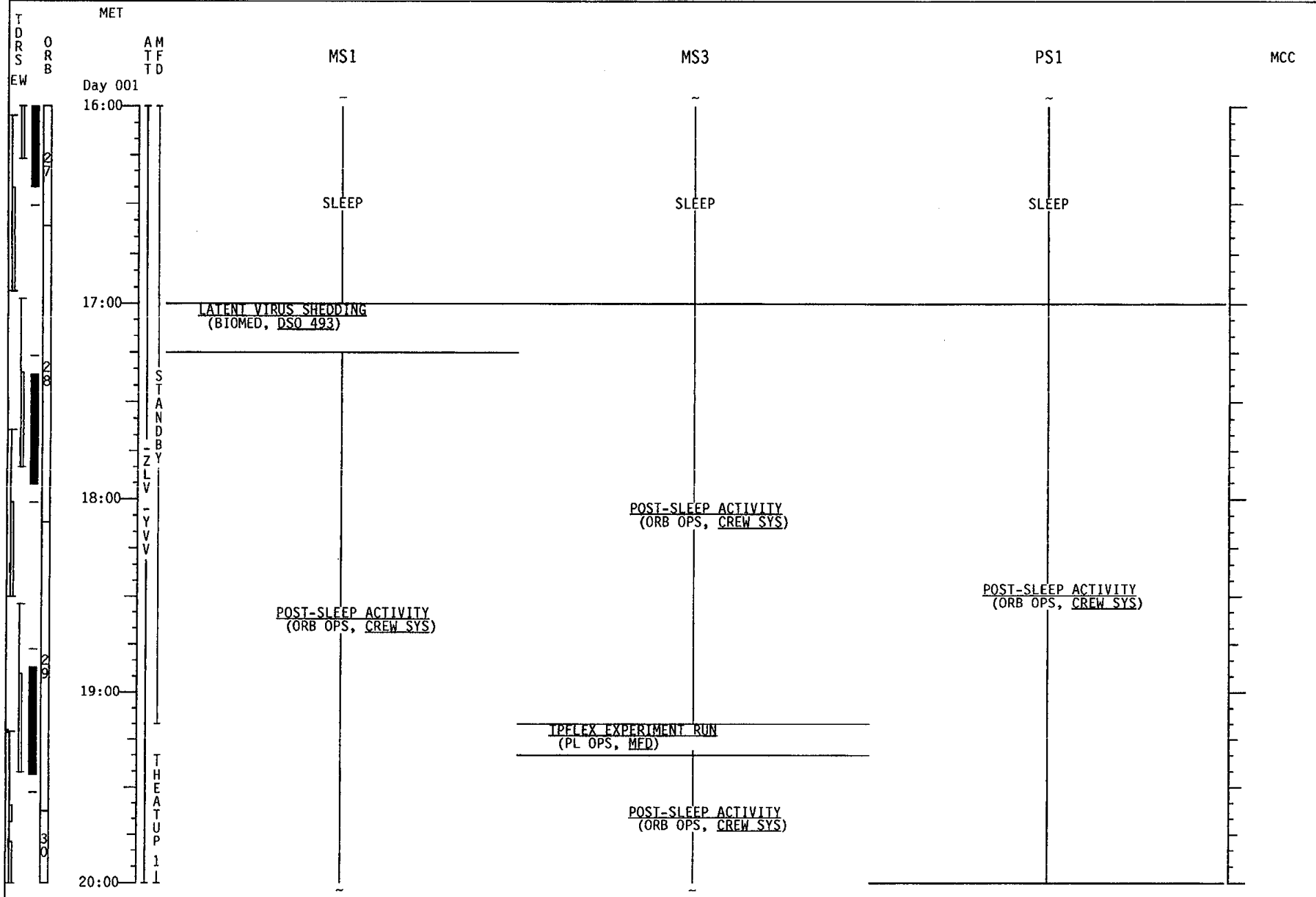




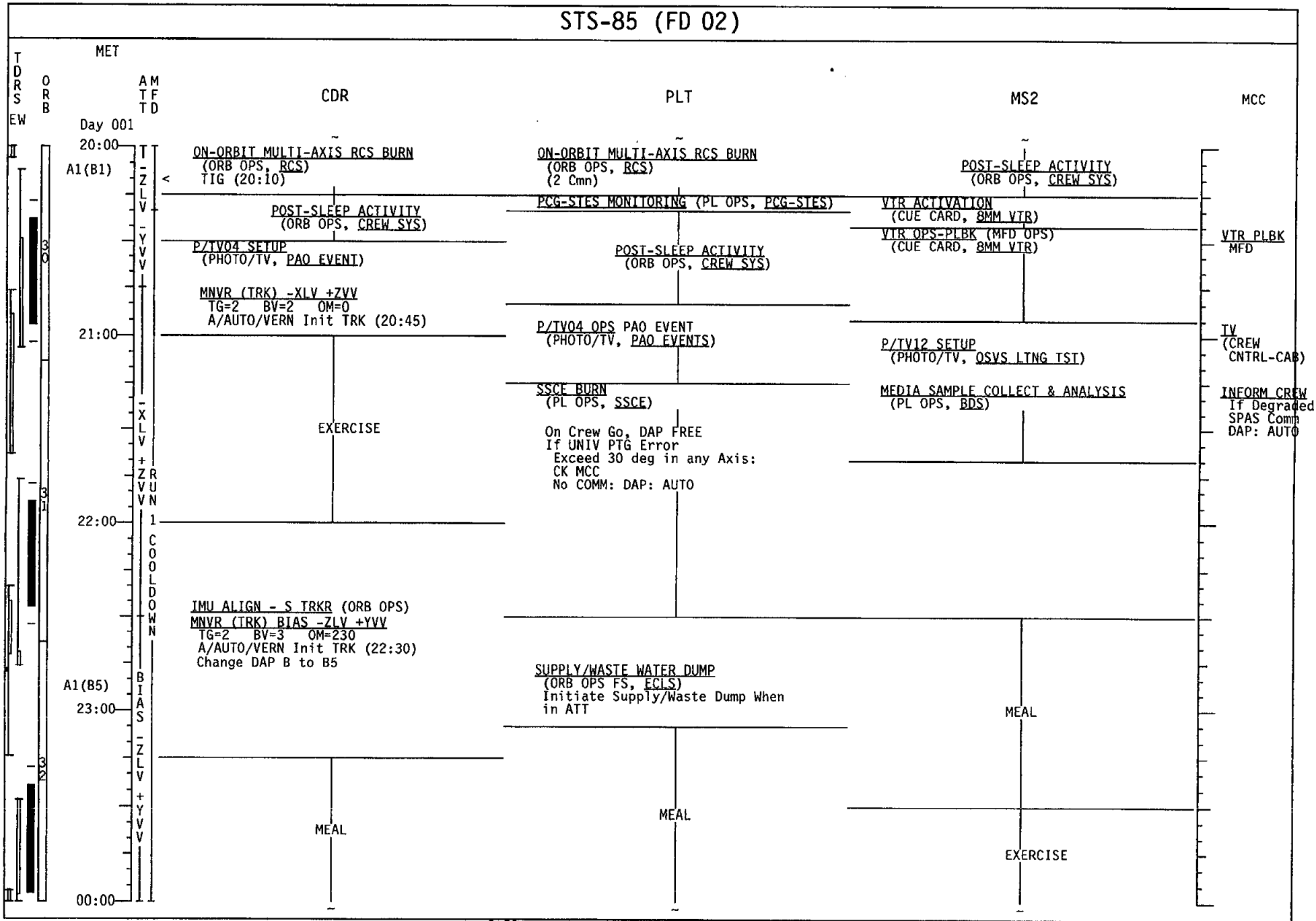
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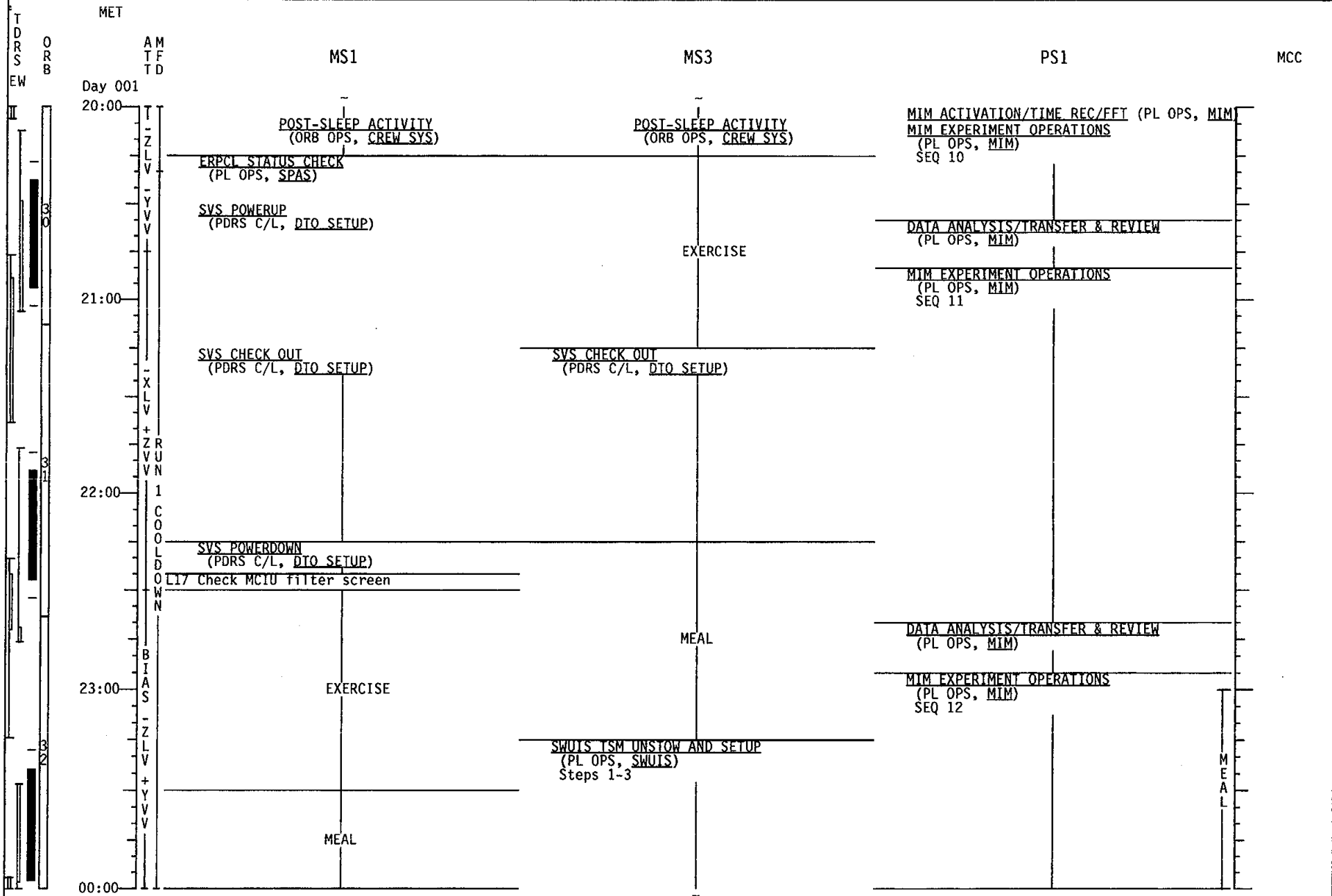
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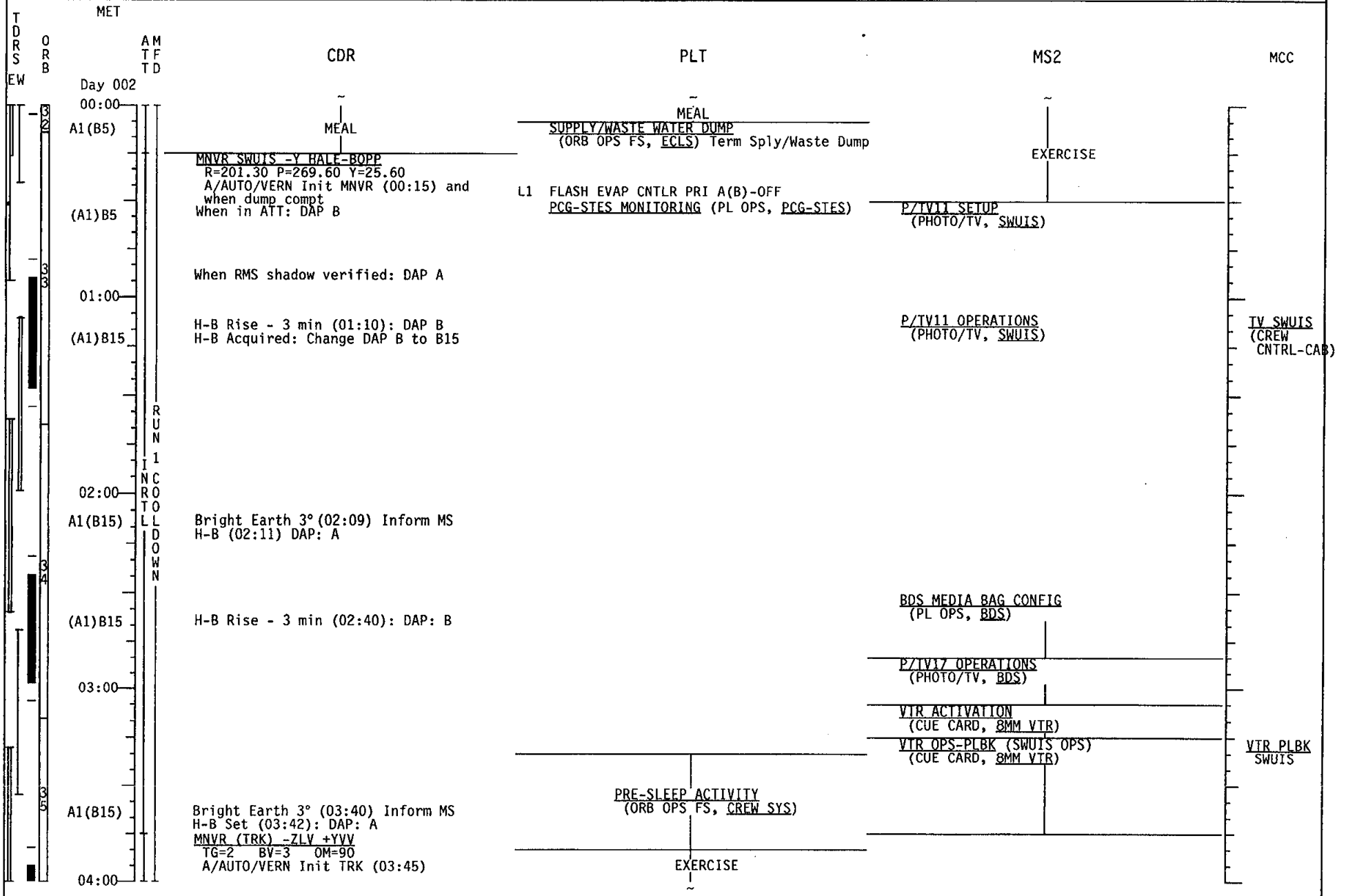
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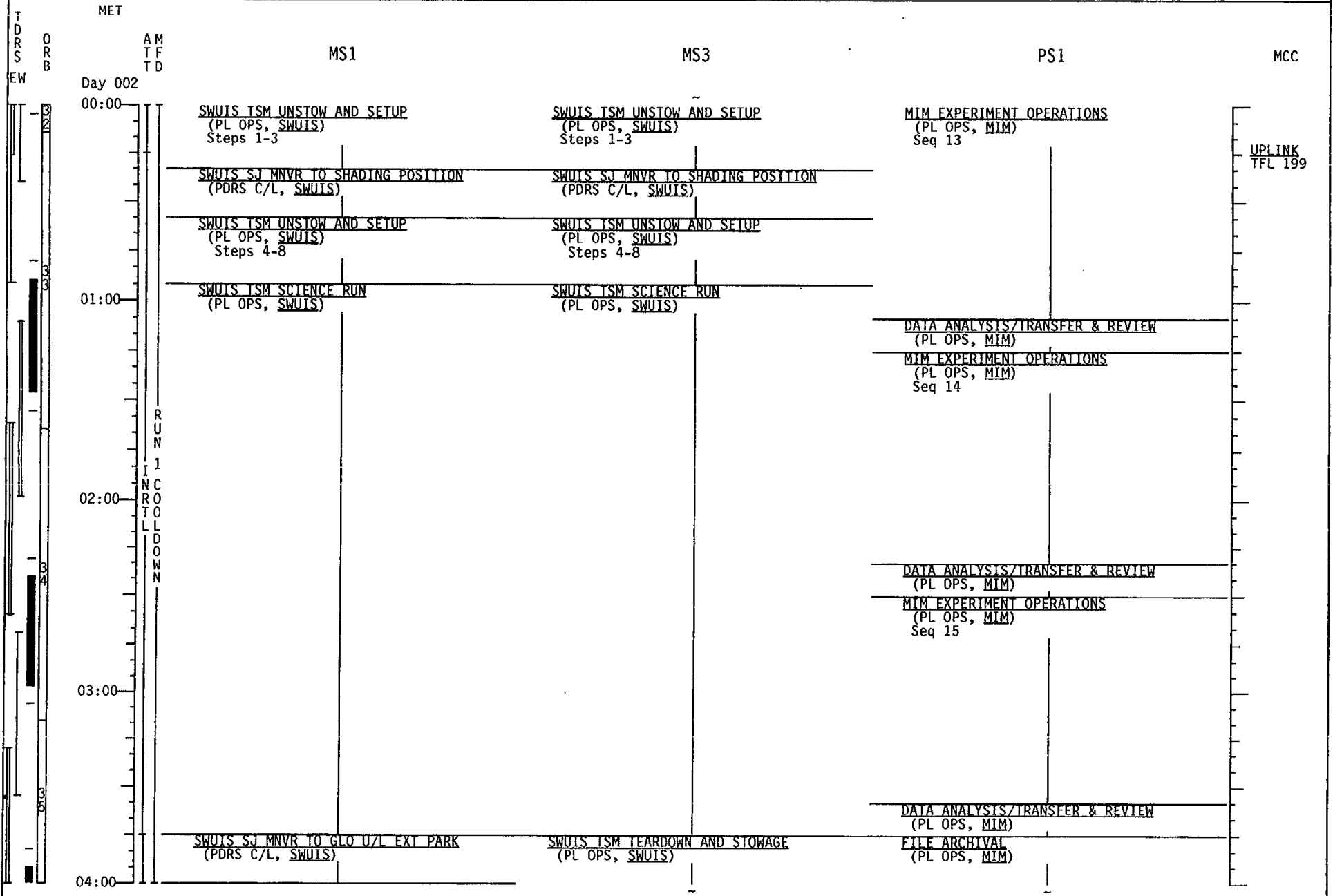
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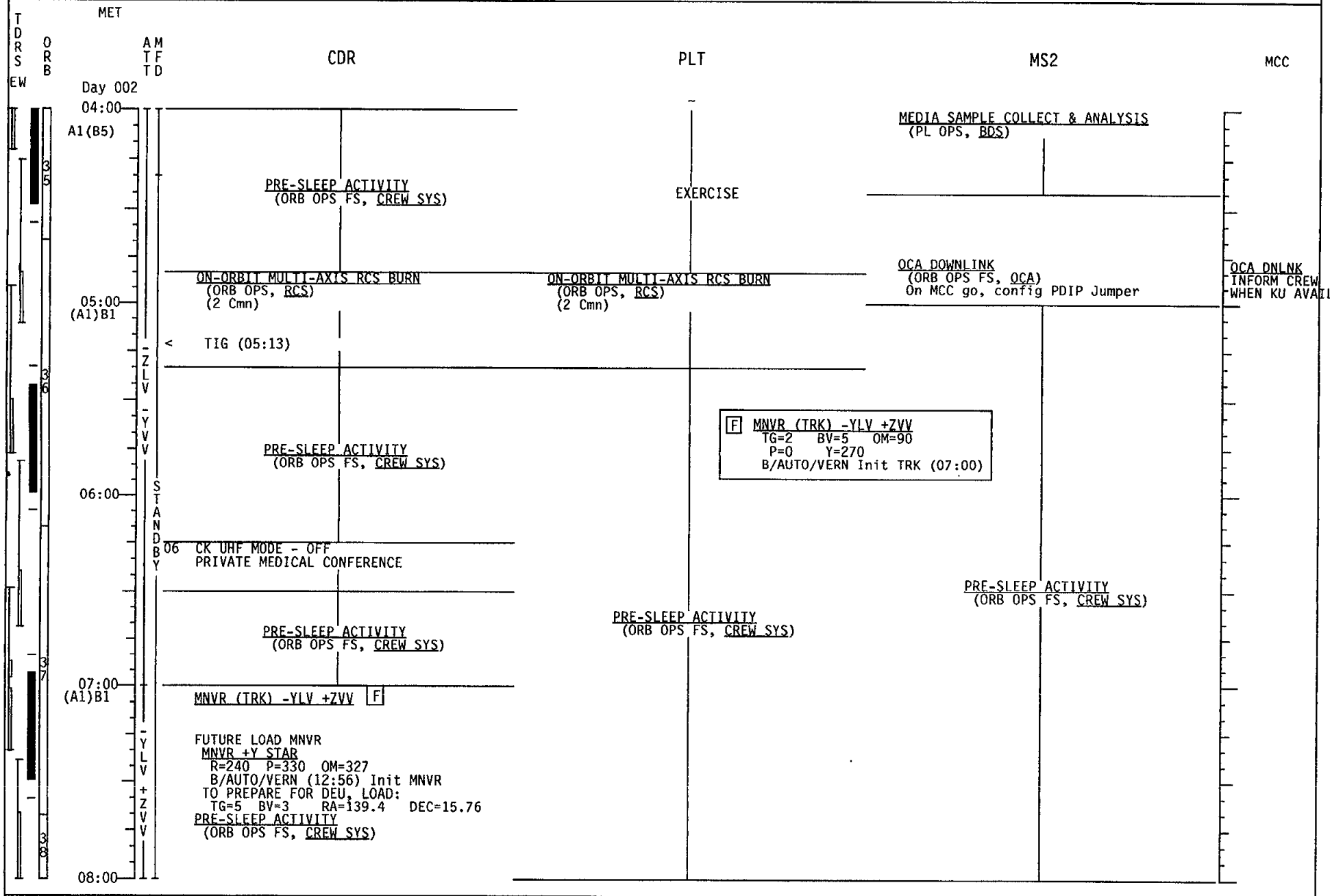
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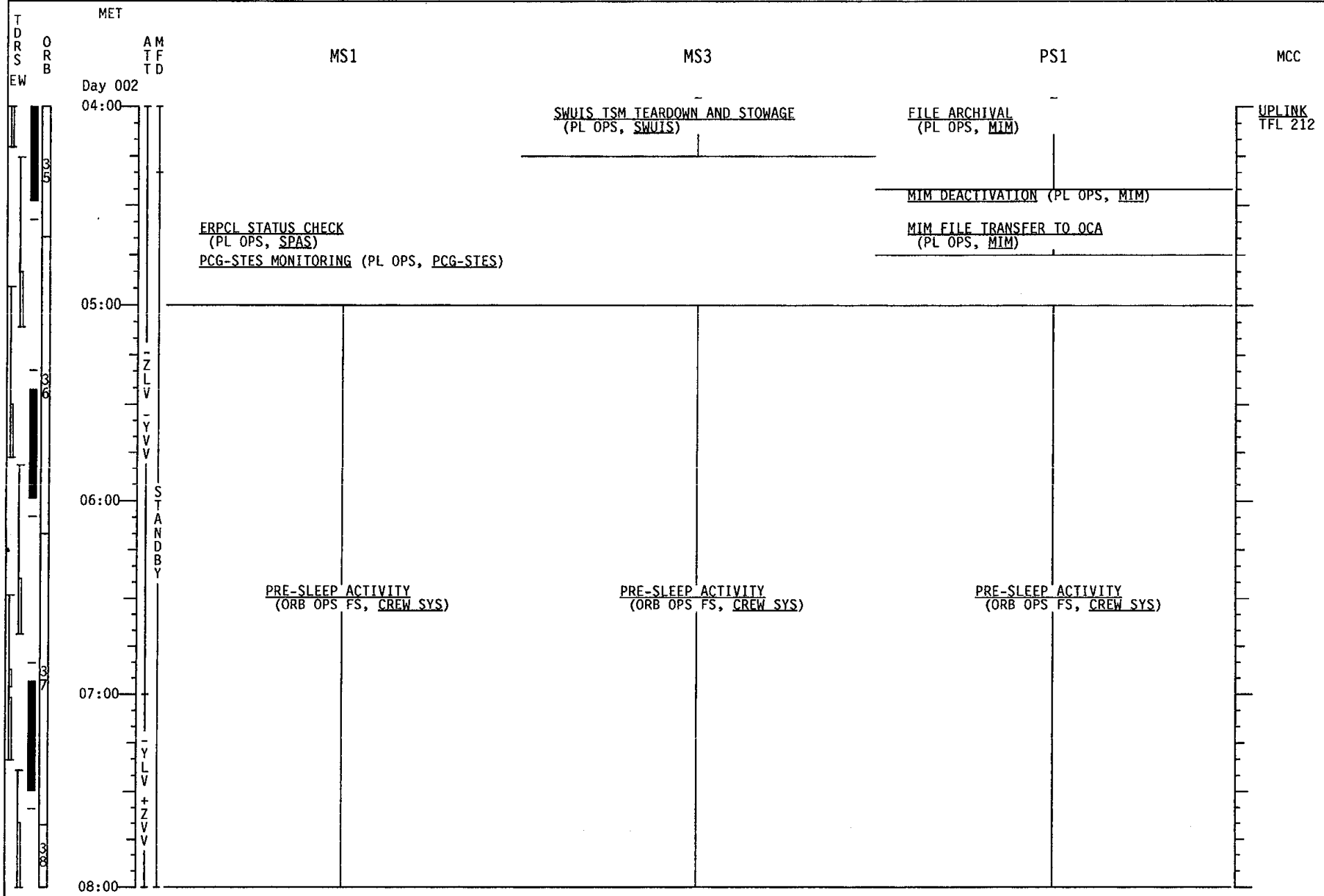
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# STS-85 (FD 03)

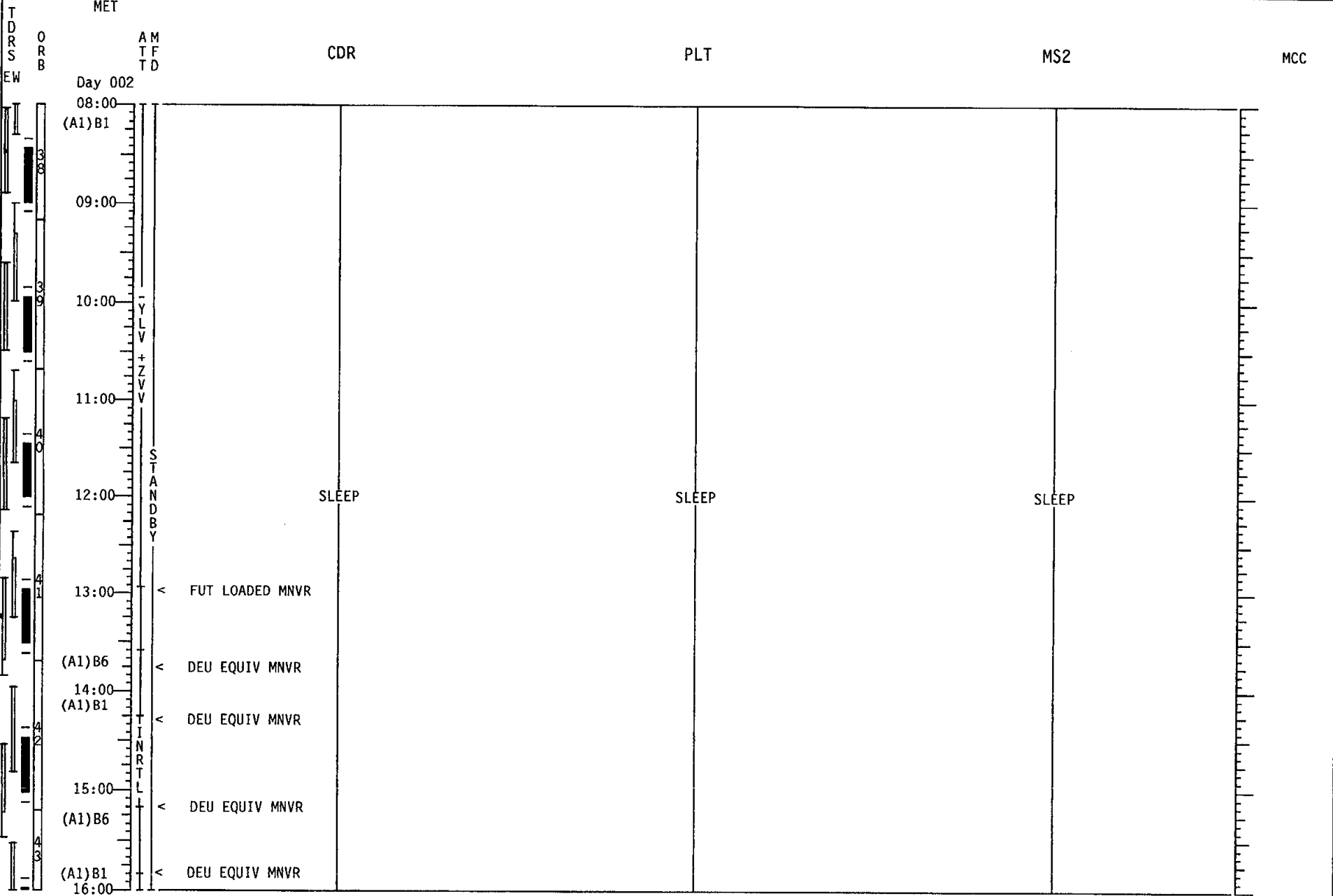


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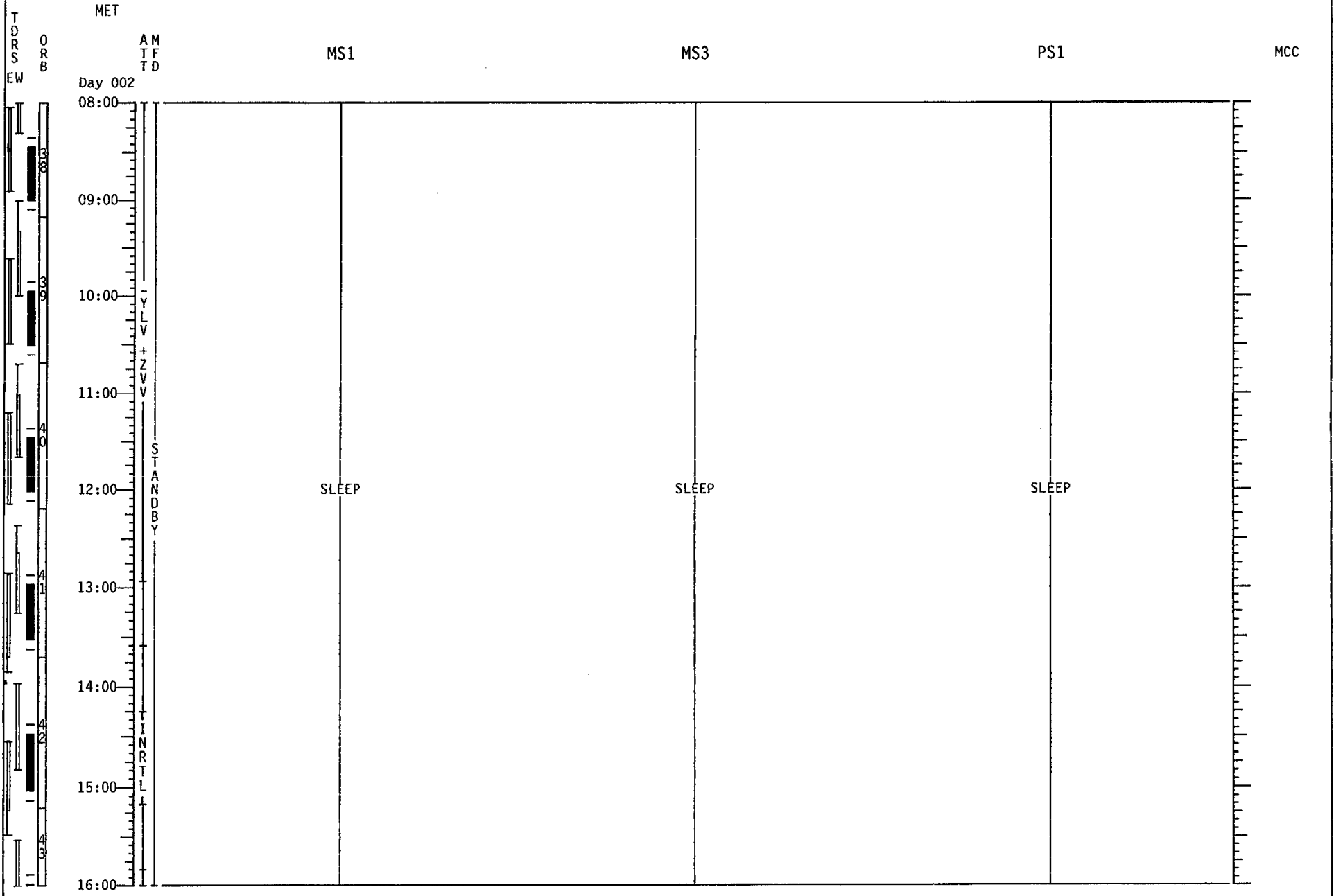




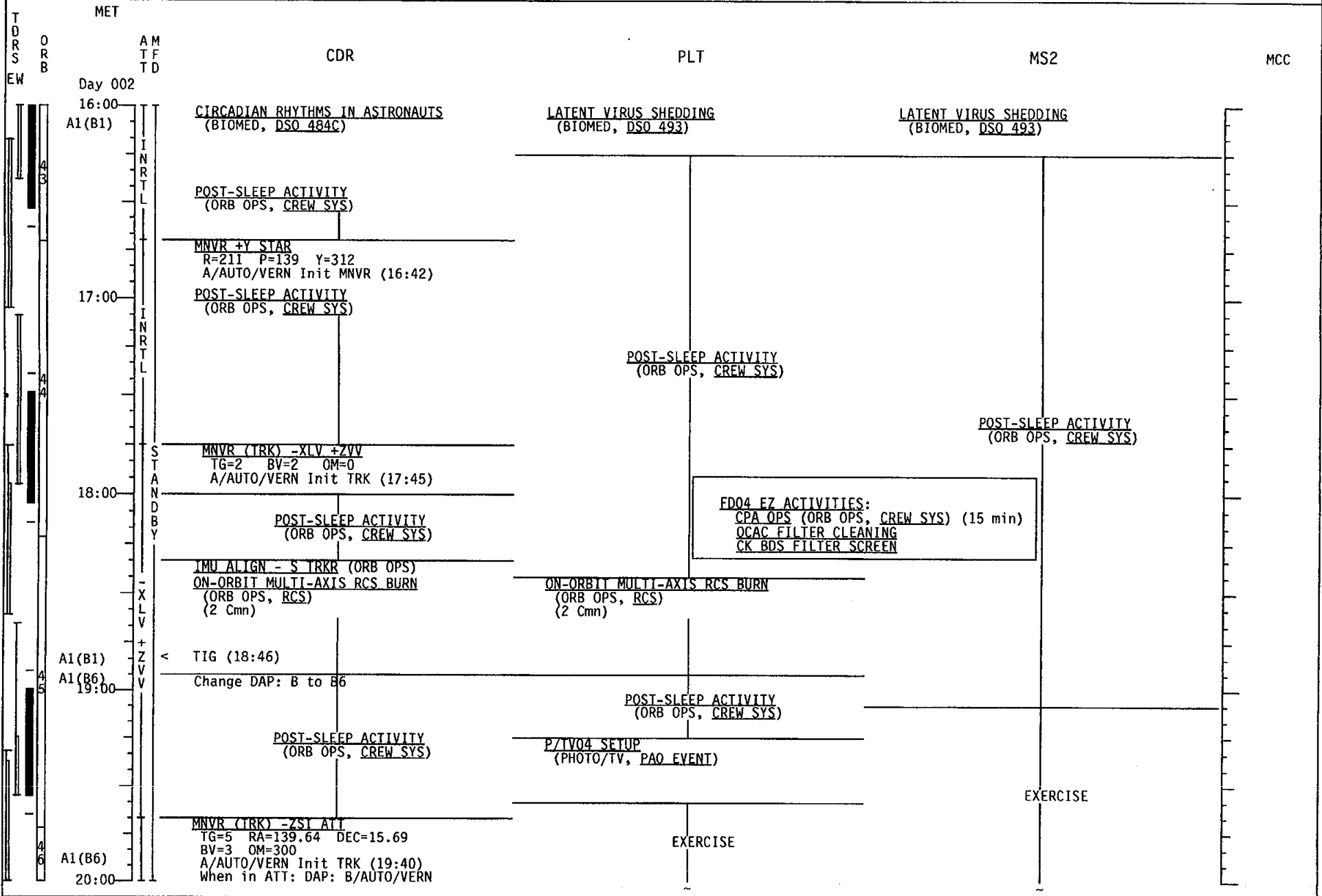
STS-85 (FD 03)



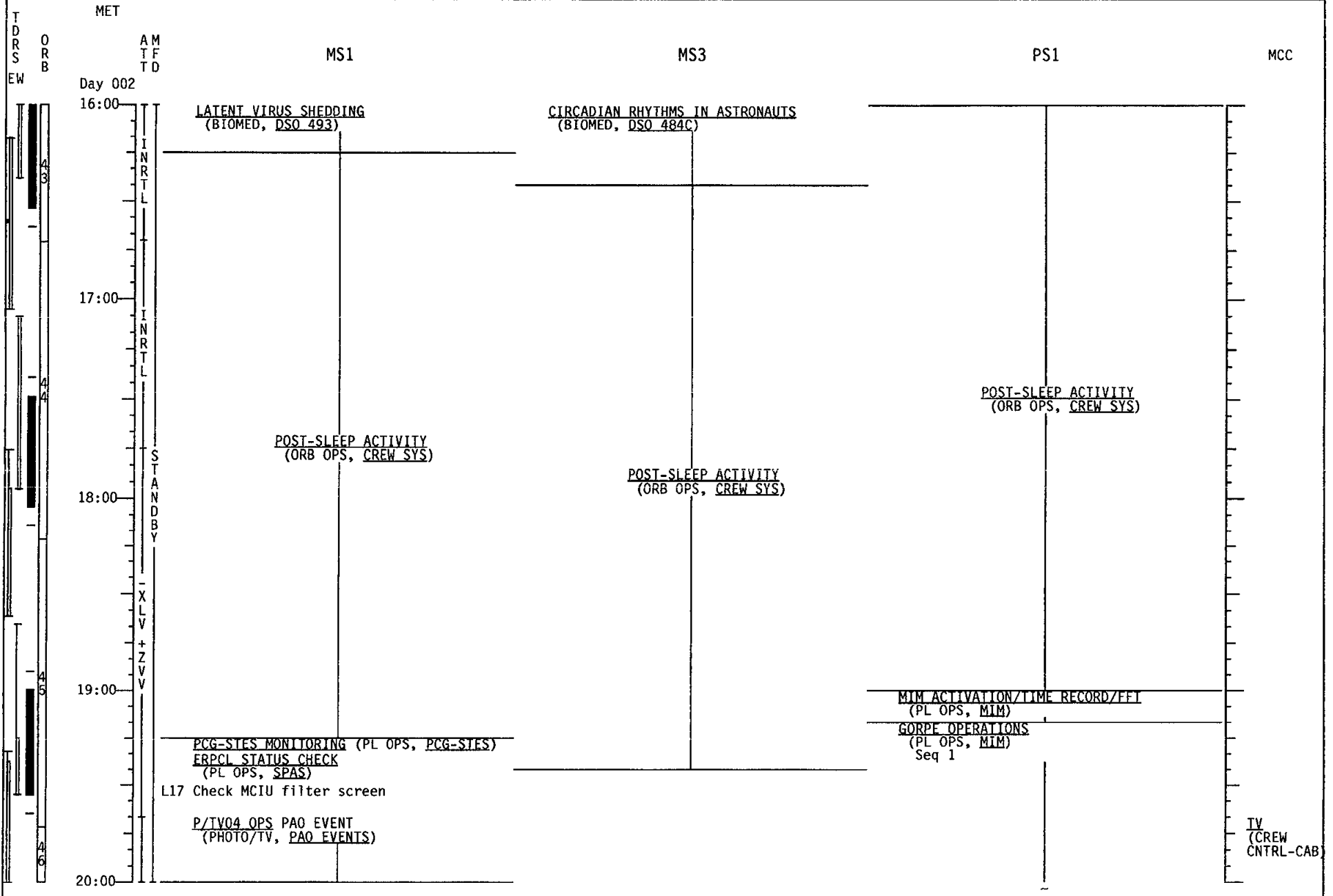
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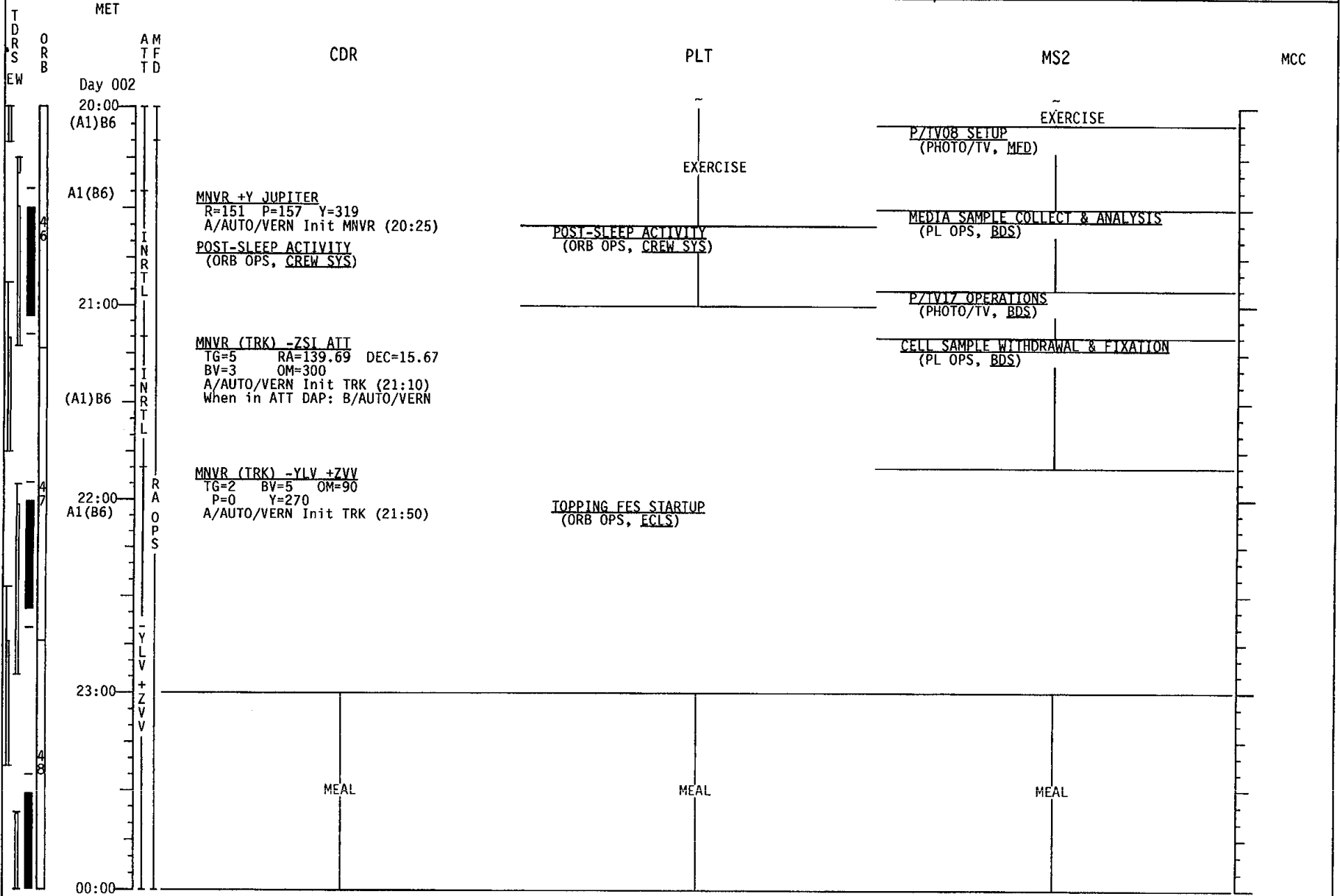
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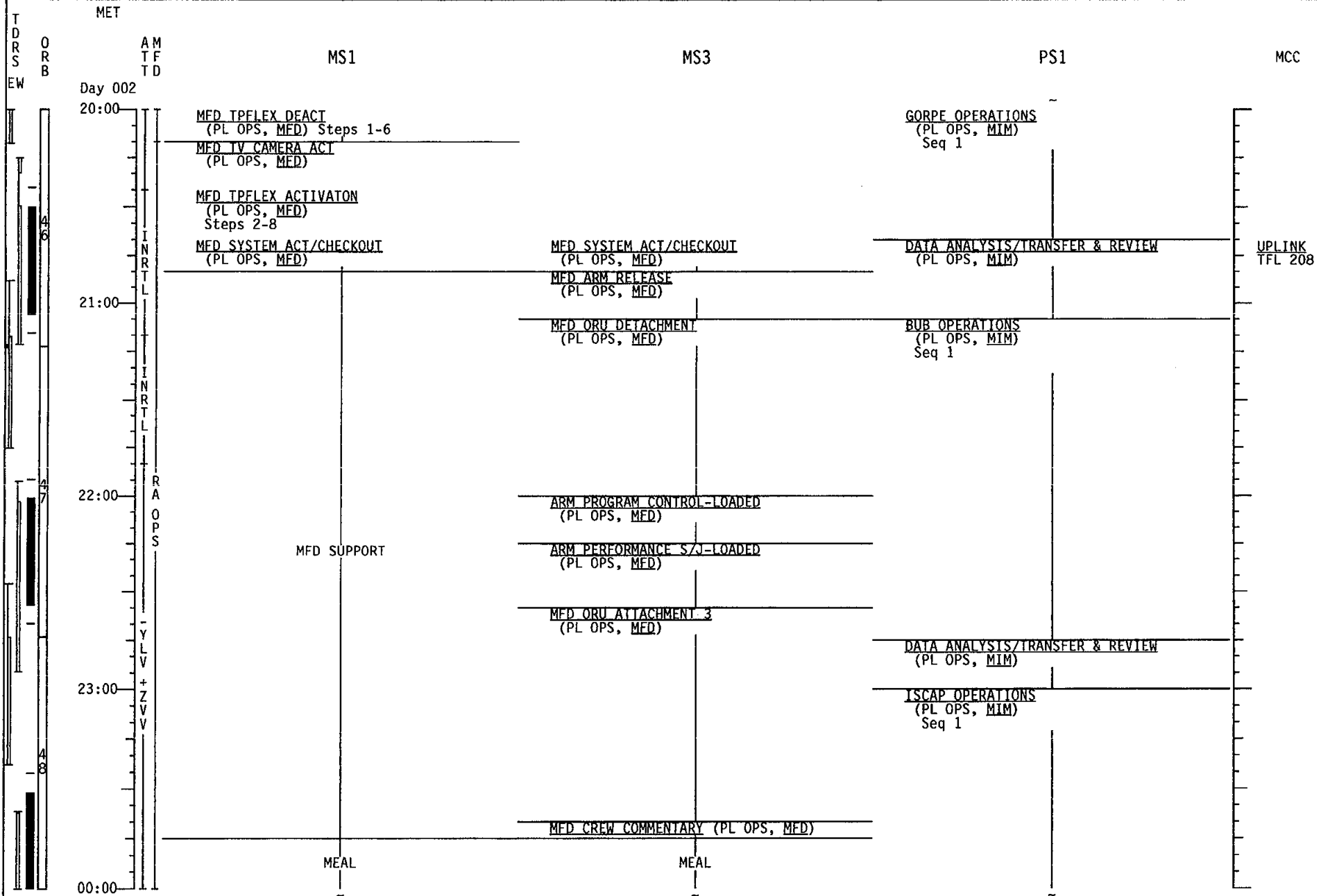
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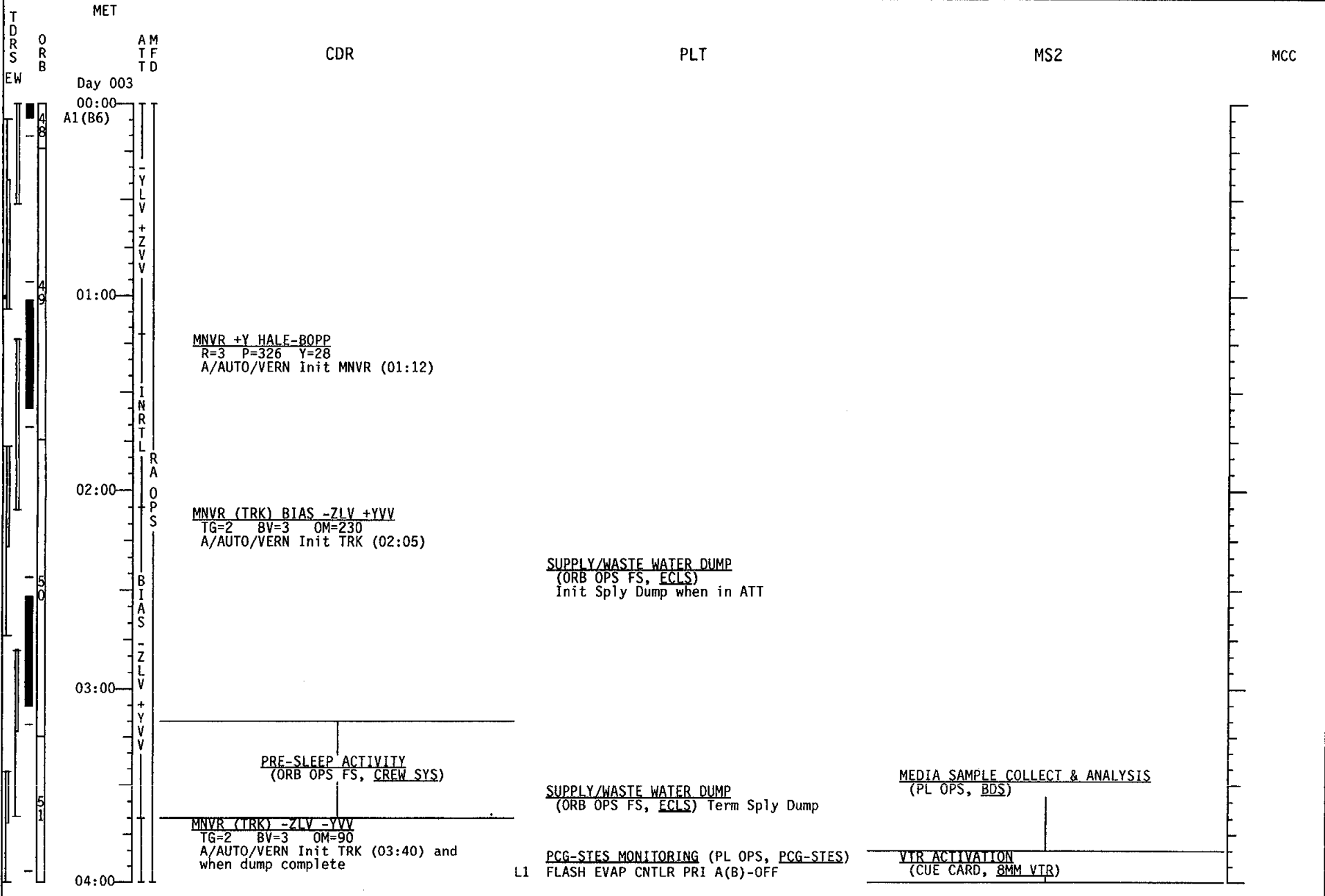
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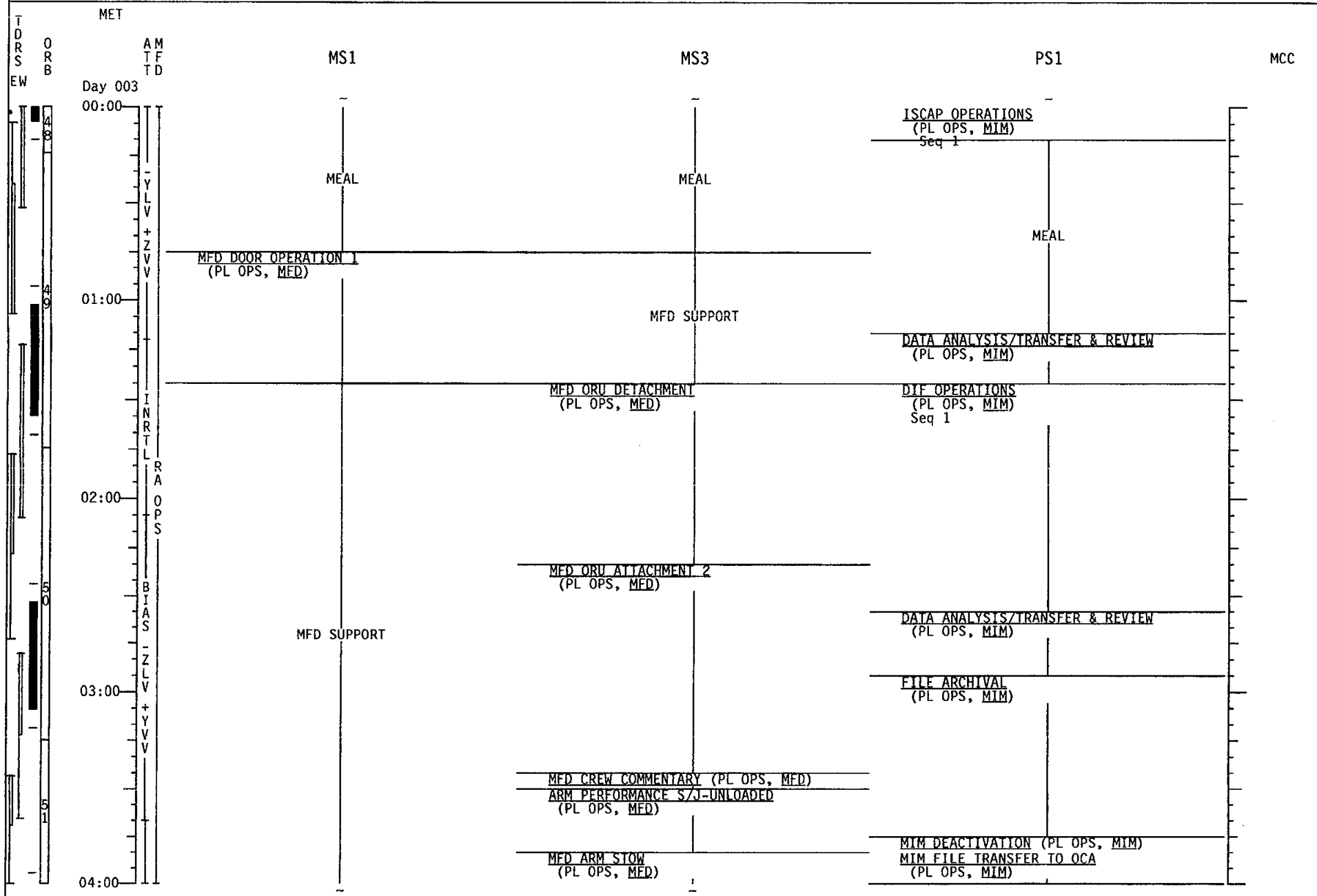
# STS-85 (FD 04)



# STS-85 (FD 04)

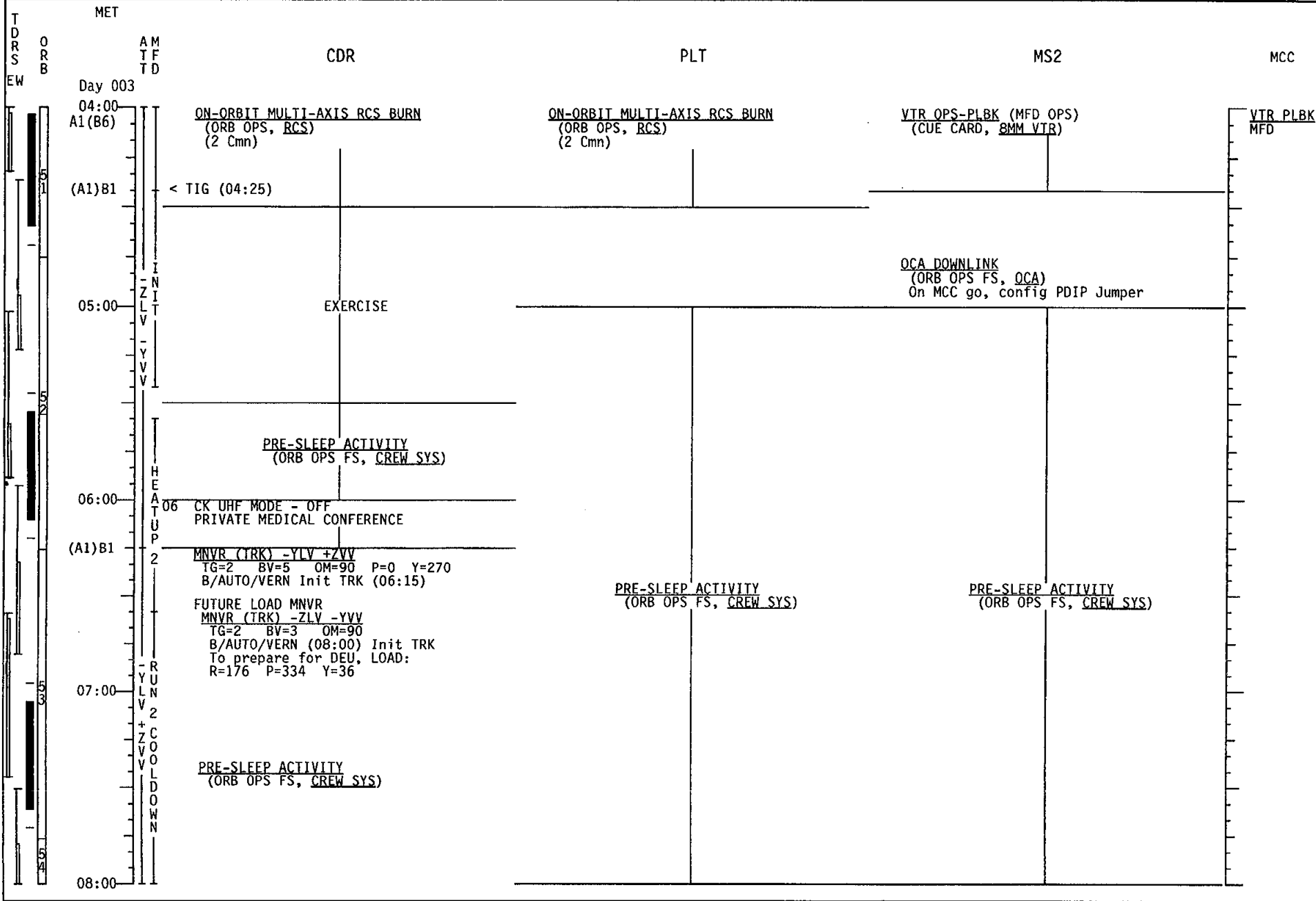


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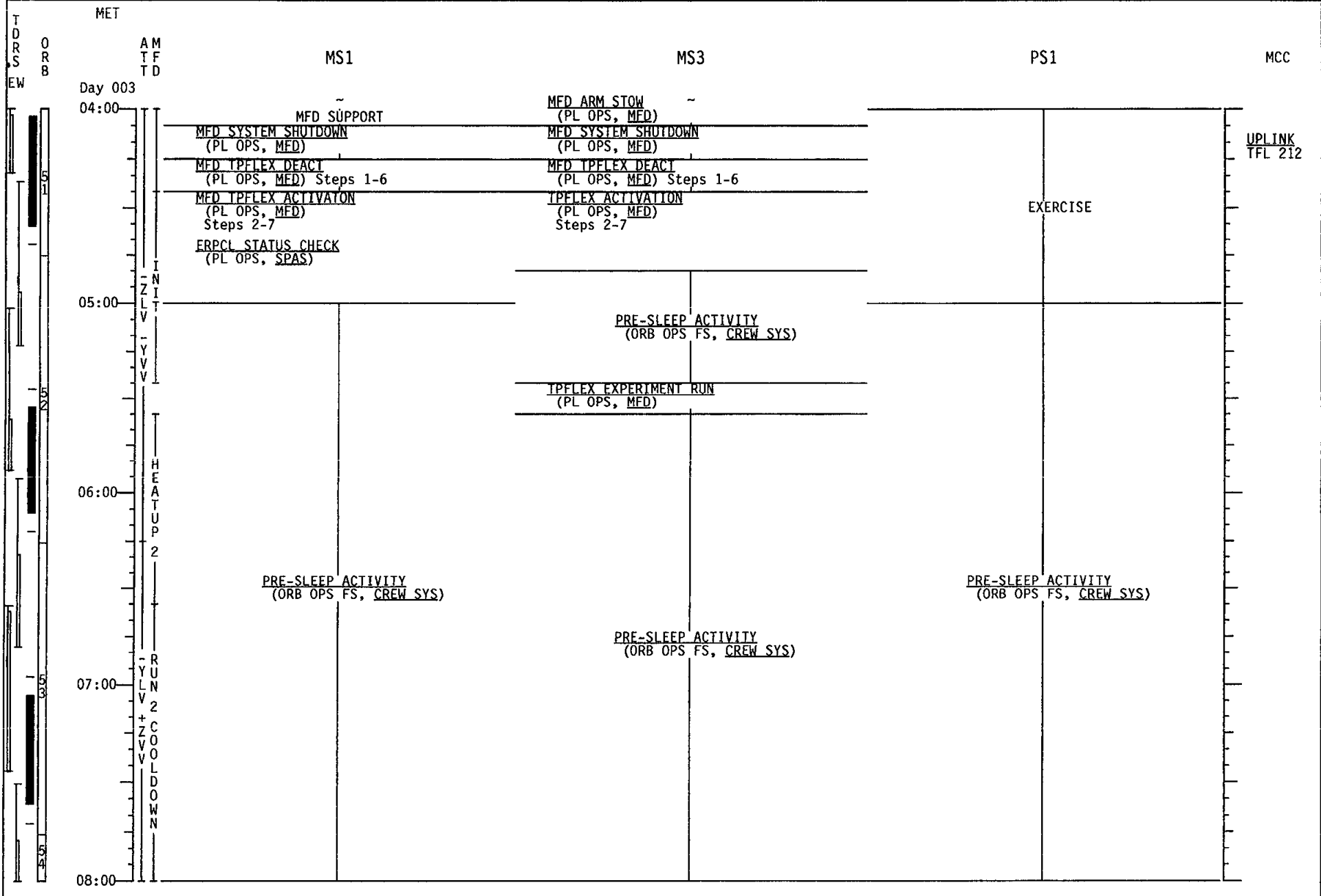




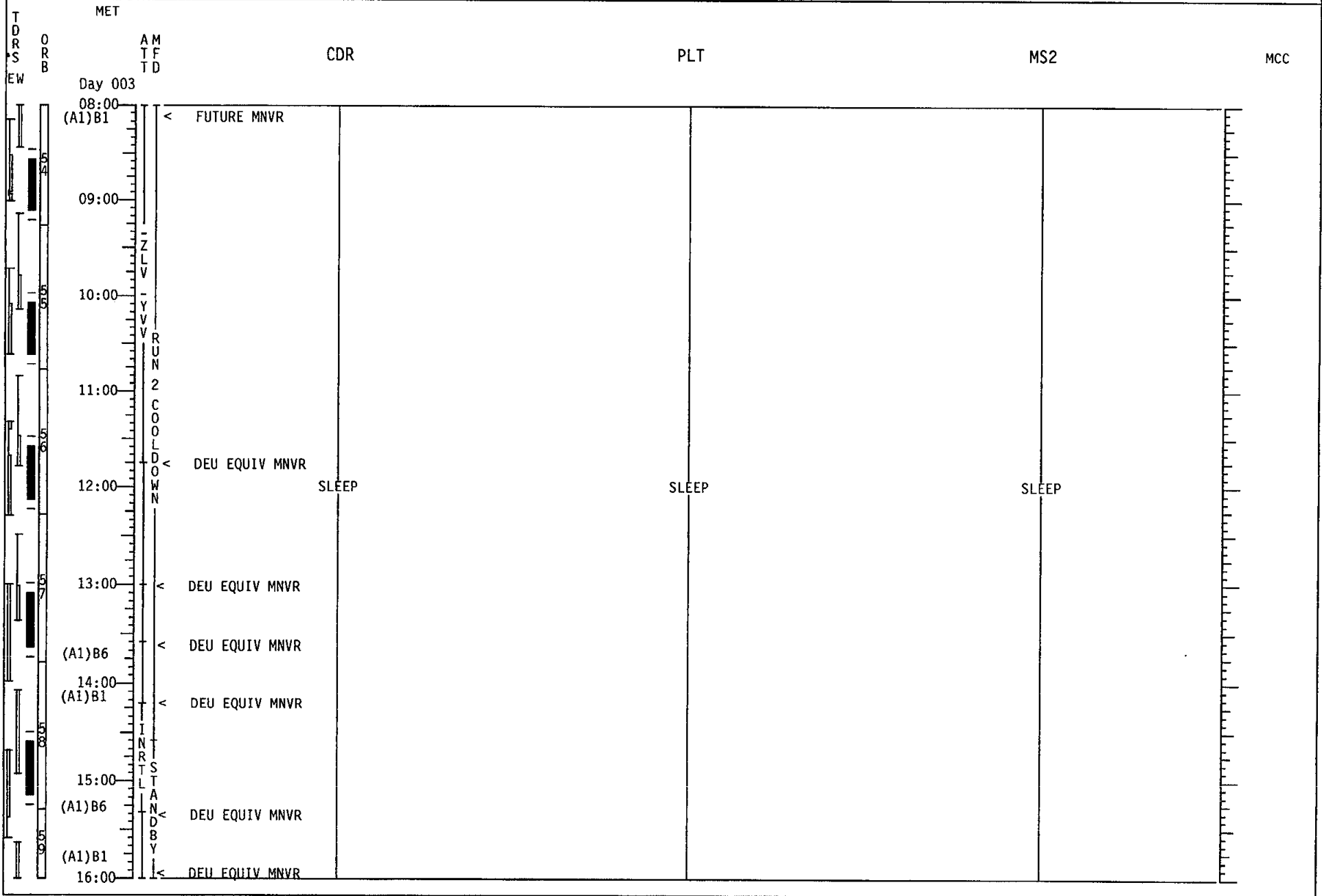
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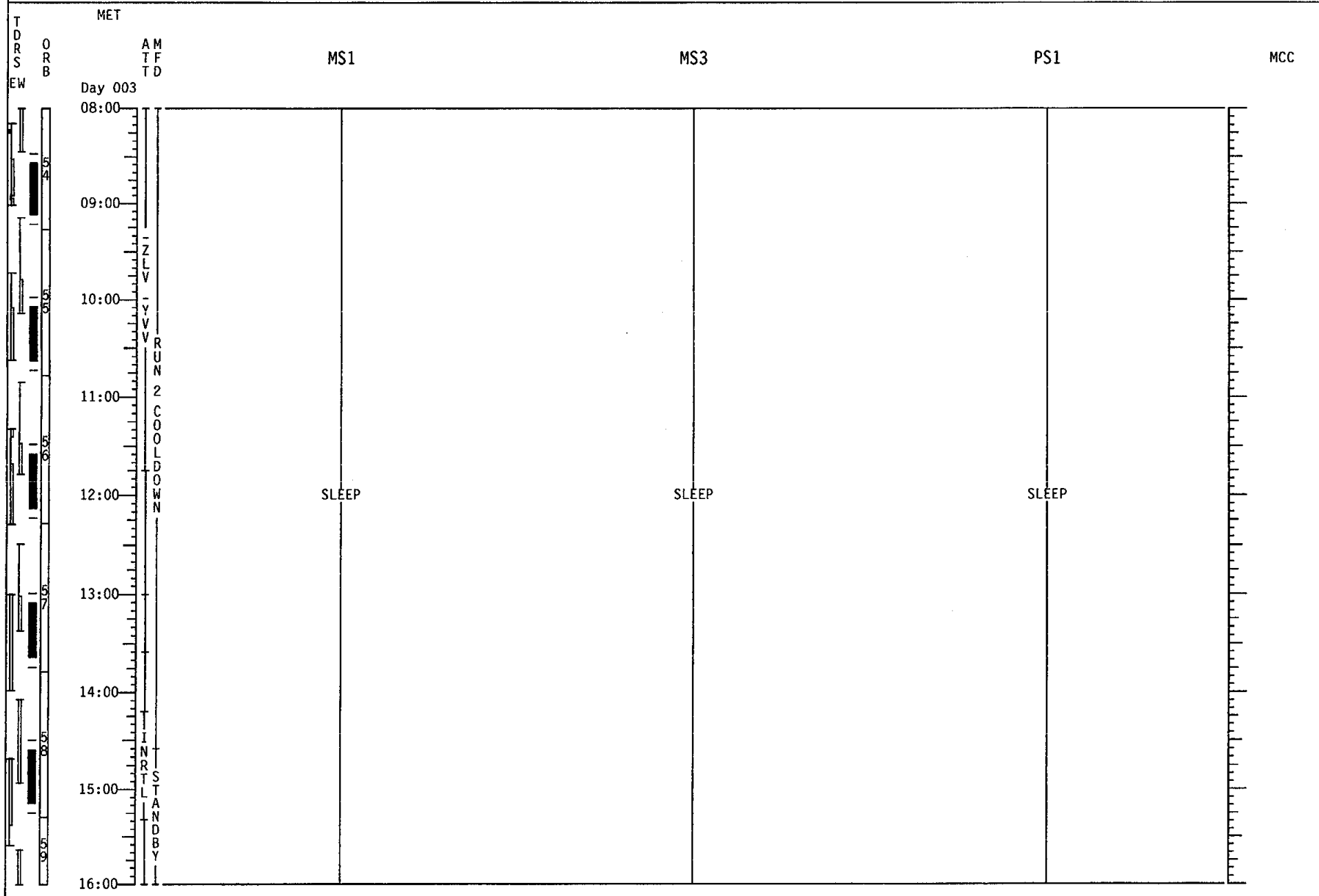
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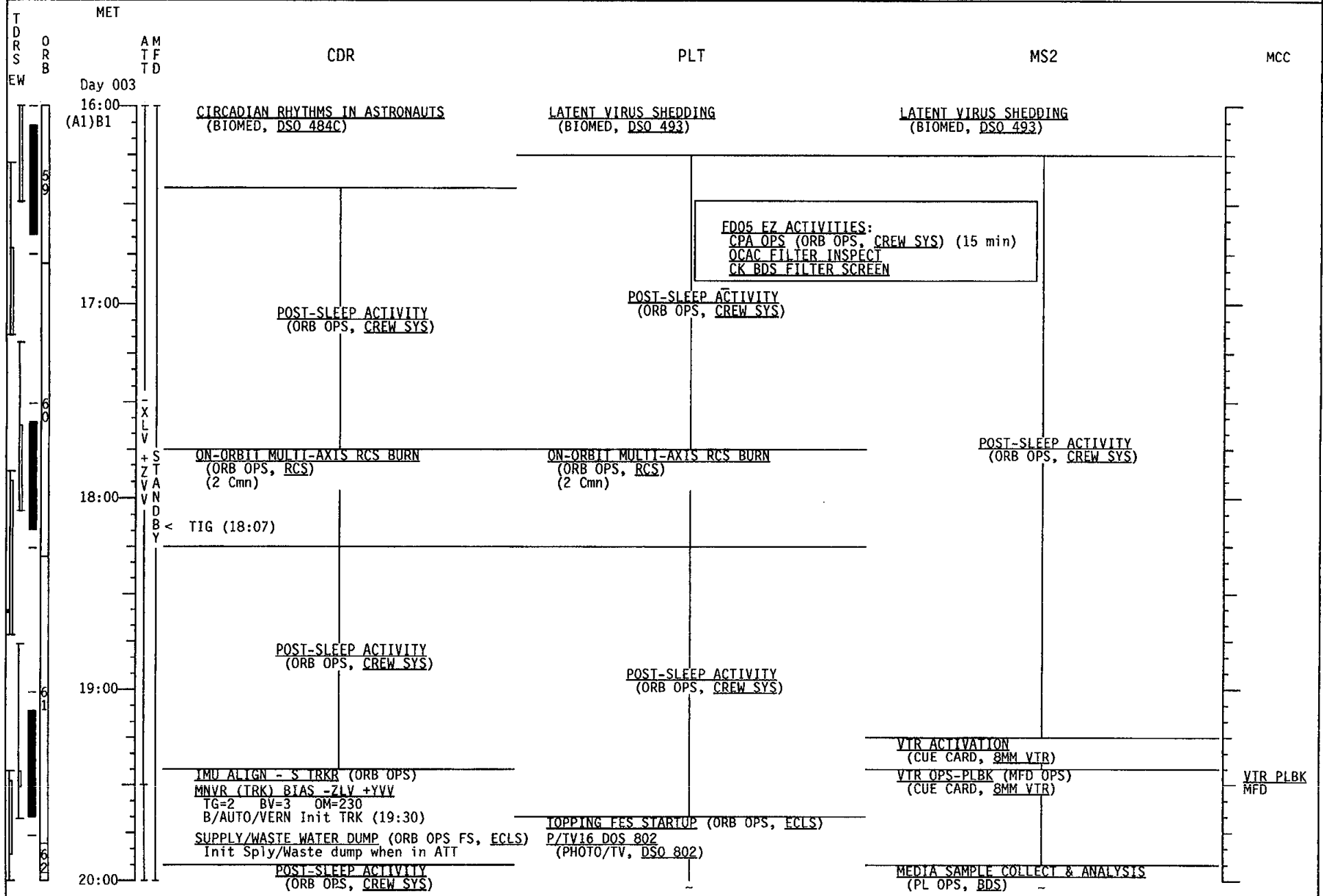
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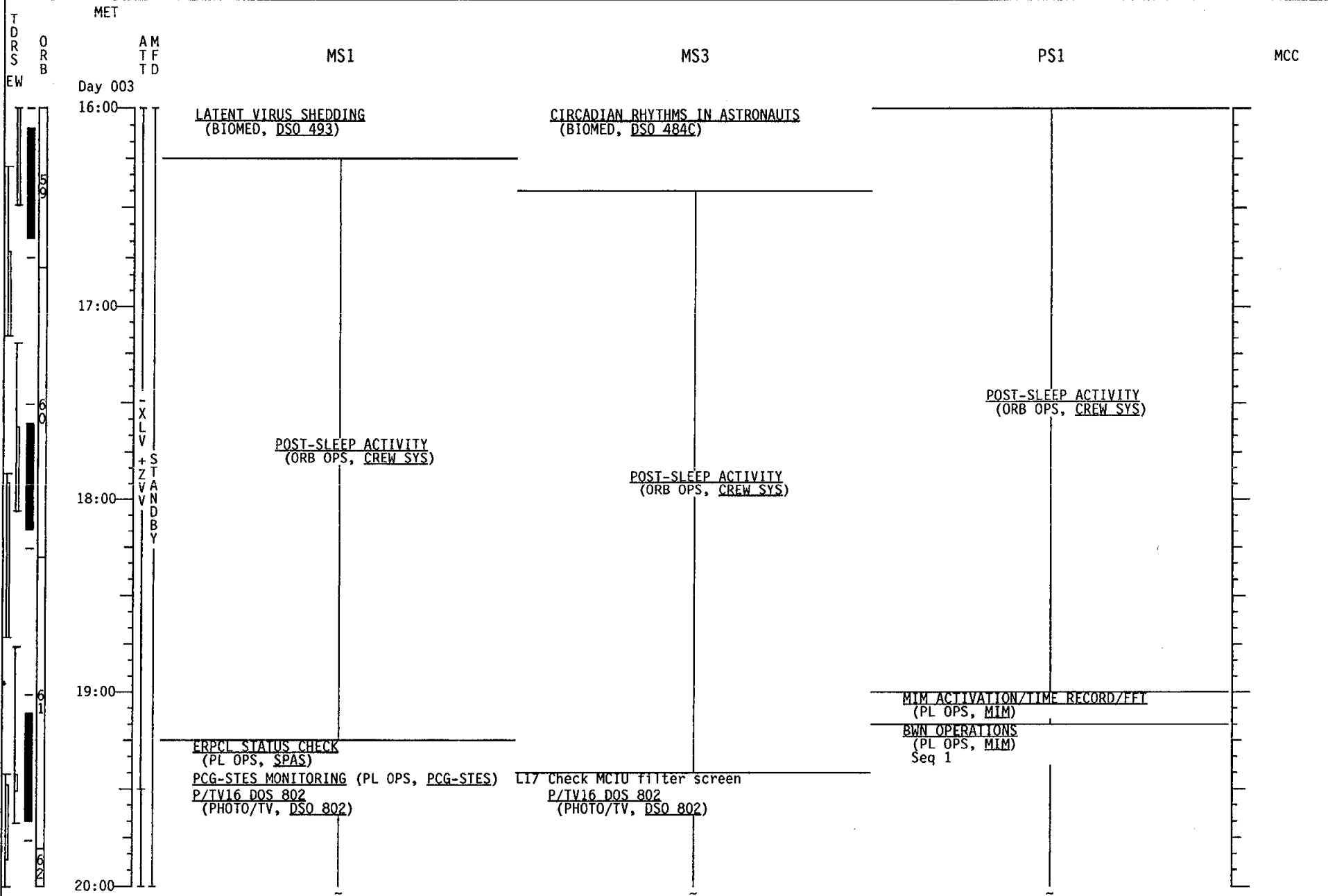
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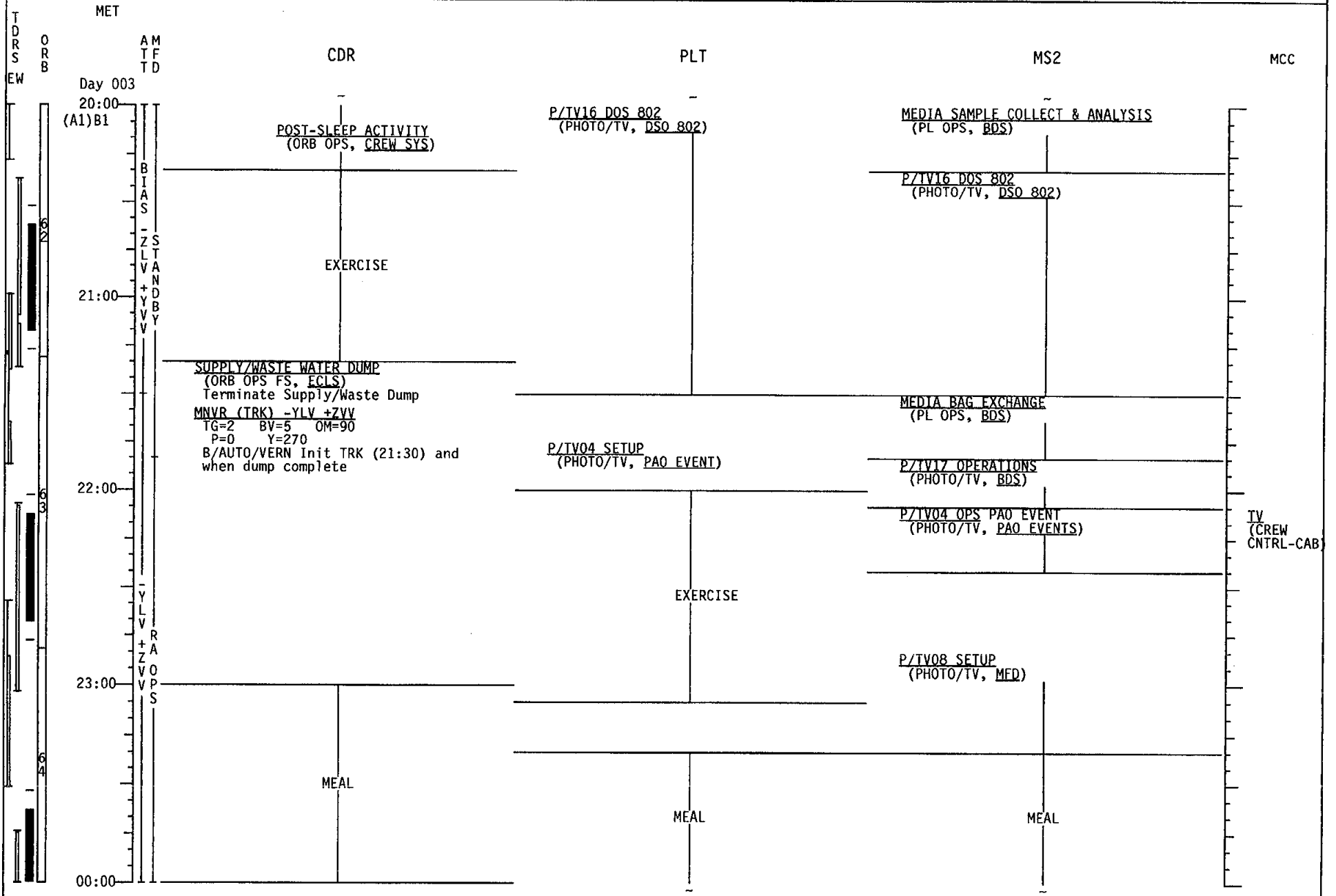
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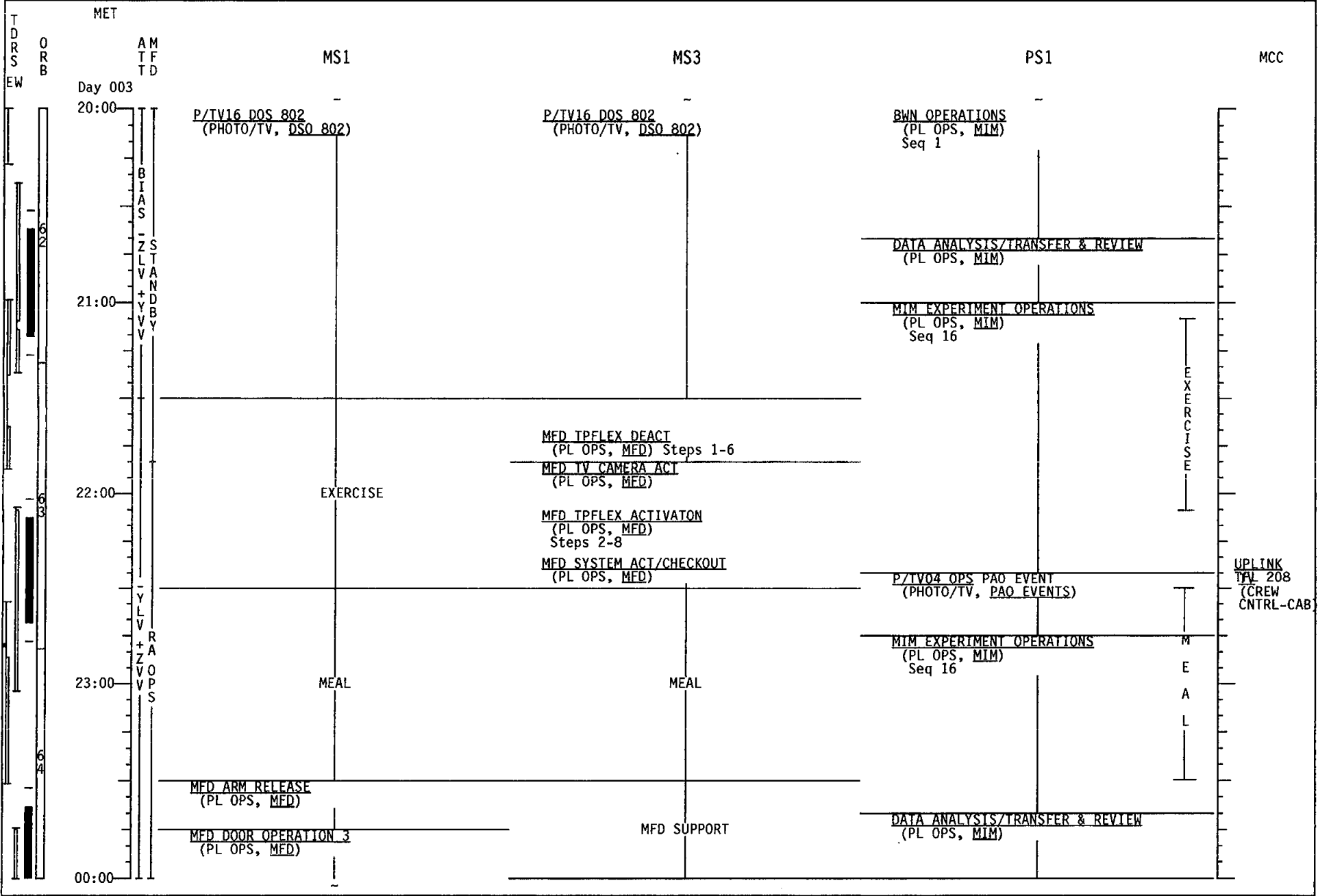
# STS-85 (FD 05)



# STS-85 (FD 05)

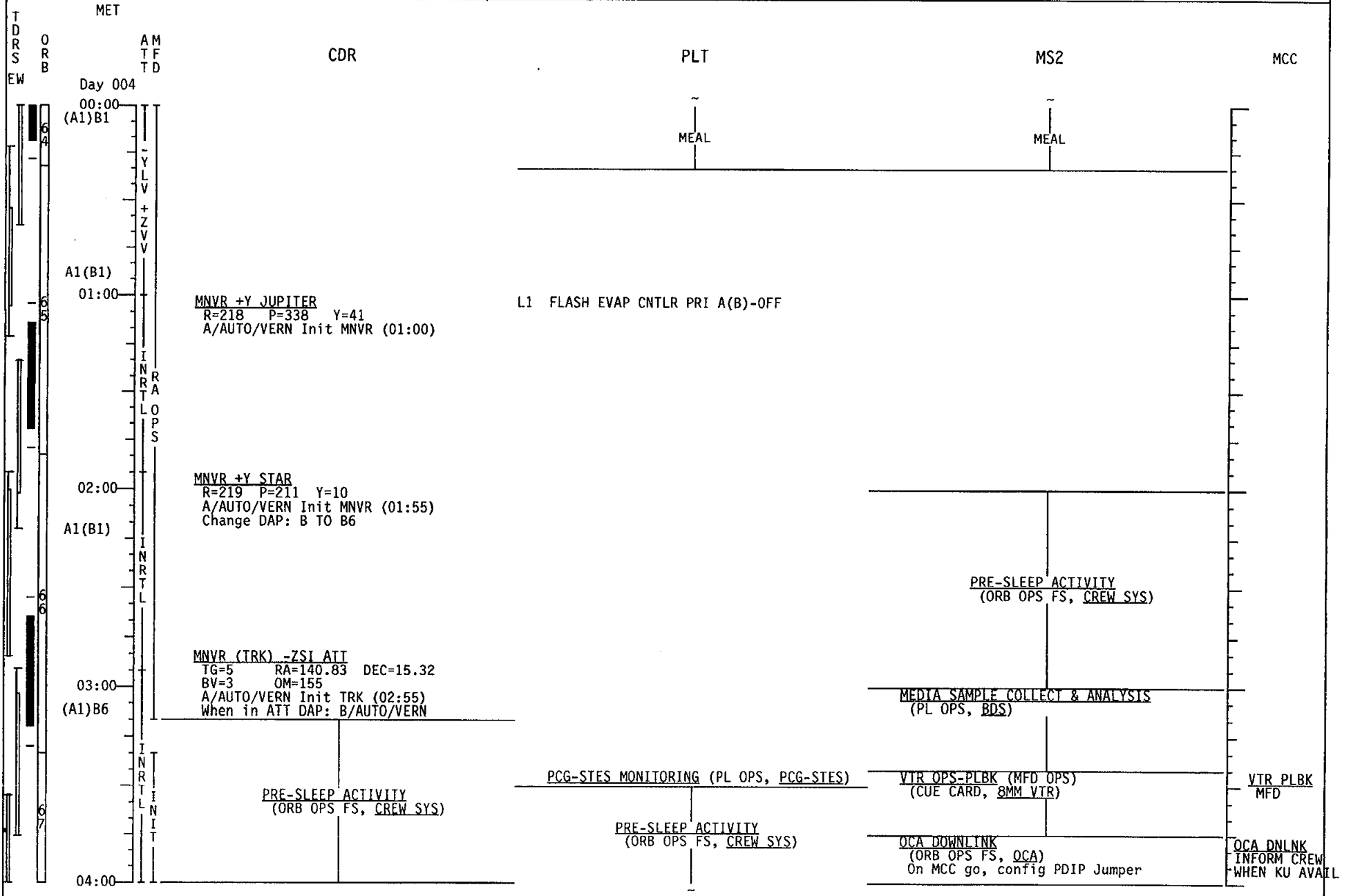


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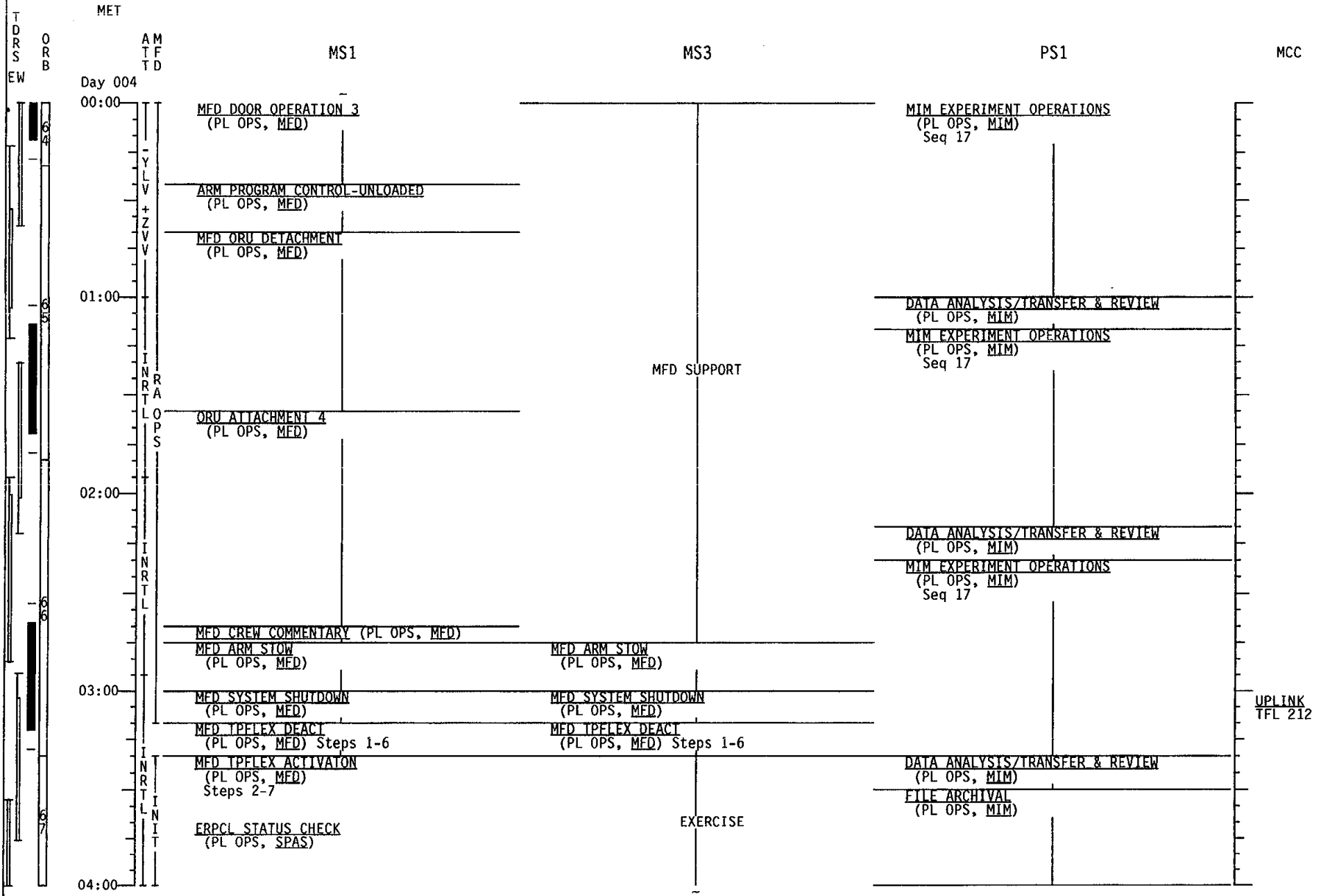




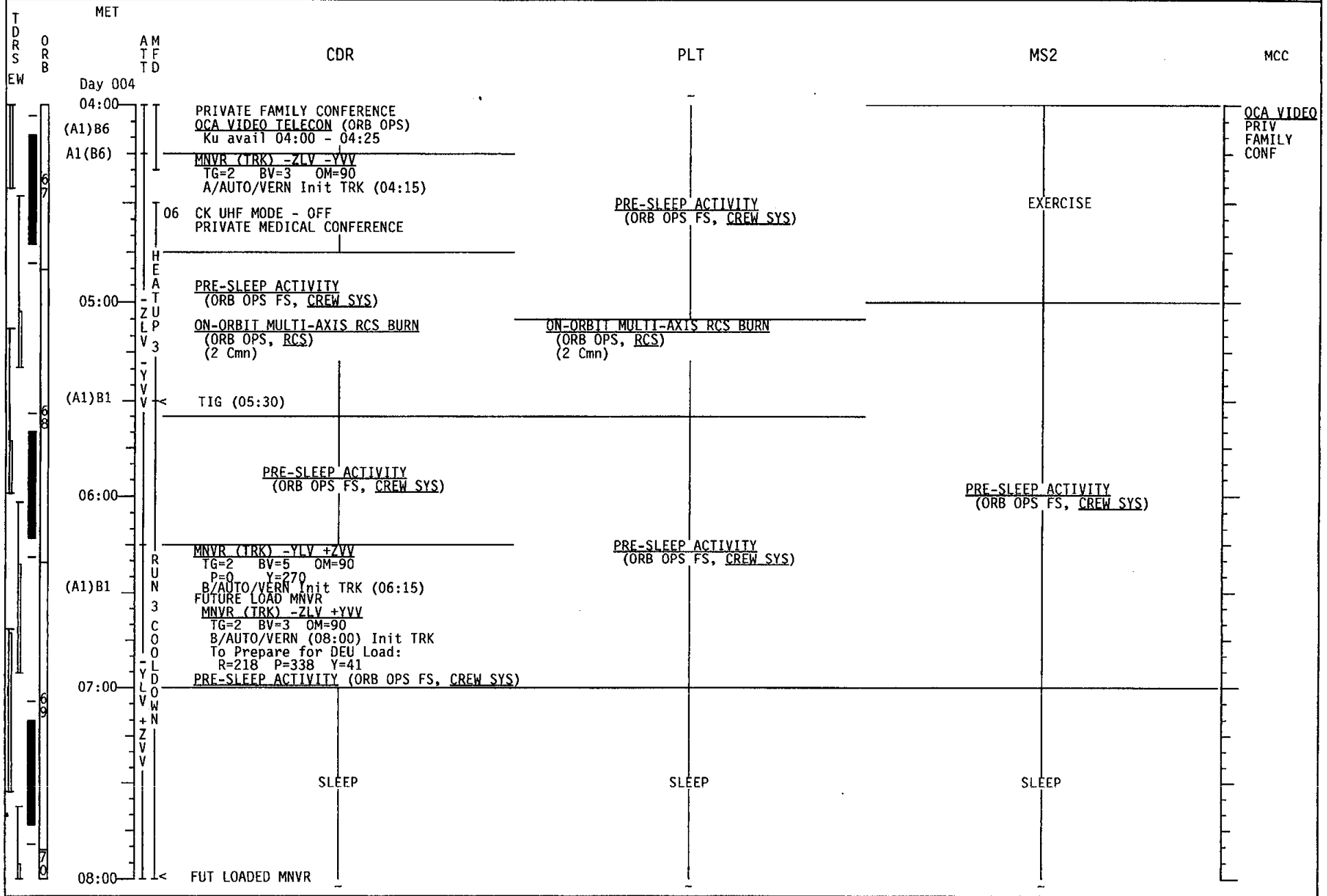
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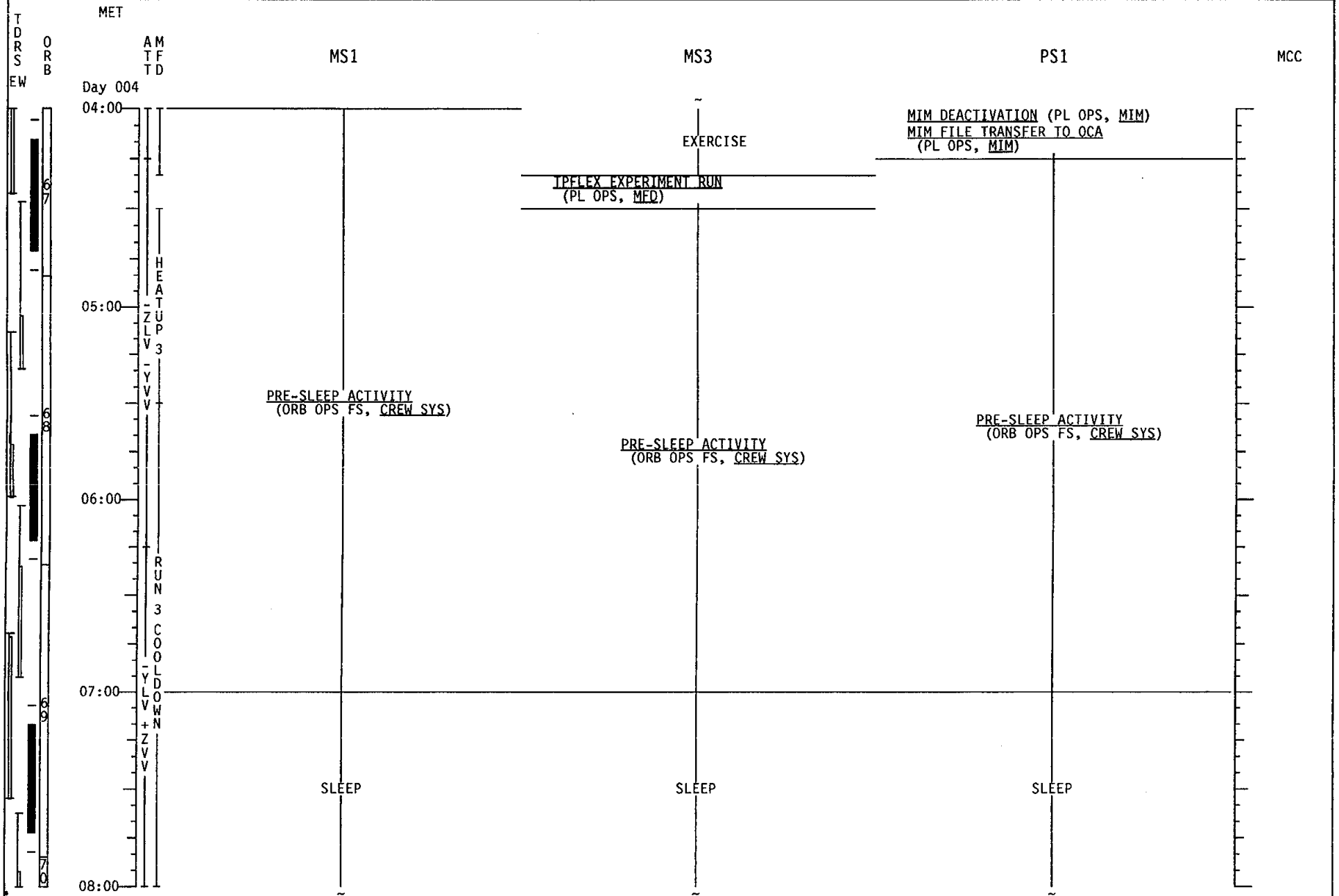
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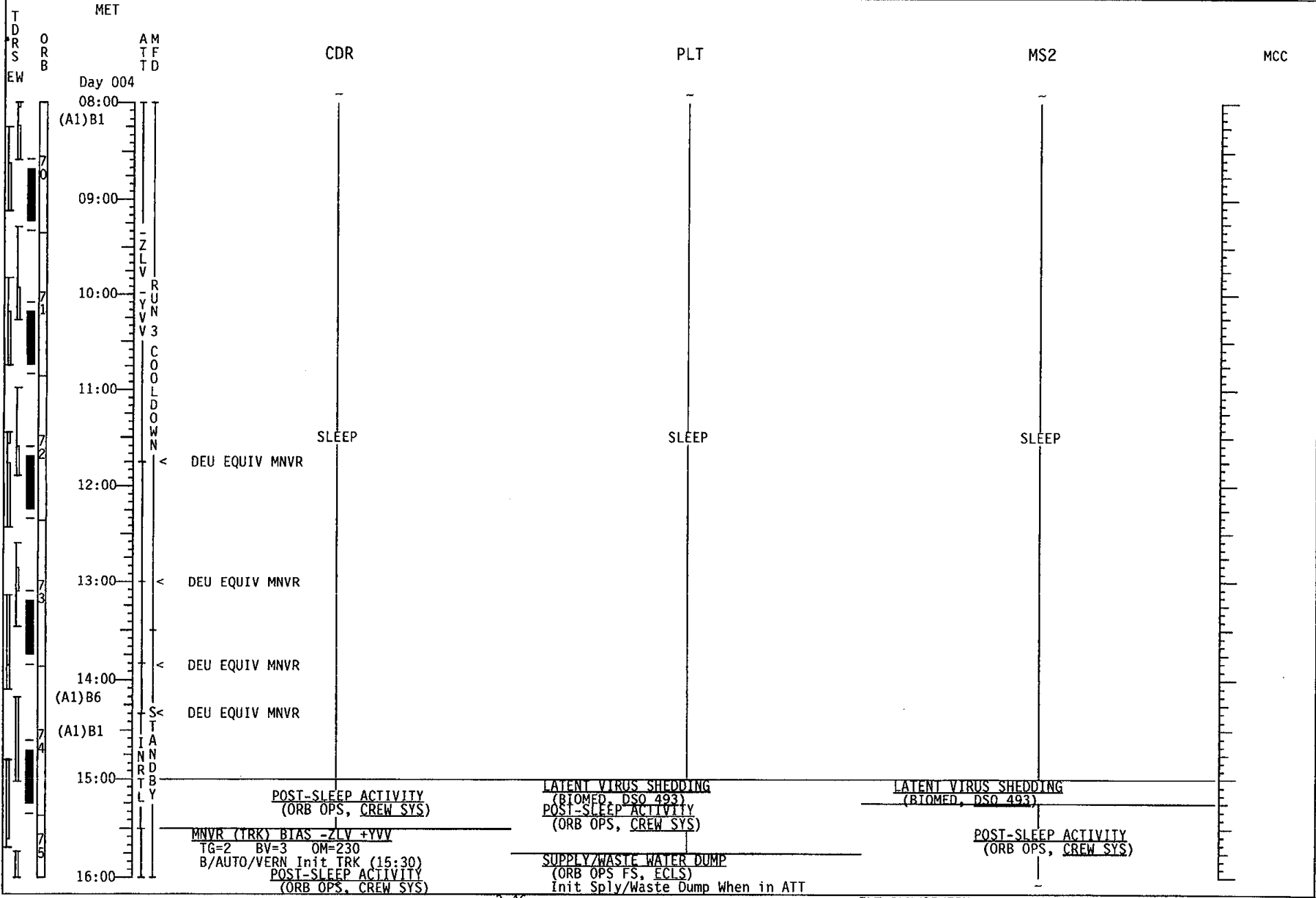
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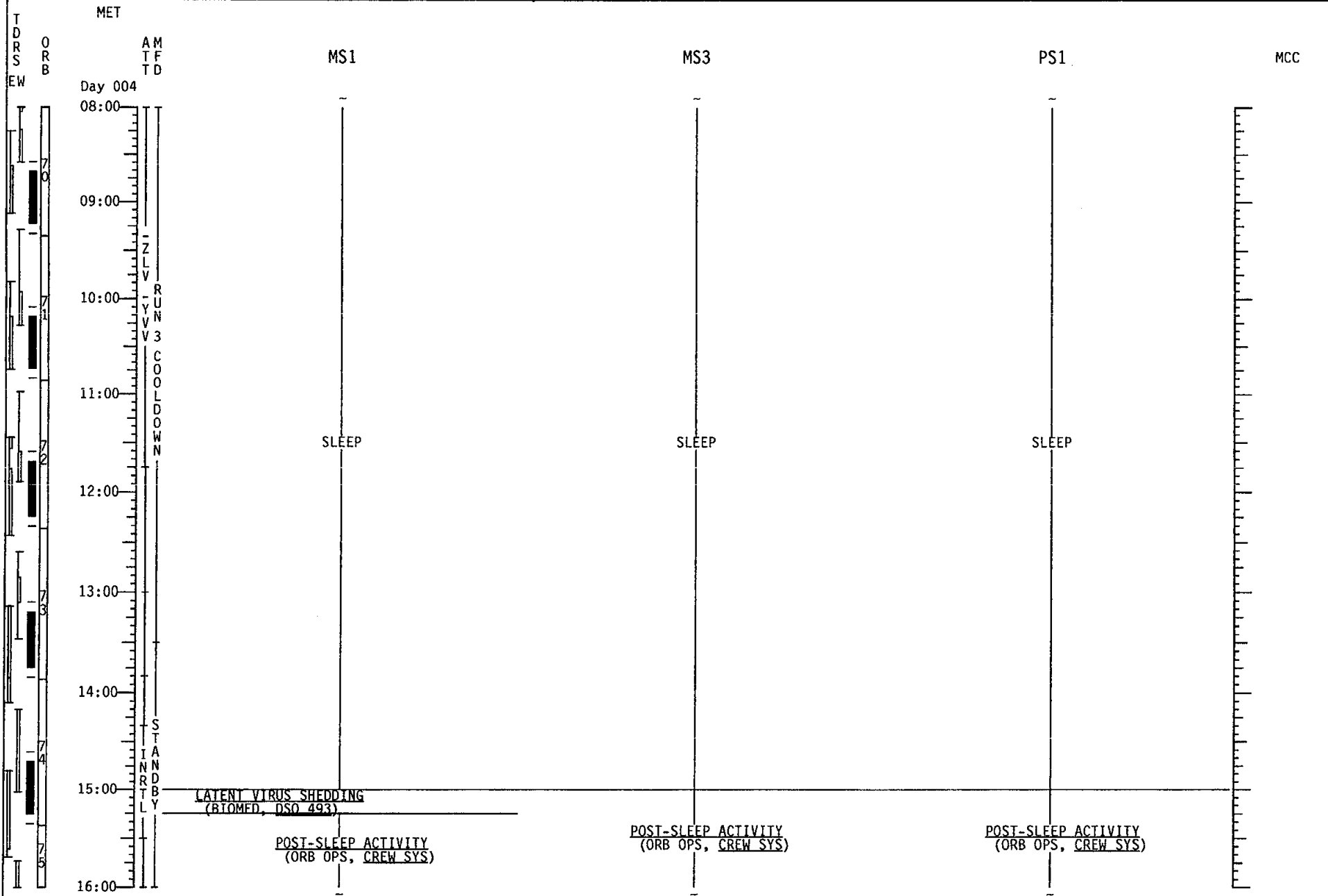
# STS-85 (FD 05)



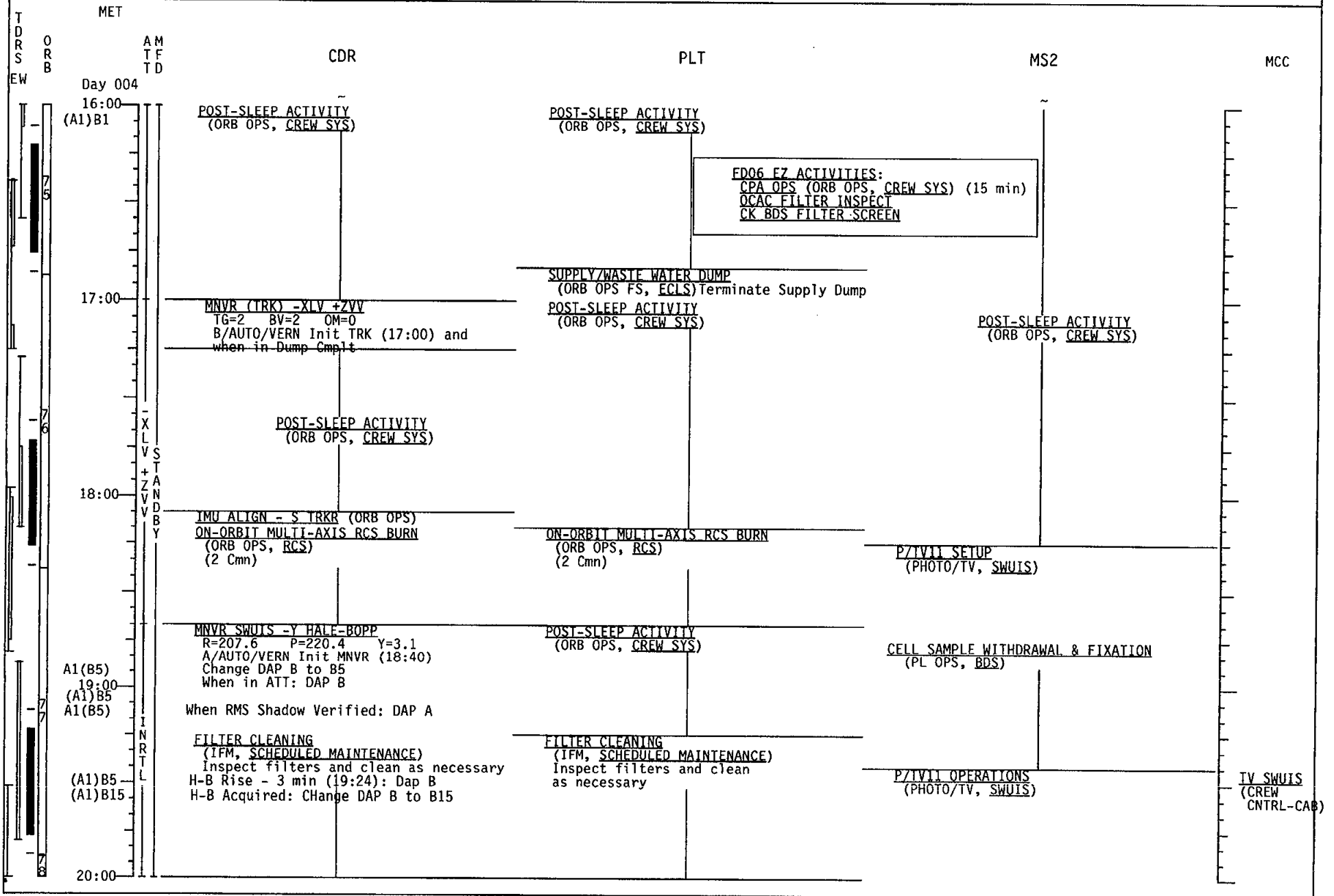
# STS-85 (FD 05)



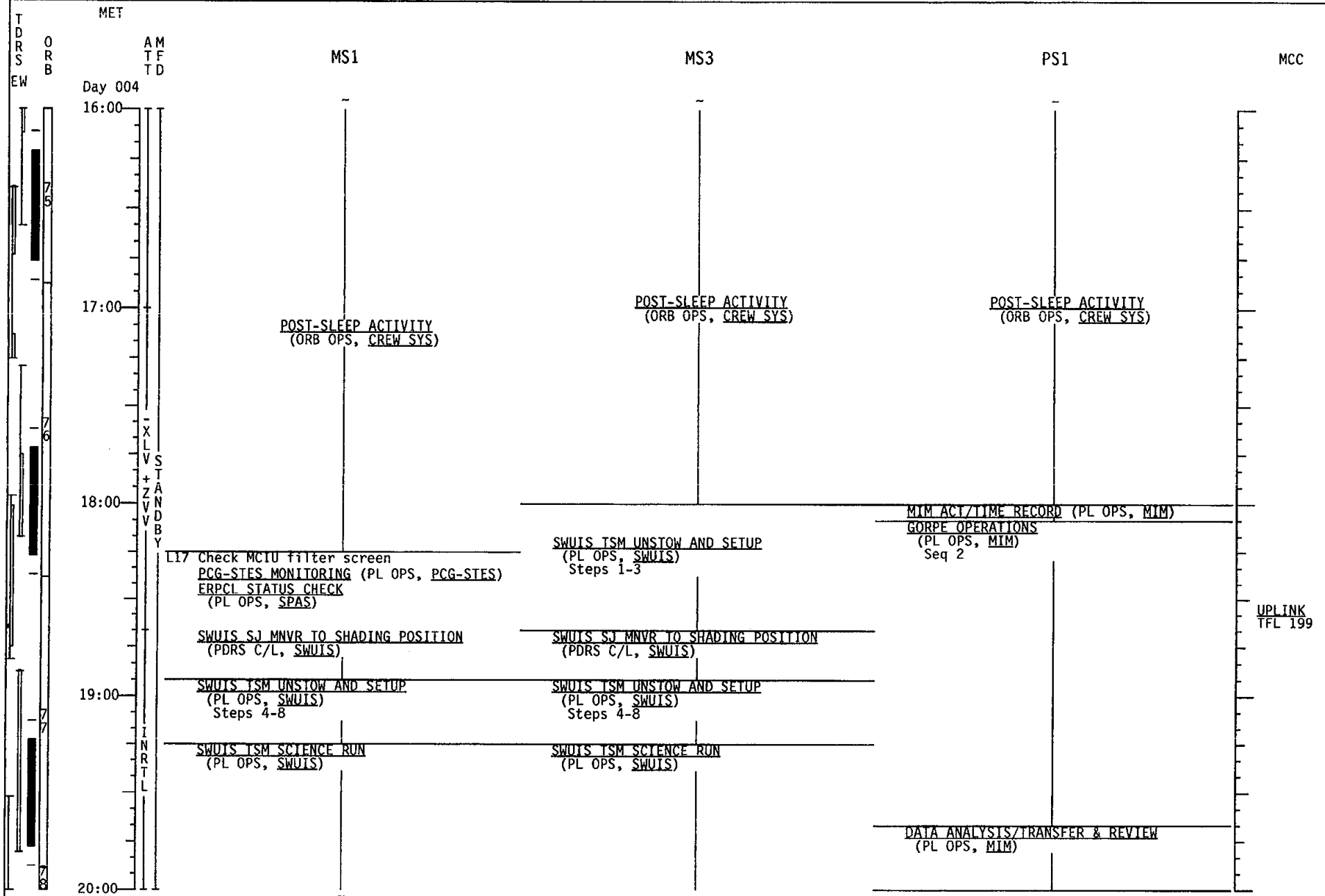
# STS-85 (FD 05)



# STS-85 (FD 06)

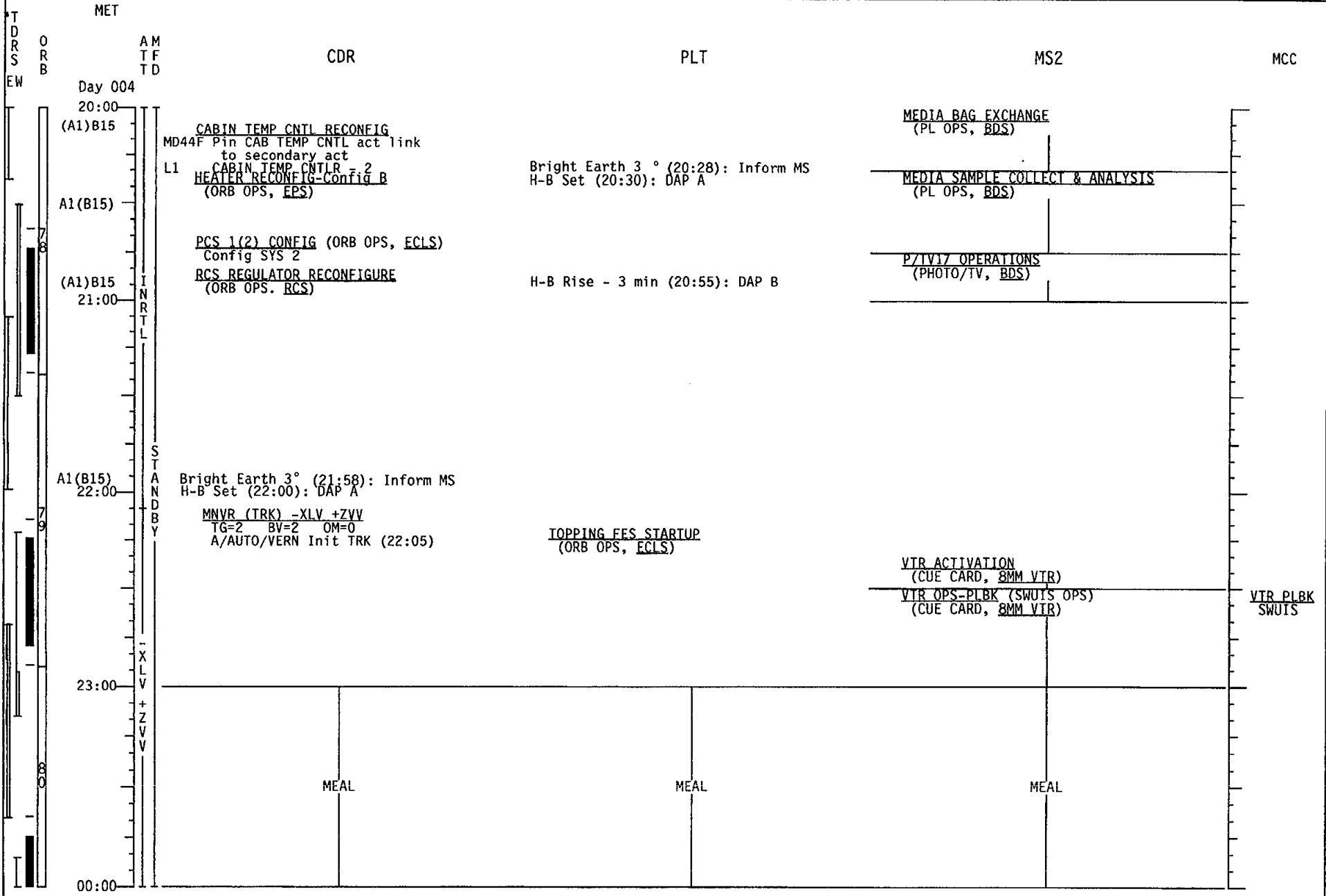


# STS-85 (FD 06)

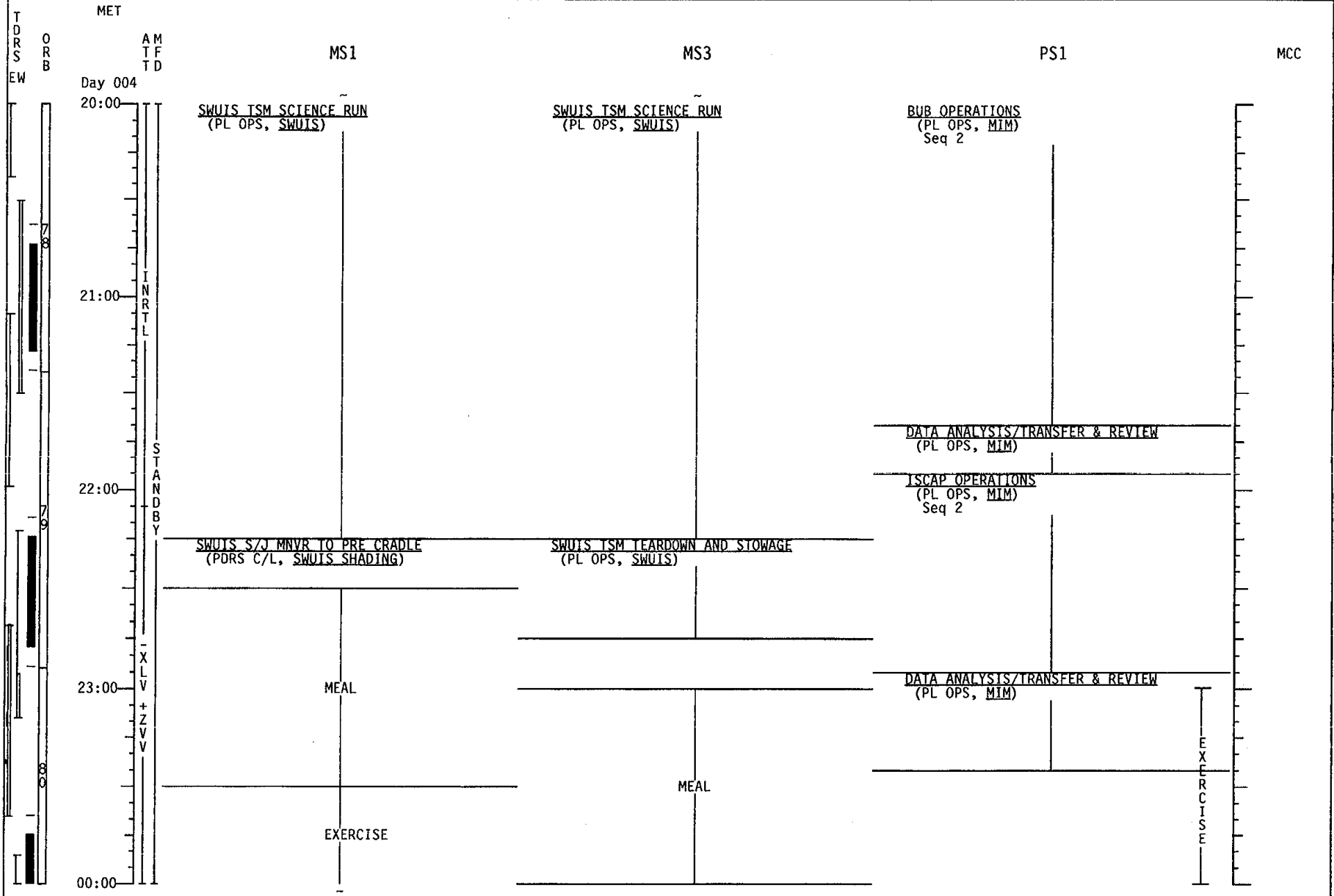




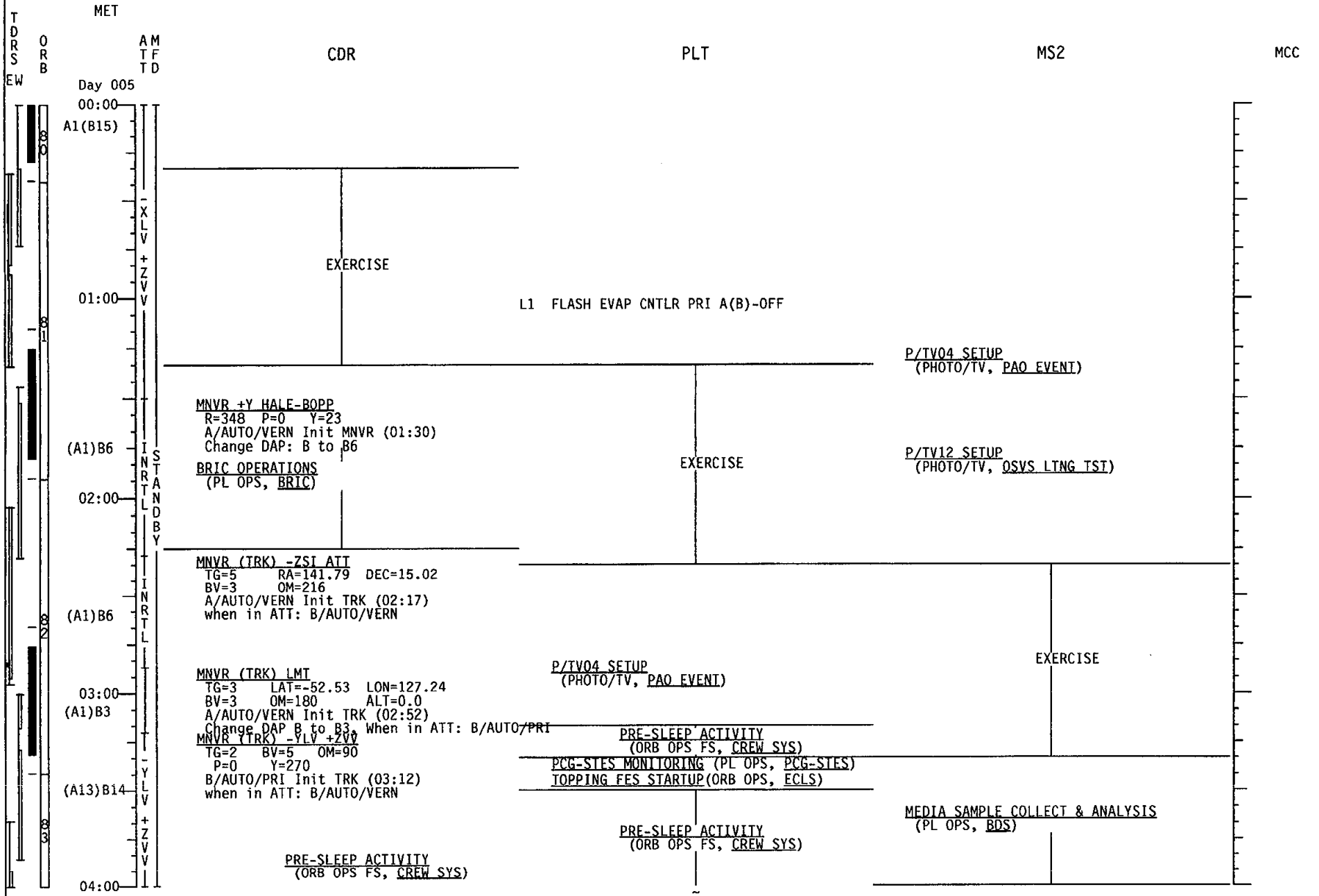
# STS-85 (FD 06)



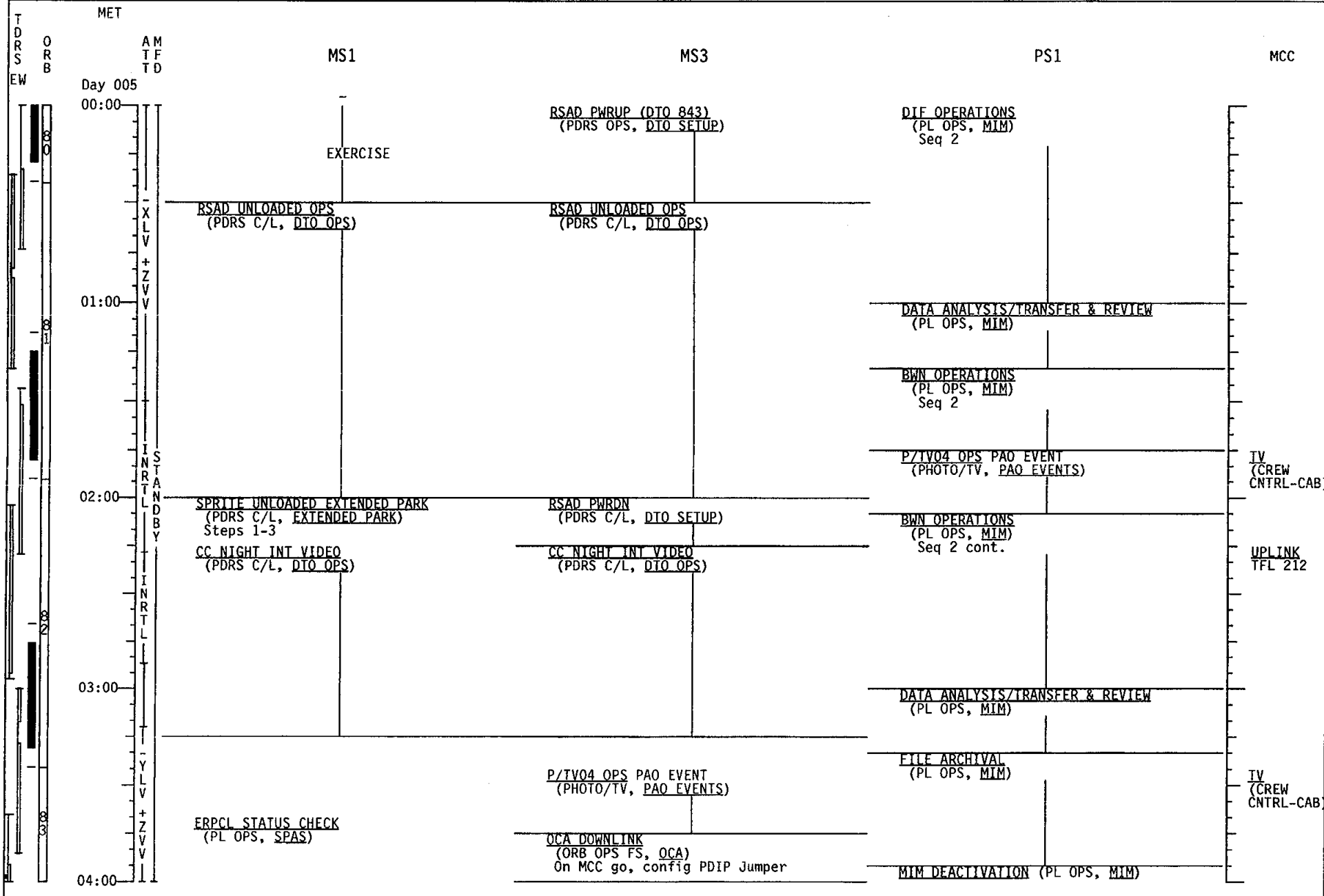
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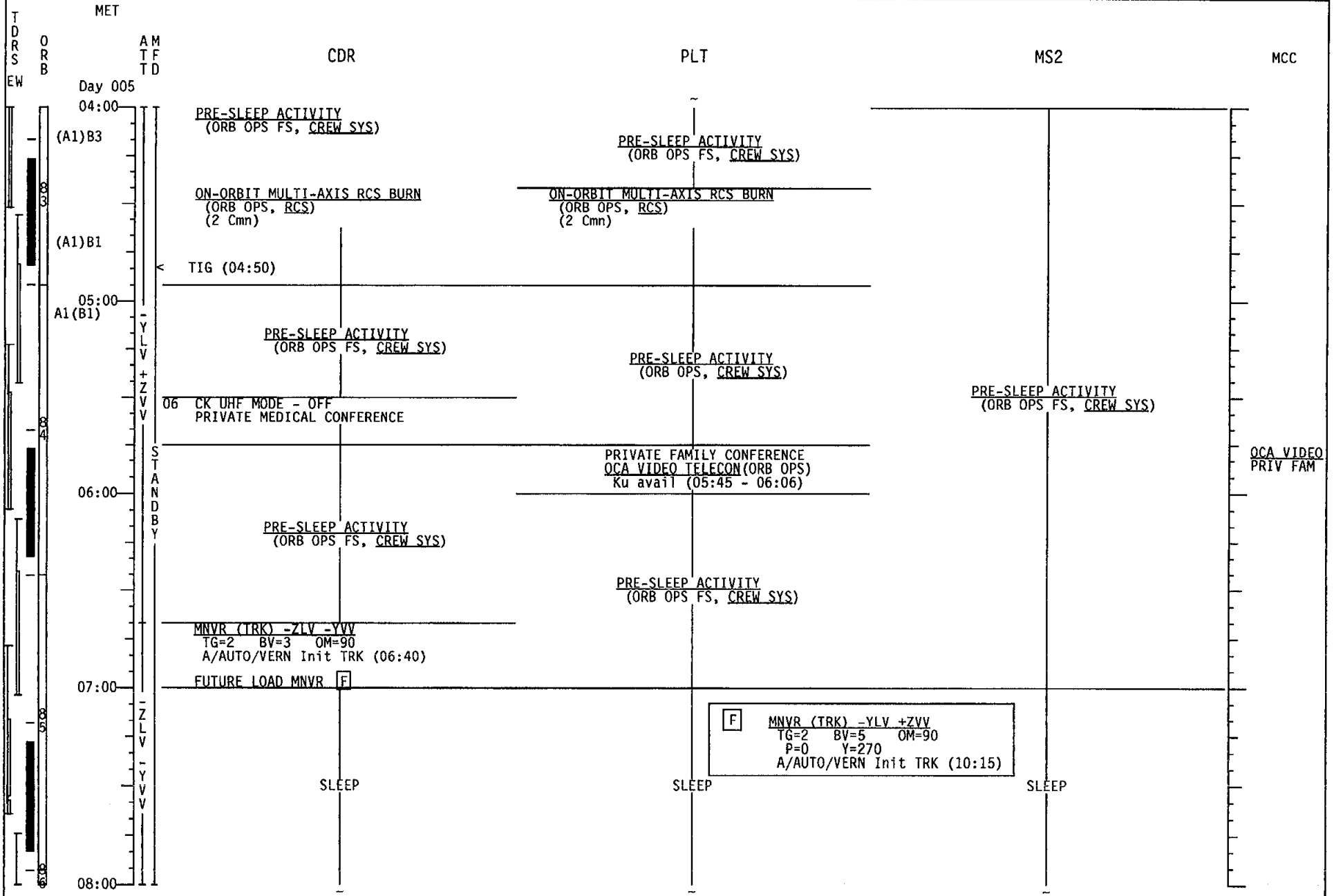
STS-85 (FD 06)



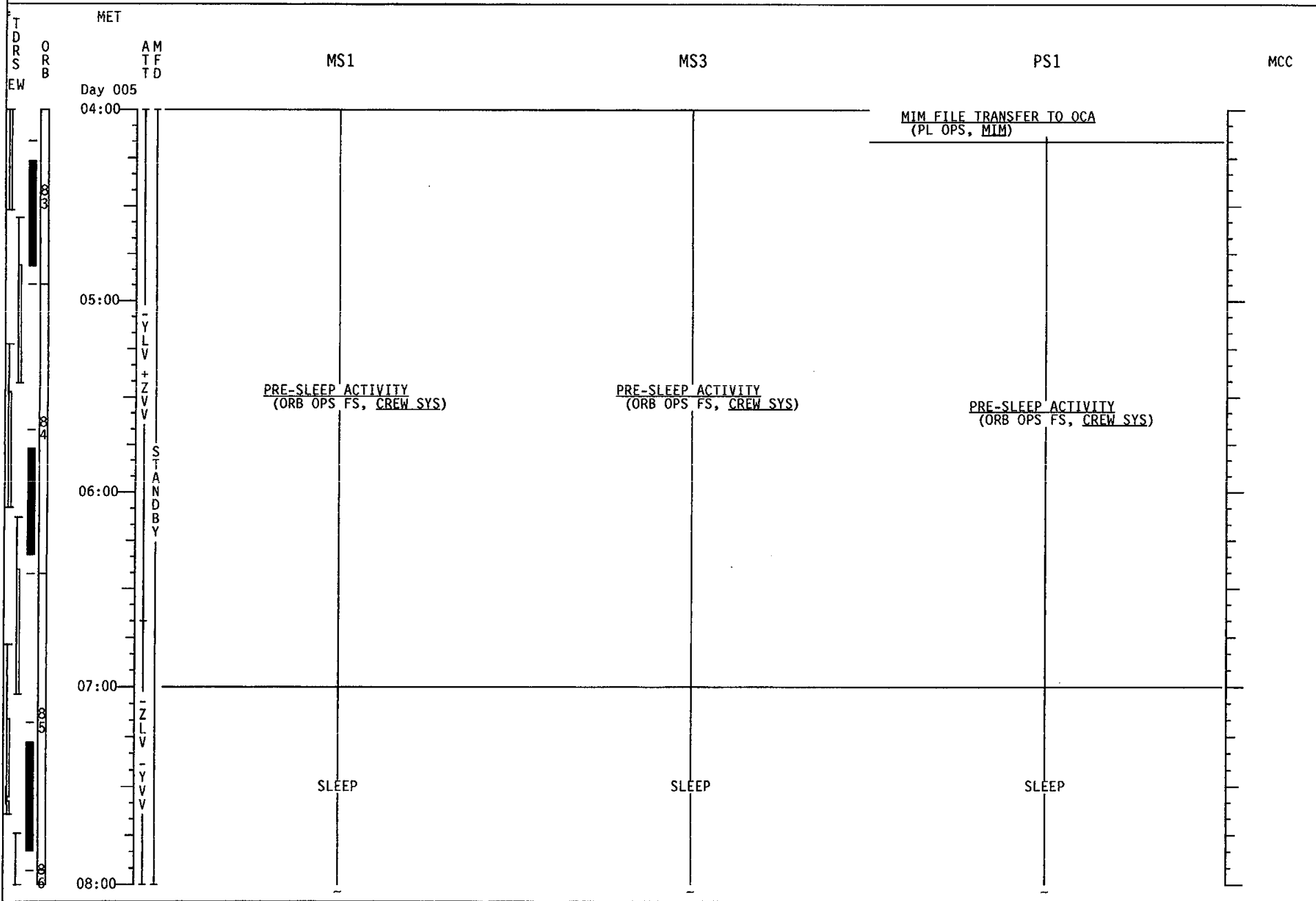
# STS-85 (FD 06)



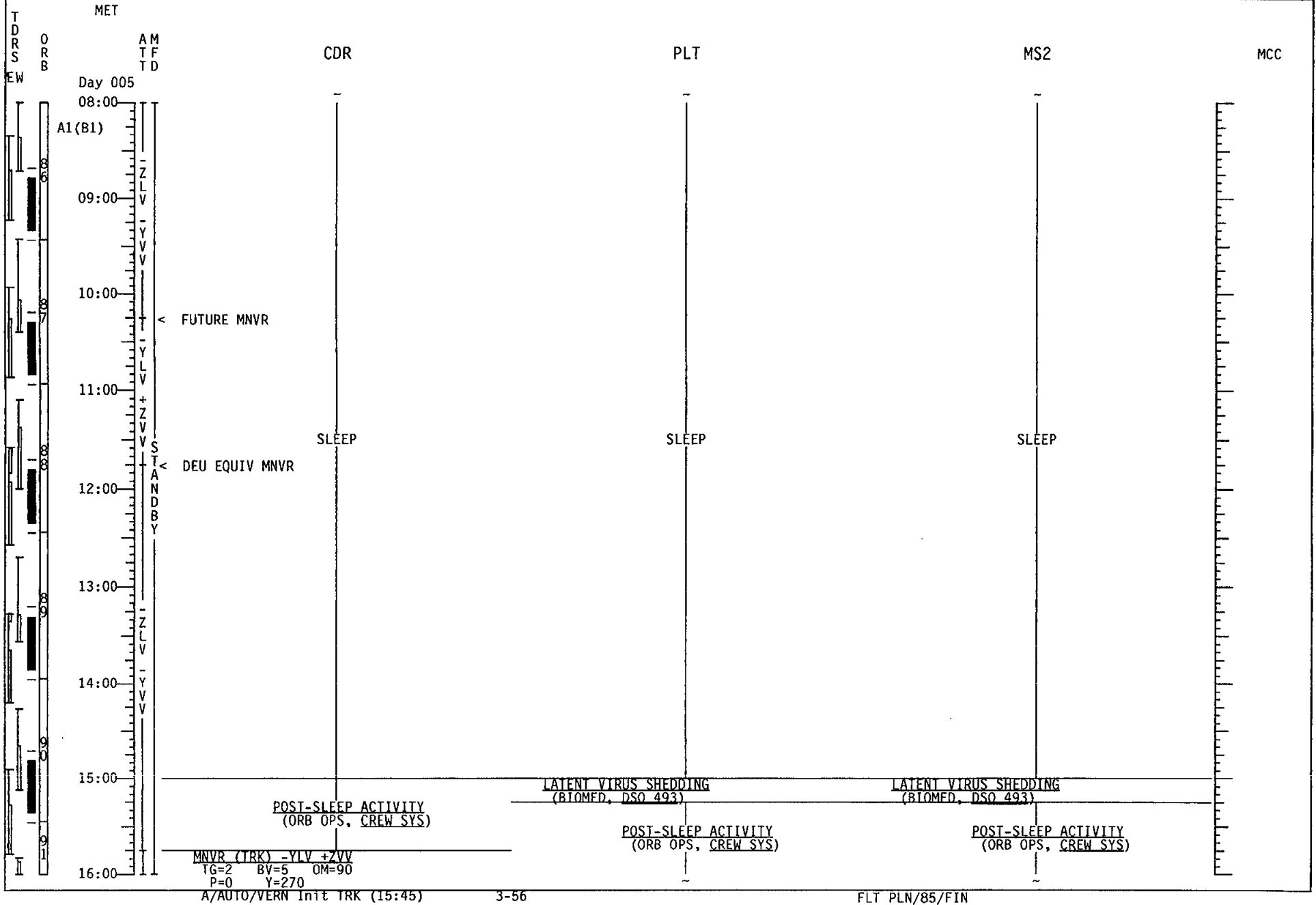
# STS-85 (FD 06)



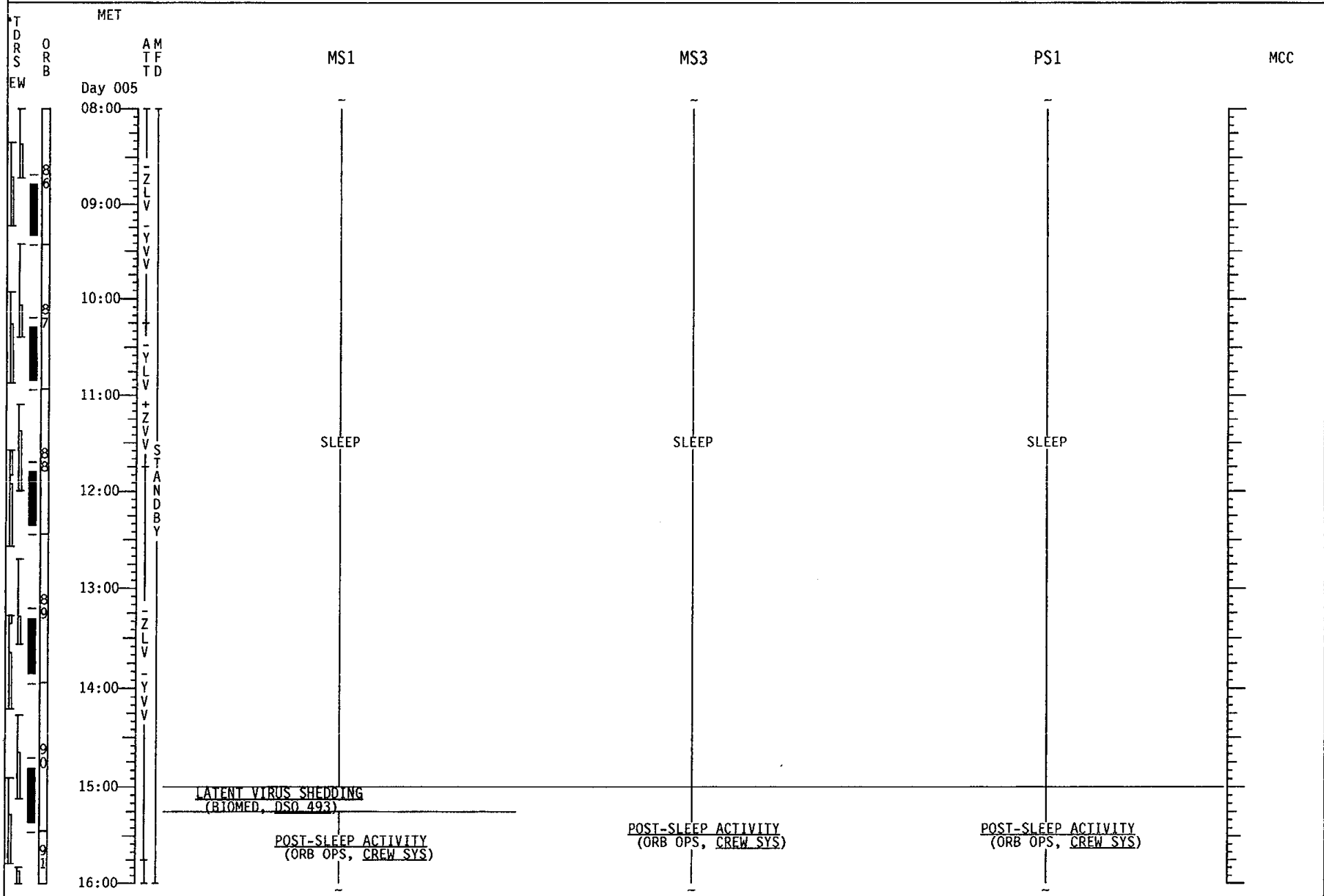
# STS-85 (FD 06)



# STS-85 (FD 06)

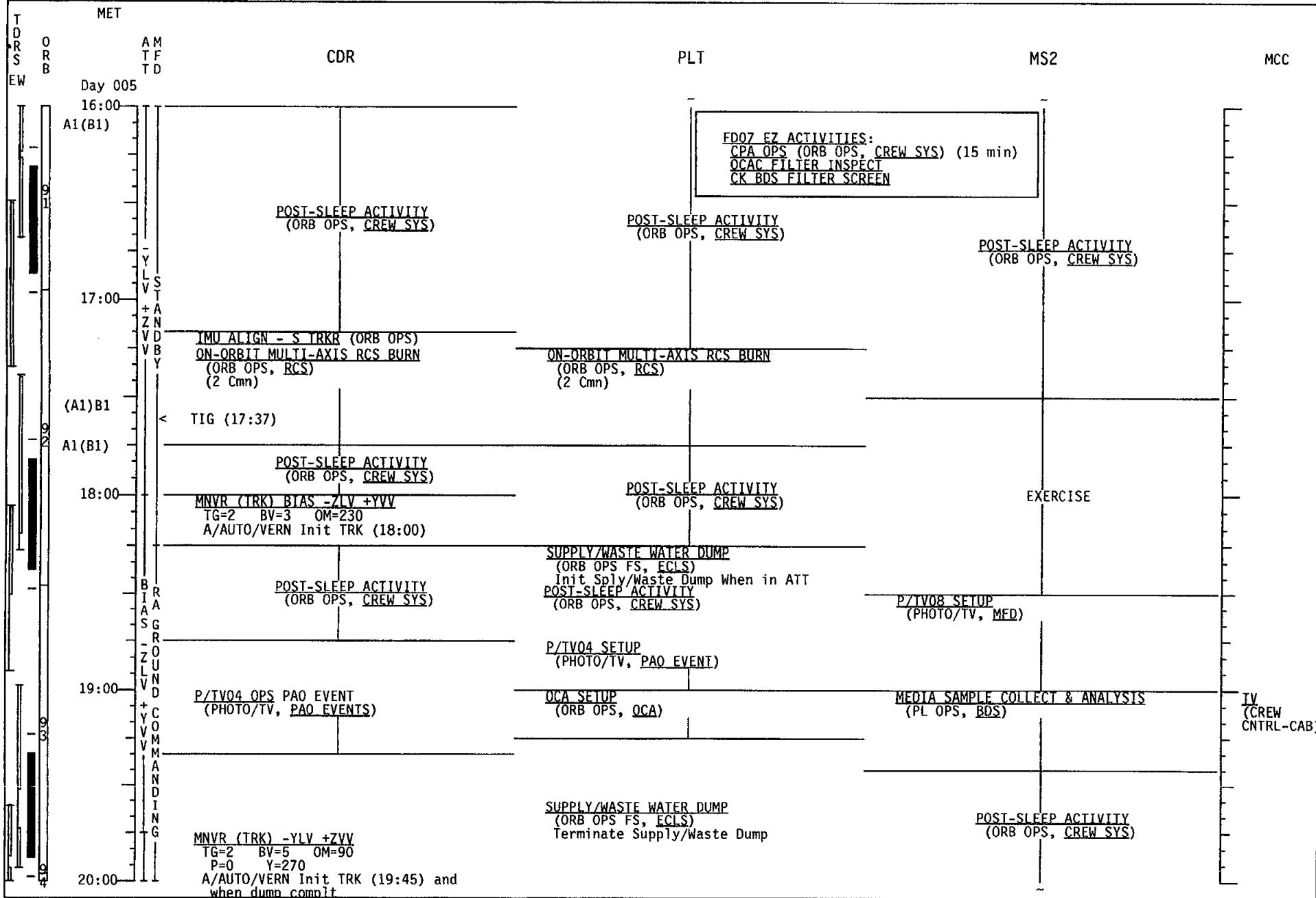


# STS-85 (FD 06)

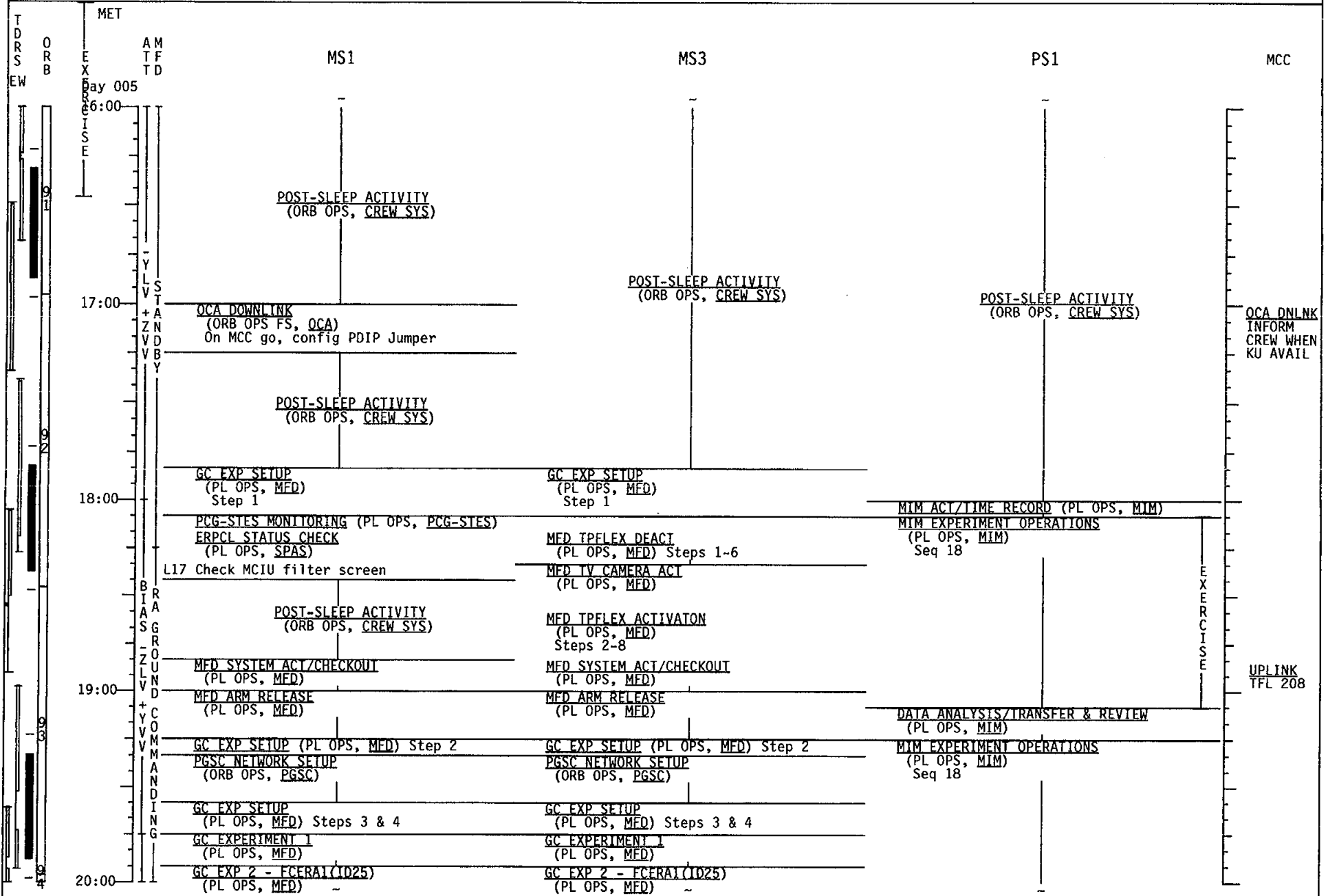




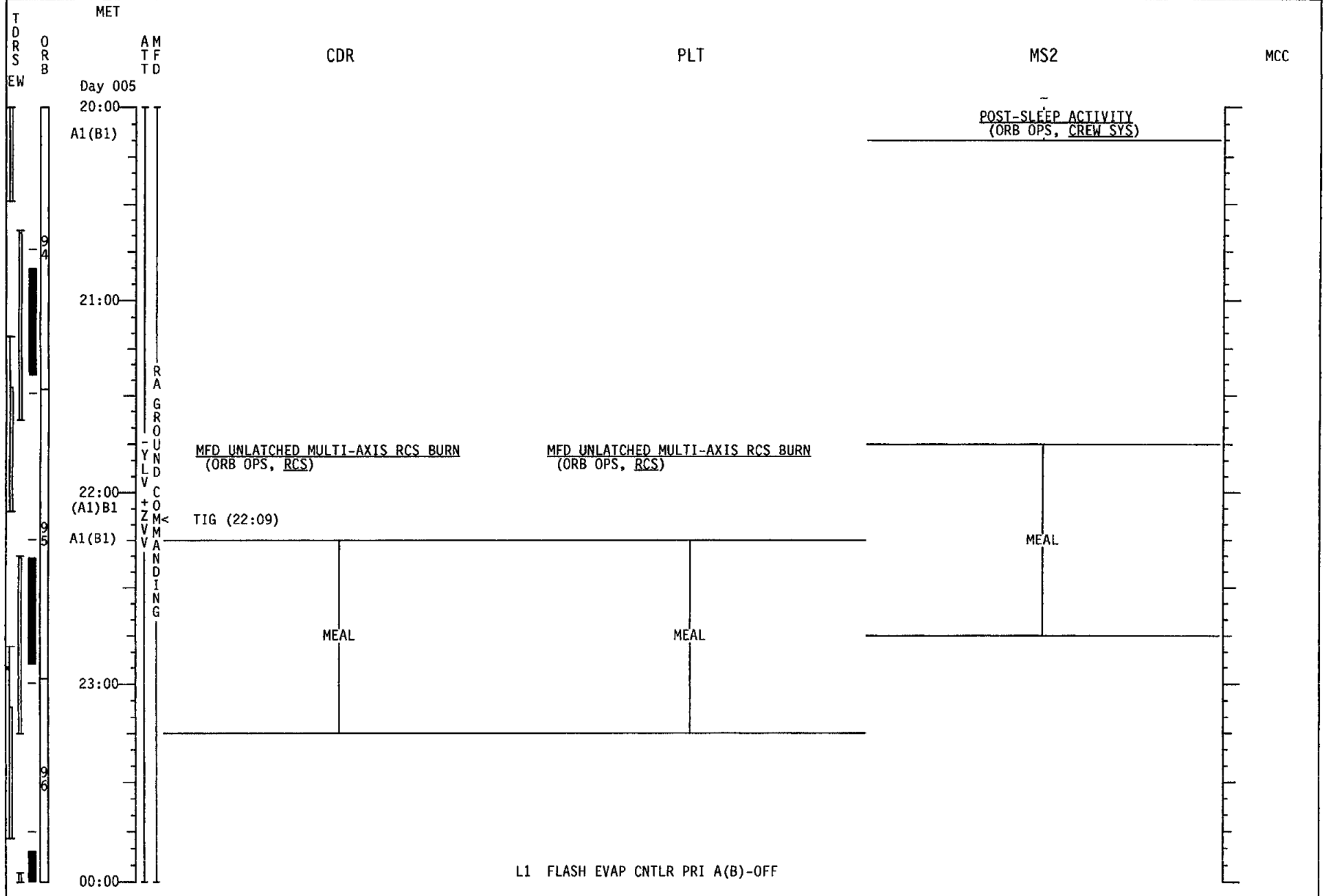
# STS-85 (FD 07)



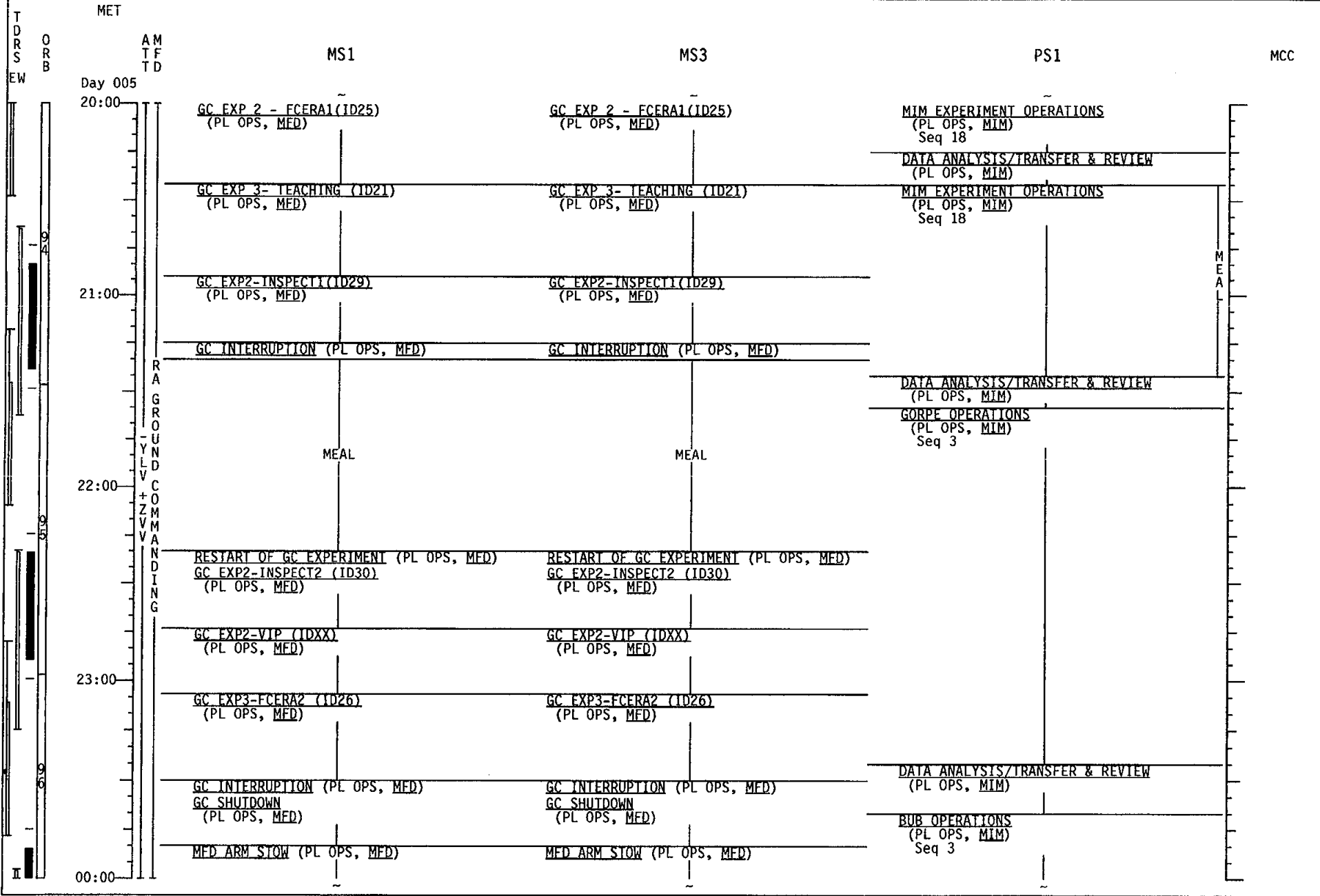
# STS-85 (FD 07)



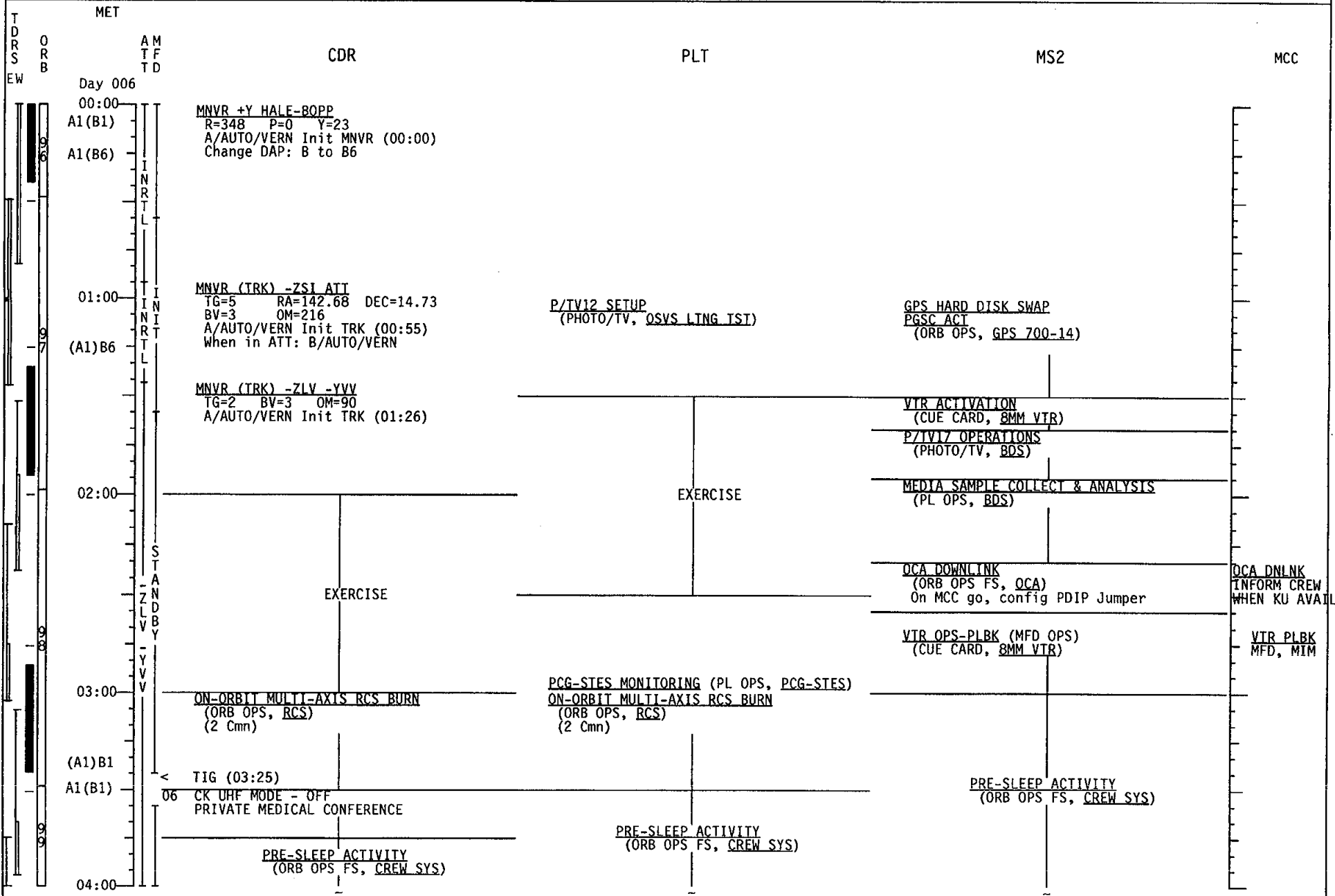
# STS-85 (FD 07)



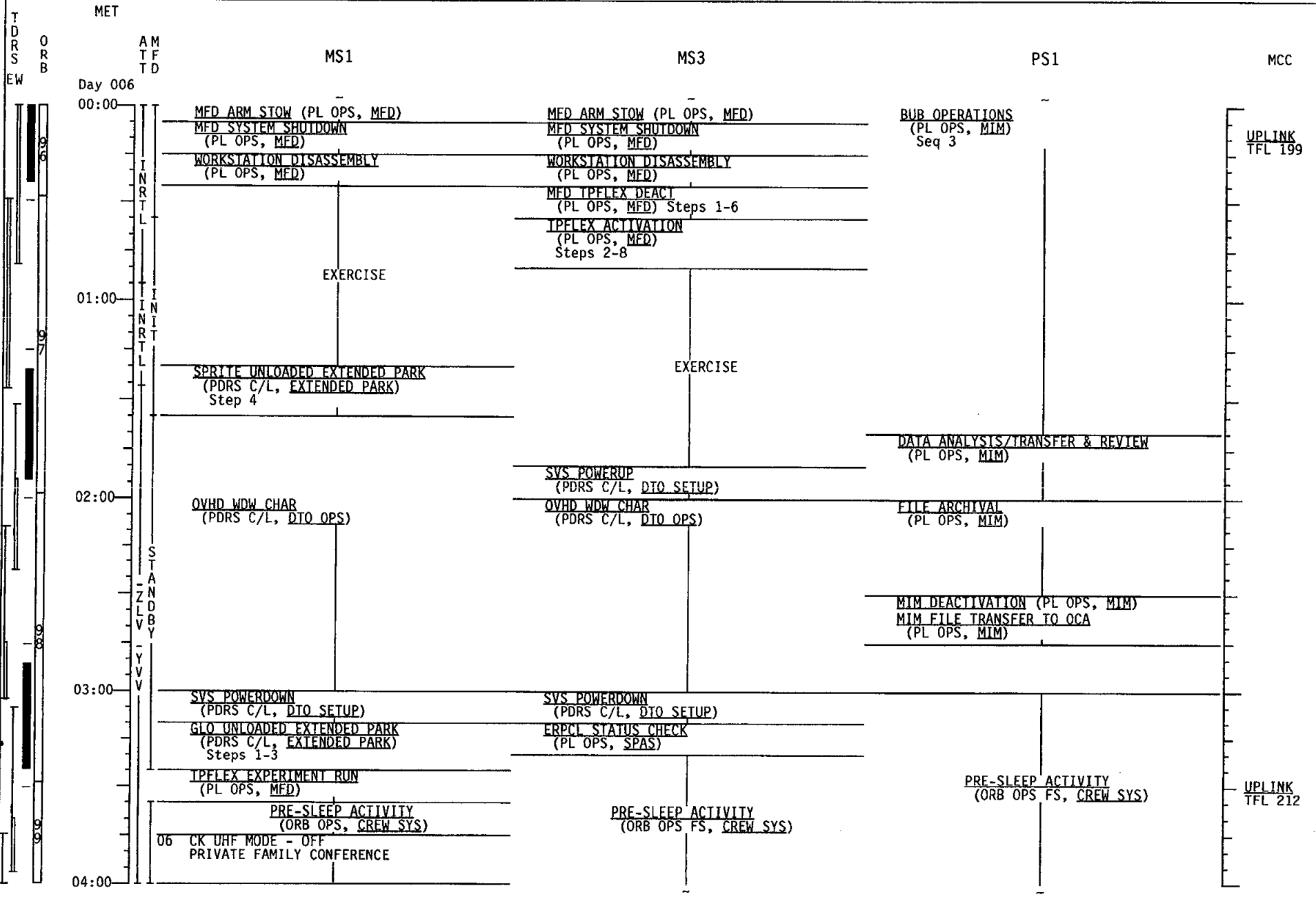
# STS-85 (FD 07)



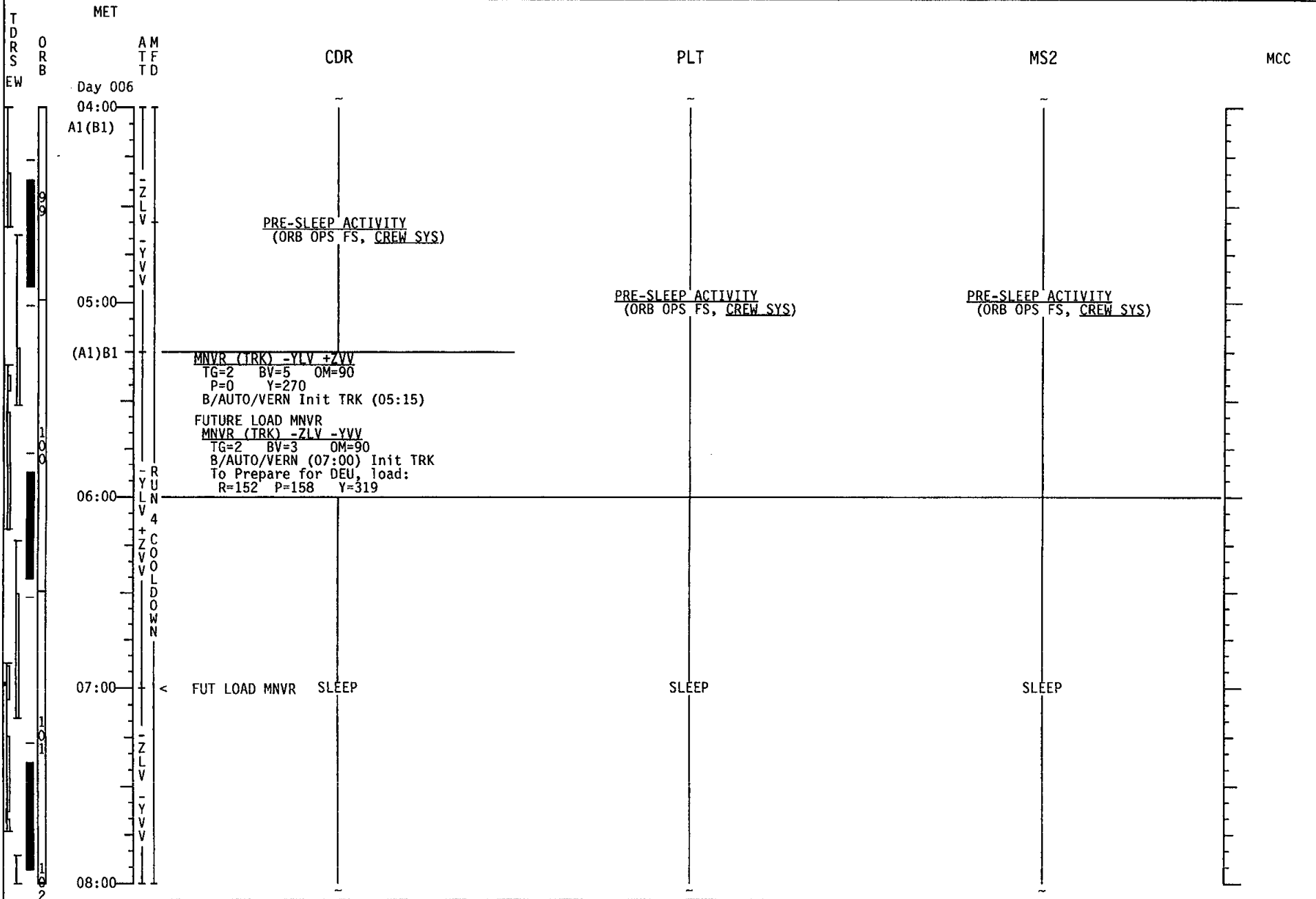
# STS-85 (FD 07)



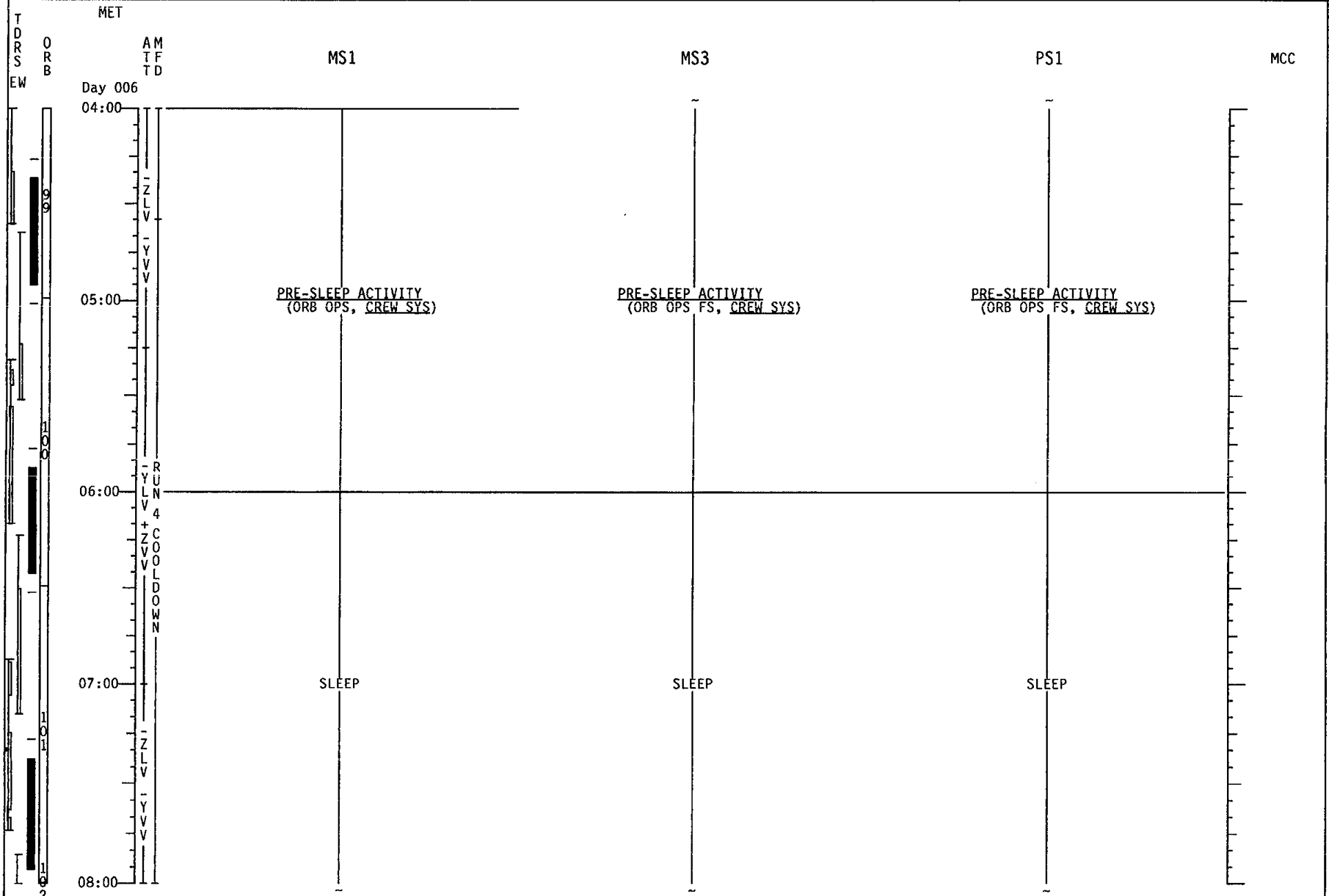
# STS-85 (FD 07)



# STS-85 (FD 07)

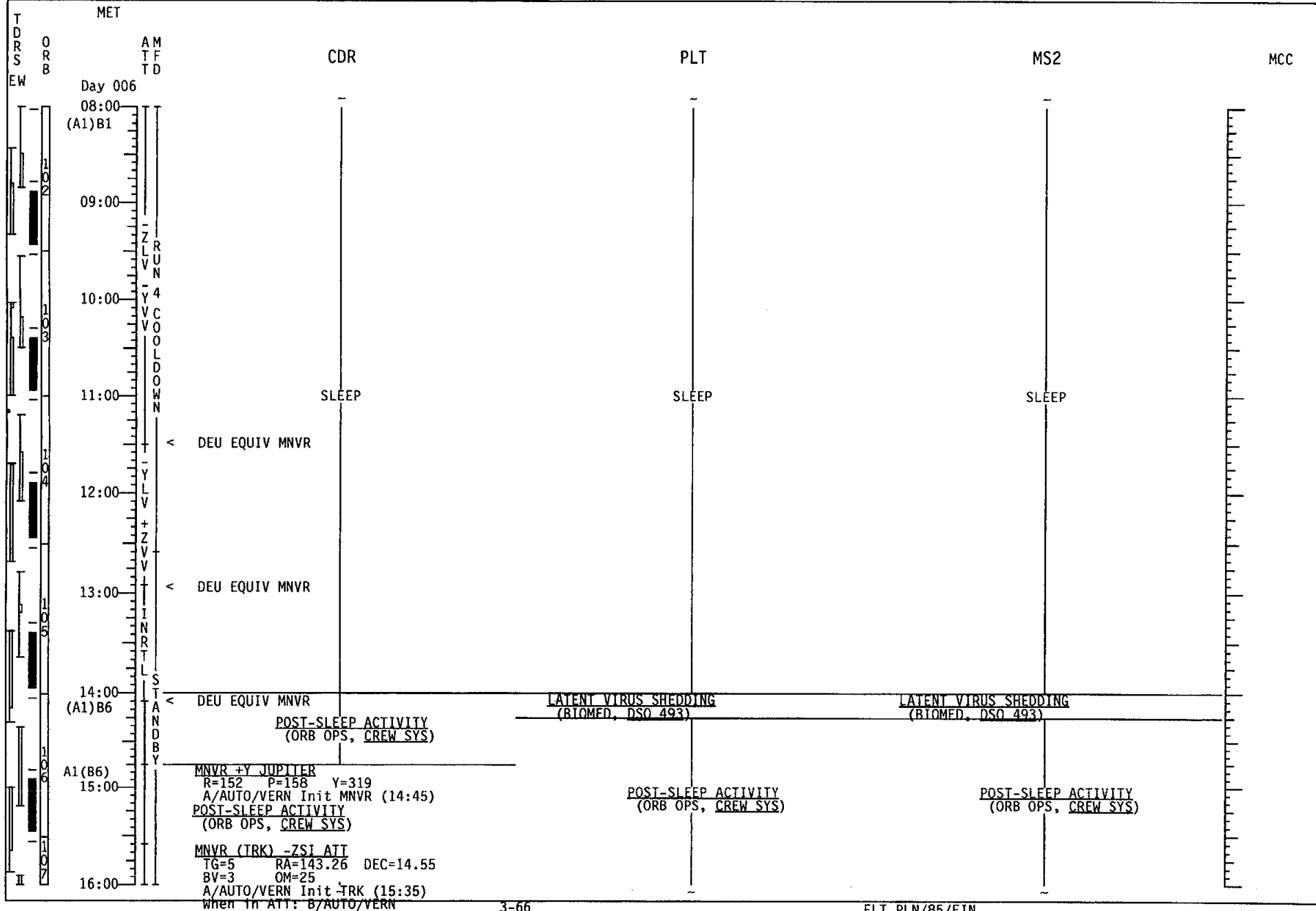


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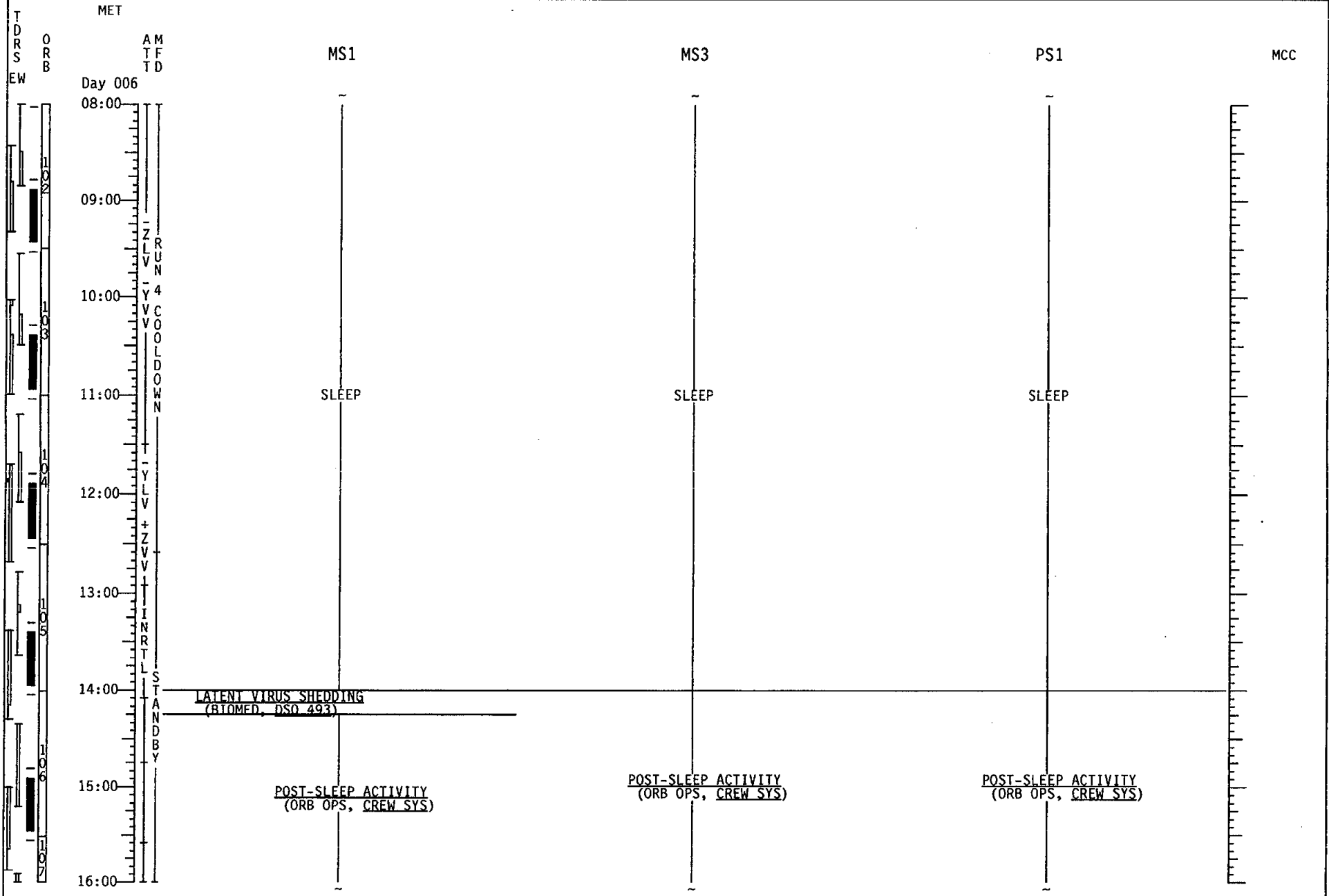




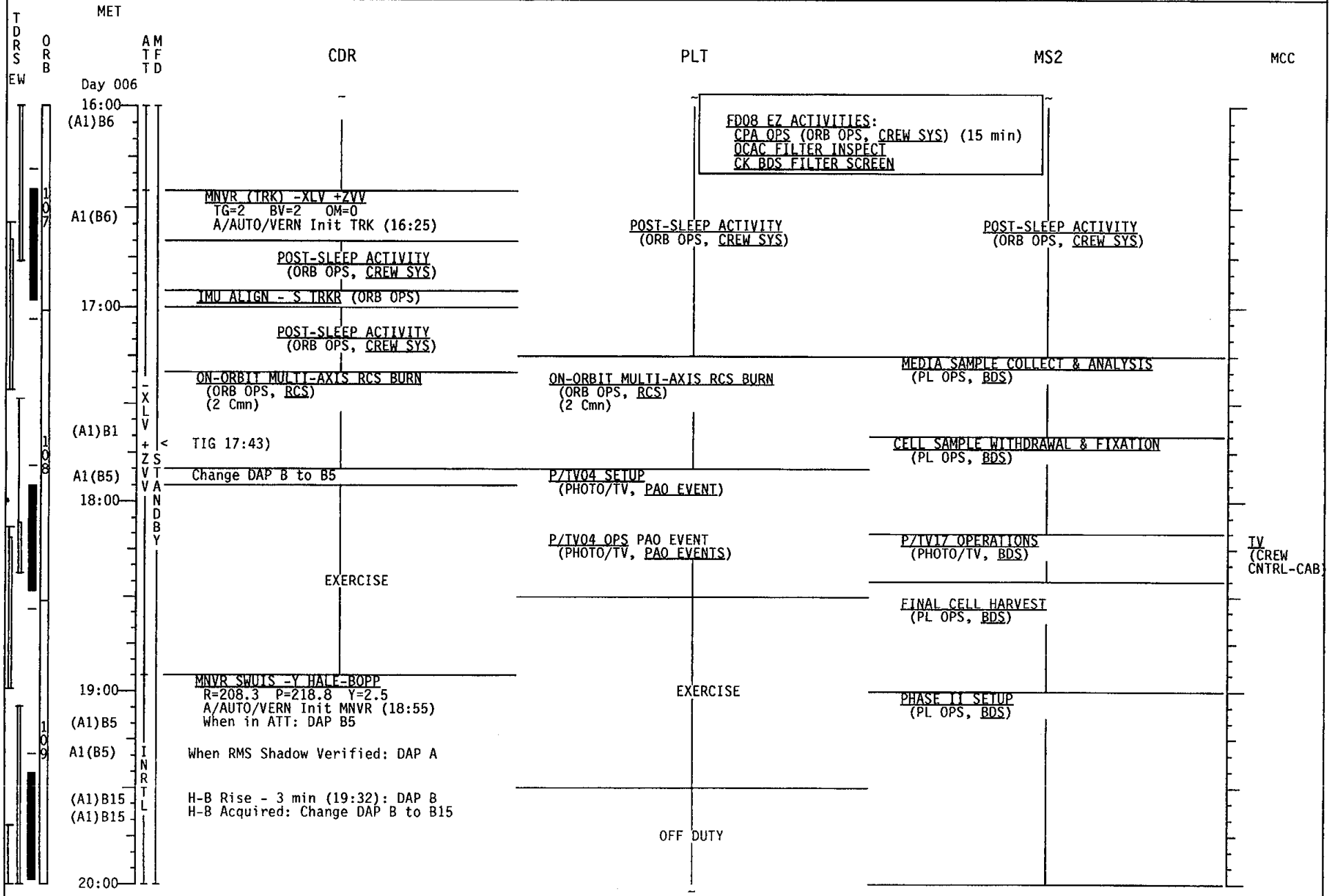
# STS-85 (FD 07)



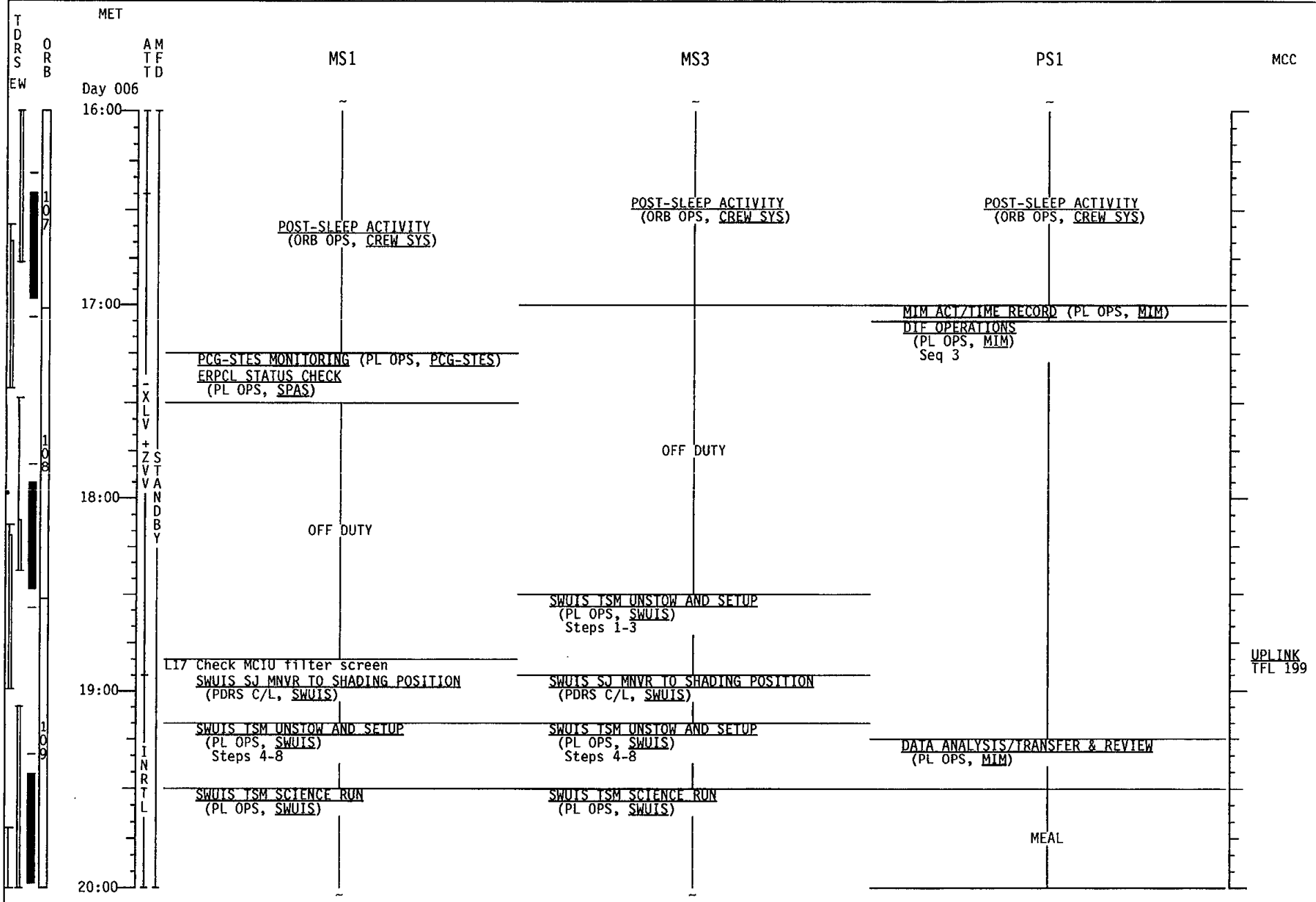
# STS-85 (FD 07)



# STS-85 (FD 08)



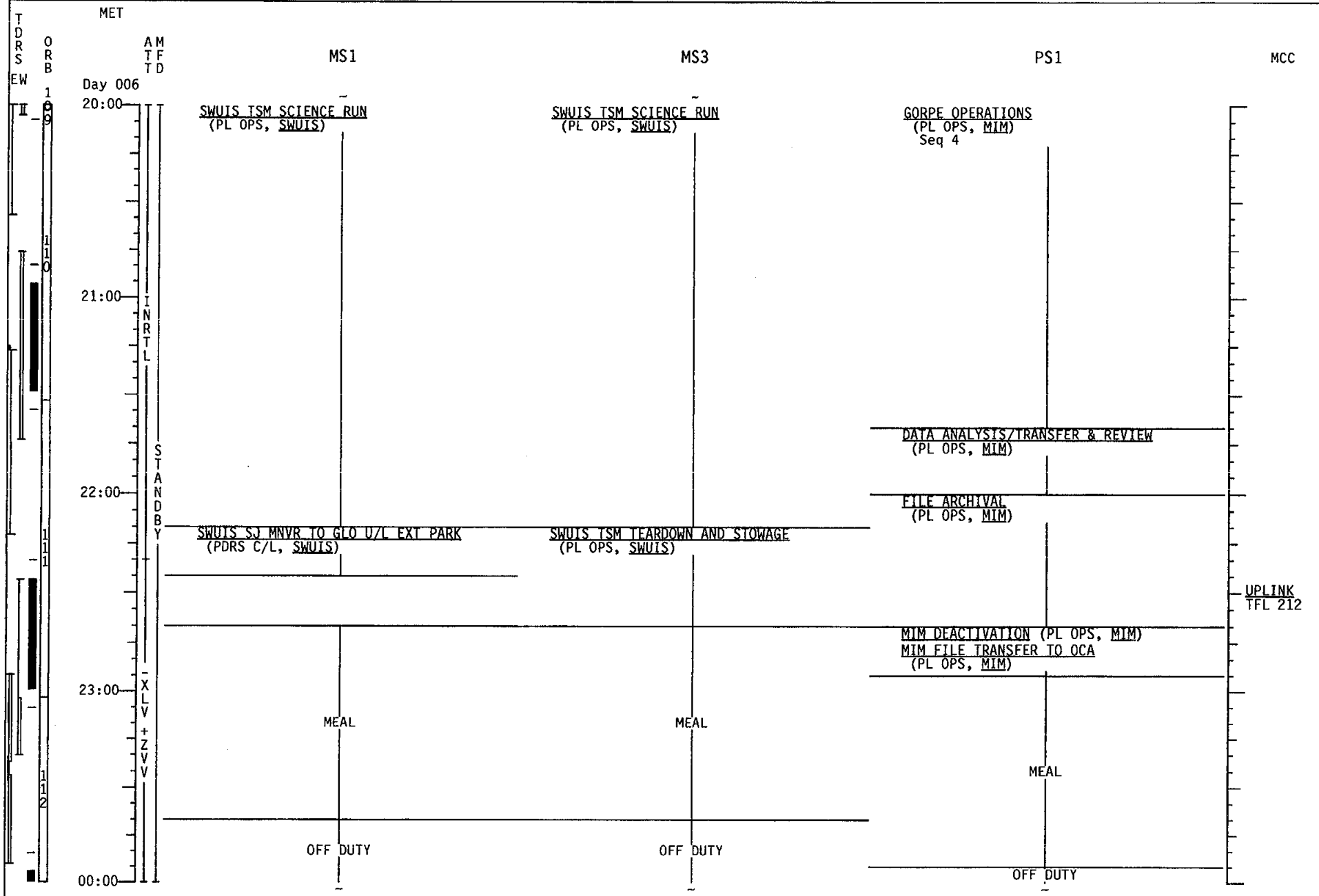
# STS-85 (FD 08)



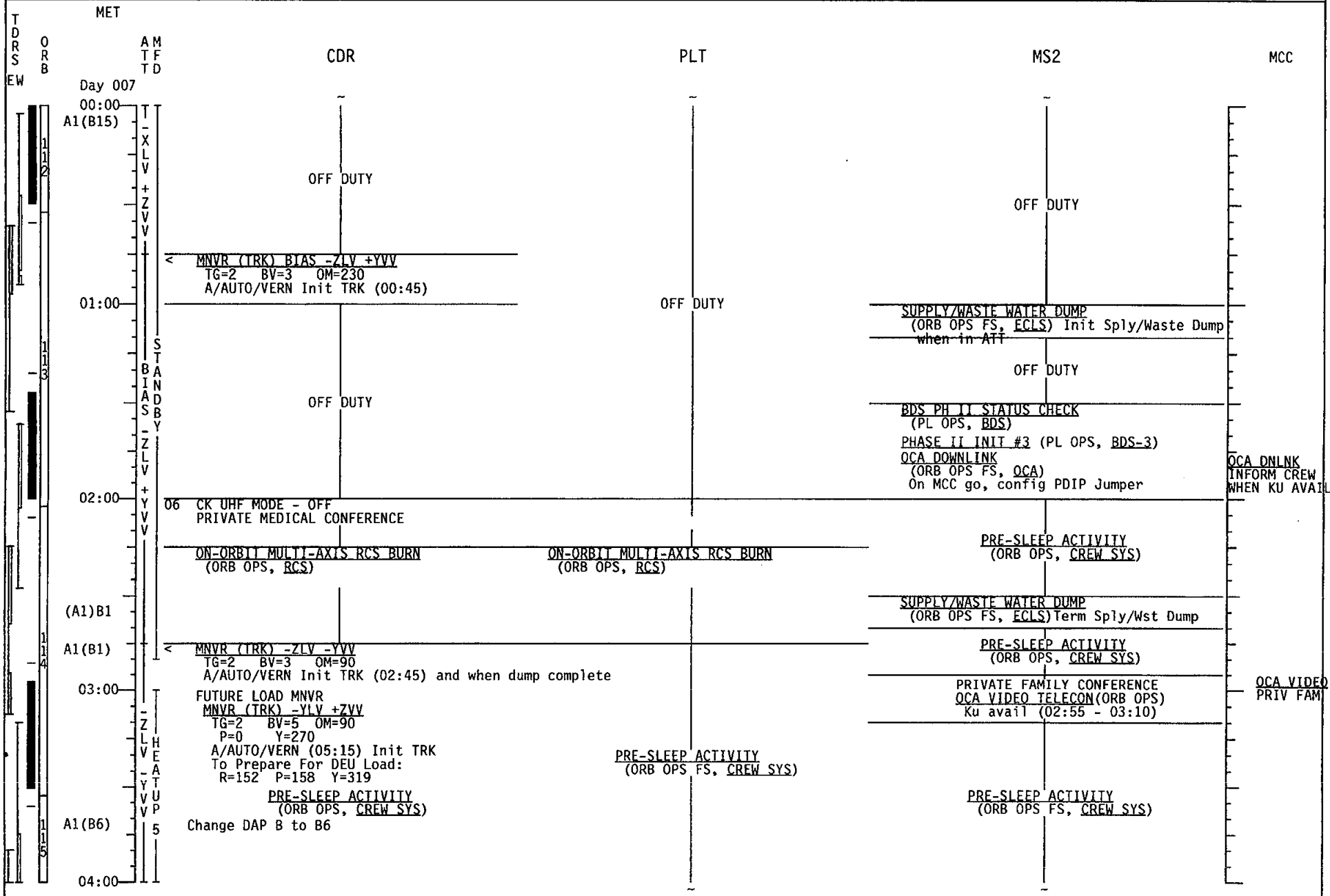
# STS-85 (FD 08)

	MET	CDR	PLT	MS2	MCC
TDRS EW OR B 1 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000	Day 006 20:00 (A1)B15  A1(B15)  21:00 (A1)B15  22:00  A1(B15)  23:00  00:00	AM TF TD  I N R T L  S T A N D B Y  X L V + Z V V	OFF DUTY  MEAL  OFF DUTY  OFF DUTY  OFF DUTY	BDS PH II STATUS CHECK (PL OPS, BDS) PHASE II INIT #X (PL OPS, BDS)  MEAL  OFF DUTY  VTR ACTIVATION (CUE CARD, 8MM VTR) VTR OPS-PLBK (SWUIS OPS) (CUE CARD, 8MM VTR)  BDS PH II STATUS CHECK (PL OPS, BDS) PHASE II INIT #X (PL OPS, BDS)  OFF DUTY	VTR PLBK SWUIS
		Bright Earth 3° (20:41): Inform MS H-B Set (20:44): DAP A  MEAL H-B Rise - 3 min (21:03) DAP B  OFF DUTY  Bright Earth 3° (22:11): Inform MS H-B Set (22:15): DAP A  MNVR (TRK) -XLV +ZVV TG=2 BV=2 OM=0 A/AUTO/VERN Init TRK (22:20) TOPPING FES STARTUP(ORB OPS, ECLS)			

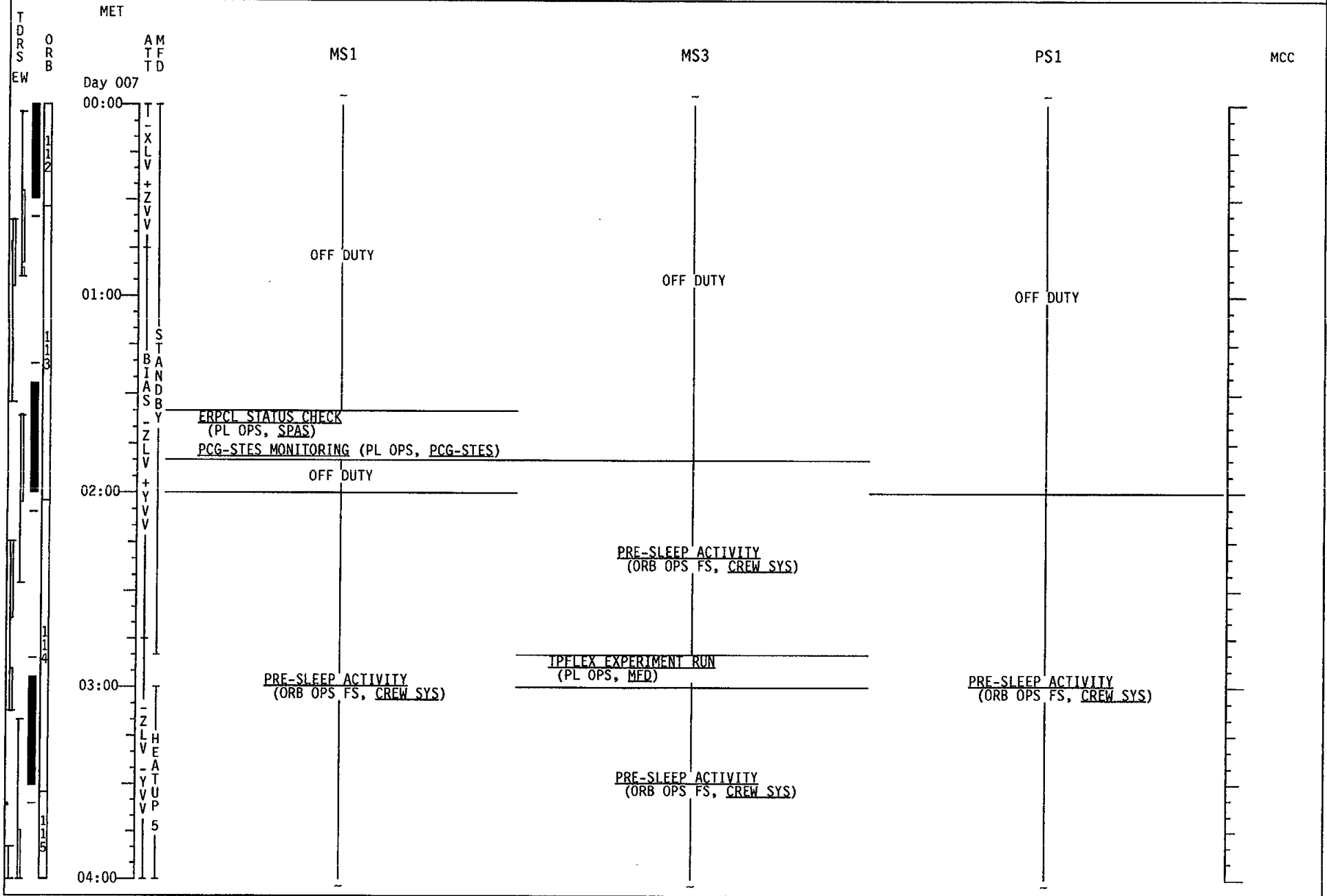
# STS-85 (FD 08)



# STS-85 (FD 08)

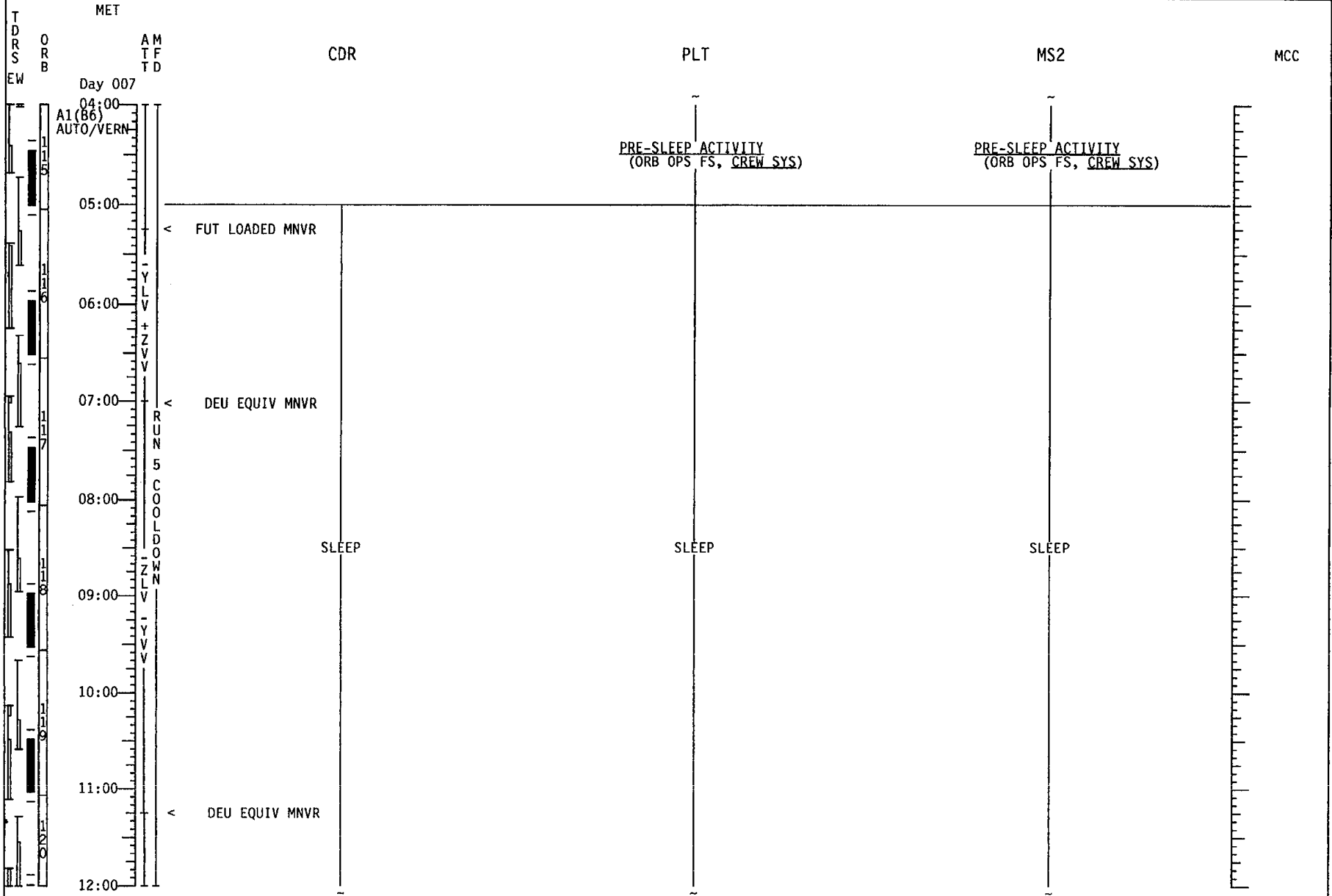


# STS-85 (FD 08)

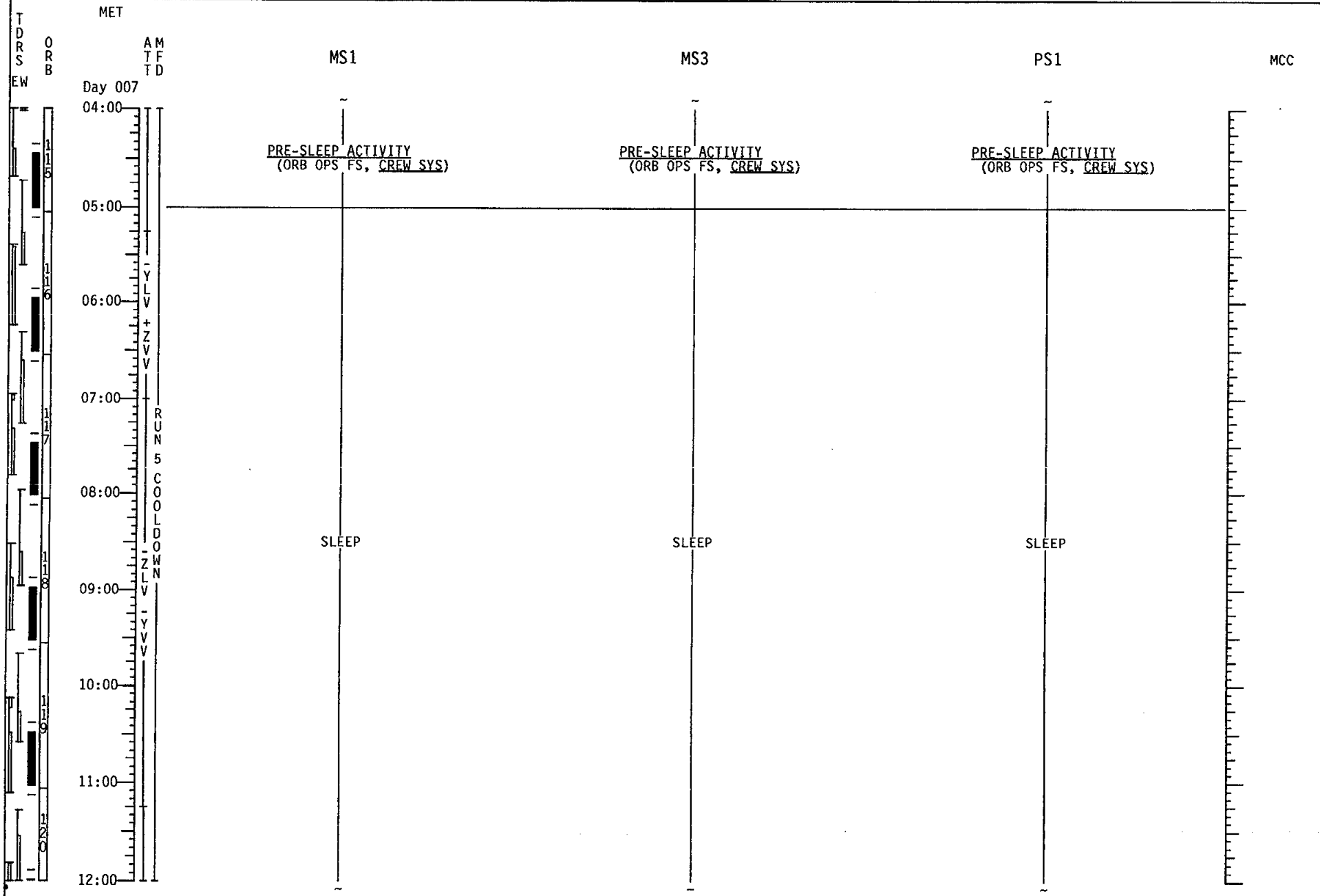




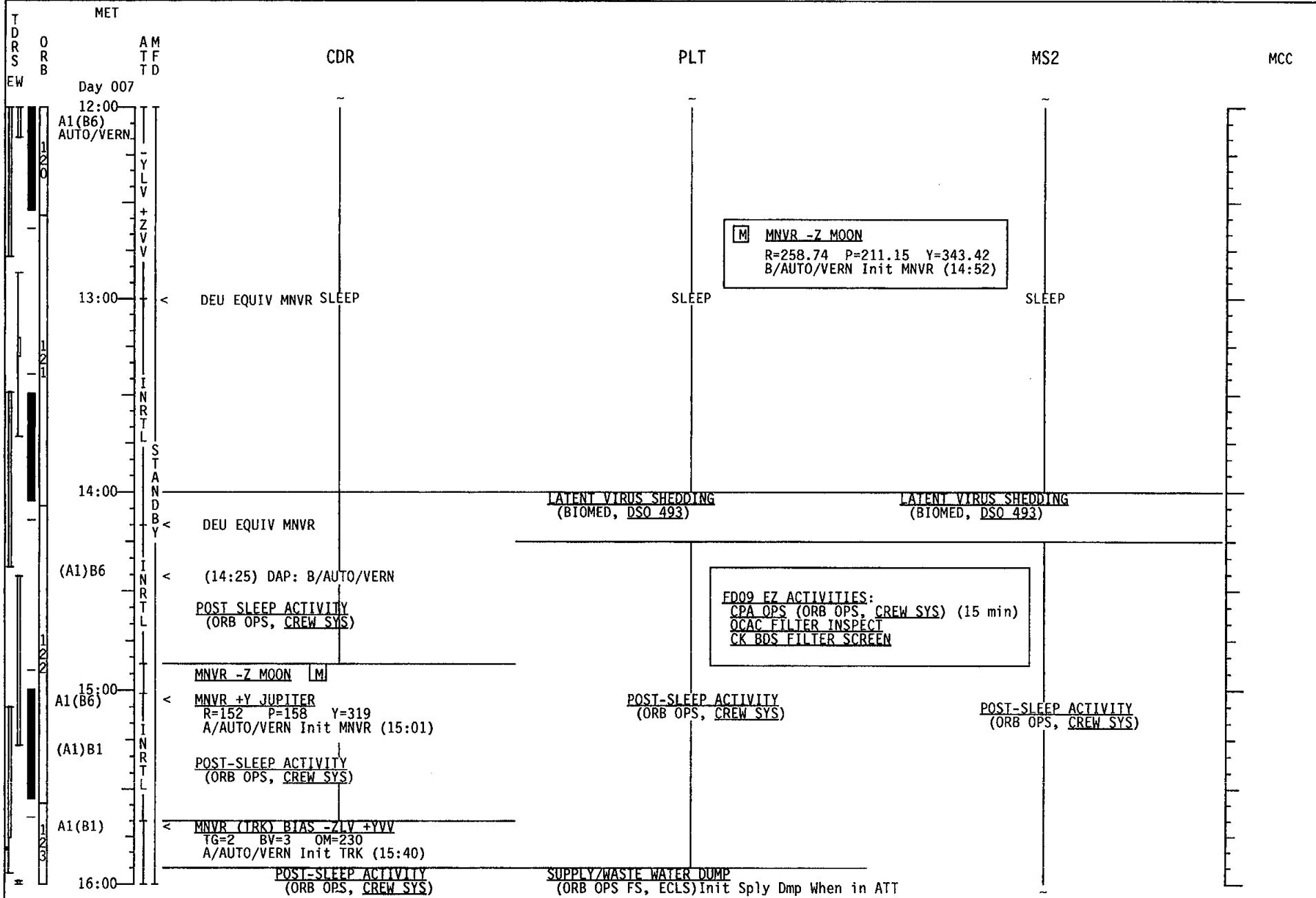
# STS-85 (FD 08)



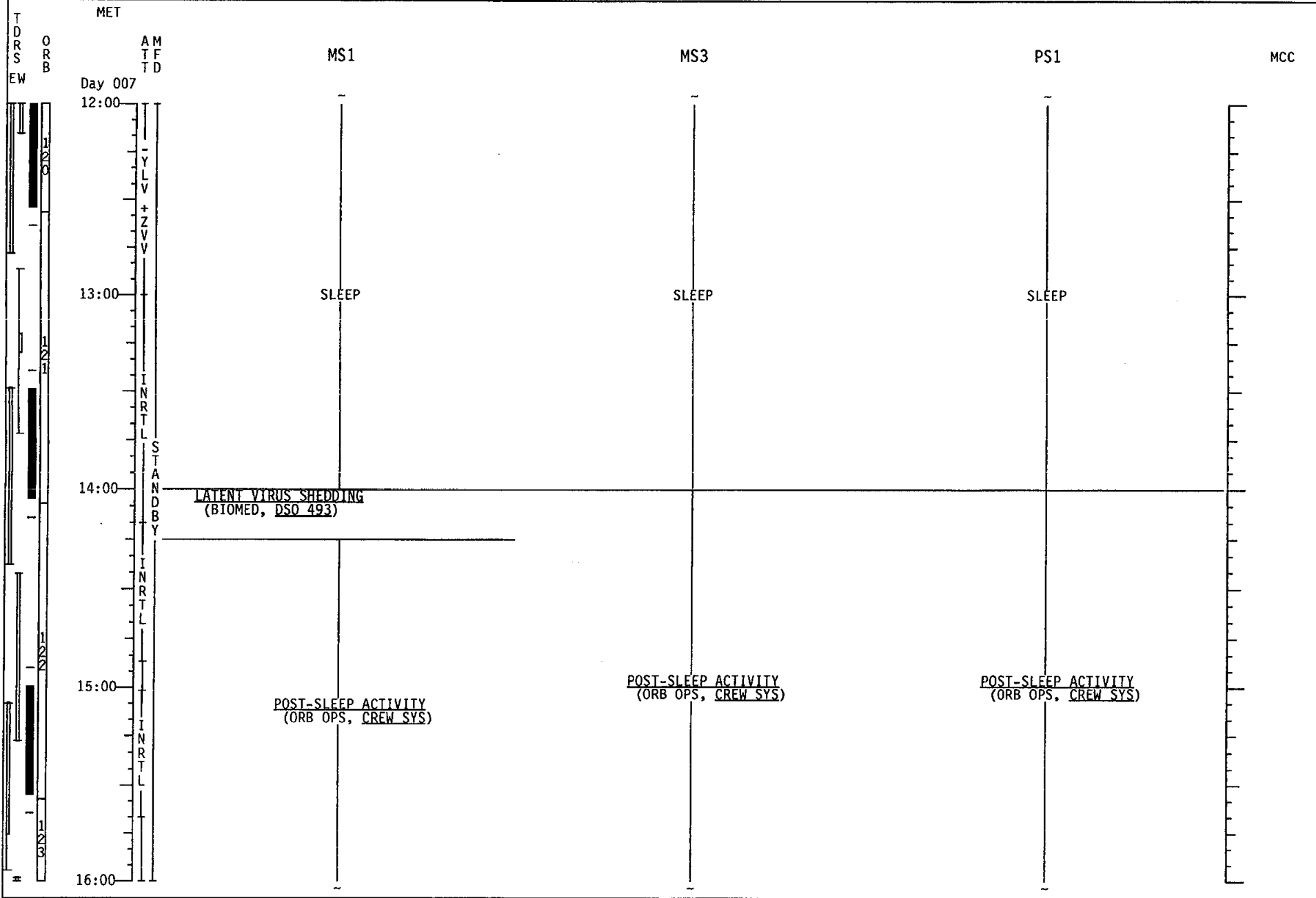
# STS-85 (FD 08)



# STS-85 (FD 08)

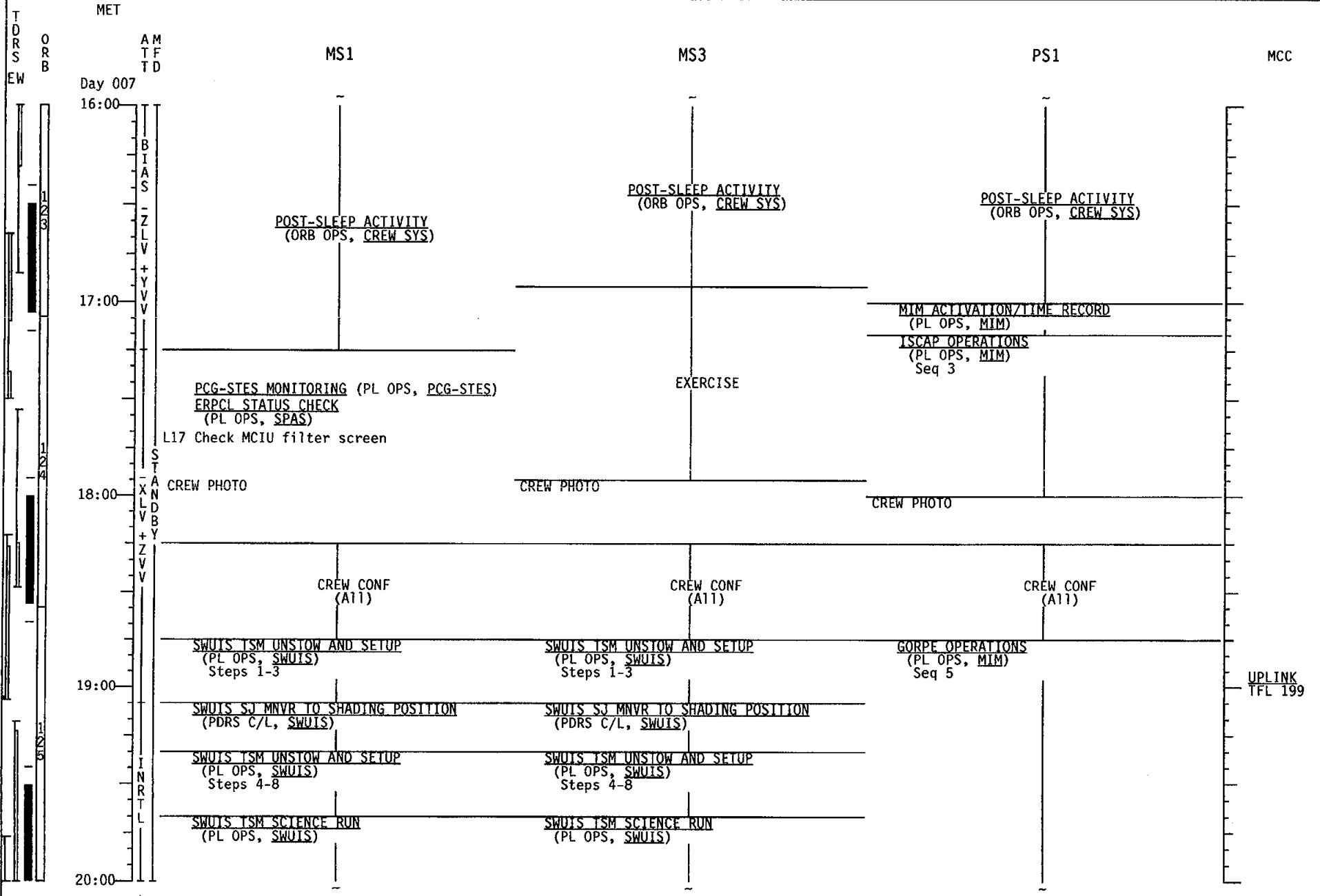


# STS-85 (FD 08)





# STS-85 (FD 09)



# STS-85 (FD 09)

TDRS	ORB	MET	AMTFD	CDR	PLT	MS2	MCC
EW	Day 007	20:00					
	1	A1(B15)					
	2	AUTO/VERN					
	3						
	4						
	5						
	6	A1(B15)		Bright Earth 3° (20:48): Inform MS H-B Set (20:52): DAP A			
	7	21:00					
	8	A1(B15)		H-B Rise - 3 min (21:05): DAP B			
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	100						
		00:00					

P/TV11 OPERATIONS  
(PHOTO/TV, SWUIS)

TV SWUIS  
(CREW  
CNTRL-CAB)

BDS PH II STATUS CHECK  
(PL OPS, BDS)  
PHASE II INIT #6  
(PL OPS, BDS)

Bright Earth 3° (20:48): Inform MS  
H-B Set (20:52): DAP A

H-B Rise - 3 min (21:05): DAP B

MEAL

MEAL

Bright Earth 3° (22:19): Inform MS  
H-B Set (22:23): DAP A

MNVR (TRK) -XLV +ZVV  
TG=2 BV=2 OM=0  
A/AUTO/VERN Init TRK (22:25)

EXERCISE

MEAL

BDS PH II STATUS CHECK  
(PL OPS, BDS)  
PHASE II INIT #7 (PL OPS, BDS)

P/TV12 SETUP  
(PHOTO/TV, QSVS LTNG TSI)

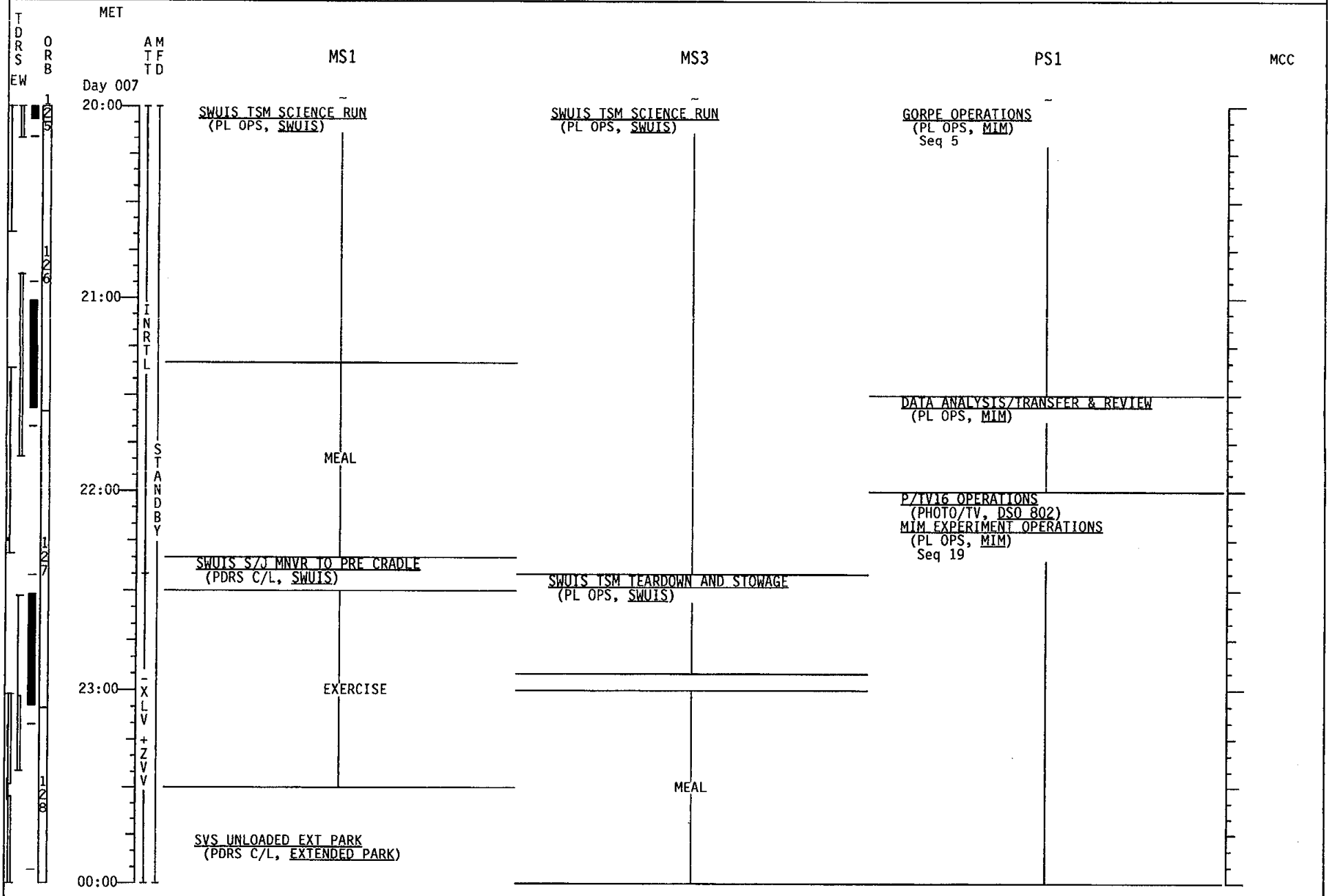
WCS COMPACTOR OPS  
(CUE CARD)  
Dual - Vane

P/TV16 OPERATIONS  
(PHOTO/TV, DSO 802)  
MIM EXPERIMENT OPERATIONS  
(PL OPS, MIM)  
Seq 19

EXERCISE

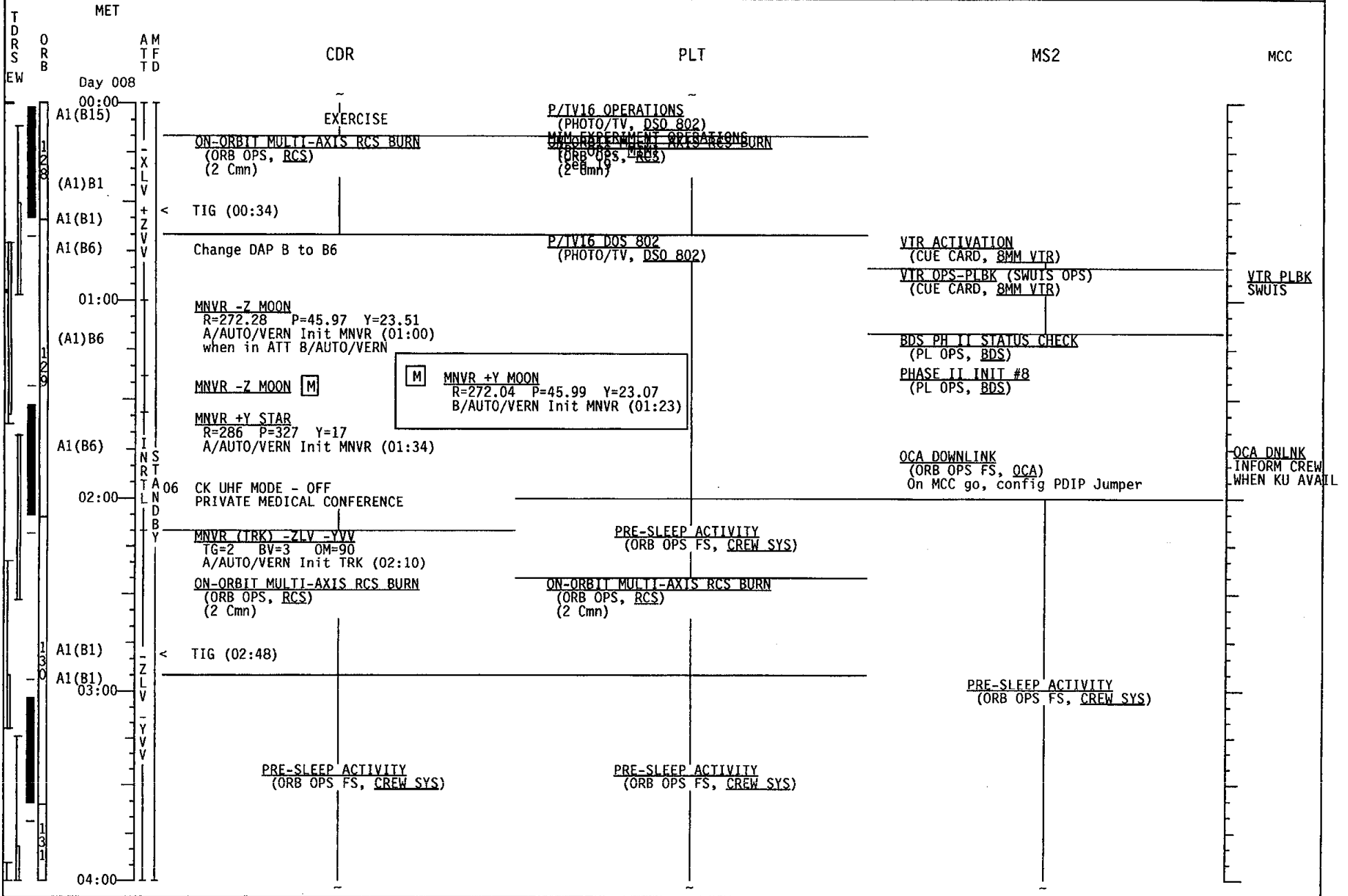
EXERCISE

# STS-85 (FD 09)

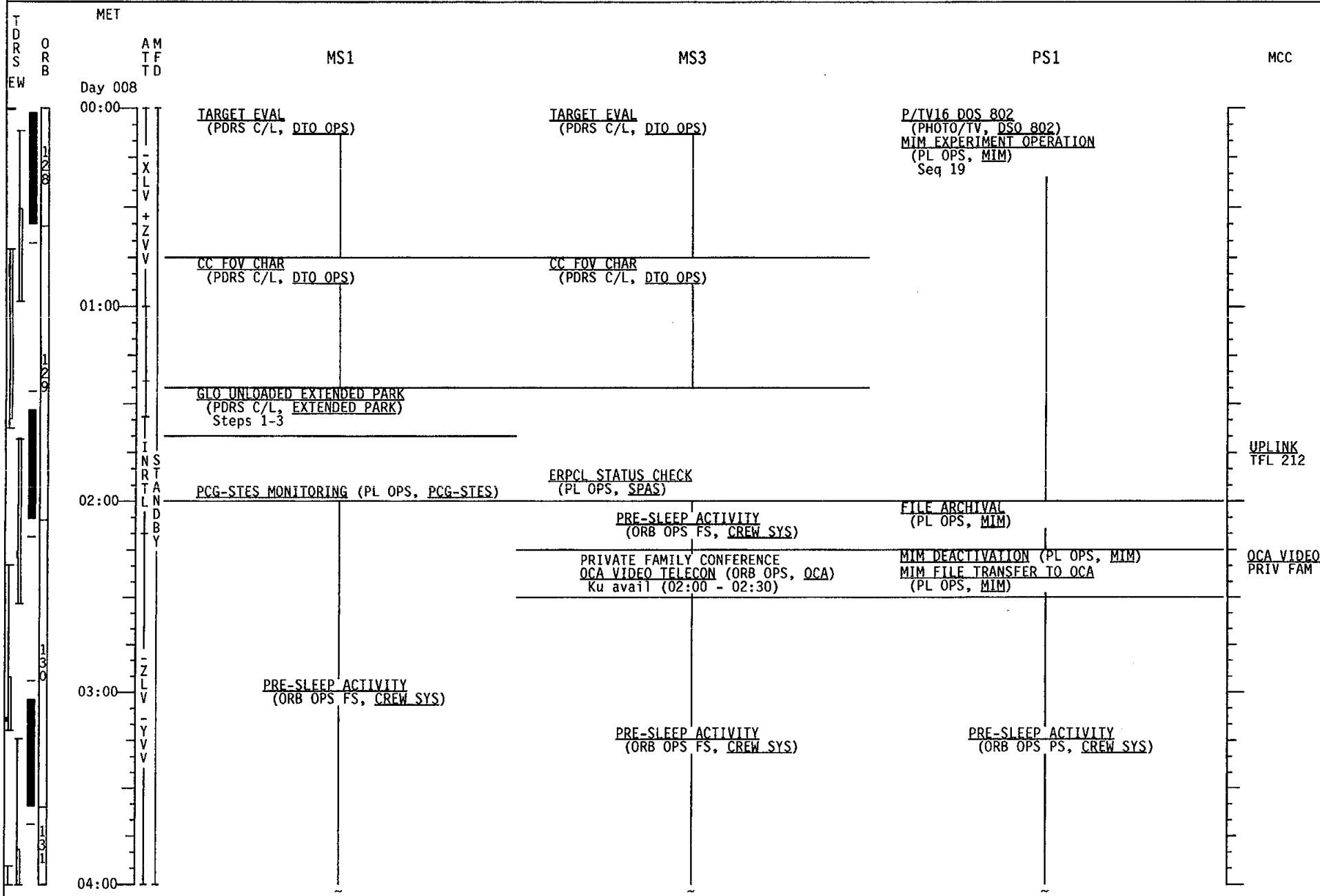




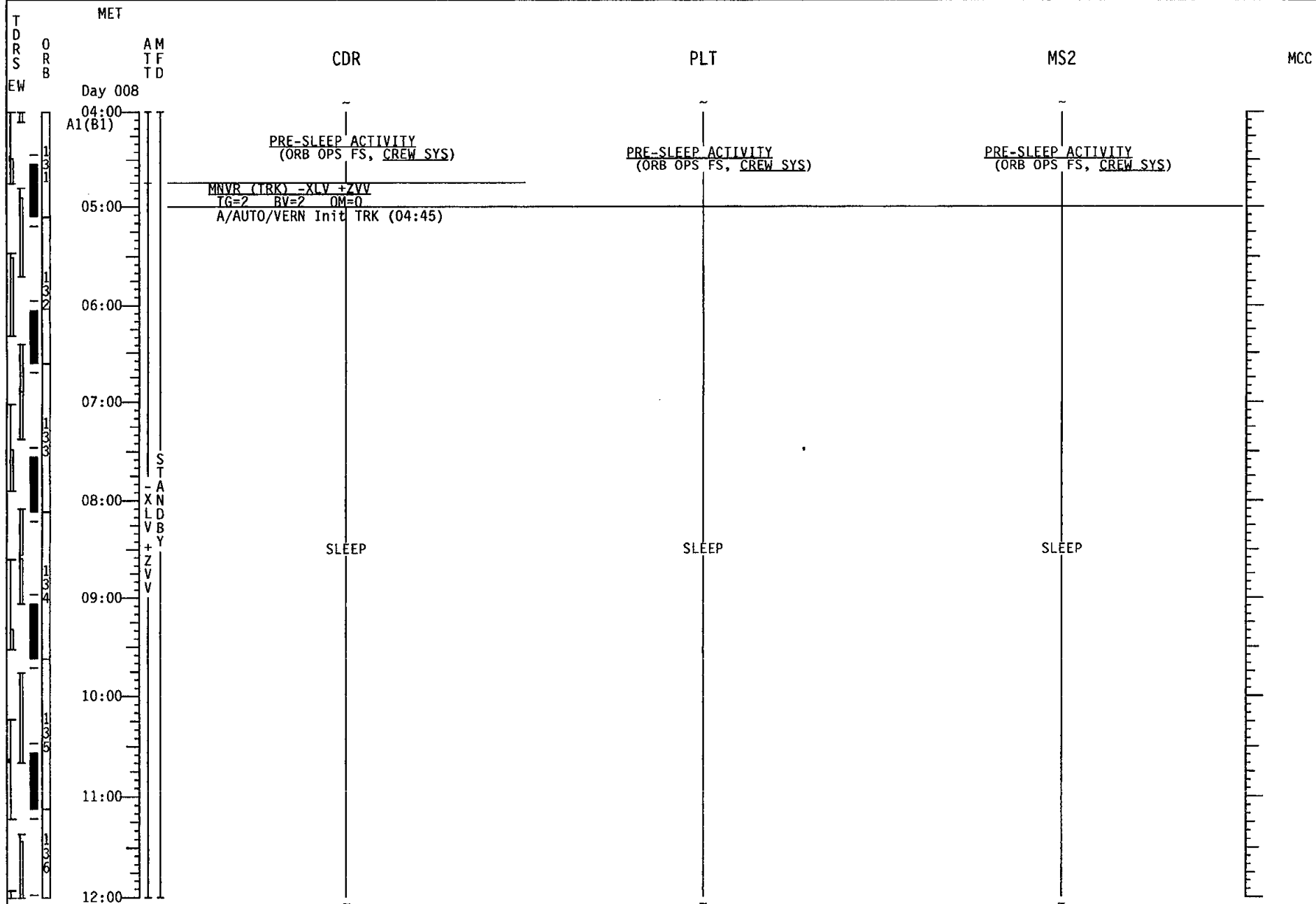
# STS-85 (FD 09)



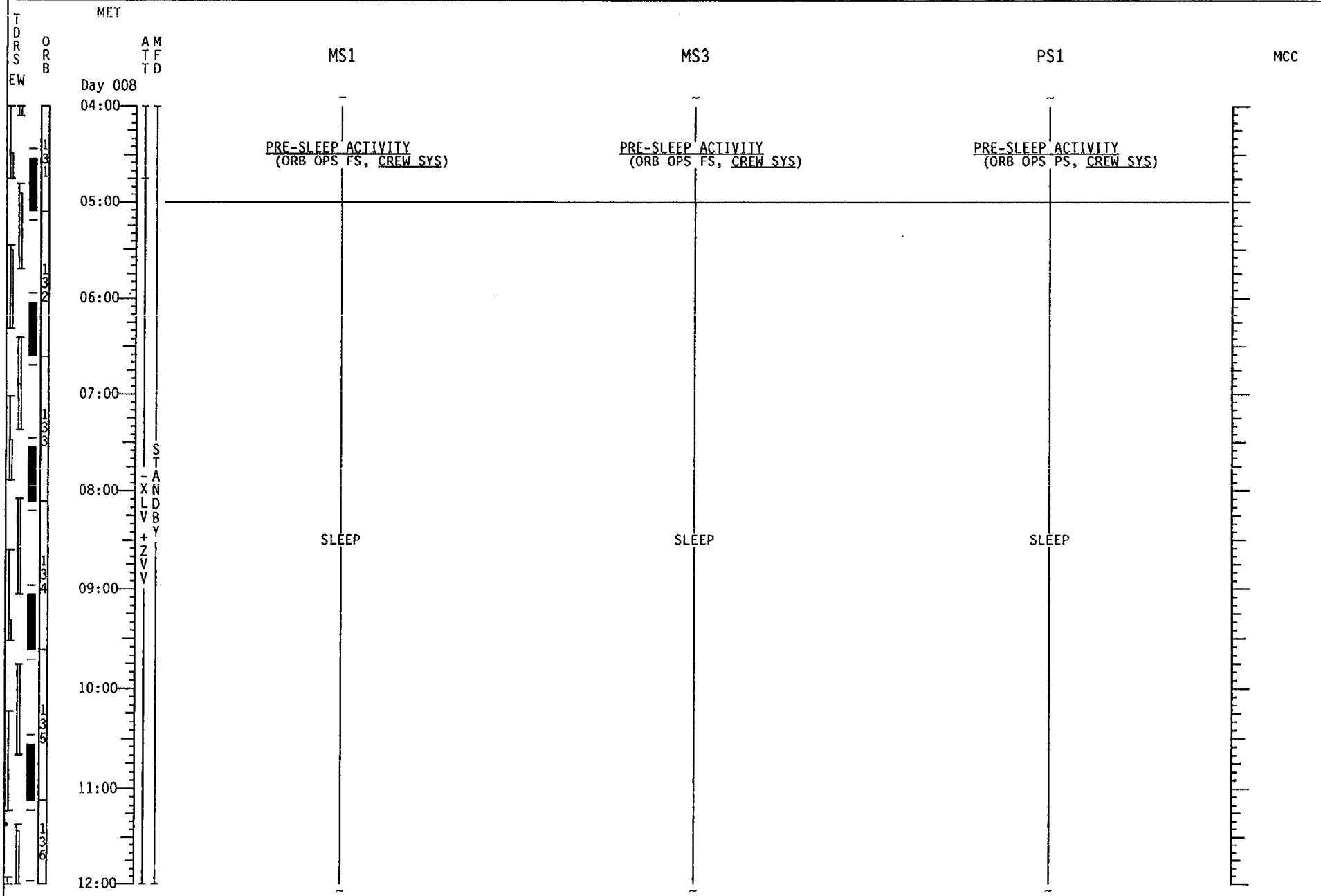
# STS-85 (FD 09)



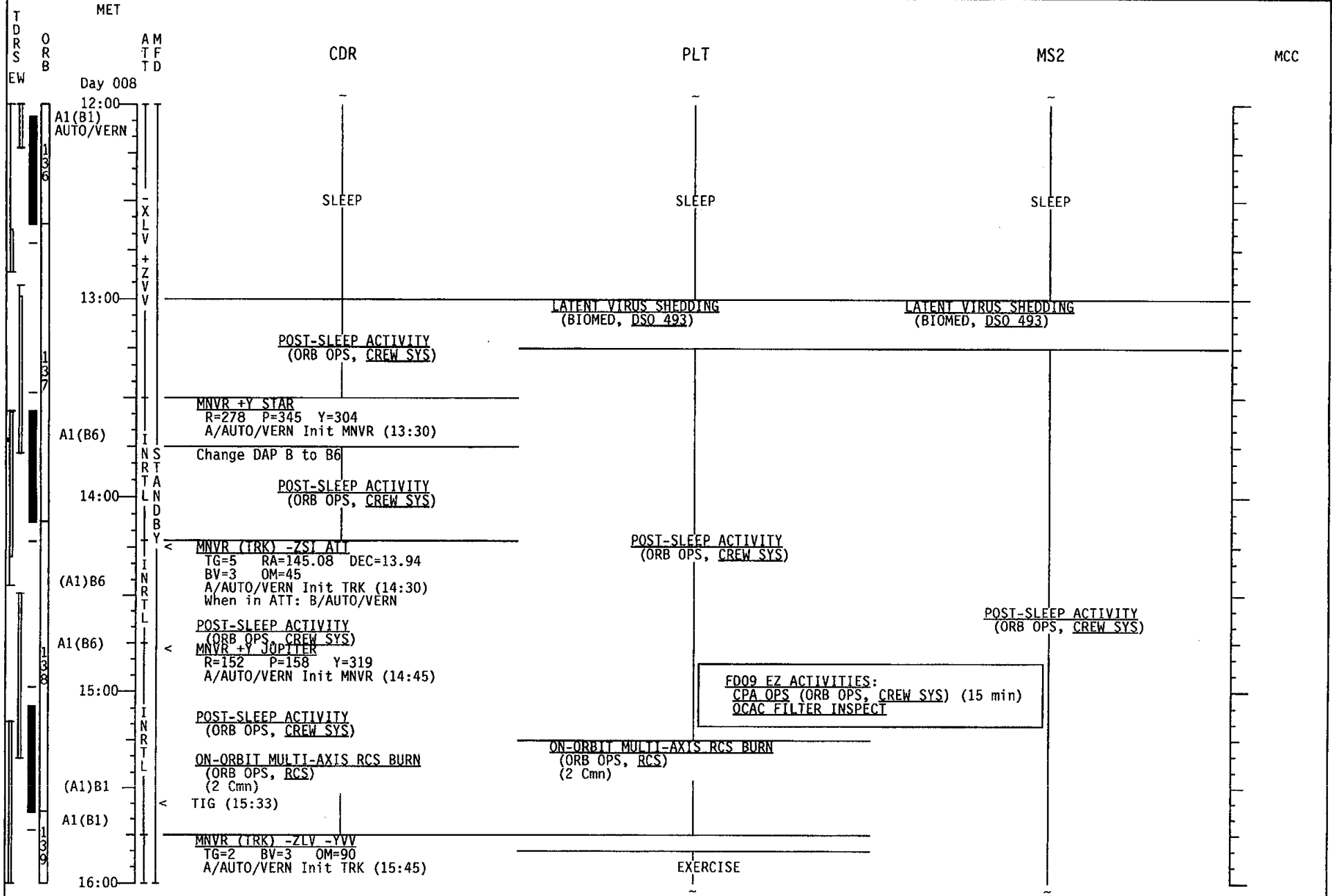
# STS-85 (FD 09)



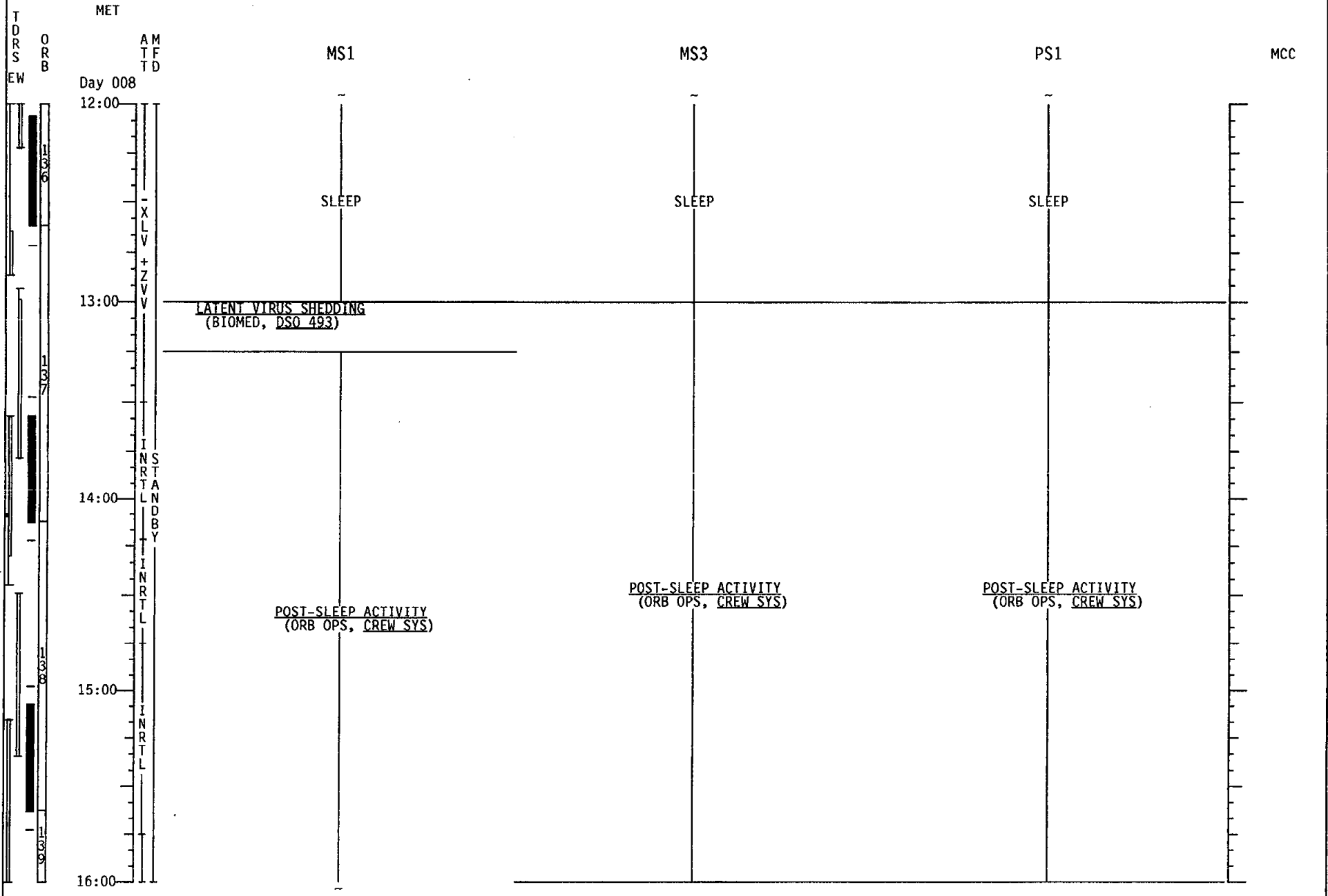
# STS-85 (FD 09)



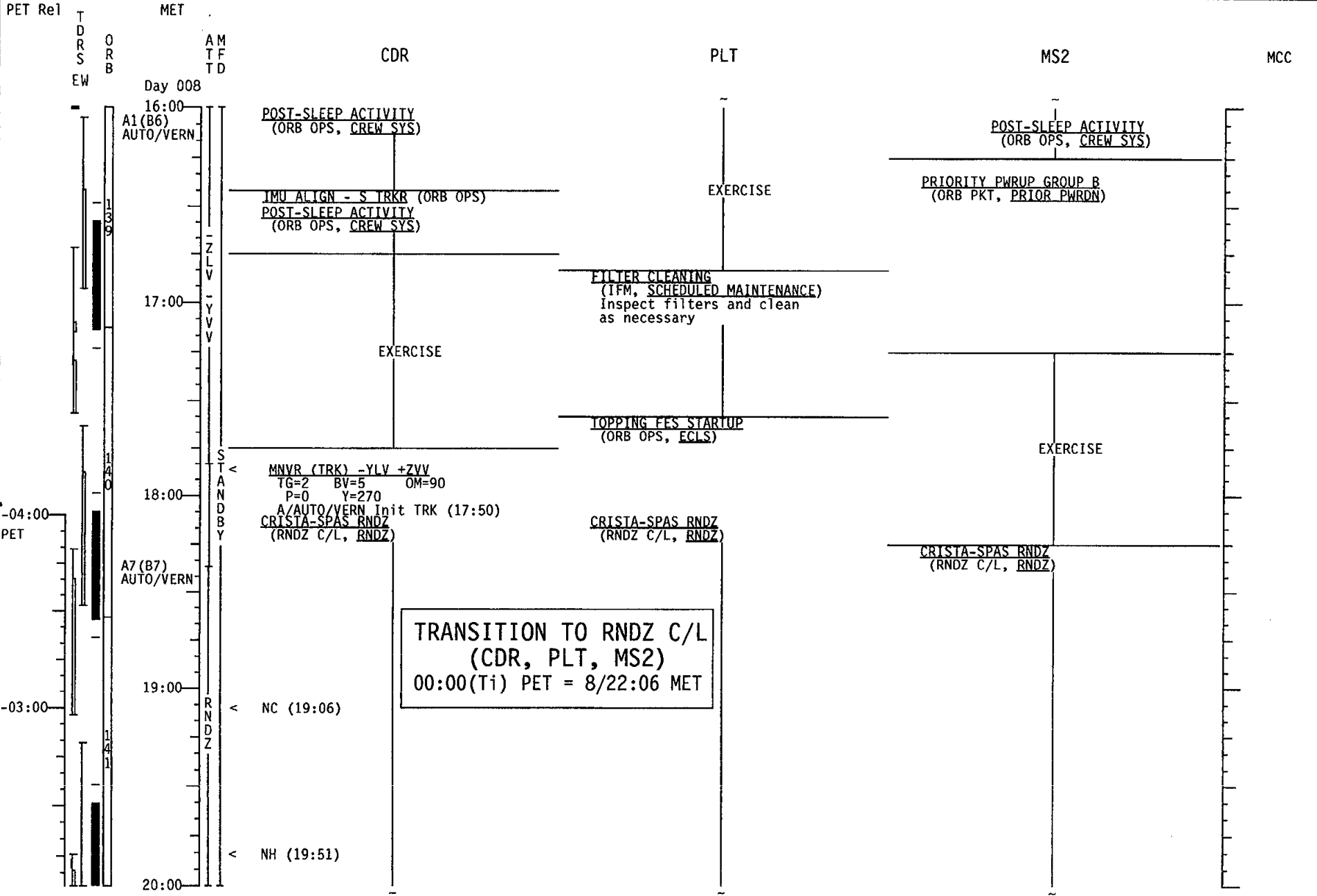
# STS-85 (FD 09)



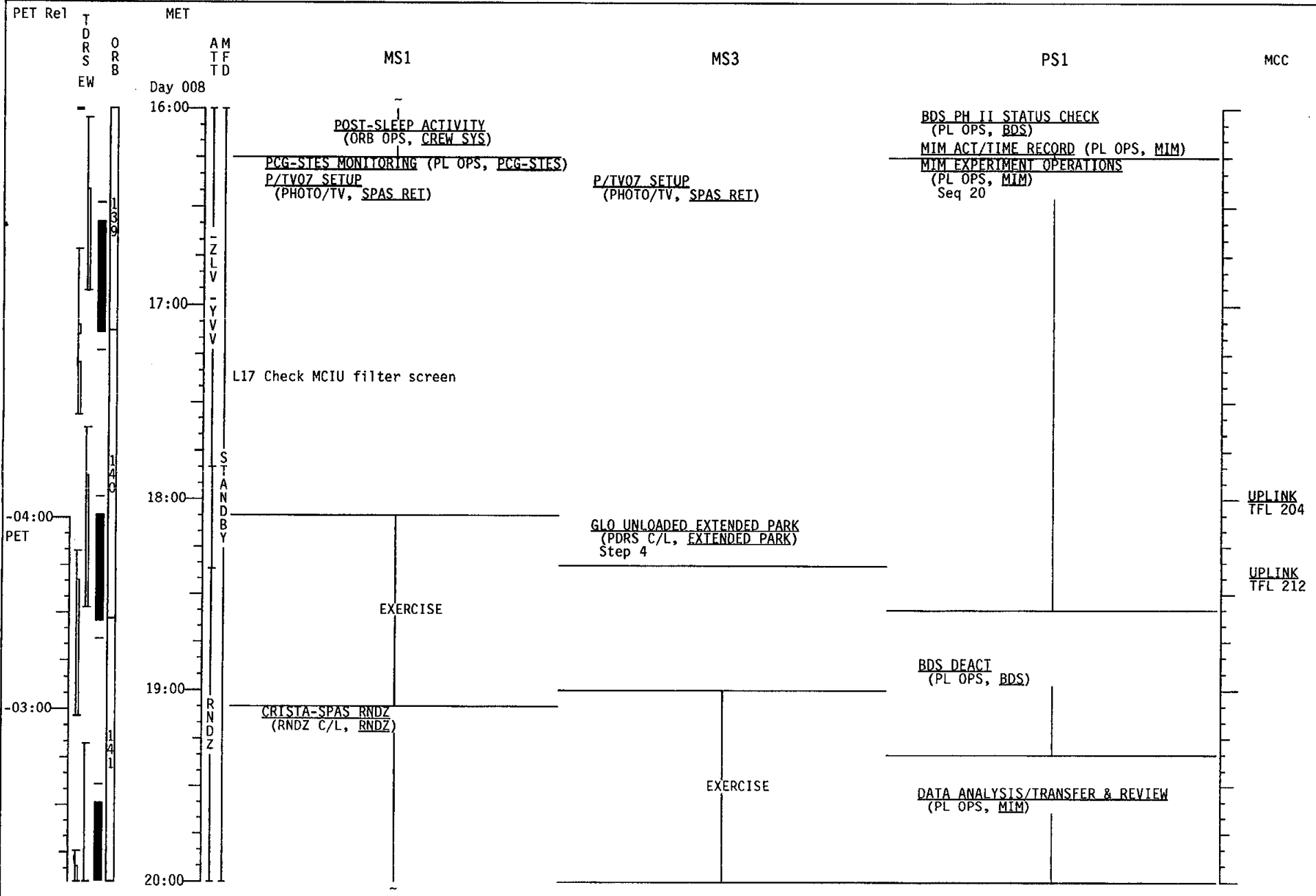
# STS-85 (FD 09)



# STS-85 (FD 10)

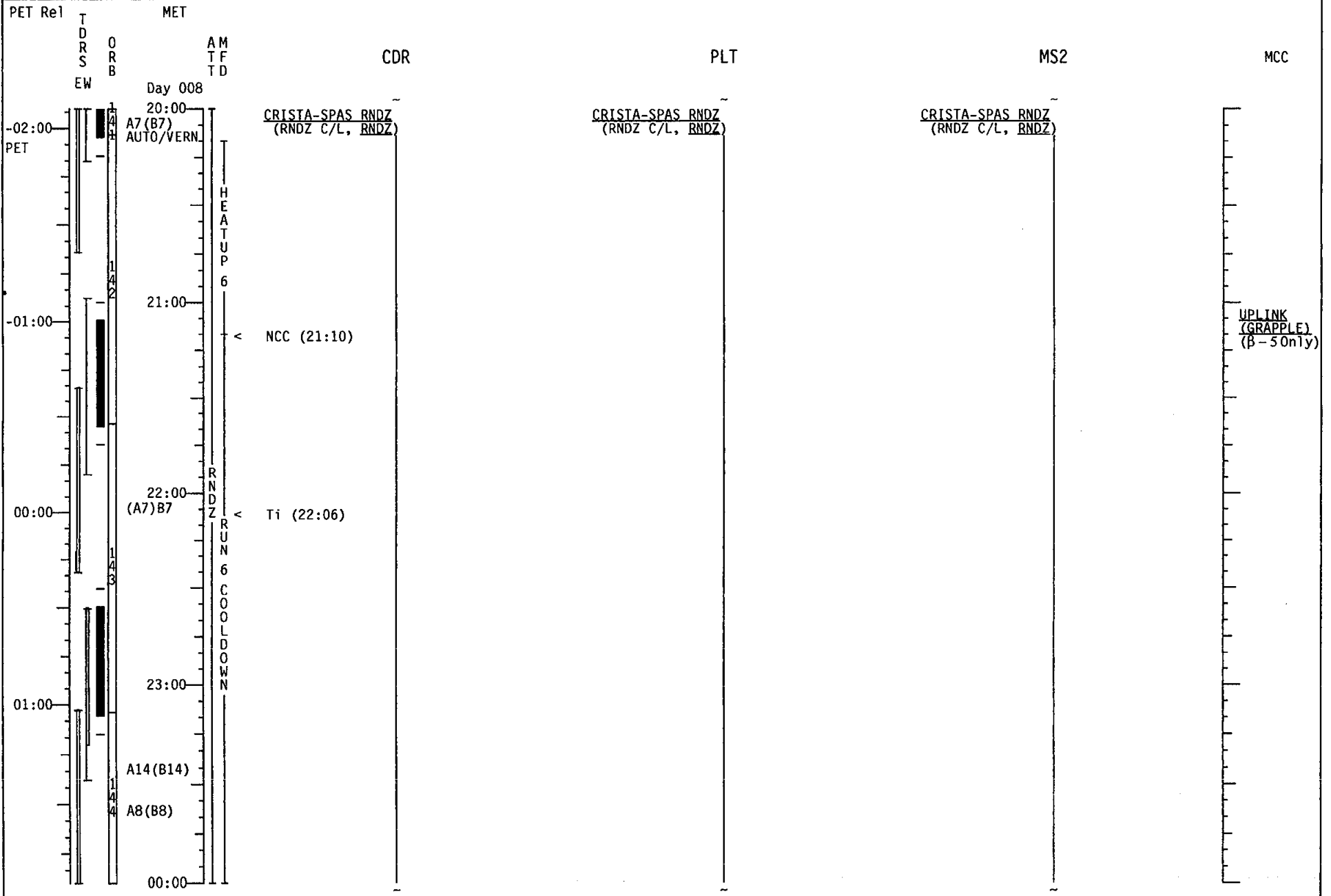


# STS-85 (FD 10)

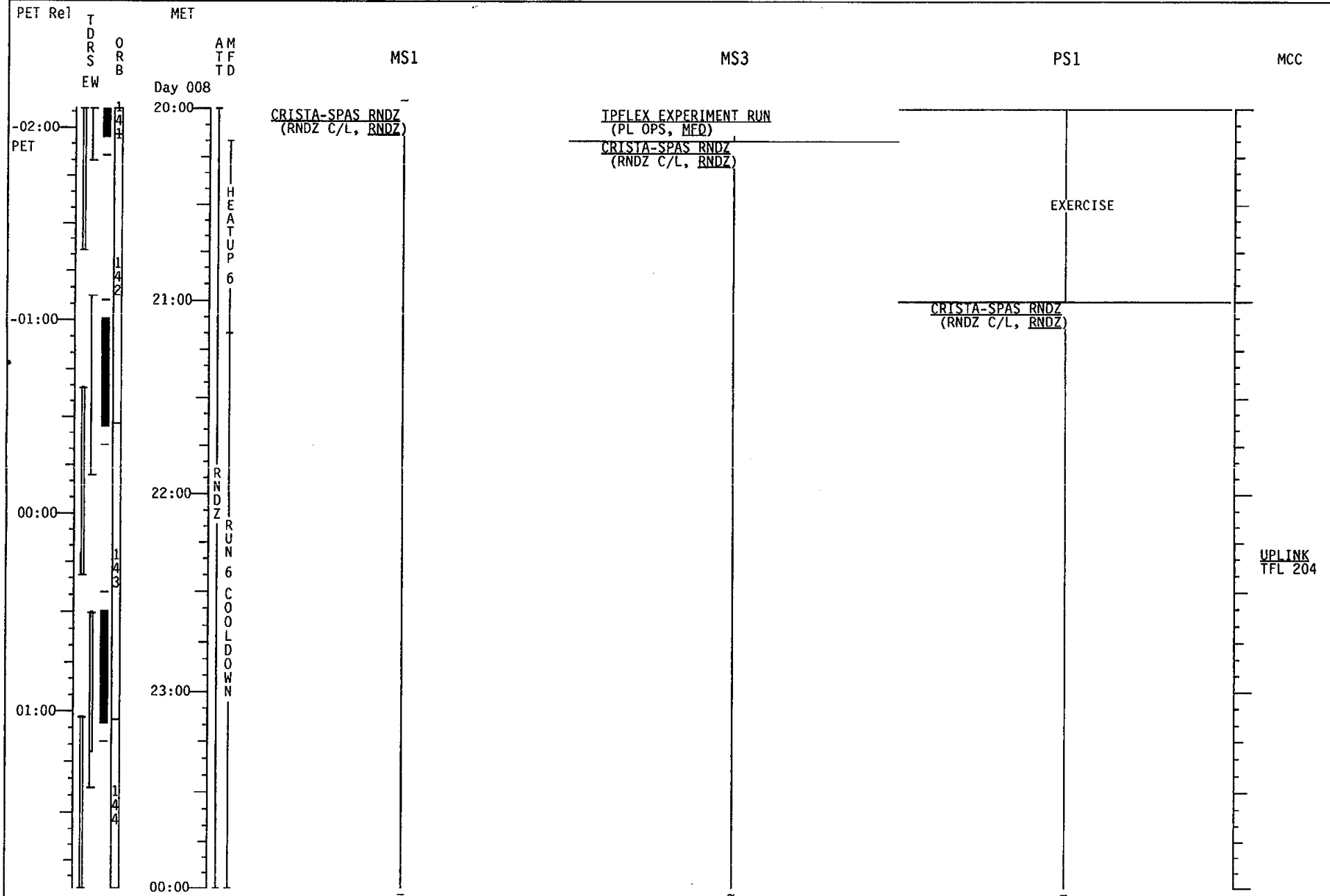




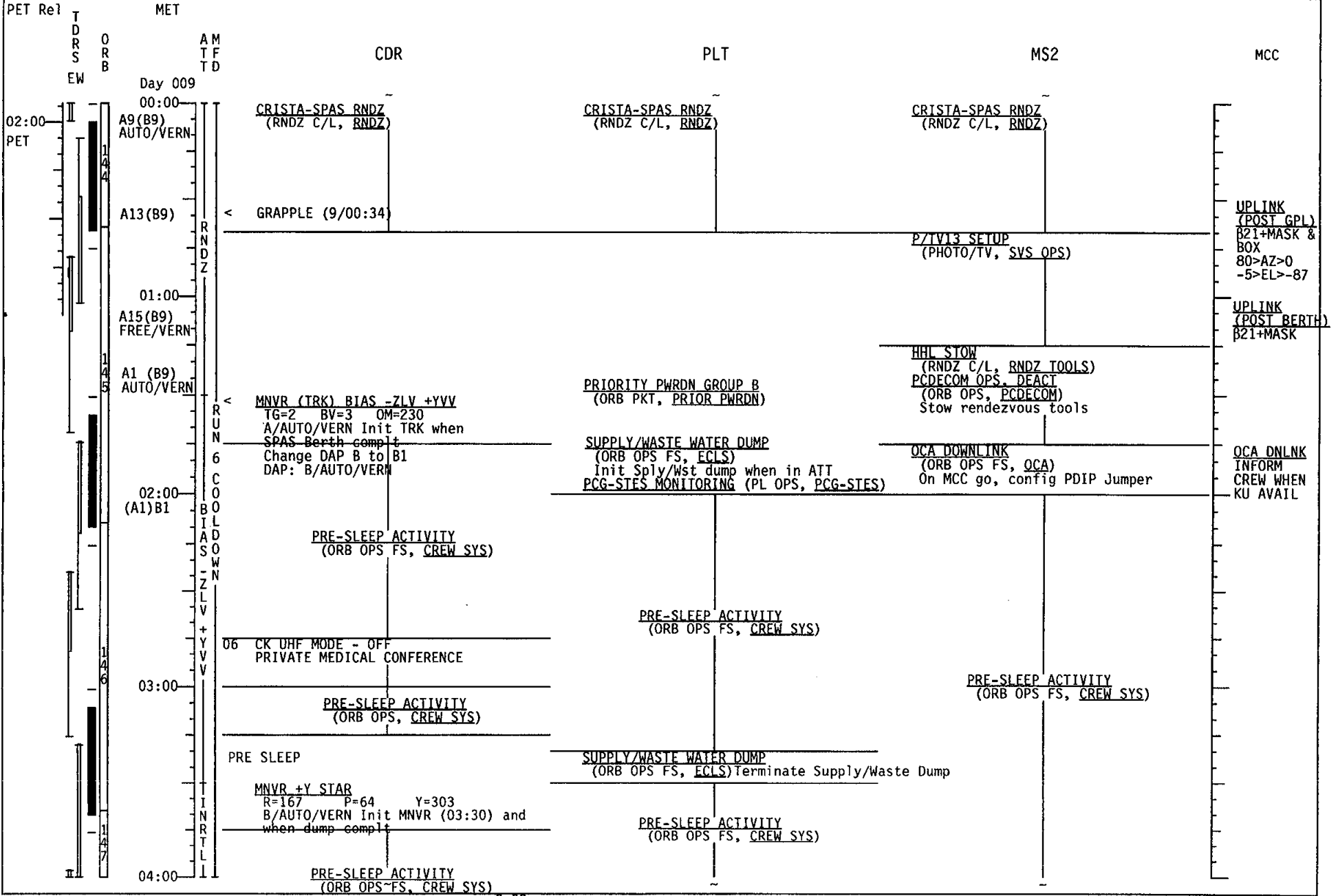
# STS-85 (FD 10)



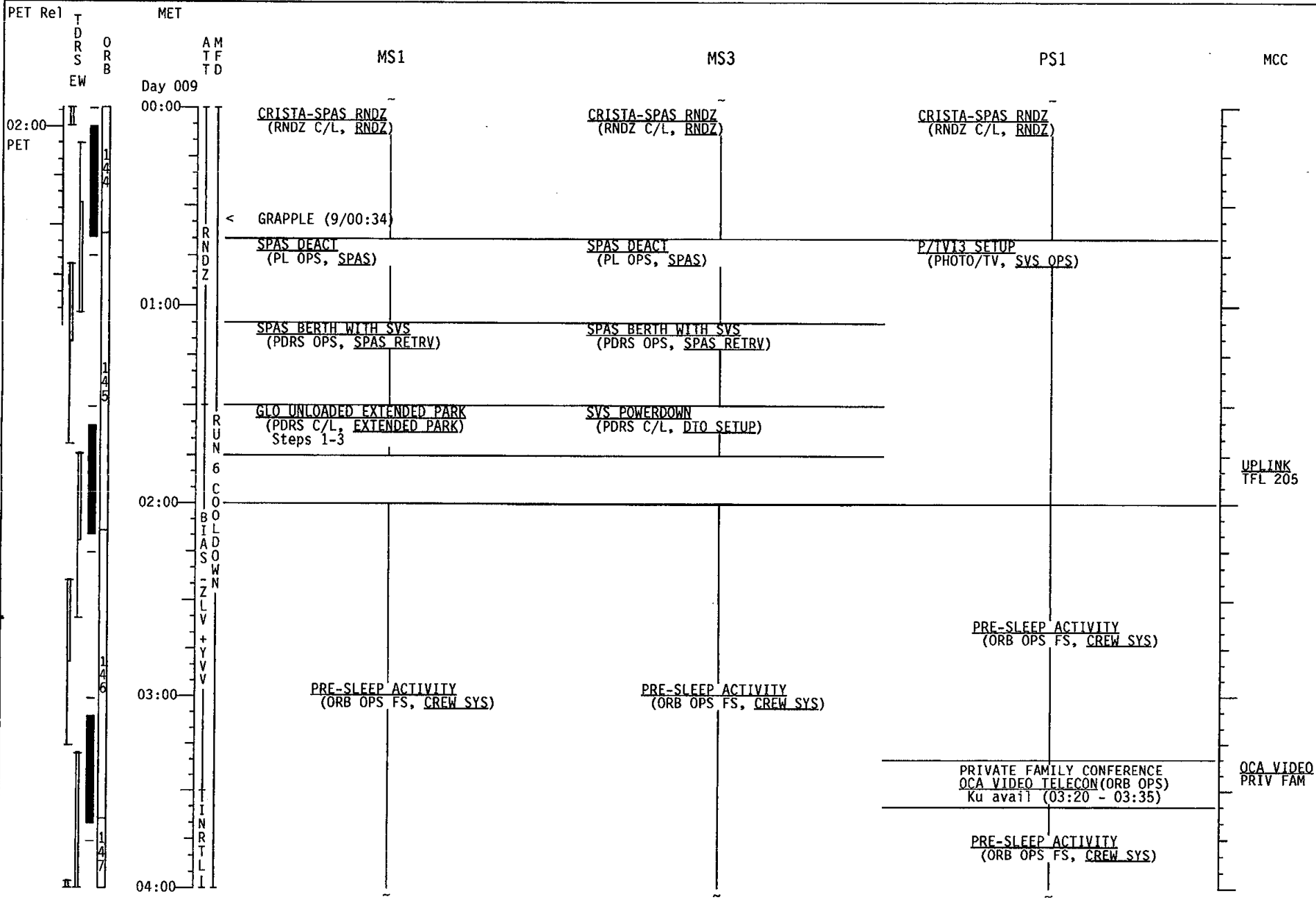
# STS-85 (FD 10)



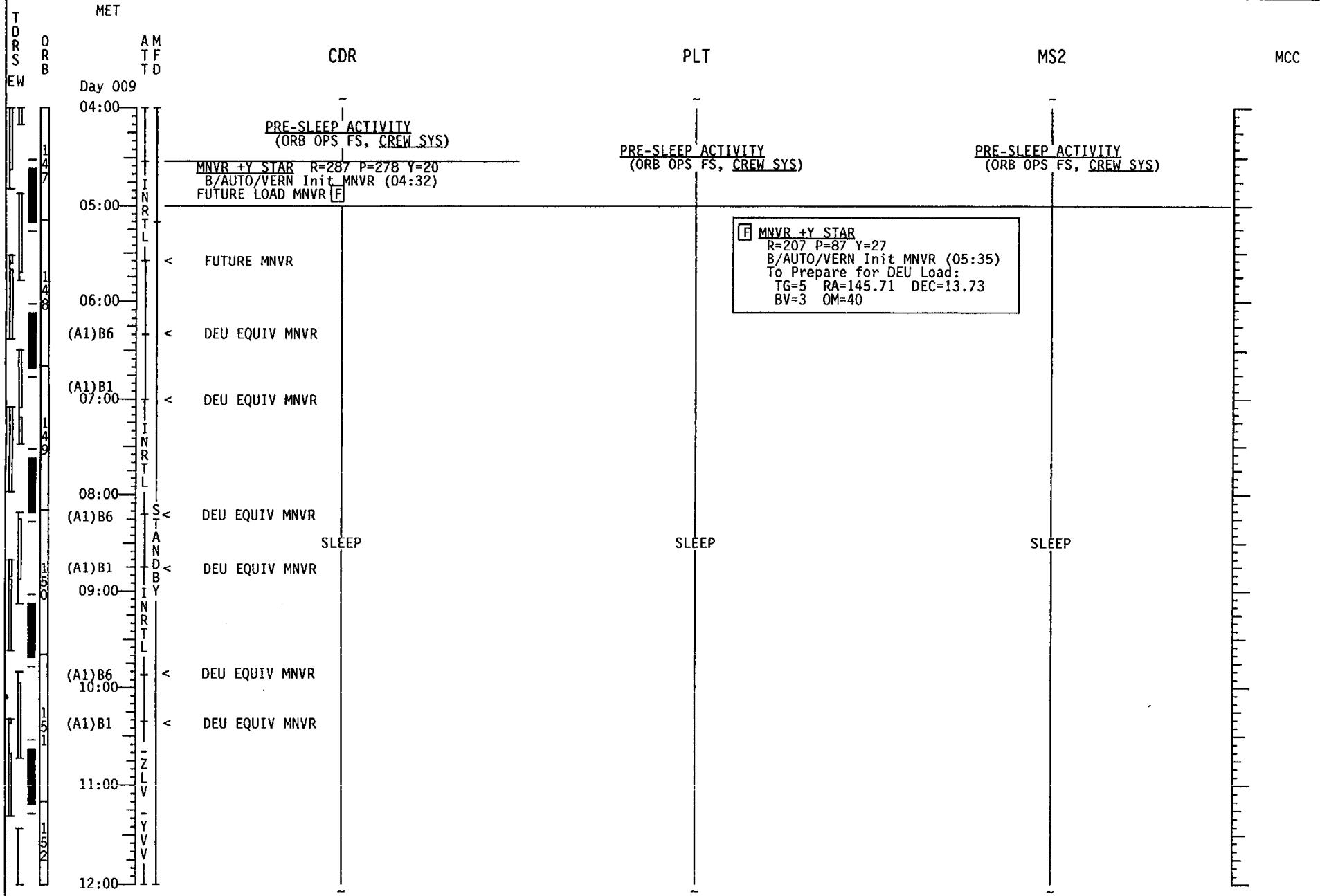
# STS-85 (FD 10)



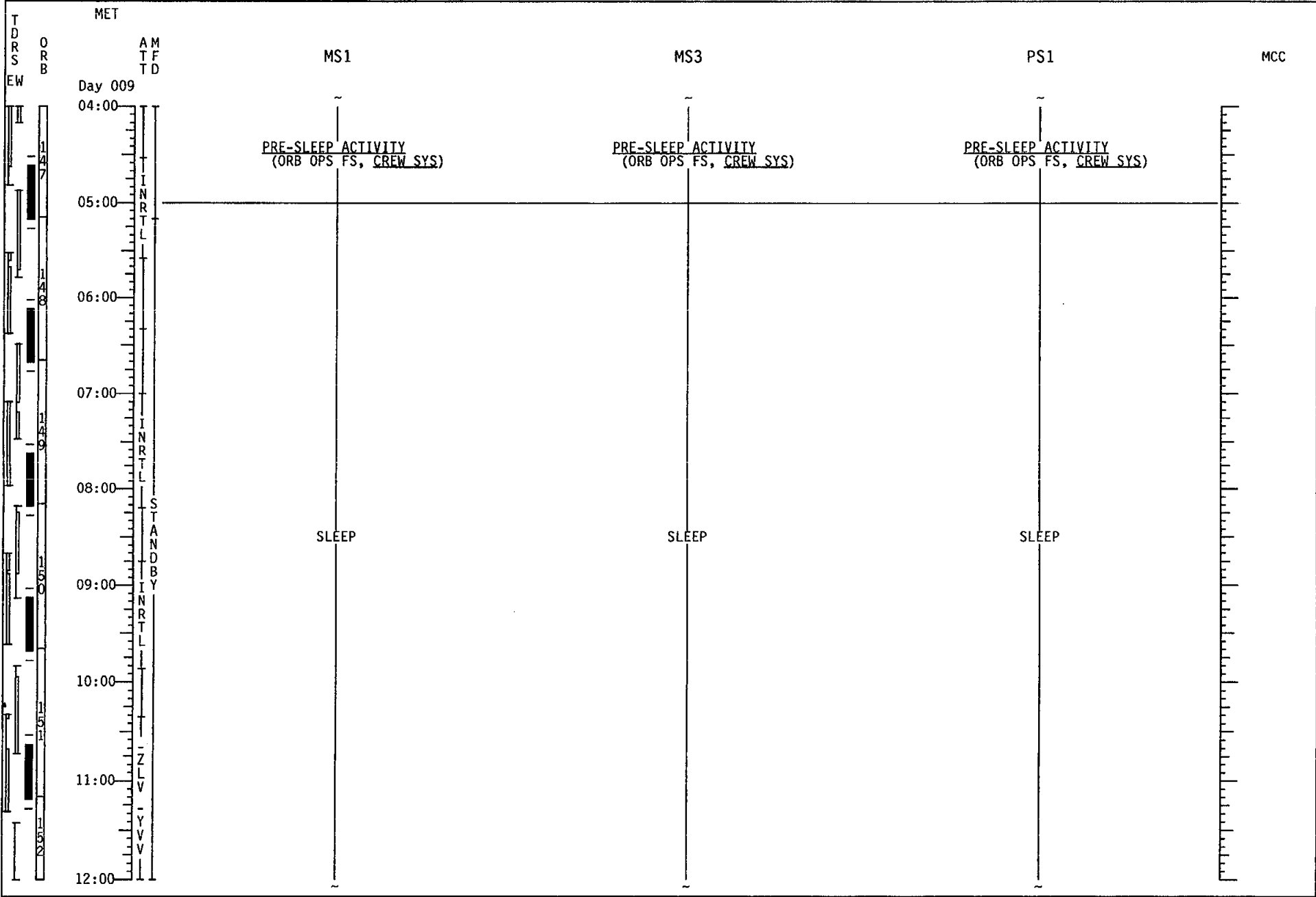
# STS-85 (FD 10)



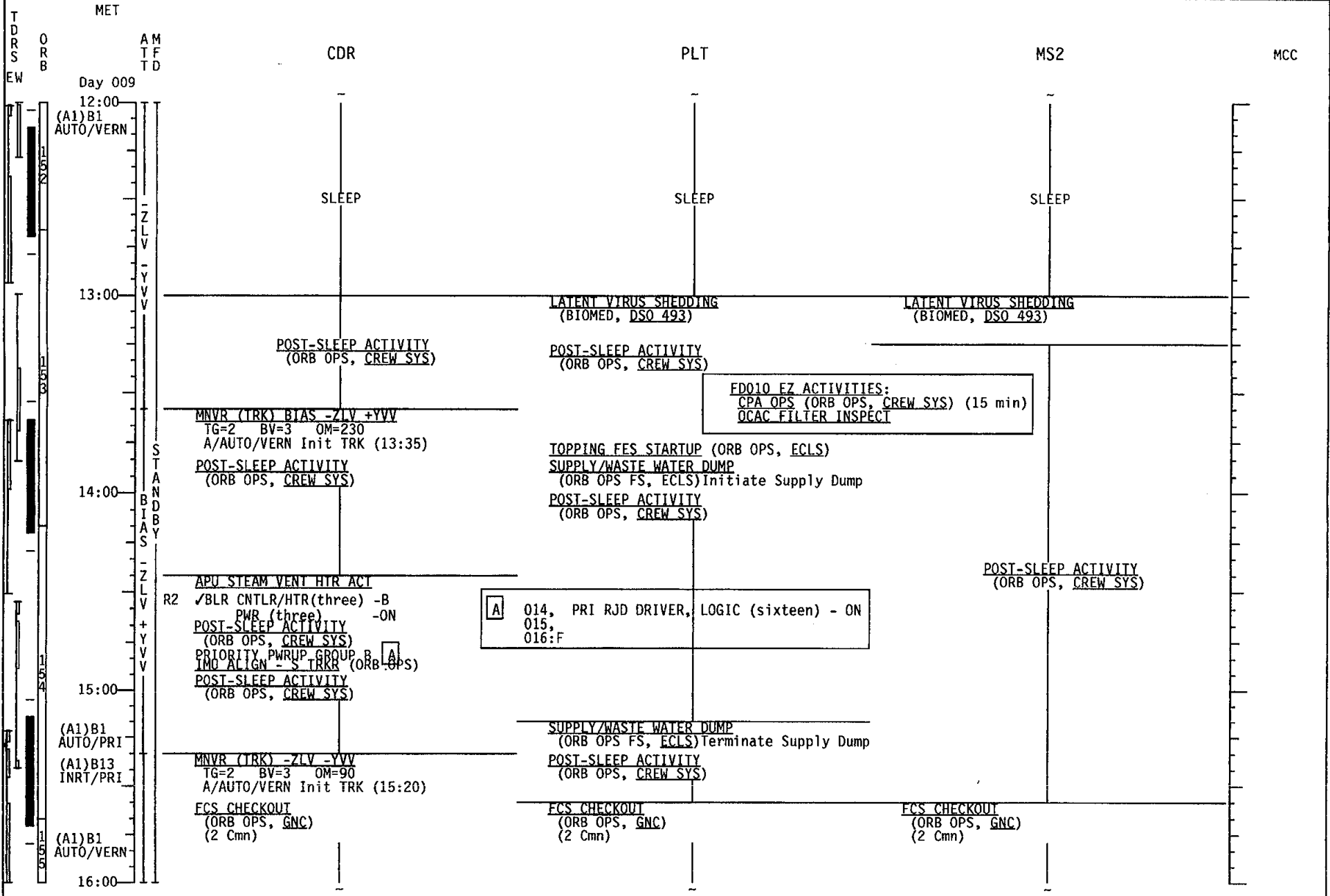
# STS-85 (FD 10)



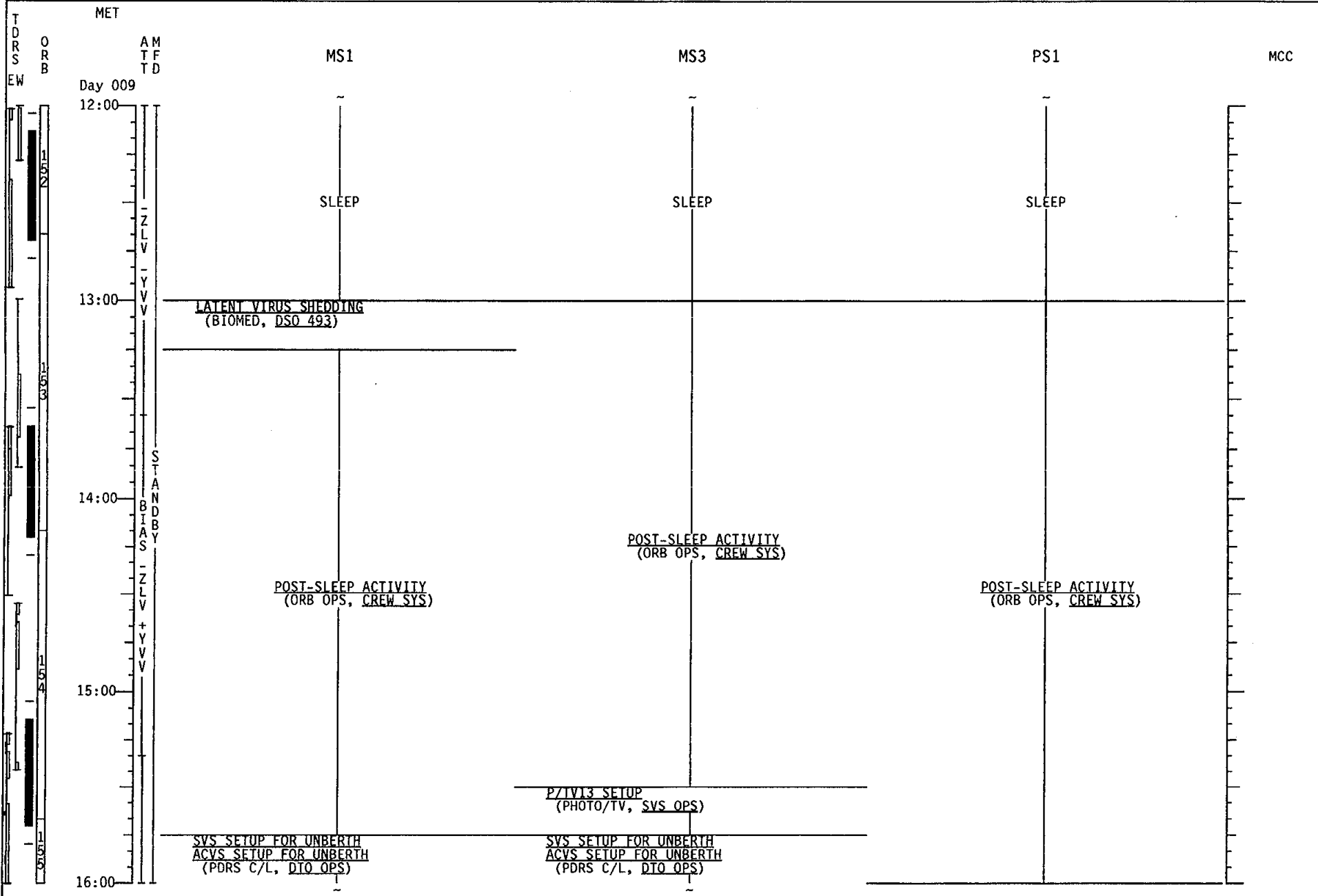
# STS-85 (FD 10)



# STS-85 (FD 11)

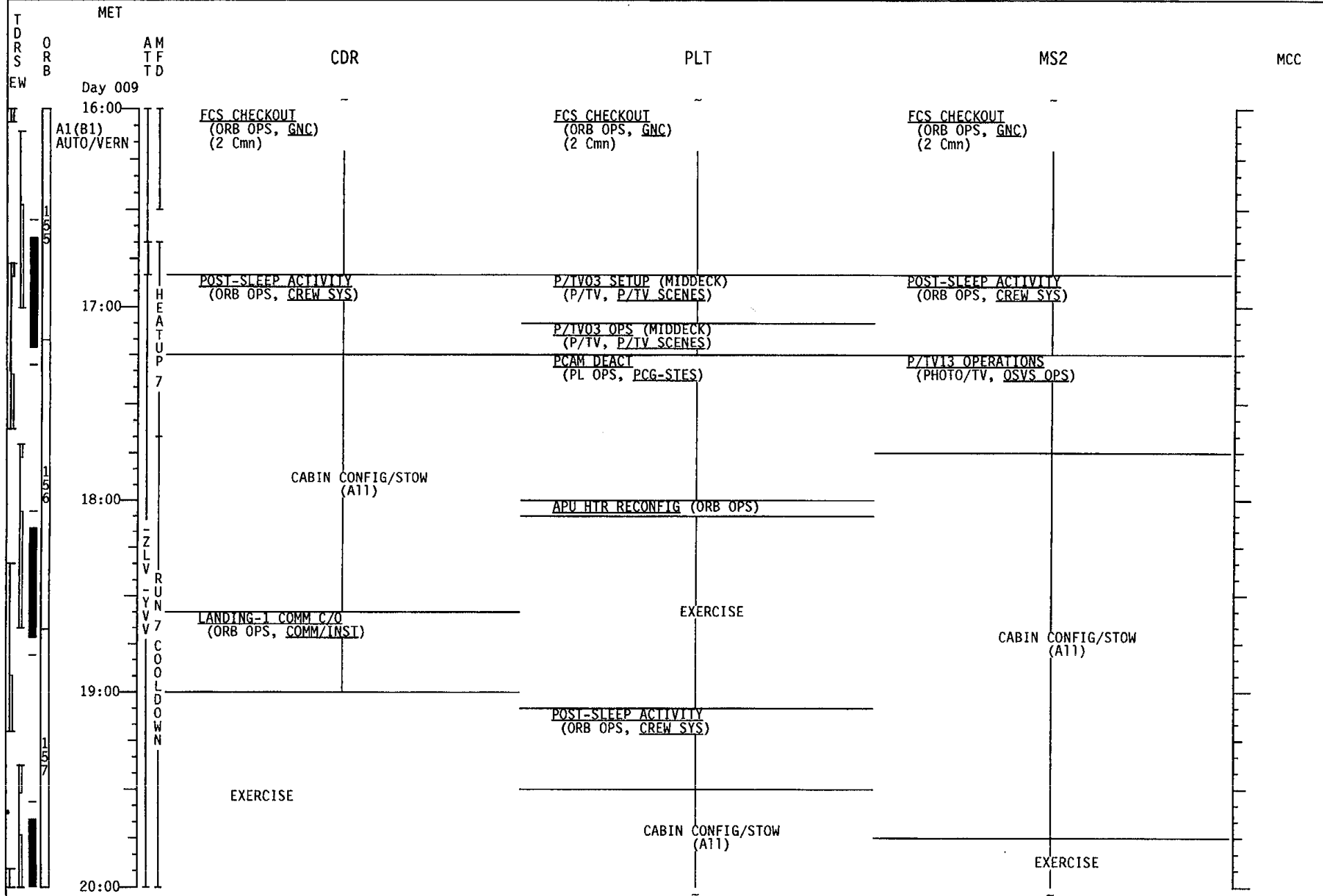


# STS-85 (FD 11)

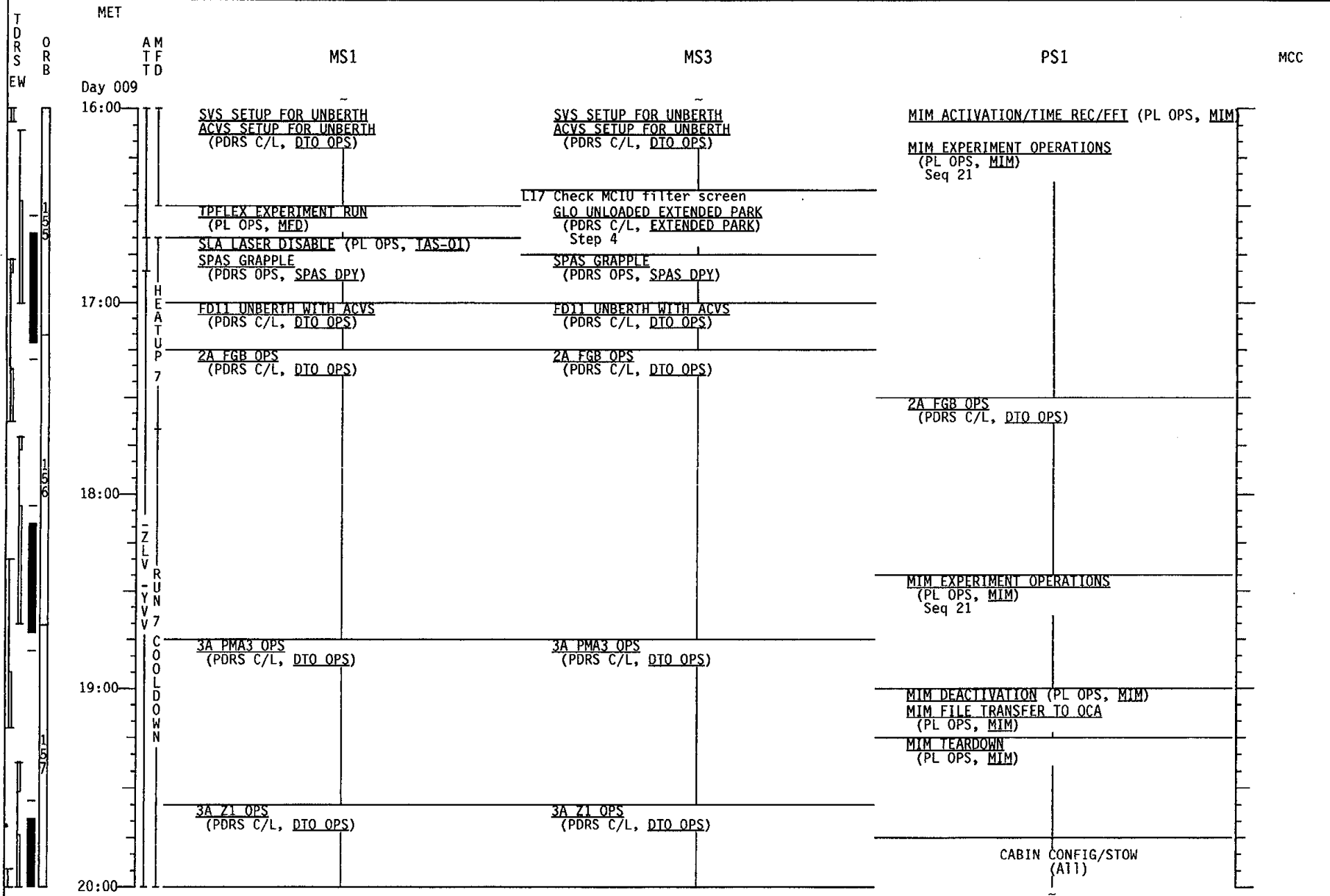




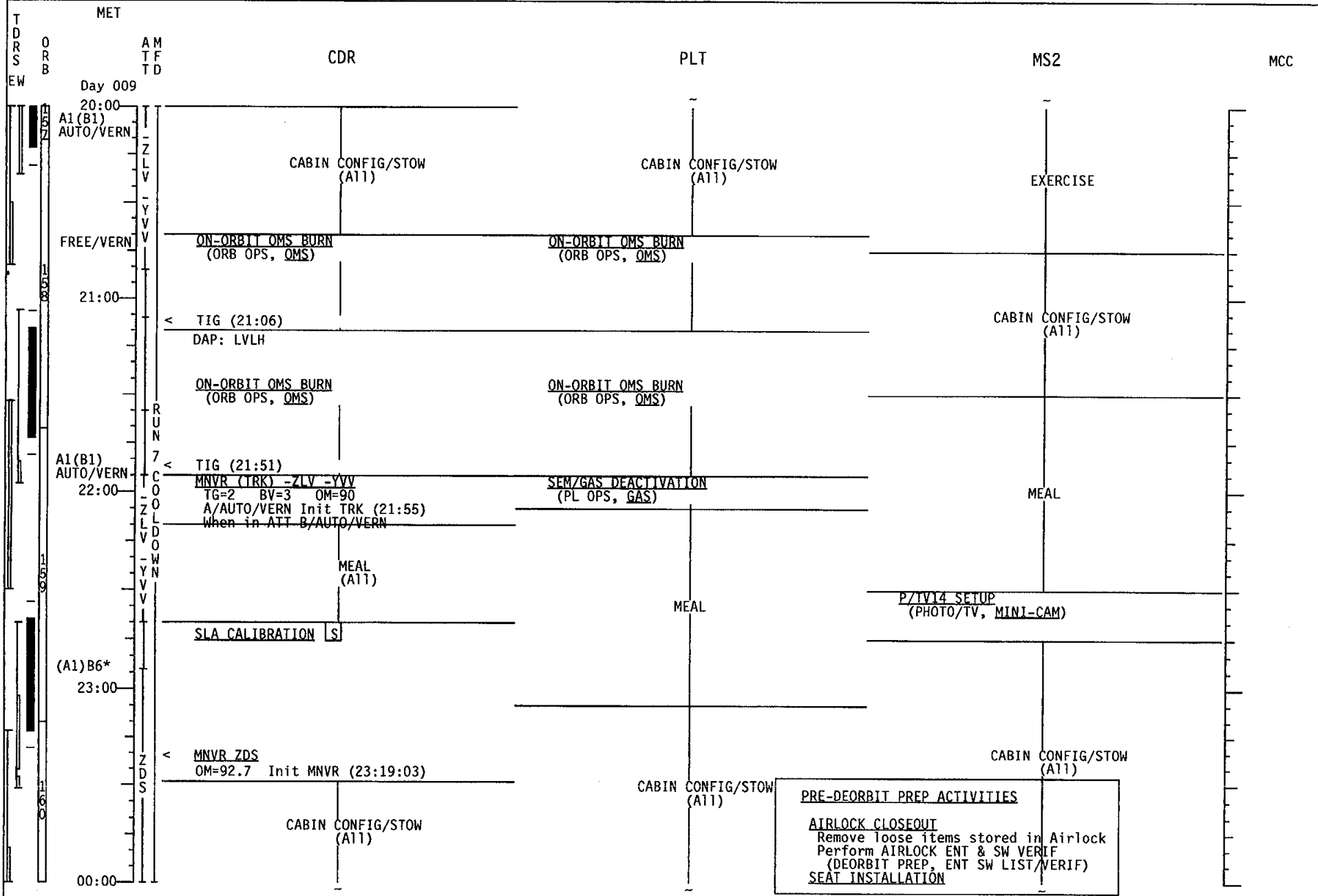
# STS-85 (FD 11)



# STS-85 (FD 11)



# STS-85 (FD 11)



Day 001

**S** SLA LOS CALABRATION

1. SET UP

**GNC 20 DAP CONFIG**

Change DAP A,B to A1, B1  
Temp edit B VERN ROT RATE  
ITEM 43 + 0.1000 EXEC

**Future Load MNVR 1**

**GNC UNIV PTG**

START TIME = 09/22:40:00  
TG=2 BV=5  
P=90 Y=6 OM=90  
B/AUTO/VERN Init TRK

2. SMALL NADIR CROSS

Init Track for each MNVR when  
att errors of prior MNVR are  
< 1.0 deg

CK TG=2 BV=5

Note: Only "\*" entires must be loaded

MNVR	P ITEM 15	Y ITEM 16
2	90	354*
3	90	0*
4	84*	0
5	96*	0
6	70*	0

CK OM=90  
B/AUTO/VERN Init TRK

3. 20 DEG CROSS TRACK SWEEP

Increase VERN ROT RATE to 0.2 deg/sec  
during MNVR 6

When Pitch errors = 15 deg:

DAP: A/AUTO/VERN

When in att (Rates < 0.1 Deg/sec):

Exec sweep in opposite direction

CK TG=2

CK BV=5

P=110

CK Y=0

CK OM=90

A/AUTO/VERN Init TRK

4. MNVR TO ISIR ZDS START ATTITUDE

When in att (Rates < 0.1 deg/sec):

MNVR to ISIR ZDS (-ZLV -YVV)

CK TG=2

CK BV=3

CK OM=87.3

A/AUTO/VERN Init TRK

Change DAP B to B6

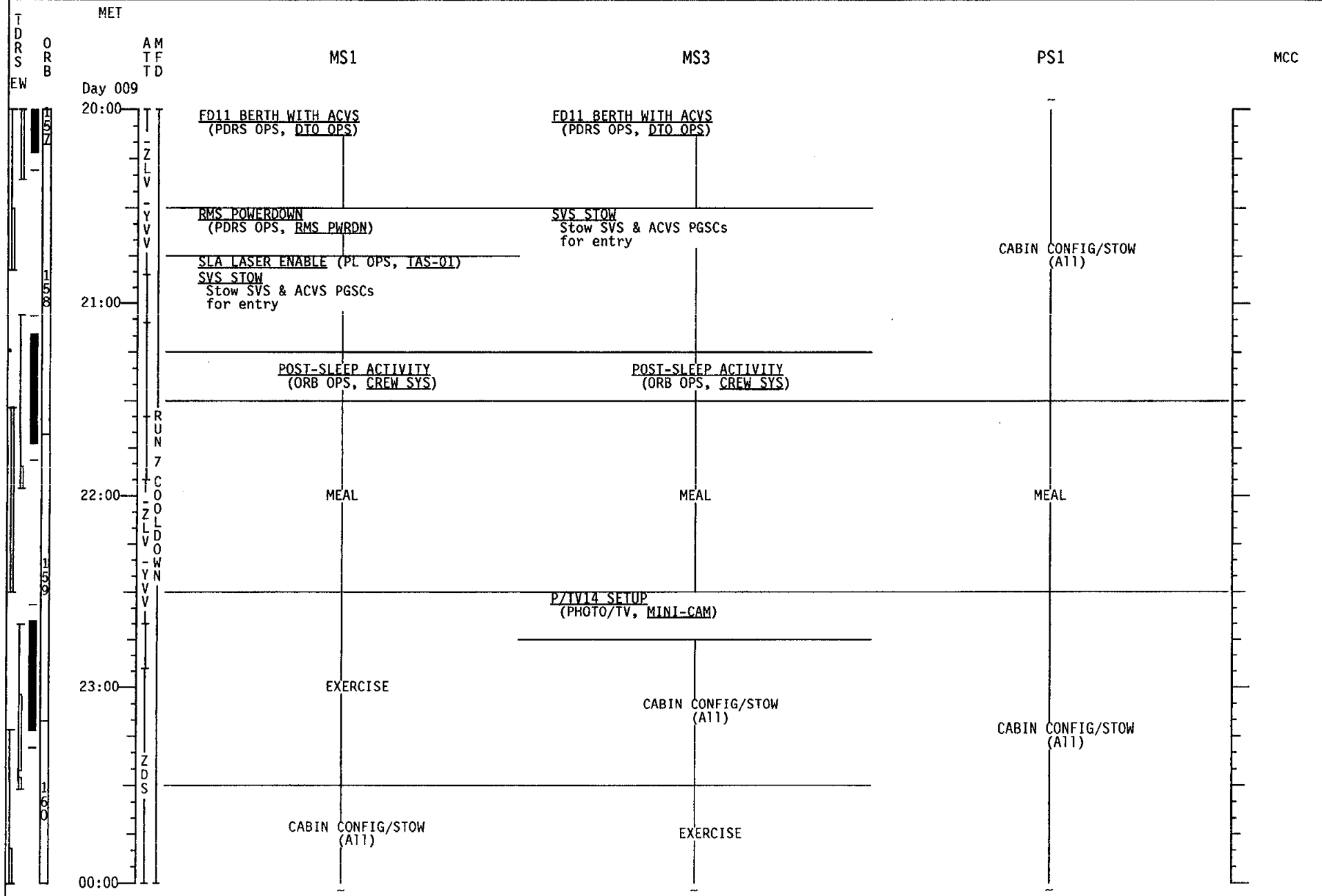
Temp Edit B6

VERN ROT RATE - ITEM 43 + 0.0033 EXEC

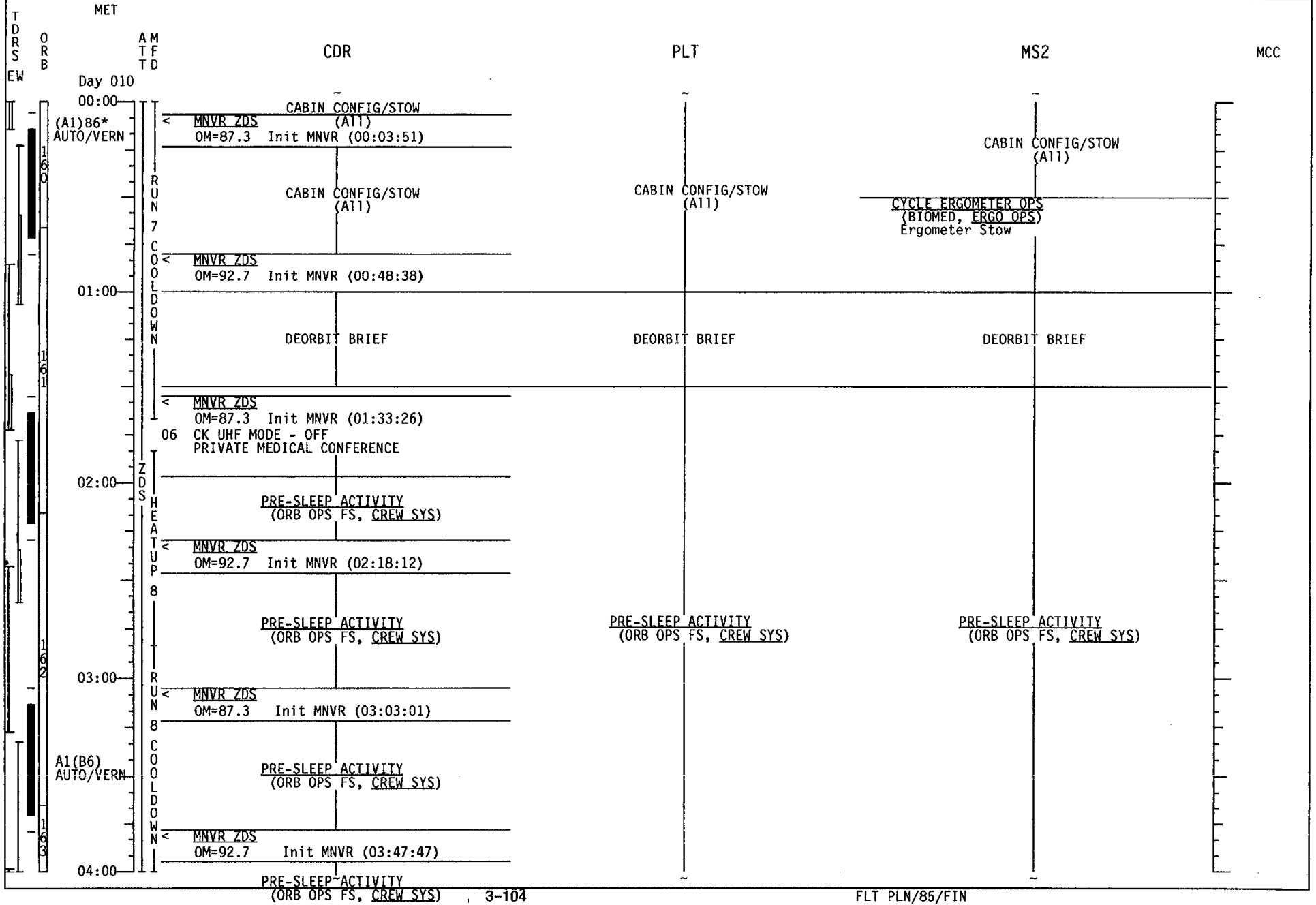
When in ATT: DAP: B/AUTO/VERN

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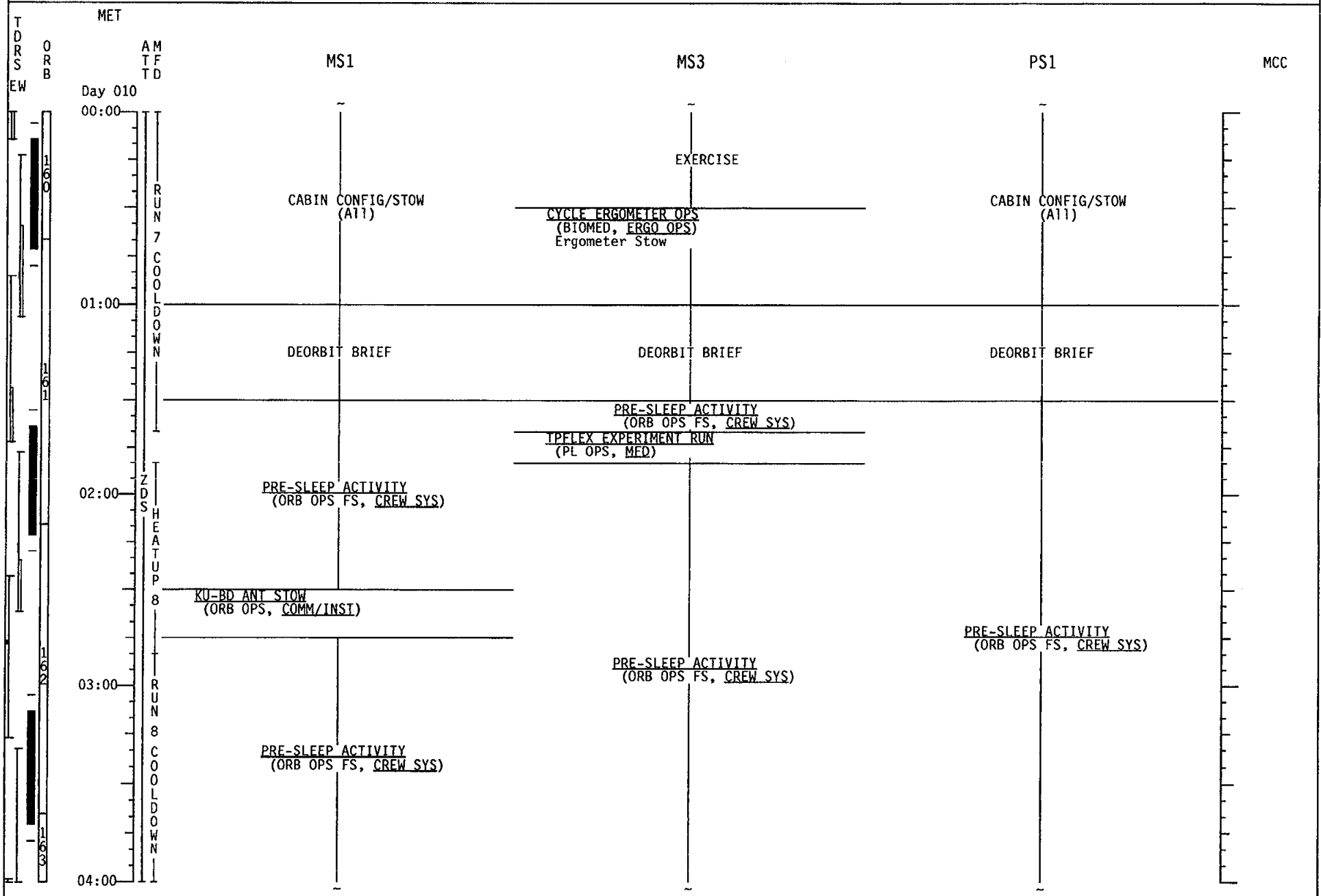
# STS-85 (FD 11)



# STS-85 (FD 12)

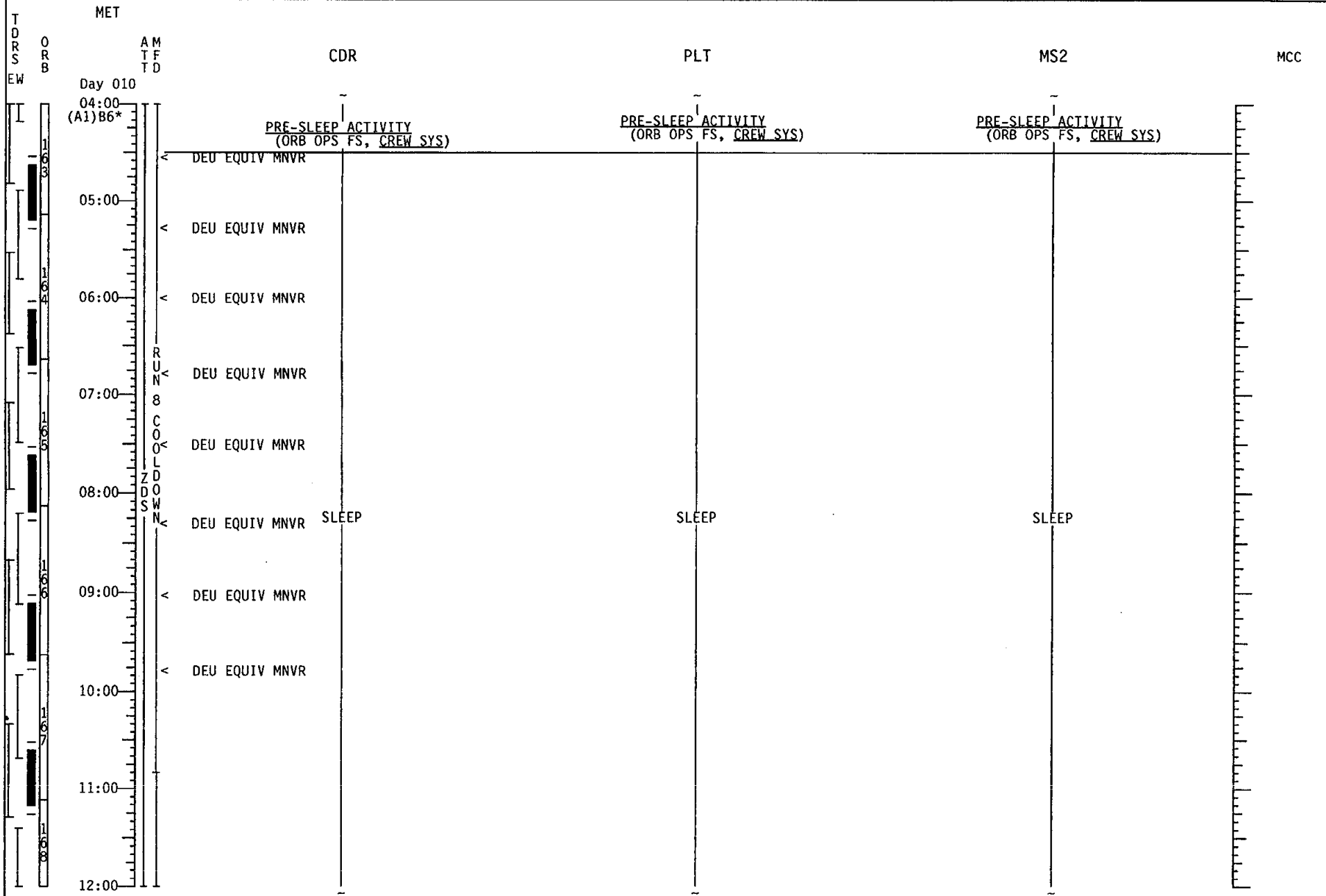


# STS-85 (FD 12)

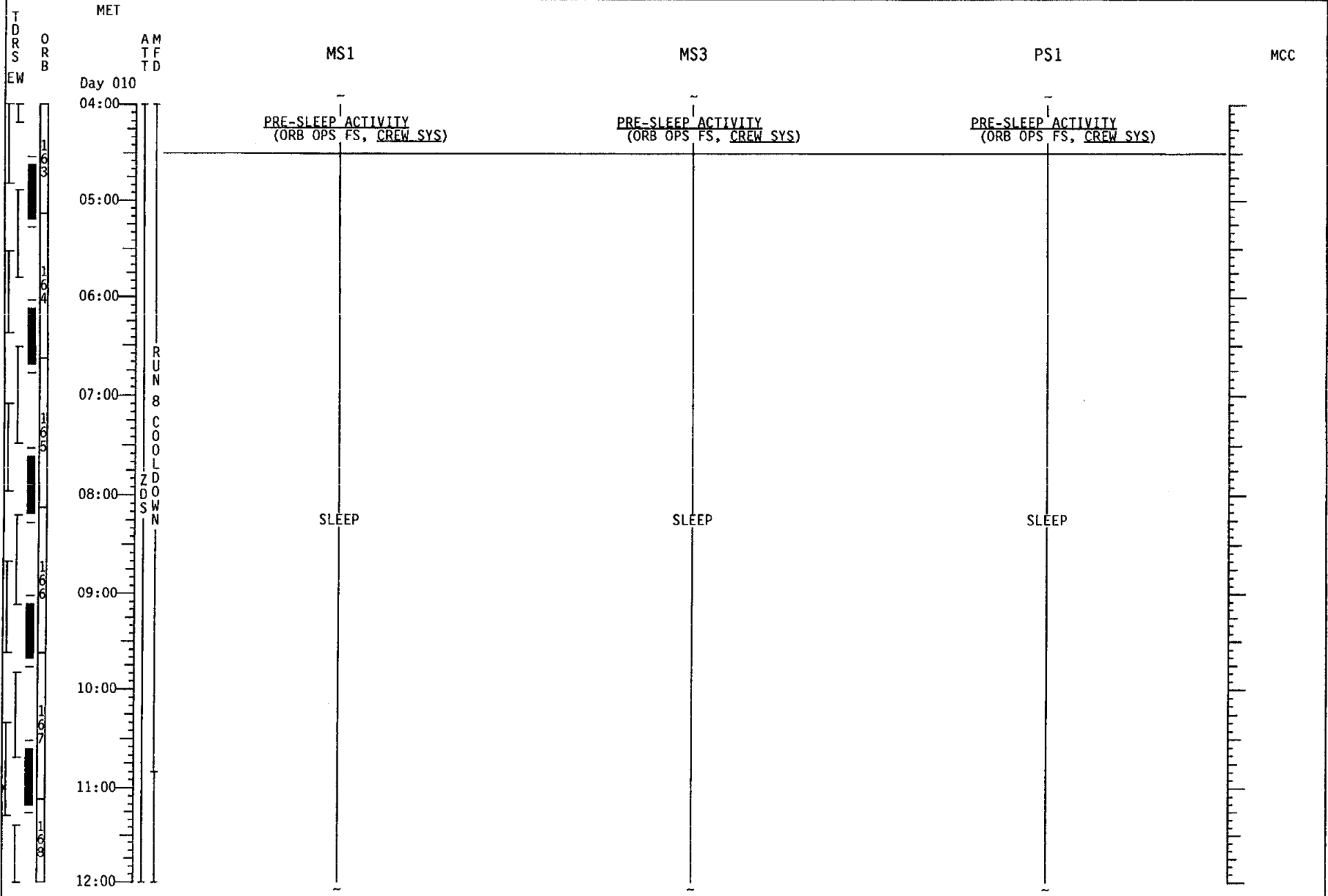




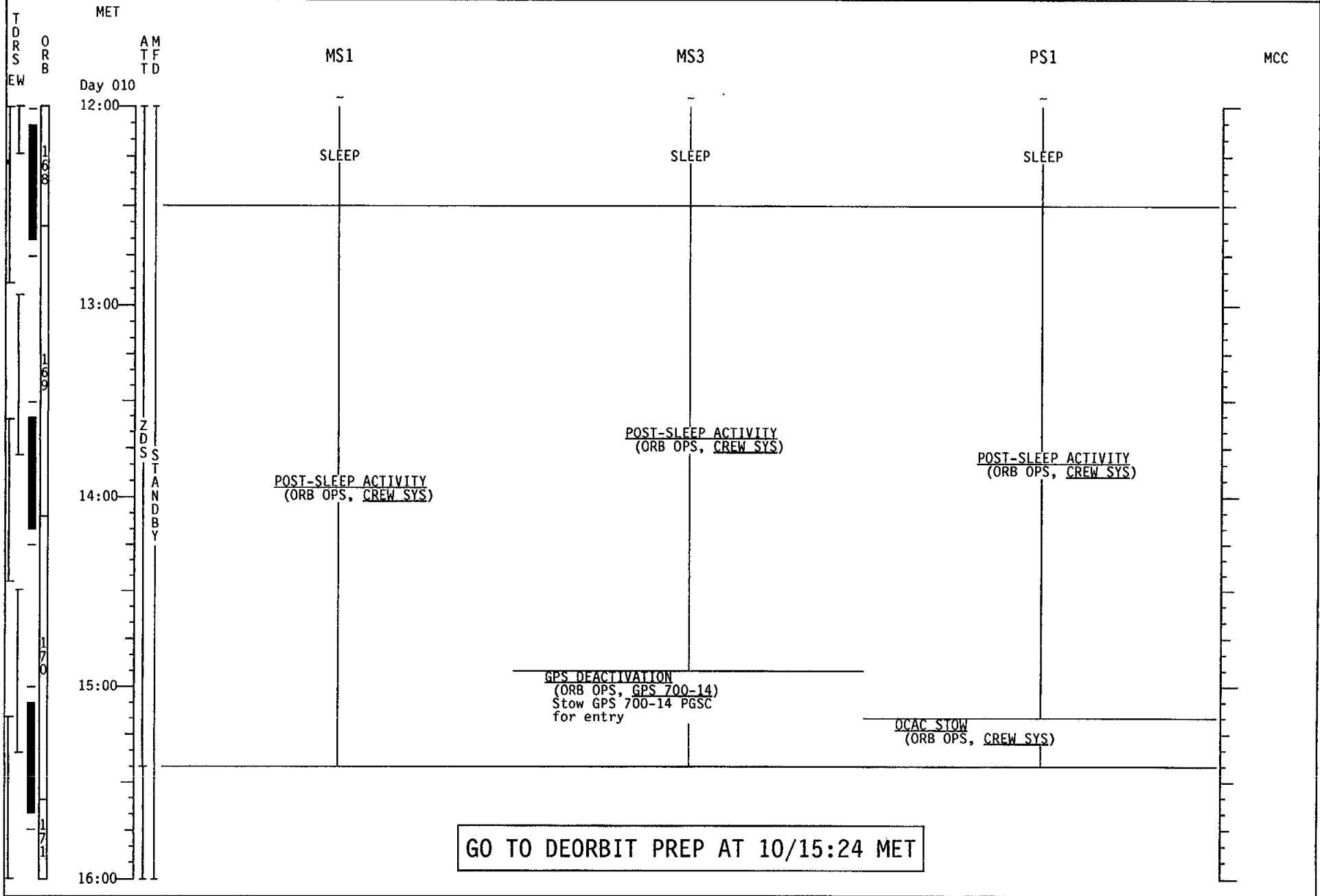
# STS-85 (FD 12)



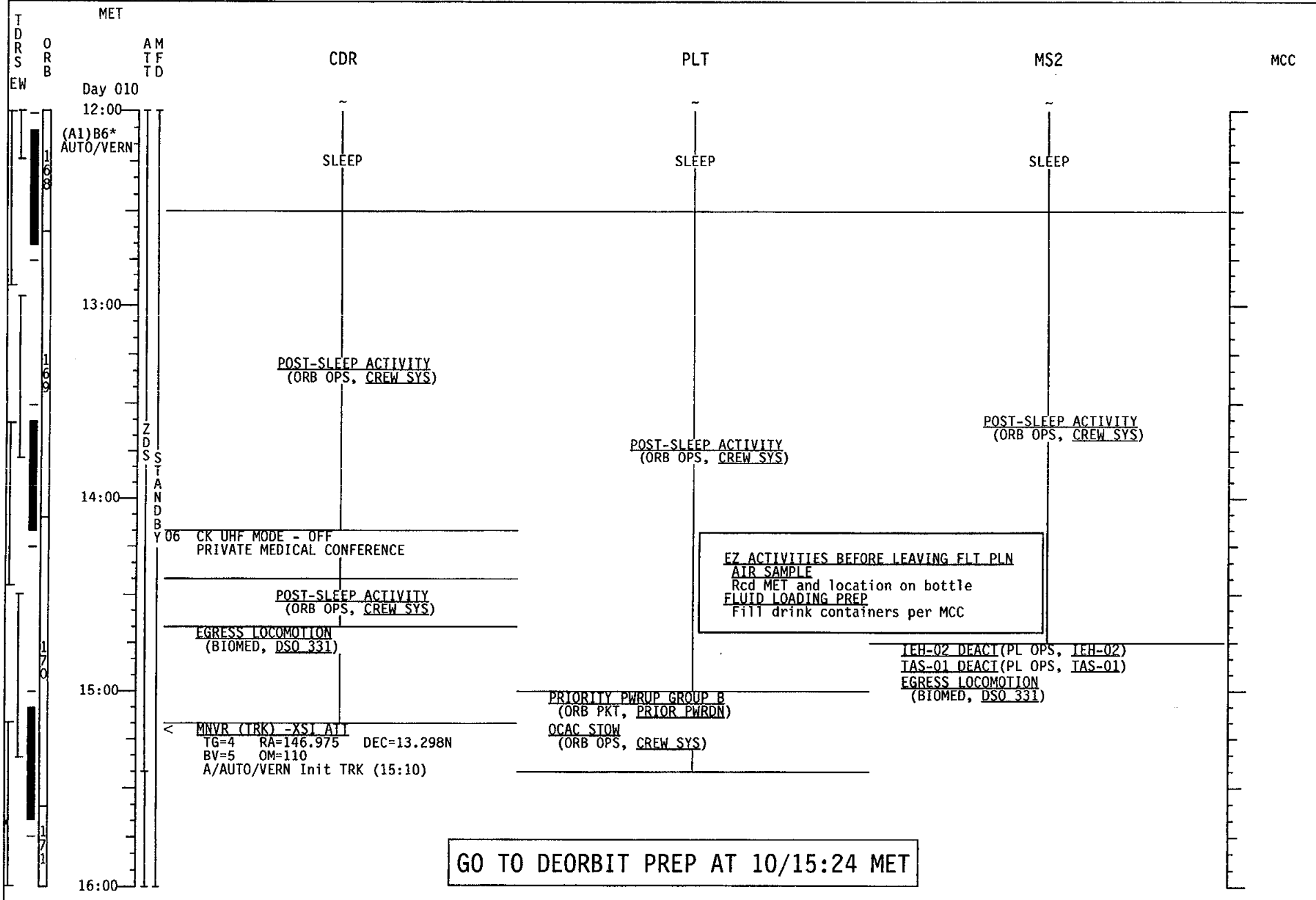
# STS-85 (FD 12)



# STS-85 (FD 12)



# STS-85 (FD 12)



GO TO DEORBIT PREP AT 10/15:24 MET

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DAP TABLE

DAP TABLE

# DAP TABLE

<u>DAP</u>	<u>PURPOSE</u>	<u>DAP</u>	<u>PURPOSE</u>
A1	- NOMINAL	B1	- NOMINAL UVSTAR
A2	- PTC		ISIR LOW RESOLUTION
A3	- GG	B2	- LOSS OF VERN (TAIL ONLY)
A4	- SVS 3A PMA3 3A Z1 5A LAB	B3	- LOSS OF VERN (NOSE & TAIL)
A5	- LOSS OF VERN (NOSE & TAIL)	B4	- SVS 5A PMA2
A6	- LOSS OF VERN (TAIL ONLY)	B5	- COAS CAL SWUIS COMET ACQUISITION
A7	- RENDEZVOUS	B6	- SPAS GYRO DRIFT & SCALE SEH -ZSI DC -Z MOON
A8	- CORRIDOR	B7	- RENDEZVOUS
A9	- DOCKING	B8	- CORRIDOR
A10	- CRISTA-SPAS RELEASE SJ CAPTURE	B9	- DOCKING
A11	- MFD LOW HOVER	B10	- CRISTA-SPAS NOMINAL DEADBAND COLLAPSE RMS PH
A12	- MFD RELEASE	B11	- CRISTA SPAS DB COLLAPSE W/O POSN HOLD RMS BO
A13	- CRISTA-SPAS NOMINAL CAPTURE	B12	- CRISTA SPAS EXTENDED PARK
A14	- RBAR TO VBAR TRANSITION	B13	- SVS 4A P6 2A FGB
A15	- CRISTA-SPAS LOW HOVER	B14	- RBAR TO VBAR TRANSITION
		B15	- SWUIS COMET OBS SPAS COMM ALT DAP

CNTL ACC = 0	UNLOADED RMS
= 1	CRISTA-SPAS LOW HOVER
= 2	CRISTA-SPAS RELEASE, CAPTURE (NOM & SJ)
= 3	MFD LOW HOVER
= 4	MFD RELEASE
= 5	SVS - 2A FGB, 4A P6
= 6	SVS - 3A PM3A, 3A Z1, 5A LAB
= 7	SVS - 5A PMA2
= 8	CRISTA-SPAS EXTENDED PARK
= 9	NOT USED

UNIV PTG	
TGT ID	= 1 Orbiting Vehicle = 2 Earth ctr = 3 Earth tgt Input LAT ( $\pm 90$ ) LON ( $\pm 180$ , + = East) ALT (-3444.0 to 20000.0 nm)
	= 4 Sun ctr = 5 Celestial tgt Input RA (0-359.99) DEC ( $\pm 90$ ) = 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	→ OM (0-359.99)
MON AXIS	= 1 +X = 2 -X

IF LOSS OF VERNIS AND MFD ROBOT ARM IN USE,  
ALT DAP WILL BE RECONFIGURED AS FOLLOWS:

	<u>OPTION 1</u>	<u>OPTION 2</u>
RATE DB =	0.07	0.10
JET OPT =	TAIL	TAIL
# JETS =	1	2
ON TIME =	0.08	0.08
DELAY =	14	20

STS-85 DAP A CONFIGURATION, 1 OF 2

	ITEM #	A1	A2	A3	A4	A5	A6	A7	A8
<b>PRI</b>									
ROT RATE	10 (50)	0.2000	0.4000	0.2000	<b>0.1000</b>	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	<b>1.00</b>
RATE DB	12 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	<b>0.10</b>
ROT PLS	13 (53)	0.10	0.10	0.10	<b>0.04</b>	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	<b>TAIL</b>
Y OPTION	16 (56)	ALL	ALL	TAIL	ALL	ALL	TAIL	ALL	<b>TAIL</b>
TRAN PLS	17 (57)	0.10	0.10	0.10	<b>0.01</b>	0.10	0.10	0.10	0.05
<b>ALT</b>									
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	<b>6.90</b>	0.00	0.00	0.00	0.00
<b>VERN</b>									
ROT RATE	23 (63)	0.2000	0.4000	0.0080	0.2000	0.2000	0.2000	0.2000	0.2000
ATT DB	24 (64)	1.000	1.000	0.070	<b>3.000</b>	1.000	1.000	1.000	1.000
RATE DB	25 (65)	.020	.020	.010	<b>.200</b>	.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	<b>6</b>	0	0	0	0
PURPOSE		NOMINAL	PTC	GG	SVS 3A PMA3* 3A Z1 5A LAB	LOSS OF VERN (NOSE & TAIL)	LOSS OF VERN (TAIL ONLY)	RNDZ	CORRIDOR

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

\* Temp change ALT JET OPT to TAIL ONLY for 3A PMA3 RMS posn in procedures



STS-85 DAP A CONFIGURATION, 2 OF 2

	ITEM #	A9	A10	A11	A12	A13	A14	A15
<b>PRI</b>								
ROT RATE	10 (50)	<b>0.0500</b>	<b>0.1000</b>	<b>0.1000</b>	<b>0.1000</b>	<b>0.1000</b>	<b>0.1300</b>	<b>0.1000</b>
ATT DB	11 (51)	<b>0.50</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	<b>3.00</b>
RATE DB	12 (52)	<b>0.10</b>	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	13 (53)	<b>0.10</b>	<b>0.04</b>	<b>0.04</b>	<b>0.04</b>	<b>0.04</b>	0.10	<b>0.04</b>
COMP	14 (54)	.000	.000	.000	.000	.000	.000	.000
P OPTION	15 (55)	<b>TAIL</b>	ALL	ALL	ALL	ALL	<b>TAIL</b>	ALL
Y OPTION	16 (56)	<b>TAIL</b>	ALL	ALL	ALL	ALL	<b>TAIL</b>	ALL
TRAN PLS	17 (57)	<b>0.05</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	0.10	<b>0.01</b>
<b>ALT</b>								
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	ALL	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	<b>8.20</b>	<b>3.60</b>	<b>5.50</b>	<b>9.40</b>	0.00	<b>8.20</b>
<b>VERN</b>								
ROT RATE	23 (63)	<b>0.0500</b>	0.2000	0.2000	0.2000	0.2000	<b>0.1300</b>	<b>0.2000</b>
ATT DB	24 (64)	<b>0.500</b>	<b>3.000</b>	<b>3.000</b>	<b>3.000</b>	<b>3.000</b>	1.000	<b>3.000</b>
RATE DB	25 (65)	.020	<b>.200</b>	<b>.200</b>	<b>.200</b>	<b>.200</b>	.020	<b>.200</b>
ROT PLS	26 (66)	<b>0.050</b>	0.010	0.010	0.010	0.010	0.010	0.010
COMP	27 (67)	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28 (68)	0	2	3	4	2	0	1
PURPOSE		DOCKING	CRISTA-SPAS RELEASE SJ CAPTURE	MFD		CRISTA-SPAS NOMINAL CAPTURE	RBAR TO VBAR TRANSITION	CRISTA-SPAS LOW HOVER
				LOW HOVER	RELEASE			

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

STS-85 DAP B CONFIGURATION, 1 OF 2

	ITEM #	B1	B2	B3	B4	B5	B6	B7	B8
<b>PRI</b>									
ROT RATE	30 (50)	0.5000	0.2000	0.2000	<b>0.1000</b>	0.2000	<b>0.0500</b>	0.5000	0.2000
ATT DB	31 (51)	3.00	3.00	3.00	<b>3.00</b>	3.00	<b>1.00</b>	2.00	<b>1.00</b>
RATE DB	32 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	<b>0.10</b>
ROT PLS	33 (53)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
COMP	34 (54)	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	35 (55)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	<b>TAIL</b>
Y OPTION	36 (56)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	<b>TAIL</b>
TRAN PLS	37 (57)	0.10	0.02	0.02	0.02	0.02	0.02	0.05	0.01
<b>ALT</b>									
RATE DB	38 (58)	0.200	0.070	0.070	0.200	0.200	<b>0.100</b>	0.200	0.200
JET OPT	39 (59)	ALL	TAIL	ALL	ALL	<b>TAIL</b>	ALL	ALL	ALL
# JETS	40 (60)	2	1	1	2	2	<b>1</b>	2	2
ON TIME	41 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42 (62)	0.00	0.00	0.00	<b>5.90</b>	0.00	0.00	0.00	0.00
<b>VERN</b>									
ROT RATE	43 (63)	0.2000	0.2000	0.2000	<b>0.200</b>	0.0160	<b>0.0440</b>	0.2000	0.2000
ATT DB	44 (64)	1.000	1.000	1.000	<b>3.000</b>	0.033	<b>0.100</b>	1.000	1.000
RATE DB	45 (65)	.020	.020	.020	<b>.200</b>	.020	<b>.010</b>	.020	.020
ROT PLS	46 (66)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
COMP	47 (67)	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	48 (68)	0	0	0	<b>7</b>	0	<b>0</b>	0	0
PURPOSE		NOMINAL UVSTAR ISIR LOW RESOLUTION	LOSS OF VERN (TAIL ONLY)	LOSS OF VERN (NOSE & TAIL)	SVS 5A PMA2	COAS CAL SWUIS COMET ACQUISITION	SPAS GYRO DRIFT & SCALE SEH-ZSI DC-Z MOON	RNDZ	CORRIDOR

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

STS-85 DAP B CONFIGURATION, 2 OF 2

	ITEM #	B9	B10	B11	B12	B13	B14	B15	
<b>PRI</b>									
ROT RATE	30 (50)	<b>0.0500</b>	<b>0.0500</b>	<b>0.0500</b>	<b>0.1000</b>	<b>0.1000</b>	<b>0.1300</b>	<b>0.2000</b>	
ATT DB	31 (51)	<b>0.50</b>	<b>1.00</b>	<b>2.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	<b>10.00</b>	
RATE DB	32 (52)	<b>0.10</b>	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)	<b>TAIL</b>	ALL	ALL	<b>TAIL</b>	ALL	<b>TAIL</b>	<b>TAIL</b>	
Y OPTION	36 (56)	<b>TAIL</b>	ALL	ALL	<b>TAIL</b>	ALL	<b>TAIL</b>	<b>TAIL</b>	
TRAN PLS	37 (57)	<b>0.01</b>	0.02	0.02	0.02	0.02	<b>0.05</b>	0.02	
<b>ALT</b>									
RATE DB	38 (58)	0.200	<b>0.100</b>	<b>0.100</b>	0.200	0.200	0.200	<b>0.070</b>	
JET OPT	39 (59)	ALL	ALL	ALL	<b>TAIL</b>	ALL	ALL	<b>TAIL</b>	
# JETS	40 (60)	2	2	2	2	2	2	1	
ON TIME	41 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
DELAY	42 (62)	0.00	<b>8.20</b>	<b>8.20</b>	<b>8.20</b>	<b>8.50</b>	0.00	0.00	
<b>VERN</b>									
ROT RATE	43 (63)	<b>0.0500</b>	<b>0.0160</b>	<b>0.0320</b>	0.2000	0.2000	<b>0.1300</b>	<b>0.0400</b>	
ATT DB	44 (64)	<b>0.500</b>	<b>0.500</b>	<b>2.000</b>	<b>3.000</b>	<b>3.000</b>	1.000	<b>0.200</b>	
RATE DB	45 (65)	.020	.020	<b>.040</b>	<b>.200</b>	<b>.200</b>	.020	.020	
ROT PLS	46 (66)	<b>0.020</b>	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	2	2	8	5	0	0	
PURPOSE		DOCKING	CRISTA-SPAS			SVS 4A P6 2A FGB	RBAR TO VBAR TRANSITION	SWUIS COMET OBS SPAS COMM ALT DAP	
			NOMINAL DEADBAND COLLAPSE  RMS PH	DEADBAND COLLAPSE W/O POSN HOLD RMS BO	EXTENDED PARK				

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

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**ATTITUDE TIMELINE**

ATTITUDE  
TIMELINE

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 000/01:00:00 MET	STS 85 Final Launch Aug 07, 1997 219/14:41:00 Z					
2 000/01:12:00 MET 22:40	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=248.00	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= 68.00	Post Insertion Good S Band SOPA 0/03:45
3 000/05:05:00 MET 13:41	INRTL R=238.31 MNVR P= 87.57 Y= 59.26	A6 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 163 P 66		SPAS Gyro Drift
4 000/05:13:00 MET	When in Att: B6/AUTO/VERN					DB Collapse for Gyro Drift Comp
5 000/05:35:00 MET 47:55	INRTL R=229.00 MNVR P=301.00 Y= 10.00  On MCC GO	A6 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 269 P 90	EA P = 135.00 Y = 35.26 ANG = 155.00	Gyro Scaling
6 000/05:48:00 MET	When in Att: B6/AUTO/VERN					DB Collapse for Gyro Scaling
7 000/06:55:00 MET 07:03:59	INRTL R=121.50 MNVR P= 9.30 Y= 15.60	A10 AUTO VERN	RATE 0.2000 DB AT 3.000 DB RT 0.020	SUN R 340 P 123		SPAS Deploy  Window Open 00/07:16:00
8 000/07:06:00 MET	SPAS Release - 10 min B10/AUTO/VERN				ROT Rate 0.0160 DB Att 0.500 DB Rate 0.020	DB Collapse for SPAS Deploy RMS - Posn Hold
9 000/07:26:30 MET 29:48	INRTL R=104.11 MNVR P= 50.58 Y= 23.54  MM 202	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 323 P 110		SEP 2 TIG: 0/07:33:30
10 000/07:55:00 MET 08:02:36	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm RNDZ Nav Disable
11 000/11:00:00 MET	FN1 Sleep Start  0/11:00 MET					
12 000/15:45:00 MET 52:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR

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

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
13 000/19:00:00 MET 10:00	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 79 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
14 000/19:30:00 MET	FN1 Sleep End 0/19:30 MET				
15 000/23:45:00 MET 55:00	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
16 001/03:15:00 MET 27:00	TGT=5 RA= 138.030 BV=3 DEC= 16.170N P= 90.00 Y= 0.00 OM=270.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 0 P 90	INRTL R= 40.38 P=117.65 Y=352.49	SEH Sunset Set: 1/03:47:09
17 001/03:28:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for ZSI Obs
18 001/03:52:00 MET 57:11	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL
19 001/05:35:00 MET 47:40	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
20 001/09:00:00 MET	FN2 Sleep Start 1/09:00 MET				
21 001/16:00:00 MET 07:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
22 001/17:00:00 MET	FN2 Sleep End 1/17:00 MET				
23 001/20:45:00 MET 55:00	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 217 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
24 001/22:30:00 MET 42:06	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL

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



Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
25 002/00:15:00 MET 22:01	INRTL R=201.30 MNVR P=269.60 Y= 25.60	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 307 P 58	H-B Rise 1:13 Set 2:11 Rise 2:43 Set 3:42	SWUIS Obs 1 Sun Pos: 130
26 002/00:36:00 MET	SWUIS Obs DAP Changes			When in Att Sunset (00:54) H-B Rise -3 min H-B Acquired	B5 DB AT 0.033 A1 DB AT 1.000 B5 DB AT 0.033 B15 DB AT 0.200
27 002/02:10:00 MET	SWUIS Obs DAP Changes (cont)			H-B Set (02:11) H-B Rise -3 min H-B Set (03:42)	A1 DB AT 1.000 B15 DB AT 0.200 A1 DB AT 1.000
28 002/03:45:00 MET 58:37	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
29 002/07:00:00 MET 07:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
30 002/08:00:00 MET	FN3 Sleep Start 2/08:00 MET				
31 002/12:56:00 MET 13:02:19	INRTL R=240.00 MNVR P=330.00 Y=327.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 277 P 139	Observation 2/13:04 to 13:34	UV* Cel Star 119
32 002/13:35:00 MET 42:07	TGT=5 RA= 139.400 BV=3 DEC= 15.760N P= 90.00 Y= 0.00 OM= 35.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 360 P 90	INRTL R=127.47 P=251.69 Y=322.11	SEH Noon SOLCON Noon 2/13:59:49
33 002/13:43:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
34 002/14:15:00 MET 24:17	INRTL R=152.00 MNVR P=157.00 Y=319.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 266 P 89	Observation 2/14:25 to 15:10	UV* Jupiter SOLCON Space 14:34 to 15:10
35 002/15:10:00 MET 18:13	TGT=5 RA= 139.460 BV=3 DEC= 15.740N P= 90.00 Y= 0.00 OM= 0.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 360 P 90	INRTL R= 93.36 P=204.65 Y=308.81	SEH Noon SOLCON Noon 2/15:30:17
36 002/15:19:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs

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

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
37 002/15:50:00 MET 58:13	INRTL R=152.00 MNVR P=157.00 Y=319.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 266 P 89	Observation 2/16:00 to 16:42	UV* Jupiter SOLCON Space 16:05 to 16:42
38 002/16:00:00 MET	FN3 Sleep End 2/16:00 MET					
39 002/16:42:00 MET 48:05	INRTL R=211.00 MNVR P=139.00 Y=312.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 194 P 102	Observation 2/16:49 to 17:45	UV* Cel Star 120
40 002/17:45:00 MET 56:38	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 0 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
41 002/19:40:00 MET 53:37	TGT=5 RA= 139.640 BV=3 DEC= 15.690N P= 90.00 Y= 0.00 OM=300.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 0 P 90	INRTL R= 43.15 P=131.32 Y=335.72	SEH Noon SOLCON Noon 2/20:01:39
42 002/19:54:00 MET	When in Att: B6/AUTO/VERN					DB Collapse for -ZSI Obs
43 002/20:25:00 MET 33:03	INRTL R=151.00 MNVR P=157.00 Y=319.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 267 P 89	Observation 2/20:34 to 21:10	UV* Jupiter SOLCON Space 20:35 - 21:10
44 002/21:10:00 MET 18:04	TGT=5 RA= 139.690 BV=3 DEC= 15.670N P= 90.00 Y= 0.00 OM=300.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 0 P 90	INRTL R= 43.01 P=131.03 Y=335.94	SEH Noon SOLCON Noon 2/21:32:06
45 002/21:19:00 MET	When in Att: B6/AUTO/VERN					DB Collapse for -ZSI Obs
46 002/21:50:00 MET 22:03:13	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
47 003/01:12:00 MET 24:41	INRTL R= 3.00 MNVR P=326.00 Y= 28.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 127 P 97	Observation 3/01:25 to 02:05	UV* Hale-Bopp AOS 3/01:20 LOS 02:16
48 003/02:05:00 MET 19:00	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL

\*\*\* ALL ATTITUDES IN MEAN OF 1950 \*\*\*  
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Attitude Timeline

MET	MNVR OPTION	DAF	E/S	REF ATT/REMARKS	EVENT
49 003/03:40:00 MET 51:40	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
50 003/06:15:00 MET 22:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
51 003/07:59:59 MET	FN4 Sleep Start 3/08:00 MET				
52 003/08:00:00 MET 07:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
53 003/11:45:00 MET 55:00	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=180.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 24 P 0	LVLH R=180.00 P=270.00 Y= 0.00	+XLV SPAS Comm
54 003/13:00:00 MET 02:49	INRTL R=176.00 MNVR P=334.00 Y= 36.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 309 P 95	Observation 3/13:03 to 13:35	UV* Cel Star 122
55 003/13:35:00 MET 39:34	TGT=5 RA= 140.340 BV=3 DEC= 15.470N P= 90.00 Y= 0.00 OM=125.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 360 P 90	INRTL R=137.14 P=311.38 Y= 25.27	SEH Noon SOLCON Noon 3/14:06:54
56 003/13:40:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
57 003/14:12:00 MET 25:24	INRTL R=152.00 MNVR P=157.00 Y=319.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 266 P 88	Observation 3/14:25 to 15:19	UV* Jupiter SOLCON Space 14:38 - 15:19
58 003/15:19:00 MET 27:58	TGT=5 RA= 140.410 BV=3 DEC= 15.450N P= 90.00 Y= 0.00 OM= 33.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 360 P 90	INRTL R=123.04 P=243.44 Y=317.12	SEH Noon SOLCON UV* 217 Noon 3/15:37:20
59 003/15:38:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
60 003/15:59:59 MET	FN4 Sleep End 3/16:00 MET				

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Attitude Timeline

MET	MNVR OPTION	DAI	E/S	REF ATT/REMARKS	EVENT	
61 003/16:00:00 MET 37:54	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	B1 AUTO VERN	RATE 0.0230 DB AT 1.000 DB RT 0.020	EARTH R 350 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
62 003/19:30:00 MET 42:06	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL
63 003/21:30:00 MET 42:40	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
64 004/01:00:00 MET 08:22	INRTL R=218.00 MNVR P=338.00 Y= 41.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 264 P 93	Observation 4/01:09 to 01:50	UV* Jupiter
65 004/01:55:00 MET 02:05:43	INRTL R=219.00 MNVR P=211.00 Y= 10.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 250 P 29	Observation 4/02:08 to 02:55	UV* Cel Star 118
66 004/02:55:00 MET 03:03:57	TGT=5 BV=3 P= 90.00 Y= 0.00 OM=155.00 RA= 140.830 DEC= 15.320N	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 360 P 90	INRTL R=123.24 P=335.73 Y= 43.25	SEH STS w/ WSMR Noon 4/03:40:44 M 223/18:21:44 G
67 004/03:04:00 MET	When in Att: B6/AUTO/VERN					DB Collapse for -ZSI Obs
68 004/04:15:00 MET 21:06	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
69 004/06:15:00 MET 22:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
70 004/07:00:00 MET	FN5 Sleep Start 4/07:00 MET					
71 004/08:00:00 MET 07:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
72 004/11:45:00 MET 52:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm

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Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
73 004/13:00:00 MET 09:06	INRTL R=218.00 MNVR P=338.00 Y= 41.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 264 P 93	Observation 4/13:10 to 13:50	UV* Jupiter
74 004/13:50:00 MET 58:13	TGT=5 RA= 141.300 BV=3 DEC= 15.170N P= 90.00 Y= 0.00 OM=130.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 360 P 90	INRTL R=138.19 P=309.96 Y= 25.14	SEH Noon Noon 4/14:13:37
75 004/13:59:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
76 004/14:20:00 MET 33:13	INRTL R=152.00 MNVR P=158.00 Y=319.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 266 P 87	Observation 4/14:34 to 15:30	UV* Jupiter
77 004/15:00:00 MET	FN5 Sleep End 4/15:00 MET				
78 004/15:30:00 MET 38:33	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL
79 004/17:00:00 MET 12:06	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 253 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
80 004/18:40:00 MET 52:09	INRTL R=207.60 MNVR P=220.40 Y= 3.10	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 270 P 39	H-B Rise 19:27 Set 20:30 Rise 20:58 Set 22:00	SWUIS Obs 2 Sun Pos: 180
81 004/18:53:00 MET	SWUIS Obs DAP Changes			When in Att Sunset (19:13) H-B Rise -3 min H-B Acquired	B5 DB AT 0.033 A1 DB AT 1.000 B5 DB AT 0.033 B15 DB AT 0.200
82 004/20:29:00 MET	SWUIS Obs DAP Changes (cont)			H-B Set (20:30) H-B Rise -3 min H-B Set (22:00)	A1 DB AT 1.000 B15 DB AT 0.200 A1 DB AT 1.000
83 004/22:05:00 MET 17:58	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 262 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
84 005/01:30:00 MET 37:37	INRTL R=348.00 MNVR P= 0.00 Y= 23.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 119 P 118	Observation 5/01:40 to 02:17	UV* Hale-Bopp

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\*\*\* PYR EULER SEQUENCE \*\*\*

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
85 005/02:17:00 MET 26:37	TGT=5 RA= 141.790 BV=3 DEC= 15.020N P= 90.00 Y= 0.00 OM=216.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 0 P 90	INRTL R= 60.21 P= 57.13 Y= 46.50	SEH Sunset Set 5/02:45:18
86 005/02:27:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
87 005/02:52:00 MET 03:00:08	TGT=3 LAT= -52.530S BV=3 LON= 127.240E P= 90.00 ALT= 0.0nm Y= 0.00 OM=180.00	B3 RATE 0.2000 AUTO DB AT 3.00 PRI DB RT 0.20			ISIR Landmark Track Pt AOS 03:03 LOS 3:11
88 005/03:12:00 MET 19:37	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B3 RATE 0.2000 AUTO DB AT 3.00 PRI DB RT 0.20	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm When In Att: B14/AUTO/VERN
89 005/06:40:00 MET 47:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
90 005/07:00:00 MET	FN6 Sleep Start 5/07:00 MET				
91 005/10:15:00 MET 22:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
92 005/11:45:00 MET 52:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
93 005/15:00:00 MET	FN6 Sleep End 5/15:00 MET				
94 005/15:45:00 MET 52:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
95 005/18:00:00 MET 12:40	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL
96 005/19:45:00 MET 57:40	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm

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Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
97 006/00:00:00 MET 11:08	INRTL R=348.00 MNVR P= 0.00 Y= 23.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 119 P 119	Observation 6/00:12 to 00:55	UV* Hale-Bopp
98 006/00:55:00 MET 01:04:36	TGT=5 RA= 142.680 BV=3 DEC= 14.730N P= 90.00 Y= 0.00 OM=216.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 0 P 90	INRTL R= 64.90 P= 49.87 Y= 49.65	SEH Sunset Set 6/01:21:03
99 006/01:05:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
100 006/01:26:00 MET 35:49	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
101 006/05:15:00 MET 22:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
102 006/06:00:00 MET	FN7 Sleep Start 6/06:00 MET				
103 006/07:00:00 MET 07:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
104 006/11:30:00 MET 37:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
105 006/12:55:00 MET 13:07:22	INRTL R=152.00 MNVR P=158.00 Y=319.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 266 P 85	Observation 6/13:10 to 14:05	UV* Jupiter
106 006/14:00:00 MET	FN7 Sleep End 6/14:00 MET				
107 006/14:05:00 MET 12:48	TGT=5 RA= 143.200 BV=3 DEC= 14.560N P= 90.00 Y= 0.00 OM=355.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 360 P 90	INRTL R= 59.96 P=160.06 Y=312.05	SEH Noon SOLCON 30 Min Obs Noon 6/14:25:50
108 006/14:13:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs

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Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
109 006/14:45:00 MET 52:48	INRTL R=152.00 MNVR P=158.00 Y=319.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 266 P 85	Observation 6/14:53 to 15:35	UV* Jupiter SOLCON Space 14:55 - 15:35
110 006/15:35:00 MET 43:05	TGT=5 RA= 143.260 BV=3 DEC= 14.550N P= 90.00 Y= 0.00 OM= 25.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 360 P 90	INRTL R= 97.46 P=207.11 Y=305.73	SEH Noon SOLCON 30 Min Obs Noon 6/15:56:12
111 006/15:44:00 MET	When in Att: B6/AUTO/VERN					DB Collapse for -ZSI Obs
112 006/16:25:00 MET 29:51	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 135 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
113 006/18:55:00 MET 19:07:49	INRTL R=208.30 MNVR P=218.80 Y= 2.50	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 270 P 38	H-B Rise: 19:35 Set: 20:44 Rise: 21:06 Set: 22:15	SWUIS Obs 3 Sun Pos: 180
114 006/19:08:00 MET	SWUIS Obs DAP Changes				When in Att Sunset (19:25) H-B Rise -3 min H-B Acquired	B5 DB AT 0.033 A1 DB AT 1.000 B5 DB AT 0.033 B15 DB AT 0.200
115 006/21:43:00 MET	SWUIS Obs DAP Changes (cont)				H-B Set (20:43) H-B Rise -3 min H-B Set (22:14)	A1 DB AT 1.000 B15 DB AT 0.200 A1 DB AT 1.000
116 006/22:20:00 MET 33:43	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 0 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
117 007/00:45:00 MET 57:06	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL
118 007/02:45:00 MET 56:40	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
119 007/05:00:00 MET	FNS Sleep Start 7/05:00 MET					
120 007/05:15:00 MET 22:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm

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Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
121 007/07:00:00 MET 07:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
122 007/11:15:00 MET 22:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
123 007/13:00:00 MET 12:29	INRTL R=152.00 MNVR P=158.00 Y=319.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 266 P 84	Observation 7/13:18 to 14:10	UV* Jupiter
124 007/14:00:00 MET	FN8 Sleep End 7/14:00 MET				
125 007/14:10:00 MET 17:40	TGT=5 RA= 278.380 BV=3 DEC= -18.1705 P= 90.00 Y= 0.00 OM=180.00 Obs 14:39-15:00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 206 P 53	INRTL R=258.77 P=211.27 Y=343.40	DC Moon View 1A Moon Centered at 14:46
126 007/14:18:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for Moon View
127 007/14:52:00 MET	INRTL R=258.74 MNVR P=211.15 Y=343.42	B6 RATE 0.0440 AUTO DB AT 0.100 VERN DB RT 0.010	SUN R 205 P 53	Observation 7/14:39 to 15:00	DC Moon View 1B Moon Centered at 14:56
128 007/15:01:00 MET 08:40	INRTL R=152.00 MNVR P=158.00 Y=319.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 266 P 84	Observation 7/15:10 to 15:40	UV* Jupiter
129 007/15:40:00 MET 49:48	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump FR 2-44 Co-Orbit PL
130 007/17:15:00 MET 27:06	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 60 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
131 007/19:05:00 MET 18:12	INRTL R=208.60 MNVR P=218.00 Y= 2.20	A1 RATE 0.2000 AUTO DB AT 5.00 PRI DB RT 0.20	SUN R 270 P 38	H-B Rise 19:38 Set 20:52 Rise 21:08 Set 22:23	SWUIS Obs 4 Sun Pos: 180
132 007/19:20:00 MET	SWUIS Obs DAP Changes			When in Att Sunset (19:31) H-B Rise -3 min H-B Acquired	B5 DB AT 0.033 A1 DB AT 1.000 B5 DB AT 0.033 B15 DB AT 0.200

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

## Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
133 007/21:51:00 MET	SWUIS Obs DAP Changes (cont)			H-B Set (20:51) H-B Rise -3 min H-B Set (22:22)	A1 DB AT 1.000 B15 DB AT 0.200 A1 DB AT 1.000	
134 007/22:25:00 MET 38:54	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 9 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
135 008/01:00:00 MET 11:07	INRTL R=272.28 MNVR P= 45.97 Y= 23.51	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 151 P 116	Observation 8/01:13 to 01:33	DC Moon View 2A Moon Centered at 01:18
136 008/01:23:00 MET 11	INRTL R=272.04 MNVR P= 45.99 Y= 23.07	B6 AUTO VERN	RATE 0.0440 DB AT 0.100 DB RT 0.010	SUN R 151 P 116	Observation 8/01:13 to 01:33	DC Moon View 2B Moon Centered at 01:28
137 008/01:34:00 MET 40:17	INRTL R=286.00 MNVR P=327.00 Y= 17.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 207 P 110	Observation 8/01:40 02:10	UV* Cel Star 113
138 008/02:10:00 MET 15:31	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
139 008/04:45:00 MET 55:00	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 9 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV SPAS Comm
140 008/05:00:00 MET	FN9 Sleep Start 8/05:00 MET					
141 008/13:00:00 MET	FN9 Sleep End 8/13:00 MET					
142 008/13:30:00 MET 37:50	INRTL R=278.00 MNVR P=345.00 Y=304.00	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 294 P 149	Observation 8/13:39 14:13	UV* Cel Star 111
143 008/14:13:00 MET 19:40	TGT=5 BV=3 P= 90.00 Y= 0.00 OM= 45.00 RA= 145.080 DEC= 13.940N	A1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 360 P 90	INRTL R=110.88 P=222.22 Y=306.48	SEH Noon Noon 8/14:36:02
144 008/14:20:00 MET	When in Att: B6/AUTO/VERN					DB Collapse for -ZSI Obs

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

5-13

FLT PLN/85/FIN

Attitude Timeline

MET	MNVR OPTION	DAF	E/S	REF ATT/REMARKS	EVENT
145 008/14:45:00 MET 53:13	INRTL R=152.00 MNVR P=158.00 Y=319.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 266 P 83	Observation 8/14:55 15:45	UV* Jupiter
146 008/15:45:00 MET 53:05	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
147 008/17:50:00 MET 57:30	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 270 P 90	LVLH R= 0.00 P= 90.00 Y=270.00	-YLV SPAS Comm
148 008/18:22:00 MET 29:30	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A1 RATE 0.2000 AUTO DB AT 5.000 ALT DB RT 0.200	EARTH R 51 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-Z TGT Track
149 008/18:55:00 MET 19:05:39	INRTL R= 21.35 MNVR P=161.82 Y=317.42	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 40 P 83	Posigrade +X Heads Up	NC 24 Rndz Mnvr TIG 8/19:07
150 008/19:10:00 MET 12:16	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	B7 RATE 0.5000 AUTO DB AT 2.00 PRI DB RT 0.20	EARTH R 180 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	-Z TGT Track
151 008/21:05:00 MET 53:29	TGT=2 BV=5 P= 20.00 Y= 0.00 OM= 0.00	A7 RATE 0.0550 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 20	LVLH R= 0.00 P=250.00 Y= 0.00	-Z TGT Track
152 008/21:55:00 MET 22:03:09	INRTL R=329.88 MNVR P=355.33 Y= 37.02	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 139 P 107	Retrograde OMS Heads Down	Ti TIG: 8/22:06
153 008/22:10:00 MET 11:56	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B7 RATE 0.5000 AUTO DB AT 2.00 PRI DB RT 0.20	EARTH R 166 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	-Z TGT Track
154 008/22:12:00 MET 23:17:13	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 0.00	A7 RATE 0.0230 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 0.00	On R bar
155 008/23:36:00 MET 47:32	TGT=2 BV=2 P=180.00 Y= 0.00 OM= 0.00	A14 RATE 0.1300 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 51 P 180	LVLH R= 0.00 P= 90.00 Y= 0.00	Vbar
156 009/01:30:00 MET 42:06	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump When SPAS Berth Complete

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

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
157 009/03:30:00 MET 44:24	INRTL R=167.00 MNVR P= 64.00 Y=303.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 177 P 140	Observation 9/03:47 to 04:32	UV* Cel Star 117
158 009/04:32:00 MET 45:35	INRTL R=287.00 MNVR P=278.00 Y= 20.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 223 P 72	Observation 9/04:46 to 05:26	UV* Cel Star 112
159 009/05:00:00 MET	FN10 Sleep Start 9/05:00 MET				
160 009/05:35:00 MET 46:48	INRTL R=207.00 MNVR P= 87.00 Y= 27.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 191 P 90	Observation 9/05:42 to 06:20	UV* Cel Star 116
161 009/06:20:00 MET 34:37	TGT=5 RA= 145.710 BV=3 DEC= 13.730N P= 90.00 Y= 0.00 OM= 40.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 360 P 90	INRTL R= 99.67 P=208.05 Y=303.72	SEH Sunrise Rise 9/06:41:01
162 009/06:35:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
163 009/07:00:00 MET 13:51	INRTL R=288.00 MNVR P= 20.00 Y= 42.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 159 P 105	Observation 9/07:16 to 08:07	UV* Cel Star 115
164 009/08:12:00 MET 25:50	TGT=5 RA= 145.770 BV=3 DEC= 13.710N P= 90.00 Y= 0.00 OM= 40.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 0 P 90	INRTL R= 99.14 P=207.37 Y=303.61	SEH Noon Noon 9/08:39:17
165 009/08:26:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs
166 009/08:45:00 MET 57:23	INRTL R=158.00 MNVR P= 99.00 Y= 12.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 236 P 90	Observation 9/08:58 to 09:41	UV* Cel Star 121
167 009/09:52:00 MET 10:04:22	TGT=5 RA= 145.830 BV=3 DEC= 13.690N P= 90.00 Y= 0.00 OM= 40.00	B1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 0 P 90	INRTL R= 98.70 P=206.81 Y=303.51	SEH Noon Noon 9/10:09:33
168 009/10:05:00 MET	When in Att: B6/AUTO/VERN				DB Collapse for -ZSI Obs

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

## Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
169 009/10:21:00 MET 34:02	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	B1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North ESEM, SLA, ISIR
170 009/13:00:00 MET	FN10 Sleep End 9/13:00 MET				
171 009/13:35:00 MET 46:40	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=230.00	A1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 50.00	H2O Dump UV* Vbar Protect
172 009/15:20:00 MET 31:40	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North
173 009/16:40:00 MET		A1 INRT DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 SUN R 63 P 128	INRTL R=106.59 HOLD P=308.67 Y=314.04	FCS C/O PT 2
174 009/16:50:00 MET 53:20	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North
175 009/20:51:00 MET 59:21	INRTL R= 42.84 MNVR P=226.92 Y= 8.39	B1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 SUN R 92 P 37	Retrograde OMS Heads Down	ISIR GLO Adj TIG: 9/21:06
176 009/21:06:00 MET		B1 LVLH DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 0 P 80	LVLH R=360.00 HOLD P=190.01 Y=360.00	DAP - LVLH
177 009/21:35:00 MET 40:22	INRTL R=317.23 MNVR P= 46.71 Y=351.71	A1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 SUN R 88 P 143	Retrograde OMS Heads Down	ISIR GLO Circ TIG: 9/21:51
178 009/21:55:00 MET 22:02:45	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV Nose North SLA Cal Setup
179 009/22:30:00 MET	Temp Edit B1 VERN ROT RATE to 0.1 deg/sec				
180 009/22:40:00 MET 41:00	TGT=2 BV=5 P= 90.00 Y= 6.00 OM= 90.00	B1* AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.1000 EARTH R 6 P 90	LVLH R= 0.00 P=186.00 Y=270.00	SLA LOS cal 1

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

5-16

FLT PLN/85/FIN

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
181 009/22:41:00 MET 43:00	TGT=2 BV=5 P= 90.00 Y=354.00 OM= 90.00	B1* RATE 0.1000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 354 P 90	LVLH R= 0.00 P=174.00 Y=270.00	SLA LOS cal 2
182 009/22:43:00 MET 44:00	TGT=2 BV=5 P= 90.00 Y= 0.00 OM= 90.00	B1* RATE 0.1000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	SLA LOS cal 3
183 009/22:44:00 MET 45:00	TGT=2 BV=5 P= 84.00 Y= 0.00 OM= 90.00	B1* RATE 0.1000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 84	LVLH R= 90.00 P=270.00 Y=276.00	SLA LOS cal 4
184 009/22:45:00 MET 47:00	TGT=2 BV=5 P= 96.00 Y= 0.00 OM= 90.00	B1* RATE 0.1000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 96	LVLH R=270.00 P= 90.00 Y=276.00	SLA LOS cal 5
185 009/22:47:00 MET	TGT=2 BV=5 P= 70.00 Y= 0.00 OM= 90.00	B1* RATE 0.1000 AUTO DB AT 1.000 VERN DB RT 0.020			SLA LOS cal 6
186 009/22:49:00 MET 50:10	*** MNVR INTERRUPT *** TGT=2 BV=5 P= 70.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 70	LVLH R= 90.00 P=270.00 Y=290.00	SLA LOS cal 7
187 009/22:50:15 MET 53:35	TGT=2 BV=5 P=110.00 Y= 0.00 OM= 90.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 0 P 110	LVLH R=270.00 P= 90.00 Y=290.00	SLA LOS cal 8
188 009/22:54:00 MET 55:41	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Start Southern Hemisphere
189 009/22:58:00 MET	DAP B to B6 Mod Vern ROT RT to 0.0033				When in Att: DAP: B6/AUTO/VERN
190 009/23:19:03 MET 46:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere
191 010/00:03:51 MET 31:07	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Southern Hemisphere
192 010/00:48:38 MET 01:15:54	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere

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

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
193 010/01:33:26 MET 02:00:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Southern Hemisphere
194 010/02:18:12 MET 45:28	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere
195 010/03:03:01 MET 30:17	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Southern Hemisphere
196 010/03:47:47 MET 04:15:03	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere
197 010/04:30:00 MET	FN11 Sleep Start 10/04:30 MET				
198 010/04:32:35 MET 59:51	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Southern Hemisphere
199 010/05:17:22 MET 44:38	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere
200 010/06:02:10 MET 29:26	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Southern Hemisphere
201 010/06:46:57 MET 07:14:13	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere
202 010/07:31:45 MET 59:01	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Southern Hemisphere
203 010/08:16:31 MET 43:47	TGT=2 BV=3 P= 90.00 -Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere
204 010/09:01:20 MET 28:36	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 87.30	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=272.70	ISIR ZDS Southern Hemisphere

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

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
205 010/09:46:06 MET 10:13:22	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 92.70	B6 RATE 0.0033 AUTO DB AT 0.100 VERN DB RT 0.010	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y=272.70	ISIR ZDS Northern Hemisphere
206 010/12:30:00 MET	FN11 Sleep End 10/12:30 MET				
207 010/15:10:00 MET 15:17	TGT=4 RA= 146.965 BV=5 DEC= 13.302N P=184.00 Y= 0.00 OM=110.00	A1 RATE 0.2000 AUTO DB AT 1.000 VERN DB RT 0.020	SUN R 180 P 176	INRTL R=202.09 P= 20.12 Y=329.39	Rad Coldsoak UVSTAR protect
208 010/16:26:00 MET 31:48	INRTL R=207.00 MNVR P= 85.00 Y=295.00	A1 RATE 0.2000 AUTO DB AT 5.00 PRI DB RT 0.20	SUN R 150 P 127	Stars -Y: 16 -Z: 59	D-O IMU Align
209 010/16:40:00 MET 42:10	INRTL R=183.00 MNVR P= 58.00 Y=357.00	B1 RATE 0.5000 AUTO DB AT 3.00 PRI DB RT 0.20	SUN R 218 P 131	Stars -Y: 13 -Z: 37	D-O IMU Verif
210 010/16:52:00 MET 55:49	INRTL R=294.00 MNVR P= 48.00 Y=337.00	B1 RATE 0.5000 AUTO DB AT 3.00 PRI DB RT 0.20	SUN R 91 P 150		D-O Comm Thermm
211 010/19:09:00 MET 14:23	INRTL R= 30.75 MNVR P=252.74 Y= 28.44	TRN RATE 0.5000 AUTO DB AT 3.50 PRI DB RT 0.50	SUN R 130 P 49		D-O Burn TIG 10/19:24

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



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**FLIGHT PLAN NOTES**

FLIGHT PLAN NOTES  
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION

Orbiter: OV103/Discovery  
 Inclination: 57°  
 Insertion Altitude: 160 X 160 nm  
 Duration: 11 days

B. MAJOR EVENTS

<u>EVENT</u>	<u>MET</u>	<u>DATE</u>	<u>CDT</u>	<u>GMT</u>	<u>ΔV</u>	<u>HA/HP</u>
Launch	00/00:00	08/07:97	09:41	14:41	--	--
OMS2	00/00:39	08/07:97	10:20	15:20	253.3	161/159
SPAS Deploy	00/07:16	08/07:97	16:57	21:57	--	161/159
SPAS Retrieve	09/00:21	08/16:97	10:02	15:02	--	156/152
ISIR/GLO Adjust	09/21:06	08/17:97	06:47	11:47	25.4	155/138
ISIR/GLO Circ	09/12:51	08/17:97	07:32	12:32	30.4	139/137
Deorbit	10/19:24	08/18:97	05:05	10:05	225.0	--
Landing	10/20:24	08/18:97	06:05	11:05	--	--

C. LANDING OPPORTUNITIES

		<u>Landing Orbit</u>	<u>Site</u>	<u>Local Time</u>	<u>MET</u>
		<u>No.</u>			
Nominal	Primary	174	KSC	07:05 EDT	10/20:24
	1 Rev Late	176	EDW	07:07 PDT	10/23:26
1 Day Late	Primary	190	KSC	06:59 EST	11/20:18
	1 Rev Late	192	EDW	07:00 PST	11/23:19
2 Days Late	Primary	206	KSC	06:52 EDT	12/20:11
	1 Rev Late	208	EDW	06:54 PST	12/23:13

D. CREW

CDR – Curt Brown  
 PLT – Kent Rominger  
 MS – Jan Davis  
 MS2 – Robert Curbeam  
 MS3 – Steve Robinson  
 PS1 – Bjarni Tryggvason

E. COMMUNICATIONS

TDRS Support: East (41° W), West (174° W), Z (85° E)  
 Backup Real-Time TV: GDS(GDX), MIL(MLX)  
 Contingency GSTDN: DFR\*, MIL(MLX)\*, BDA(BDX)\*, GDS(GDX), and WLP  
 Contingency RTS: HTS, GTS, VTS, CTS, DGS, OTS\*, and NHS

\*UHF capability

Lead time for site callup: GSTDN – 2 hr, RTS – 4 hr

FLIGHT PLAN NOTES

## F. PAYLOADS

### 1. Cryogenic Infrared Spectrometers and Telescopes for the Atmosphere-Shuttle Pallet Satellite (CRISTA-SPAS)

The CRISTA-SPAS payload is the fourth mission in the Astronomy (ASTRO)-SPAS program, a cooperative venture between the German Space Agency, DARA, and the Office of Space Science and Applications (OSSA) at NASA Headquarters. CRISTA-SPAS is a Remote Manipulator System (RMS) deployed and retrieved free-flying payload which will acquire atmospheric physics data in low Earth orbit. The payload is comprised of the ASTRO-SPAS carrier and two science instruments. The primary experiment of CRISTA-SPAS is the CRISTA, which is a system of three telescopes and four spectrometers to measure infrared radiation emitted by the Earth's middle atmosphere.

A complementary instrument, Middle Atmosphere High Resolution Spectrograph Investigation (MAHRSI) will also be carried on the payload together with a passive Surface Effects Sample Monitor (SESAM). MAHRSI will measure ultraviolet radiation emitted and scattered by the Earth's atmosphere. An Earth sensor called Mini Dual Earth Sensor (MiDES) will be mounted on the SPAS and activated during the payload free-flight in order to gather operational data. This data, Earth horizon positions, will be compared postflight to SPAS Earth sensor data. An additional experiment, the Interferometry Program Experiment-II (IPEX-II) is attached to the SPAS. IPEX-II measures the vibrations of the SPAS during the payload free-flight operations.

The ASTRO-SPAS carrier is a truss structure that supports the payload subsystems and instruments. The carrier is capable of rotational attitude control using two redundant cold gas propulsion systems.

### 2. Manipulator Flight Demonstration (MFD)

The MFD is a self-contained attached payload which will demonstrate the operational capability of the JEM Remote Manipulator System (JEM RMS) and its Small Fine Arm (SFA). The MFD System is divided into Payload Bay (PLB) element and Aft Flight Deck (AFD) element. MFD also contains the Two-Phase Fluid Loop Experiment (TPFLEX) and Evaluation of Space Environment and Effects on Materials (ESEM).

#### a. Small Fine Arm (SFA)

The MFD PLB element will be mounted on an MSFC-provided Multipurpose Equipment Support Structure (MPRESS) carrier. The MFD PLB element is approximately 5 feet (1.5 m) in length in the fully extended configuration and has a shoulder roll and pitch joint, elbow pitch joint and wrist pitch, yaw, and roll joint. The SFA is controlled via hand controllers located in the AFD and can be ground controlled.

#### b. Two-Phase Fluid Loop Experiment (TPFLEX)

The TPFLEX mounted on the MPRESS is a heat transport system which circulates water from an evaporator to a condenser whose objective is to obtain the heat transfer characteristics of the two-phase loop under microgravity conditions. The TPFLEX has a pump and heater system, and is operated by the crewmember. Experiment run times are estimated to be approximately 60 minutes for heat-up and approximately 8 hours for cool-down.

c. Evaluation of Space Environment and Effects on Materials (ESEM)

The ESEM is mounted on the MFD task element support structure. The objective of the passive ESEM experiment is to evaluate advanced technical materials in a space environment and to capture and analyze space debris. Sample materials include solar cell glass and other materials. The Capture Dust Collector (CDC) is made of silicon dioxide and gold foil. The ESEM does not require orbiter electrical power.

d. Ground Commanding

The purpose of the experiment is to test the file transfer based ground control system of the robot arm on the manned space system. The test results should be reflected to the future Robot design and operation consideration toward a control from the ground in order to reduce the crew operation on board.

3. Technology Applications and Science-01 (TAS-01)

The TAS-01 payload will include six separate experiments mounted on a crossbay Hitchhiker (HH) MPSS.

a. Shuttle Laser Altimeter-2 (SLA-2)

The SLA-2 is the second in a series of four flights of the SLA experiment. SLA-2 is comprised of the Laser Altimeter Canister (LAC) and the Altimeter Support Canister (ASC). The LAC hardware consists of a laser altimeter instrument including a transmitter and receiver subassemblies housed in a 5 ft<sup>3</sup> HH canister. The canister is equipped with a Hitchhiker Motorized Door Assembly (HMDA) with an optical window. The ASC consists of the control and data electronics utilized by the laser altimeter instrument in the LAC. The SLA payload will acquire samples of land topography and vegetation data on a near-global basis to demonstrate laser altimeter operation in Earth orbit. The payload will also attempt to provide an in-space engineering testbed for laser altimeter sensors and measure cloud top-height, cloud structure, and aerosol layering. Laser altimeter measurement of surface elevation and surface structure by the SLA results from timing and digitization of short pulses of laser radiation that are sent by a laser transmitter and detected by an optical receiver after scattering from the Earth's surface or atmosphere.

b. Critical Viscosity of Xenon (CVX)

The CVX is a microgravity experiment designed to more accurately than is possible from ground based testing measure the viscosity of Xenon at temperatures very near its liquid-vapor critical point. The CVX experiment will be housed in two adjacent 5 ft<sup>3</sup> canisters mounted on the aft face of the HH MPSS. One canister houses the Experiment Package (EP) which includes the viscometer/sample cell and precision temperature control elements. The second canister houses the Avionics Package (AP) which includes the data acquisition and control electronics and the power conditioning systems. The CVX experiment is also thermally sensitive and requires precise temperature control to a few millionths of a degree. CVX can perform autonomously, but in the most desirable scenario, it will be controlled interactively via ground commands.

c. Two Phase Flow (TPF)

The TPF is an integrated two-phase Thermal Control System (TCS) designed to address critical component and system performance issues. Measurements will be made that will demonstrate and characterize flight operation of a Capillary Pumped Loop (CPL) with advanced features and components. The TPF is housed in a sealed 5 ft<sup>3</sup> canister mounted on the aft face of the HH MPESS. The TPF canister will be equipped with a modified "heavy" UEP which serves as a heat sink and radiator for the experiment. The canister will also be equipped with a motorized butterfly vent valve that will allow it to fully vent onorbit. Once the experiment is activated, it will be controlled via ground commands.

d. Cryogenic On-orbit Long-Life Active Refrigerator Flight Experiment (CFE)

The CFE will attempt to cool a simulated sensor surface to 65 degC in order to test the operation of an engineering development model of a cryogenic collar. CFE will be mounted on an HH Single Bay Pallet (SBP) on top of the HH MPESS. The CFE experiment includes a compressor, gas purifier, cold head module, and electronics module all contained within the experiment enclosure. Vertical and horizontal radiator plates will dissipate heat generated by the experiment.

e. Infrared Spectral Imaging Radiometer (ISIR)

The ISIR will measure infrared radiation emitted from cloud tops in three narrow bands and one broad band. ISIR will also provide an in-space test bed for uncooled microbolometer array detectors for pushbroom instruments of the future, as well as measure cloud and aerosol layers. The ISIR experiment is housed in a sealed 5 ft<sup>3</sup> canister mounted on the forward face of the HH MPESS. The canister will be equipped with a unique Upper End Plate (UEP) modified to include an optical window.

f. Solar Constant (SOLCON)

The SOLCON is designed to accurately measure the solar constant and identify variations in the value during a solar cycle. This data will ensure continuity of the solar constant level obtained by instruments mounted on free flyers, over climate time scale duration.

g. Space Experiment Module 2 (SEM-2)

The SEM-2 experiment is housed in a sealed 5 ft<sup>3</sup> canister mounted on the aft face of the HH MPESS. The canister will contain up to ten small enclosed modules, each containing a separate experiment designed and constructed by students. Each experiment will have its own internal support system.

The SEM-2 is an educational initiative being pursued by the NASA SSPP to increase educational access to space. The SEM will be controlled by a crewmember through the use of the Bus Interface Adapter (BIA) connected to a Payload and General Support Computer (PGSC).

#### 4. International Extreme Ultraviolet Hitchhiker 2 (IEH-2)

The IEH-2 consists of a hitchhiker carrier designed for cross-bay mounting in the payload bay. Three experiments mounted on the carrier are:

##### a. Solar Extreme Ultraviolet Hitchhiker (SEH)

The SEH is designed to obtain absolute solar Extreme Ultraviolet (EUV) and Far UV fluxes that are required to interpret emissions from other solar system and earth atmospheric measuring instruments. SEH is mounted on the side of the HH MPSS (HH-M) bridge and is contained in an extended Get-Away Special (GAS) can with a HMDA. SEH support electronics are mounted in the second can. Maneuvering the orbiter to the required Sun-pointing attitude is the only crew activity required.

##### b. UV Spectrograph Telescope for Astronomical Research (UVSTAR)

The UVSTAR is an EUV spectral imager devoted to solar system and stellar astronomy. UVSTAR will spectrally resolve images and atomic emission lines from a variety of stellar sources including IO plasma torus at Jupiter, hot stars, and the Earth's atmosphere. UVSTAR is mounted on top of the carrier. The associated electronics are mounted on the side of the carrier. Maneuvering the orbiter to the required attitude is the only crew activity required.

##### c. GLO-3

An EUV imager and spectrograph of the GLO-3 instrument will make 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-3 will also obtain data passively throughout the mission. The GLO-3 instrument package is mounted on a scan platform on the top of the carrier. The associated electronics are mounted on the side of the carrier. The crew will perform a variety of activities in support of some GLO-3 data takes.

##### d. Distribution and Automation Technology Advancement – Colorado Hitchhiker and Student Experiment of Solar Radiation (DATA-CHASER)

The DATA-CHASER is a distributed, automated, and interactive control system which manages the operation of three solar instruments. It consists of two assemblies, the instrumentation assembly and the electronics assembly, mounted in adjacent GAS-type canisters on the forward side of the HH-M bridge. The DATA-CHASER instrumentation is contained in a GAS-type canister equipped with an HMDA.

## G. SECONDARY PAYLOADS

### 1. Southwest Ultraviolet Imaging System (SWUIS)

The SWUIS is a general-purpose, small-scale astronomical facility designed for use as an STS middeck payload. SWUIS is based around a high quality imaging telescope and an intensified CCD Camera developed from military night vision technology. The SWUIS Telescope will be used primarily to view the Hale-Bopp comet. However, it can also be used to perform UV astronomy, planetary and cometary imaging, terrestrial airglow and atmospheric background imaging, auroral imaging, or studies of shuttle glow and vehicle plume evaluations. The SWUIS assembly is mounted in the orbiter side hatch window, AFD overhead windows, or the pilot-side forward window via SSP-provided standard mounts/brackets and a customer-provided mount adapter. Video data from the SWUIS intensified CCD Camera is recorded on the SSP-provided Camcorder and also downlinked to the SWUIS ground personnel located in the JSC Payload Operations Control Center (POCC).

### 2. Bioreactor Demonstration System (BDS-03) Configuration B

The experiment design consists of two onorbit phases. Phase one objectives include verifying science data collection and verifying the suitability of vessel fluid support hardware to support mammalian cell growth for an experiment period of 9 days onorbit. This will include demonstrating the ability of the system to monitor pH, provide oxygen supply, and remove waste products. Phase two of the experiment will consist of approximately 2 days of fluid dynamics observations to monitor fluid flow and particle trajectory within the vessel in microgravity. Both phases of the experiment will require still photography and video recording.

### 3. Biological Research in Canisters (BRIC-Block II)

The BRIC payload provides flight opportunities for investigations into the effects of spaceflight on tobacco seed plant specimens. The Block II consists of two BRIC 60 canisters containing the specimens in a locker removed during the flight and placed within a gaseous nitrogen (GN2) freezer. The Block II canisters are two-chambered aluminum holders for the specimen support hardware.

### 4. Protein Crystal Growth Single Thermal Enclosure System (PCG-STES)

The PCG-STES payload is designed to conduct experiments in microgravity which will supply information on the scientific methods and dynamics of growing large high-quality protein crystals. The PCG-STES will be installed and operated in the orbiter middeck. The STES is a refrigeration and incubation module for conducting microgravity and biotechnology research in the crew compartment (middeck). The temperature of the STES internal volume can be controlled to any desired temperature between 4 degC and 40 degC.



5. Solid Surface Combustion Experiment (SSCE)

The SSCE studies the effects of microgravity on the combustion of specific solid surface samples. The SSCE is designed to be flown in four space shuttle middeck lockers and consists of a Camera Module Assembly and an Experiment Sample Chamber Assembly. Each SSCE sample will be ignited by a hot filament wire. Instrumentation will consist of six thermocouples on or about the Polymethyl Methacrylate (PMMA) samples, a silicon temperature sensor, and a pressure transducer to measure the internal chamber temperature and pressure.

6. Shuttle Ionospheric Modification With Pulsed Local Exhaust (SIMPLEX)

The objective of the SIMPLEX activity is to determine the source of Very High Frequency (VHF) radar echoes caused by the orbiter and its OMS engine firings. The Principal Investigator (PI) will use the collected data to examine the effects of orbital kinetic energy on ionospheric irregularities and to understand the processes that take place with the venting of exhaust materials. SIMPLEX sensors may collect data during any encounter opportunity when the orbiter support activities meet the criteria defined. The SIMPLEX has no flight hardware and is considered a payload of opportunity for this flight. If an opportunity is identified, orbiter OMS thruster firings can be used to create ionospheric disturbances for observation by the SIMPLEX radars. The SIMPLEX has three different radar sites used for collecting data: Arecibo, Kwajalien, and Jicamarca. The Arecibo radar site will also use a low-level laser to observe the effects on the ionosphere resulting from the thruster firing.

7. Midcourse Space Experiment (MSX)

The MSX is a satellite in orbit at a 99° inclination and approximately 485 nm in altitude. Orbiter thruster firings or specific attitude requirements will be used as a sensor calibration and evaluation target for the space-based ultraviolet, infrared, and visible sensors on the MSX. There is no flight hardware associated with MSX tests and is considered a payload of opportunity for this flight. If an opportunity is identified, the crew and orbiter participation will be used to establish the controlled conditions for the cooperative passes. The MSX tests that can be performed by the orbiter include Orbital Maneuvering System (OMS), Primary Reaction Control System (PRCS) thruster firings, maintenance of specific attitudes, and use of orbiter S-Band transmissions (and payload bay lights for some tests) while in the Field of View (FOV) of the MSX satellite.

H. GET-AWAY SPECIALS (GAS)

1. GAS-572

The GAS-572 payload is sponsored by Utah State University. The experiment is titled Characterization of Fluid Physics Effects on Cardiovascular Response to Microgravity. The experiment is an investigation of fluid physics phenomena that contribute to cardiovascular changes during spaceflight. The experiment consists of an artificial heart, instrumented with pressure and flow sensors, that pumps a whole blood viscosity analog solution around a fluid circuit with components that mimic the resistance and compliance of the blood vessels creating physiologic pressure and flow conditions.

## 2. GAS-745

The GAS-745 payload is sponsored by Mayo High School, Rochester, Minnesota. The experiment consists of six growing chambers that will each contain a variety of seed types embedded in vermiculite. After launch, the seeds will be watered and allowed to germinate in a temperature-controlled environment. A portion of the seeds will be treated with growth hormone. Prior to reentry, the seeds will be treated with a fixative that will stop their growth.

### I. RISK MITIGATION EXPERIMENTS (RMEs)

#### Microgravity Vibration Isolation Mount (MIM) System Performance Evaluation and Characterization (RME 1328)

The primary objective of RME 1328 is to thoroughly characterize the performance of the MIM using advanced control techniques and to determine what level of microgravity quality is obtainable with the MIM. This knowledge will be used to assist in determining what microgravity environment is achievable on the International Space Station (ISS) using locker level motion isolation systems. The basic set of characterization testing will be conducted using MIM alone. Additional testing will be conducted using representative experiments which will allow for a more complete understanding of the requirements for isolation systems on ISS.

### J. ON-ORBIT DTOs

#### 1. Orbiter Space Vision System (OSVS) Flight Video Taping (DTO 700-10)

The purpose of DTO 700-10 is to record Camera video of targets (which are mounted to orbiter and/or payload structure) under varying on-orbit conditions. The recorded video can be used in conjunction with OSVS on the ground in a laboratory environment. This allows accurate characterization of OSVS performance and target characteristics under actual on-orbit viewing conditions without having to fly the OSVS unit. The SVS photogrammetry technology uses existing shuttle Payload Bay Camera views of targets on payloads and payload bay hardware to provide precise relative position, attitude, and rate cues in a concise graphical and digital format. The orbiter crew uses these cues to perform RMS operations and/or proximity operations (PROX OPS) piloting.

The OSVS is planned for critical path operations early in the space station assembly sequence. The OSVS will be the only source of precision data with which the Shuttle RMS (SRMS) operator will perform station assembly operations that include Androgynous Peripheral Attachment System (APAS) and Common Berthing Mechanism (CBM) mating tasks. The goal of this DTO is to develop a high level of confidence that OSVS can be relied upon for Space Station assembly.

The OSVS has the potential to reduce/eliminate the need for dedicated keel and Boresight Cargo Bay Cameras required for RMS operations. For PROX OPS applications, it has the potential to decrease orbiter propellant usage and plume impingement effects, and it could increase the chance for meeting the docking conditions for approaches to the Mir space station and the ISS. It is also anticipated that it will reduce both training and on-orbit operations timelines.

2. Orbiter Space Vision System (OSVS) (DTO 700-11)

The purpose of DTO 700-11 is to evaluate the operation and performance of OSVS in conjunction with the Orbiter Closed Circuit Television. The OSVS is an advanced version of the SVS which is smaller and lighter, has a much simpler user interface, and has significantly upgraded operational capabilities. The OSVS is planned for critical path operations early in the space station assembly sequence.

The OSVS activities will include dedicated robotic operations designed to provide a thorough evaluation of system performance and capabilities. OSVS will also be used in parallel with nominally planned RMS operations and will serve as an additional source of payload position and attitude information to aid RMS operators and/or pilots in performing robotic and/or free-flying operations.

3. Single String Global Positioning System (GPS) (DTO 700-14)

The purpose of this experiment is to demonstrate the performance and operation of the GPS during orbiter on-orbit operations, utilizing a modified military GPS receiver processor and the existing orbiter GPS antennas to supplement the TAS-01 SLA experiment data collection. A PGSC hard drive is used to record GPS data during extended on orbit time. SLA will use the data postflight to analyze orbiter attitudes and location during SLA operating periods.

4. Automatic Targeting and Reflective Alignment Concept (AutoTRAC) Computer Vision System (Objective A only) (DTO 842)

DTO 842 will demonstrate the ability of the orthogonal Camera-to-Target system to align ISS modules so that they can be assembled. During ISS assembly, the camera system will use this capability to support operations such as mating the Functional Energy Block (FGB) to the Pressurized Mating Adapter (PMA1) on mission 2A.

Objective A: Unberth/berth a payload utilizing redundant Mini Keel Camera and mirror target with retroreflectors as a crew visual (relative orientation) aid.

For this objective the (AutoTRAC) mirror target, with five retroreflectors is mounted on a payload, and is being unberthed/berthed using the Shuttle Remote Manipulator System (SRMS). The mirror target is illuminated by an LED Ring, mounted around the camera lens, and controlled by the LED Control Unit (LCU) in the AFD. The LCU requires orbiter power and CCTV system synchronization signal to synchronize the flashing of the LEDs with the CCTV system. The LCU also controls the brightness of the LEDs and selects their operational mode. The Mini Keel Camera video is processed by a vision processor card within the PGSC Expansion Chassis and viewed on the AFD Closed Circuit Television (CCTV) monitor or other display device. The AutoTRAC control data are displayed on the PGSC monitor.

5. V-BAR Proximity Operations Demonstration for ISS (DTO 843)

This DTO 843 demonstrates piloting techniques and shuttle performance during a V-bar approach to a small payload target using a single nose x-jet for x-axis translation control. Shuttle flights to the ISS on flights 6A and subsequent will utilize a V-bar docking attitude approach procedure. Shuttle flights 6A through 13A will utilize V-bar docking with a single nose x-axis translation jet. Prior testing of the specific shuttle proximity operations ground rules and constraints on a small payload rendezvous will allow fine tuning of the procedures prior to the critical ISS flights.

6. RMS Situational Awareness Displays (RSAD) (DTO 844)

The objective of DTO 844 is to demonstrate the use of RSAD before it is used operationally on ISS assembly flights. The SRMS will be used extensively during the assembly of the ISS. The RMS tasks will involve translation of large elements over long distances, culminating in an approach of two large structures to within one inch and one degree accuracy. The RMS operator often will not have the benefit of direct viewing or good camera views for substantial portions of the RMS trajectory.

RSAD will be capable of integrating information pertaining to RMS from various sources such as PCMMU, the Canadian Space Vision System, the Johnson Space Center Vision System, and any other system that may be developed to determine the position and attitude of a payload. Utilizing a design philosophy similar to the one used in RPOP for data integration from various sources, RSAD will be capable of providing situational awareness cues to the operator irrespective of the source of the RMS position data or the payload ID and the mode of the RMS. RSAD will be used in combination with the OSVA and ACVS during loaded RMS operations. The AutoTRAC Computer Vision System (RSAD) also has one dedicated unloaded RMS period during the mission.

K. ON-ORBIT DSOs

1. Interaction of the Space Shuttle Launch and Entry Suit and Sustained Weightlessness on Egress Locomotion (DSO 331)

The objectives of DSO 331 are to identify the impact of the LES/ACES and sustained weightlessness on egress locomotion mechanical efficiency as measured by O<sub>2</sub> consumption and gait alteration (when data analysis is made available). This DSO will identify the impact of the LES/ACES on physiological responses as measured by oxygen consumption, increased body temperatures, heart rate, and ventilatory equivalent and will determine if crewmembers can sustain egress locomotion at a uniform velocity (3.5 mile per hour) for 5 minutes.

2. Assessment of Sleep Quality and Circadian Shifting in Astronauts by Bright Light (DSO 484C)

The objective of DSO 484C investigation is to diagnose and analyze the quality and quantity of sleep in astronauts as a function of the work-rest cycles, circadian rhythms, and flight-specific environment variables in order to develop a sleep-enhancing and fatigue-reducing countermeasures program.

**3. Intermars Tissue Equivalent Proportional Counter (ITEPC) (DSO 485)**

The ITEPC hardware consists of the experiment attached to a mounting plate which is used to attach the experiment hardware to the Adaptive Payload Carrier (APC) or APC with extension beam. The ITEPC experiment consists of a spectrometer, a radiation detector, a data storage board, a computer clock, a multichannel analyzer, discriminators, amplifiers and a power supply. The ITEPC is activated onorbit by the flightcrew. Power to the ITEPC will be deactivated by the flightcrew prior to deorbit.

**4. Monitoring Latent Virus Reactivation and Shedding in Astronauts (DSO 493)**

The purpose of DSO 493 is to determine the frequency of induced reactivation of herpes viruses, herpes virus shedding, and clinical disease after exposure to the physical, physiological, and psychological stressors associated with space flight. One crewmember will perform a 15 minute saliva collection each flight day during postsleep.

**5. Educational Activities (DSO 802)**

The purpose of DSO 802 is to use the attraction of space flight to capture the interest of students and motivate them toward careers in science, engineering, and mathematics.

DAP BOOK

DAP BOOK

<u>DAP</u>	<u>PURPOSE</u>
A1	- NOMINAL
A2	- PTC
A3	- GG
A4	- SVS
	3A PMA3
	3A Z1
	5A LAB
A5	- LOSS OF VERN (NOSE & TAIL)
A6	- LOSS OF VERN (TAIL ONLY)
A7	- RENDEZVOUS
A8	- CORRIDOR
A9	- DOCKING
A10	- CRISTA-SPAS RELEASE SJ CAPTURE
A11	- MFD LOW HOVER
A12	- MFD RELEASE
A13	- CRISTA-SPAS NOMINAL CAPTURE
A14	- RBAR TO VBAR TRANSITION
A15	- CRISTA-SPAS LOW HOVER

<u>DAP</u>	<u>PURPOSE</u>
B1	- NOMINAL UVSTAR ISIR LOW RESOLUTION
B2	- LOSS OF VERN (TAIL ONLY)
B3	- LOSS OF VERN (NOSE & TAIL)
B4	- SVS
	5A PMA2
B5	- COAS CAL SWUIS COMET ACQUISITION
B6	- SPAS GYRO DRIFT & SCALE SEH-ZSI DC-Z MOON
B7	- RENDEZVOUS
B8	- CORRIDOR
B9	- DOCKING
B10	- CRISTA-SPAS NOMINAL DEADBAND COLLAPSE RMS PH
B11	- CRISTA-SPAS DEADBAND COLLAPSE W/O POSN HOLD RMS BO
B12	- CRISTA-SPAS EXTENDED PARK
B13	- SVS
	4A P6
	2A FGB
B14	- RBAR TO VBAR TRANSITION
B15	- SWUIS COMET OBS SPAS COMM ALT DAP

FLT PLN-1a/85/O/B

CNT ACC = 0	UNLOADED RMS
= 1	CRISTA-SPAS LOW HOVER
= 2	CRISTA-SPAS RELEASE, CAPTURE (NOM & SJ)
= 3	MFD LOW HOVER
= 4	MFD RELEASE
= 5	SVS - 2A FGB, 4A P6
= 6	SVS - 3A PM3A, 3A Z1, 5A LAB
= 7	SVS - 5A PMA2
= 8	CRISTA-SPAS EXTENDED PARK
= 9	NOT USED

IF LOSS OF VERNIS AND MFD ROBOT ARM IN USE,  
ALT DAP WILL BE RECONFIGURED AS FOLLOWS:

	<u>OPTION 1</u>	<u>OPTION 2</u>
RATE DB =	0.07	0.10
JET OPT =	TAIL	TAIL
# JETS =	1	2
ON TIME =	0.08	0.08
DELAY =	14	20

FLT PLN-1b/85/O/B

(reduced copy)



DAP A

DAP A1  
PURPOSE:  
NOMINAL

FLT PLN-2a/85/O/A

FLT PLN-2b/85/O/A

A1

A1

DAP A2

	<b>A1</b>		
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	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:  
PTC

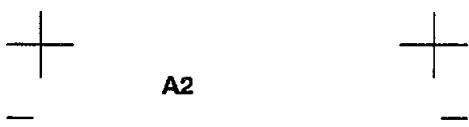
FLT PLN-3a/85/O/A

FLT PLN-3b/85/O/A

A2

(reduced copy)





**A2**

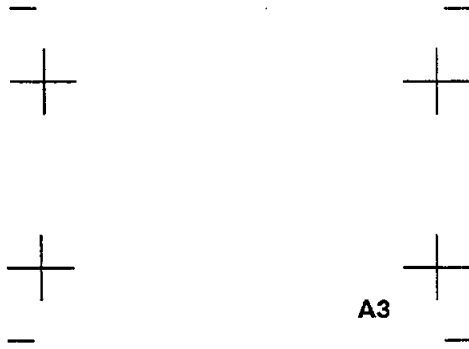
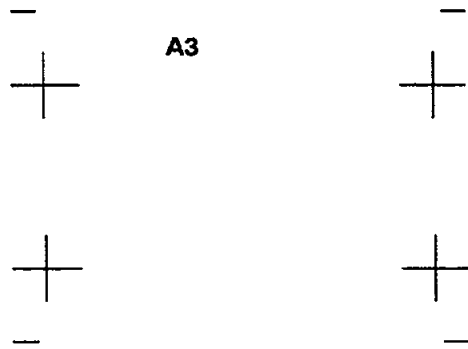
DAP A 0 2	1	PRI
0.4 0 0 0	10	ROT RATE
- 1.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
0.0 0	14	COMP
ALL	15	P OPTION
ALL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.2 0 0	18	RATE DB
ALL	19	JET OPT
2	20	#JETS
0.0 8	21	ON TIME
- 0.0 0	22	DELAY
		VERN
0.4 0 0 0	23	ROT RATE
- 1.0 0 0	24	ATT DB
0.2 0	25	RATE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

**DAP A3**

PURPOSE:  
GG

FLT PLN-4a/85/O/A

FLT PLN-4b/85/O/A



**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	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	27	COMP
0	28	CNTL ACC

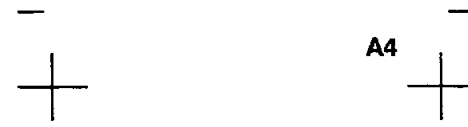
**DAP A4**

PURPOSE:  
SVS  
3A PMA3\*  
3A Z1  
5A LAB

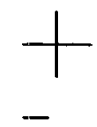
\*Temp change ALT JET OPT  
to TAIL ONLY for 3A PMA3  
RMS posn in procedures

FLT PLN-5a/85/O/A

FLT PLN-5b/85/O/B



(reduced copy)



A4

A4

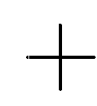
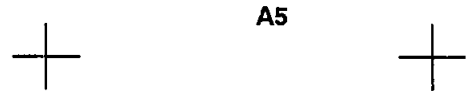
DAP A 0 4	1/3	PRI
0.1 0 0 0	10/50	ROT RATE
- 3.0 0	11/51	ATT DB
0.2 0	12/52	RATE DB
0.0 4	13/53	ROT PLS
0.0 0	14/54	COMP
ALL	15/55	P OPTION
ALL	16/56	Y OPTION
0.0 1	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL*	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 6.9 0	22/62	DELAY
		VERN
0.2 0 0 0	23/63	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
6	28/68	CNTL ACC

DAP A5

PURPOSE:  
LOSS OF VERN  
(NOSE & TAIL)

FLT PLN-6a/85/O/B

FLT PLN-6b/85/O/A



A5



A5

A5

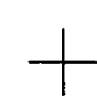
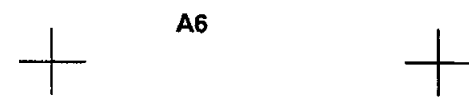
DAP A 0 5	1	PRI
0.2 0 0 0	10	ROT RATE
- 5.0 0	11	ATT DB
0.2 0	12	RATE DB
0.1 0	13	ROT PLS
0.0 0	14	COMP
ALL	15	P OPTION
ALL	16	Y OPTION
0.1 0	17	TRAN PLS
		ALT
0.0 7 0	18	RATE DB
ALL	19	JET OPT
1	20	#JETS
0.0 8	21	ON TIME
- 0.0 0	22	DELAY
		VERN
0.2 0 0 0	23	ROT RATE
- 1.0 0 0	24	ATT DB
0.2 0	25	RATE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

DAP A6

PURPOSE:  
LOSS OF VERN (TAIL ONLY)

FLT PLN-7a/85/O/A

FLT PLN-7b/85/O/A



A6

(reduced copy)



A6

**A6**

DAP A 0 6	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
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
0.2 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

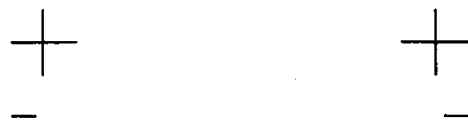
**DAP A7**  
PURPOSE:  
RENDEZVOUS

FLT PLN-8a/85/O/A

FLT PLN-8b/85/O/A



A7



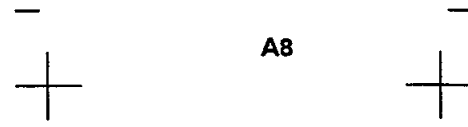
**A7**

DAP A 0 Z	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

**A7**  
**DAP A8**  
PURPOSE:  
CORRIDOR

FLT PLN-9a/85/O/A

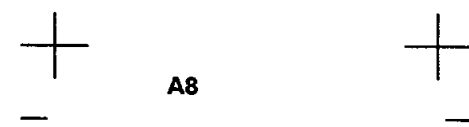
FLT PLN-9b/85/O/B



A8



(reduced copy)



**A8**

DAP A 0 8	1	PRI
0.2 0 0 0	10	ROT RATE
- 1.0 0	11	ATT DB
0.1 0	12	RATE DB
0.1 0	13	ROT PLS
0.0 0	14	COMP
TAIL	15	P OPTION
TAIL	16	Y OPTION
0.0 5	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

**DAP A9**

PURPOSE:  
DOCKING

FLT PLN-10a/85/O/B

FLT PLN-10b/85/O/B



**A9**

DAP A 0 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

**DAP A10**

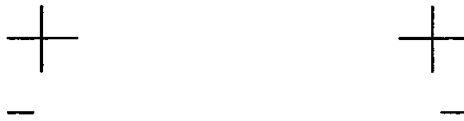
PURPOSE:  
CRISTA-SPAS  
RELEASE,  
SJ CAPTURE

FLT PLN-11a/85/O/B

FLT PLN-11b/85/O/B



(reduced copy)



A10

A10

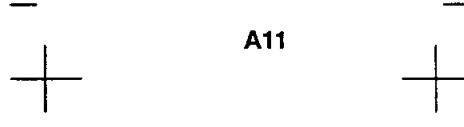
DAP A 1 0	1/3	PRI
0.1 0 0 0	10/50	ROT RATE
- 3.0 0	11/51	ATT DB
0.2 0	12/52	RATE DB
0.0 4	13/53	ROT PLS
.0 0 0	14/54	COMP
ALL	15/55	P OPTION
ALL	16/56	Y OPTION
0.0 1	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 8.2 0	22/62	DELAY
		VERN
0.2 0 0 0	23/63	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
2	28/68	CNTL ACC

DAP A11

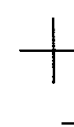
PURPOSE:  
MFD LOW HOVER

FLT PLN-12a/85/O/B

FLT PLN-12b/85/O/A



A11



A11

A11

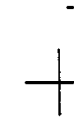
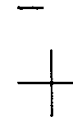
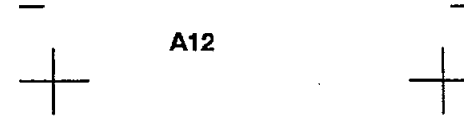
DAP A 1 1	1/3	PRI
0.1 0 0 0	10/50	ROT RATE
- 3.0 0	11/51	ATT DB
0.2 0	12/52	RATE DB
0.0 4	13/53	ROT PLS
.0 0 0	14/54	COMP
ALL	15/55	P OPTION
ALL	16/56	Y OPTION
0.0 1	17/57	TRAN PLS
		ALT
0.2 0 0	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
0.0 8	21/61	ON TIME
- 3.6 0	22/62	DELAY
		VERN
0.2 0 0 0	23/63	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
3	28/68	CNTL ACC

DAP A12

PURPOSE:  
MFD RELEASE

FLT PLN-13a/85/O/A

FLT PLN-13b/85/O/A



A12

(reduced copy)

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 1</u>	17/57	TRAN PLS
		ALT
<u> 0.2 0 0</u>	18/58	RATE DB
ALL	19/59	JET OPT
<u> 2</u>	20/60	#JETS
<u> 0.0 8</u>	21/61	ON TIME
<u>- 5.5 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
<u> 4</u>	28/68	CNTL ACC

FLT PLN-14a/85/O/A

DAP A13

PURPOSE:  
CRISTA-SPAS  
NOMINAL CAPTURE

FLT PLN-14b/85/O/B

A13

A13

DAP A 1 3	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 1</u>	17/57	TRAN PLS
		ALT
<u> 0.2 0 0</u>	18/58	RATE DB
ALL	19/59	JET OPT
<u> 2</u>	20/60	#JETS
<u> 0.0 8</u>	21/61	ON TIME
<u>- 9.4 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> 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
<u> 2</u>	28/68	CNTL ACC

FLT PLN-15a/85/O/B

A13

DAP A14

PURPOSE:  
RBAR TO VBAR  
TRANSITION

FLT PLN-15b/85/O/B

A14

(reduced copy)

A14

DAP A15

PURPOSE:  
CRISTA-SPAS  
LOW HOVER

A14

DAP A 14	1/3	PRI
<u>0.1300</u>	10/50	ROT RATE
<u>-2.00</u>	11/51	ATT DB
<u>0.20</u>	12/52	RATE DB
<u>0.10</u>	13/53	ROT PLS
<u>0.00</u>	14/54	COMP
TAIL	15/55	P OPTION
TAIL	16/56	Y OPTION
<u>0.10</u>	17/57	TRAN PLS
		ALT
<u>0.200</u>	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
<u>0.08</u>	21/61	ON TIME
<u>-0.00</u>	22/62	DELAY
		VERN
<u>0.1300</u>	23/63	ROT RATE
<u>-1.000</u>	24/64	ATT DB
<u>0.20</u>	25/65	RATE DB
<u>0.010</u>	26/66	ROT PLS
<u>0.00</u>	27/67	COMP
0	28/68	CNTL ACC

FLT PLN-16a/85/O/B

FLT PLN-16b/85/O/B

A15

A15

DAP A 15	1/3	PRI
<u>0.1000</u>	10/50	ROT RATE
<u>-3.00</u>	11/51	ATT DB
<u>0.20</u>	12/52	RATE DB
<u>0.04</u>	13/53	ROT PLS
<u>0.00</u>	14/54	COMP
ALL	15/55	P OPTION
ALL	16/56	Y OPTION
<u>0.01</u>	17/57	TRAN PLS
		ALT
<u>0.200</u>	18/58	RATE DB
ALL	19/59	JET OPT
2	20/60	#JETS
<u>0.08</u>	21/61	ON TIME
<u>-8.20</u>	22/62	DELAY
		VERN
<u>0.2000</u>	23/63	ROT RATE
<u>-3.000</u>	24/64	ATT DB
<u>0.20</u>	25/65	RATE DB
<u>0.010</u>	26/66	ROT PLS
<u>0.00</u>	27/67	COMP
1	28/68	CNTL ACC

FLT PLN-17a/85/O/B

FLT PLN-17b/85/O/A

(reduced copy)



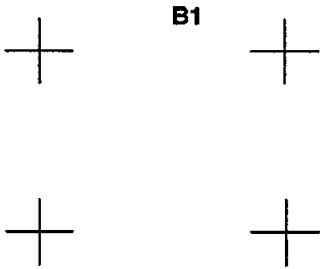
**DAP B**



**DAP B1**

PURPOSE:  
NOMINAL  
UVSTAR  
ISIR LOW  
RESOLUTION

FLT PLN-18a/85/O/A



**B1**

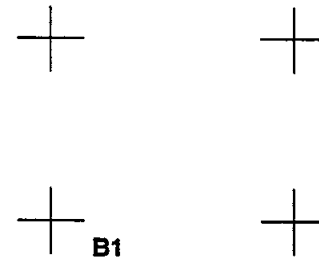
2	DAP B 0 1
30	<u>0.5 0 0 0</u>
31	<u>- 3.0 0</u>
32	<u>0.2 0</u>
33	<u>0.0 4</u>
34	<u>.0 0 0</u>
35	ALL
36	ALL
37	<u>0.1 0</u>
38	<u>0.2 0 0</u>
39	ALL
40	2
41	<u>0.0 8</u>
42	<u>- 0.0 0</u>
43	<u>0.2 0 0 0</u>
44	<u>- 1.0 0 0</u>
45	<u>.0 2 0</u>
46	<u>0.0 0 2</u>
47	<u>.0 0 0</u>
48	<u>0</u>

FLT PLN-19a/85/O/A



**B2**

FLT PLN-18b/85/O/B



**DAP B2**

PURPOSE:  
LOSS OF VERN  
(TAIL ONLY)

FLT PLN-19b/85/O/A



(reduced copy)





**B2**

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

FLT PLN-20a/85/O/A



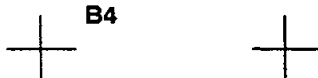
**B3**



**B3**

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

FLT PLN-21a/85/O/A



**B4**

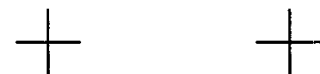


**B2**

**DAP B3**

PURPOSE:  
LOSS OF VERN  
(NOSE & TAIL)

FLT PLN-20b/85/O/A



**B3**

**DAP B4**

PURPOSE:  
SVS  
5A PMA2

FLT PLN-21b/85/O/B



(reduced copy)



**B4**

2/4	DAP B 0 4
30/50	<u>0.1 0 0 0</u>
31/51	<u>- 3.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.0 4</u>
34/54	<u>.0 0 0</u>
35/55	TAIL
36/56	TAIL
37/57	<u>0.0 2</u>
38/58	<u>0.2 0 0</u>
39/59	ALL
40/60	2
41/61	<u>0.0 8</u>
42/62	<u>- 5.9 0</u>
43/63	<u>0.2 0 0 0</u>
44/64	<u>- 3.0 0 0</u>
45/65	<u>.2 0 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>.0 0 0</u>
48/68	7

FLT PLN-22a/85/O/B



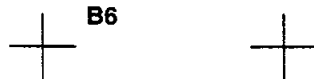
**B5**



**B5**

2/4	DAP B 0 5
30/50	<u>0.2 0 0 0</u>
31/51	<u>- 3.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.4 0</u>
34/54	<u>.0 0 0</u>
35/55	TAIL
36/56	TAIL
37/57	<u>0.0 2</u>
38/58	<u>0.2 0 0</u>
39/59	TAIL
40/60	2
41/61	<u>0.0 8</u>
42/62	<u>- 0.0 0</u>
43/63	<u>0.0 1 6 0</u>
44/64	<u>- 0.0 3 3</u>
45/65	<u>.0 2 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>.0 0 0</u>
48/68	0

FLT PLN-23a/85/O/B



**B6**



**B4**

**DAP B5**

PURPOSE:  
COAS CAL  
SWUIS COMET  
ACQUISITION

FLT PLN-22b/85/O/B



**B5**

**DAP B6**

PURPOSE:  
SPAS GYRO DRIFT  
& SCALE  
SEH -ZSI  
DC -Z MOON

FLT PLN-23b/85/O/A



(reduced copy)



**B6**

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

FLT PLN-24a/85/O/A



**B7**



**B7**

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

FLT PLN-25a/85/O/A



**B8**

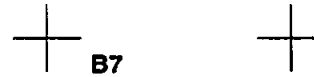


**B6**

**DAP B7**

PURPOSE:  
RENDEZVOUS

FLT PLN-24b/85/O/A



**B7**

**DAP B8**

PURPOSE:  
CORRIDOR

FLT PLN-25b/85/O/B



(reduced copy)



**B8**

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

FLT PLN-26a/85/O/B



**B9**



**B9**

2/4	DAP B 0 9
30/50	<u>0.0 5 0 0</u>
31/51	<u>- 0.5 0</u>
32/52	<u>0.1 0</u>
33/53	<u>0.0 4</u>
34/54	<u>.0 0 0</u>
35/55	TAIL
36/56	TAIL
37/57	<u>0.0 1</u>
38/58	<u>0.2 0 0</u>
39/59	ALL
40/60	<u>2</u>
41/61	<u>0.0 8</u>
42/62	<u>- 0.0 0</u>
43/63	<u>0.0 5 0 0</u>
44/64	<u>- 0.5 0 0</u>
45/65	<u>.0 2 0</u>
46/66	<u>0.0 2 0</u>
47/67	<u>.0 0 0</u>
48/68	<u>0</u>

FLT PLN-27a/85/O/B



**B10**



**B8**

**DAP B9**

PURPOSE:  
DOCKING

FLT PLN-26b/85/O/B



**B9**

**DAP B10**

PURPOSE:  
CRISTA-SPAS  
NOMINAL  
DEADBAND  
COLLAPSE  
RMS PH

FLT PLN-27b/85/O/A



(reduced copy)



**B10**

2/4	DAP B 1 0
30/50	<u>0.0 5 0 0</u>
31/51	- <u>1.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.0 4</u>
34/54	<u>.0 0 0</u>
35/55	ALL
36/56	ALL
37/57	<u>0.0 2</u>
38/58	<u>0.1 0 0</u>
39/59	ALL
40/60	<u>2</u>
41/61	<u>0.0 8</u>
42/62	- <u>8.2 0</u>
43/63	<u>0.0 1 6 0</u>
44/64	- <u>.5 0 0</u>
45/65	<u>.0 2 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>.0 0 0</u>
48/68	<u>2</u>

FLT PLN-28a/85/O/B



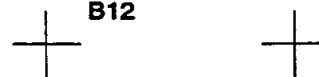
**B11**



**B11**

2/4	DAP B 1 1
30/50	<u>0.0 5 0 0</u>
31/51	- <u>2.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.0 4</u>
34/54	<u>.0 0 0</u>
35/55	ALL
36/56	ALL
37/57	<u>0.0 2</u>
38/58	<u>0.1 0 0</u>
39/59	ALL
40/60	<u>2</u>
41/61	<u>0.0 8</u>
42/62	- <u>8.2 0</u>
43/63	<u>0.0 3 2 0</u>
44/64	- <u>2.0 0 0</u>
45/65	<u>.0 4 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>.0 0 0</u>
48/68	<u>2</u>

FLT PLN-29a/85/O/B



**B12**



**B10**

**DAP B11**

PURPOSE:  
CRISTA-SPAS  
DB COLLAPSE  
W/O POSN HOLD  
RMS BO

FLT PLN-28b/85/O/B



**B11**

**DAP B12**

PURPOSE:  
CRISTA-SPAS  
EXTENDED PARK

FLT PLN-29b/85/O/B



(reduced copy)



**B12**

2/4	DAP B 12
30/50	<u>0.1 0 0 0</u>
31/51	- <u>3.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.0 4</u>
34/54	<u>.0 0 0</u>
35/55	TAIL
36/56	TAIL
37/57	<u>0.0 2</u>
38/58	<u>0.2 0 0</u>
39/59	TAIL
40/60	<u>2</u>
41/61	<u>0.0 8</u>
42/62	- <u>8.2 0</u>
43/63	<u>0.2 0 0 0</u>
44/64	- <u>3.0 0 0</u>
45/65	<u>.2 0 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>.0 0 0</u>
48/68	<u>8</u>

FLT PLN-30a/85/O/B



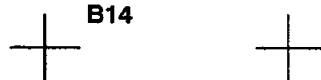
**B13**



**B13**

2/4	DAP B 13
30/50	<u>0.1 0 0 0</u>
31/51	- <u>3.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.0 4</u>
34/54	<u>.0 0 0</u>
35/55	ALL
36/56	ALL
37/57	<u>0.0 2</u>
38/58	<u>0.2 0 0</u>
39/59	ALL
40/60	<u>2</u>
41/61	<u>0.0 8</u>
42/62	- <u>8.5 0</u>
43/63	<u>0.2 0 0 0</u>
44/64	- <u>3.0 0 0</u>
45/65	<u>.2 0 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>.0 0 0</u>
48/68	<u>5</u>

FLT PLN-31a/85/O/B



**B14**



**B12**

**DAP B13**

PURPOSE:  
SVS  
4A P6  
2A FGB

FLT PLN-30b/85/O/B



**B13**

**DAP B14**

PURPOSE:  
RBAR TO VBAR  
TRANSITION

FLT PLN-31b/85/O/B



(reduced copy)



**B14**

2/4	DAP B 1 4
30/50	<u>0.1 3 0 0</u>
31/51	<u>- 2.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.0 4</u>
34/54	<u>-0.0 0</u>
35/55	TAIL
36/56	TAIL
37/57	<u>0.0 5</u>
38/58	<u>0.2 0 0</u>
39/59	ALL
40/60	<u>2</u>
41/61	<u>0.0 8</u>
42/62	<u>- 0.0 0</u>
43/63	<u>0.1 3 0 0</u>
44/64	<u>- 1.0 0 0</u>
45/65	<u>-0.2 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>-0.0 0</u>
48/68	<u>0</u>

FLT PLN-32a/85/O/B



**B15**



**B15**

2/4	DAP B 1 5
30/50	<u>0.2 0 0 0</u>
31/51	<u>1 0.0 0</u>
32/52	<u>0.2 0</u>
33/53	<u>0.0 4</u>
34/54	<u>-0.0 0</u>
35/55	TAIL
36/56	TAIL
37/57	<u>0.0 2</u>
38/58	<u>0.0 7 0</u>
39/59	TAIL
40/60	<u>1</u>
41/61	<u>0.0 8</u>
42/62	<u>- 0.0 0</u>
43/63	<u>0.0 4 0 0</u>
44/64	<u>- 0.2 0 0</u>
45/65	<u>-0.2 0</u>
46/66	<u>0.0 0 2</u>
47/67	<u>-0.0 0</u>
48/68	<u>0</u>

FLT PLN-33a/85/O/B

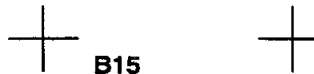


**B14**

**DAP B15**

PURPOSE:  
 SWUIS COMET OBS  
 SPAS COMM ALT  
 DAP

FLT PLN-32b/85/O/B



**B15**

FLT PLN-33b/85/O/B



(reduced copy)

UNIV PTG	
TGT ID = 1 Orbiting Vehicle	
= 2 Earth ctr	
= 3 Earth tgt	
Input LAT ( $\pm 90$ )	
LON ( $\pm 180$ , + = East)	
ALT (-3444.0 to 20000.0 nm)	
= 4 Sun ctr	
= 5 Celestial tgt	
Input RA (0-359.99)	
DEC ( $\pm 90$ )	
= 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-34/85/O/B

FLT PLN-34/85/O/B is mounted on the back of the DAP Book



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SUITE 600/ANDERSON, K. (2)

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