

FLIGHT DATA FILE

*Pink***Flight Plan****STS-86****(Mir L-1 Month Vector)****Mission Operations Directorate
Operations Division****Final
September 4, 1997**

<u>EVENT</u>	<u>CDT</u>		
Launch	21:34	Thur	Sept 25
Mir Docking	16:30	Sat	Sept 27
Mir Undocking	10:46	Fri	Oct 3
KSC Landing	17:58	Mon	Oct 5

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas




MISSION OPERATIONS DIRECTORATE

STS-86 FLIGHT PLAN

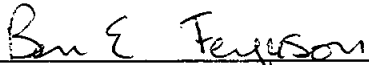
FINAL
September 4, 1997

PREPARED BY:

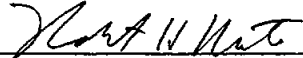


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Lead FAO Planner	DO4/T. Schneider	244-1136
Lead Pointer	DO4/B. Kelly	244-1141

FLIGHT PLAN
STS-86

LIST OF EFFECTIVE PAGES

FINAL 09/04/97

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3-19		86/FIN	3-71	86/FIN
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3-22		86/FIN	3-74	86/FIN

* - Omit from flight book

3-75	86/FIN	3-112	86/FIN
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3-85	86/FIN	4-4	86/FIN
3-86	86/FIN	4-5	86/FIN
3-87	86/FIN	4-6	86/FIN
3-88	86/FIN	5-i	* 86/FIN
3-89	86/FIN	5-ii	* 86/FIN
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3-92	86/FIN	5-3	* 86/FIN
3-93	86/FIN	5-4	* 86/FIN
3-94	86/FIN	5-5	* 86/FIN
3-95	86/FIN	5-6	* 86/FIN
3-96	86/FIN	5-7	* 86/FIN
3-97	86/FIN	5-8	* 86/FIN
3-98	86/FIN	6-1	* 86/FIN
3-99	86/FIN	6-2	* 86/FIN
3-100	86/FIN	6-3	* 86/FIN
3-101	86/FIN	6-4	* 86/FIN
3-102	86/FIN	6-5	* 86/FIN
3-103	86/FIN	6-6	* 86/FIN
3-104	86/FIN	6-7	* 86/FIN
3-105	86/FIN	6-8	* 86/FIN
3-106	86/FIN	7-1	* 86/FIN
3-107	86/FIN	CC 7-2	* 86/FIN
3-108	86/FIN	CC 7-3	* 86/FIN
3-109	86/FIN	CC 7-4	* 86/FIN
3-110	86/FIN	CC 7-5	* 86/FIN
3-111	86/FIN	7-6	* 86/FIN

STS-86 FLIGHT PLAN FABRICATED ITEMS

<u>Title</u>	<u>Ref. Page</u>	<u>Item No.</u>
STS-86 GENERIC DAP A CONFIGURATIONS (Top/Front)	CC 7-2	FLT PLN-1a/86/O/B
STS-86 GENERIC DAP B CONFIGURATIONS (Top/Back)	CC 7-3	FLT PLN-1aa/86/O/B
STS-86 FLIGHT SPECIFIC DAP A CONFIGURATION (Bottom/Front)	CC 7-4	FLT PLN-1b/86/O/B
STS-86 FLIGHT SPECIFIC DAP B CONFIGURATIONS (Bottom/Back)	CC 7-5	FLT PLN-1bb/86/O/B

* - Omit from flight book

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INTRODUCTION

The STS-86 Flight Plan is the Flight Data File article that contains the on-orbit timeline. It does not contain the detailed timelines that are covered in the Ascent, Post Insertion, Deorbit Prep, and Entry Checklists. For continuity, the summary level timeline includes the entire flight.

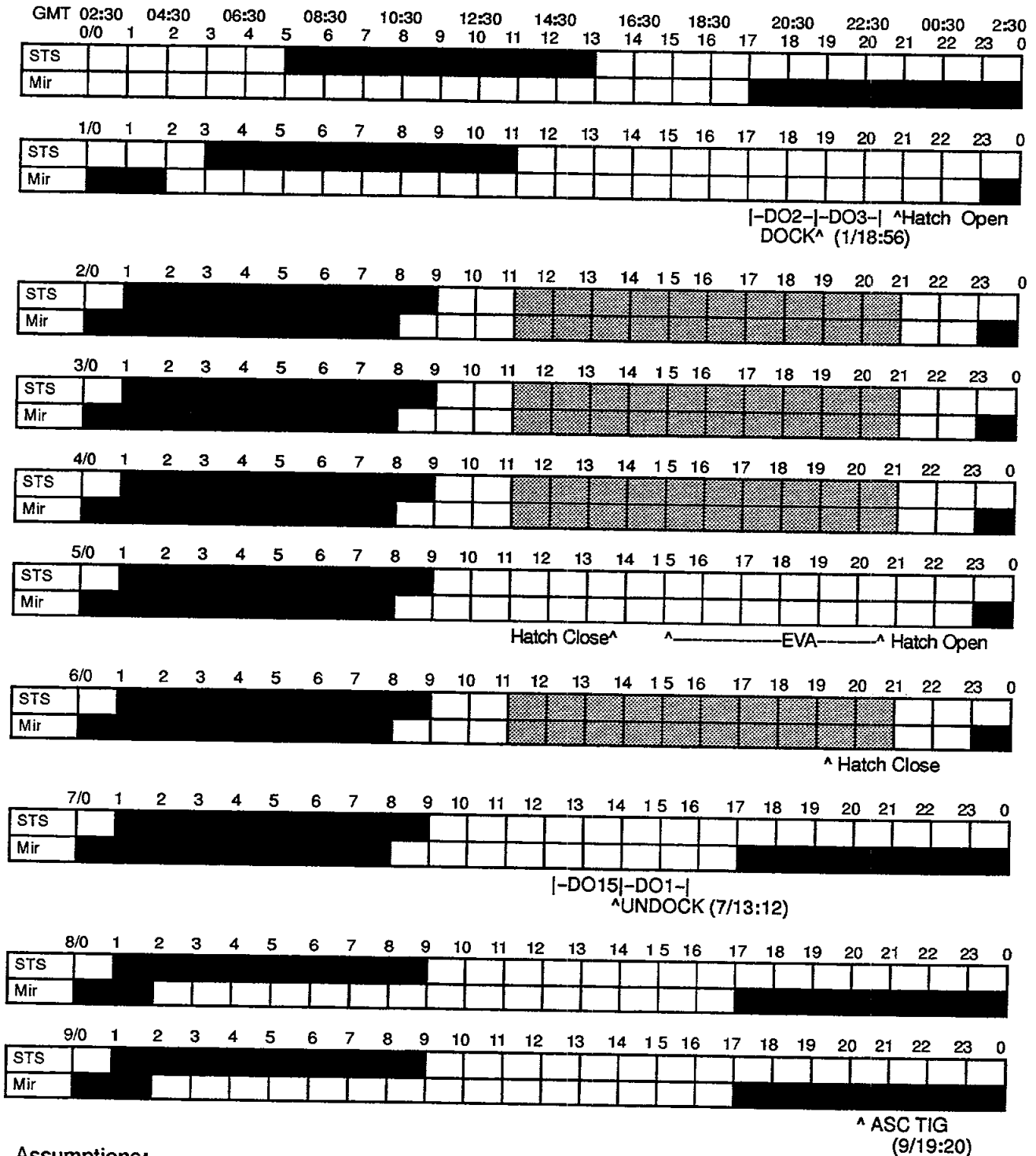
This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive and the requirements of the STS-86 Flight Requirements Document. The Flight Plan, as part of the Flight Data File, meets the specifications of the Flight Cycle version of the STS-86 Flight Initialization Data Pack.

The flight profile used for this Flight Plan is for a launch date of September 25, 1997, at 21:34 am CST. The launch time was derived from a predicted Mir vector (L-1) with a September 25, 1997. 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 and the Shuttle/Mir Sleep Cycle Guidelines established at WGO September 1995, have been used to build the timelines contained in this Flight Plan.

OVERVIEW TIMELINE

2:34 GMT L/O (9/26 Launch) (10 Hour Joint Workdays)




Assumptions:

- Russian groundsites during docking and undocking
 - Docking is scheduled at 00:30 DMT on September 28, DO3
 - Undocking is scheduled at 18:46 DMT on October 3, DO1
- 12.6 EVA
- Ascending Landing
- Sleep cycles not optimized for 10 hr workday
- Total Mir shift of 6 hours later (Desired change)
- Total Shuttle shift is 4 hours earlier

SUMMARY TIMELINE

SUMMARY TIMELINE

				BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
				43.81				STS-86	FINAL	09/04/97

DMT Date 09/26/97 06 07 08 09 10 11 12 13 14 15 16 17

CT Date 09/25/97 22 23 09/26 01 02 03 04 05 06 07 08 09

MET Day 000/00 01 02 03 04 05 06 07 08 09 10 11 12

CDR Wetherbee		POST INSERT			ELEVON	NC-1 OMS BURN	-ZLV -XVV	MGP PWB DN	PMO	PSA *	SLEEP
PLT Bloomfield		POST INSERT	E I S N C I T	PCS	OMS BURN	E T S E R M			PRE SLEEP	W A P U *	SLEEP
MS1 Titov	L A U N C H	POST INSERT	SHAB ACT I		PRE SLEEP						SLEEP
MS2 Parazynski		POST INSERT	OCA	OMS BURN	φ	M D D K	PRE SLEEP				SLEEP
MS3 Chretien		POST INSERT	SHAB ACT I		SIGI ASC DATA D/L	GPS ASC DATA D/L	PRE SLEEP				SLEEP
MS4 / MS5 Lawrence/ Wolf		POST INSERT	PRE SLEEP		SIGI ASC DATA D/L	GPS ASC DATA D/L	PRE SLEEP				SLEEP
DAY/NIGHT ORBIT		2 3 4 5 6 7 8									



TDRS E
W

ATTITUDE

NOTES

▼CCM ACT ▲CPCG ACT *HTR RCNFG
 ΔAFT CNTLR φTEHM SETUP
 Biased -ZLV -XVV
 *CHECK HUMIDITY SEPARATORS

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			45.04				STS-86	FINAL	09/04/97

DMT Date 09/26/97 18 19 20 21 22 23 09/27 01 02 03 04 05

CT Date 09/26/97 10 11 12 13 14 15 16 17 18 19 20 21 001/00

MET Day 000 12 13 14 15 16 17 18 19 20 21 22 23

CDR Wetherbee	SLEEP	POST SLEEP	NC-2 OMS BURN	MZ LV VR	POST SLEEP	MDD DK	PAO OPTY	LD OAP DS	EXERCISE	BI03D INSPCT	MEAL	NPC BURN	SLM DTO * 700-12	MZ LV VR	®	FILTER CLEAN	MDD DK	SHAB PRE- SLP CNFG
PLT Bloomfield	SLEEP	POST SLEEP	OMS BURN	ERGO S/U	KDSAT S/U	PAO	C/L CMR MOUNT	EC M/ UO	EXERCISE	MEAL	RCS BURN	CRYO 02 SNSR CK	HI 2 NO IT	RNDZ TOOLS C/O			P/TV 20 S/U	
MS1 Titov	SLEEP	POST SLEEP	SHAB ACT II		EXERCISE	A/L PREP	EMU C/O	GC L/ OO VE	EMU TEMP STOW	SP AR FER	SA FER C/O	SA FER Φ	MEAL	XFER PREP				
MS2 Parazynski	SLEEP	POST SLEEP	OMS BURN	PO 4 TV S/ U	LAN NTWK S/U	PAO	SA SCT	A/L PREP	EMU C/O	GC L/ OO VE	EMU TEMP STOW	SP AR FER	SA FER C/O	SA FER Φ	MEAL	OR DIX TNG	TPCS SETUP	EXER- CISE
MS3 Chretien	SLEEP	POST SLEEP	SHAB ACT II		SHAB MOD SETUP	SIGI S/U	SC INI G C T I *	H2O INITIAL SETUP	VHF RAD S/U	HT 2 OR M	MEAL	OR DIX TNG	HT 2 OR M	HT 1 NO IT	EXERCISE			
MS4 / MS5 Lawrence/ Wolf	SLEEP	POST SLEEP	ERGO S/U	TEMP STOW ODS BAG	PAO	C/L CMR MOUNT	GS P/ SU - 1 2	GC P S T *	EXER- CISE (MS5)	H2O INIT S/U	VHF RAD S/U	STS AIR SAMP	MEAL	STS SURF SAMP	EXERCISE		HT 2 OR M	GT P S R M *

DAY/NIGHT ORBIT DAILY ORBIT



TDRS ATTITUDE BIAS -ZLV -XVV NC2 Biased -ZLV -XVV BIAS -ZLV -XVV NPC SLM BIAS -ZLV -XVV

NOTES

*EMU C/O
 *DTO 700-15 INIT
 *DTO 700-15 PCDECOM CONNECT
 *DTO 700-12 INIT
 *700-12 PCDECOM CNCT

*QUIESENCE
 *SAFER STOW

*MAN FC PURGE
 Biased -ZLV -XVV

*700-12
 TERM
 & D/L

⊗ EHIP LIGHT CHARGE

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			46.06				STS-86	FINAL	09/04/97

DMT Date 09/27/97 06 07 08 09 10 11 12 13 14 15 16 17

CT Date 09/26/97 22 23 09/27 01 02 03 04 05 06 07 08 09

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

CDR Wetherbee	PMC	PRE SLEEP	NC-3 OMS BURN	-M Z N L V R	* PRE SLEEP	SLEEP (7:00)	-M Z N L V R	MD NUM IPT	CP CG *	PS OL SE TP	IM Δ	POST SLEEP	GP PW UP BP
PLT Bloomfield		PRE SLEEP	OMS BURN	F U T U R E *	PRE SLEEP	SLEEP (7:00)						POST SLEEP	
MS1 Titov					PRE SLEEP	SLEEP (7:00)						POST SLEEP	
MS2 Parazynski	EC X I S E R E -	PRE SLEEP	OMS BURN		PRE SLEEP	SLEEP (7:00)						POST SLEEP	
MS3 Chretien					PRE SLEEP	SLEEP (7:00)						POST SLEEP	
MS4 / MS5 Lawrence/ Wolf	GPS *	STE G R I M I *	SIN G I T Φ		PRE SLEEP	SLEEP (7:00)						POST SLEEP	

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

DAILY ORBIT 5 6 7 8 9 10 11 12 13



TDRS ATTITUDE NC3 BIAS -ZLV -XVV -ZLV +YVV

NOTES


Biased -ZLV -XVV
 *CHECK HUMIDITY SEPARATORS
 *FUTURE LOAD -ZLV, +YVV
 *700-12 ATT RE-INIT & INIT
 ΦDTO 700-15 ATT RE-INIT & INIT
 *DTO 700-15 TERM & DATA D/L

ΔDUMP TERM
*CPCG SEQ DELETION

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			46.93				STS-86	FINAL	09/04/97

DMT Date 09/27/97
 CT Date 09/27/97
 MET Day 001

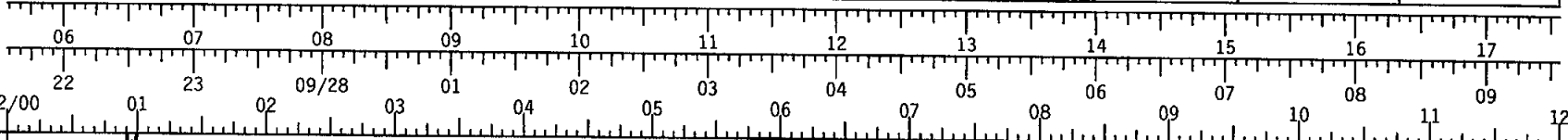
STS-86	CDR/PLT Wetherbee/ Bloomfield	KDSAT DEACT	NC-4		RNDZ		RBAR		FINAL APPROACH	IM ON SV IR	PRESSURE CKS	P/TV 22 S/U	W E L C O M E H A T C H O P E N Y C E R E M O N Y	MEAL	GP B PWND	PMC	PRE SLEEP	
	MS1 Titov	POST SLEEP		VIEW MIR	RNDZ					ODS INGR PREP	V S T R	P L R B K		C N F G *	MEAL	PRE SLEEP		
	MS2 Parazynski	SHAB POST SLP CNFG	M D D K	RNDZ TOOL S/U	RNDZ						PRESSURE CKS			A D I U N R C S T T	MEAL	M D D K	SHAB PRE- SLP CNFG	PRE SLEEP
	MS3 Chretien	POST SLEEP	G P S R M *	S T E R M *	VHF COMM ACT	P/TV 20 S/U	P/TV20 OPS RNDZ/DOCK		S C H L A O S E	ODS PREP FOR DOCK	P/TV20 OPS RNDZ/DOCK			ODS INGR PREP	S H A B	E X C H A N G E	PRE SLEEP	
MIR	MS4 / MS5 Lawrence/Wolf	POST SLEEP	G P S R M *	S T E R M *	VHF COMM ACT		A / G 2 *	AIR TO AIR	ODS PREP FOR DOCK	AIR TO AIR		ODS INGR PREP		MEAL	B A C K *	PRE SLEEP		
	MS6 Foale	GH POLLINATION						MISDE ACT		MISDE DEACT		A I R	A I R	MEAL	A I R	SLEEP (9:00)		
	MIR-CDR Solovyov		VHF COMM ACT	AIR TO AIR		R E L A Y	AIR TO AIR			IM ON SV IR		P/TV SETUP MIR		MEAL	PRE SLEEP	SLEEP (9:00)		
	MIR-ENG Vinogradov							OSC7 MNVR SA FIX		D A S C B S L	F R E E	S A T R K	PRESSURE CKS	A D I U N R C S T T	MEAL	PRE SLEEP	SLEEP (9:00)	
DAY/NIGHT		[Day/Night Cycle]																
ORBIT		[Orbit Cycle]																
DAILY ORBIT		[Daily Orbit Cycle]																
TDRS		[TDRS Cycle]																
ALTAIR		[ALTAIR Cycle]																
SITES		[Site Activity: PPK, DJS, KLP, SHK, SPB]																
ATTITUDE		[Attitude: -ZLV +YVV, RNDZ]																
NOTES		[Notes: *TEHM CONFIG, *SSV CONFIG, *A/G2 RELAY ENABLE, *BPSMU CNFG, *BPSMU TERM, *BACK PAIN QUESTIONNAI, *VHF POWER OFF]																

				BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
				47.69				STS-86	FINAL	09/04/97


DMT Date 09/28/97

CT Date 09/27/97

MET Day 002



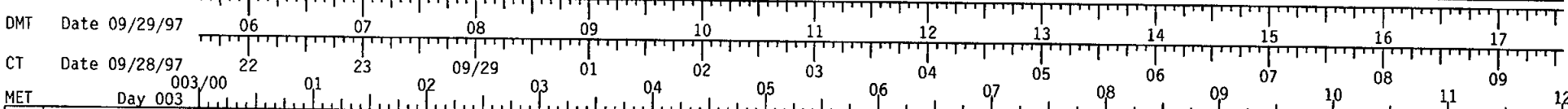
S T S - 8 6	CDR/PLT Wetherbee/ Bloomfield	PRE SLEEP	SLEEP				POST SLEEP		DAILY PLAN	MIR SAFE BRIEF
	MS1 Titov	PRE SLEEP	SLEEP				POST SLEEP		DAILY PLAN	MIR SAFE BRIEF
	MS2 Parazynski	PRE SLEEP	SLEEP				POST SLEEP		DAILY PLAN	MIR SAFE BRIEF
	MS3 Chretien	PRE SLEEP	SLEEP				POST SLEEP		DAILY PLAN	MIR SAFE BRIEF
	MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP				POST SLEEP		DAILY PLAN	MIR SAFE BRIEF
M I R	MS5 Wolf	SLEEP (9:00)				POST SLEEP	AIR	POST SLEEP	DAILY PLAN	MIR SAFE BRIEF
	MIR-CDR Solovyov	SLEEP (9:00)				POST SLEEP		EXERCISE MIR	DAILY PLAN	MIR SAFE BRIEF
	MIR-ENG Vinogradov	SLEEP (9:00)				POST SLEEP			DAILY PLAN	EXERCISE MIR
DAY/NIGHT		[Timeline with day/night indicators]								
ORBIT		[Timeline with orbit indicators]								
DAILY ORBIT		[Timeline with daily orbit indicators]								
TDRS		[Timeline with TDRS indicators]								
ALTAIR ONE		[Timeline with ALTAIR ONE indicators]								
SITES		[Timeline with site indicators]								
ATTITUDE		105.1+141+00								
NOTES										

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			48.22				STS-86	FINAL	09/04/97

DMT Date 09/28/97
 CT Date 09/28/97
 MET Day 002

STS-86	CDR/PLT Wetherbee/ Bloomfield	MIR SAFE BRIEF	SSB TARD SFI E	FX IF E	SHAB POST SLP CNFG	RUS 1A MNRV	BIO 3D XFER	EXERCISE (PLT)	MV IR SC DS	ESC *	MC INT L	SC NT L	DCAM XFR	MEAL	COLD STOW XFER	PAO MIR	IM ON SV IR	PCG DEWAR XFER	DAILY TAG	EXERCISE	PMC	PRE SLEEP	
	MS1 Titov	MIR SAFE BRIEF	IELK RMVL		EXERCISE	XFER	H I N I T	XFER	H T E R M	XFER	APU XFER		MEAL	H I N I T	PAO MIR	ELK END CAP XFER	H T E R M	XFER	DAILY TAG		PRE SLEEP	PRE SLEEP	
	MS2 Parazynski	MIR SAFE BRIEF	IELK RMVL	TGT XHR H/O		BIO 3D XFER		DTO 1118 S/U	DTO 1118 MISDE		EXERCISE		MEAL	COLD STOW XFER	PAO MIR		XFER	H I N I T	DAILY TAG	ESC EDIT	M D D K	SHAB PRE- SLP CNFG	PRE SLEEP
	MS3 Chretien	MIR SAFE BRIEF	H I N I T	H 2 O XFER	H T E R M	EXERCISE	RME III XFER/ ACT	CREAM XFER/ ACT		XFER	APU XFER		MEAL	XFER	PAO MIR		XFER	XFER TAGUP	DAILY TAG	H T E R M		PRE SLEEP	
	MS4 / MS6 Lawrence/Foale	MIR SAFE BRIEF	EXER (MS4)	MED EQUIP XFER		EXER MIR (MS6)	BIO 3D XFER	MISDE ACT	MV IR SC DS	M J E R T	M T R I S D M E L	MISDE DEACT	MEAL	XFER	PAO MIR		EXERCISE (MS6)	DAILY TAG			PFC MS6	PRE SLEEP	
	MS5 Wolf	MIR SAFE BRIEF		S X F E A E T R		SEAT INSTALL & C/O		MISDE ACT	MV IR SC DS	M J E R T	M T R I S D M E L	MISDE DEACT	MEAL		PAO MIR		FREE TIME	B I O 3 *				PRE SLEEP	SLEEP (9:00)
MIR	MIR-CDR Solovyov	MIR SAFE BRIEF	SSB TARD SFI E	FX IF E	SEAT INSTALL & C/O	RME III XFER/ ACT	CREAM XFER/ ACT		MC INT L	SC NT L	DCAM XFR	MEAL	COLD STOW XFER	PAO MIR	IM ON SV IR	PCG DEWAR XFER				PRE SLEEP	PRE SLEEP	SLEEP (9:00)	
	MIR-ENG Vinogradov	EXER- CISE MIR	SSB TARD SFI E	FX IF E	TGT XHR H/O	RUS 1A MNRV	BIO 3D XFER		XFER	APU XFER		MEAL	P/TV SETUP MIR	PAO MIR	ELK END CAP XFER		XFER	XFER TAGUP			PRE SLEEP	SLEEP (9:00)	
DAY/NIGHT		[Day/Night bar]																					
ORBIT		[Orbit bar]																					
DAILY ORBIT		[Daily Orbit bar]																					
TDRS		[TDRS bar]																					
ALTAIR		[Altair bar]																					
SITES		[Sites bar]																					
ATTITUDE		[Attitude bar]																					
NOTES		[Notes bar]																					

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			48.61	●			STS-86	FINAL	09/04/97



S T S - 8 6	CDR/PLT Wetherbee/ Bloomfield	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	SHAB POST SLP CNFG
	MS1 Titov	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	HE M * X F E R
	MS2 Parazynski	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	X F E R
	MS3 Chretien	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	C M A O L * E R
	MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	EXE R C I S E M I R
M I R	MS5 Wolf	SLEEP (9:00)				POST SLEEP	TEPC XCHNG	DAILY PLAN	B I O 3 *
	MIR-CDR Solovyov	SLEEP (9:00)				POST SLEEP	EXERCISE MIR	DAILY PLAN	
	MIR-ENG Vinogradov	SLEEP (9:00)				POST SLEEP		DAILY PLAN	R C M A L
DAY/NIGHT		[Timeline with shaded blocks]							
ORBIT		48	49	50	51	52	53	54	55
DAILY ORBIT		6	7	8	9	10	11	12	13
TDRS		[Timeline with horizontal bars]							
ALTAIR		[Timeline with horizontal bars]							
SITES		- PPK - PPK - PPK							
ATTITUDE		- I05.1+141+00 -							
NOTES									

*TEHM CONFII
*RME III
CALIBRATION
*BIO 3D CHE

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			48.82	●			STS-86	FINAL	09/04/97

DMT Date 09/29/97 18 19 20 21 22 23 09/30 01 02 03 04 05
 FD05
 CT Date 09/29/97 10 11 12 13 14 15 16 17 18 19 20 21 22 23 004/00
 MET Day 003 12 13 14 15 16 17 18 19 20 21 22 23


STS-86	CDR/PLT Wetherbee/ Bloomfield	MDDK	GON4V1R	DIUNIT	EXERCISE	DTUEMRPM	IMON5V1R	MEAL	DEWRINSRT XFER	EXERCISE (CDR)	GSXHPERLR	DTO 1118 S/U	DTO 1118 MIR	PAO MIR	DAILY TAG	RUS 1A MNVR	IMON5V1R*	PSRL EEP	PMC	PRE SLEEP	
	MS1 Titov	DTO 1118 S/U	1XFE1R3*	HT2ORM	DTO 1118 FLT DECK	HT2ORM	IMON5V1R	MEAL	HT2OIT9	HT2ORM	EXERCISE	XFER	PAO MIR	XFER TAGUP	DAILY TAG	RELAY	PRE SLEEP	PRE SLEEP			
	MS2 Parazynski	XFER	HT2OIT8	EXERCISE	DTO 1118 S/U	MEAL	DTO 1118 SHAB		XFER	P2S/2TV	PAO MIR	HT2OIT0	DAILY TAG	MDDK	HT2ORM	SHAB PRE-SLP CNFG				PRE SLEEP	
	MS3 Chretien	*GH FIX KIT XFER	STS AIR SAMP	STS SURF SAMP	EXERCISE	MEAL	DOSIMTR EXCHG	GH ROOT MOD RTRN	RME III MEM	RME III E/W	CMROVEAM	SPAO MIR	XFER TAGUP	DAILY TAG							PRE SLEEP
	MS4 / MS6 Lawrence/Foale	EXERCISE MIR	GREENHOUSE OPS				MEAL	GREENHOUSE OPS		EXERCISE MIR	PAO MIR	H/O	DAILY TAG	EXERCISE							PRE SLEEP
MIR	MS5 Wolf	COND*		COND*	FREE TIME	MEAL	BIO 3D CULT & MICRO			CDONACT	PAO MIR	H/O	BIO3*	BACK*	PRE SLEEP	RUS 1A MNVR				PRE SLEEP	SLEEP (9:00)
	MIR-CDR Solovyov	GON4V1R	1XFE1R3*	DTO 1213 INST	IMON5V1R	MEAL	DOSIMTR EXCHG	GH SMPL XFER	XFER	P/TV SETUP MIR	PAO MIR	XFER TAGUP								PRE SLEEP	SLEEP (9:00)
	MIR-ENG Vinogradov	XFER	GREENHOUSE OPS				MEAL	GREENHOUSE OPS		RME III MEM	RME III E/W	CMROVEAM	PAO MIR	EXERCISE MIR	PRE SLEEP	RELAY	PRE SLEEP	RELAY			SLEEP (9:00)
DAY/NIGHT		[Bar chart showing day/night cycles]																			
ORBIT		[Bar chart showing orbit parameters]																			
DAILY ORBIT		[Bar chart showing daily orbit parameters]																			
TDRS		[Bar chart showing TDRS operations]																			
ALTAIR		[Bar chart showing ALTAIR operations]																			
SITES		-DJS -KLP -PPK [repeated across days]																			
ATTITUDE		G04.1 I05.1+141+00 RUS 1A																			
NOTES		*Performed by PLT *MIR CONDENSATE INIT *COND FLUSH TERM & SAMPLE INIT *Performed by PLT *SSV CONFIG *BIO 3D CHECK *FUTURE LOADED I05.1 *BACK PAIN QUESTIONNAIRE THERMAL RECOVERY 1A																			

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			48.81	●			STS-86	FINAL	09/04/97

DMT Date 09/30/97
 CT Date 09/29/97
 MET Day 004

STS-86	CDR/PLT Wetherbee/ Bloomfield	PRE SLEEP	SLEEP	IM ON 5V 1R	DTO 1118	SLEEP	POST SLEEP	RUS 1A MNVR	SHAB POST SLP CNFG	
	MS1 Titov	PRE SLEEP	SLEEP			SLEEP	POST SLEEP	DAILY PLAN	XFER	
	MS2 Parazynski	PRE SLEEP	SLEEP			SLEEP	POST SLEEP	DAILY PLAN	P 2 S / 2 U H E / T * M * V	
	MS3 Chretien	PRE SLEEP	SLEEP			SLEEP	POST SLEEP	DAILY PLAN	RME III MEM	
	MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP			SLEEP	POST SLEEP	DAILY PLAN	XFER	
MIR	MS5 Wolf	SLEEP (9:00)					POST SLEEP	BIO 3*	DAILY PLAN	XFER
	MIR-CDR Solovyov	SLEEP (9:00)	IM ON 5V 1R	SLEEP (9:00)			POST SLEEP	EXERCISE MIR	RUS 1A MNVR	XFER
	MIR-ENG Vinogradov	SLEEP (9:00)					POST SLEEP	P/TV SETUP MIR	DAILY PLAN	XFER
DAY/NIGHT		[Timeline with day/night indicators]								
ORBIT		[Timeline with orbit indicators]								
DAILY ORBIT		[Timeline with daily orbit indicators]								
TDRS		[Timeline with TDRS indicators]								
ALTAIR		[Timeline with ALTAIR indicators]								
SITES		[Timeline with site indicators]								
ATTITUDE		[Timeline with attitude indicators]								
NOTES		[Timeline with notes]								

THERMAL RECOVERY 1
 *TEHM CONFIC
 *BIO 3D CHECK

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			48.69				STS-86	FINAL	09/04/97

DMT Date 09/30/97 18 19 20 21 22 23 10/01 01 02 03 04 05
 FD06
 CT Date 09/30/97 10 11 12 13 14 15 16 17 18 19 20 21 005/00
 MET Day 004 12 13 14 15 16 17 18 19 20 21 22 23

STS-86	CDR/PLT Wetherbee/ Bloomfield	PAO MIR	MDDK	XFER	BEETL XFER (PLT)	CGBA XFER	PAO MIR	MEAL	FSSC*	IM ON 5V 1R	XFER	EXERCISE	DAILY TAG	OVMSP PIDHRN MEDAEF WKBG	PRE SLEEP	PMC PRE SLEEP
	MS1 Titov	PAO MIR	ELEK- TRON UNIT XFER	EXERCISE	XFER	PAO MIR	MEAL	XFER	MDDK PREP	EU MUSTW	XFER TAGUP	DAILY TAG	EVA TOOL CNFG	PRE SLEEP		
	MS2 Parazynski	PAO MIR	XFER	EXERCISE	P2S /2 TV	PAO MIR	MEAL	XFER	MDDK PREP	EU MUSTW	Φ	DAILY TAG	EVA TOOL CNFG	PRE SLEEP		
	MS3 Chretien	PAO MIR	ELEK- TRON UNIT XFER	XFER	CGBA XFER	PAO MIR	MEAL	XFER	EXERCISE	XFER TAGUP	DAILY TAG	XFER	PRE SLEEP	PRE SLEEP		
	MS4 / MS6 Lawrence/Foale	PAO MIR	BEETL VENT & DEACT	HANDOVER	PAO MIR	MEAL	HANDOVER	EXERCISE (MS4)	DAILY TAG	EXERCISE MIR	PRE SLEEP					
	MS5 Wolf	PAO MIR	HANDOVER	PAO MIR	MEAL	HANDOVER	FREE TIME	BIO 3 * *	PRE SLEEP	SLEEP (9:00)						
MIR	MIR-CDR Solovyov	PAO MIR	XFER	P/TV SETUP MIR	PAO MIR	MEAL	XFER	IM ON 5V 1R	XFER	XFER TAGUP	PRE SLEEP	PRE SLEEP	SLEEP (9:00)			
	MIR-ENG Vinogradov	PAO MIR	ELEK- TRON UNIT XFER	BEETL XFER	CGBA XFER	PAO MIR	MEAL	XFER	EXERCISE MIR	PRE SLEEP	SLEEP (9:00)					
DAY/NIGHT		[Gantt chart showing day/night cycles]														
ORBIT		[Gantt chart showing orbit parameters]														
DAILY ORBIT		[Gantt chart showing daily orbit parameters]														
TDRS		[Gantt chart showing TDRS connections]														
ALTAIR		[Gantt chart showing ALTAIR connections]														
SITES		[Gantt chart showing site activities: -DJS, -KLP, -PPK, -SHK, -SPB]														
ATTITUDE		[Gantt chart showing attitude parameters: RUS 1A, *CGBA PHOTO, 105.1+141+00, φEVA CAM XFR]														
NOTES		*SSV CONFIG *CGBA PHOTO φEVA CAM XFR *BACK PAIN QUESTIONNAIRE *BIO 3D CHECK														

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			48.31	●			STS-86	FINAL	09/04/97

DMT Date 10/01/97
 CT Date 09/30/97
 MET Day 005

STS-86	CDR/PLT Wetherbee/ Bloomfield	PRE SLEEP	SLEEP				POST SLEEP	DRUM CVTL	C/L CMR MOUNT	UNDK PREP HATCH CL
	MS1 Titov	PRE SLEEP	SLEEP				POST SLEEP			EVA PREP
	MS2 Parazynski	PRE SLEEP	SLEEP				POST SLEEP		SPO HON ASTG	EVA PREP
	MS3 Chretien	PRE SLEEP	SLEEP				POST SLEEP	RME III MEM	CMR RODS EV FAN AER MVL	UNDK PREP HATCH CL
	MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP				POST SLEEP		C/L CMR MOUNT	RODS FAN EXERCISE (MS6)
MIR	MS5 Wolf		SLEEP (9:00)				POST SLEEP	BIO 03*		FREE TIME
	MIR-CDR Solovyov		SLEEP (9:00)				POST SLEEP	DRUM CVTL		UNDK PREP HATCH CL
	MIR-ENG Vinogradov		SLEEP (9:00)				POST SLEEP	RME III MEM	CMR RODS EV FAN AER MVL	EXERCISE MIR
DAY/NIGHT		[Timeline with alternating black and white bars]								
ORBIT		[Timeline with numbers 79-87]								
DAILY ORBIT		[Timeline with numbers 7-15]								
TDRS		[Timeline with 'E' and 'W' markers]								
ALTAIR ONE		[Timeline with 'ONE' markers]								
SITES		-PPK -PPK -PPK -PPK								
ATTITUDE		105.1+141+00								
NOTES		*BIO 3D CHECK								

DJS
KLP
G041 P
V6041 P

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			47.80	●			STS-86	FINAL	09/04/97

DMT Date 10/01/97 18 19 20 21 22 23 10/02 01 02 03 04 05
 FD07
 CT Date 10/01/97 10 11 12 13 14 15 16 17 18 19 20 21 006/00
 MET Day 005 12 13 14 15 16 17 18 19 20 21 22 23

STS-86	CDR/PLT Wetherbee/ Bloomfield	GM ON 4V 1R	DI UNIMPT		DU MR PM	IM ON 5V 1R	HE 2 HOR M 1	ME 2 DK	PO 8 / TV	SRUS 2A MNVR	MEAL	CAB TEMP	WCS	RCS	APU*	P/TV 08 OPS	FILTER CLEAN	MDDK	ODS INGR PREP	IM ON 5V 1R	CL AMR	LA TIR	TO 2 UNCT	IN 2 RI	PRE SLEEP		
	MS1 Titov	EVA PREP	SP AR FER	SD AO FN							A/L DEP	EGRS				EVA (4:40)			INGRS	A/L REP	SA FR *	POST EVA W/O H2O	SA FR *	BA TTT *	ET 2 MO	PRE SLEEP	
	MS2 Parazynski	EVA PREP	SP AR FER	SD AO FN							A/L DEP	EGRS				EVA (4:40)			INGRS	A/L REP	SA FR *	POST EVA W/O H2O	SA FR *	BA TTT *	EVA TOOL STOW	PRE SLEEP	
	MS3 Chretien	SIG INT	GPS *					SC HO ABSE	ODS	OR 2		MEAL	H 2 O 1 3	IN 1 3		HT 2 OR 1 M 3				GT PERGR MIM *	ST EGR MIM *			SO HP AEN	ODS FAN INST	EX 2 NA FB	PC 2 RE EG
MIR	MS4 / MS6 Lawrence/Foale	SIG INT	GPS *			HI 2 O 1 1		EXERCISE (MS4)	HI 2 O 1 2		HT 2 OR 1 M 2	MEAL			HT 2 O 1 4				GT PERGR MIM *	ST EGR MIM *			CN FG *	HO APE CNH	H2O XFER	PRE SLEEP	
	MS5 Wolf					FREE TIME	BACK *	MISDE ACT			MEAL	MD IN S DE	MIV SA DE	MN I SD DE		BIO 3D MEDIA SAMPLE				BIO 3 *	MISDE DEACT			PRE SLEEP	H2O XFER	SLEEP (9:00)	
	MIR-CDR Solovyov	GM ON 4V 1R				IM ON 5V 1R				RUS 2A MNVR	MEAL												IM ON 5V 1R	PRE SLEEP	SLEEP (9:00)		
	MIR-ENG Vinogradov										MEAL	HE 2 O A T		H2O HOT SAMP		H2O SVO SMPL							HO APE CNH	CL AMR	LA TIR	TO 2 UNCT	SLEEP (9:00)
	DAY/NIGHT	[Day/Night Cycle]																									
	ORBIT	[Orbit Data]																									
	DAILY ORBIT	[Daily Orbit Data]																									
	TDRS	[TDRS Data]																									
	ALTAIR ONE	[ALTAIR ONE Data]																									
	SITES	[Site Data]																									
	ATTITUDE	[Attitude Data]																									
	NOTES	[Notes]																									

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			47.12	●			STS-86	FINAL	09/04/97

DMT Date 10/02/97 06 07 08 09 10 11 12 13 14 15 16 17
 CT Date 10/01/97 22 23 10/02 01 02 03 04 05 06 07 08 09 12
 MET Day 006/00 01 02 03 04 05 06 07 08 09 10 11 12

S T S - 8 6	CDR/PLT Wetherbee/ Bloomfield	PMCPRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	HH I E2 N HO I M1 T *5
	MS1 Titov	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	XFER
	MS2 Parazynski	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	S P C M H O N D A S F D B T G K
	MS3 Chretien	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	RME III STOW
	MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP				POST SLEEP	DAILY PLAN	EXER- CISE MIR
M I R	MS5 Wolf	SLEEP (9:00)				POST SLEEP		D P A L P F C I A L N Y	BIO 3D SMPL FIX
	MIR-CDR Solovyov	SLEEP (9:00)				POST SLEEP	EXERCISE MIR	DAILY PLAN	RME III STOW
	MIR-ENG Vinogradov	SLEEP (9:00)				POST SLEEP		DAILY PLAN	MIR AIR SAMP
DAY/NIGHT		[Timeline with shaded blocks]							
ORBIT		[Timeline with shaded blocks]							
DAILY ORBIT		[Timeline with shaded blocks]							
TDRS		[Timeline with shaded blocks]							
ALTAIR		[Timeline with shaded blocks]							
SITES		- PPK - PPK - PPK - DJS - KLP - PPK							
ATTITUDE		105.1+141+00							
NOTES		*02 REPRESS TERM							

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			46.23	●			STS-86	FINAL	09/04/97

DMT Date 10/02/97 18 19 20 21 22 23 10/03 01 02 03 04 05
 F008
 CT Date 10/02/97 10 11 12 13 14 15 16 17 18 19 20 21 007/00
 MET Day 006 12 13 14 15 16 17 18 19 20 21 22 23 007/00

STS-86	CDR/PLT Wetherbee/ Bloomfield	RUS 2A MNVR	XFER	EXERCISE	XFER	MEAL		CREW CONF	XFER TAGUP	IM ON SV IR	FINAL XFER	DRUM CVTL	UNDK PREP HATCH CL	RNDZ TOOL S/U	PRE SLEEP	PMO	PRE SLEEP		
	MS1 Titov	XFER	H2ORIM	XFER	SDFFER*	XFER	MEAL		CREW CONF	XFER TAGUP	FINAL XFER	C/L CMR MOUNT	P/TV 23 S/U	EXERCISE	A/G2*	PRE SLEEP	A/G2*	PRE SLEEP	
	MS2 Parazynski	EXERCISE	TPCS STOW MIR	⊕	XFER	P2S/TV	MEAL		CREW CONF	XFER TAGUP	FINAL XFER	DRUM CVTL			SPCMD HRND AEFDB GK		PRE SLEEP		
	MS3 Chretien	XFER	CD REACMT		XFER		MEAL		CREW CONF	XFER TAGUP	FINAL XFER			UNDK PREP HATCH CL	EXERCISE		PRE SLEEP		
	MS4 / MS6 Lawrence/Foale	EXERCISE MIR	XFER		HANDOVER		MEAL		CREW CONF	XFER TAGUP	HANDOVER		C/L CMR MOUNT	EXERCISE		PRE SLEEP			
	MS5 Wolf	BIO 3D SMPL FIX	BIO 03*		HANDOVER		MEAL		CREW CONF	XFER TAGUP	HANDOVER		FREE TIME	BIO 03*		PRE SLEEP		SLEEP (9:00)	
MIR	MIR-CDR Solovyov	RUS 2A MNVR	CD REACMT		XFER	P/TV SETUP MIR	MEAL		CREW CONF	XFER TAGUP	IM ON SV IR	FINAL XFER	UNDK PREP HATCH CL		PRE SLEEP	RELAY	PRE SLEEP	RELAY	SLEEP (9:00)
	MIR-ENG Vinogradov	MIR AIR SAMP		MIR SURF SAMP	SDFFER*	XFER	MEAL		CREW CONF	XFER TAGUP	FINAL XFER	DRUM CVTL		EXERCISE MIR		PRE SLEEP		SLEEP (9:00)	

DAY/NIGHT																		
ORBIT	102	103	104	105	106	107	108	109	110									
DAILY ORBIT	14	15	1	2	3	4	5	6	7									
TDRS																		
ALTAIR	ONE																	
SITES		-DJS -KLP -PPK	-DJS -KLP -PPK -SHK	-DJS -KLP -SPB	-DJS -KLP -SHK -SPB	-DJS -KLP -SHK -SPB	-DJS -KLP -SHK -SPB	-DJS -SHK -SPB	-DJS -SHK -SPB	-DJS -SHK -SPB								
ATTITUDE				RUS 2A														
NOTES		THERMAL RECOVERY 2A *BIO 3D CHECK	⊕EVA CAM XFR *XFER UPDATED JOINT FDF	THERMAL RECOVERY 2A *SSV CONFIG														

				BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
				45.26	●			STS-86	FINAL	09/04/97

DMT Date 10/03/97 06 07 08 09 10 11 12 13 14 15 16 17

CT Date 10/02/97 22 23 10/03 01 02 03 04 05 06 07 08 09 12


MET Day 007 007/00 01 02 03 04 05 06 07 08 09 10 11 12

S T S - 8 6	CDR/PLT Wetherbee/ Bloomfield	PRE SLEEP	SLEEP					POST SLEEP			
	MS1 Titov	PRE SLEEP	SLEEP					POST SLEEP	EXER- CISE		
	MS2 Parazynski	PRE SLEEP	SLEEP					POST SLEEP	SPC HOM ASF BTG		
	MS3 Chretien	PRE SLEEP	SLEEP					POST SLEEP			
	MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP					POST SLEEP	EXERCISE (MS5) SI IN GI IT Φ		
M I R	MS5 Wolf		SLEEP (9:00)					POST SLEEP			
	MIR-CDR Solovyov		SLEEP (9:00)					POST SLEEP			
	MIR-ENG Vinogradov		SLEEP (9:00)					POST SLEEP	FC IS XA		
DAY/NIGHT		[Gantt chart showing day/night cycles]									
ORBIT		[Gantt chart showing orbit parameters]									
DAILY ORBIT		[Gantt chart showing daily orbit parameters]									
TDRS		[Gantt chart showing TDRS contacts]									
ALTAIR		[Gantt chart showing ALTAIR contacts]									
SITES		[Gantt chart showing site contacts]									
ATTITUDE		105.1+141+00									
NOTES		*TERM CONFIG									

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			44.08	●			STS-86	FINAL	09/04/97

DMT Date 10/03/97 18 19 20 21 22 23 10/04 01 02 03 04 05
 FD09
 CT Date 10/03/97 10 11 12 13 14 15 16 17 18 19 20 21 22 23 21 008/00
 MET Day 007 12 13 14 15 16 17 18 19 20 21 22 23 21 008/00

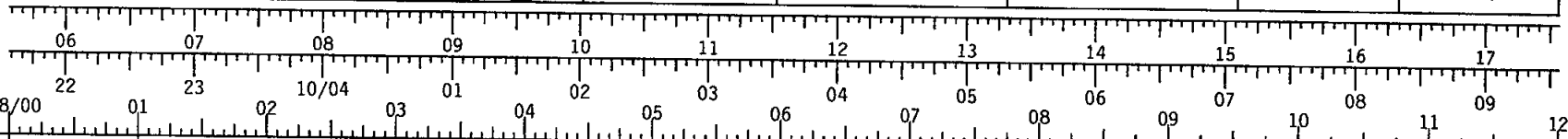
STS-86	CDR/PLT Wetherbee/ Bloomfield	OM SN CV 7R	GP PW UP	UNDOCK	KDSAT S/U	+M Z L V R	D N U N I M I R P T	GP PW D N	MEAL	D T U E M R P M	-M E Z N R L V R	♦	PAO	OFF DUTY	P F C	P F C	OFF DUTY	PMC	PRE SLEEP
	MS1 Titov	EXER- CISE		MIR UNDOCK	XFR STOW		EVA TOOL STOW		MEAL	PAO			OFF DUTY	P F C		OFF DUTY		PRE SLEEP	
	MS2 Parazynski	M D D K		UNDOCK	XFR STOW		E O B S / C O S S	T E P N C T R Y	MEAL	PAO	O M S B U R N		OFF DUTY	P F C		OFF DUTY	S P C M H R M D A E F B G K		PRE SLEEP
	MS3 Chretien	P 2 S / 3 / T V		P/TV 23 OPS UNDOCK	EXERCISE		S S V C A M T E S T	E O P F S / Φ	MEAL	PAO			OFF DUTY	P F C		OFF DUTY	S T I G I N I T I M *	S I N I T I M *	PRE SLEEP
	MS4 / MS6 Lawrence/Foale	G P S *		UNDOCK	XFR STOW		EXERCISE (MS4)		MEAL	PAO			OFF DUTY	P F C	P F C	OFF DUTY	P S I G N E E P	S I P E R M *	G P S *
MIR	MS5 Wolf			MIR UNDOCK															
	MIR-CDR Solovyov	OM SN CV 7R		MIR UNDOCK															
	MIR-ENG Vinogradov	P/TV SETUP MIR		P/TV OPS MIR															
DAY/NIGHT	[Day/Night Cycle Diagram]																		
ORBIT	[Orbit Cycle Diagram]																		
DAILY ORBIT	[Daily Orbit Cycle Diagram]																		
TDRS	[TDRS Cycle Diagram]																		
ALTAIR	[ALTAIR Cycle Diagram]																		
SITES	-DJS -KLP -PPK -SHK -SPB																		
ATTITUDE	OSC-7 +ZLV +YVV -ZLV -XVV																		
NOTES	*700-12 ATT RE-INIT & INIT UNDOCK: 7/13:12 *SSV CONFIG φRME 1314 ♦P/TV 04 S/U -ZLV -XVV φD70 700-15 ATT RE-INIT & *D70 700-15 TERM & DATA D/L *700-12 ATT RE-INIT & I *700-12 TERM & D/L																		


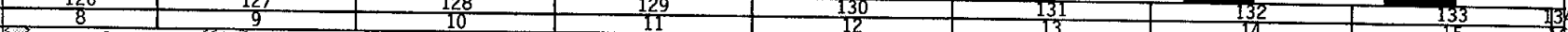

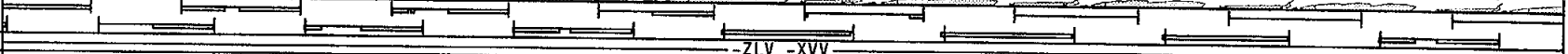
			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			42.79				STS-86	FINAL	09/04/97

DMT Date 10/04/97

CT Date 10/03/97

MET Day 008



CDR Wetherbee	PRE SLEEP	SLEEP	POST SLEEP
PLT Bloomfield	PRE SLEEP	SLEEP	POST SLEEP
MS1 Titov	PRE SLEEP	SLEEP	POST SLEEP
MS2 Parazynski	PRE SLEEP	SLEEP	POST SLEEP
MS3 Chretien	PRE SLEEP	SLEEP	POST SLEEP
MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP	POST SLEEP
DAY/NIGHT			
ORBIT			
DAILY ORBIT	126	127	128
	8	9	10
GROUND TRACK			
TDRS			
ATTITUDE	-ZLV -XVV		
NOTES			

**F
D
1
0**

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			41.39				STS-86	FINAL	09/04/97

DMT Date 10/04/97 FD10
 CT Date 10/04/97
 MET Day 008

CDR Wetherbee	EXERCISE	FCS C/O	RH COT S FR	P1 /2 TS /U	CC OK M	MEAL	-M Z N L V R	CNES EVENT	PAO	-M Z N L V R	CABIN STOW	S P O M H R N D A E F D B G K	PRE SLEEP	-M Z N L V R	PRE SLEEP
PLT Bloomfield	FILTER CLEAN	FCS C/O	RH COT S FR			EXERCISE	MEAL	CNES EVENT	PAO		CABIN STOW	K U S T W	KDSAT DEACT		PRE SLEEP
MS1 Titov		EXERCISE				POST EVA ENT PREP	MEAL	CNES EVENT	PAO		CABIN STOW	R S S C E / M A U B T N T	SH MOD TRDN	ERGO STOW	PRE SLEEP
MS2 Parazynski	M S P C H O N D A S F K B T G A	FCS C/O		P S T /T O V W 1 *		POST EVA ENT PREP	MEAL	CNES EVENT	PAO		CABIN STOW		ERGO STOW	PRE SLEEP	
MS3 Chretien	G T P E I S R I G R M I M *	CWC EQUIP STOW				EXERCISE	MEAL	CNES EVENT	PAO	®	CABIN STOW		SH MOD TRDN		PRE SLEEP
MS4 / MS6 Lawrence/Foale	G T P E I S R I G R M I M *	EXERCISE					MEAL	CNES EVENT	PAO		CABIN STOW	R S S C E / M A U B T N T	EXERCISE		PRE SLEEP

DAY/NIGHT ORBIT DAILY ORBIT



TDRS ATTITUDE

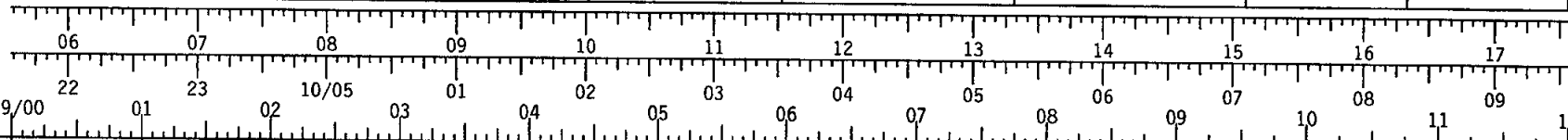
NOTES
 *SSV DEACT
 *TEHM CONFIG
 *700-12 TERM & D/L
 *DTO 700-15 TERM & DATA D/L

				BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
				39.82				STS-86	FINAL	09/04/97

DMT Date 10/05/97

CT Date 10/04/97

MET Day 009



CDR Wetherbee	PRE SLEEP	SLEEP	- M Z N L V R	SLEEP	POST SLEEP	PMC	POST SLEEP
PLT Bloomfield	PRE SLEEP	SLEEP				POST SLEEP	
MS1 Titov	PRE SLEEP	SLEEP				POST SLEEP	
MS2 Parazynski	PRE SLEEP	SLEEP				POST SLEEP	
MS3 Chretien	PRE SLEEP	SLEEP				POST SLEEP	
MS4 / MS6 Lawrence/Foale	PRE SLEEP	SLEEP				POST SLEEP	

F
D
1
1

DAY/NIGHT	141	142	143	144	145	146	147	148	149
ORBIT	7	8	9	10	11	12	13	14	15
DAILY ORBIT									



TDRS	E	W							
ATTITUDE			-ZLV -XVV		-ZLV -YVV		-ZLV -YVV		

NOTES	*AUTO FC PURGE								DTO 700-15 ATTITUDE RE-INIT
-------	----------------	--	--	--	--	--	--	--	-----------------------------------

			BETA	MOON	ATTITUDE		IDENTIFIER	EDITION	PUB. DATE
			38.19				STS-86	FINAL	09/04/97

DMT Date 10/05/97 **FD11**

CT Date 10/05/97

MET Day 009

CDR Wetherbee	CABIN STOW	GP P W U P	▼	D/O PREP BRIEF	MEAL	- M X N S V I R	D/O PREP	D / O B U R N * * K S C L A N D I N G
PLT Bloomfield	CABIN STOW		Δ	D/O PREP BRIEF	MEAL		D/O PREP	
MS1 Titov				D/O PREP BRIEF	MEAL		D/O PREP	
MS2 Parazynski	SPCM HOND ASFD BTGK	ODS ENTRY STOW	OST AO CW	▲	D/O PREP BRIEF	MEAL	D/O PREP	
MS3 Chretien	GPS 1 2	GEC PNST FG			D/O PREP BRIEF	MEAL	D/O PREP	
MS4 / MS6 Lawrence/Foale	GPS Φ				D/O PREP BRIEF	MEAL	D/O PREP	

DAY/NIGHT	149	150	151	152	153	154	155	156	157
ORBIT	15	1	2	3	4	5	6	7	8
DAILY ORBIT									



TDRS	E								
ATTITUDE	W	-ZLV	-YVV		-XSI	IMU		COMM	

NOTES

▼ TERM D/O CNFG
 Δ D/O AIR SAMPLE
 ▲ CCM ENTRY PREP

Φ D/O 700-12 ATTITUDE RE-INIT

* D/O BURN TIG
9/19:20

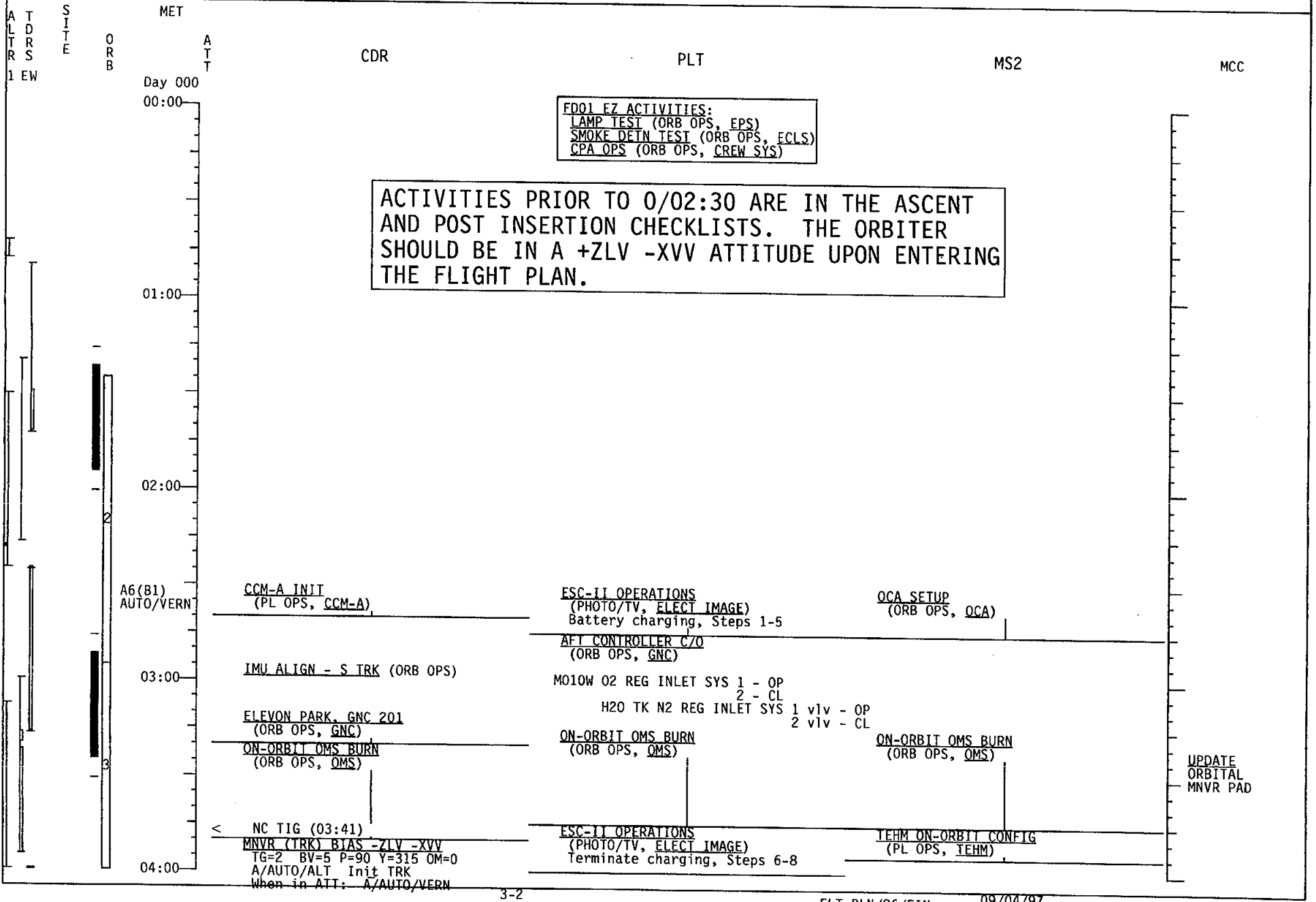
* KSC LANDING
9/20:24

DETAILED TIMELINE

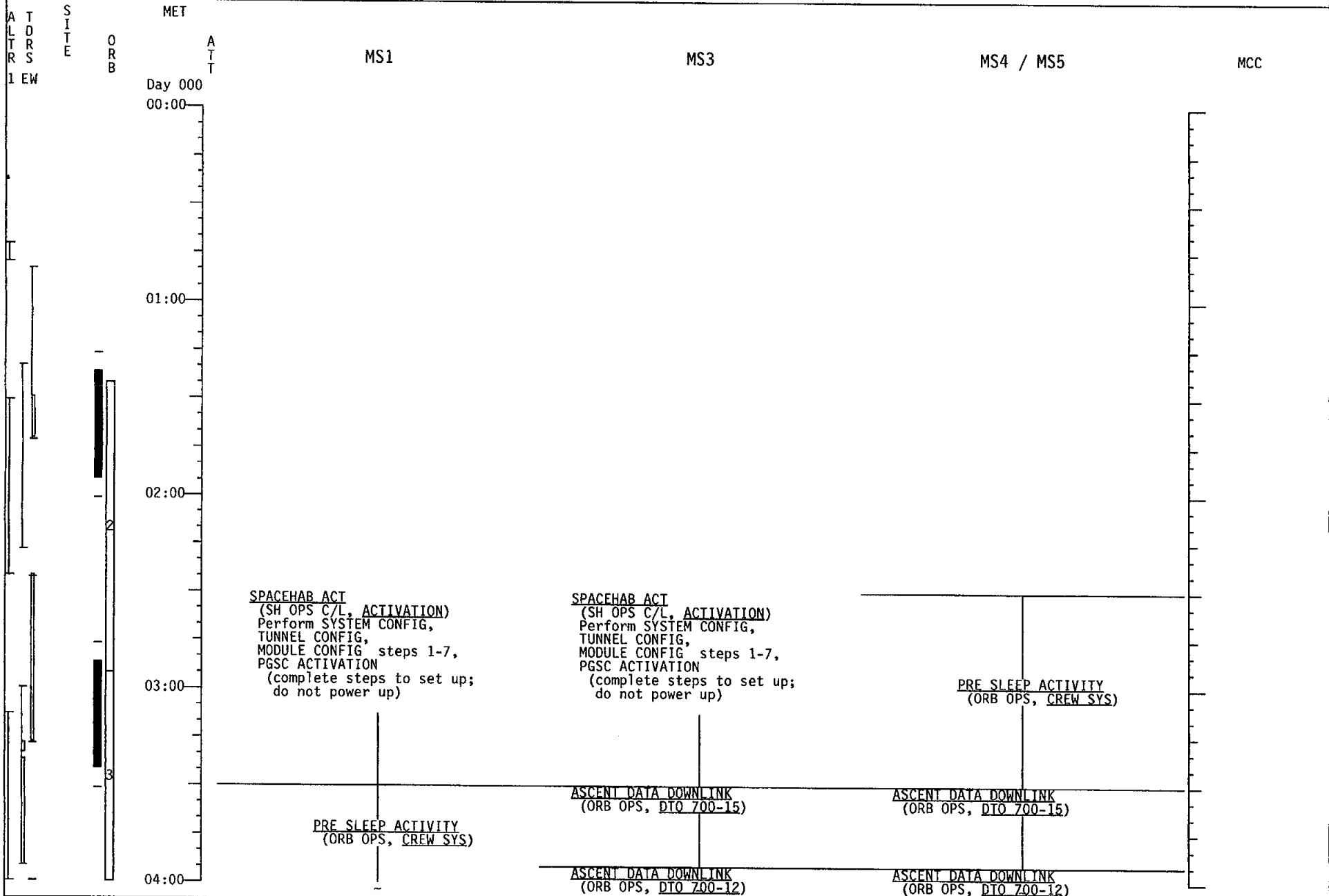
DETAILED
TIMELINE

DETAILED TIMELINE

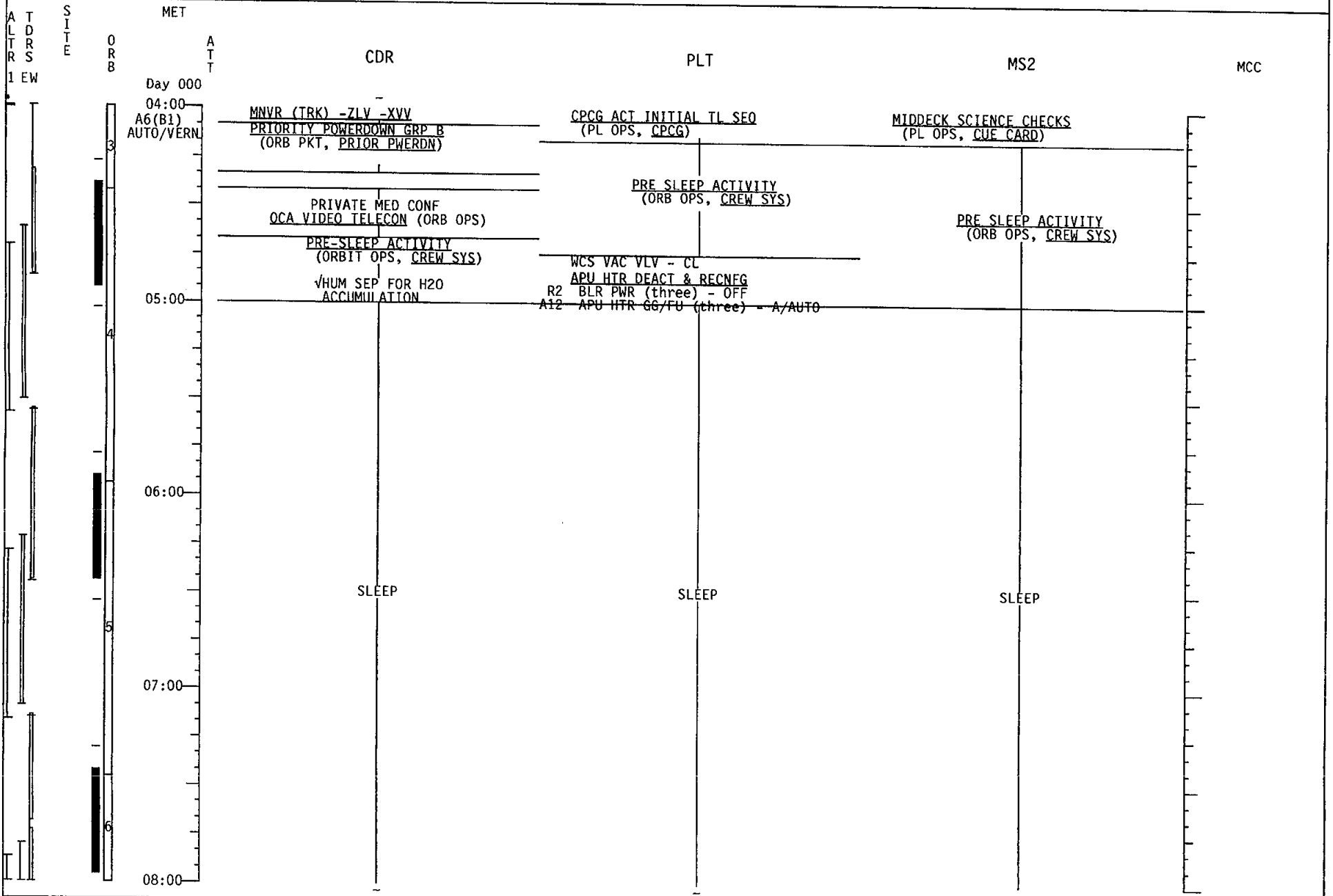
STS-86 (FD 01)



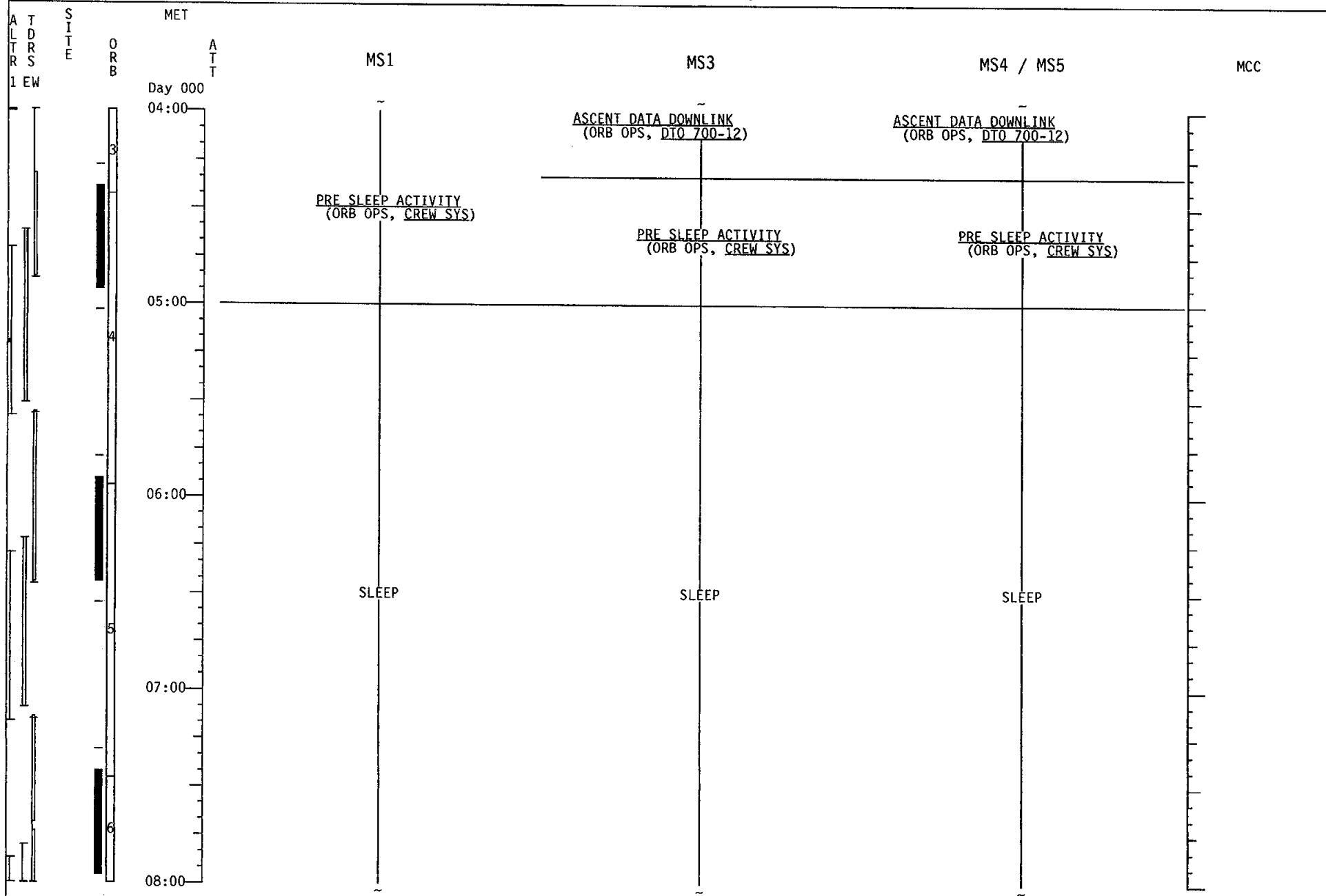
STS-86 (FD 01)



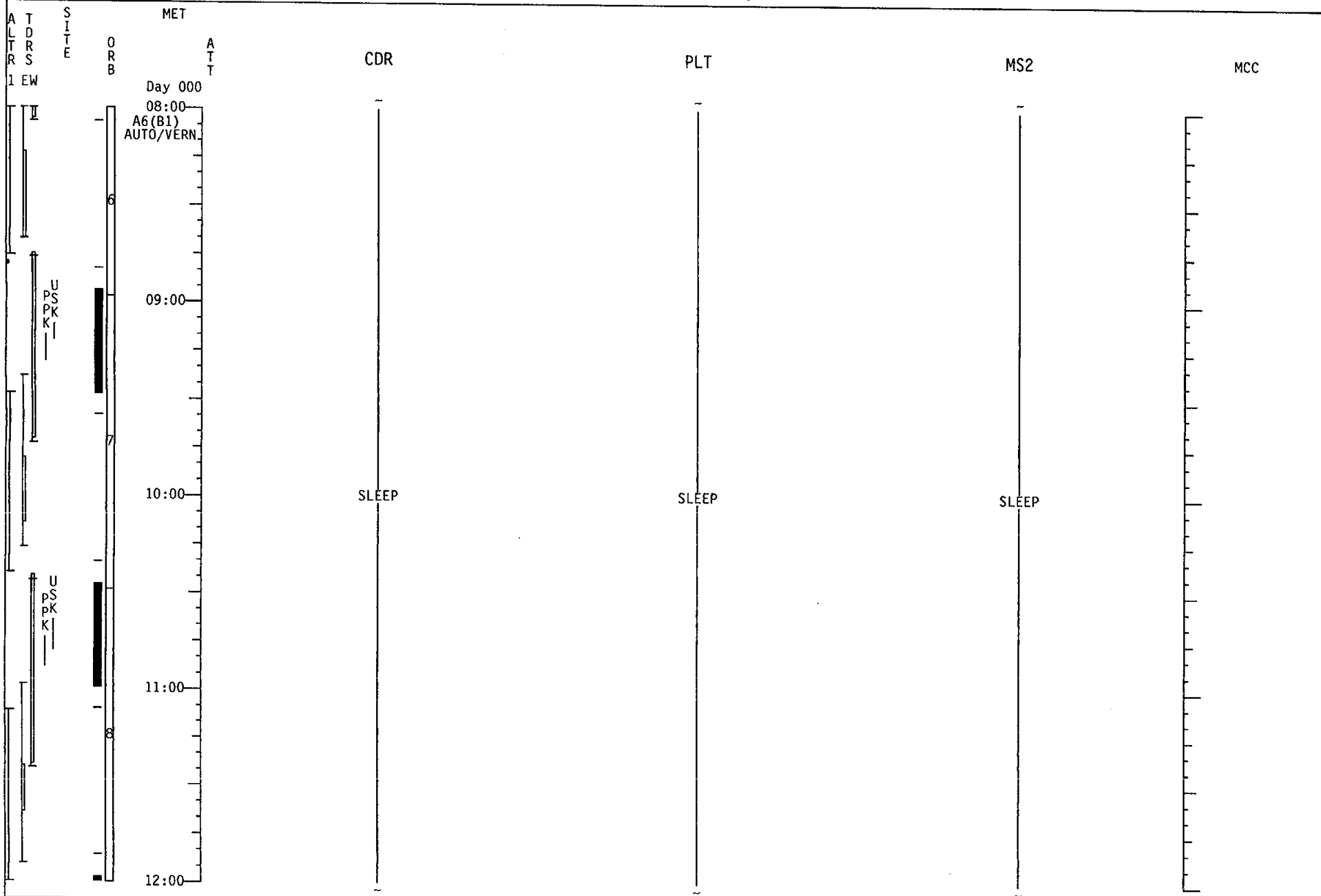
STS-86 (FD 01)



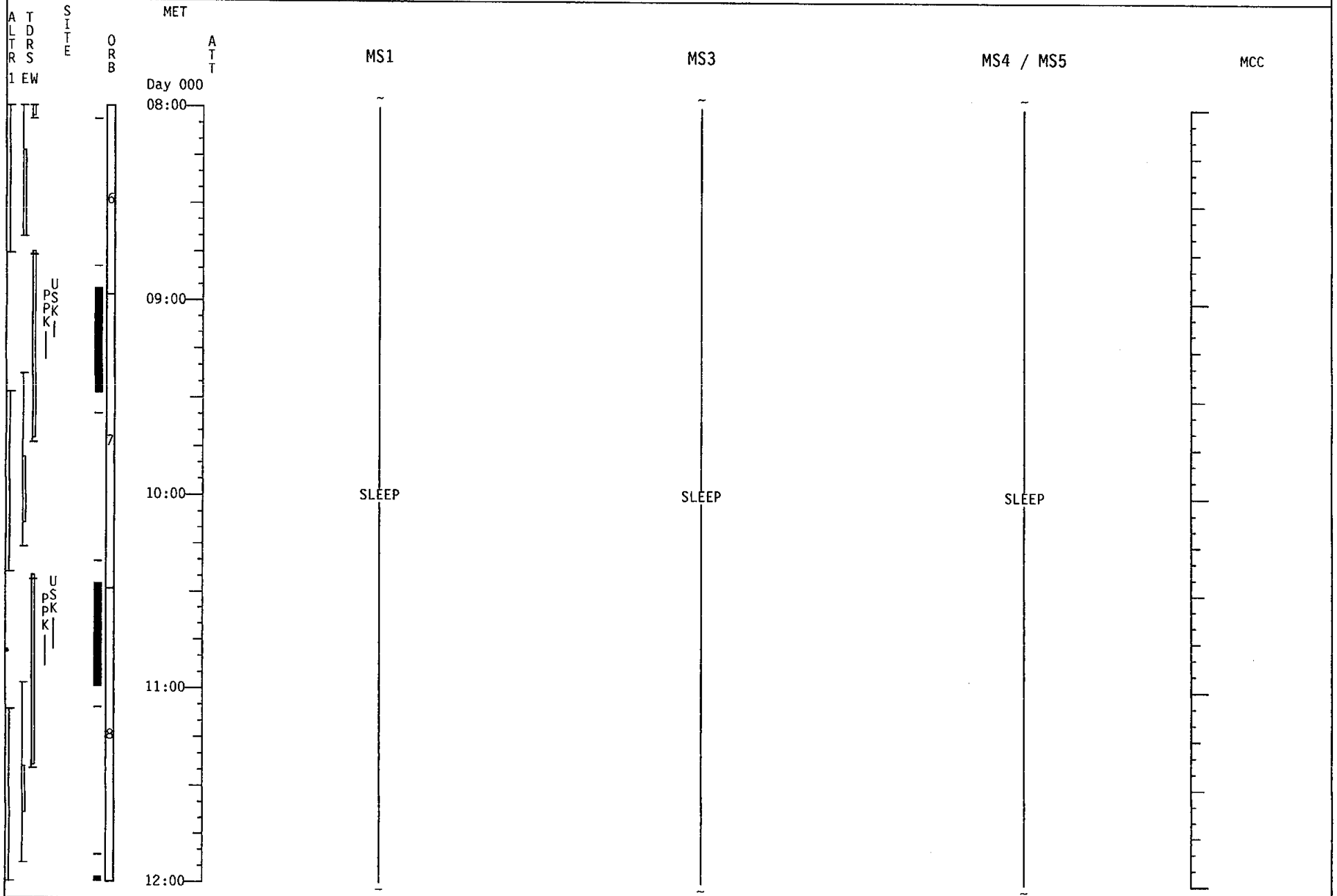
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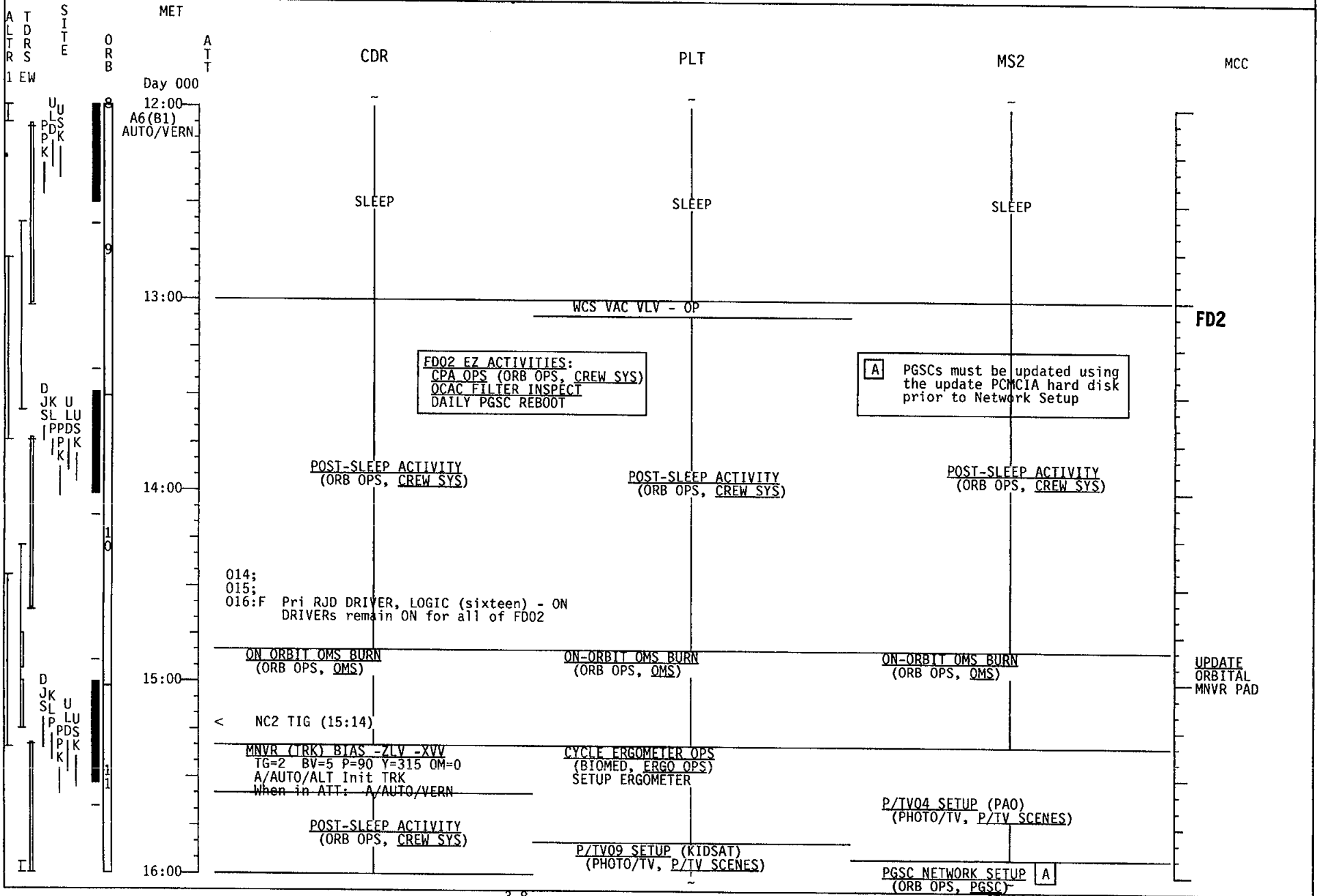
STS-86 (FD 01)



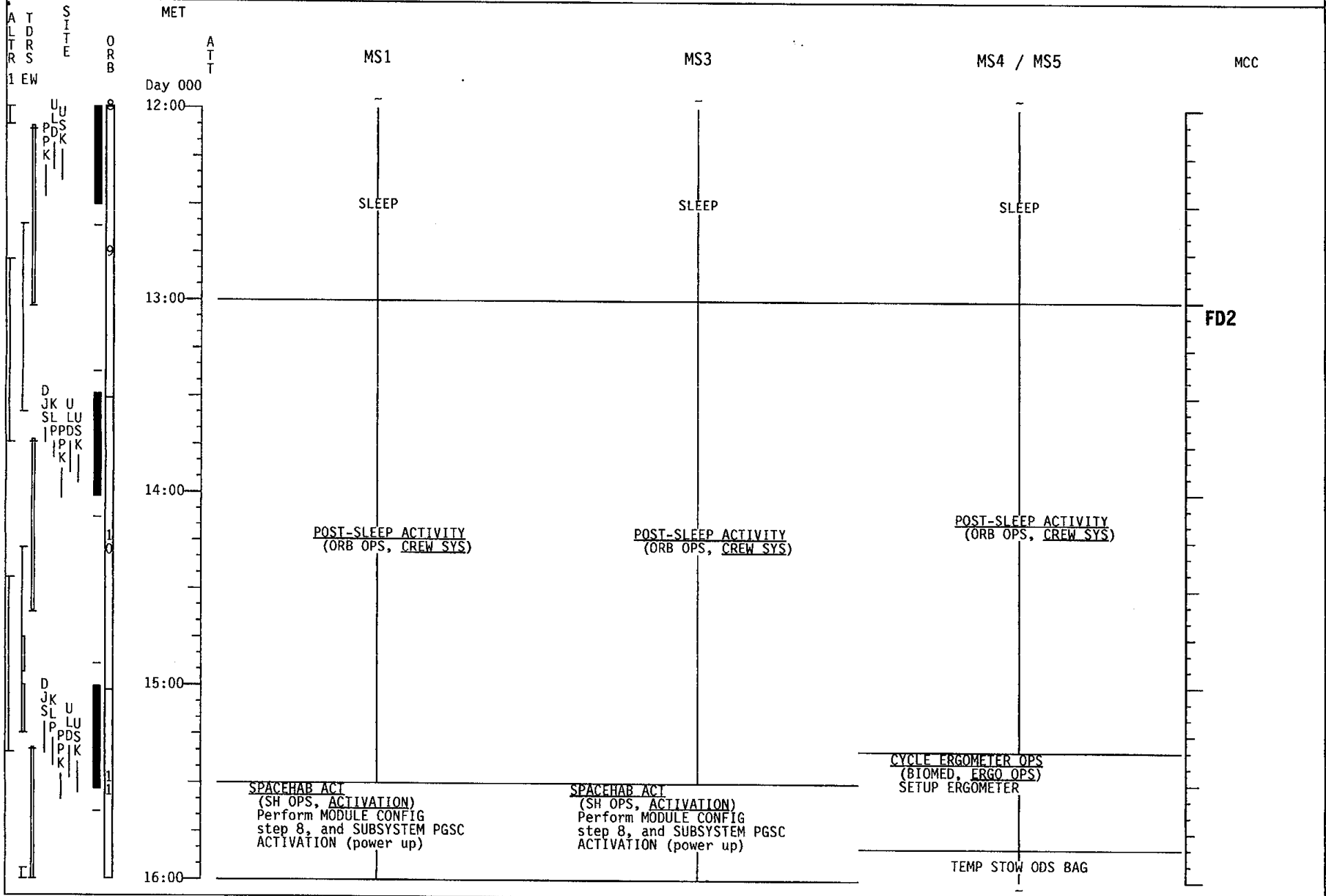
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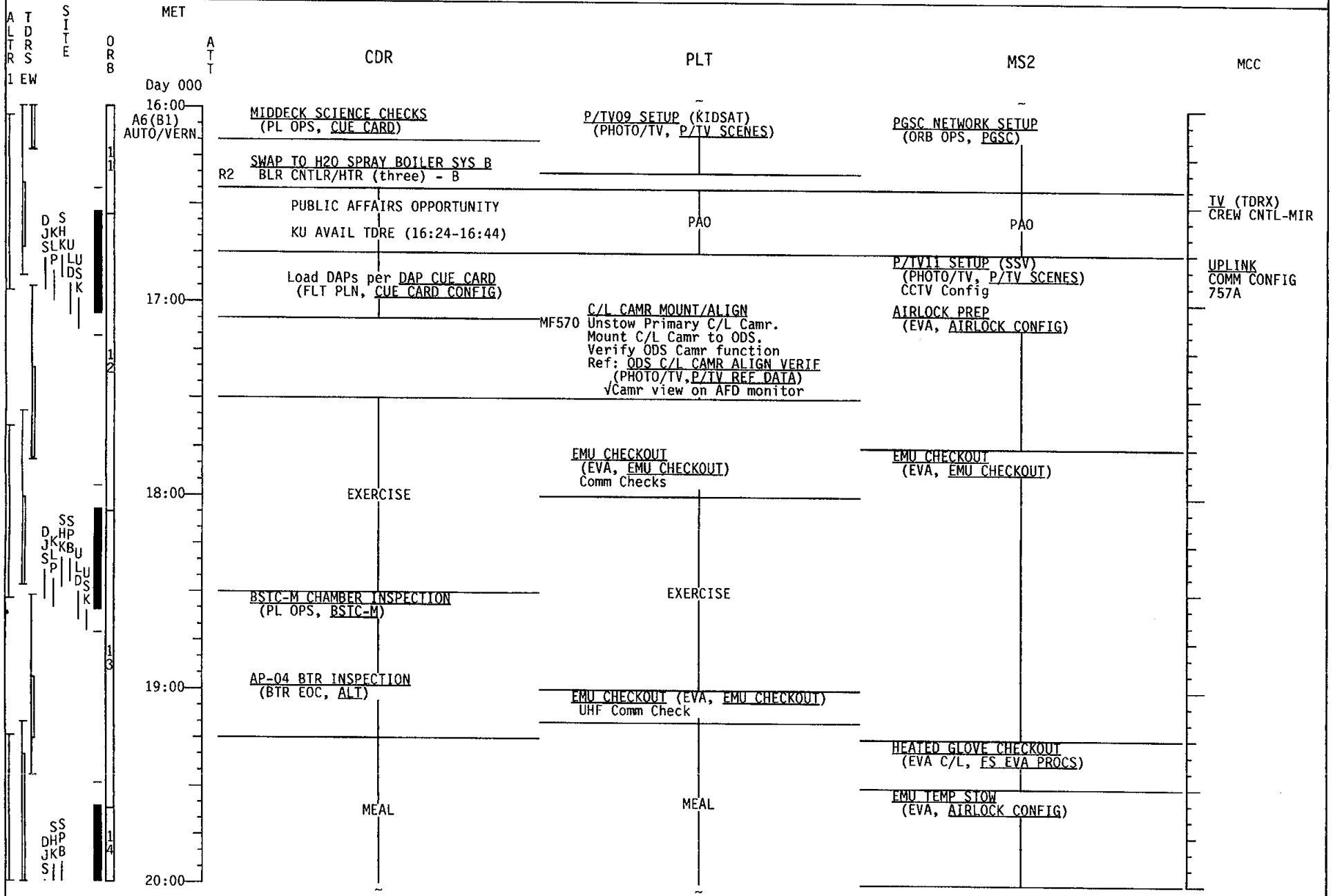
STS-86 (FD 01)



STS-86 (FD 01)



STS-86 (FD 02)



ALTER SITE
ORB

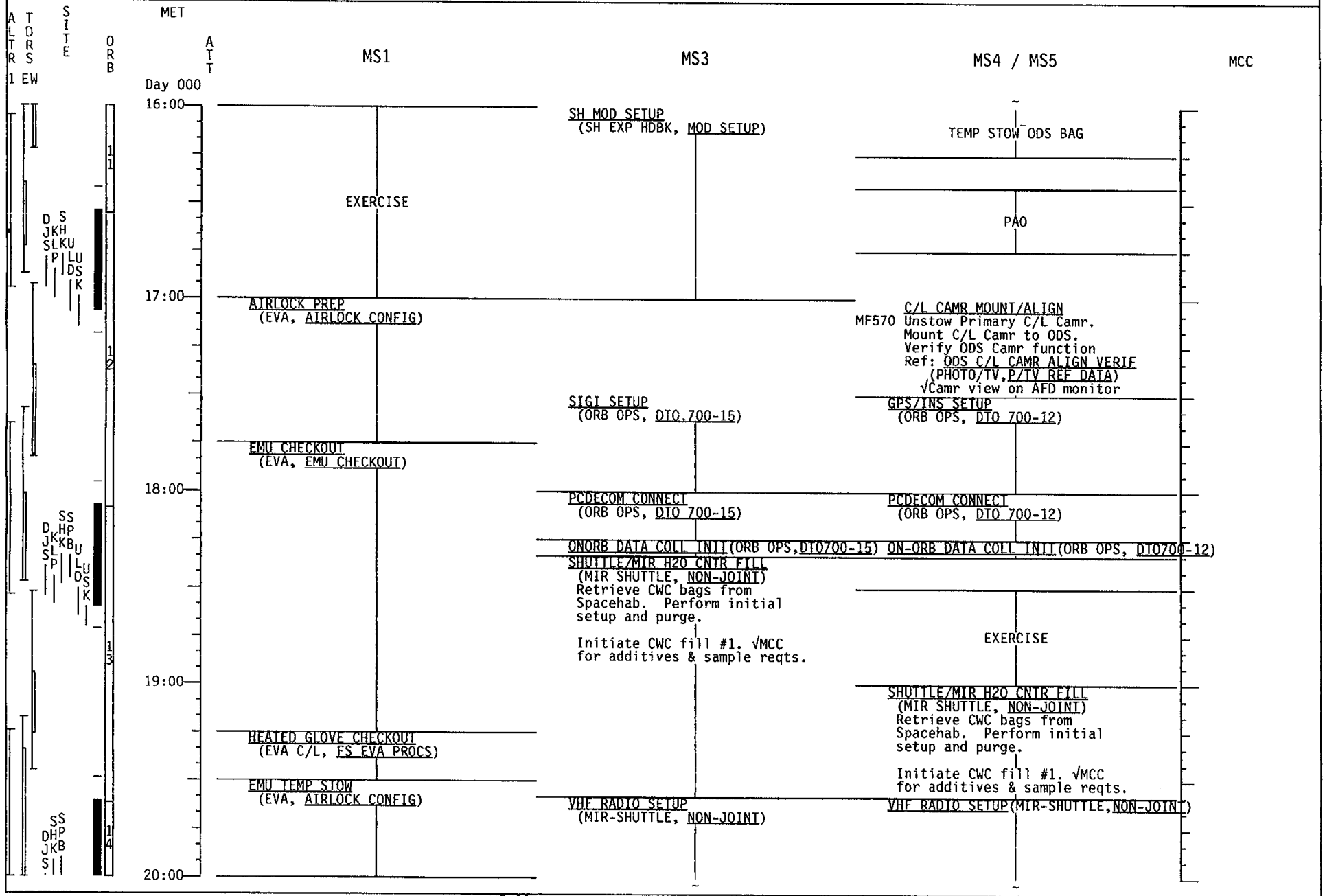
1 EW
1 1

D S
JKH SLKU
P LU
SLP LDK
K
1 2

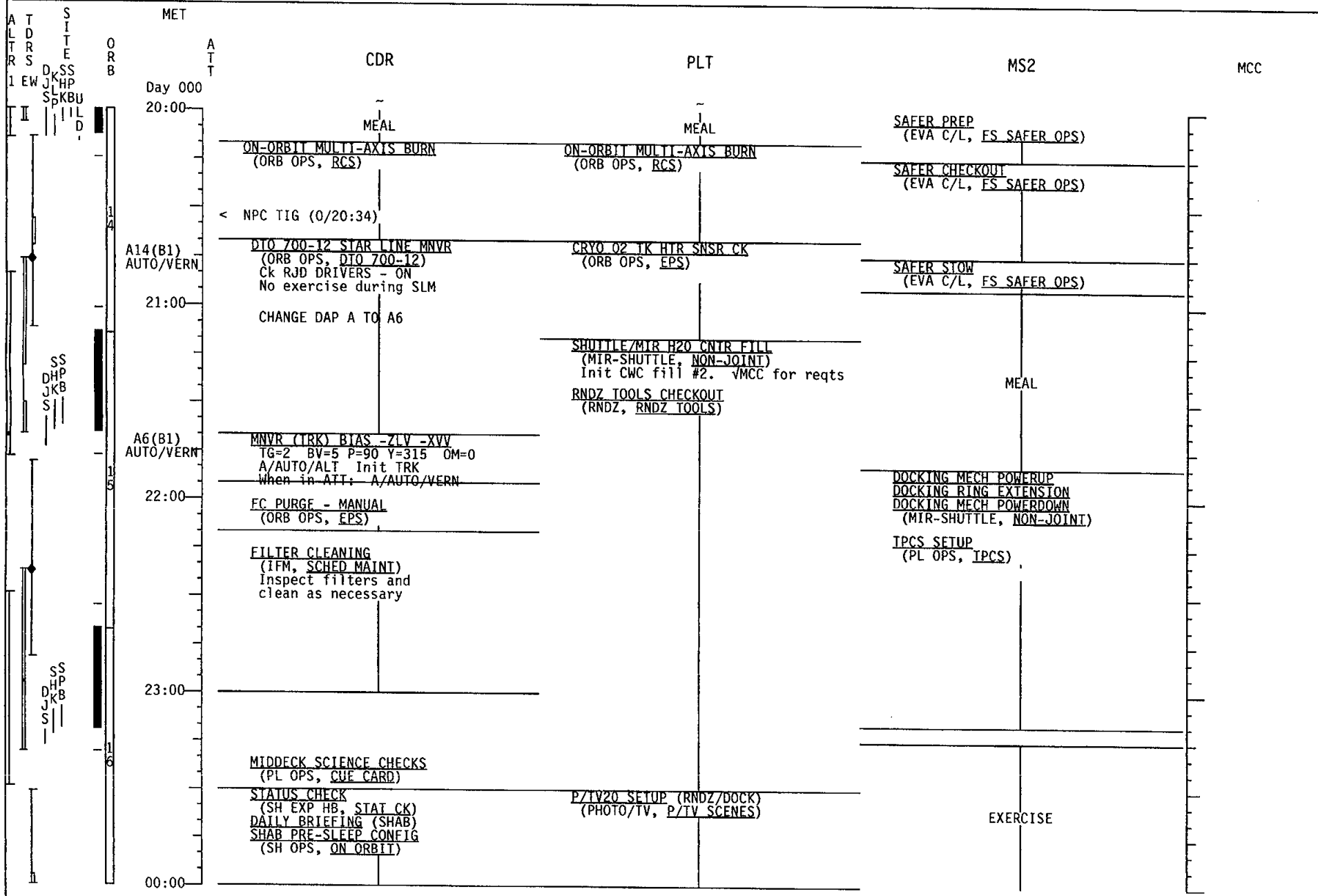
D SS
JKH HP
SLP KB
U
1 3

D SS
JKH HP
SLP KB
U
1 4

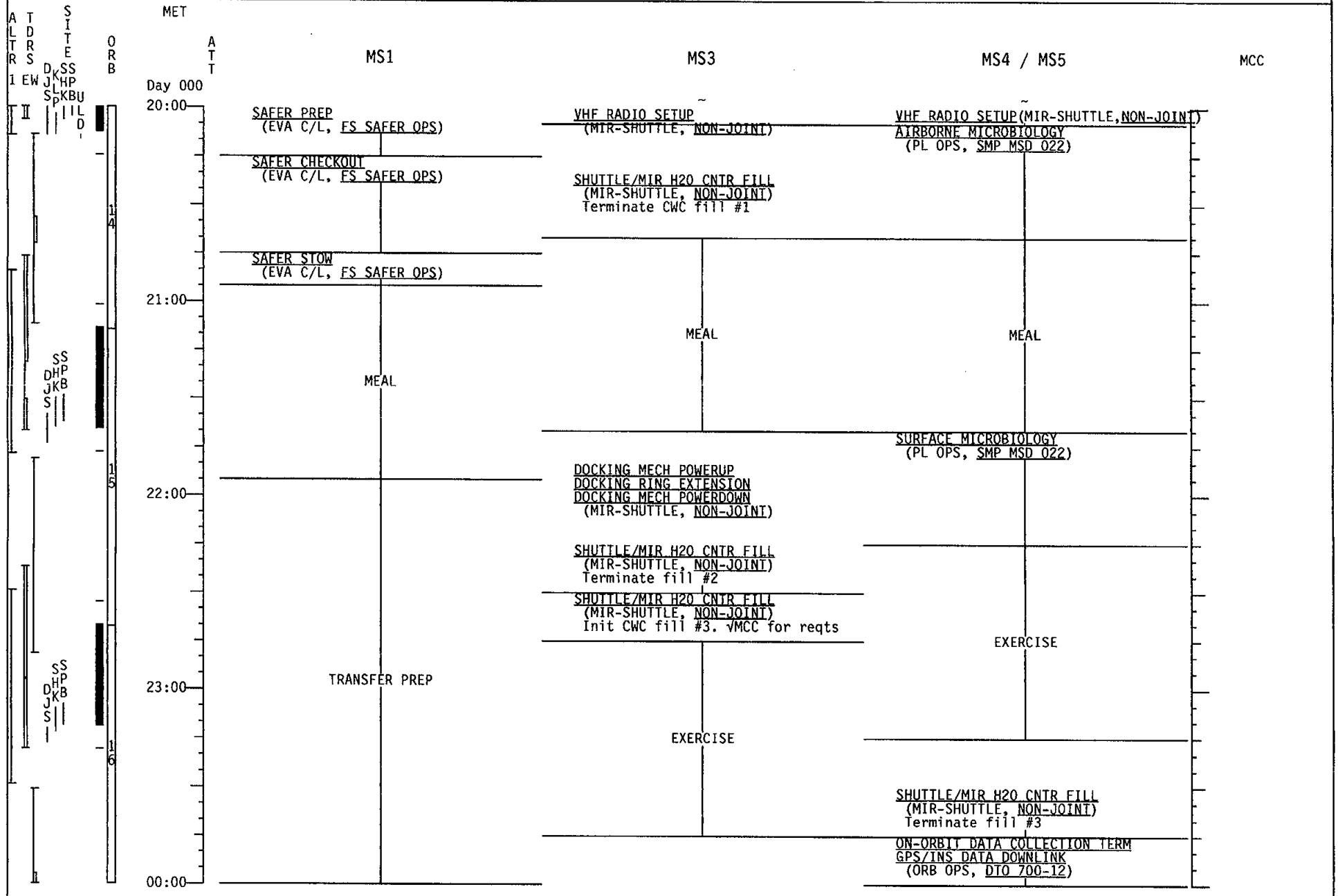
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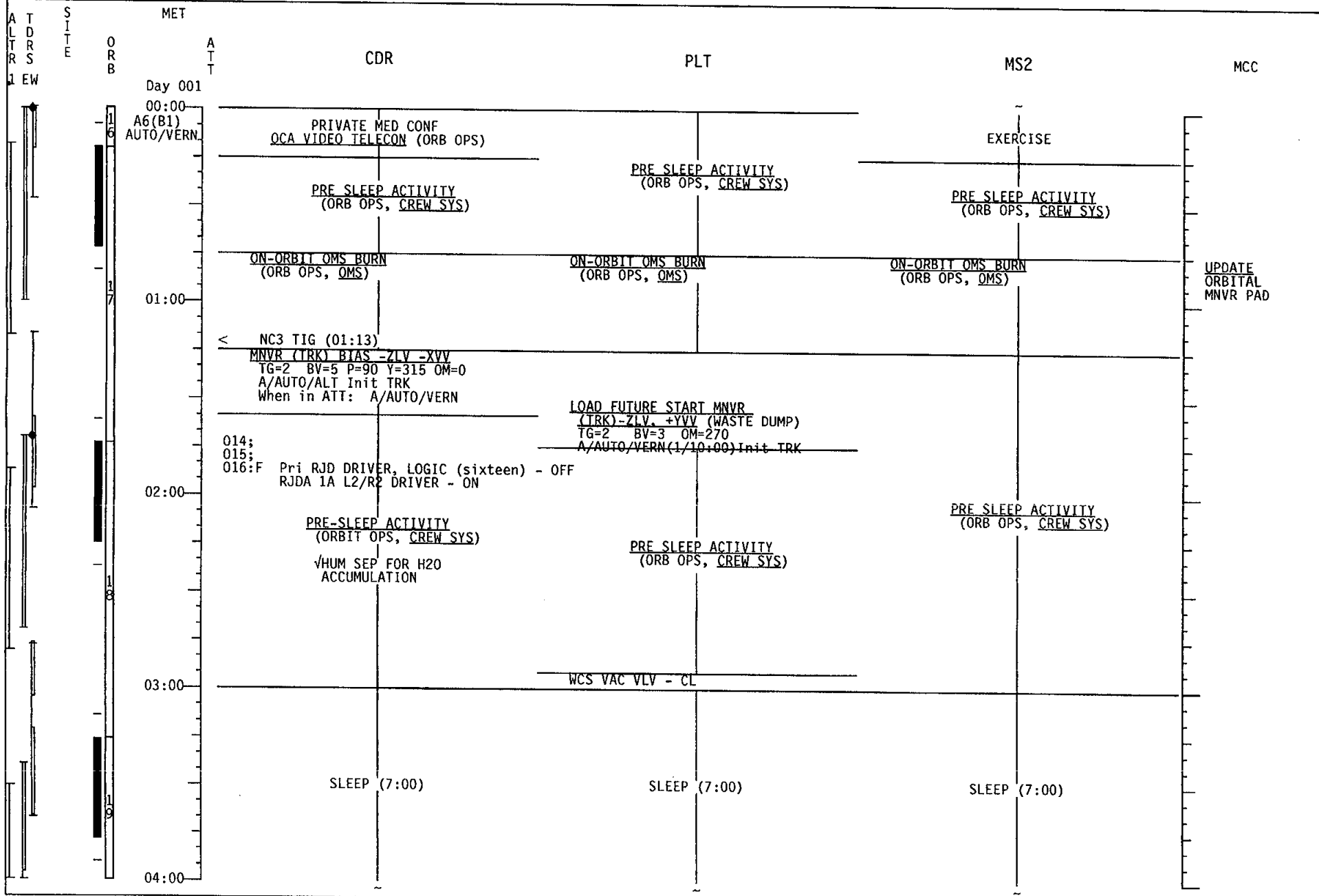
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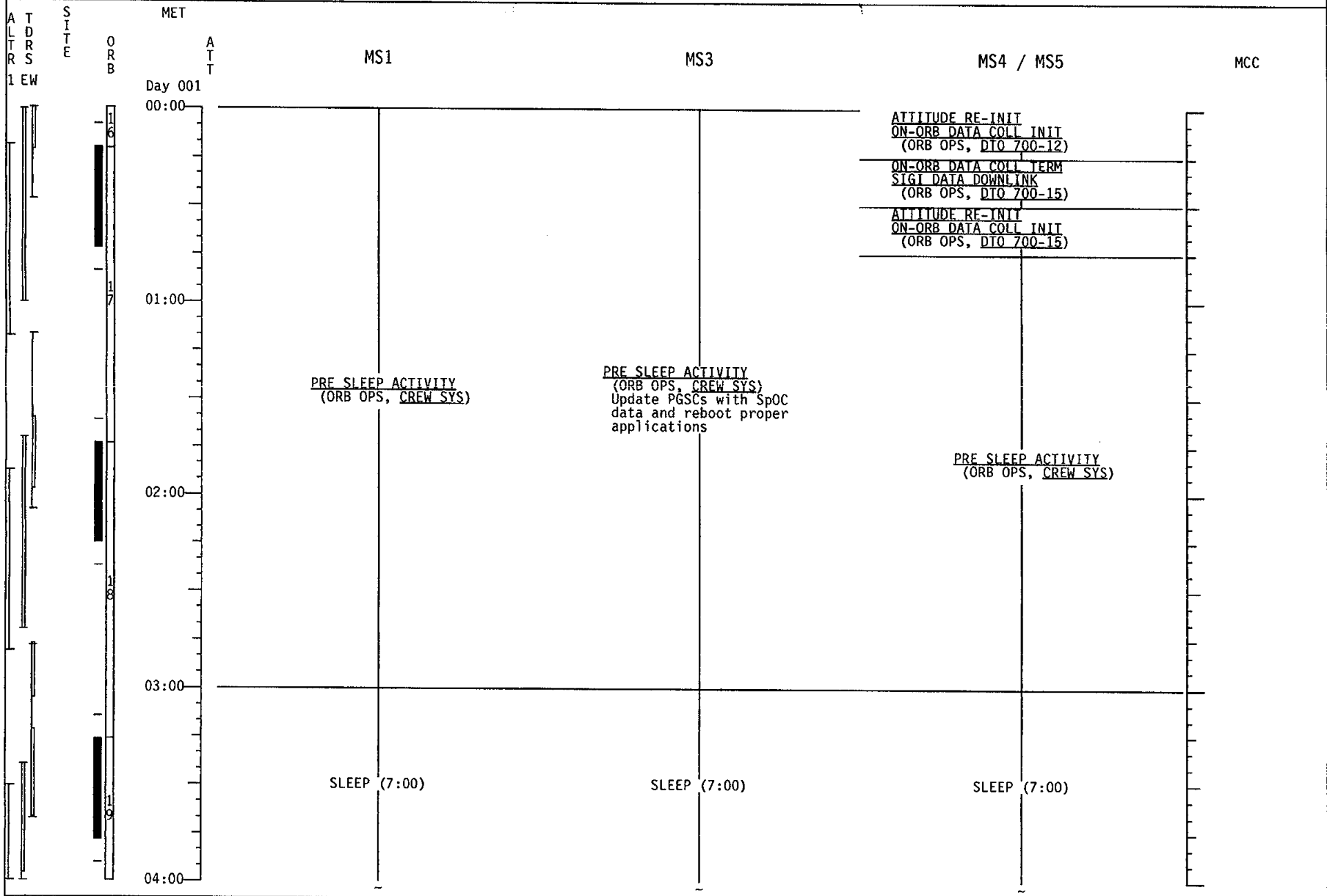
STS-86 (FD 02)



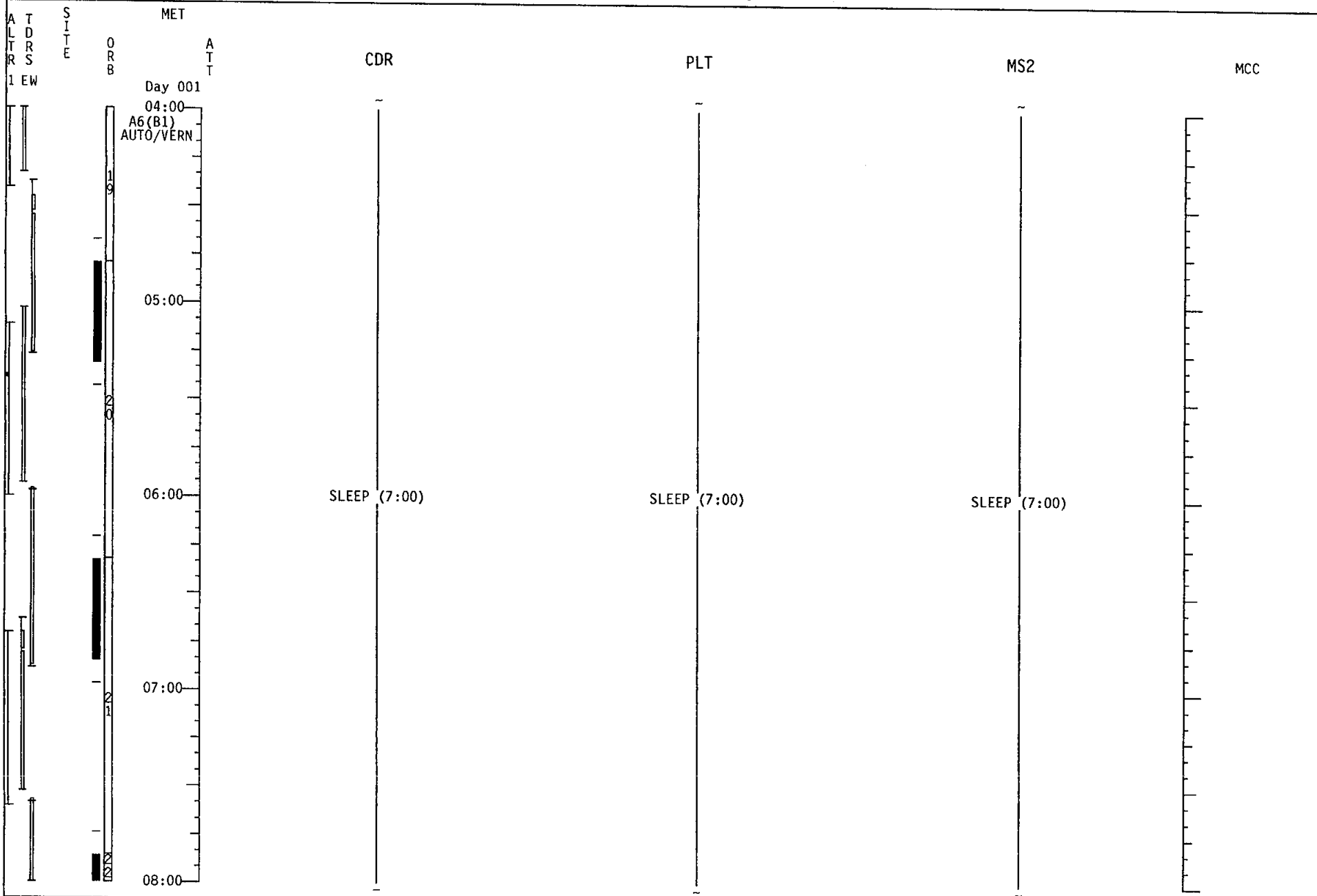
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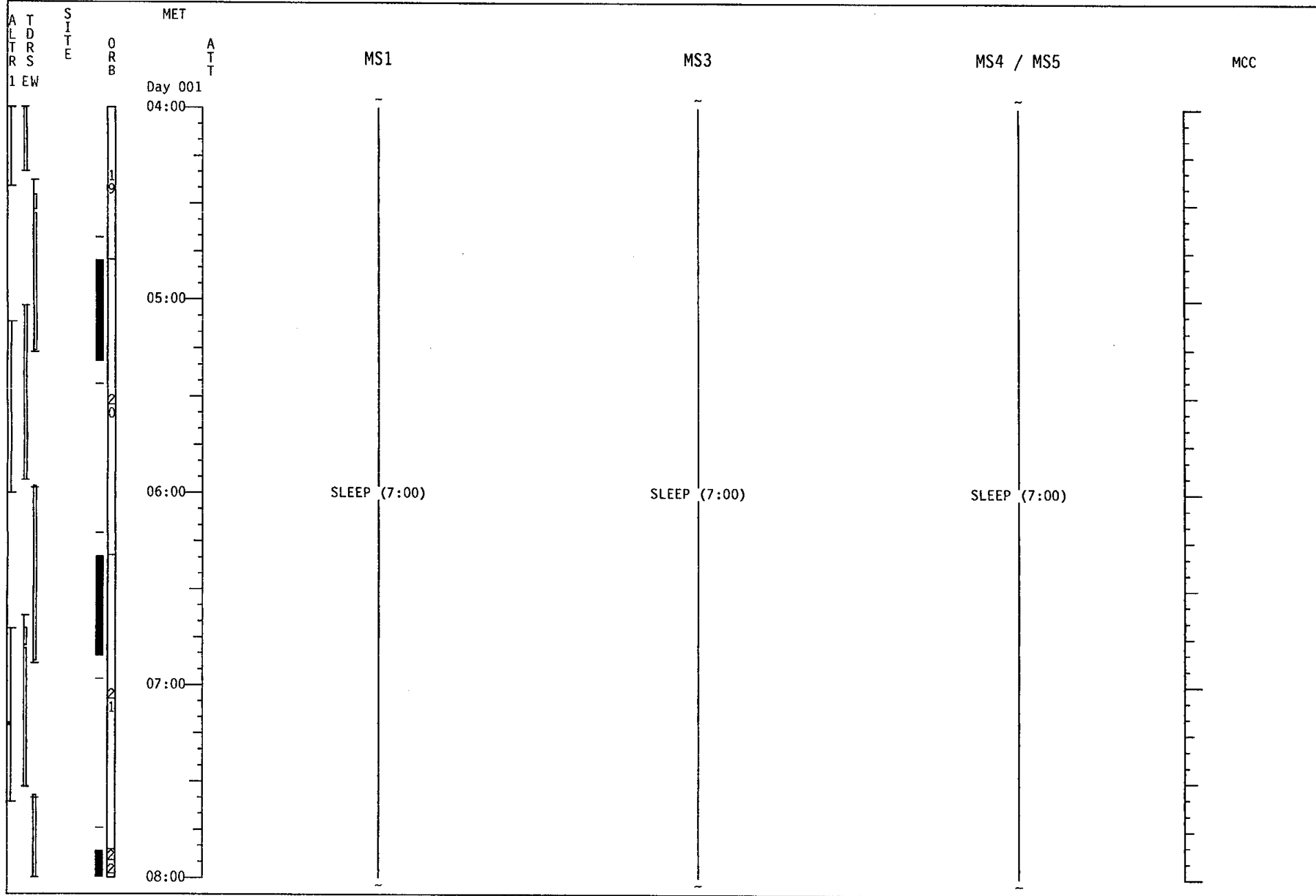
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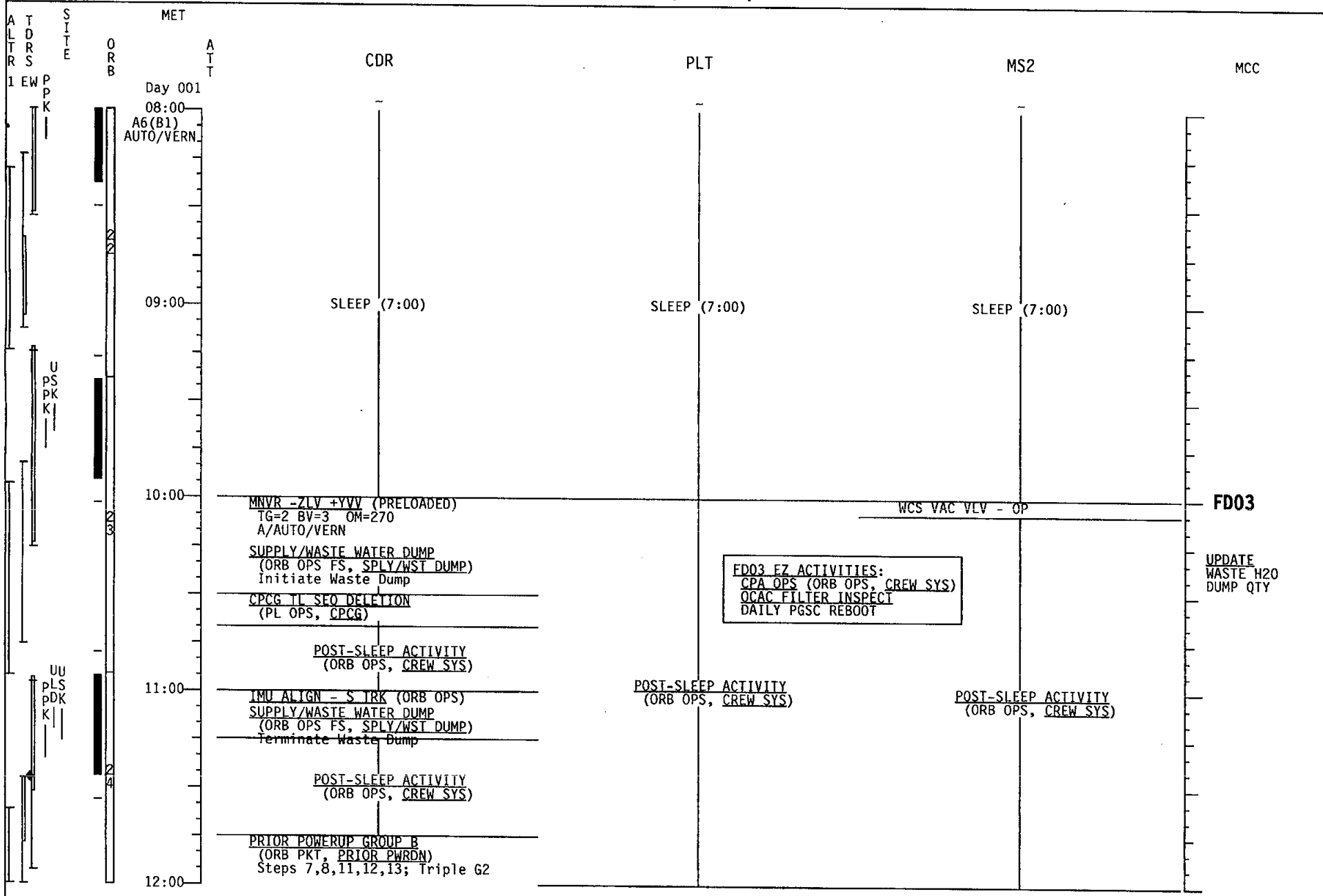
STS-86 (FD 02)



STS-86 (FD 02)

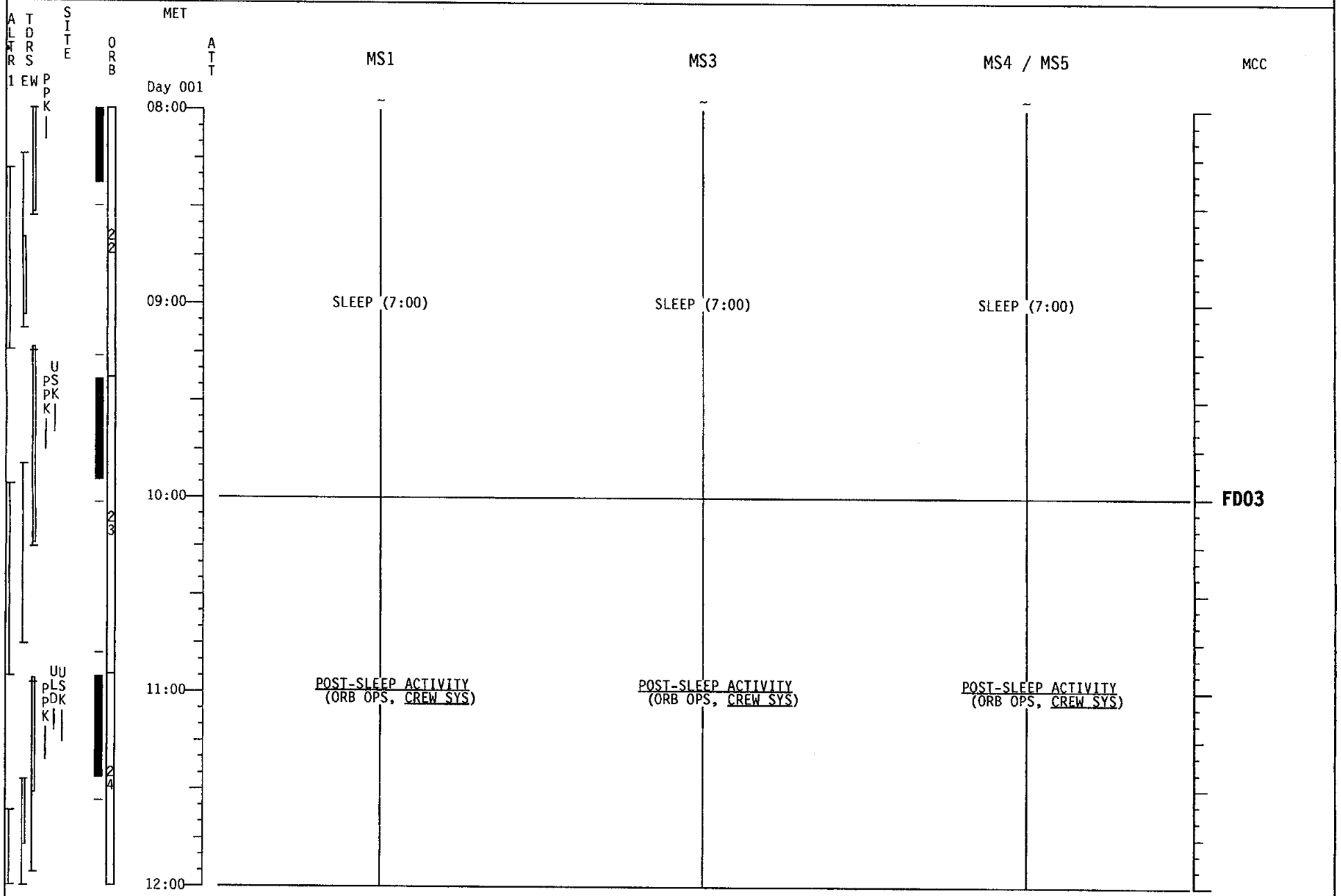


STS-86 (FD 02)

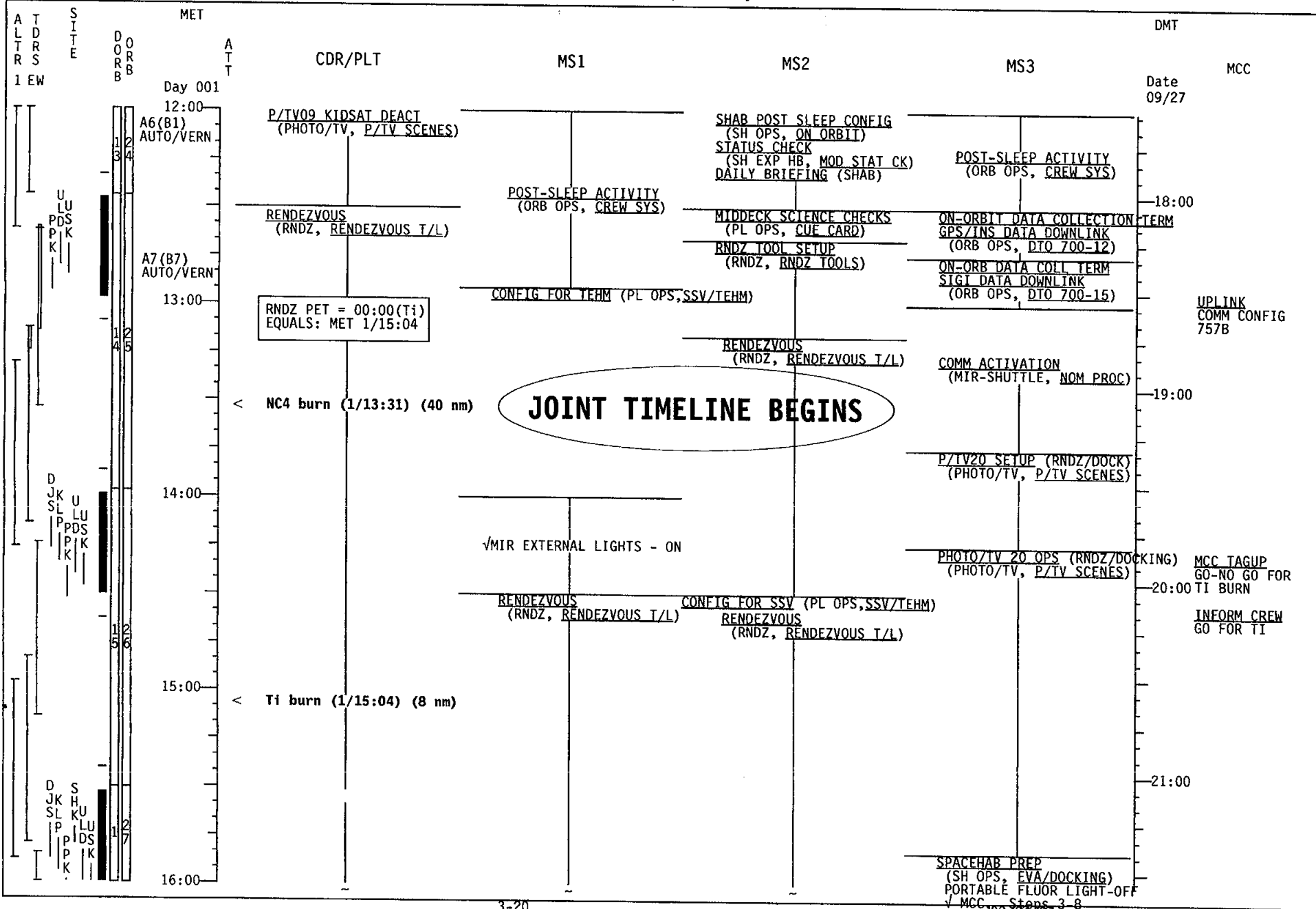


FD03 EZ ACTIVITIES:
 CPA OPS (ORB OPS, CREW SYS)
 QCAC FILTER INSPECT
 DAILY PGSC REBOOT

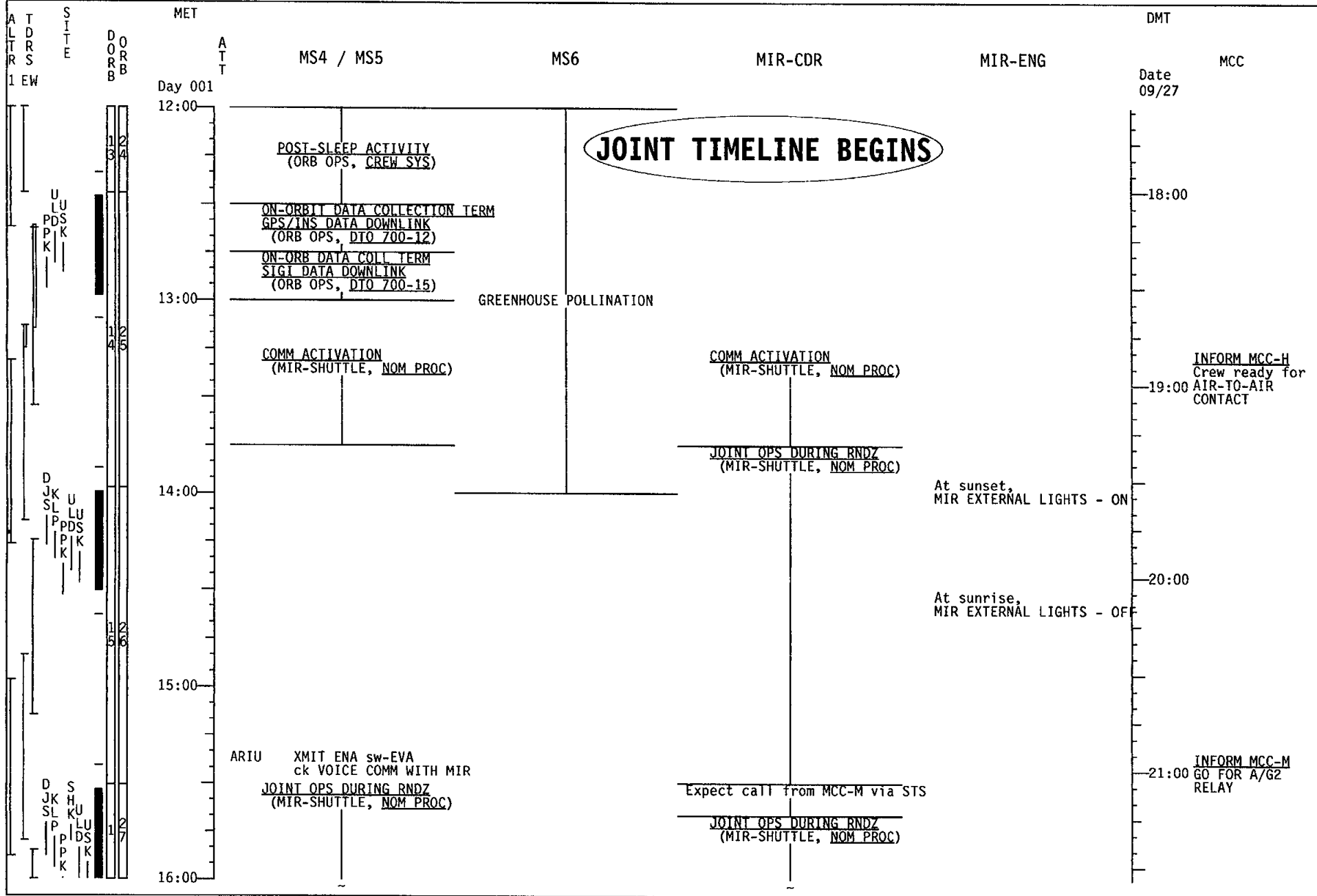
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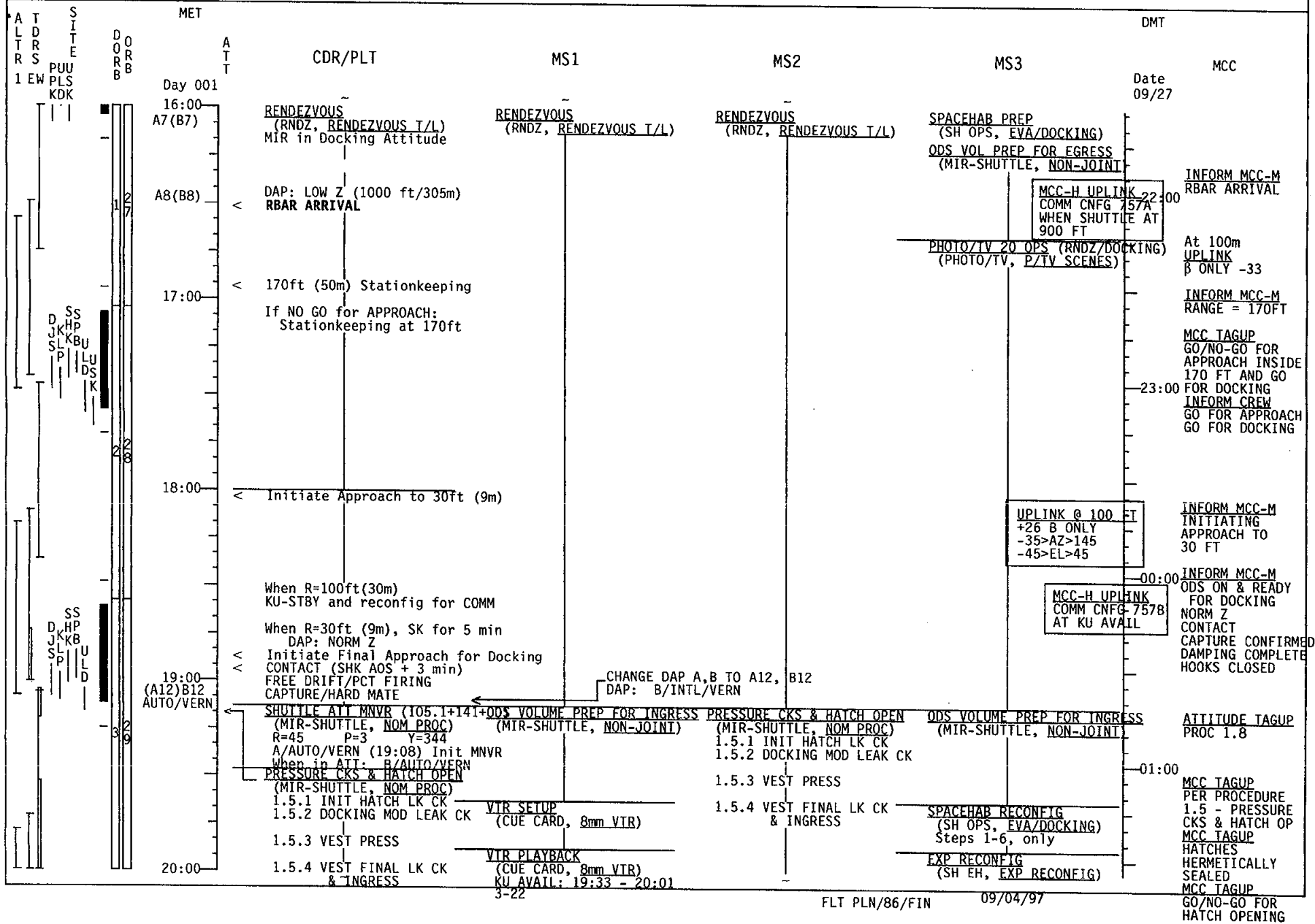
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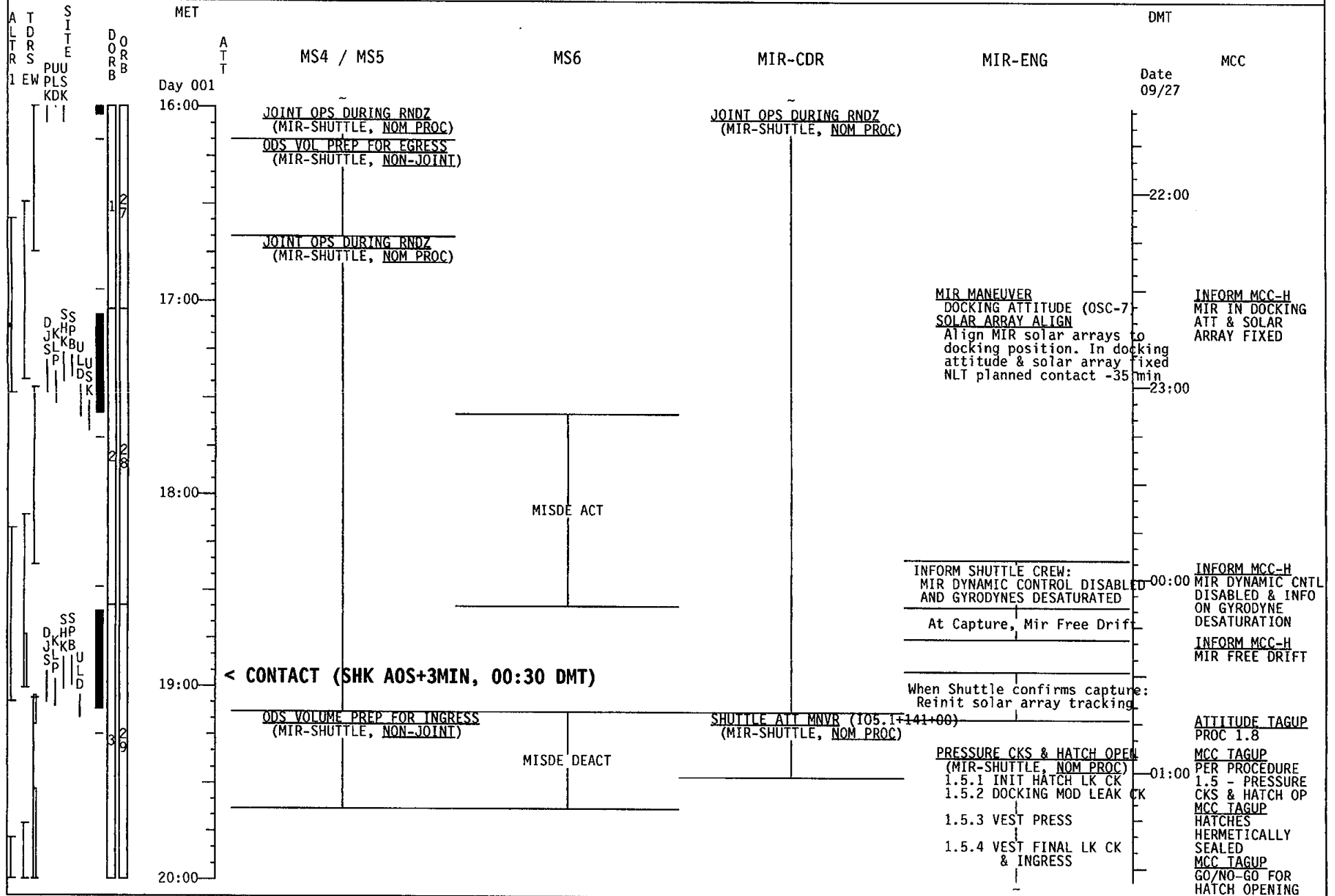
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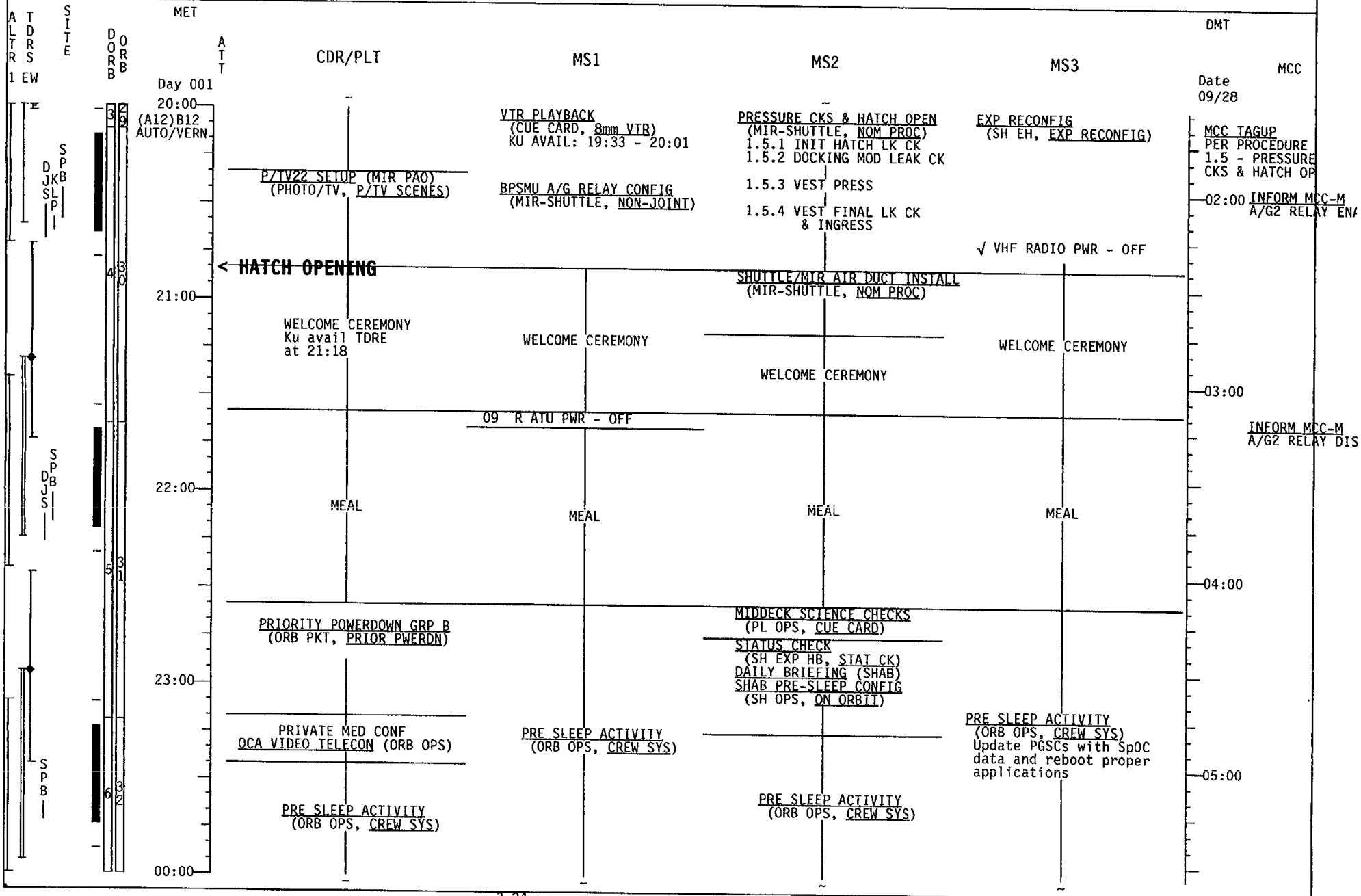
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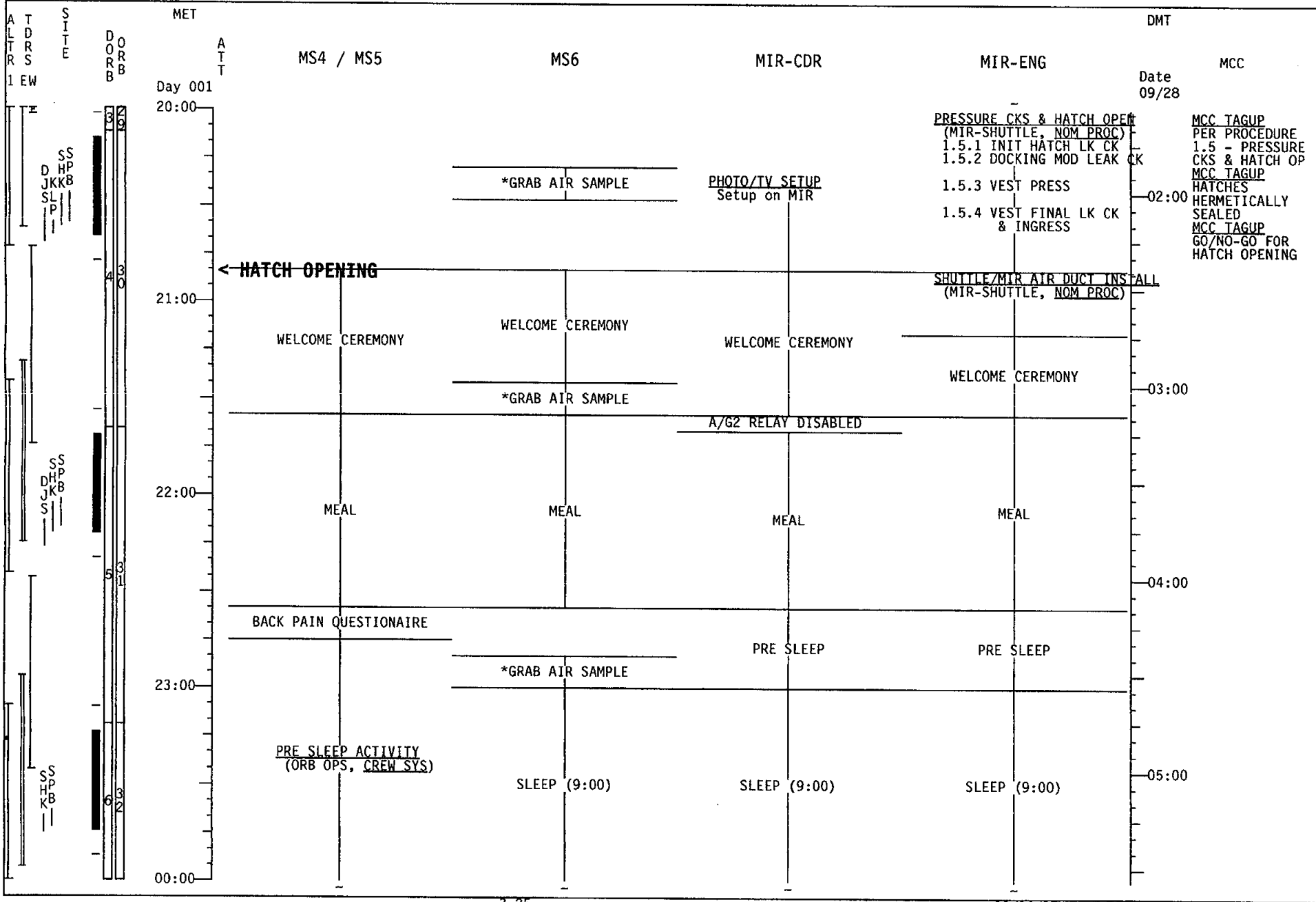
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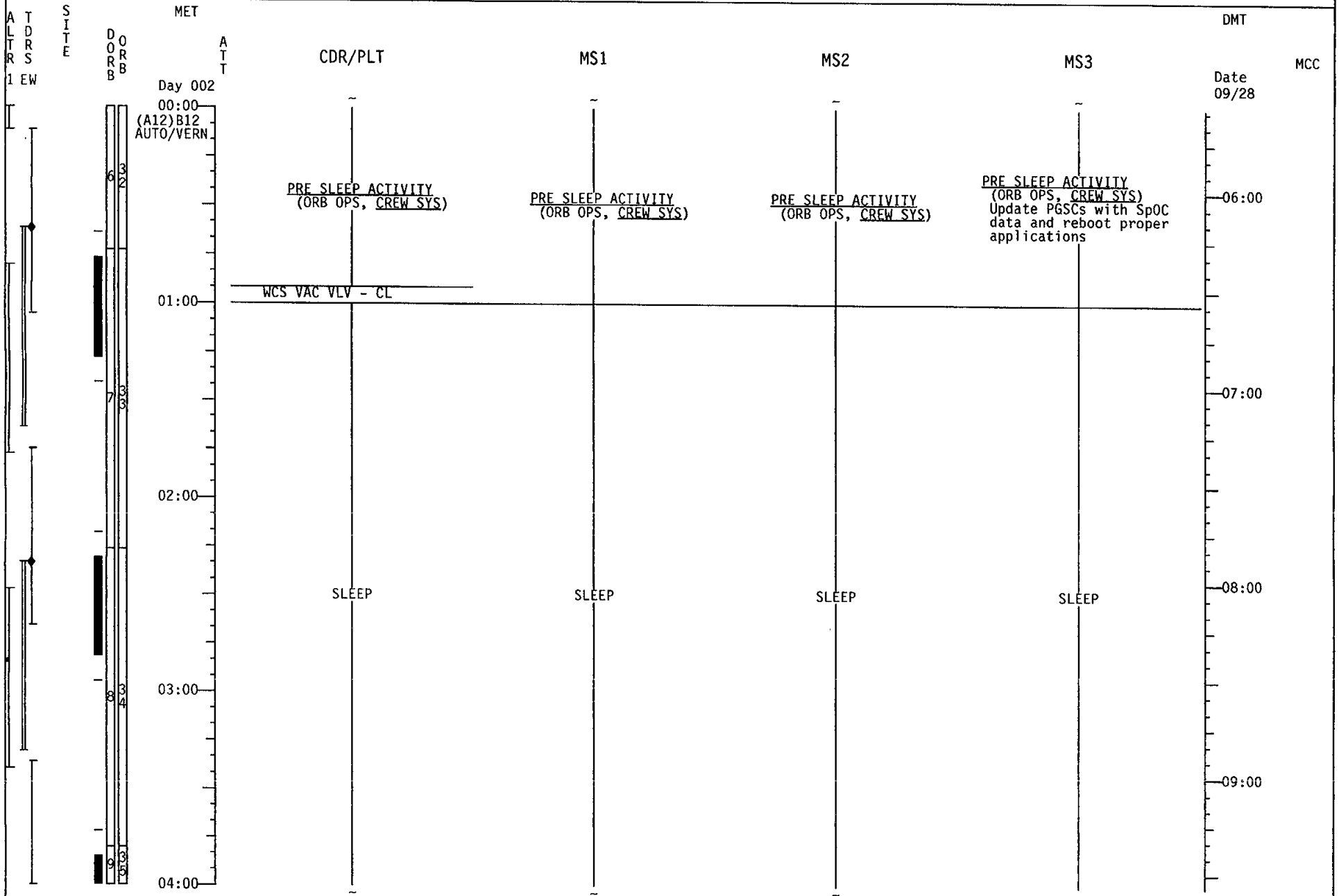
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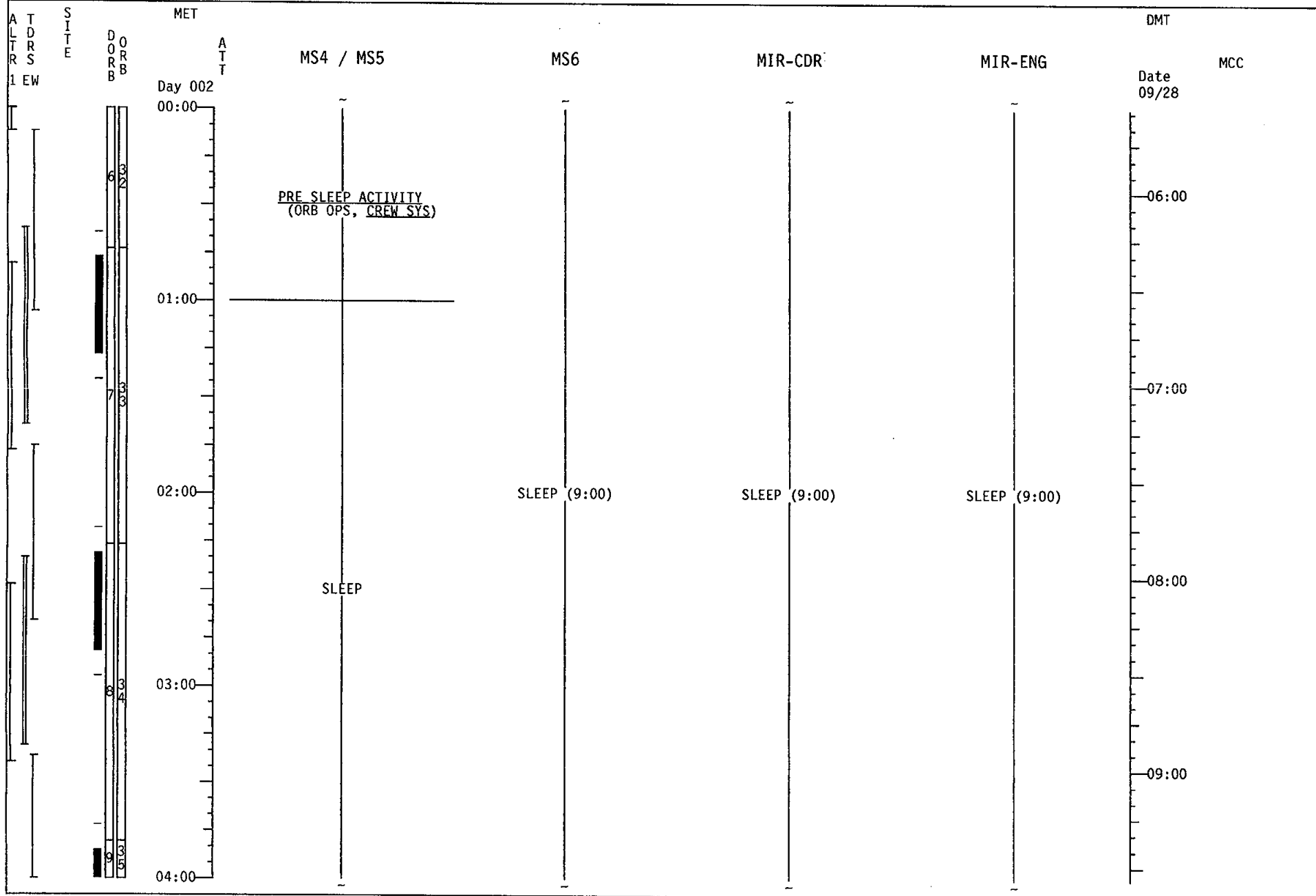
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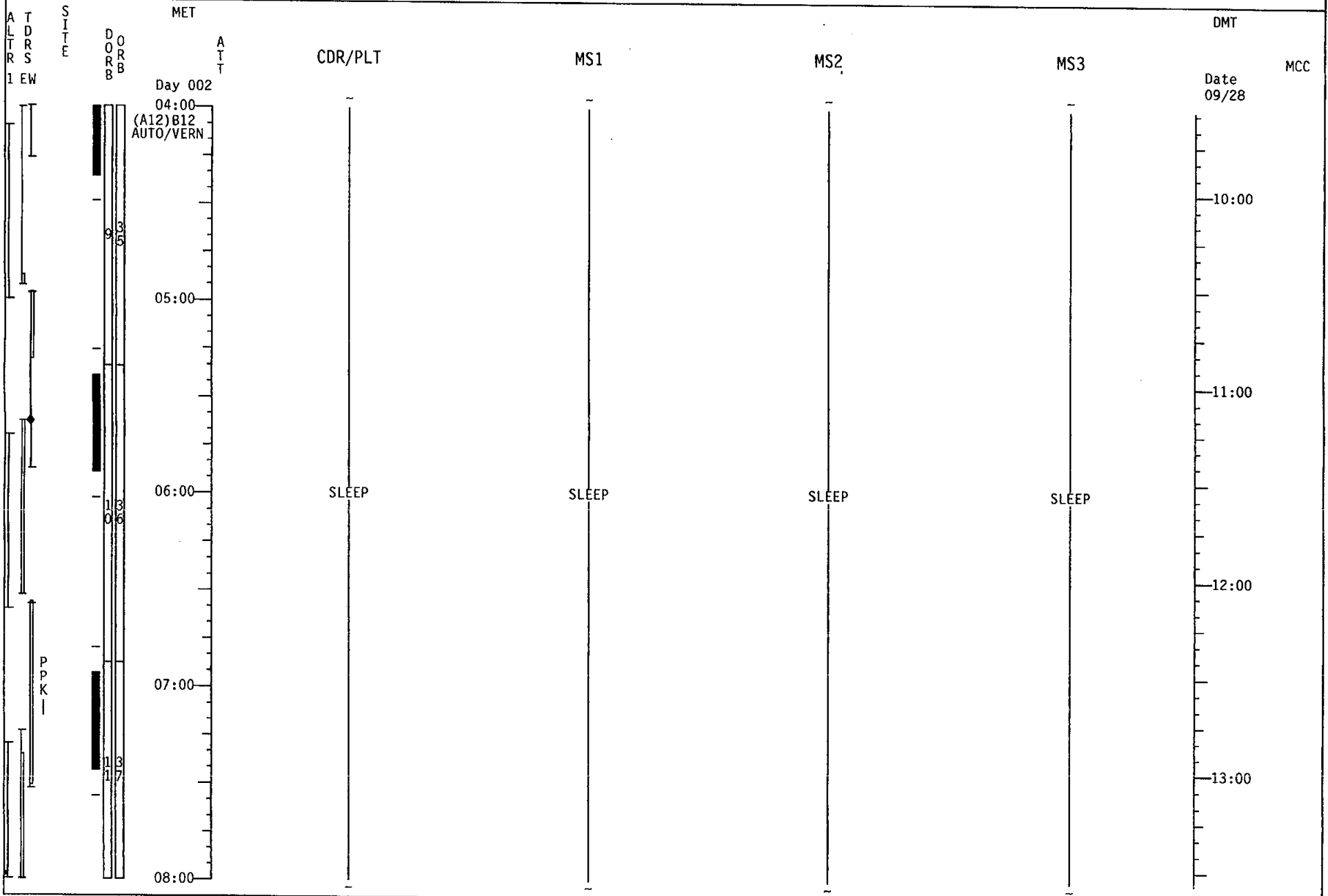
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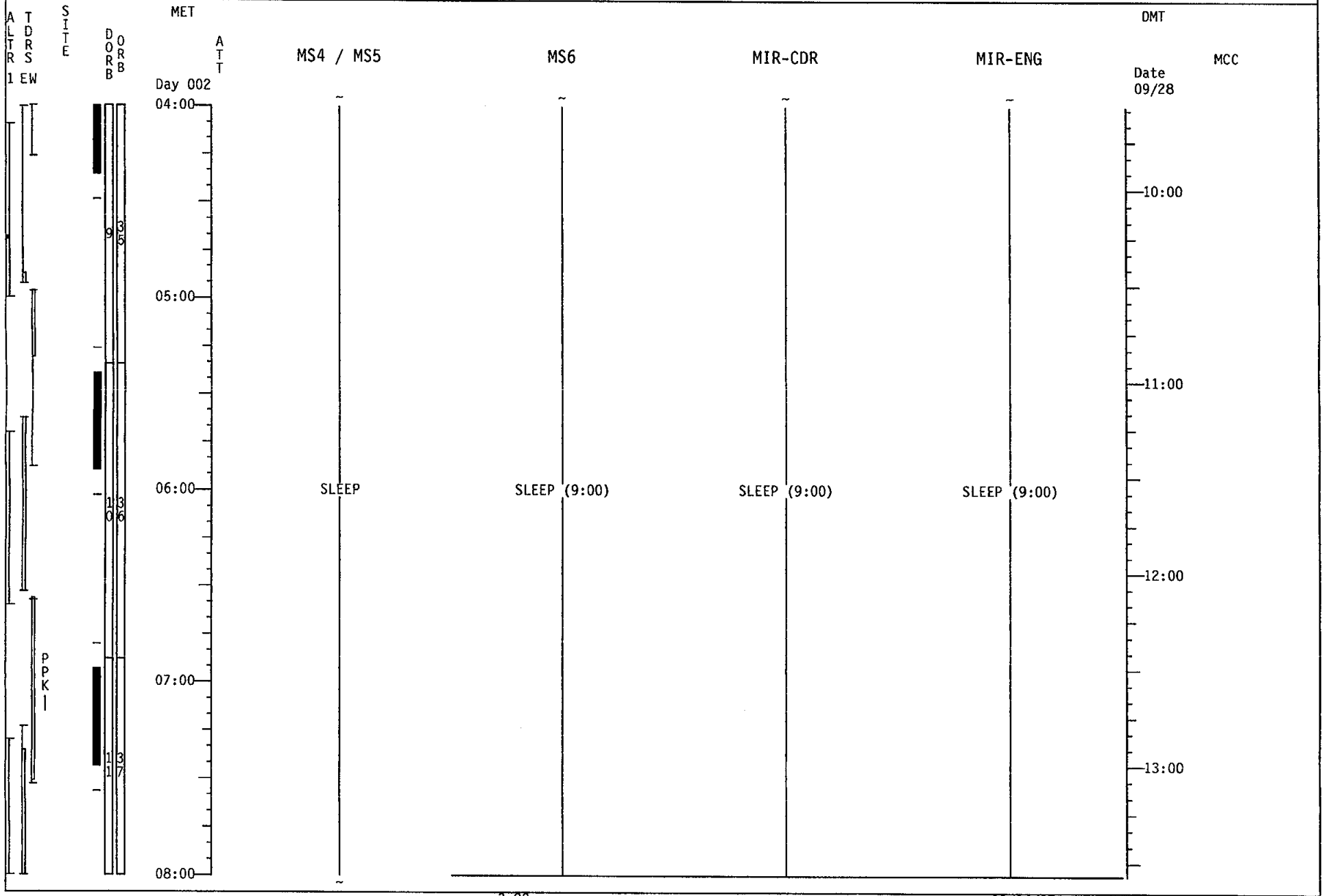
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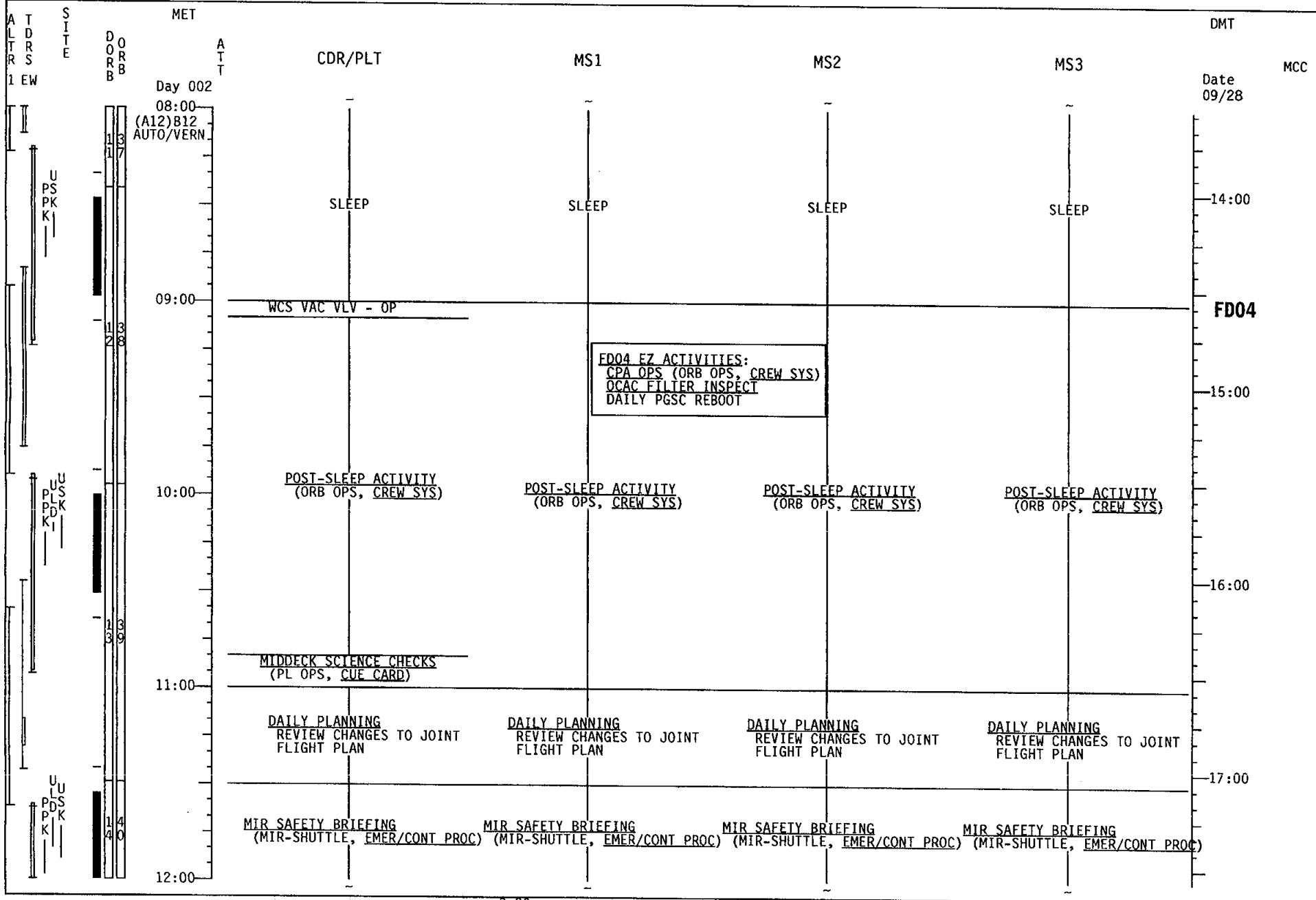
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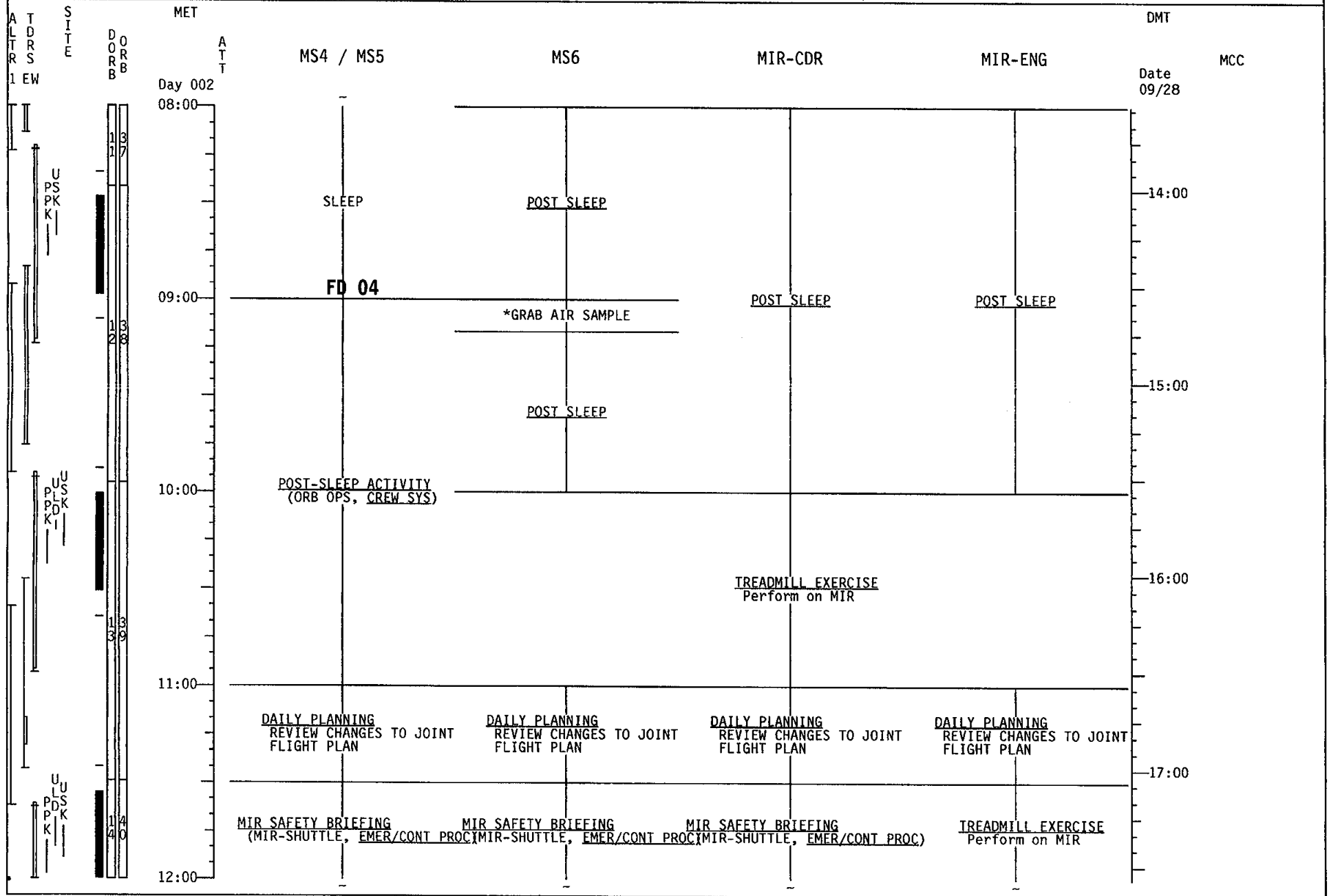
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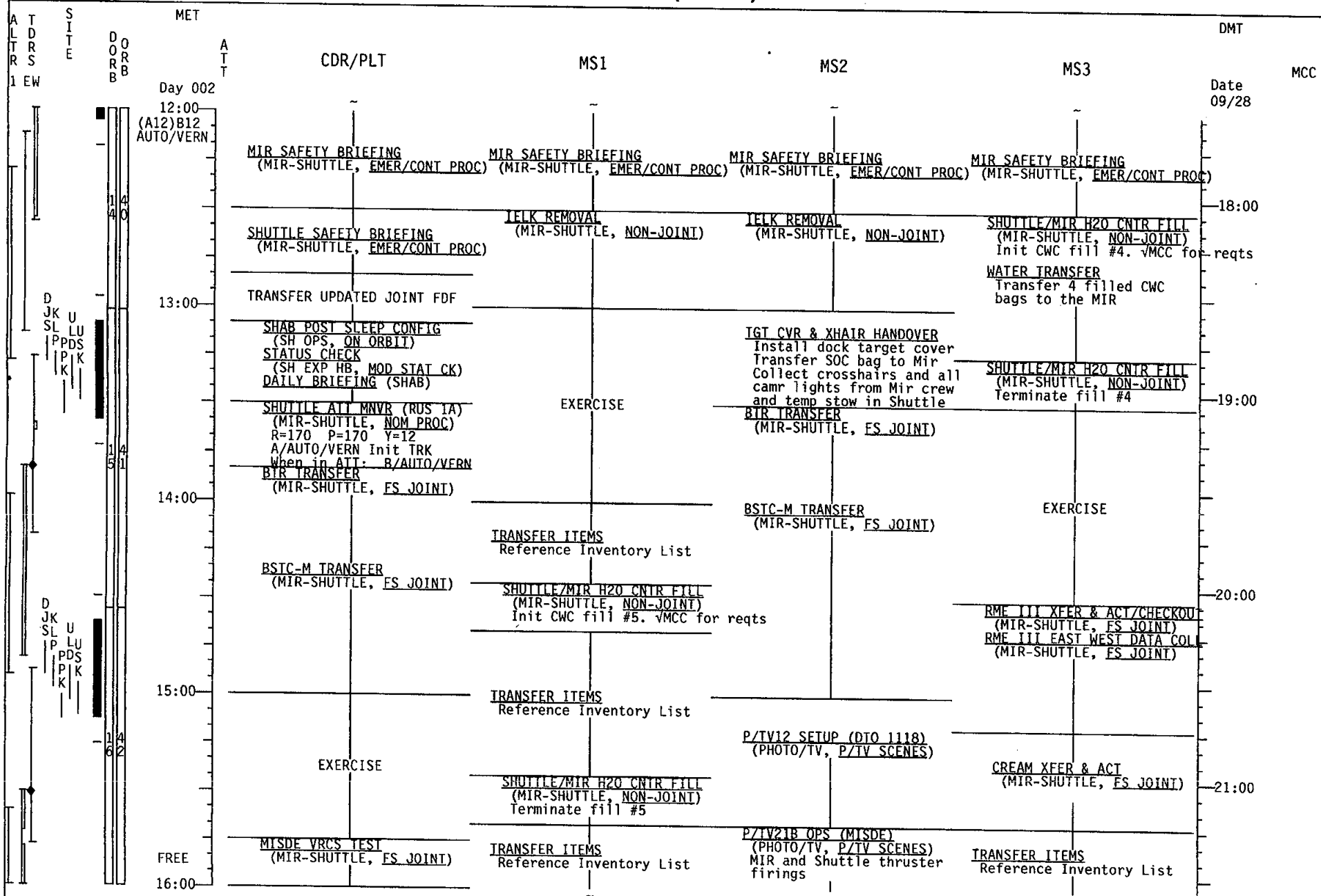
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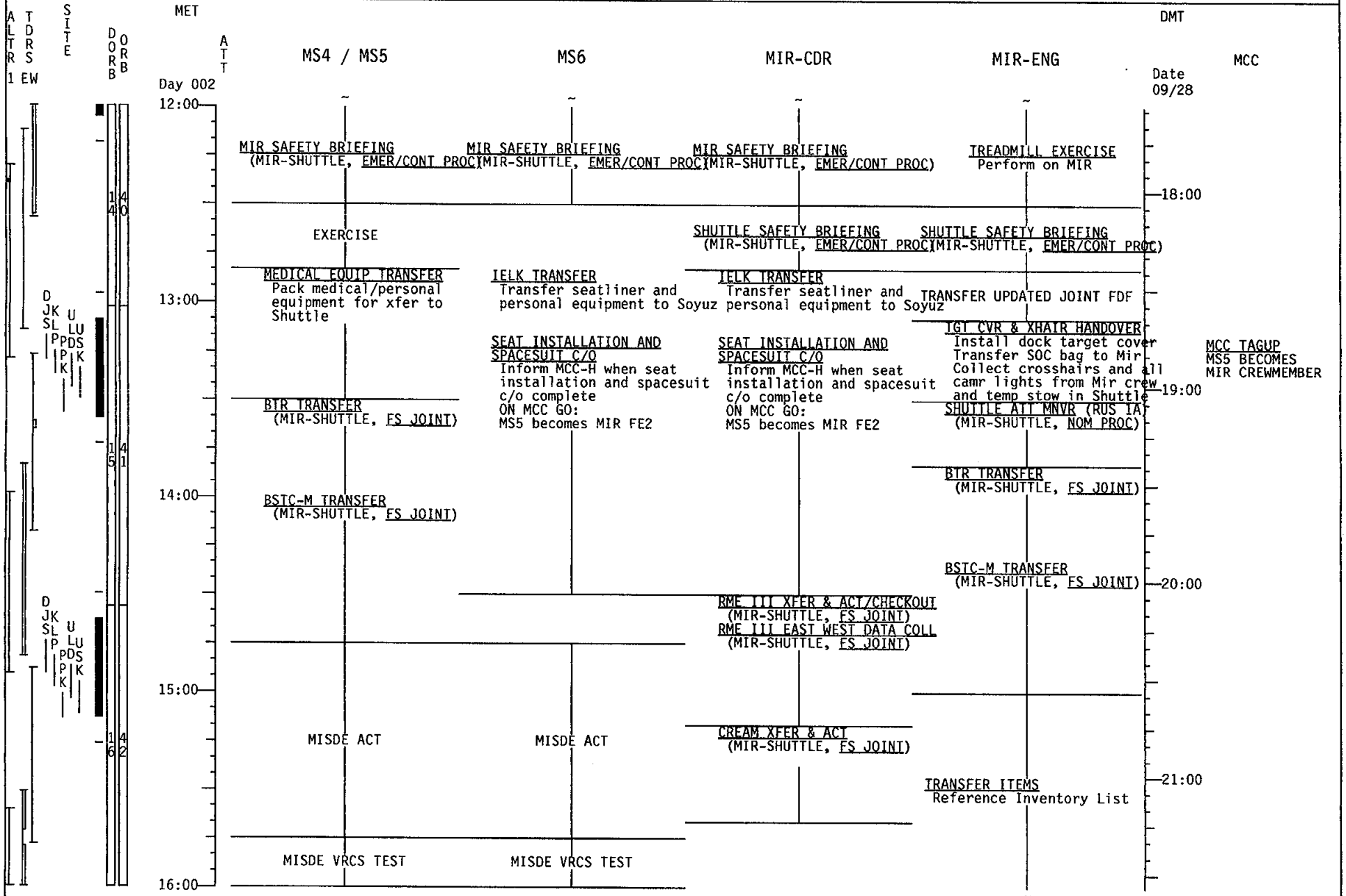
STS-86 (FD 03)



STS-86 (FD 04)



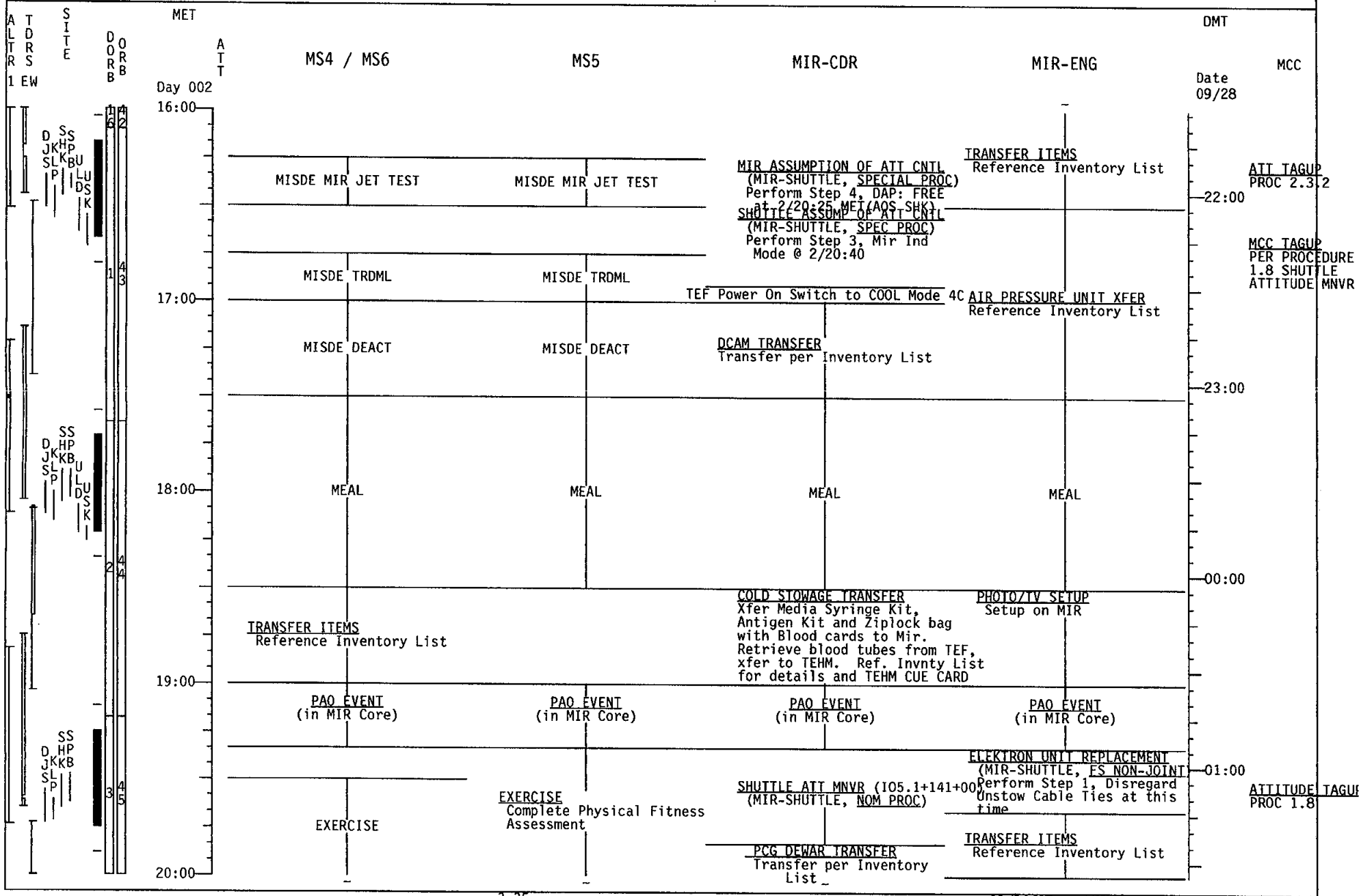
STS-86 (FD 04)



STS-86 (FD 04)

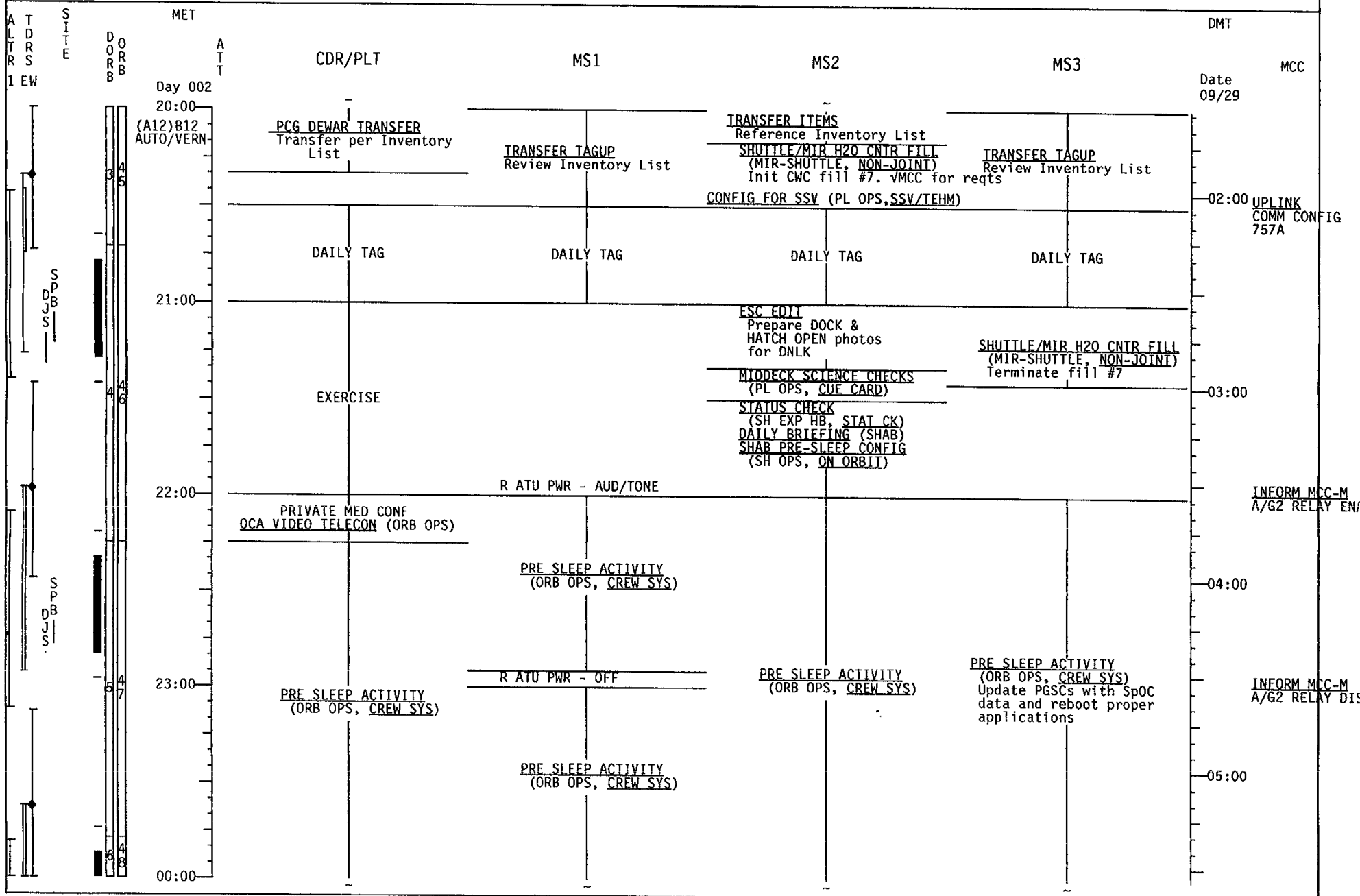
A L T R S I E W	S I T E	D O R B	MET	CDR/PLT	MS1	MS2	MS3	DMT	MCC
			Day 002					Date	
			16:00	<u>BTR & BSTC ESC PHOTO</u> Photos after Mir installation		<u>P/TV21B OPS (MISDE)</u> (PHOTO/TV, P/TV SCENES) MIR and Shuttle thruster firings		09/28	
			FREE	<u>MIR ASSUMPTION OF ATT CNTL</u> (MIR-SHUTTLE, SPECIAL PROC) Step 4, DAP: FREE @ 16:19 MET	<u>TRANSFER ITEMS</u> Reference Inventory List		<u>TRANSFER ITEMS</u> Reference Inventory List		<u>ATT TAGUP</u> PROC 2.3.2
			(A12)B12 AUTO/VERN	<u>SHUTTLE ASSUMPTION OF ATT CNTL</u> (MIR-SHUTTLE, SPECIAL PROC) Step 3, Mir Ind Mode @ 2/16:26				22:00	<u>ATTITUDE TAGUP</u> PROC 2.3.1
			17:00	<u>P/TV22 SETUP (MIR PAO)</u> (PHOTO/TV, P/TV SCENES)	<u>AIR PRESSURE UNIT XFER</u> Reference Inventory List	<u>EXERCISE</u>	<u>AIR PRESSURE UNIT XFER</u> Reference Inventory List		
				<u>DCAM TRANSFER</u> Transfer per Inventory List					
					<u>CONFIG FOR TEHM (PL OPS,SSV/TEHM)</u>			23:00	<u>UPLINK</u> COMM CONFIG 757B
			18:00	MEAL	MEAL	MEAL	MEAL		
				Verify TEF in COOL Mode 4C					
				<u>COLD STOWAGE TRANSFER</u> Xfer Media Syringe Kit, Antigen Kit and Ziplock bag with Blood cards to Mir. Retrieve blood tubes from TEF, xfer to TEHM. Ref. Invnty List for details and TEHM CUE CARD	<u>SHUTTLE/MIR H2O CNTR FILL</u> (MIR-SHUTTLE, NON-JOINT) Init CWC fill #6. VMCC for ref	<u>COLD STOWAGE TRANSFER</u> Xfer Media Syringe Kit, Antigen Kit and Ziplock bag with Blood cards to Mir. Retrieve blood tubes from TEF, xfer to TEHM. Ref. Invnty List for details and TEHM CUE CARD	<u>TRANSFER ITEMS</u> Reference Inventory List	00:00	
			19:00	<u>PAO EVENT</u> (in MIR Core)	<u>PAO EVENT</u> (in MIR Core)	<u>PAO EVENT</u> (in MIR Core)	<u>PAO EVENT</u> (in MIR Core)		
					<u>ELEKTRON UNIT REPLACEMENT</u> (MIR-SHUTTLE, FS NON-JOINT) Perform Step 1, Disregard Unstow Cable Ties at this time				
				<u>SHUTTLE ATT MNVR (I05.1+141+00)</u> (MIR-SHUTTLE, NOM PROC) R=38 P=0 Y=344 A/AUTO/VERN Init MNVR when in ATT: B/AUTO/VERN	<u>SHUTTLE/MIR H2O CNTR FILL</u> (MIR-SHUTTLE, NON-JOINT) Terminate fill #6	<u>TRANSFER ITEMS</u> Reference Inventory List	<u>TRANSFER ITEMS</u> Reference Inventory List	01:00	<u>ATTITUDE TAGUP</u> PROC 1.8
			20:00	<u>PCG DEWAR TRANSFER</u> Transfer per Inventory List					

STS-86 (FD 04)

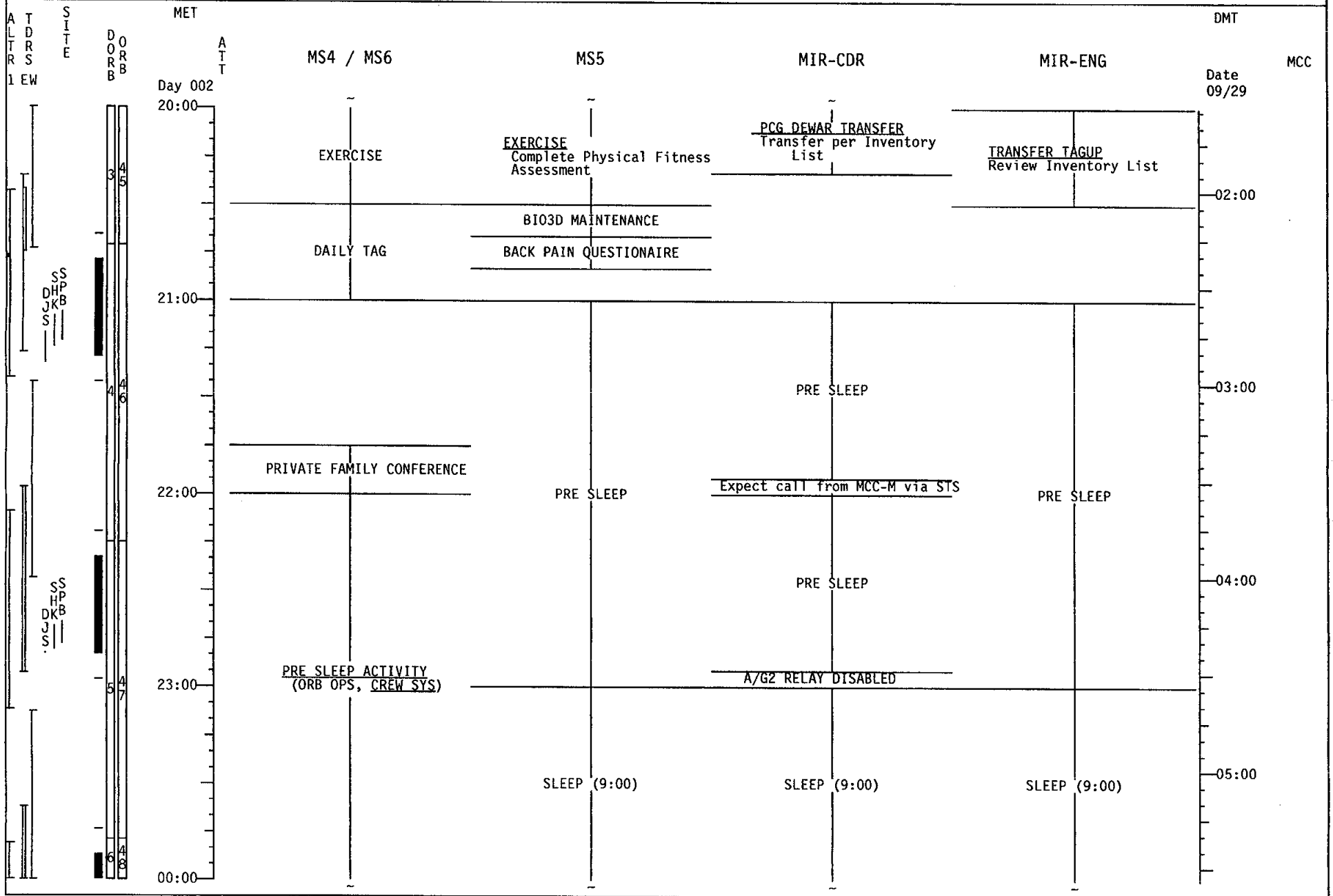


ALT TRS 1 EW
 SITE
 DORRB
 D J K H P S S
 S L K B U
 L U D S K
 D J K H P S S
 S L K B U
 L U D S K
 D J K H P S S
 S L K B U
 L U D S K

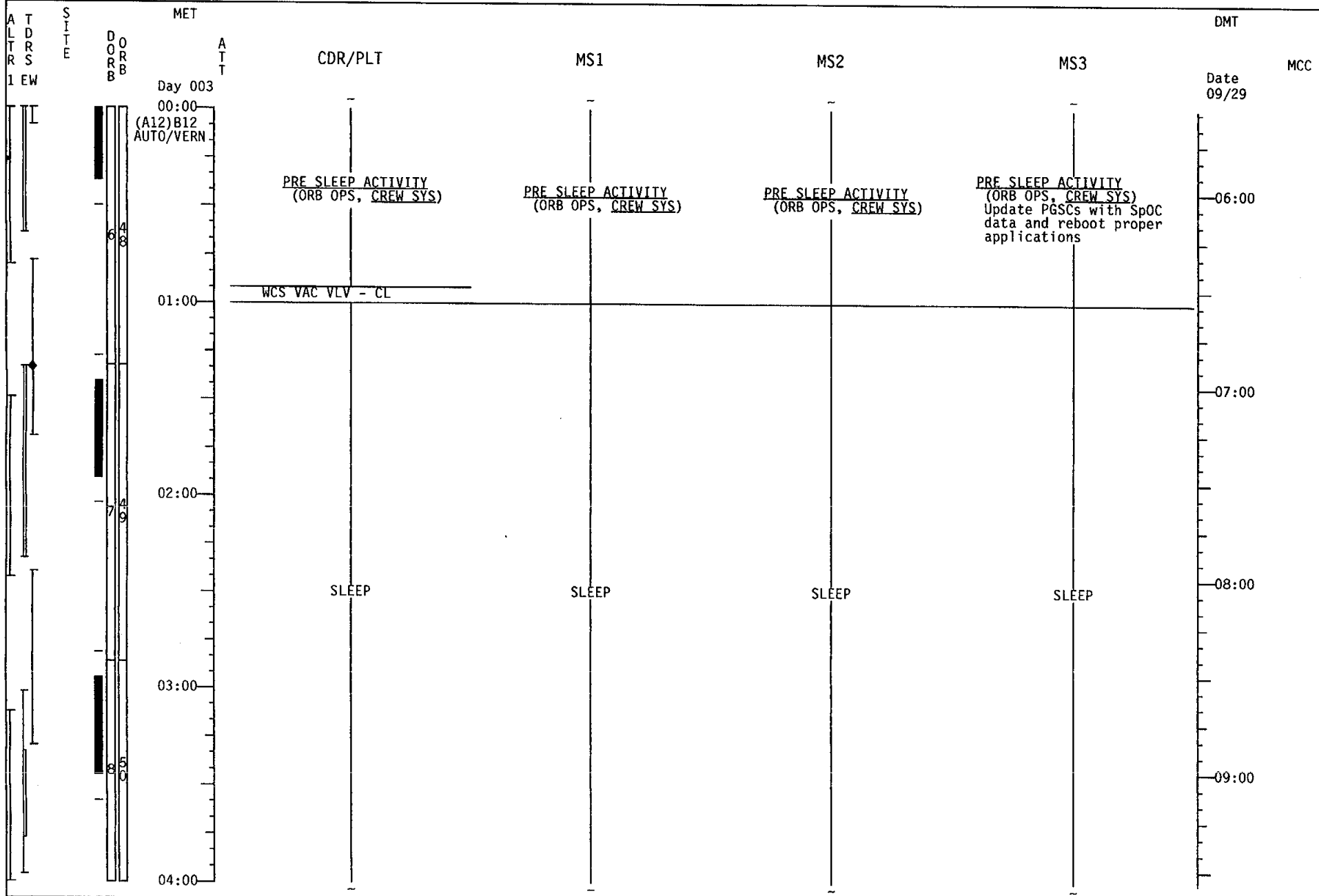
STS-86 (FD 04)



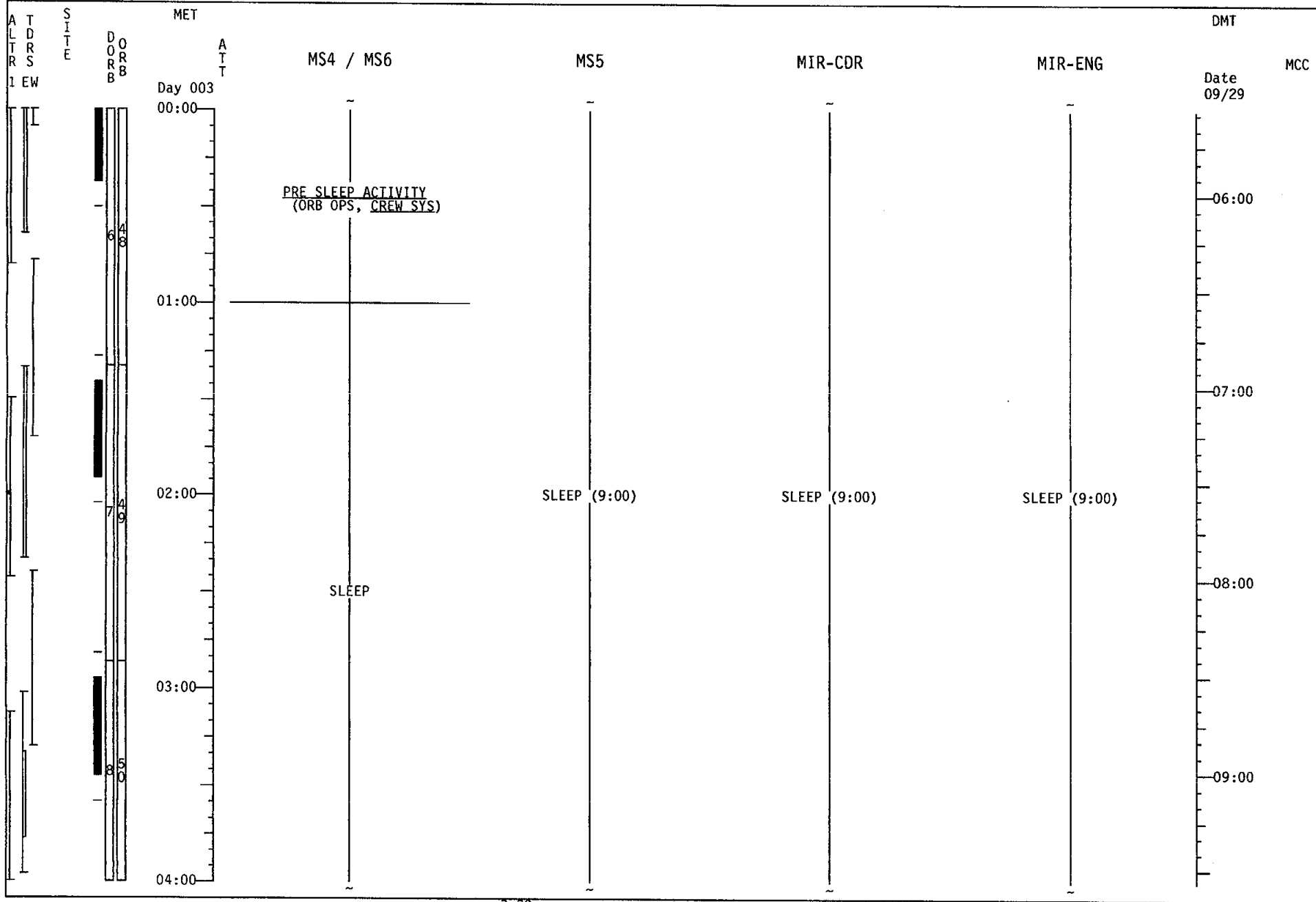
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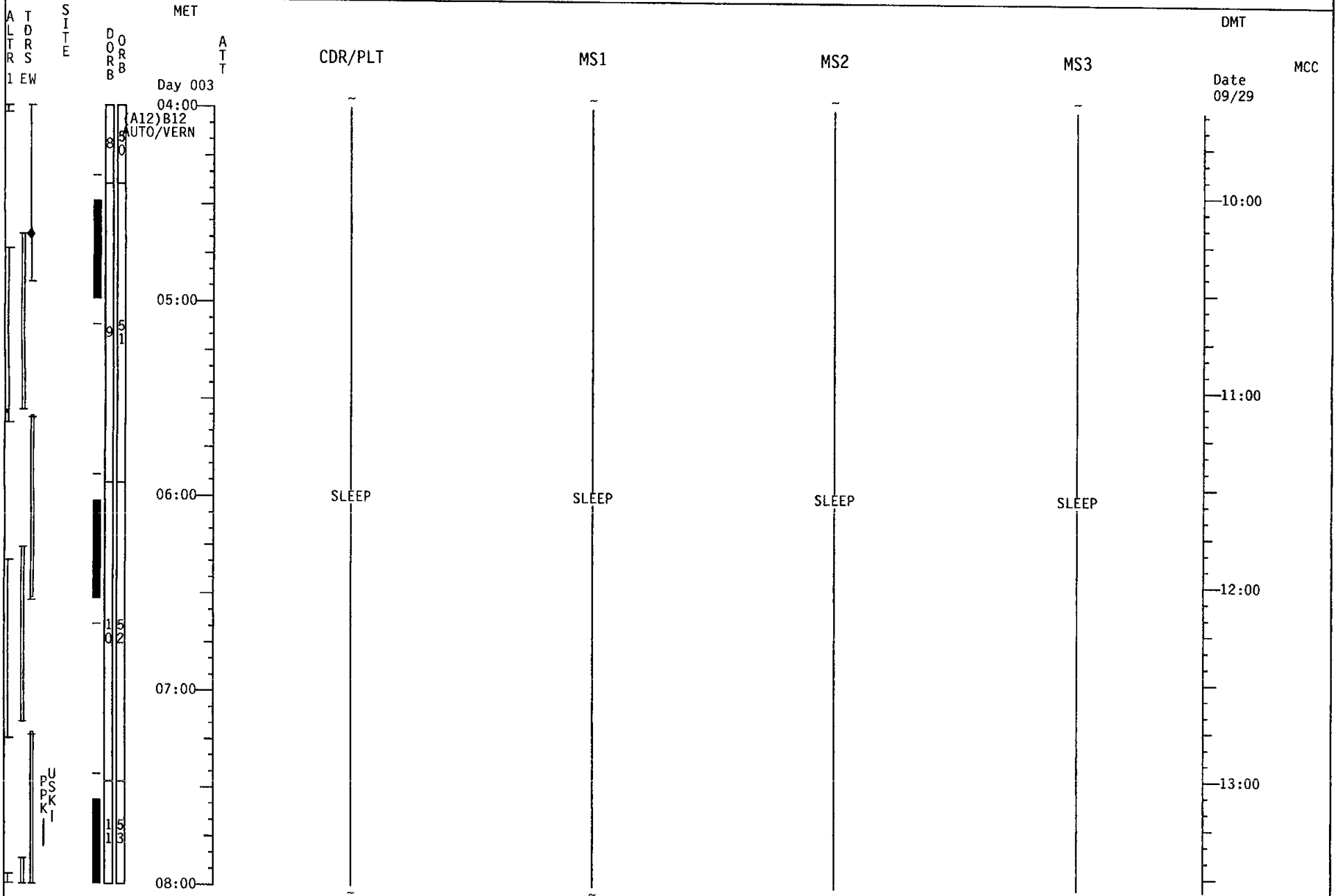
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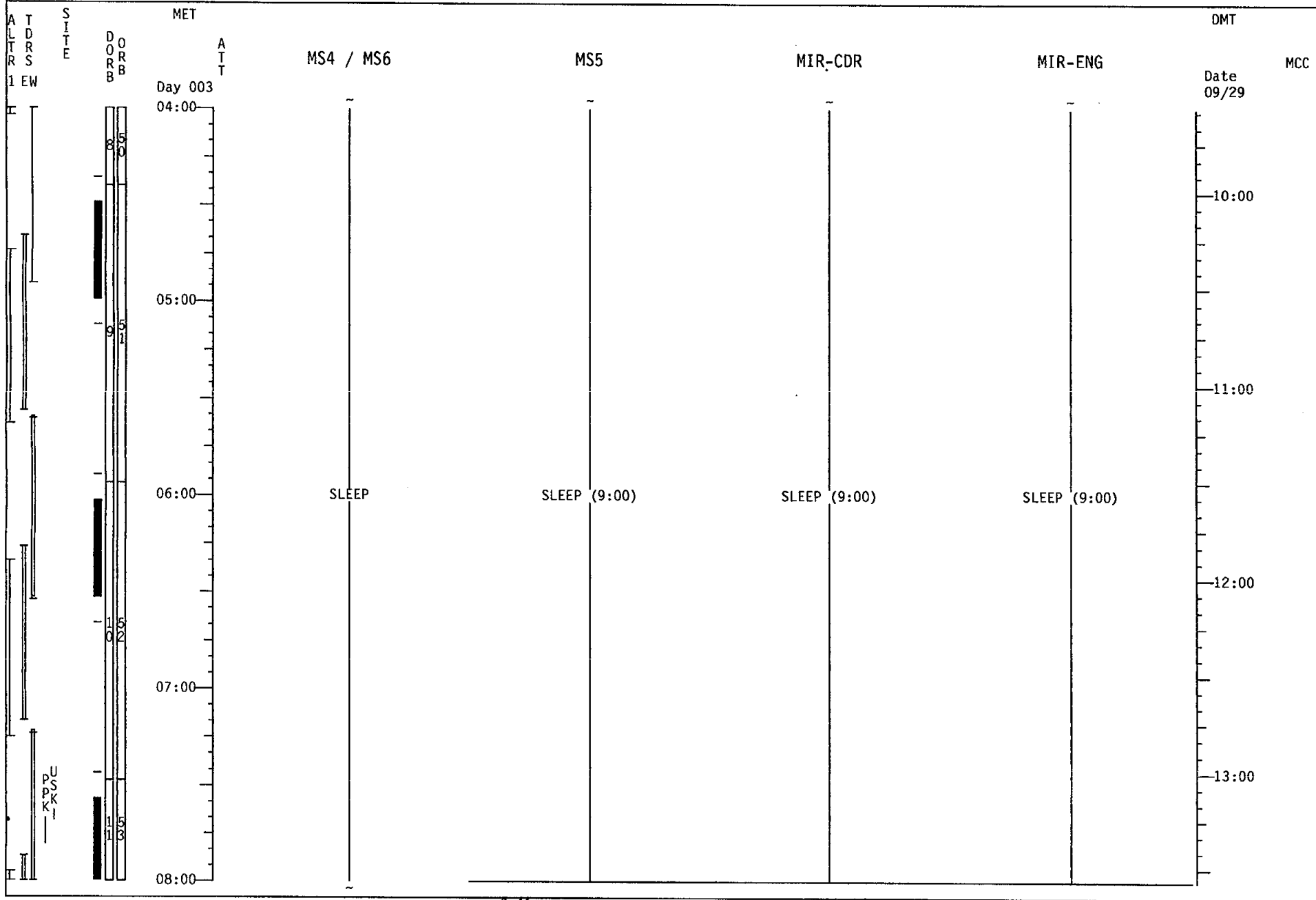
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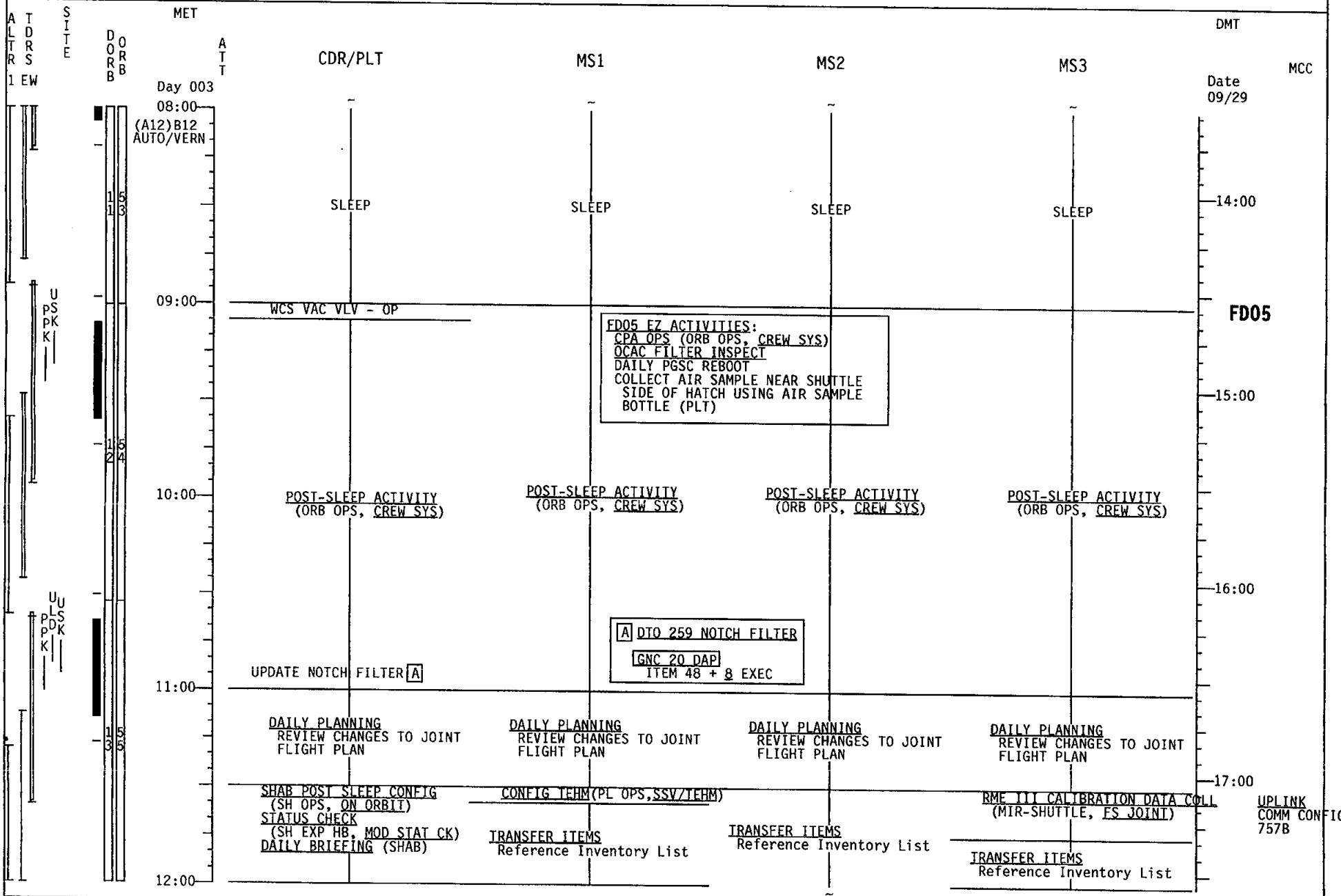
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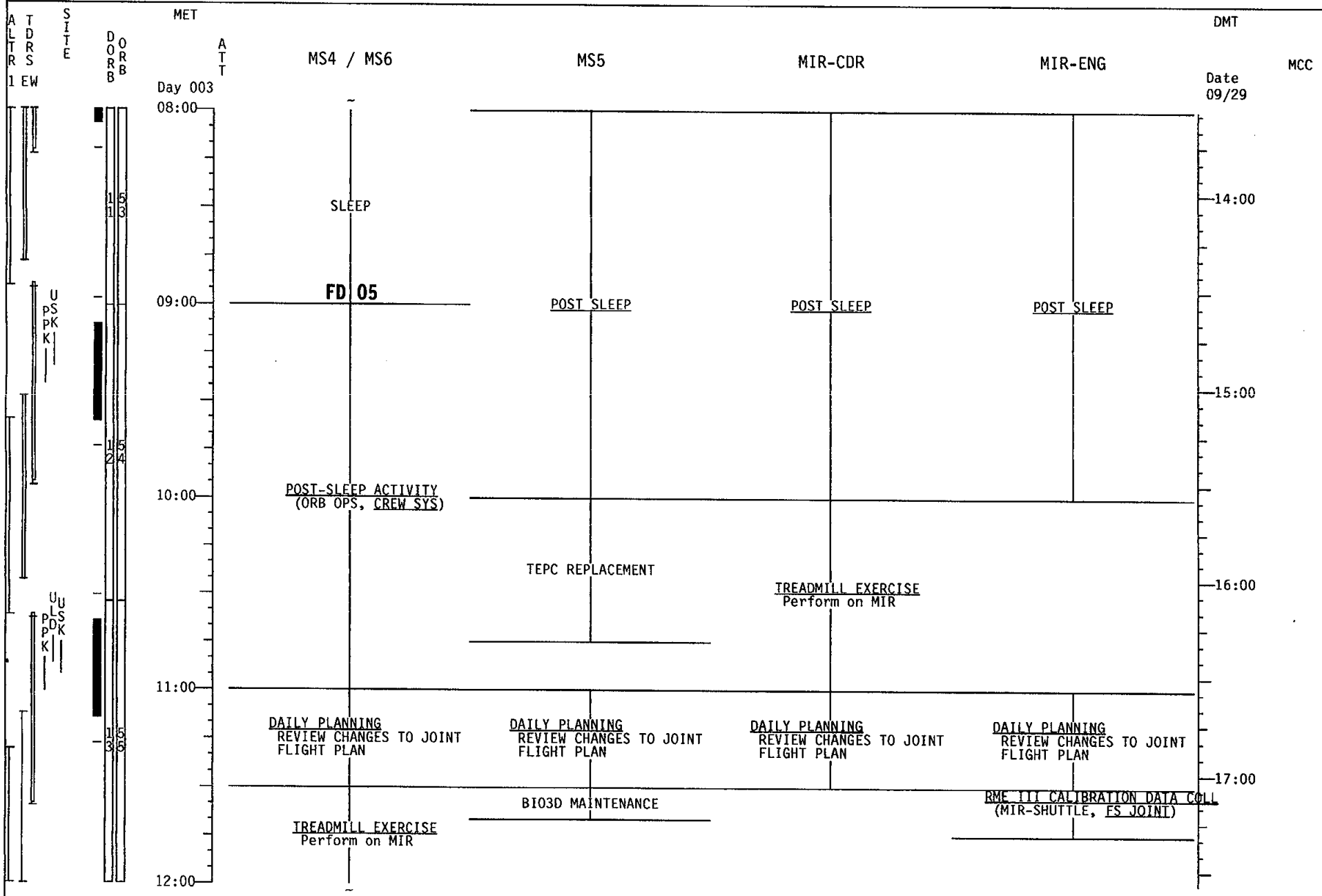
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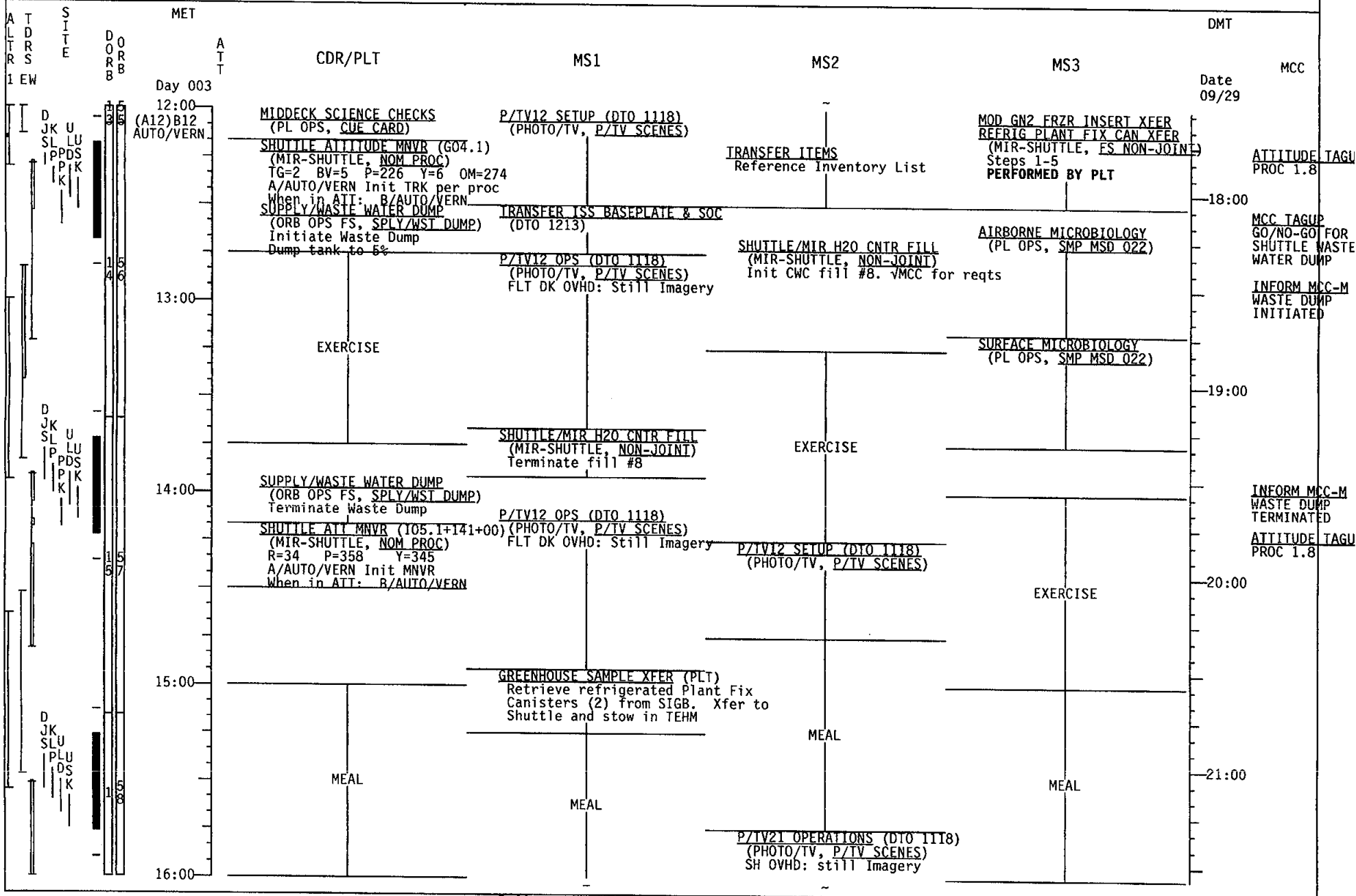
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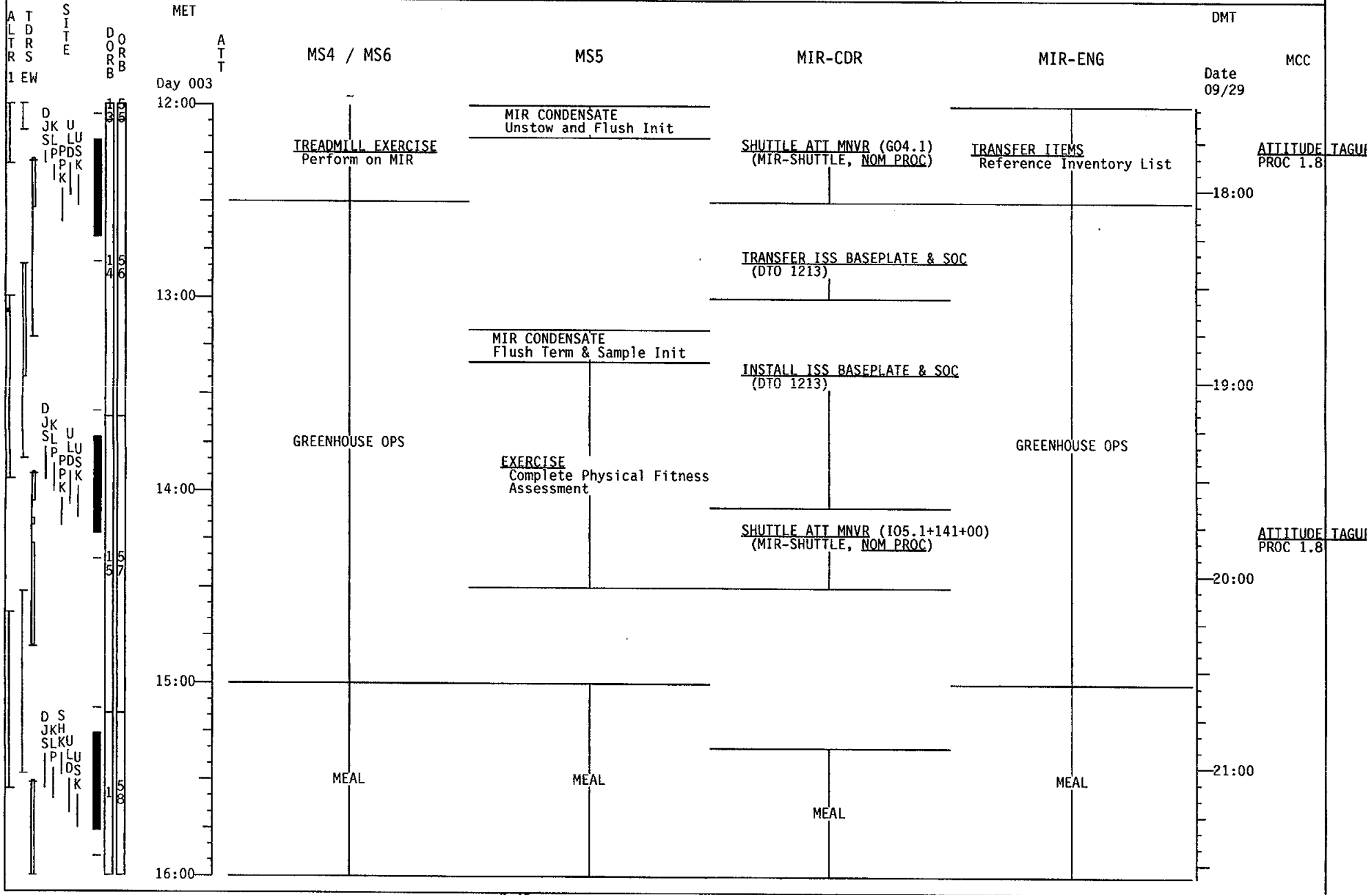
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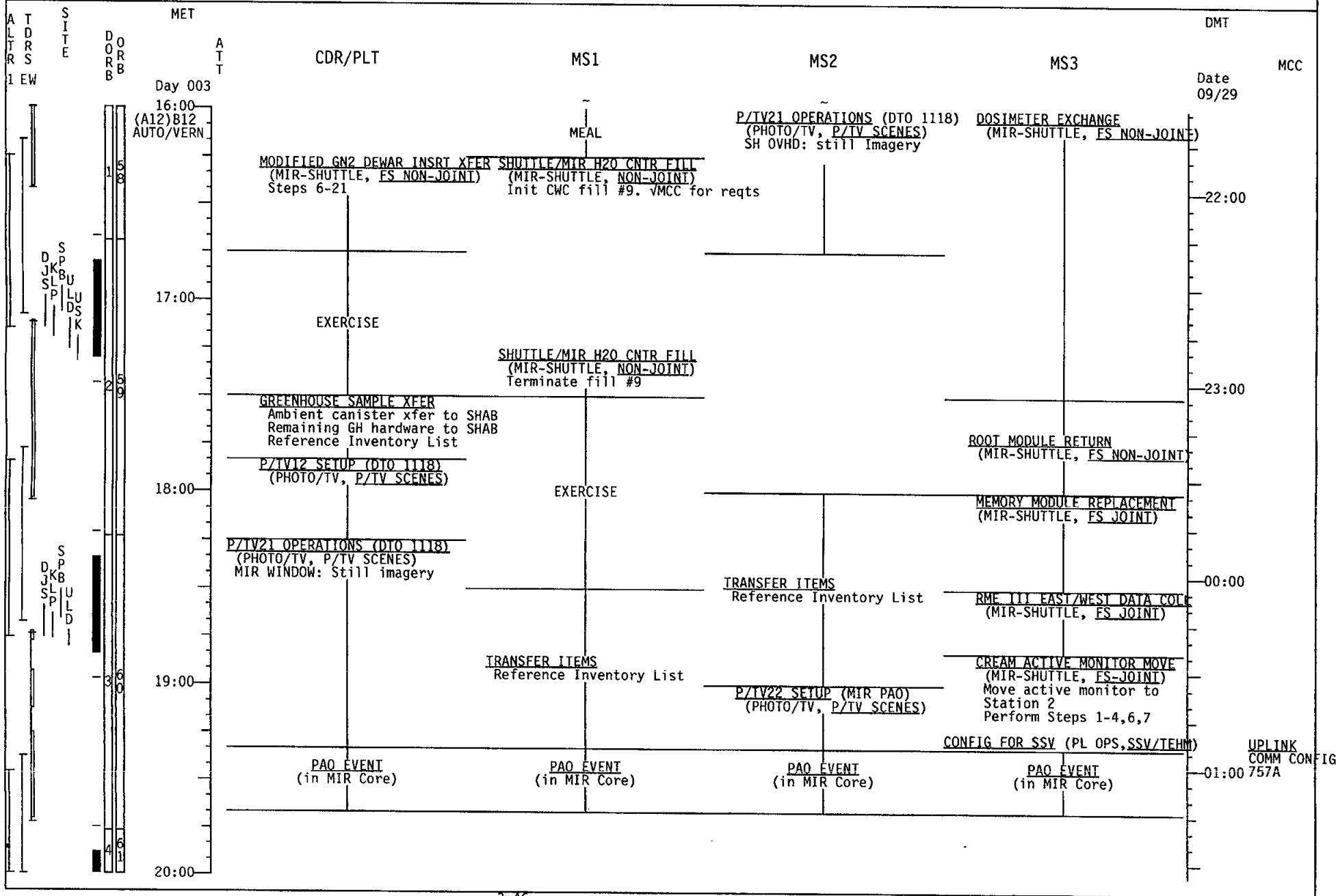
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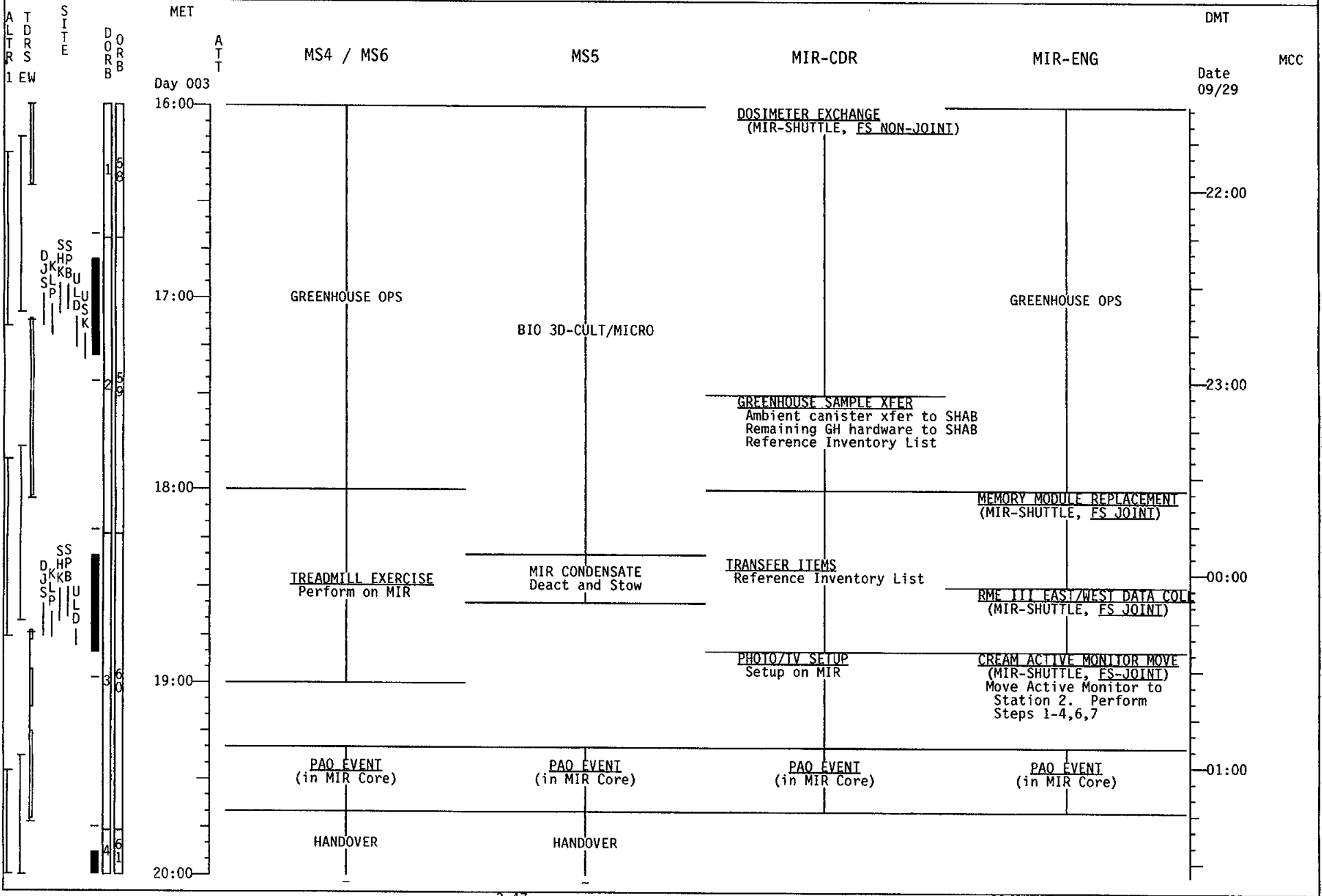
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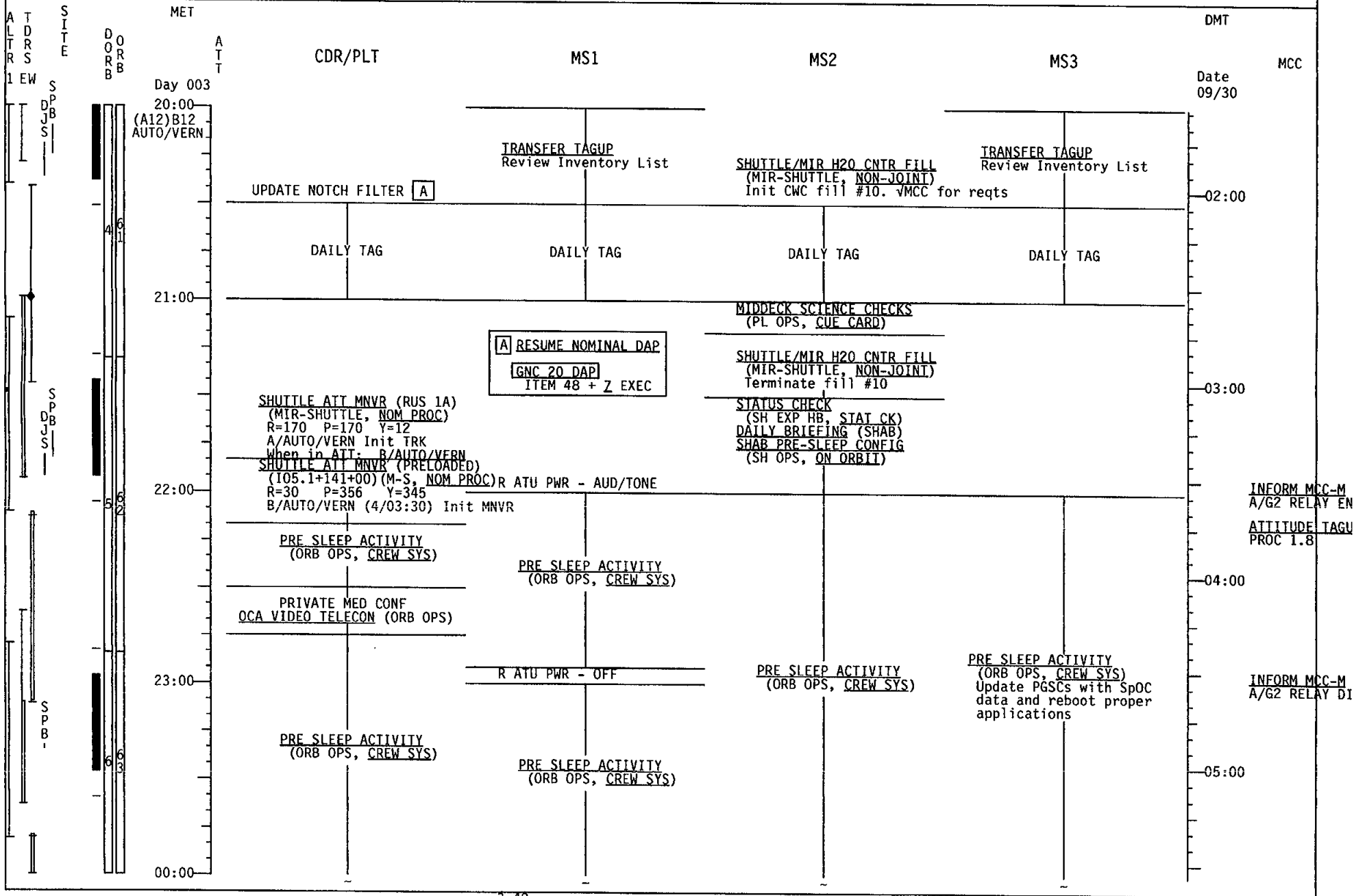
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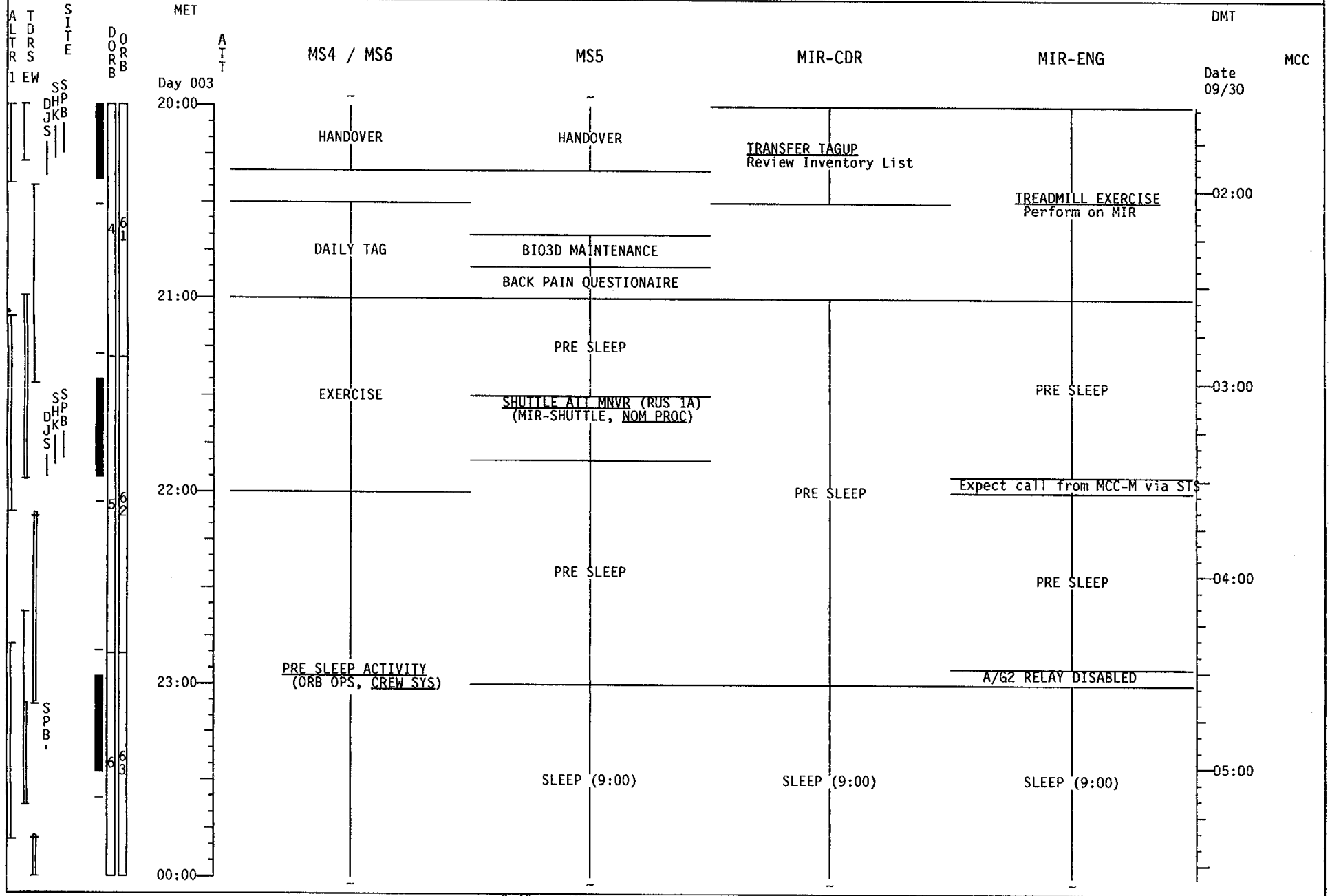
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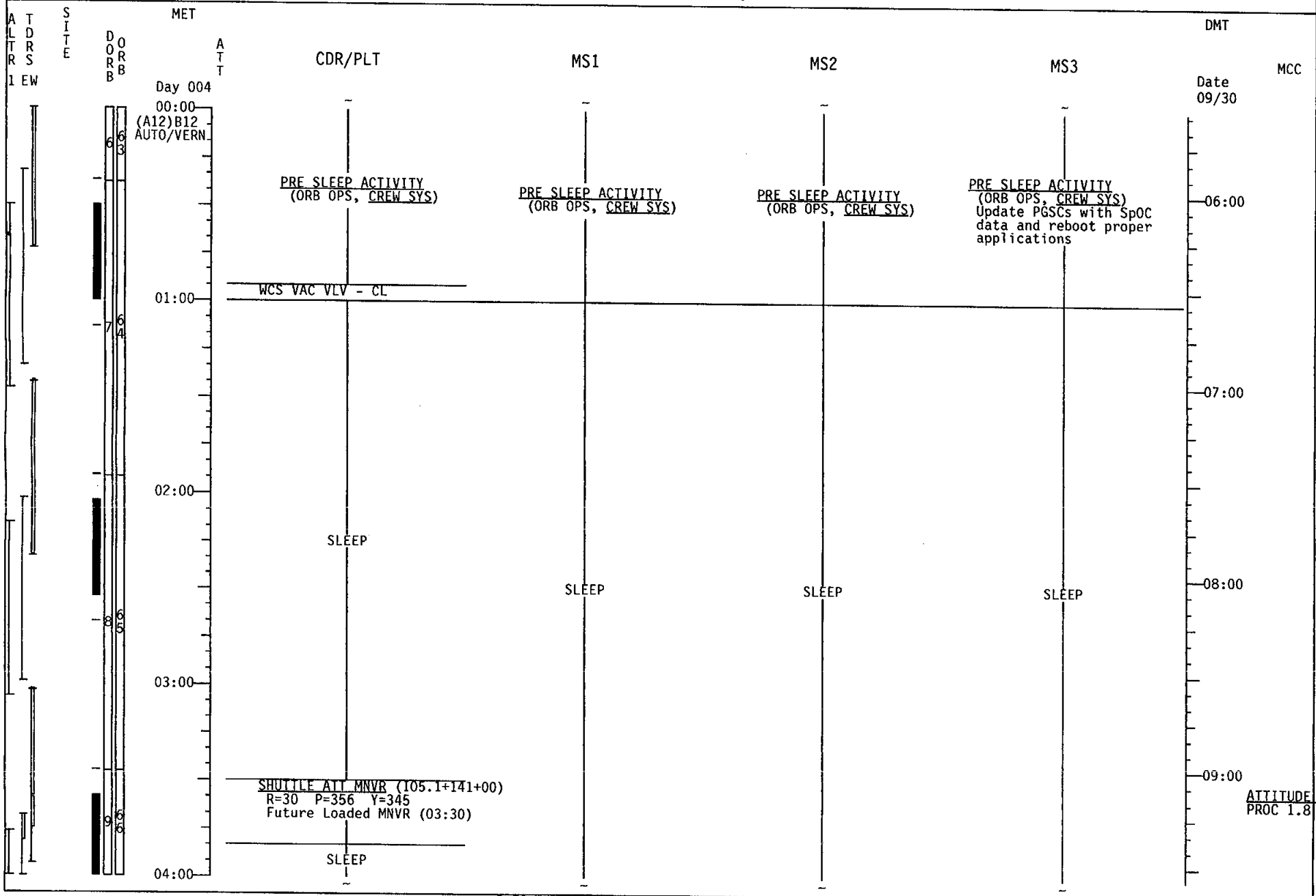
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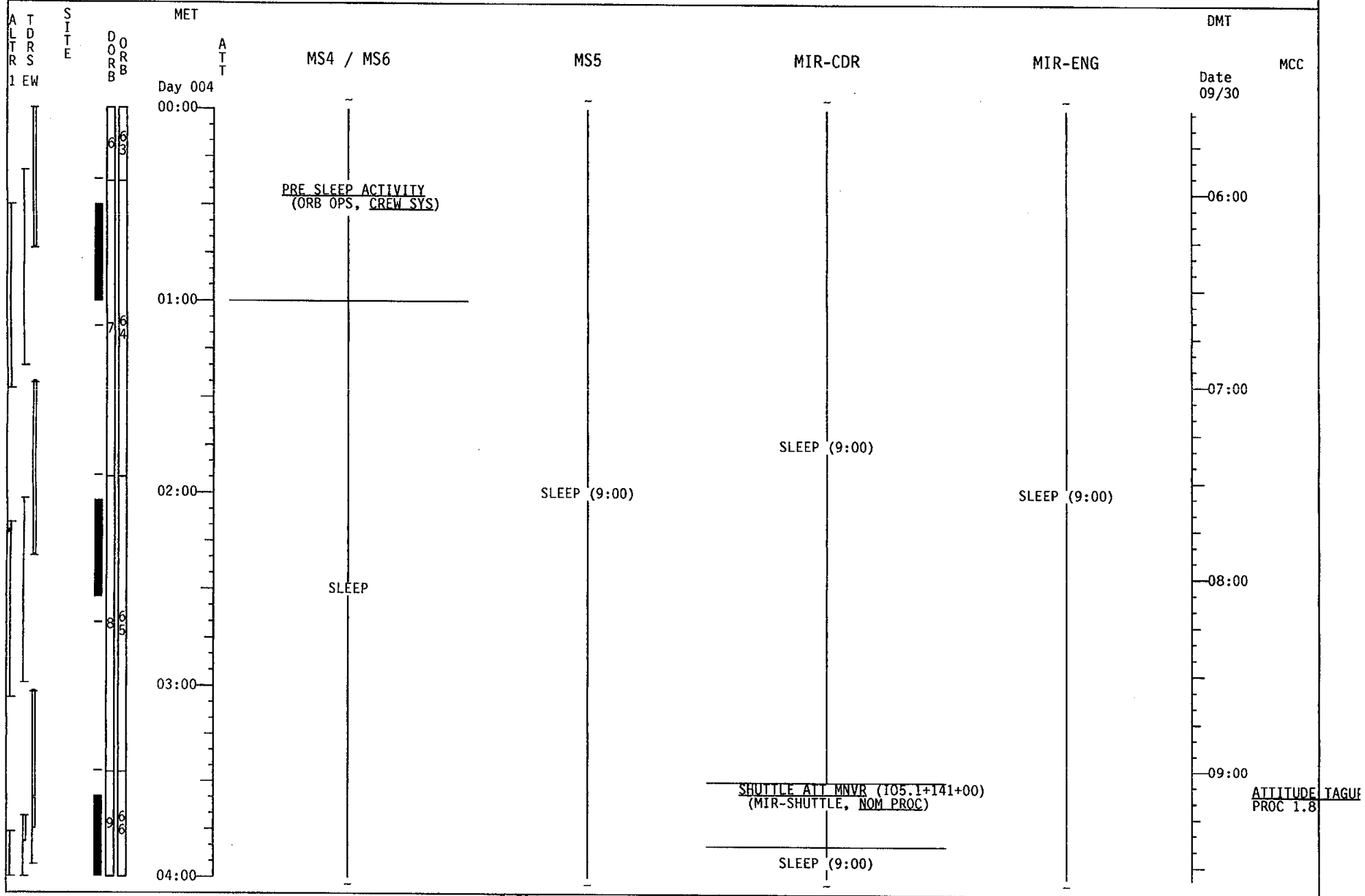
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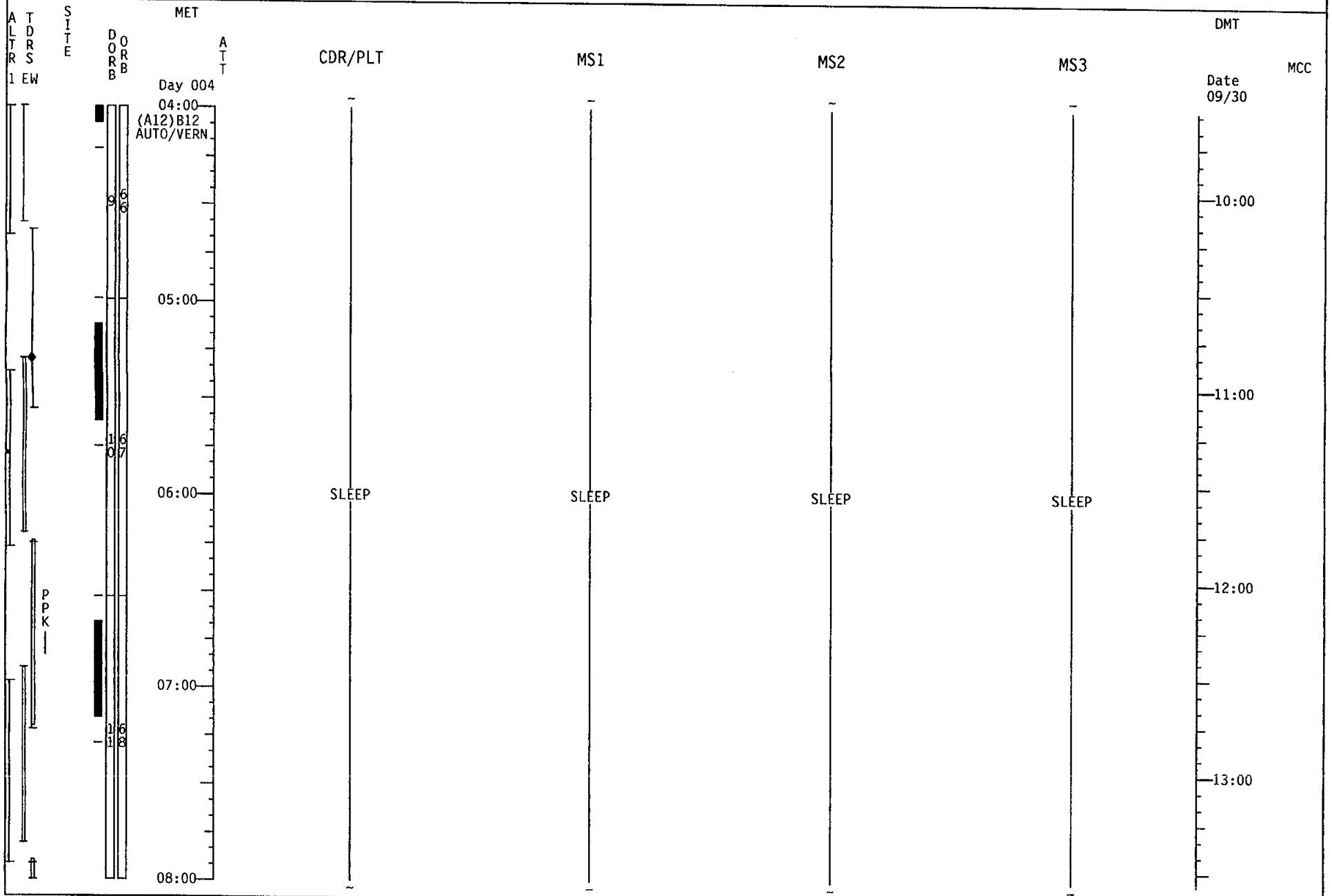
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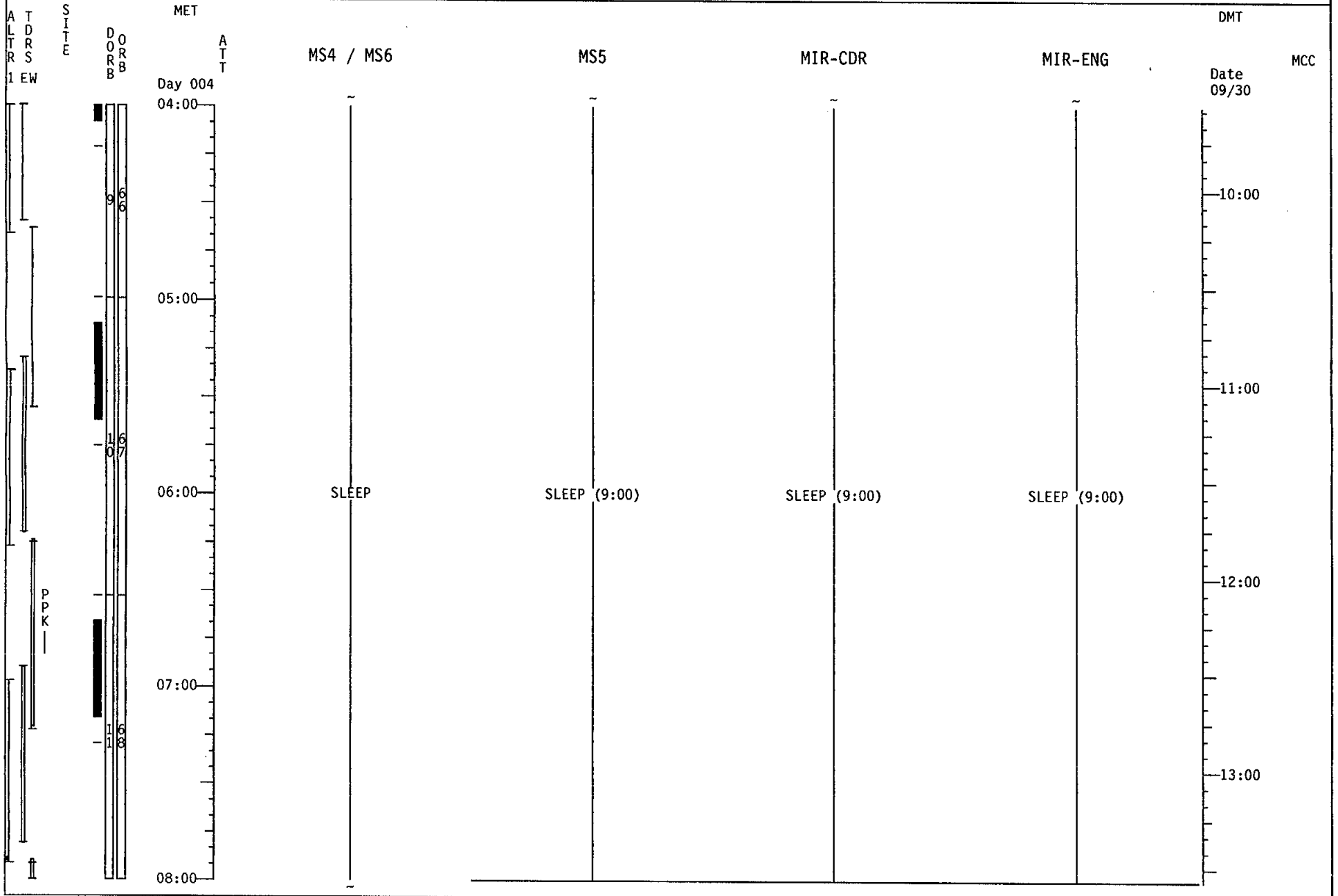
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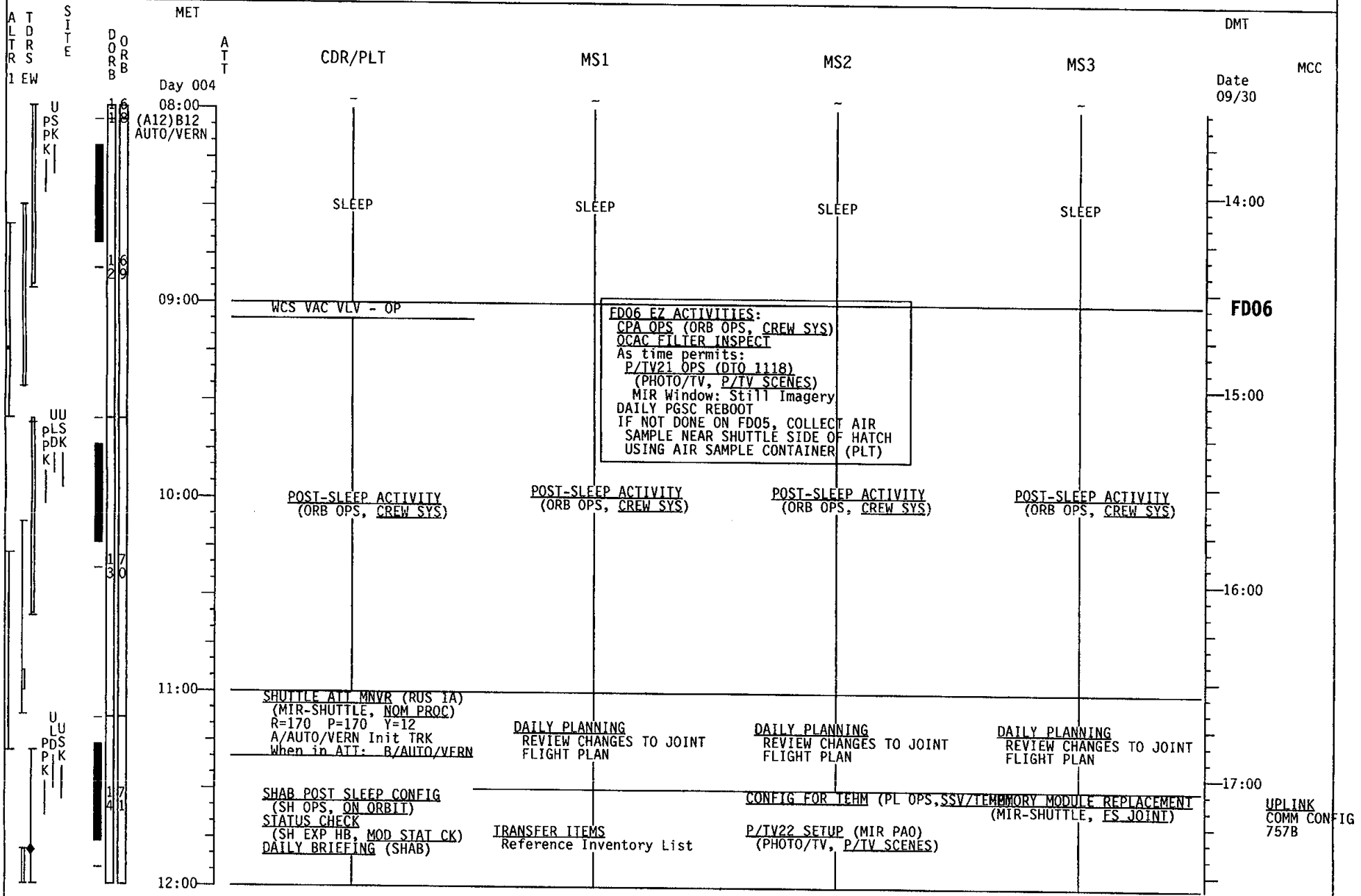
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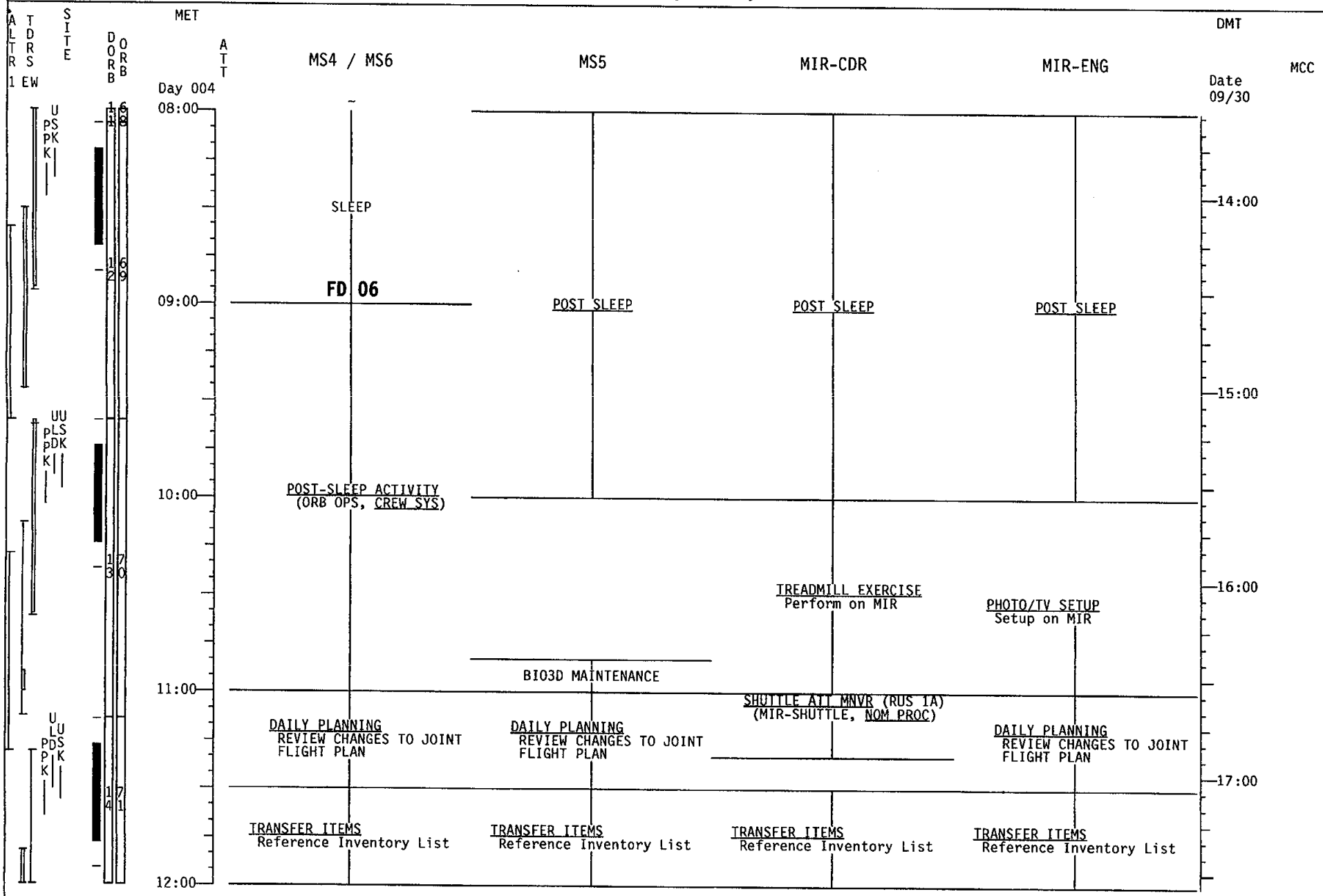
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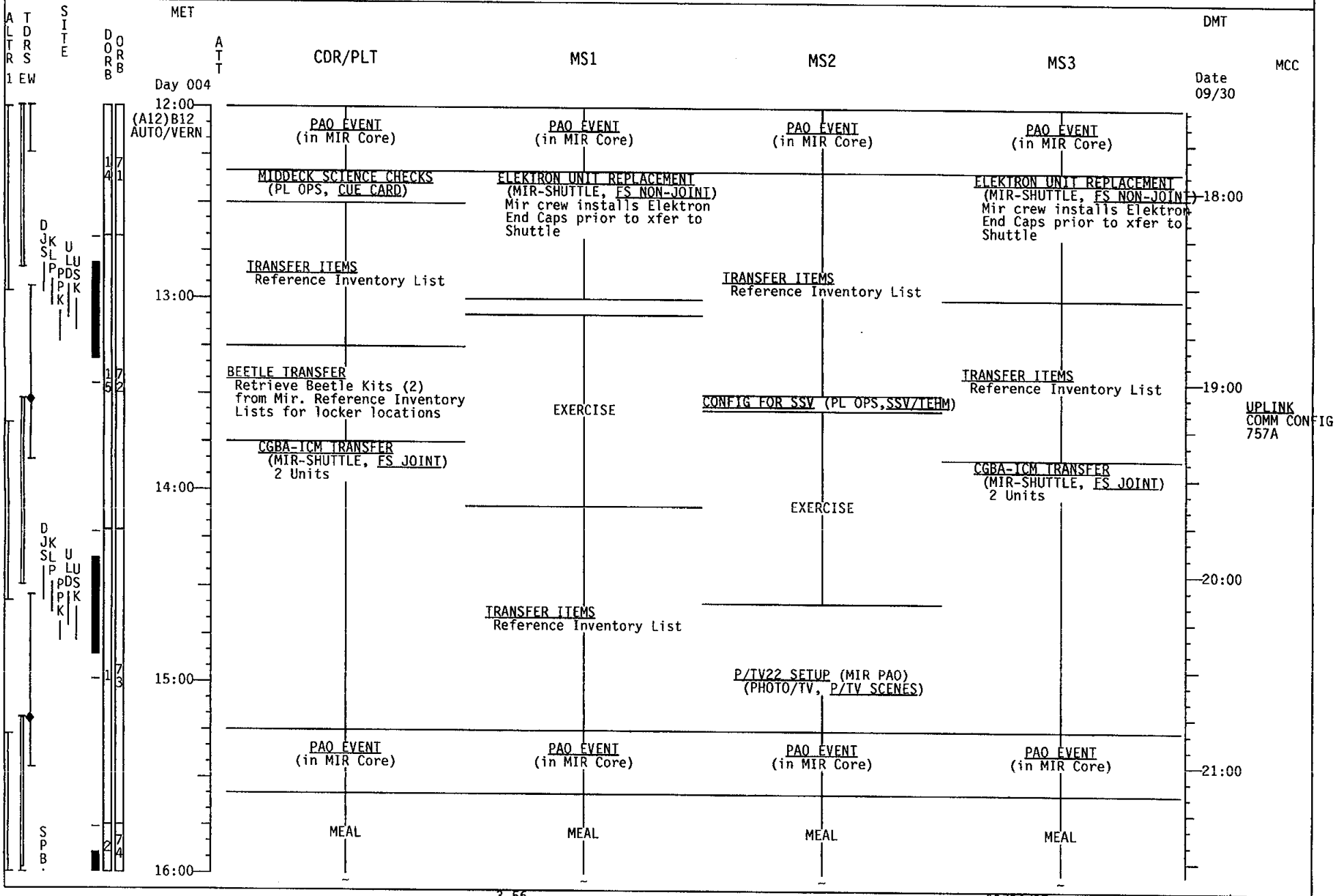
STS-86 (FD 05)



STS-86 (FD 05)

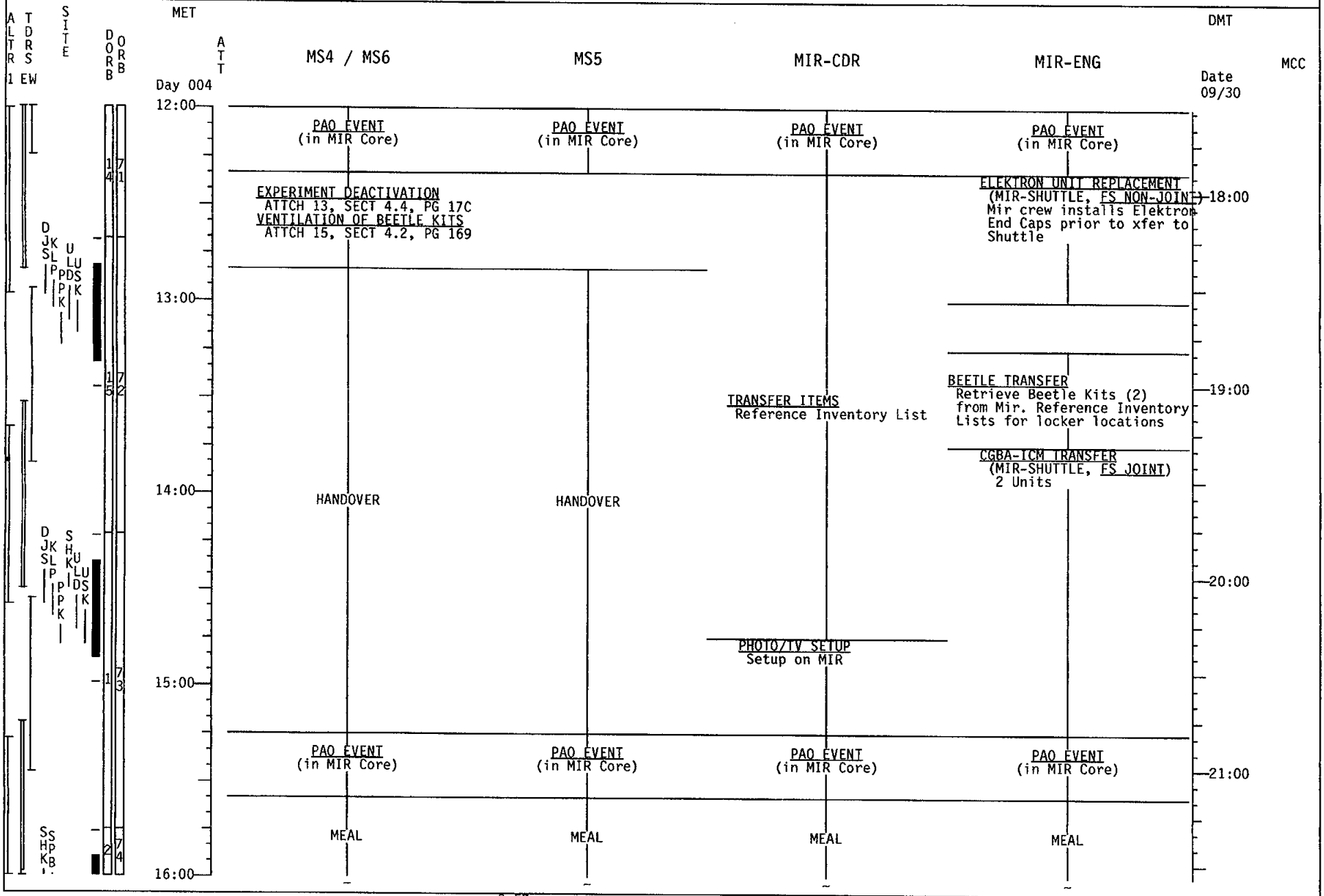


STS-86 (FD 06)

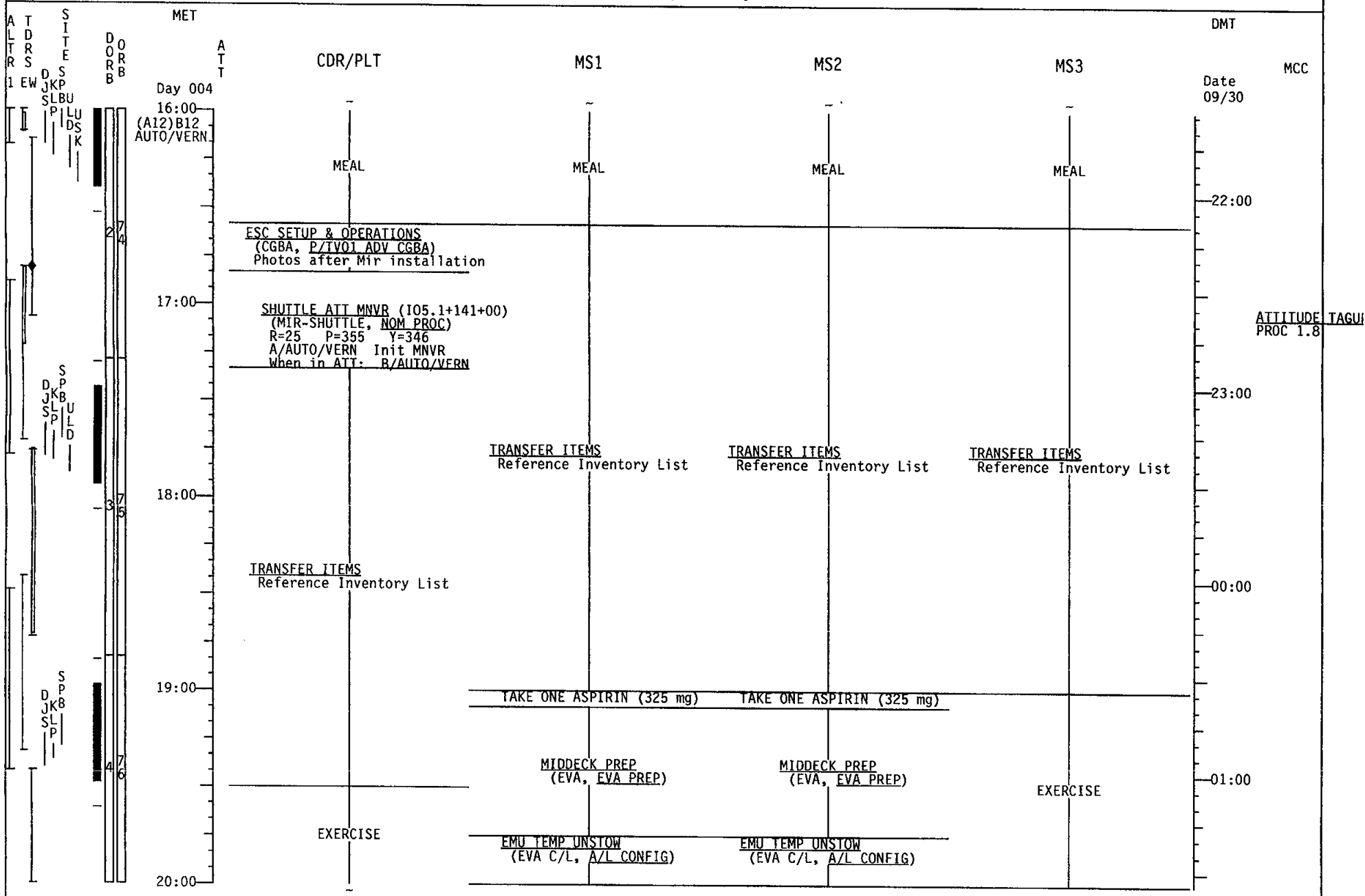


UPLINK
COMM CONFIG
757A

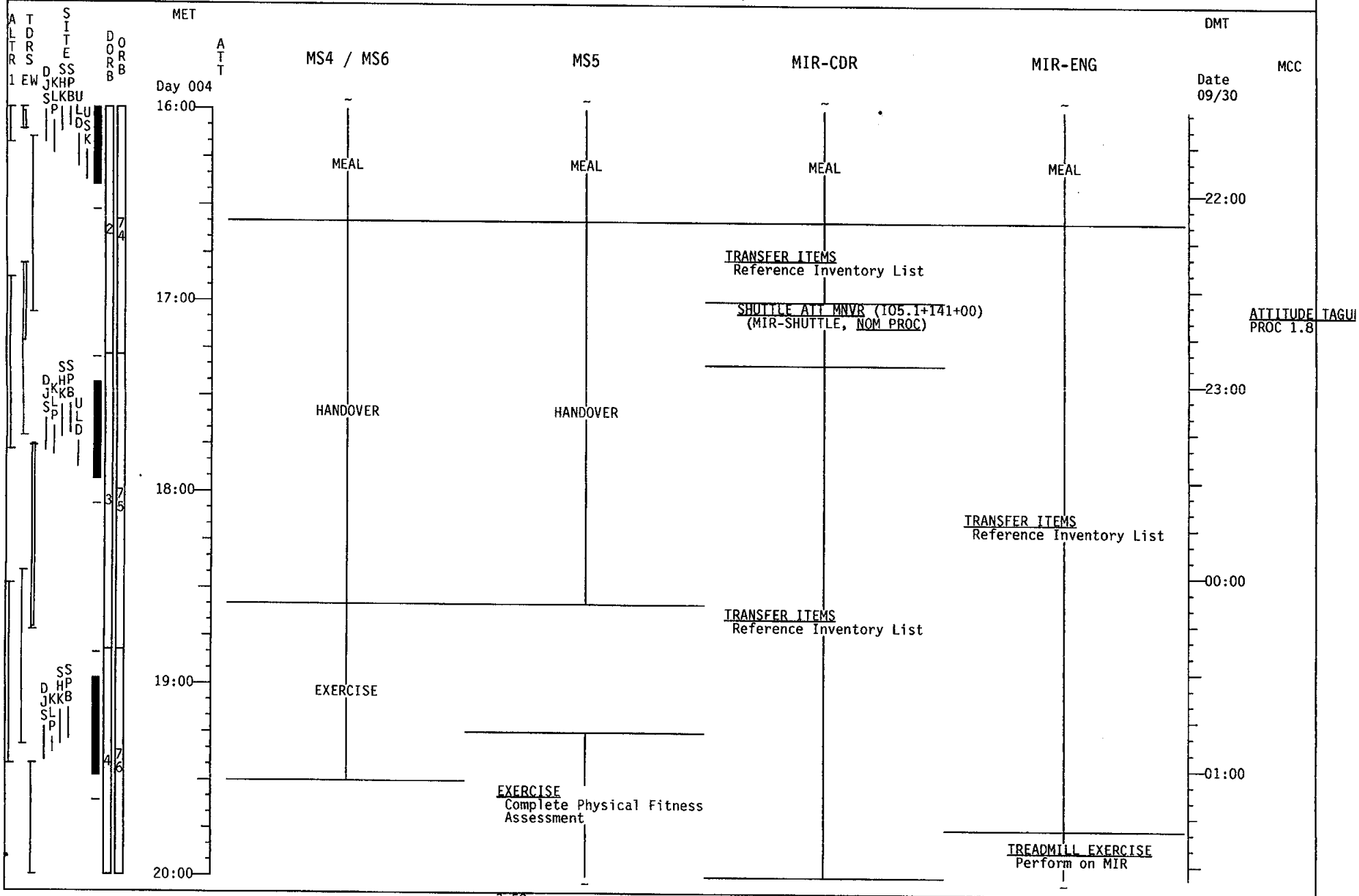
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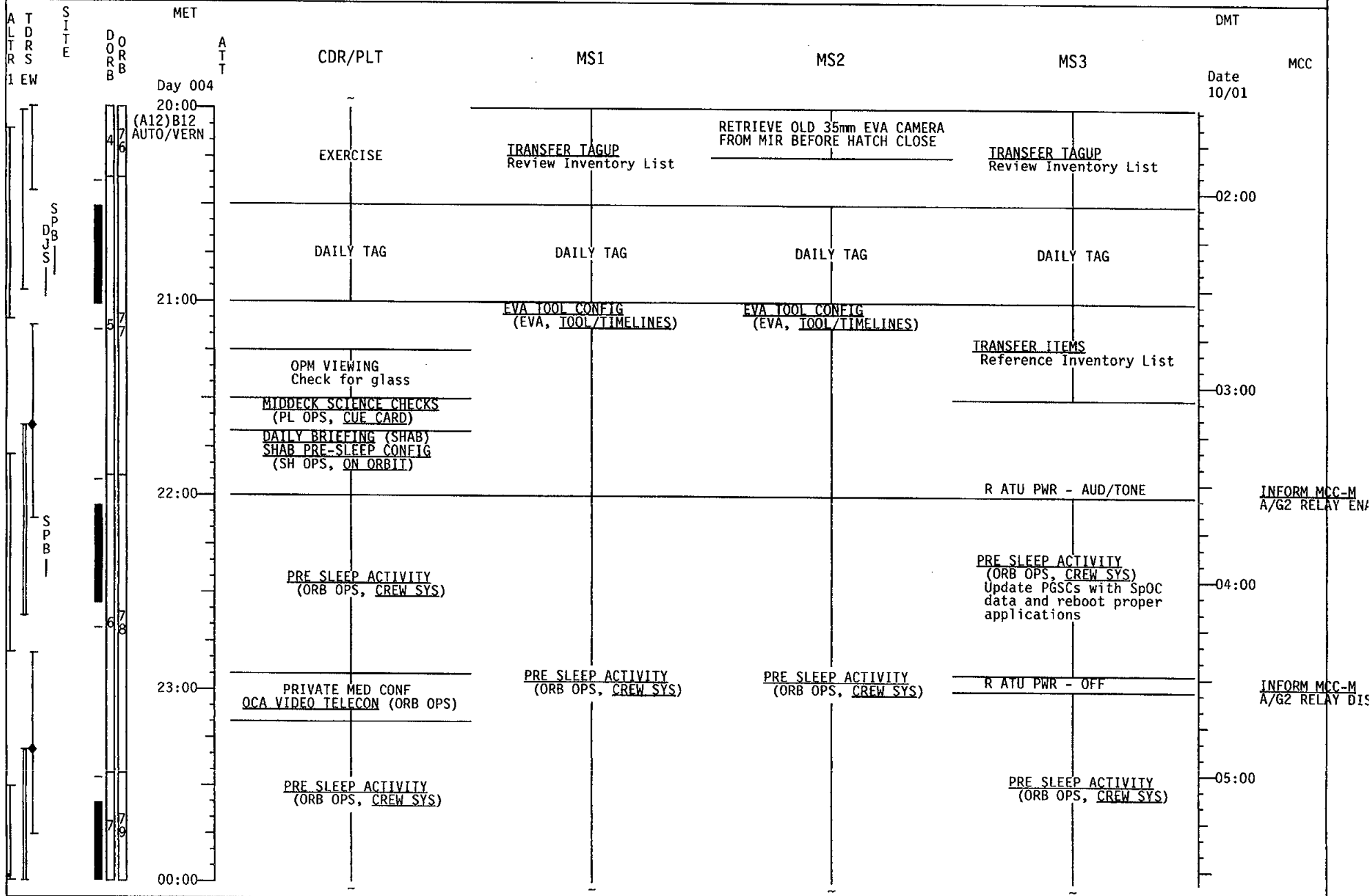
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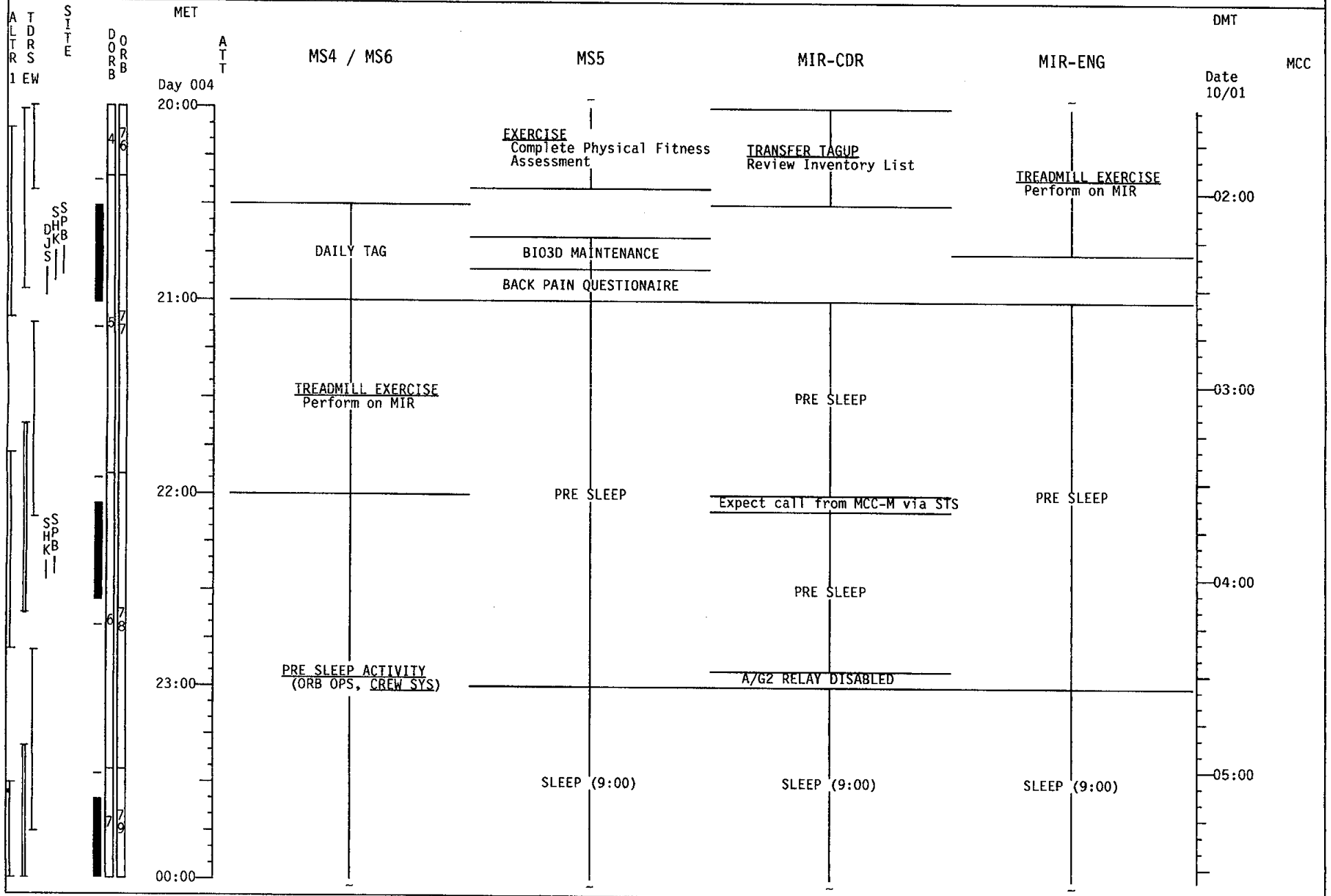
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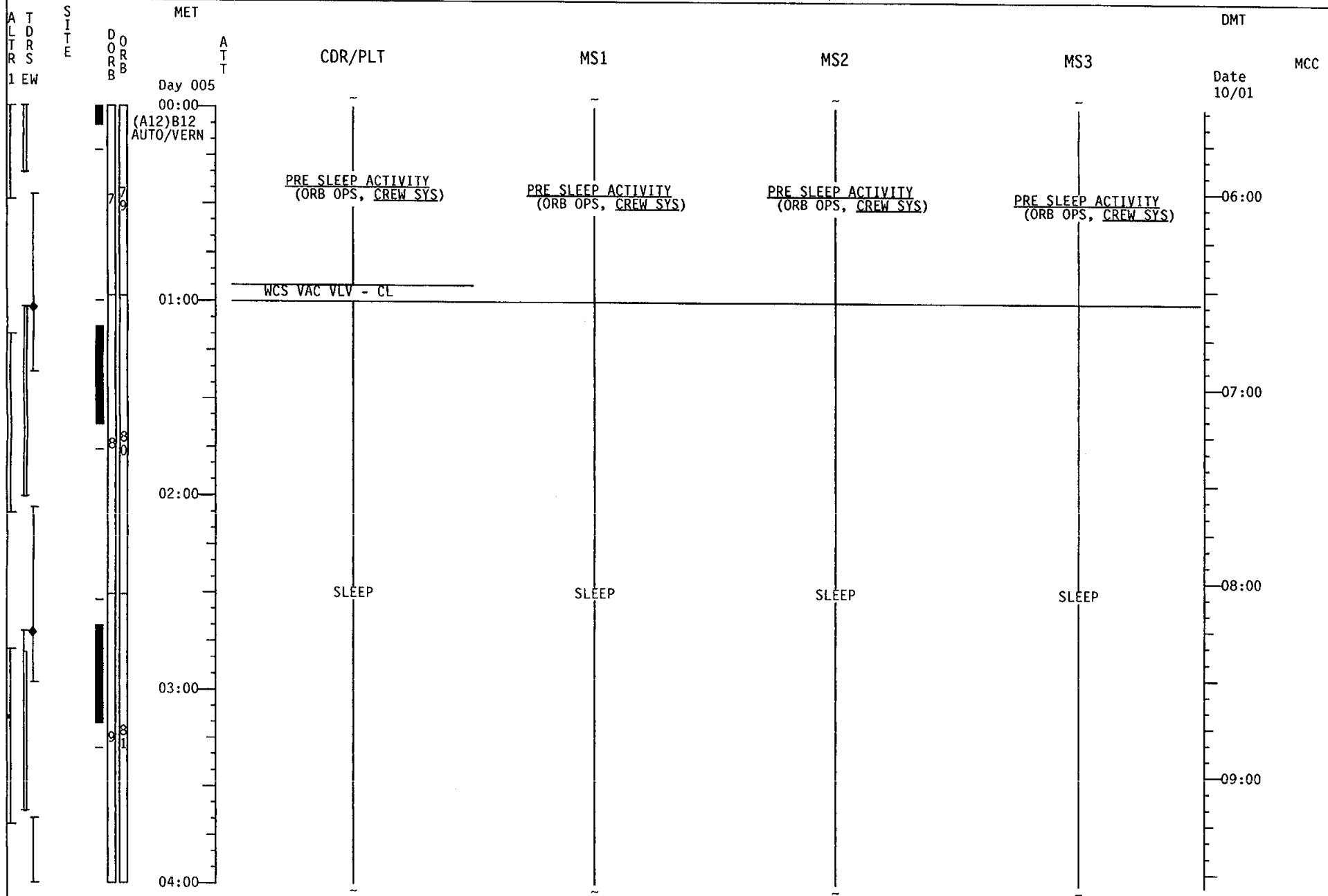
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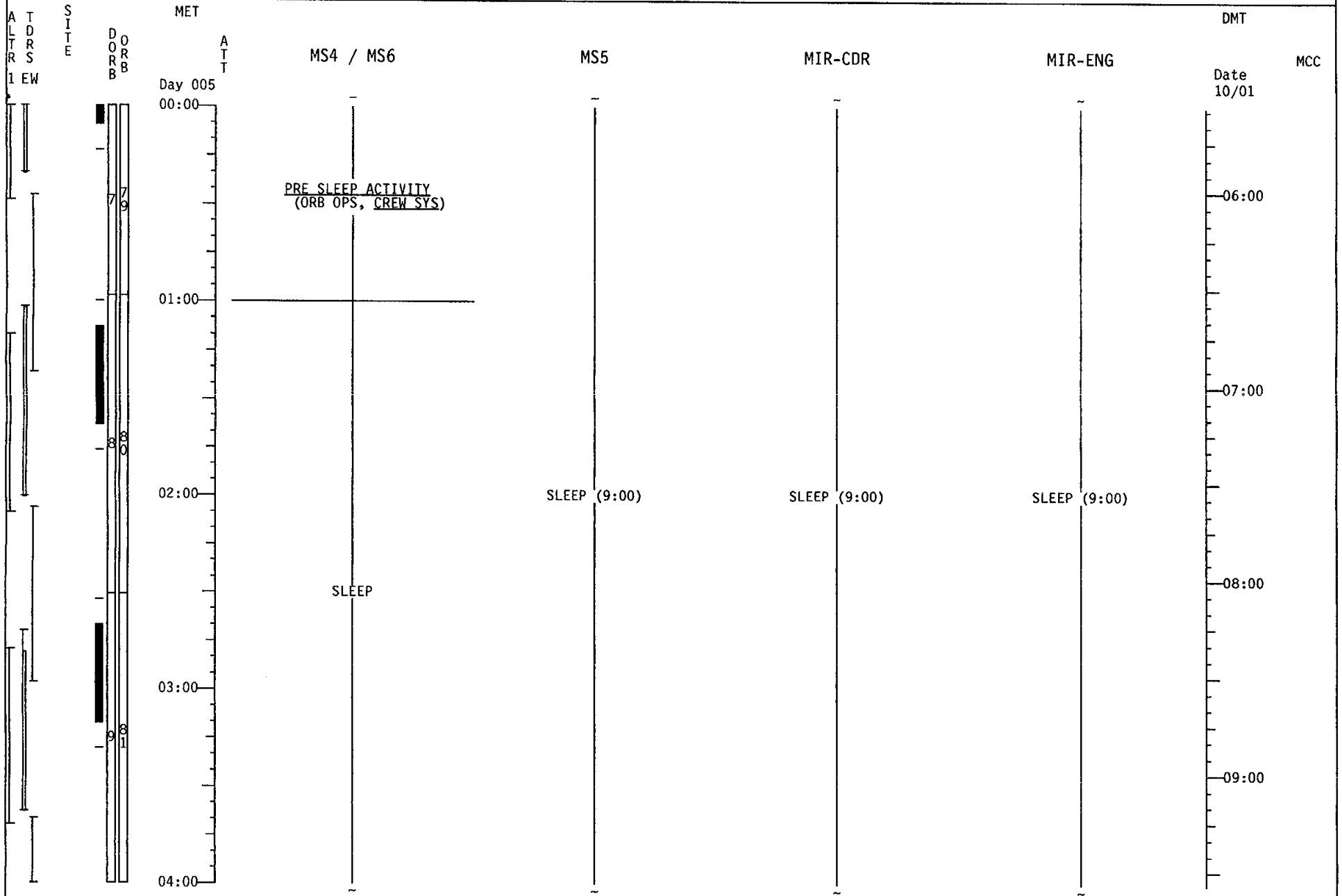
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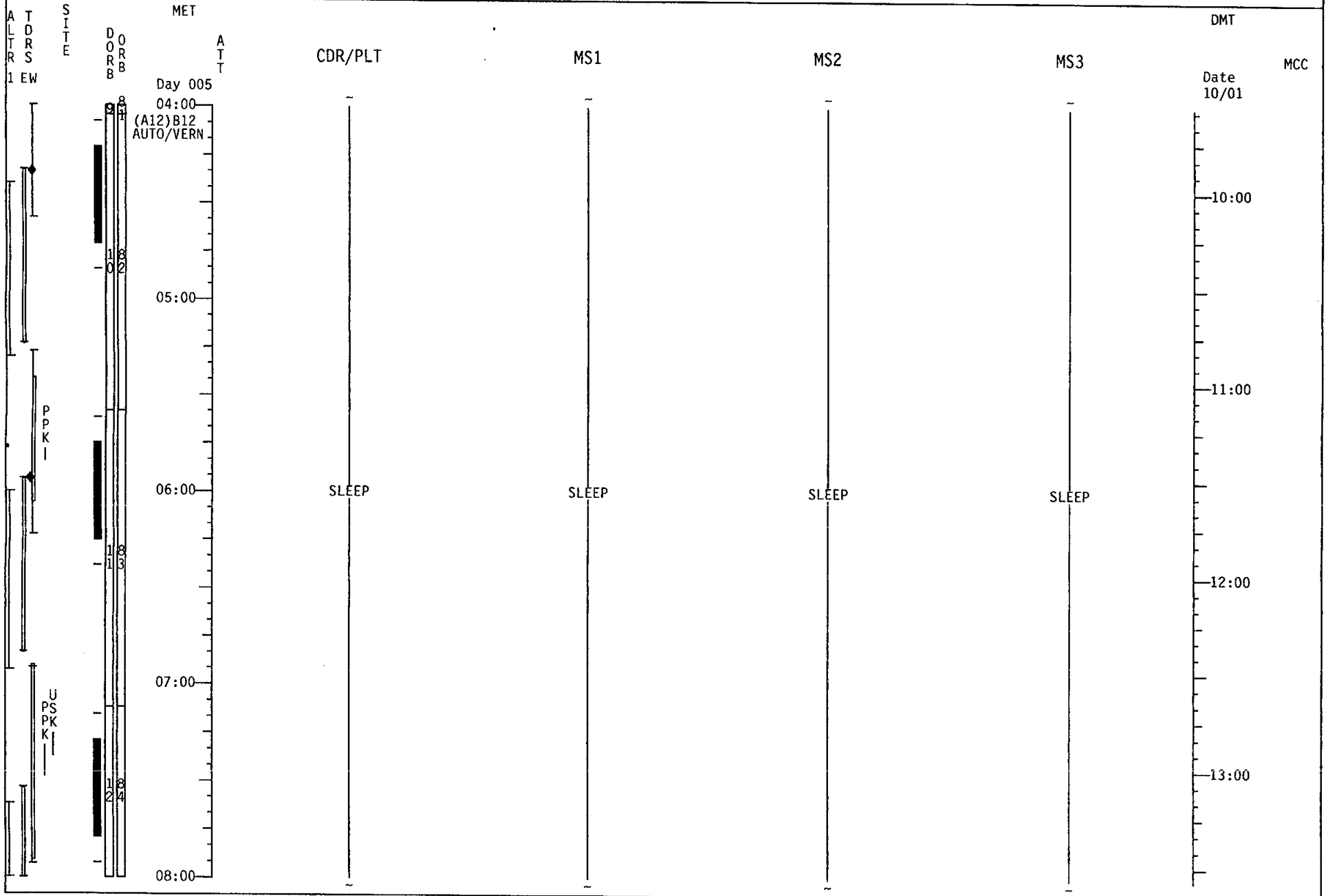
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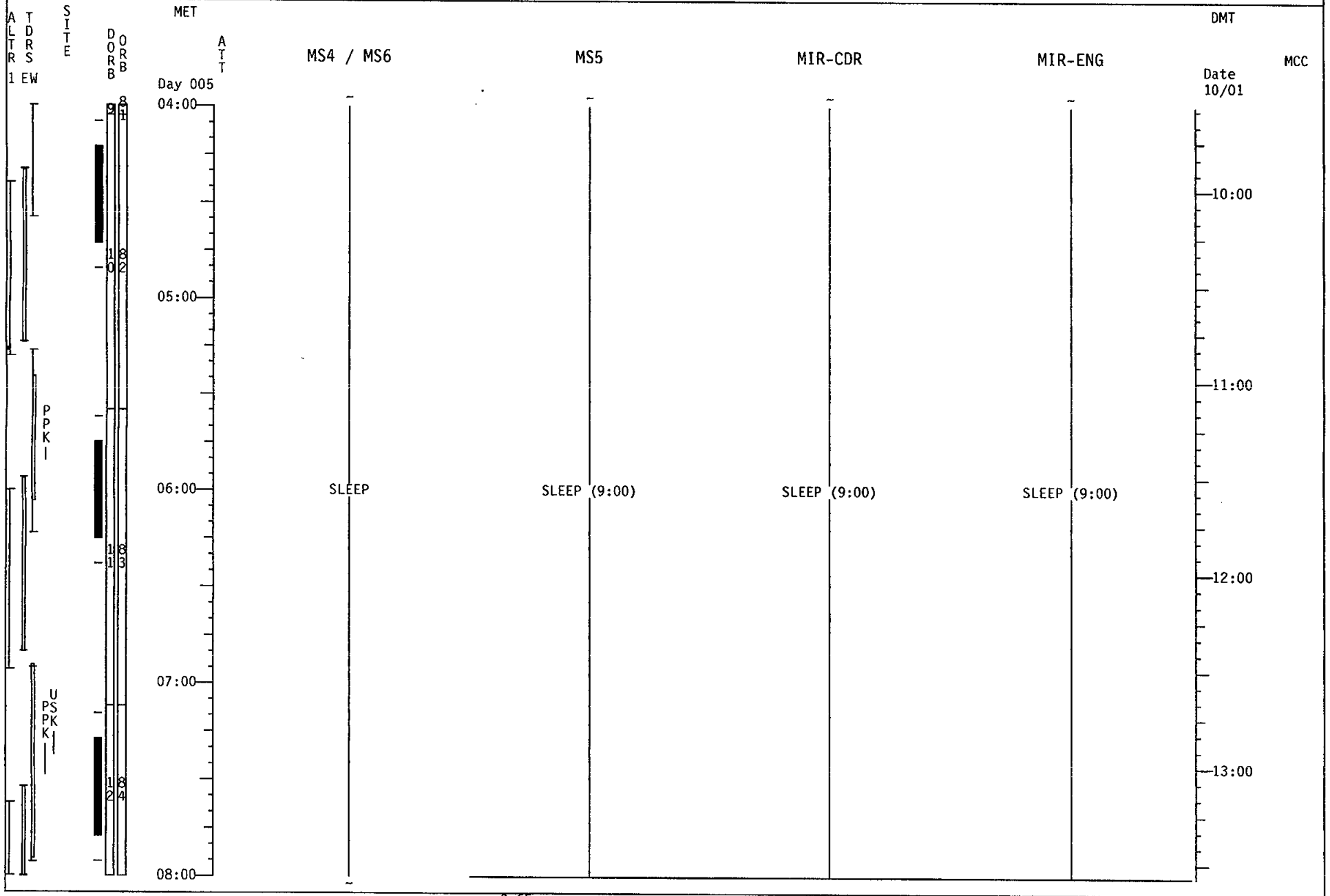
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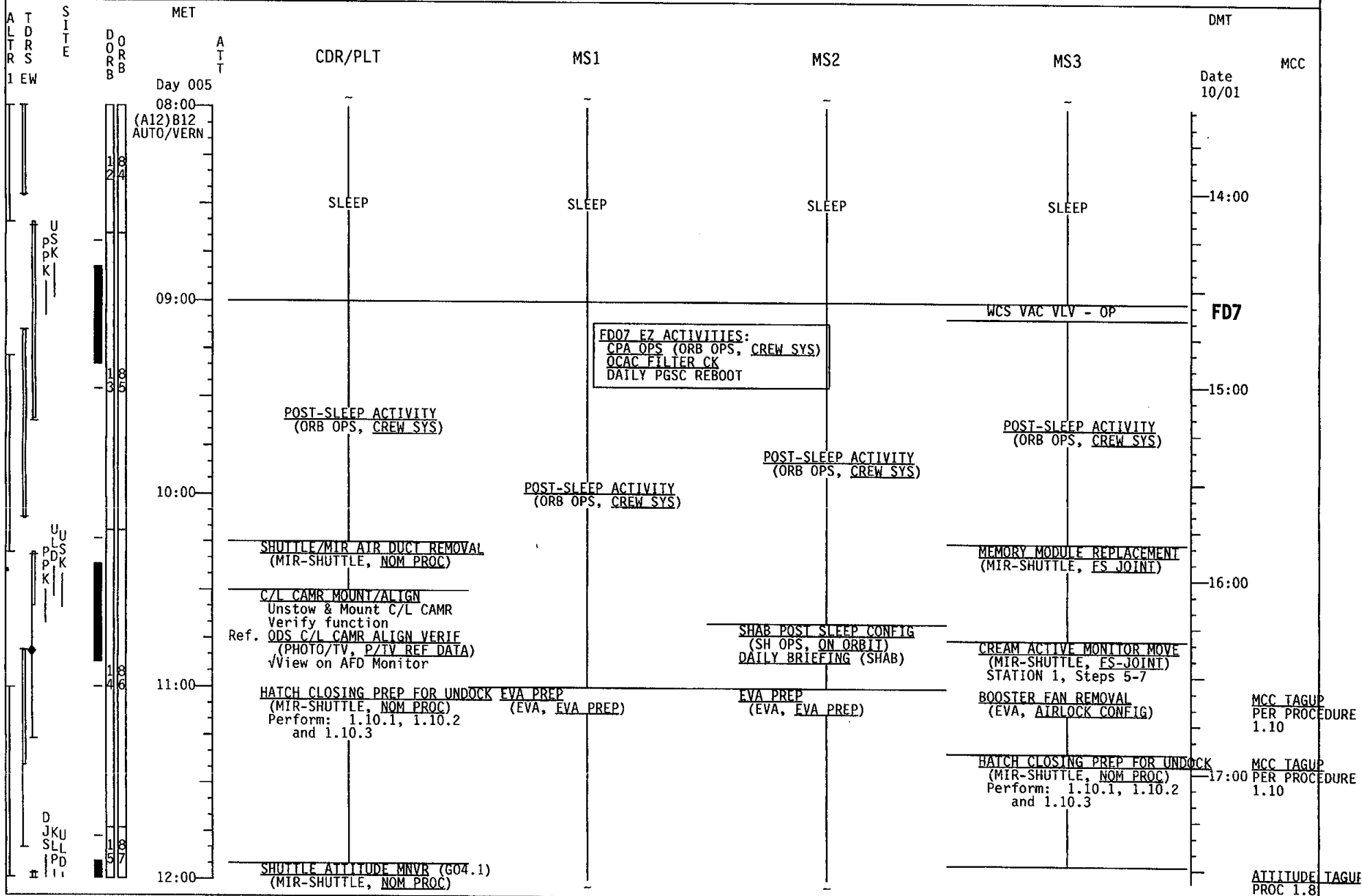
STS-86 (FD 06)



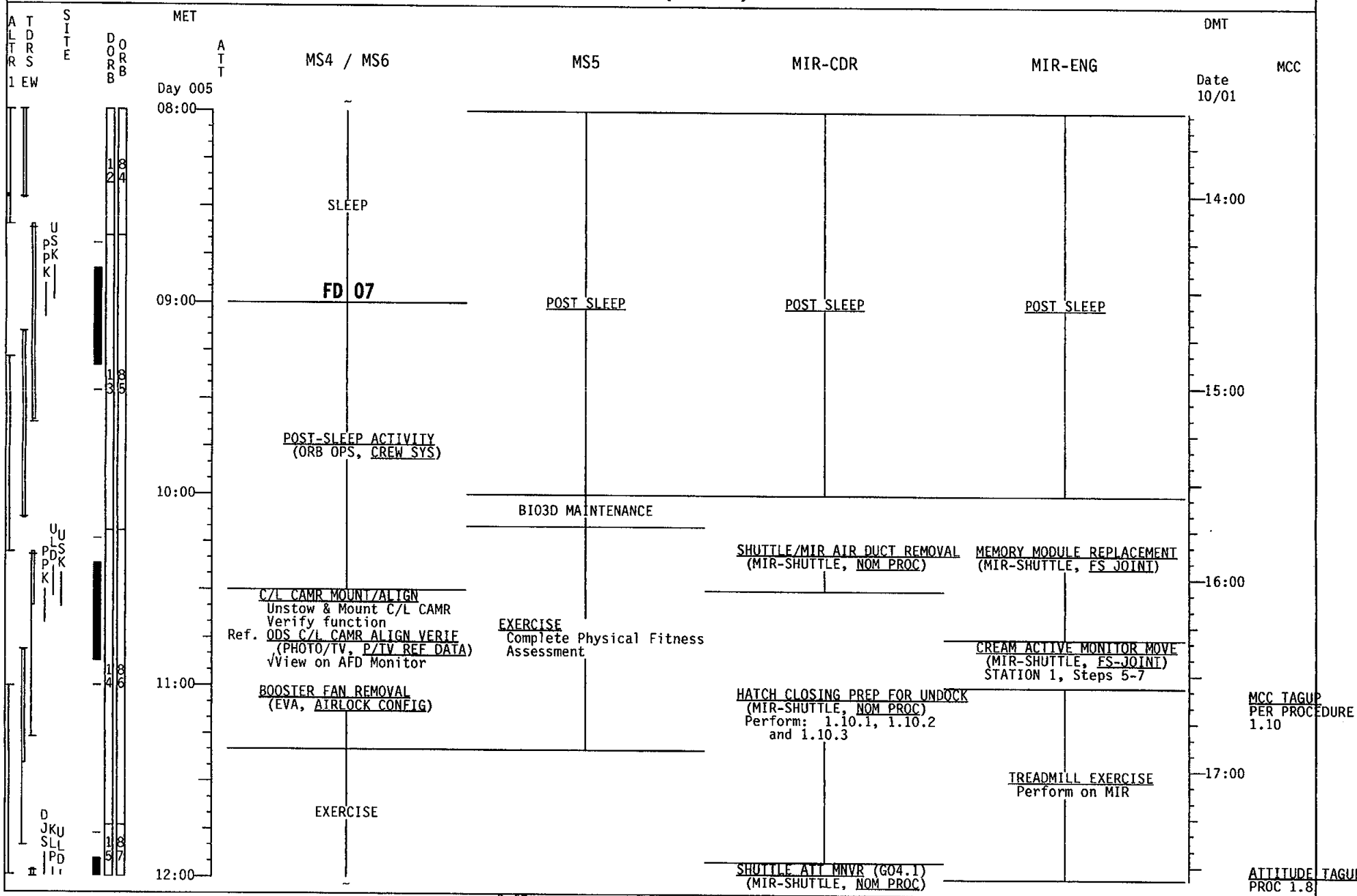
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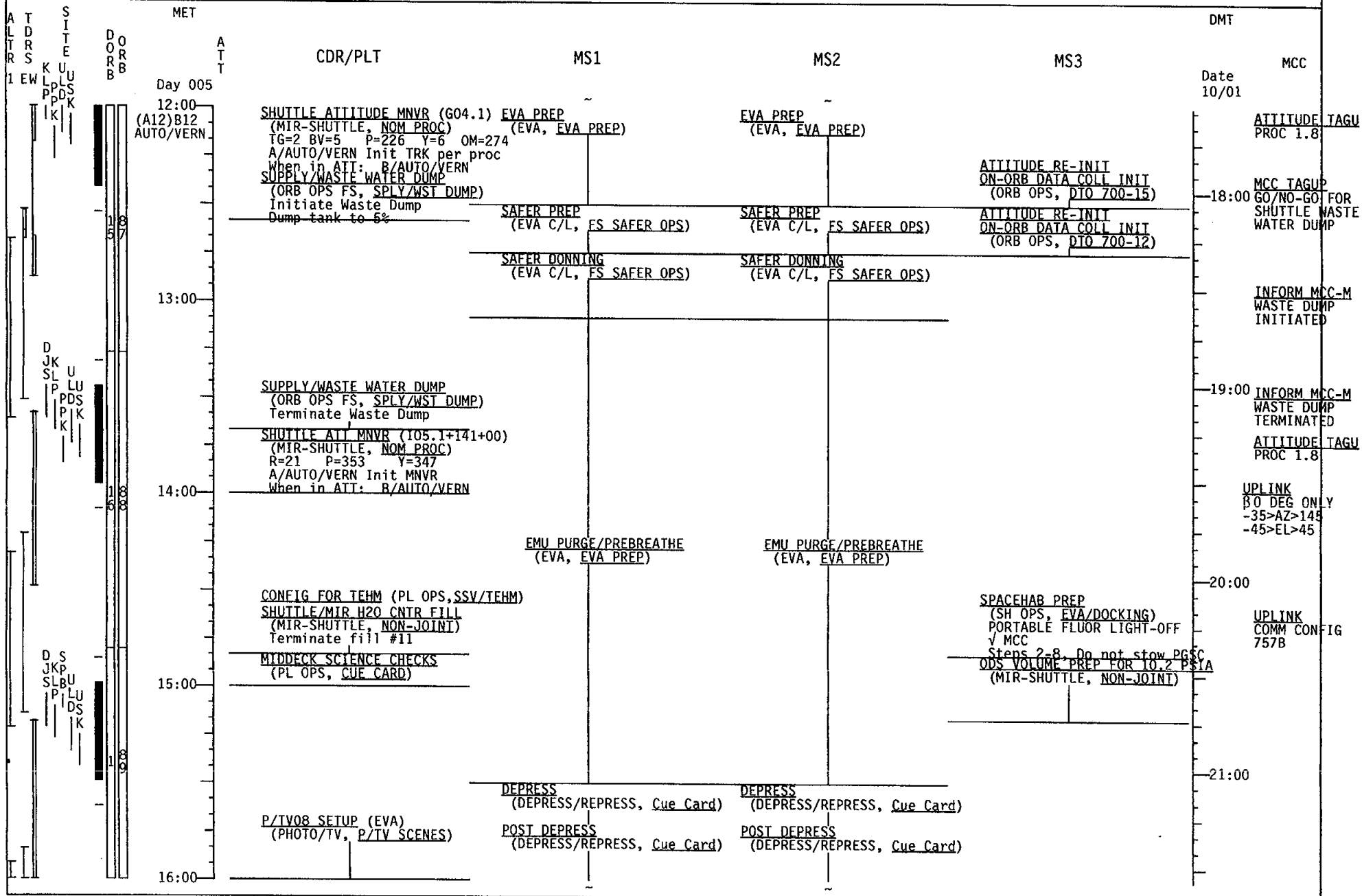
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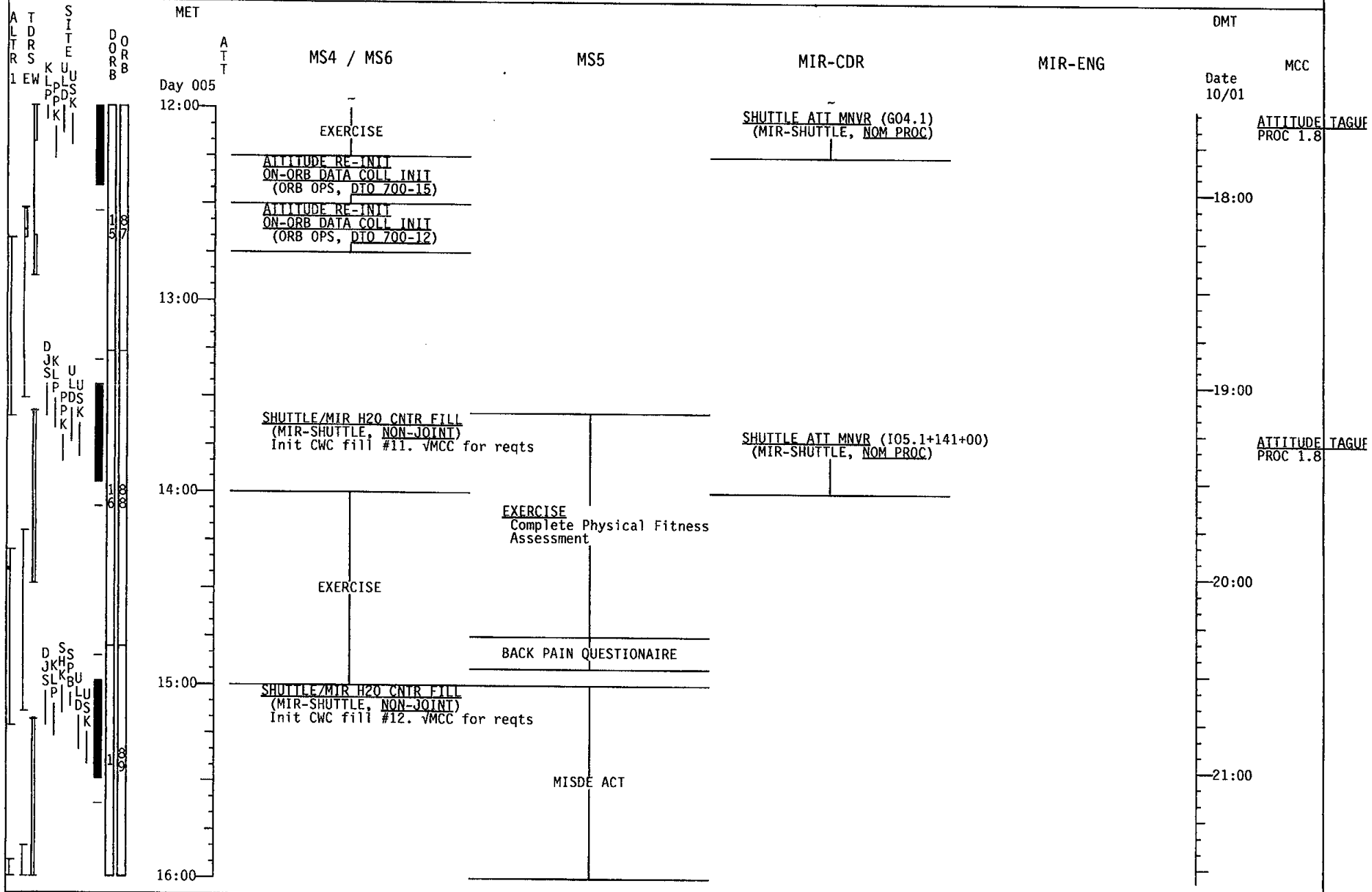
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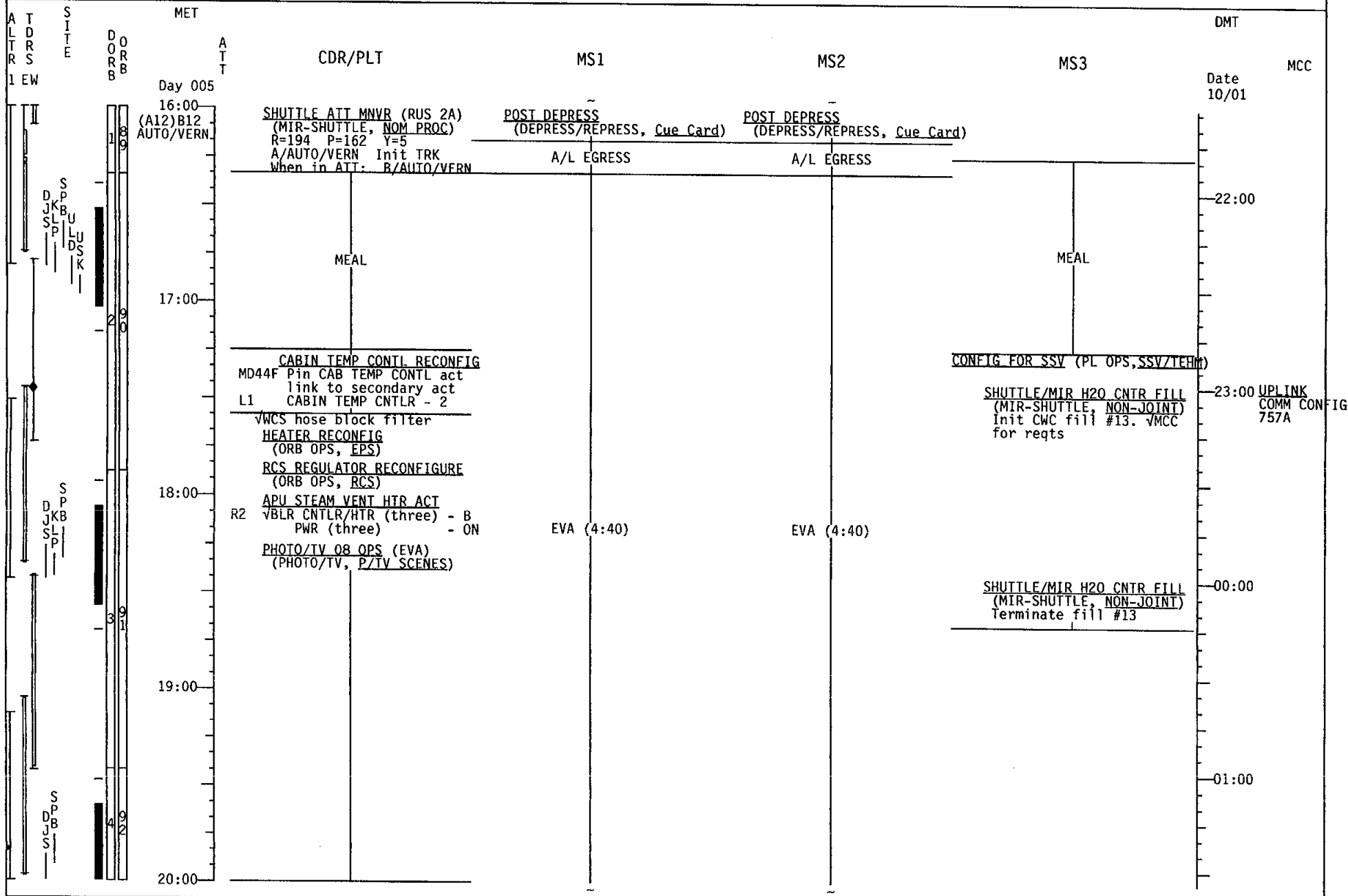
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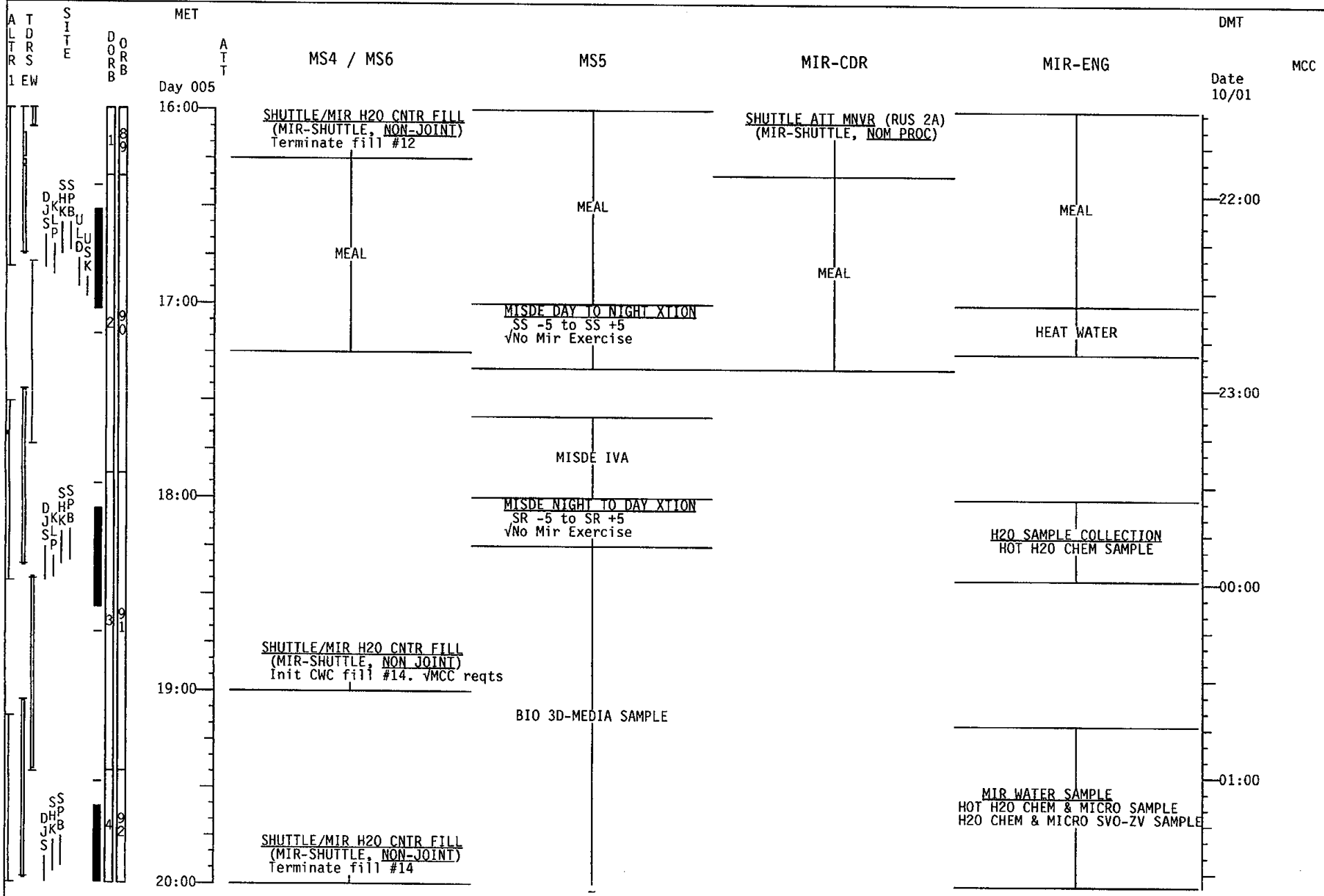
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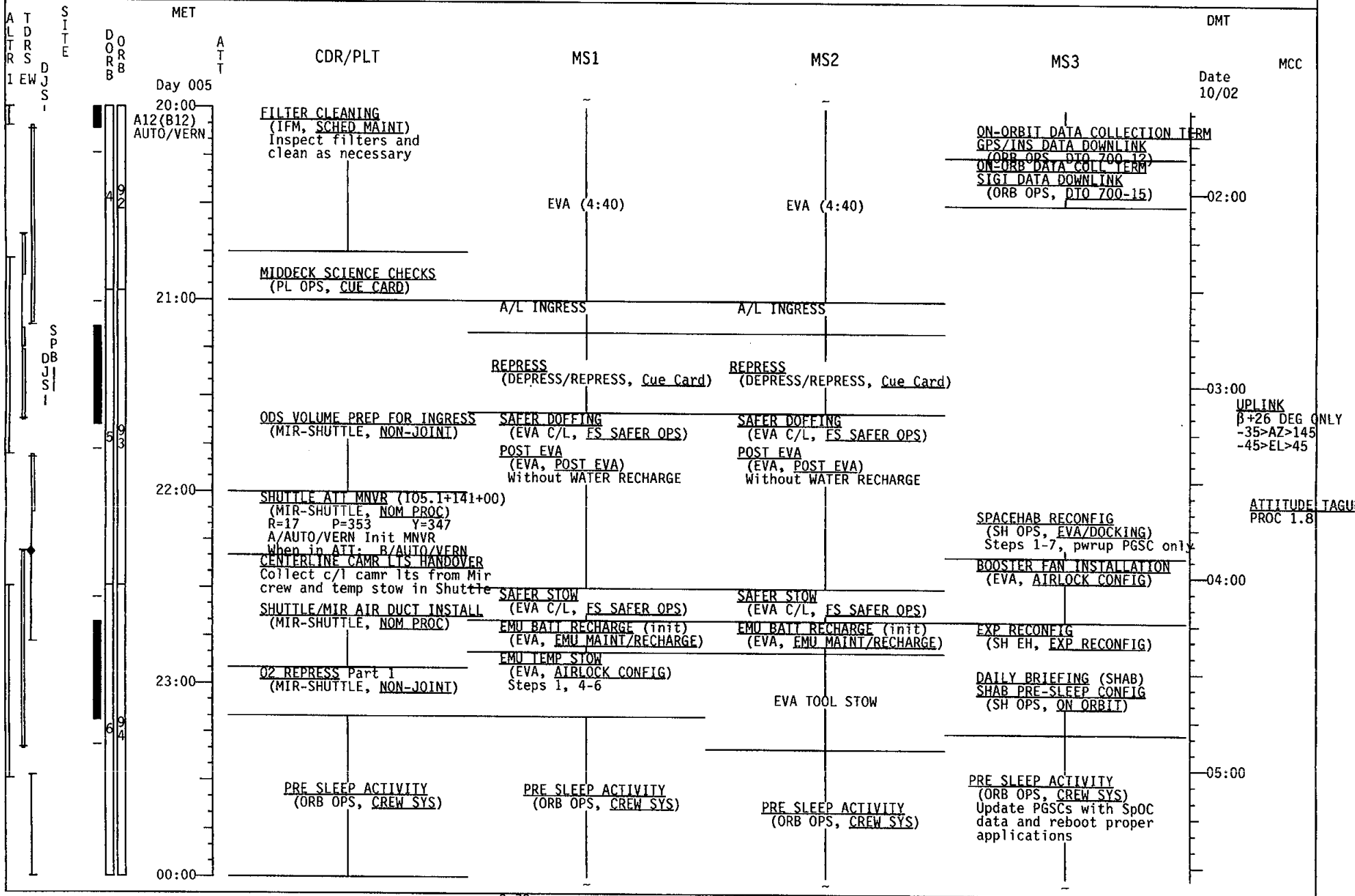
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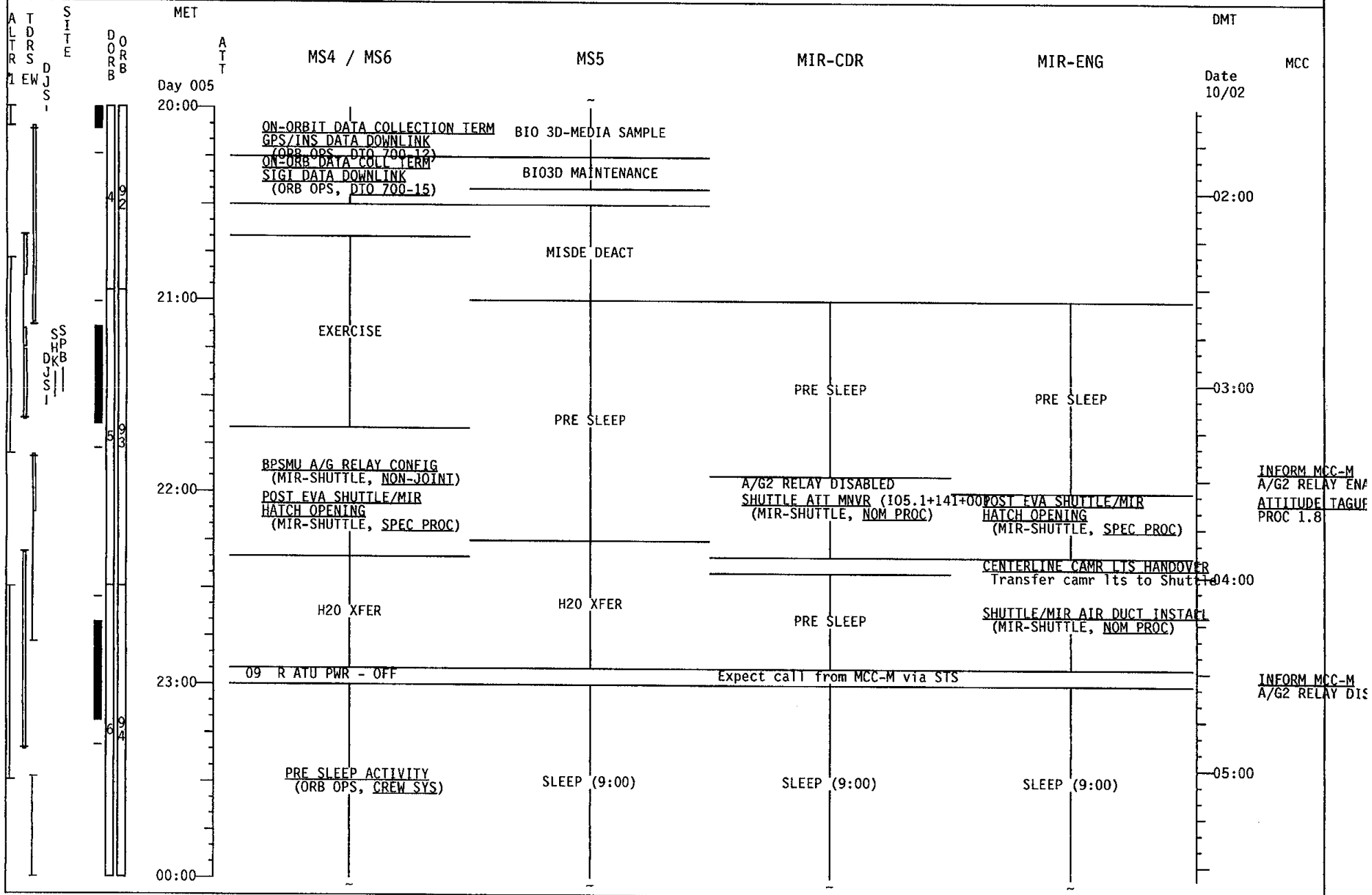
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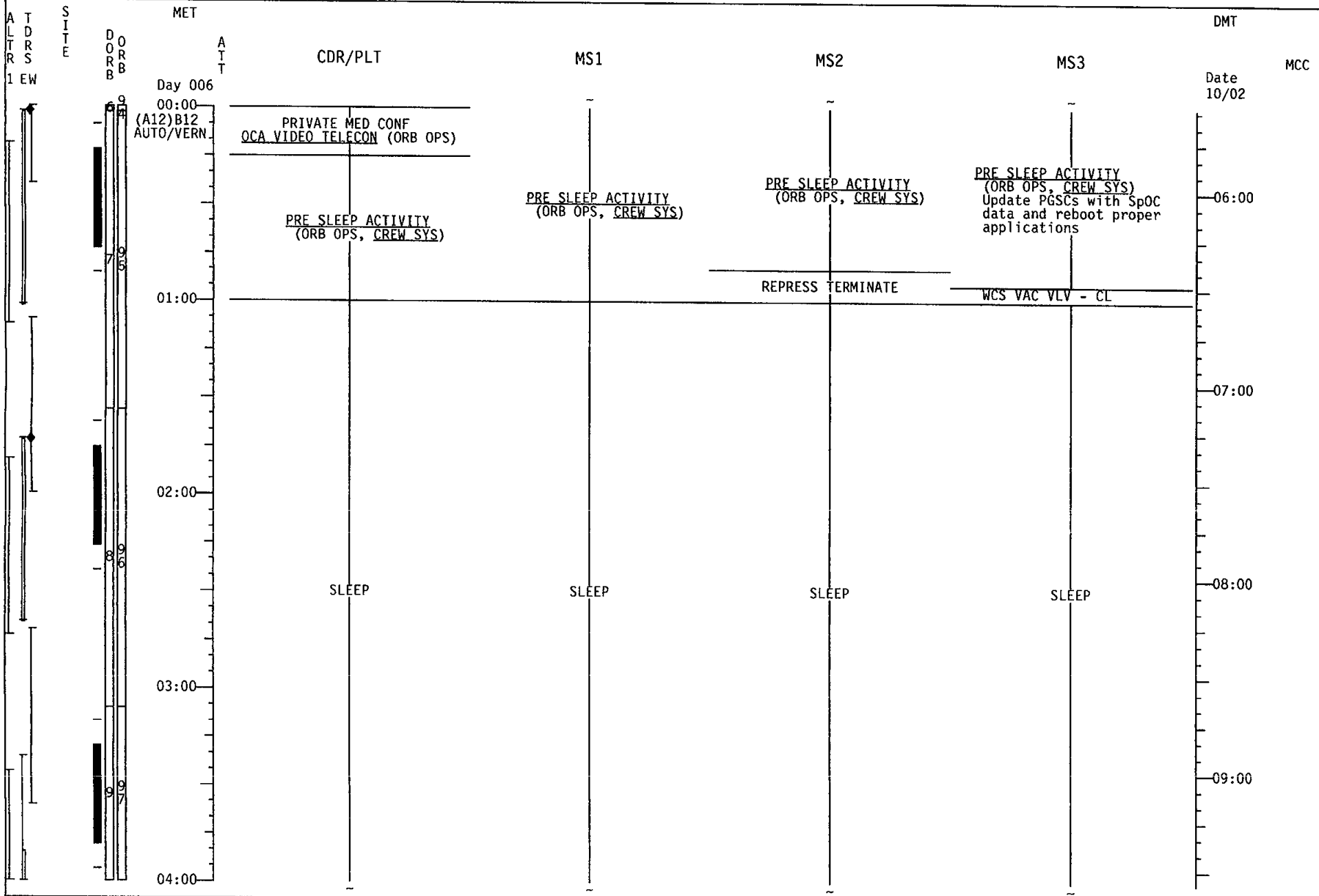
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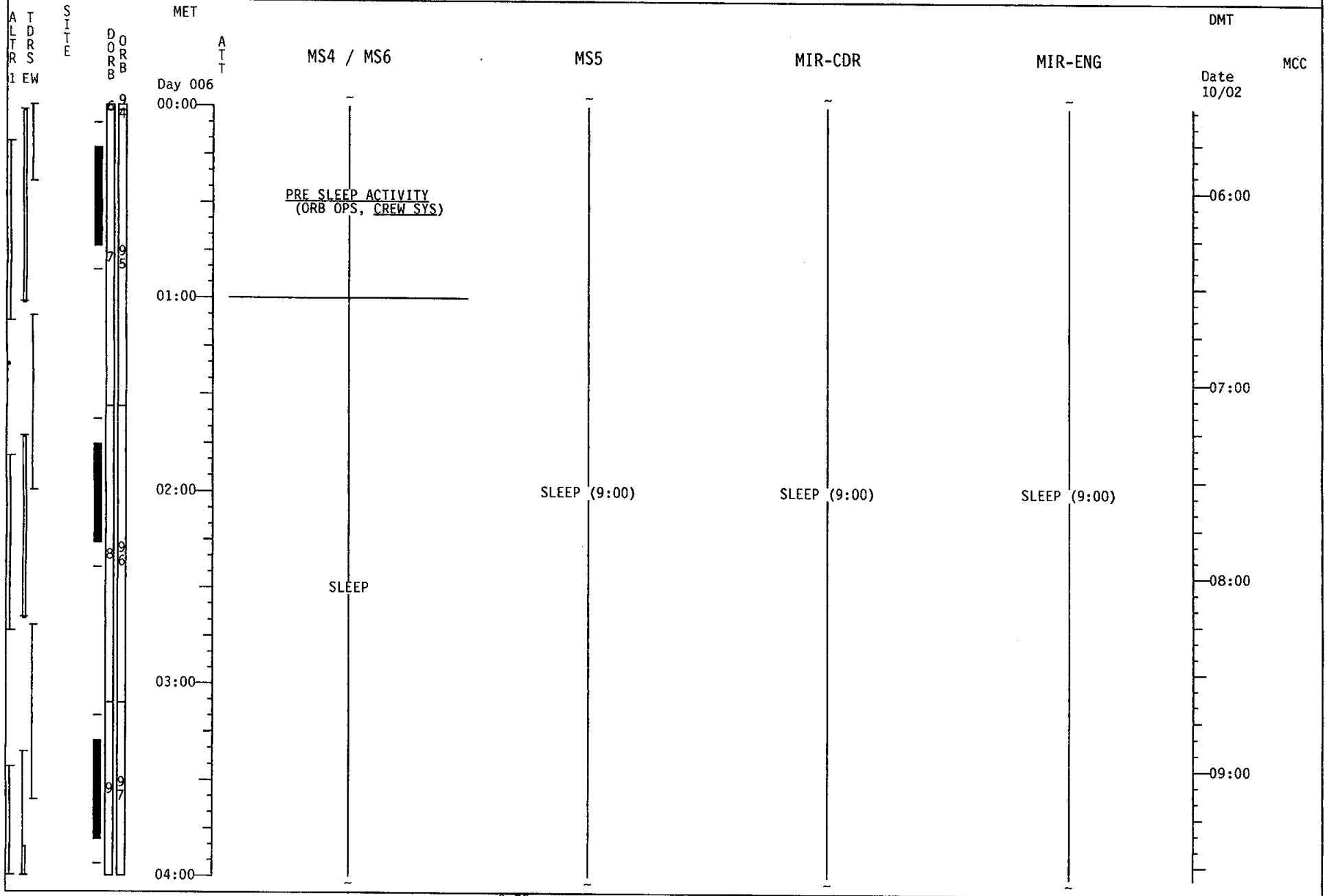
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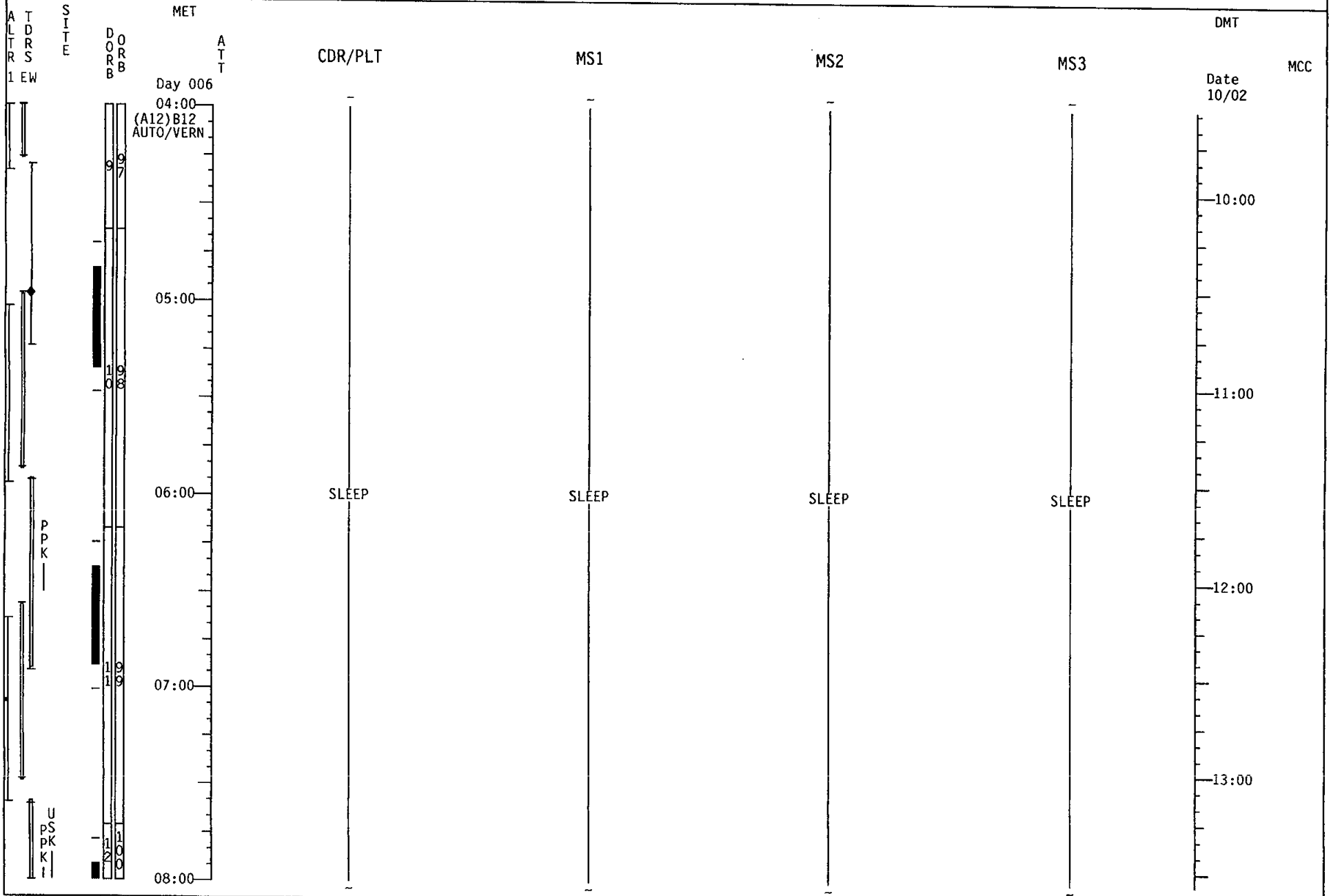
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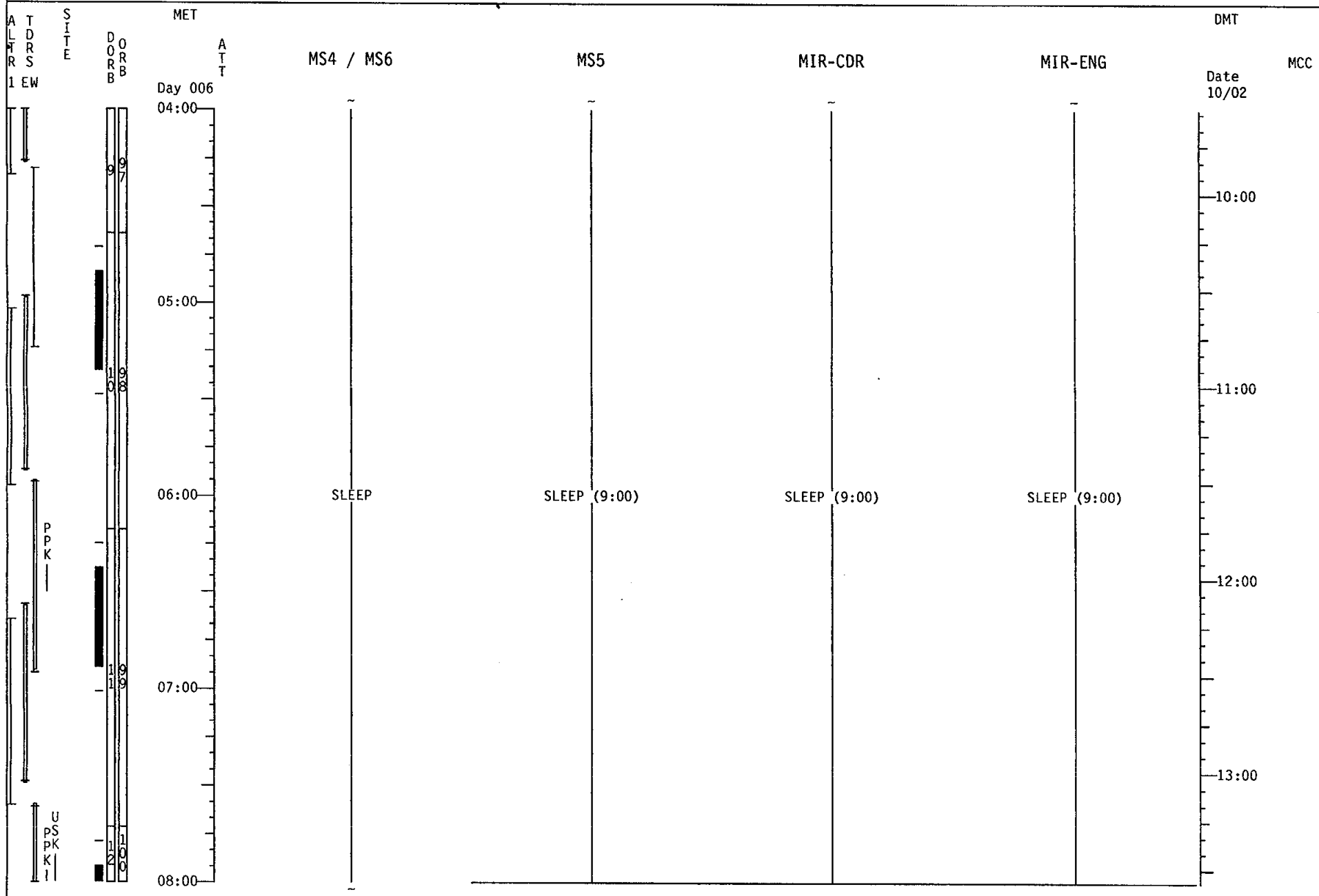
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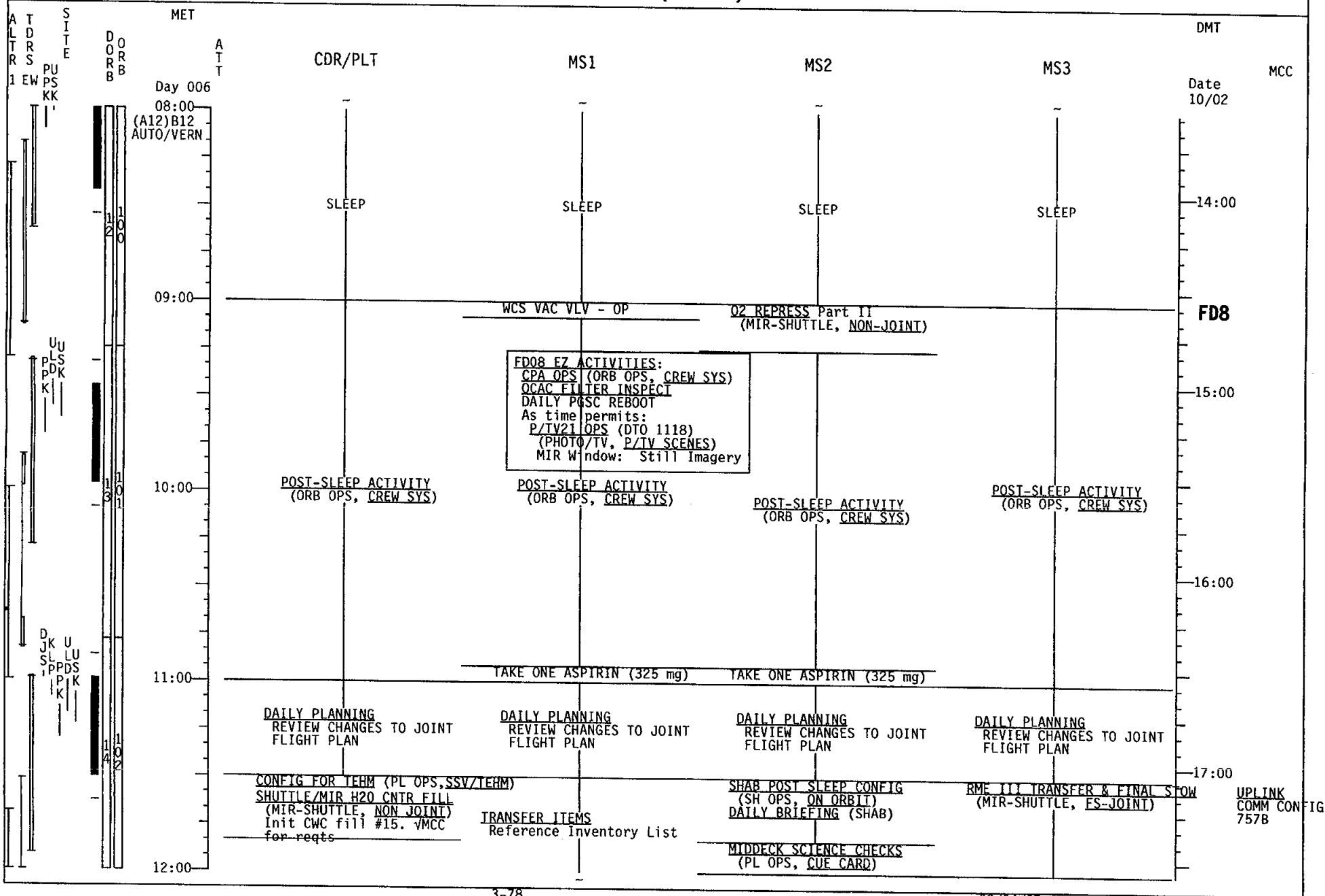
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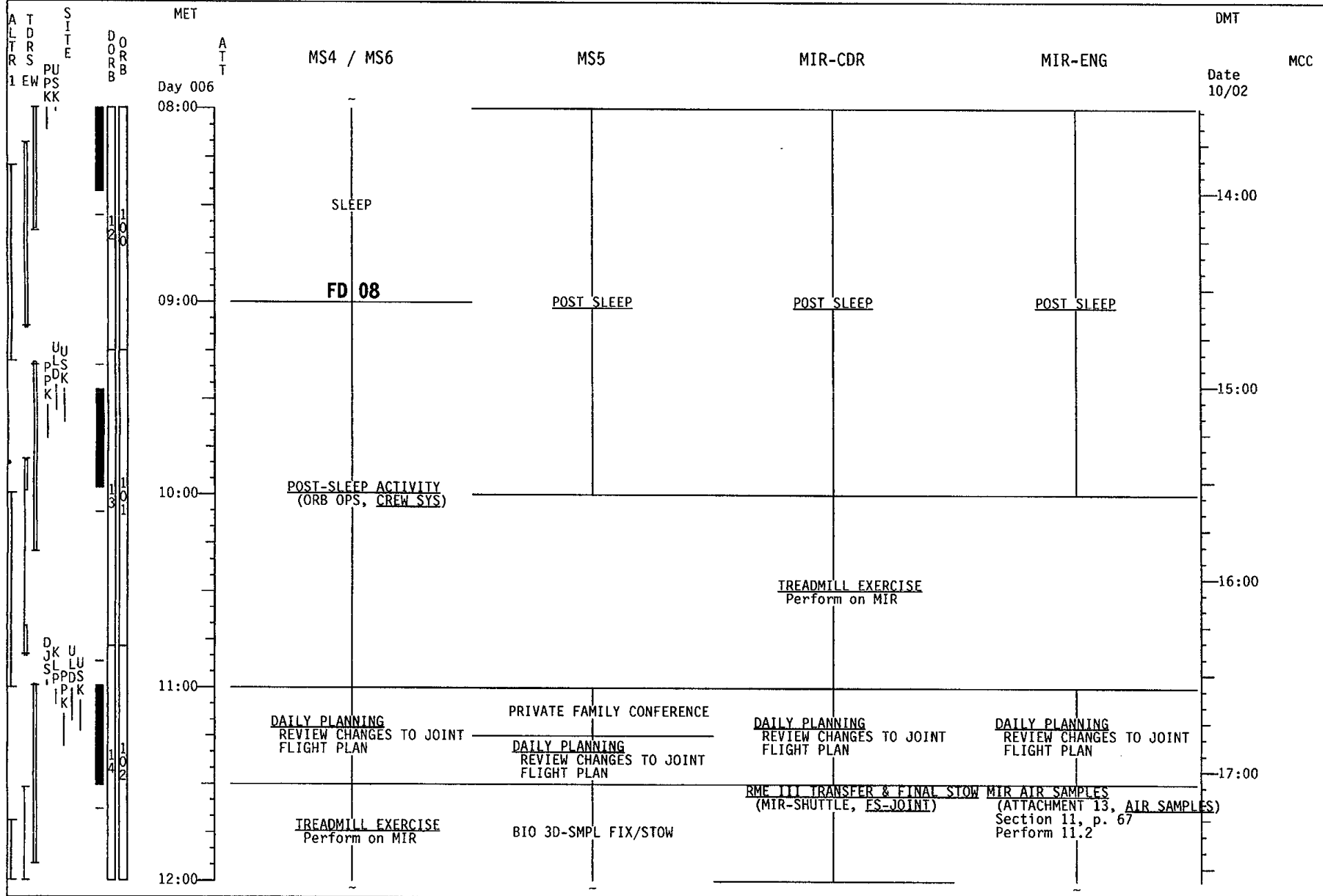
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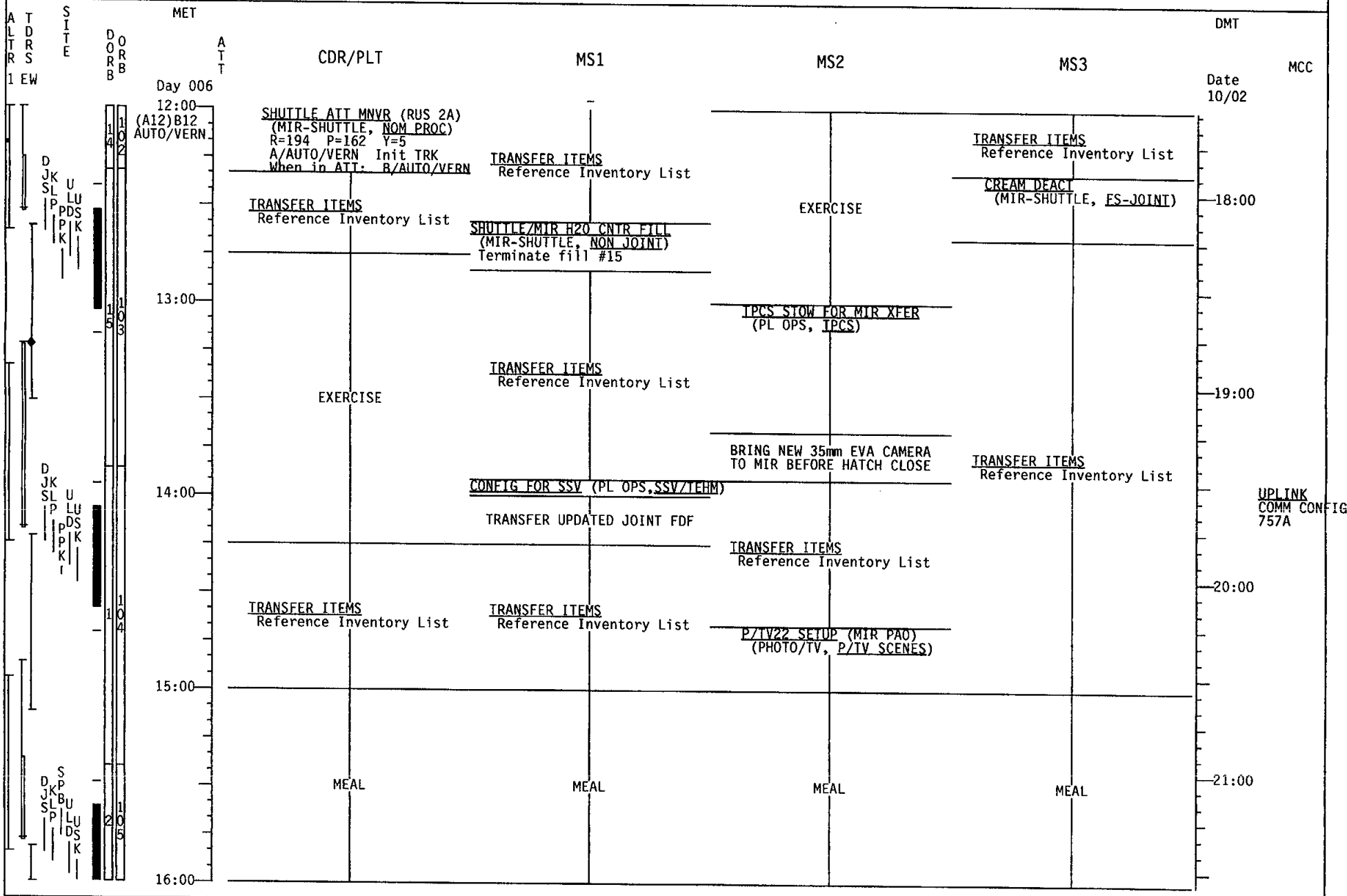
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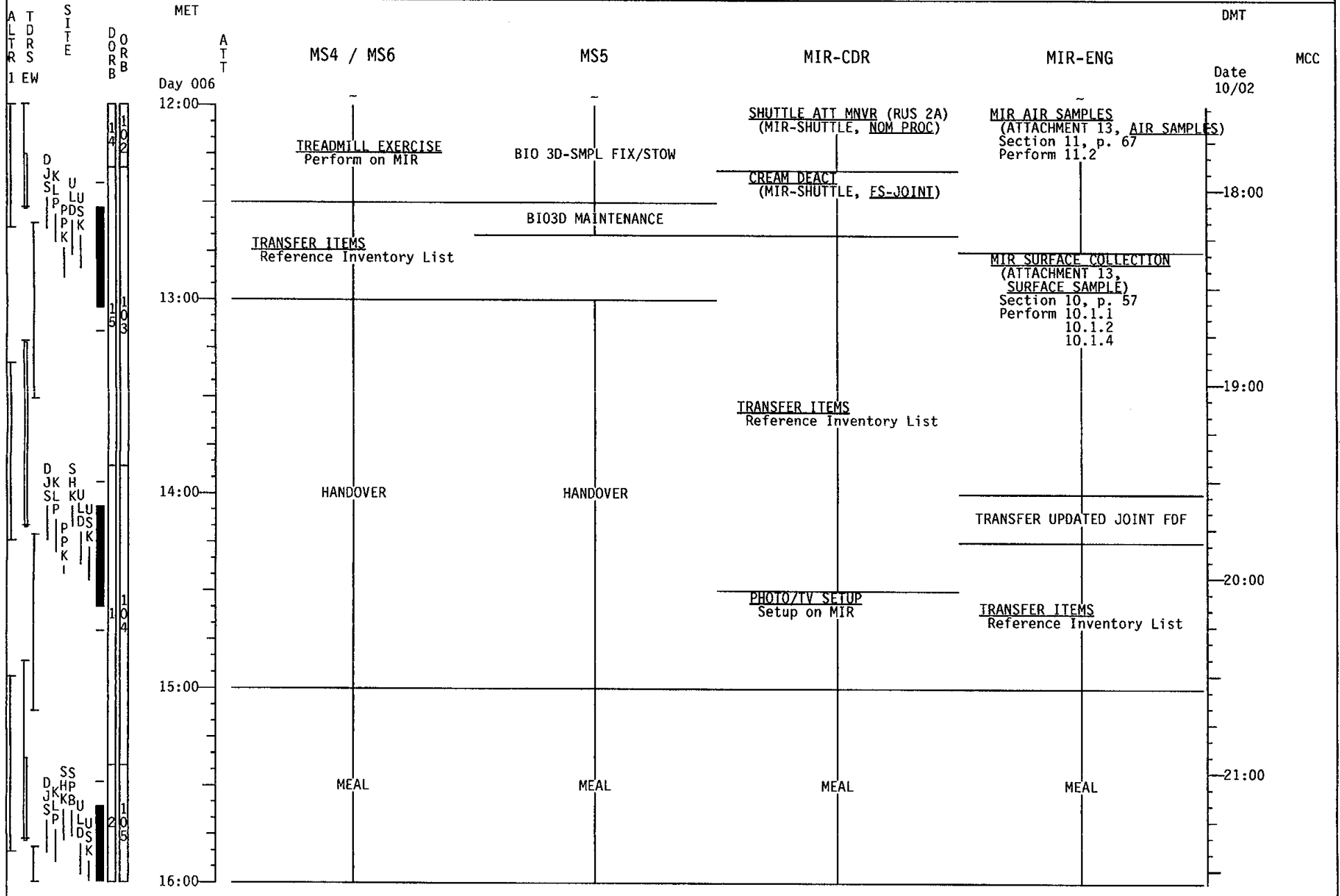
STS-86 (FD 07)



STS-86 (FD 08)



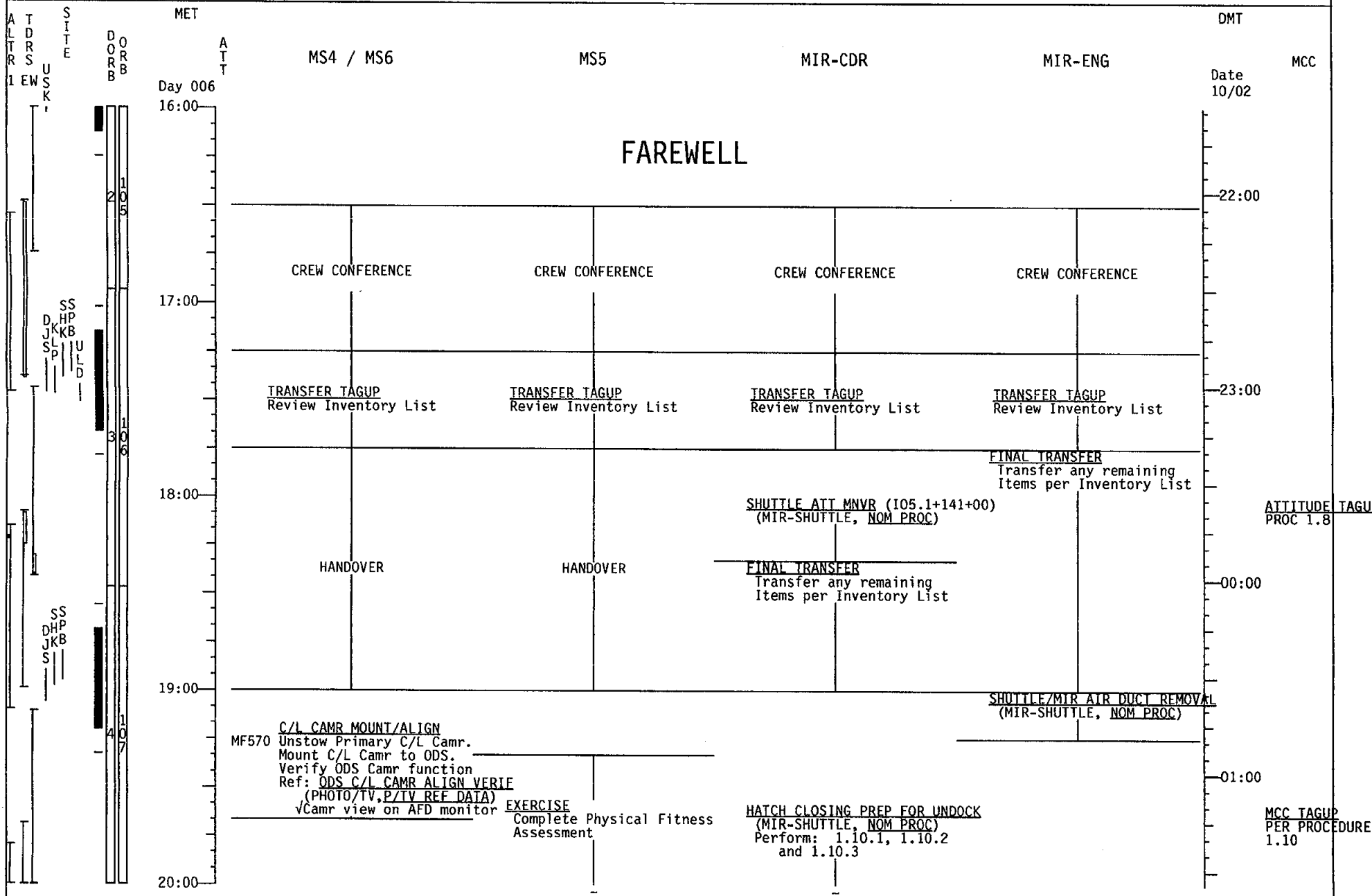
STS-86 (FD 08)



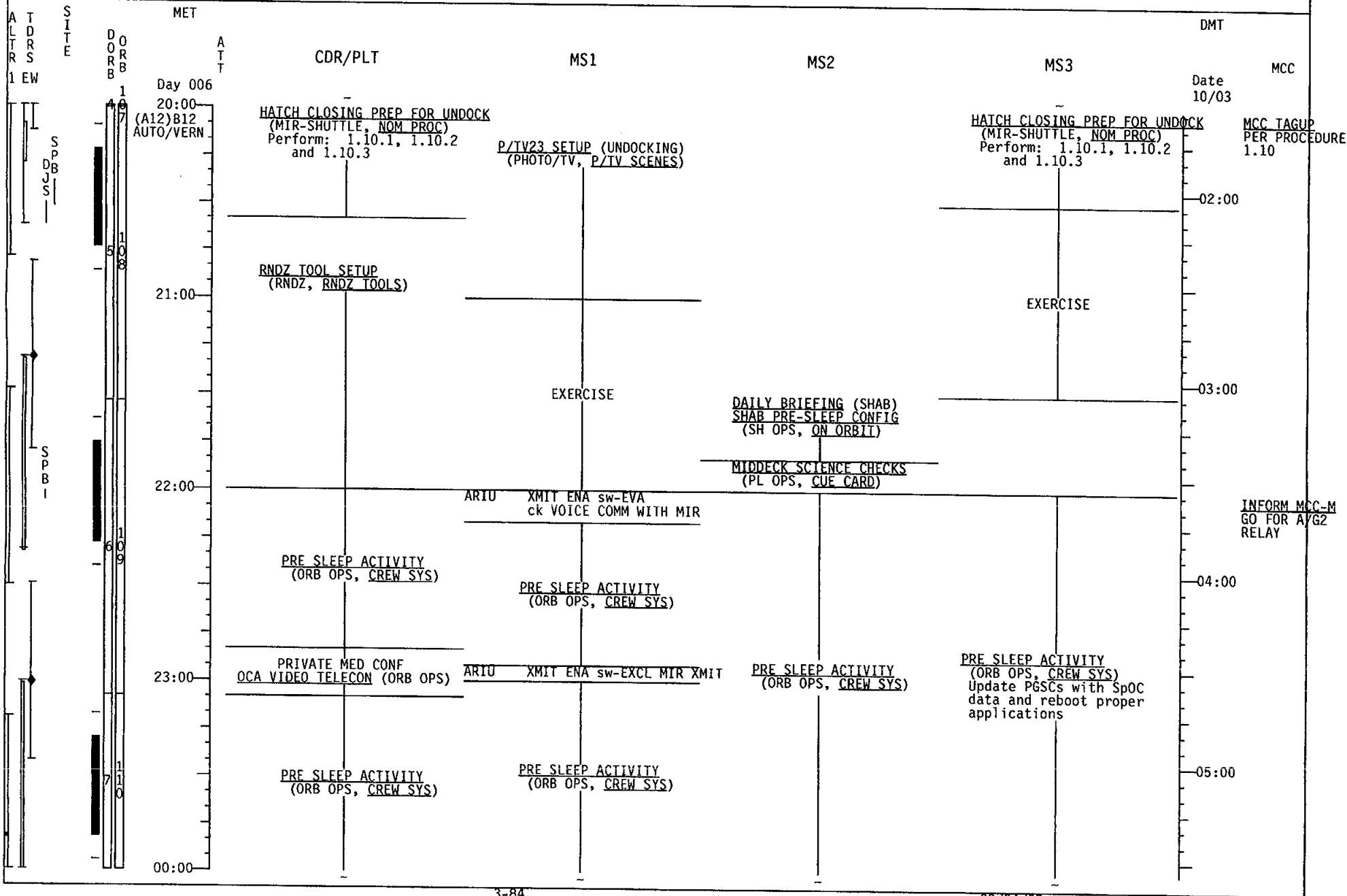
STS-86 (FD 08)

	MET	CDR/PLT	MS1	MS2	MS3	DMT
	Day 006					Date 10/02
FAREWELL						
ALT TRS 1 EW SITE DORBB 105 2 306 407 107 107	ATT 16:00 (A12)B12 AUTO/VERN 17:00 18:00 19:00 20:00	CREW CONFERENCE TRANSFER TAGUP Review Inventory List SHUTTLE ATT MNVR (105.1+141+00) (MIR-SHUTTLE, NOM PROC) R=11 P=352 Y=348 A/AUTO/VERN Init MNVR When in ATT: B/AUTO/VERN FINAL TRANSFER Transfer any remaining Items per Inventory List SHUTTLE/MIR AIR DUCT REMOVAL (MIR-SHUTTLE, NOM PROC)	CREW CONFERENCE TRANSFER TAGUP Review Inventory List FINAL TRANSFER Transfer any remaining Items per Inventory List EMU BATT RECHARGE (term) (EVA, EMU MAINT/RECHARGE) C/L CAMR MOUNT/ALIGN MF570 Unstow Primary C/L Camr. Mount C/L Camr to ODS. Verify ODS Camr function Ref: ODS C/L CAMR ALIGN VERIF (PHOTO/TV, P/TV REF DATA) √Camr view on AFD monitor	CREW CONFERENCE TRANSFER TAGUP Review Inventory List FINAL TRANSFER Transfer any remaining Items per Inventory List SHUTTLE/MIR AIR DUCT REMOVAL (MIR-SHUTTLE, NOM PROC)	CREW CONFERENCE TRANSFER TAGUP Review Inventory List FINAL TRANSFER Transfer any remaining Items per Inventory List HATCH CLOSING PREP FOR UNDOCK (MIR-SHUTTLE, NOM PROC) Perform: 1.10.1, 1.10.2 and 1.10.3	MCC 22:00 23:00 00:00 01:00 ATTITUDE TAGUP PROC 1.8 MCC TAGUP PER PROCEDURE 1.10

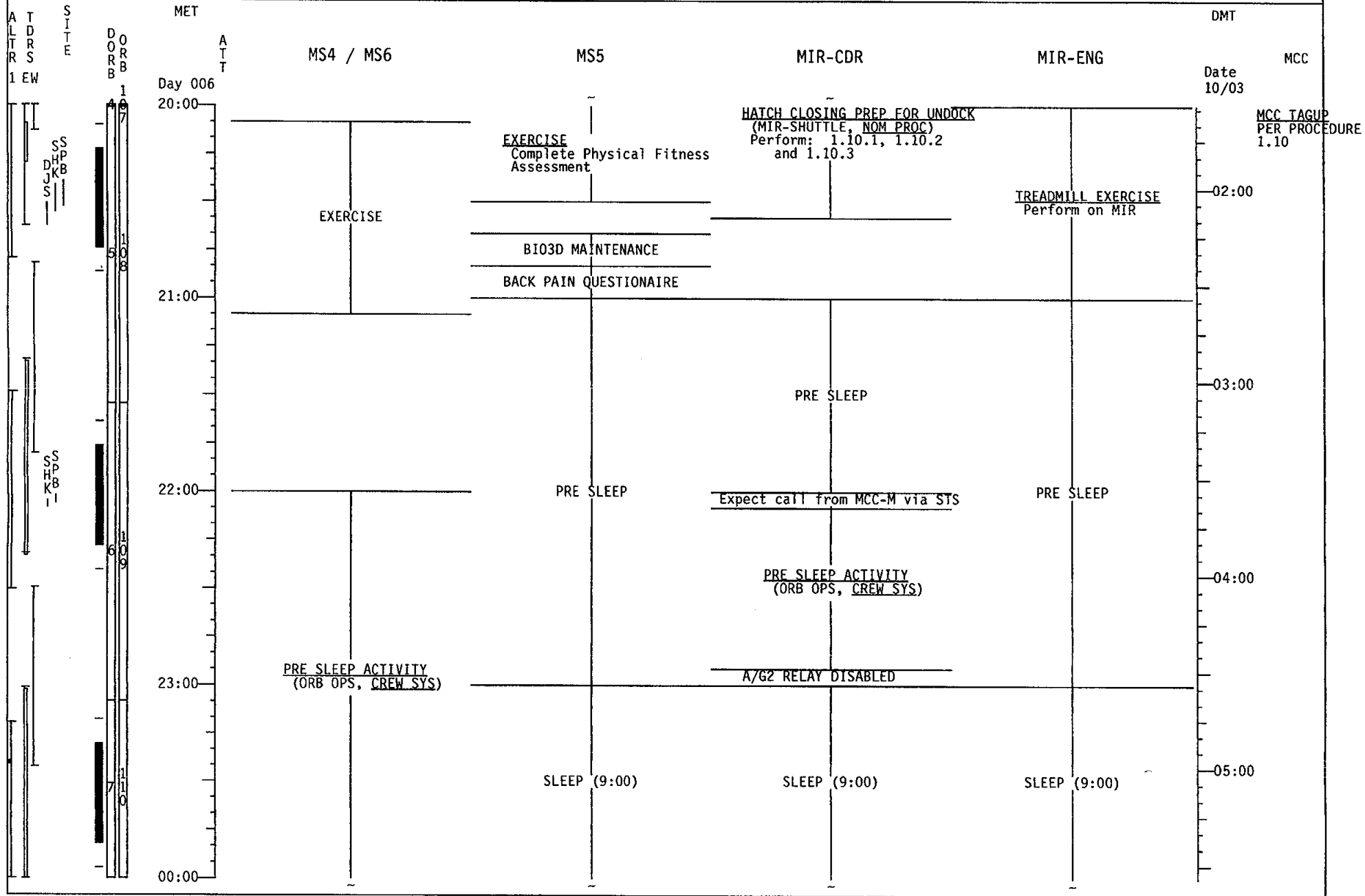
STS-86 (FD 08)



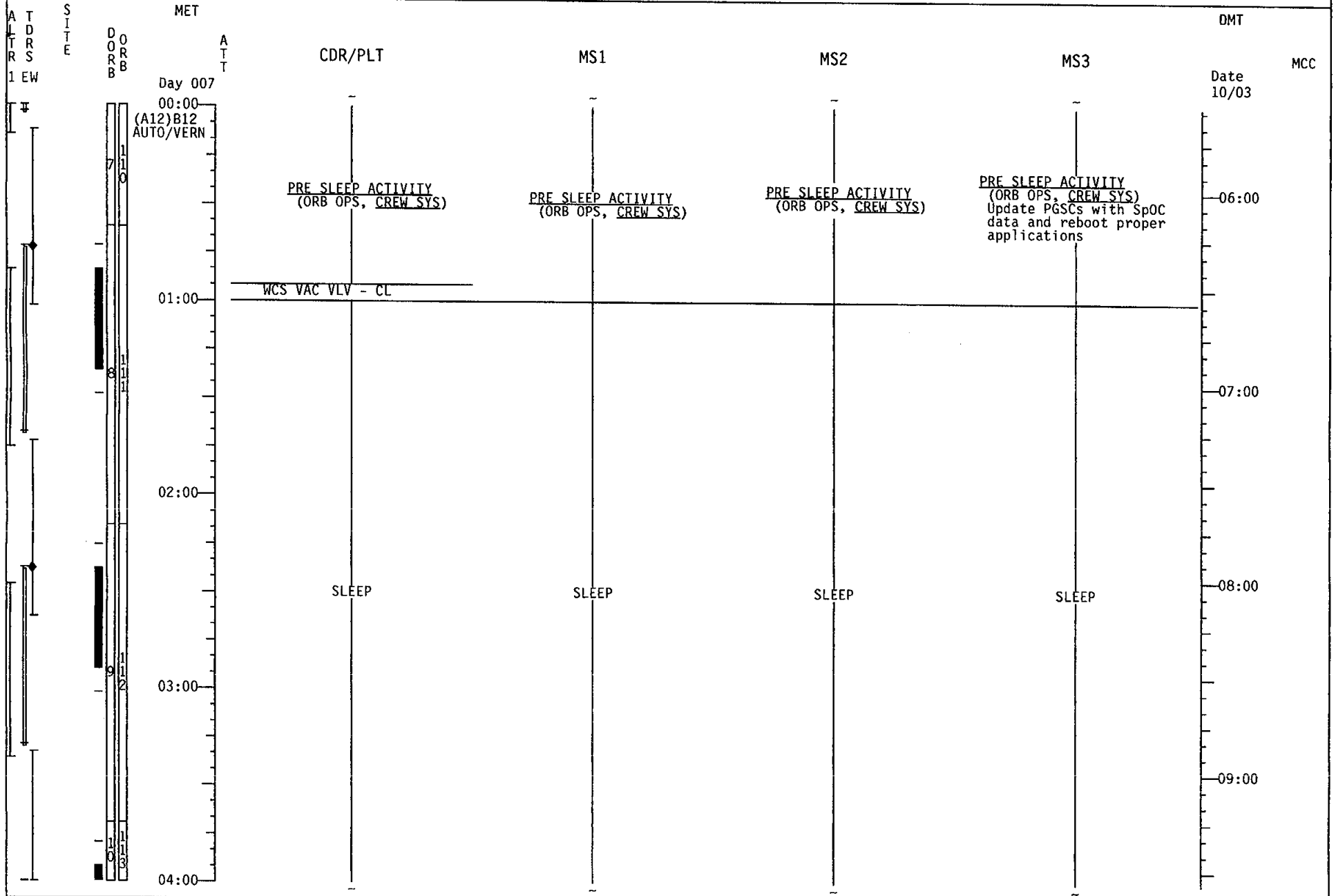
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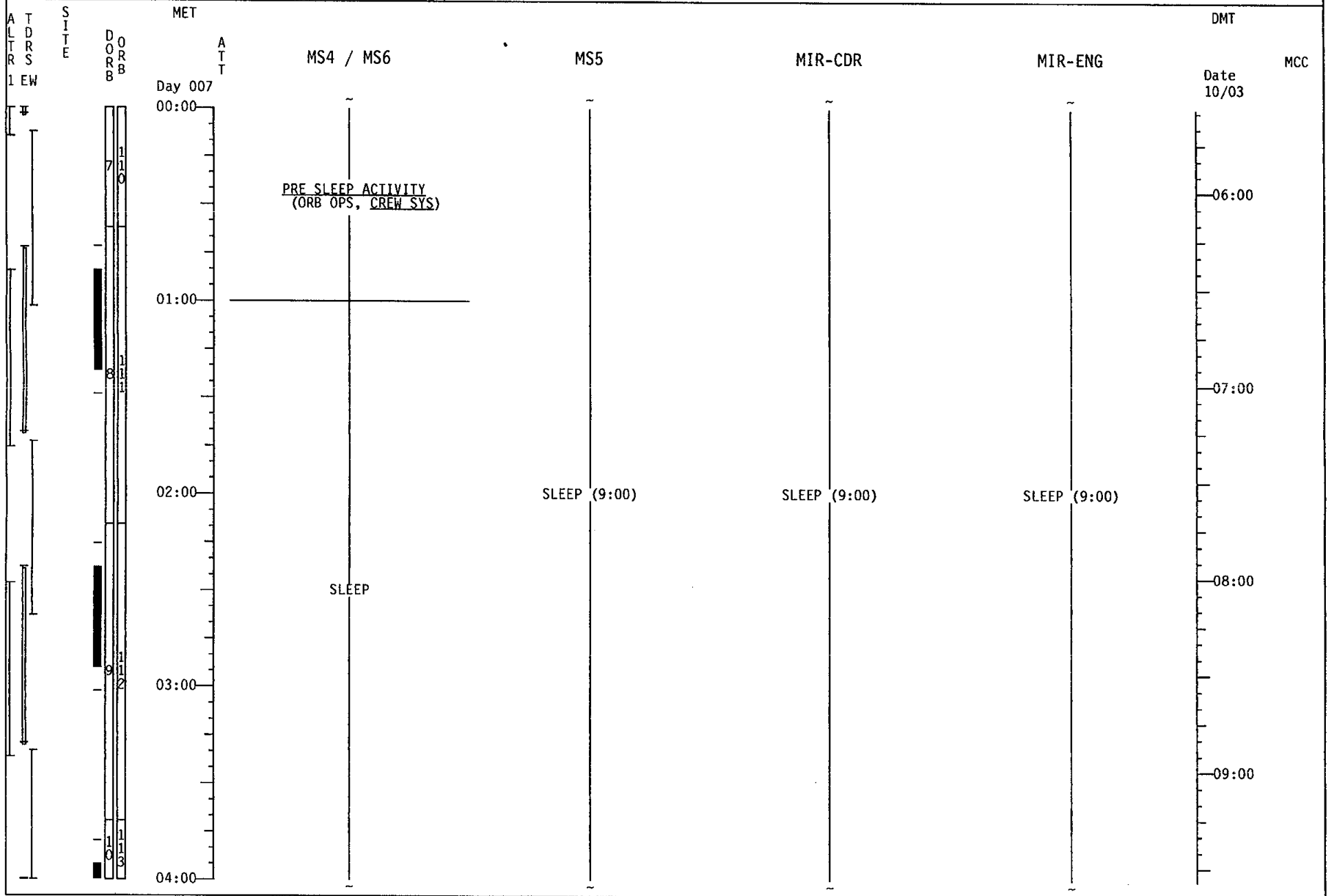
STS-86 (FD 08)



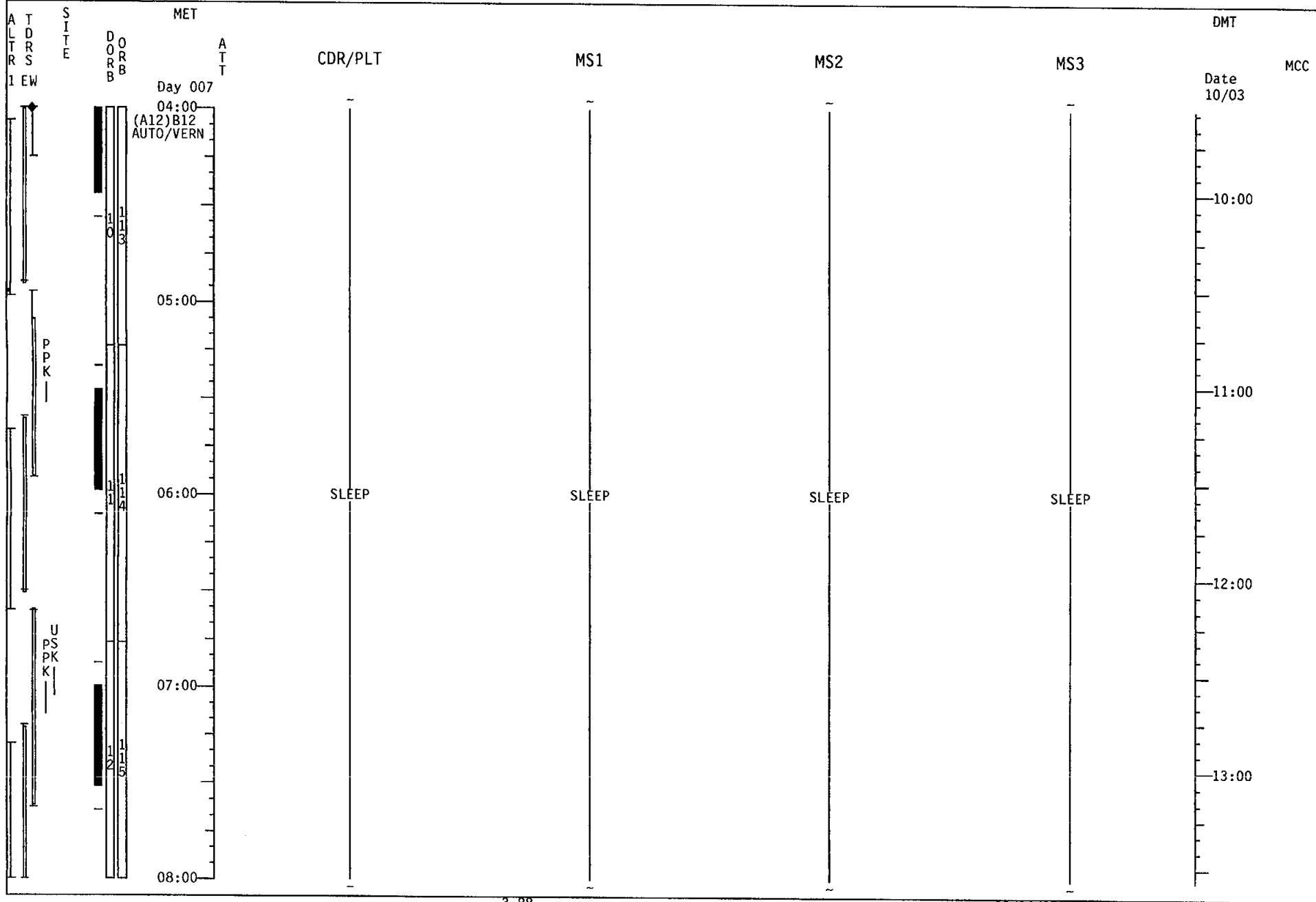
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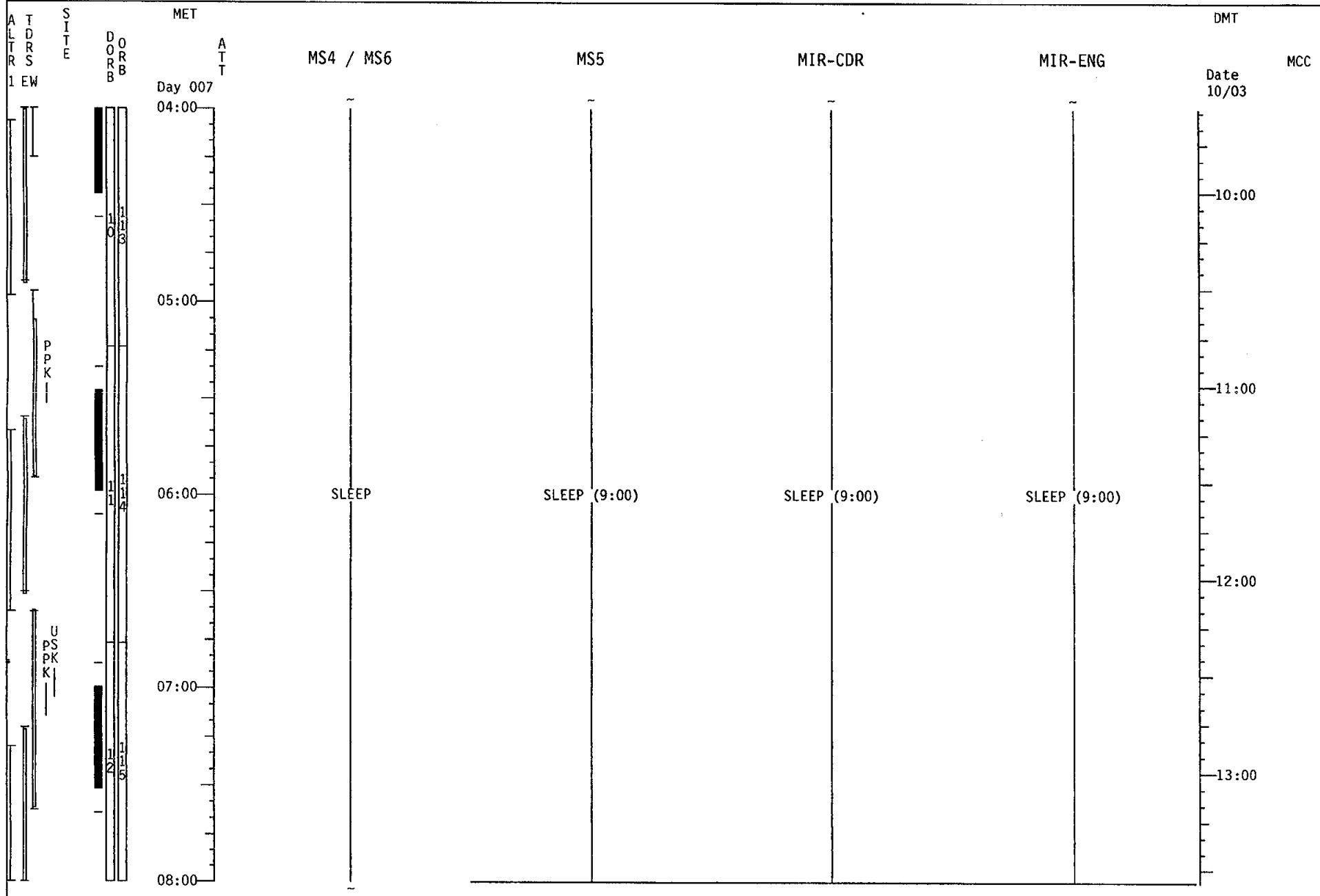
STS-86 (FD 08)



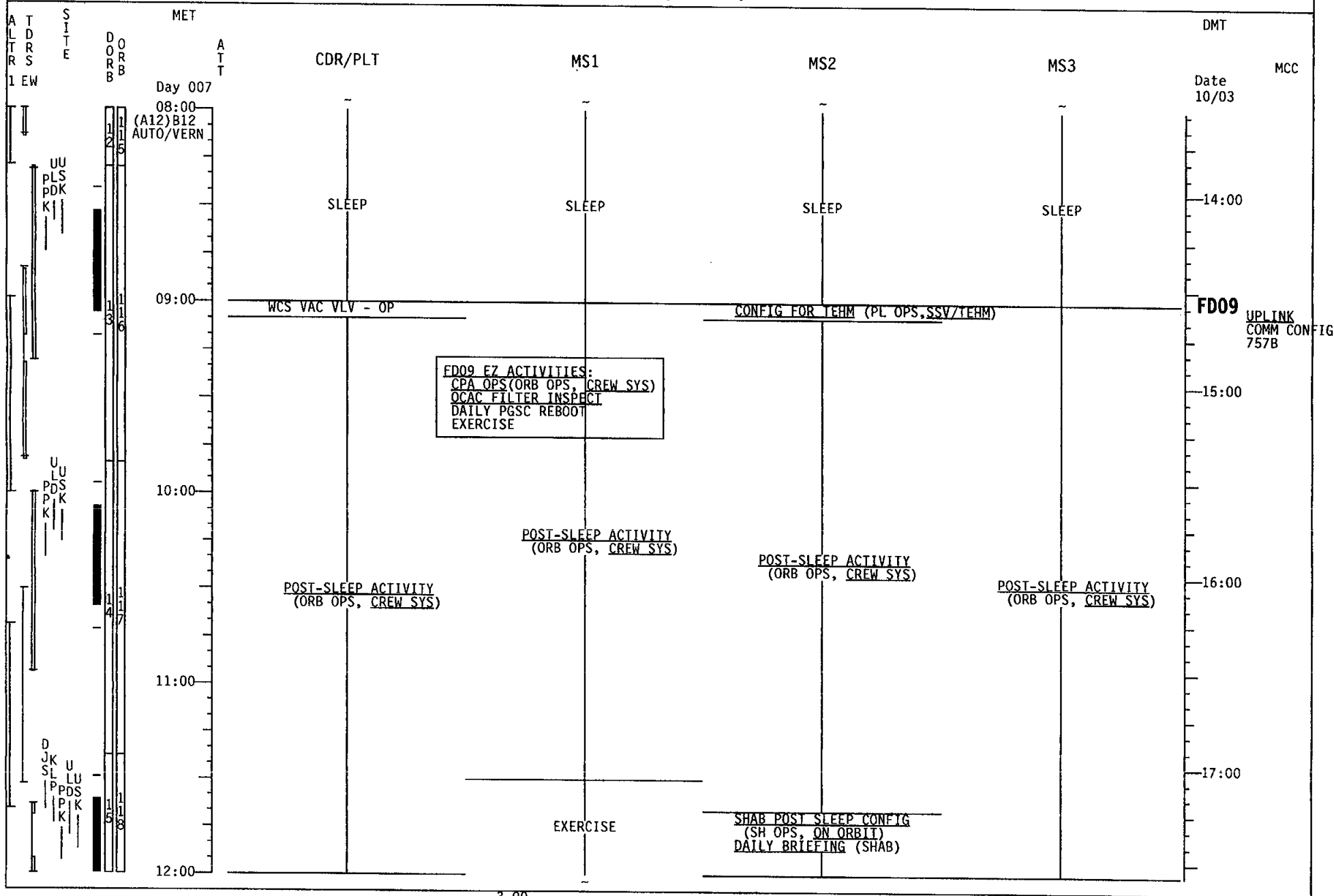
STS-86 (FD 08)



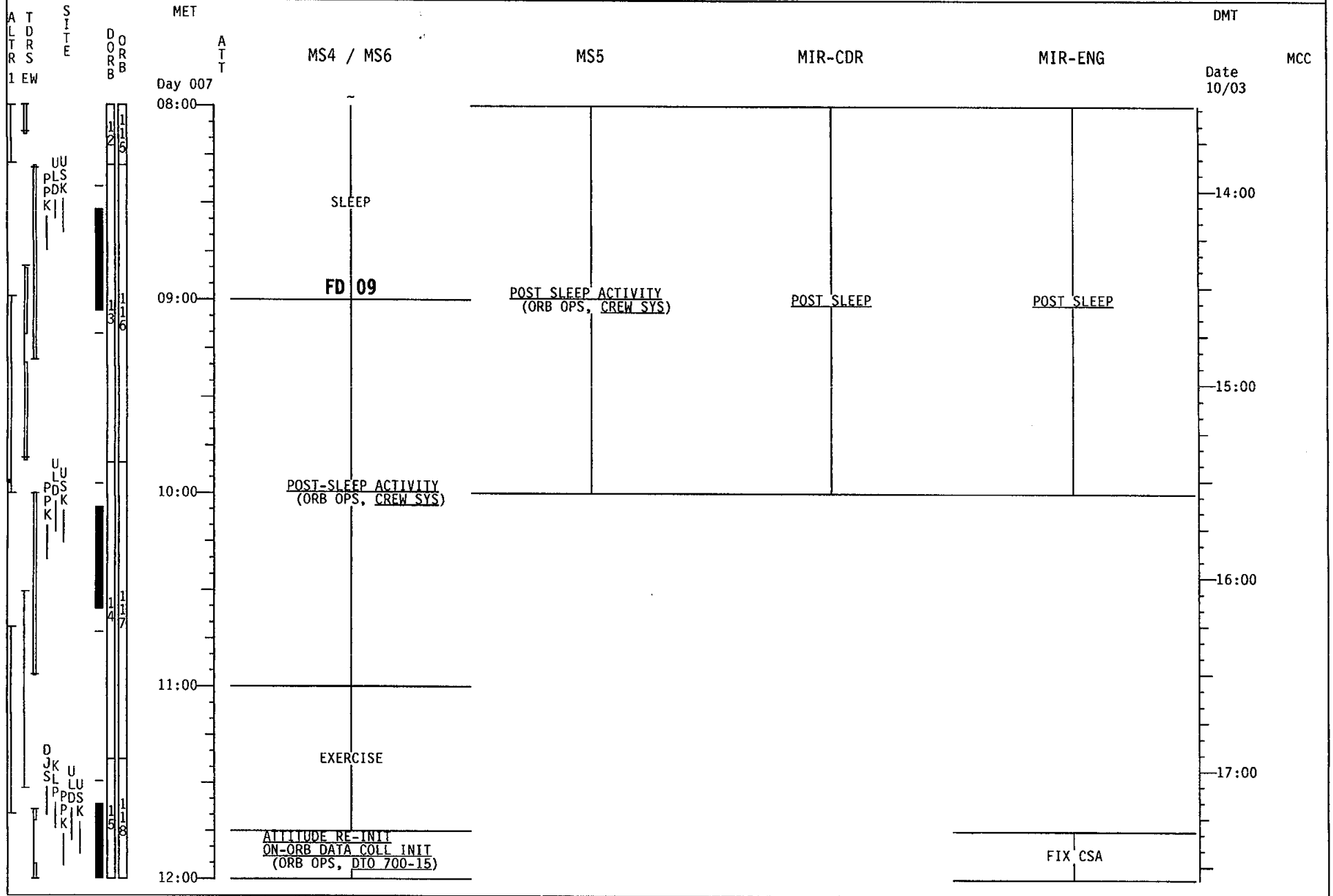
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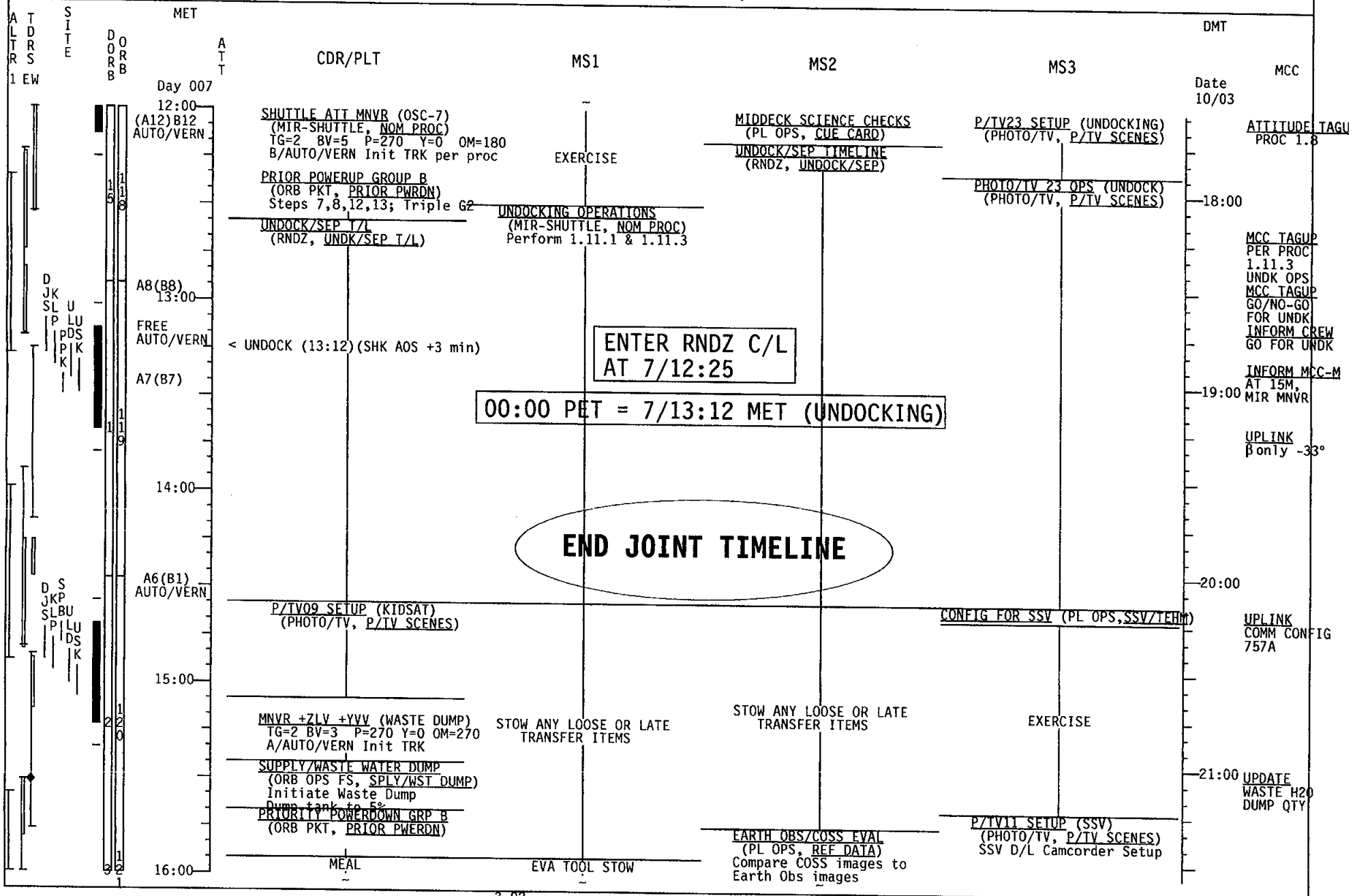
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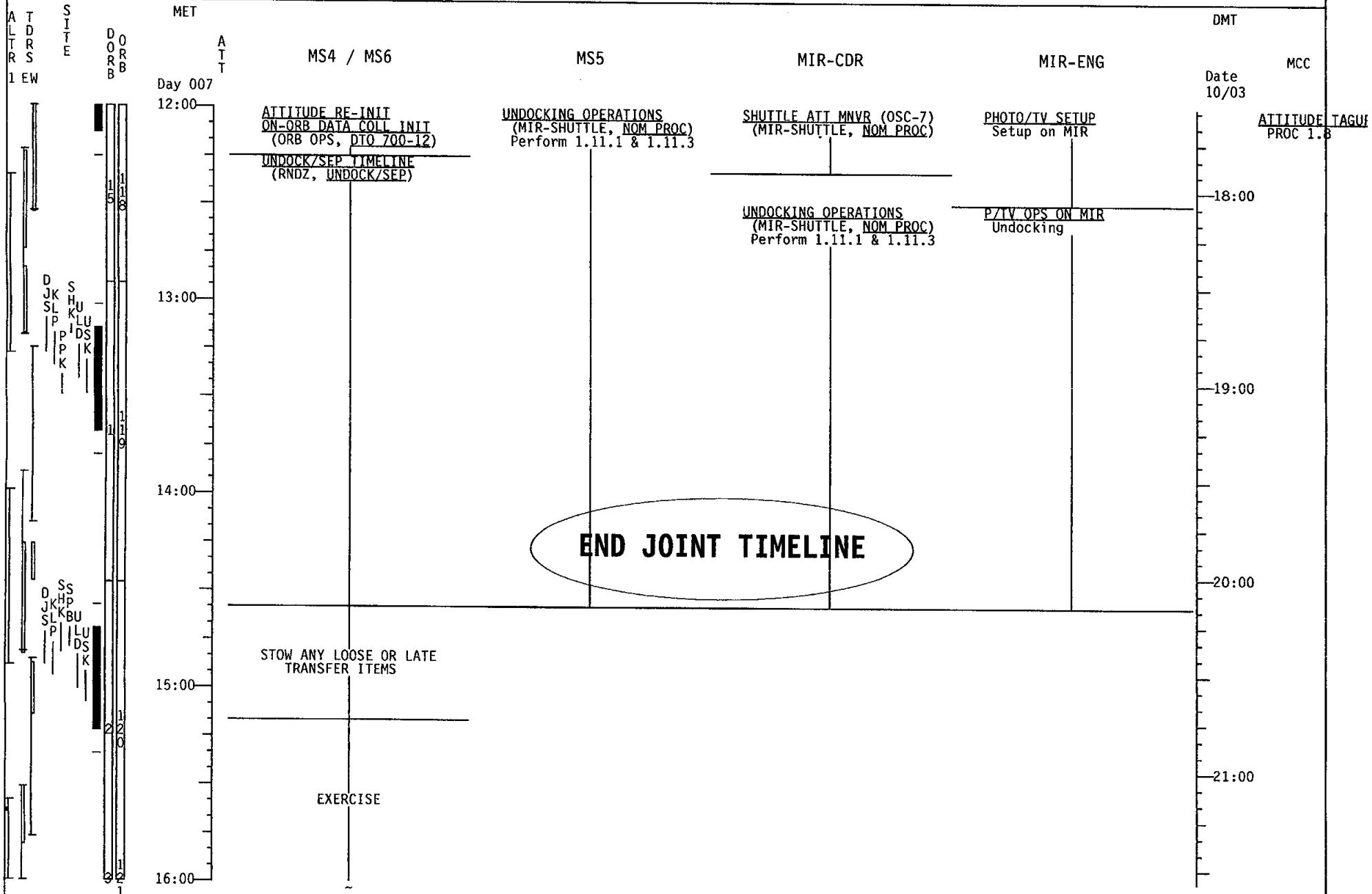
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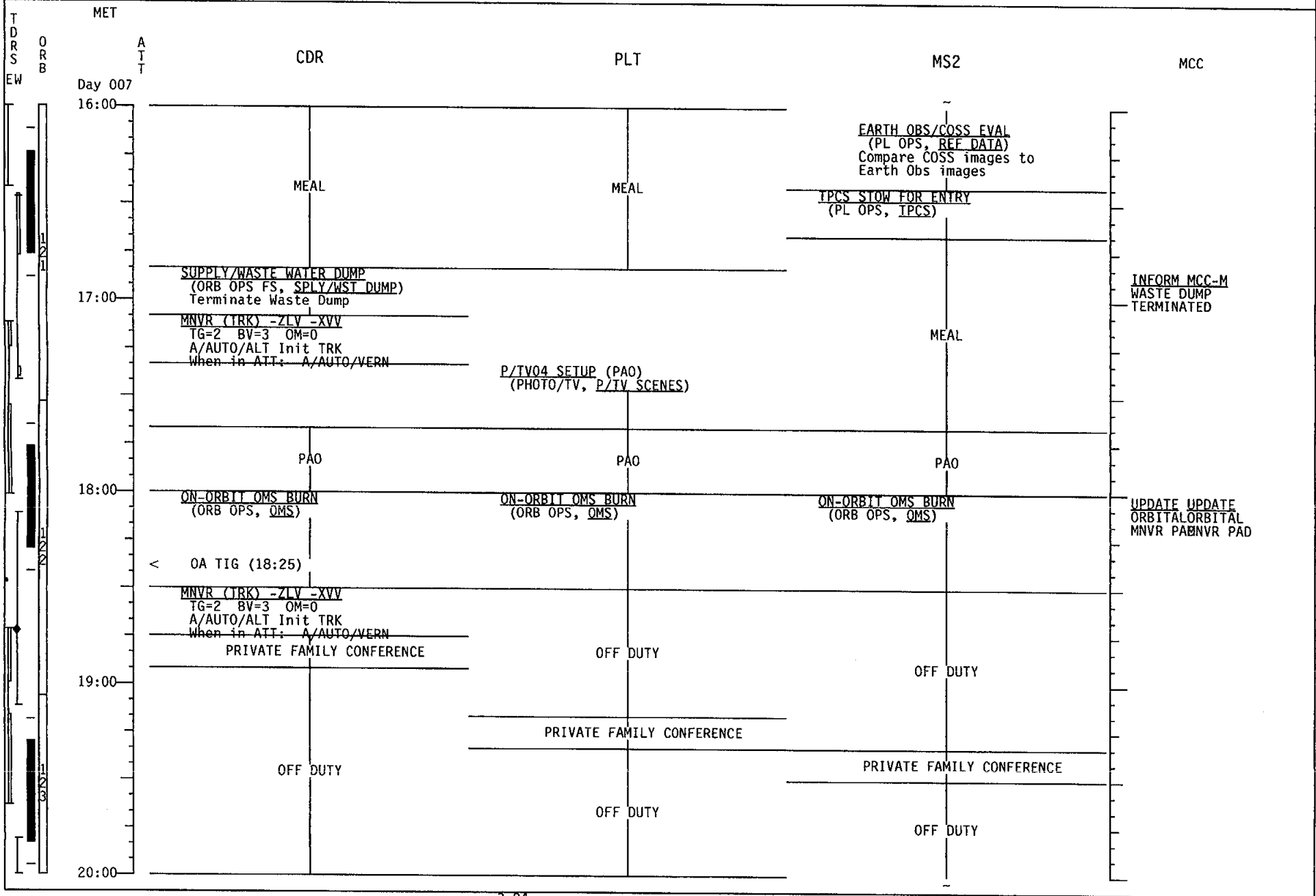
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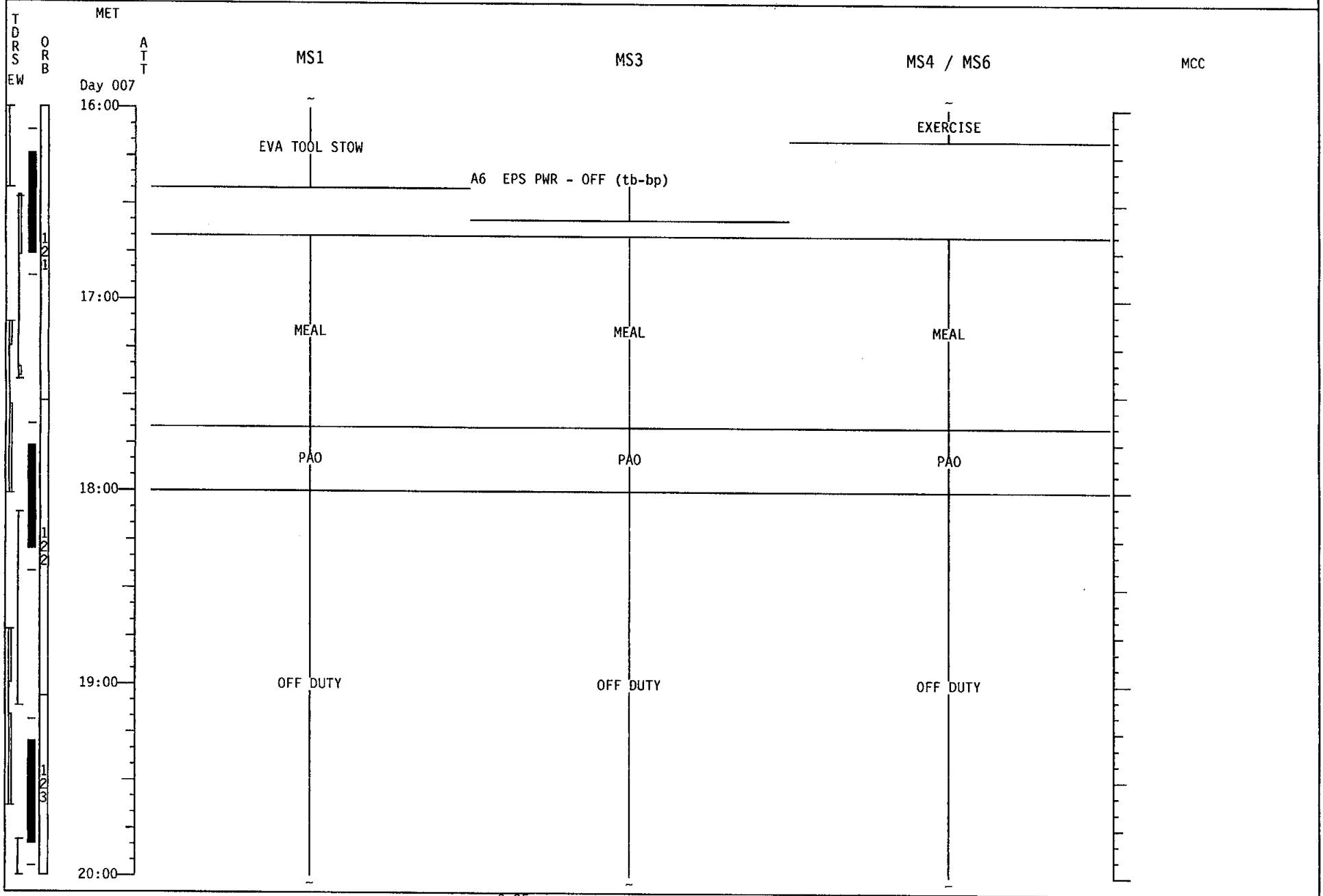
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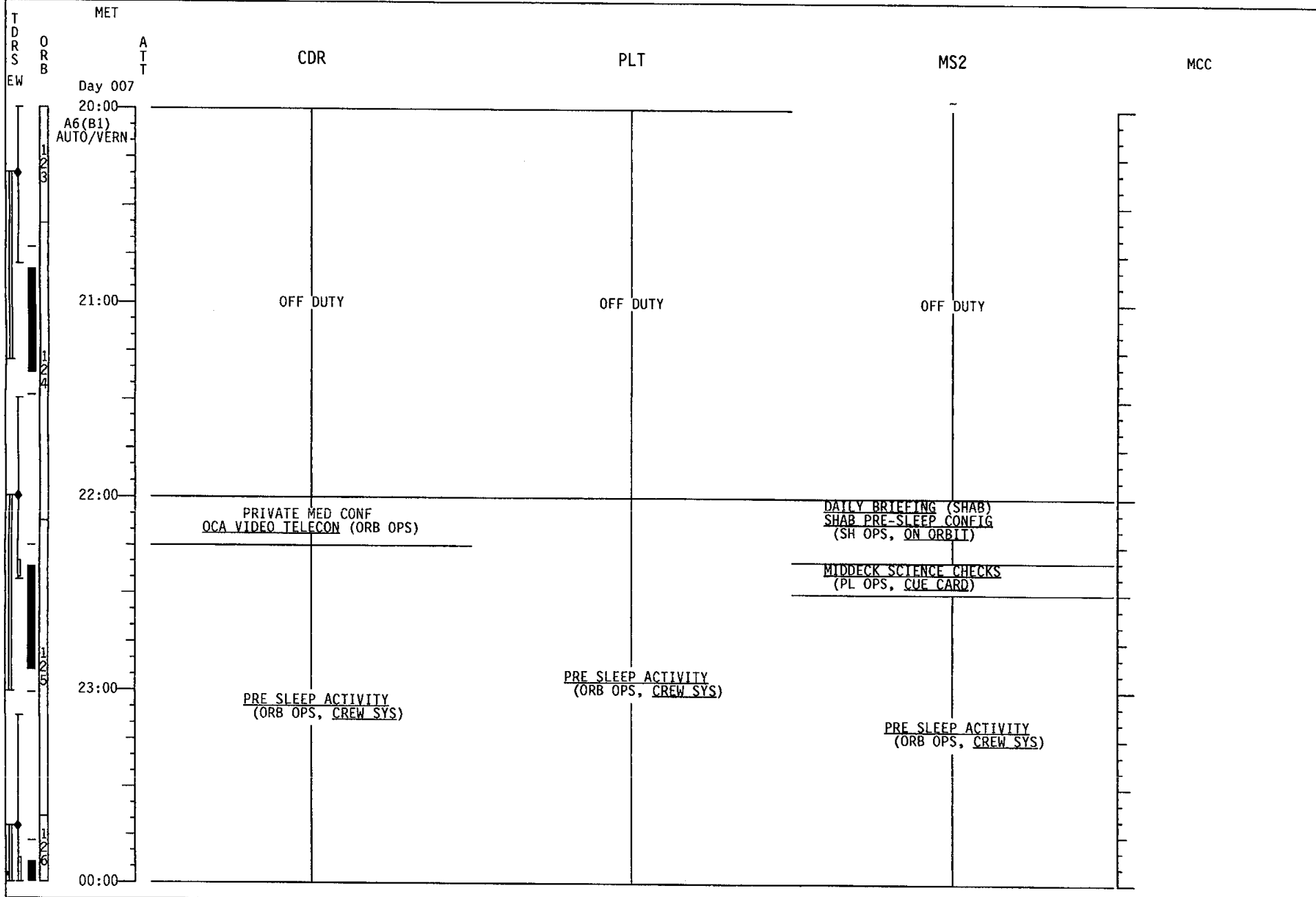
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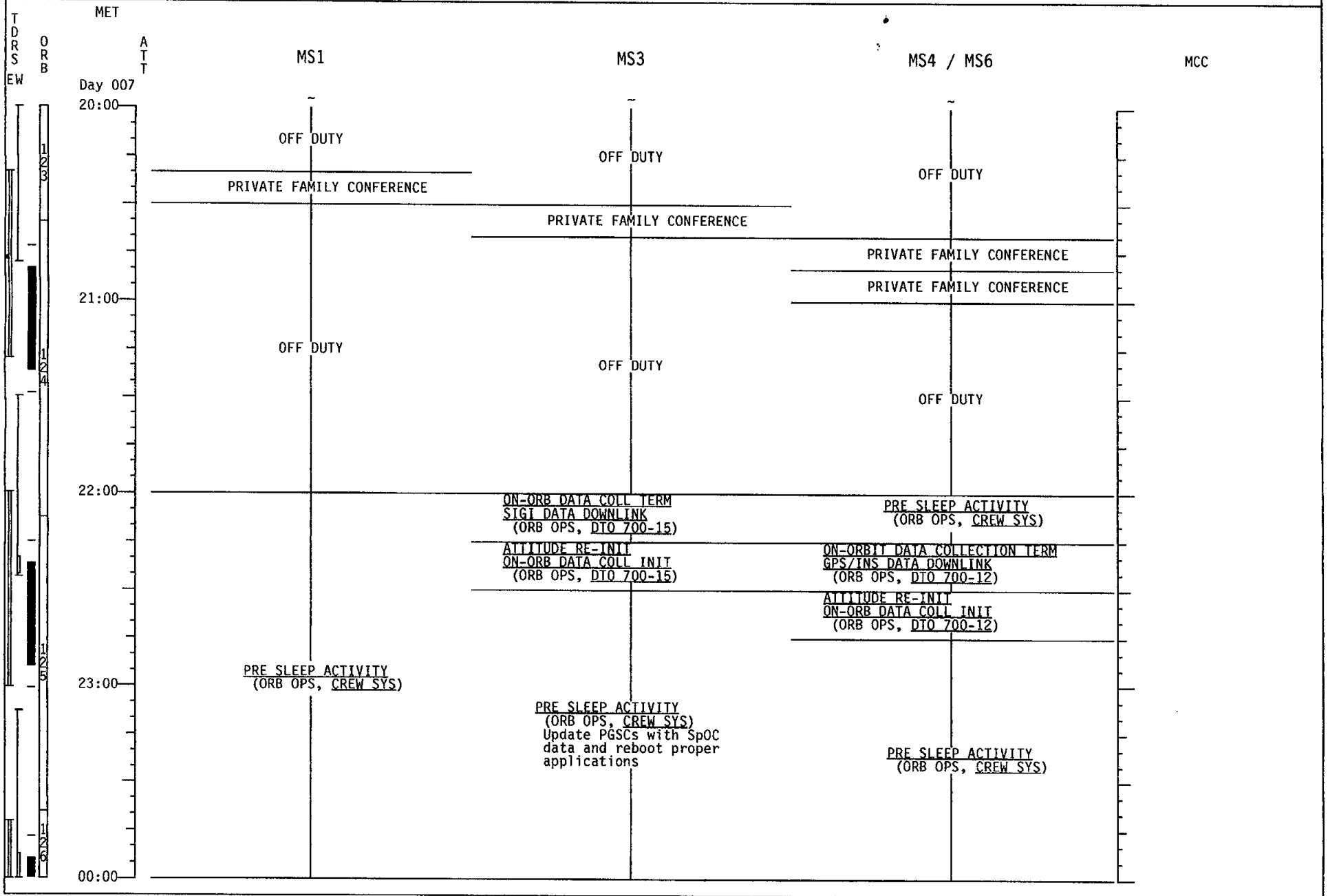
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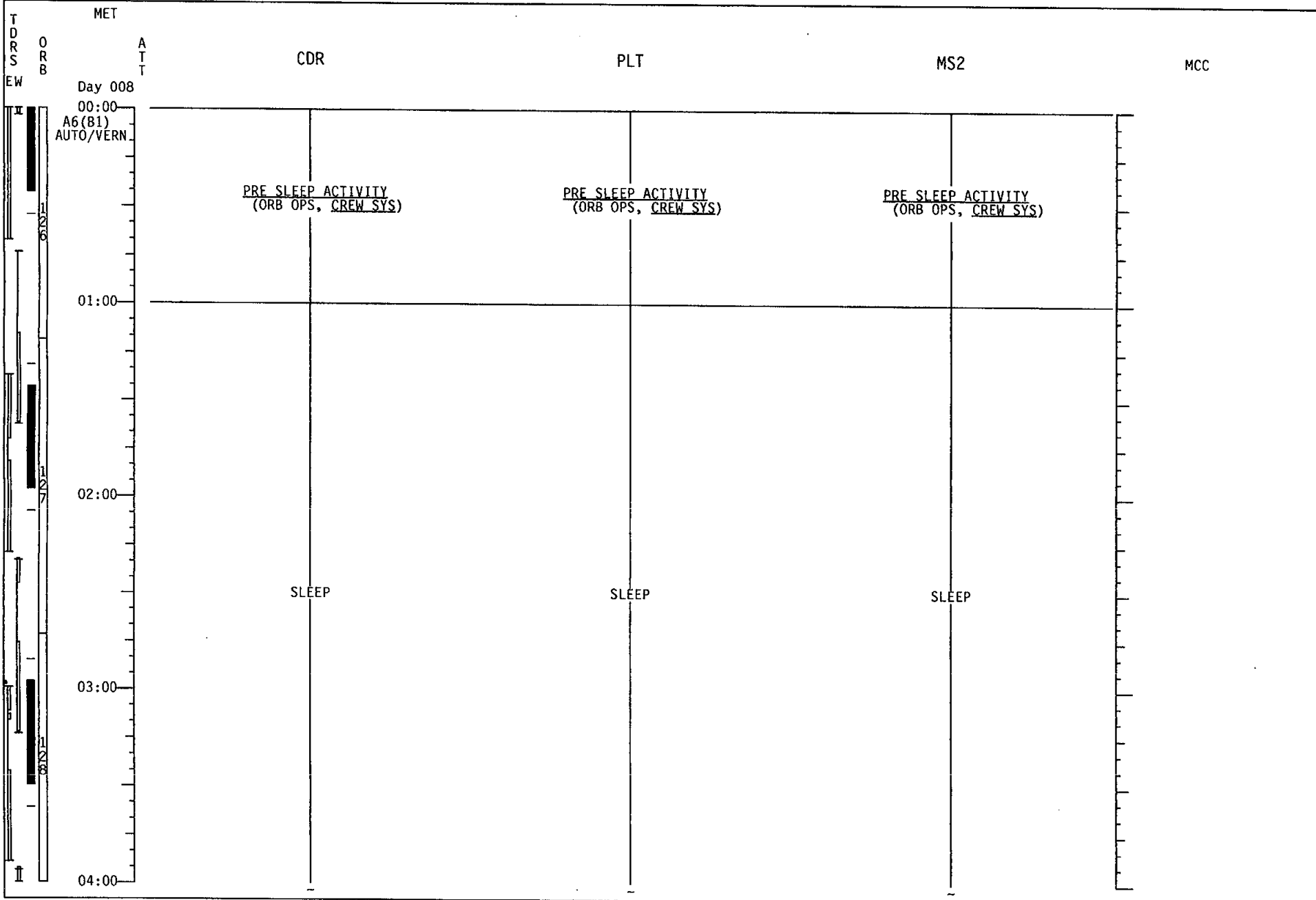
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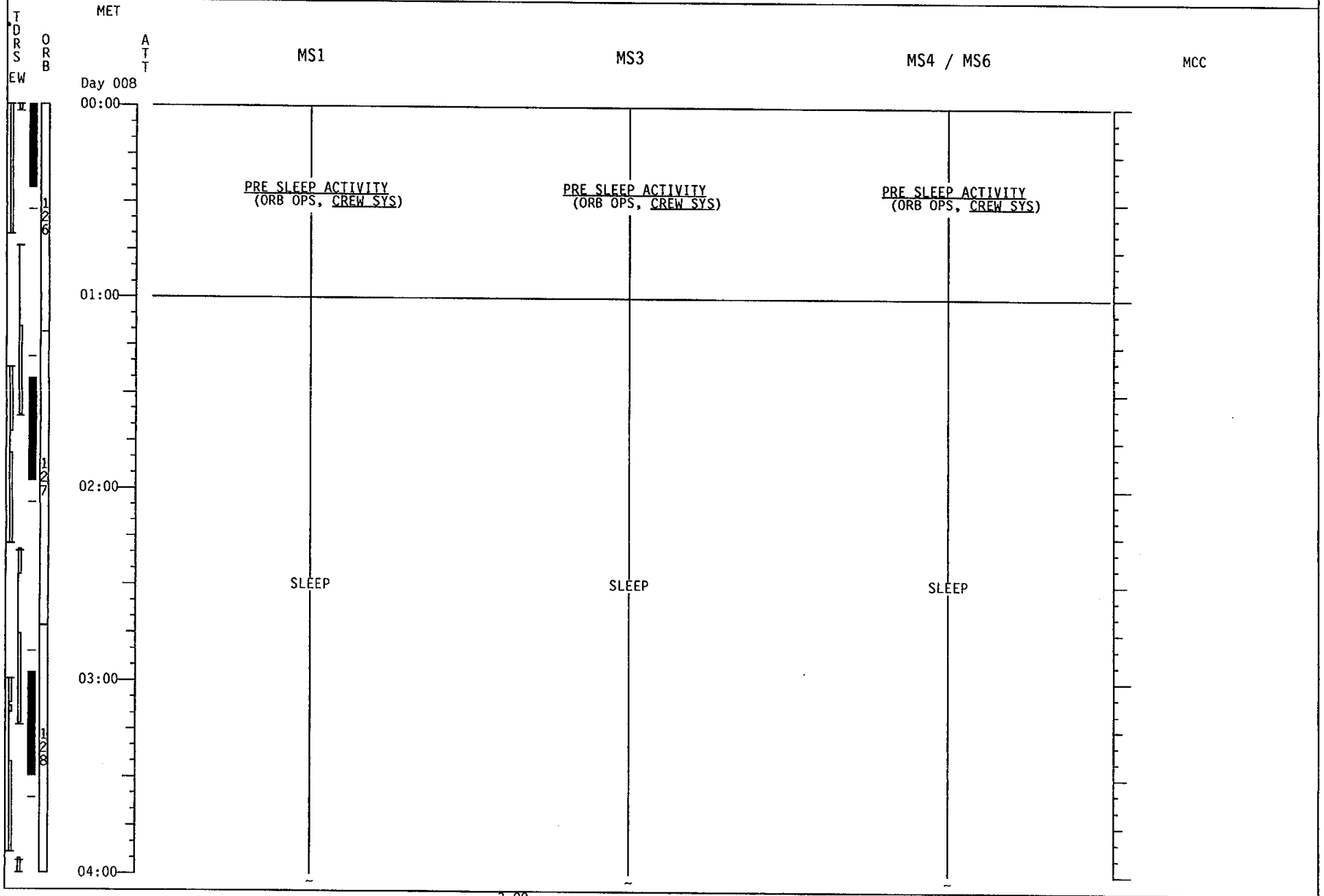
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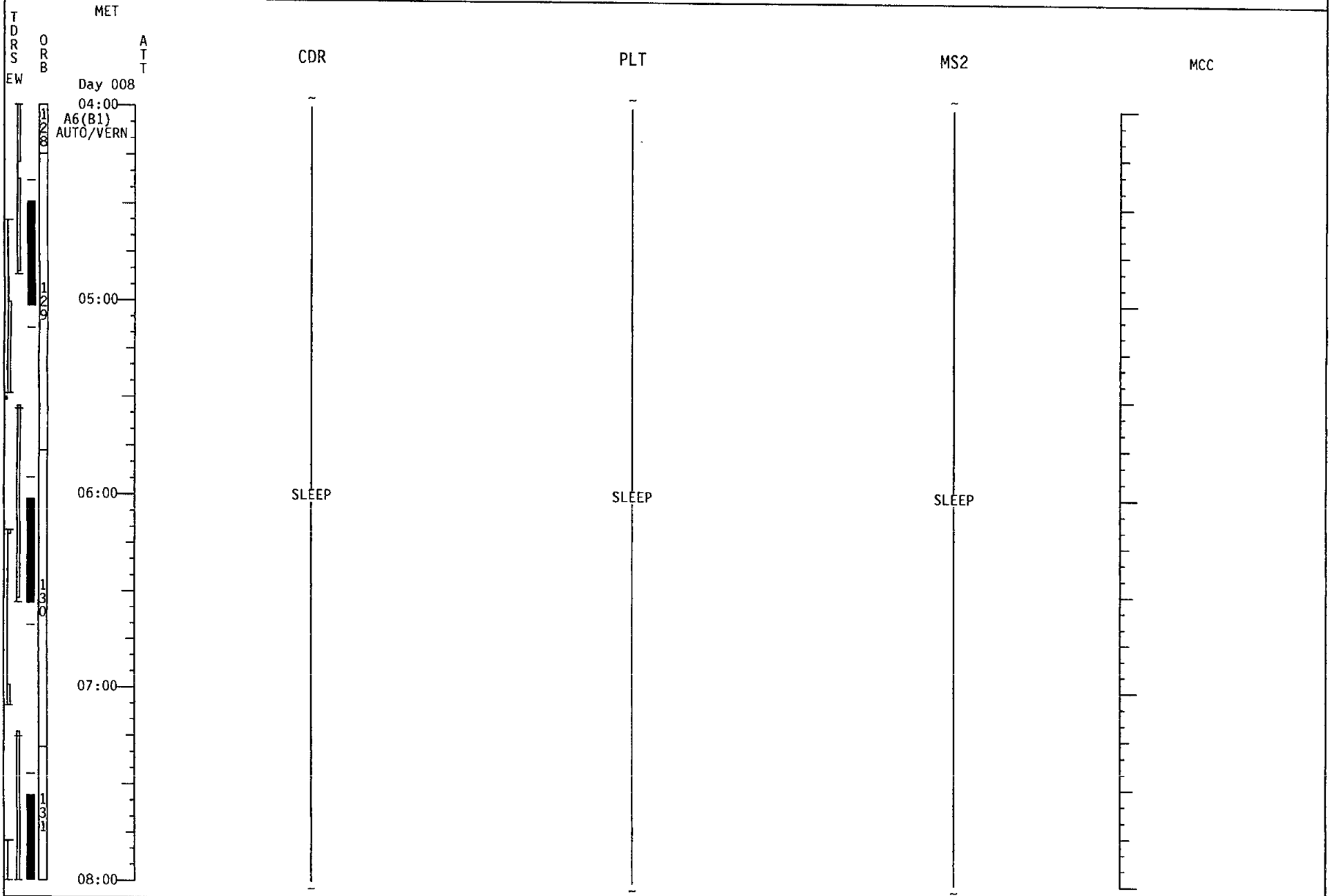
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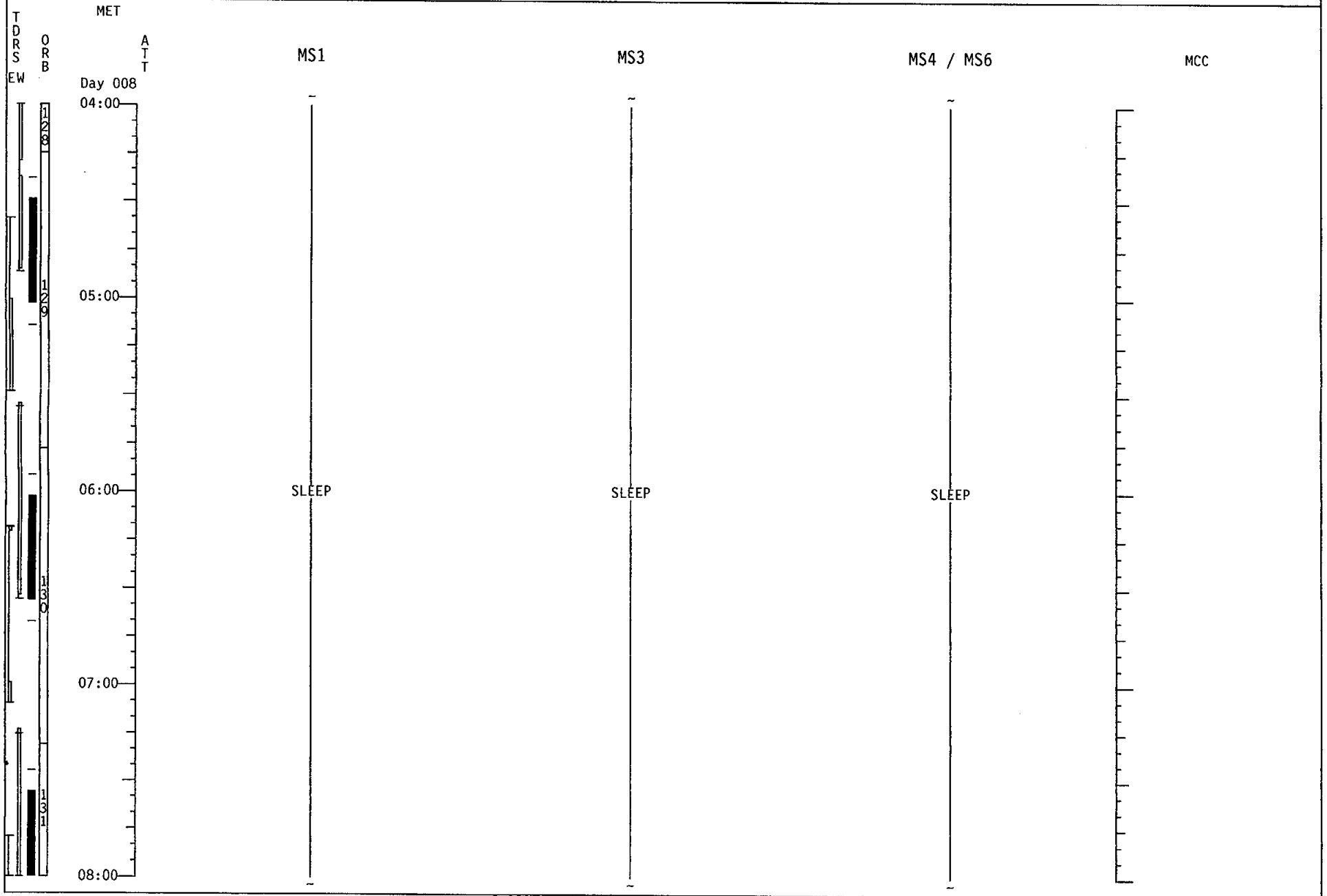
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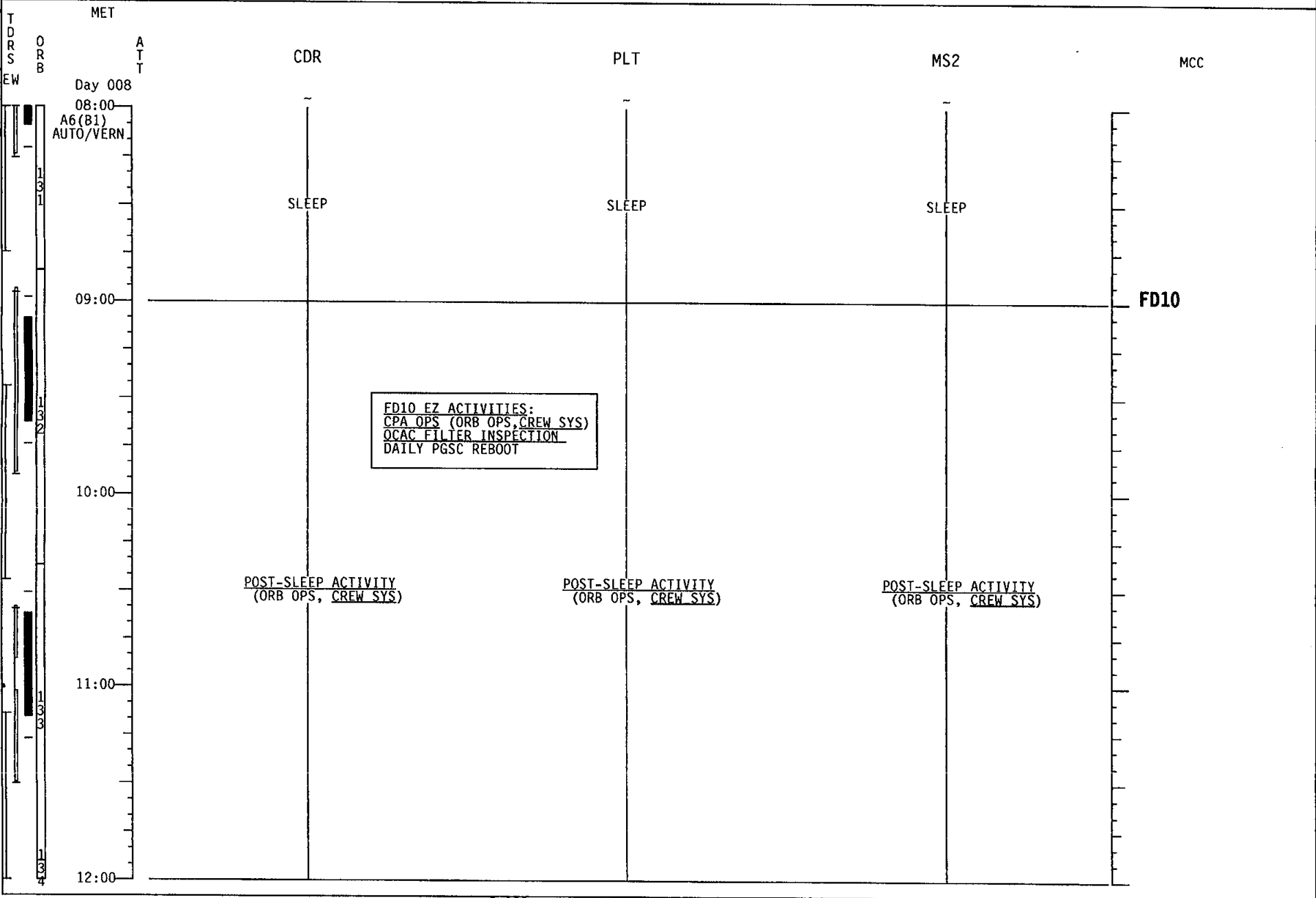
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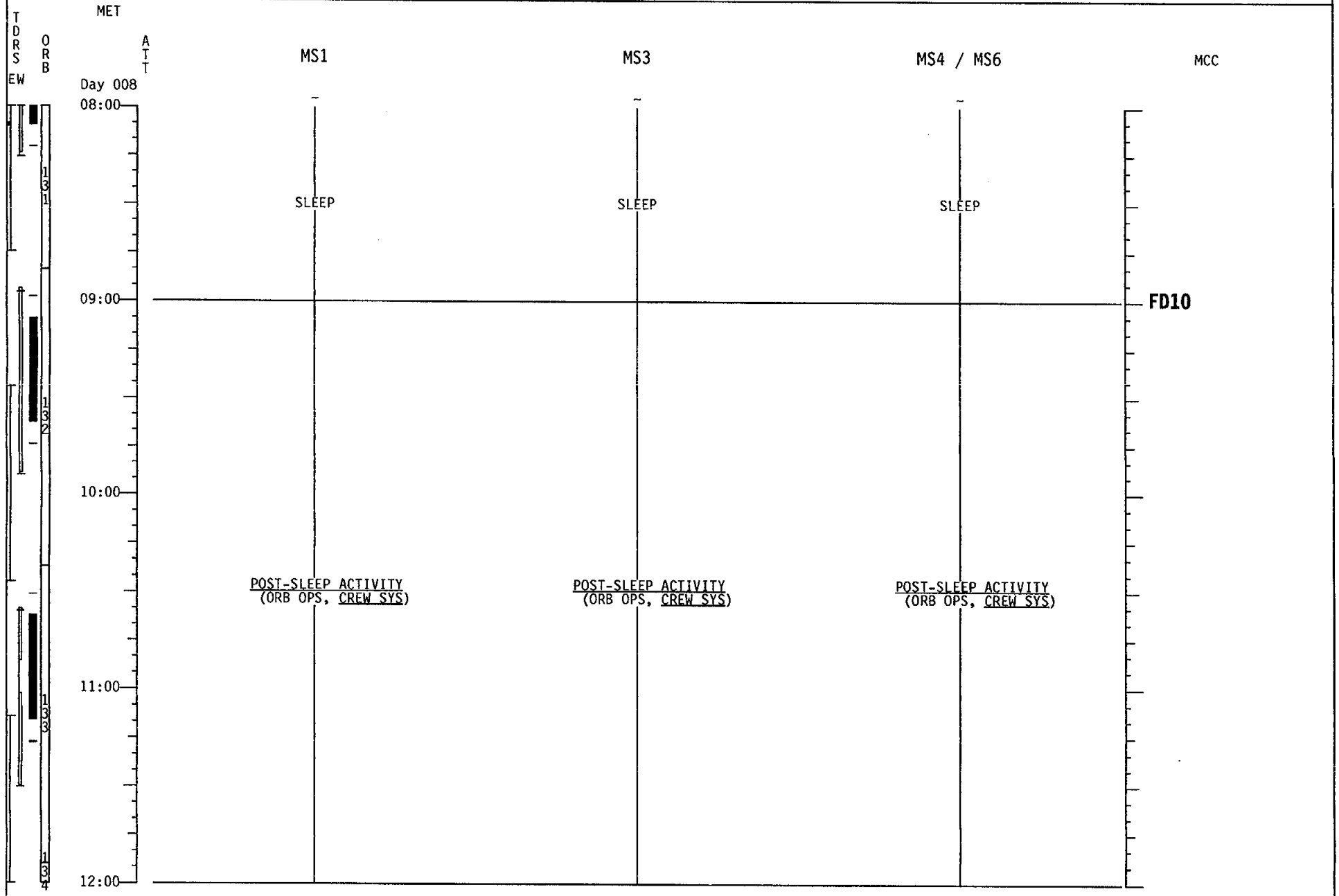
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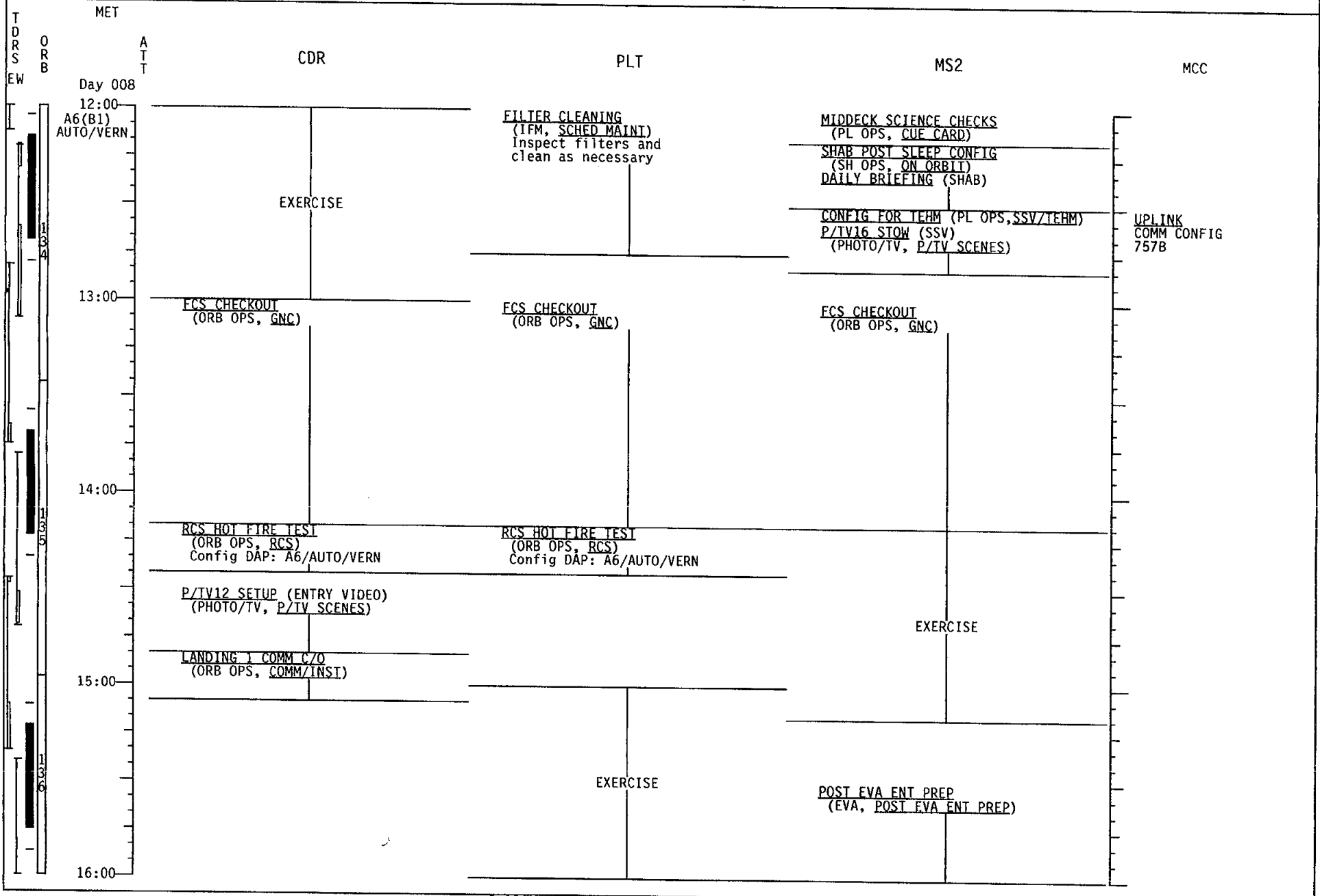
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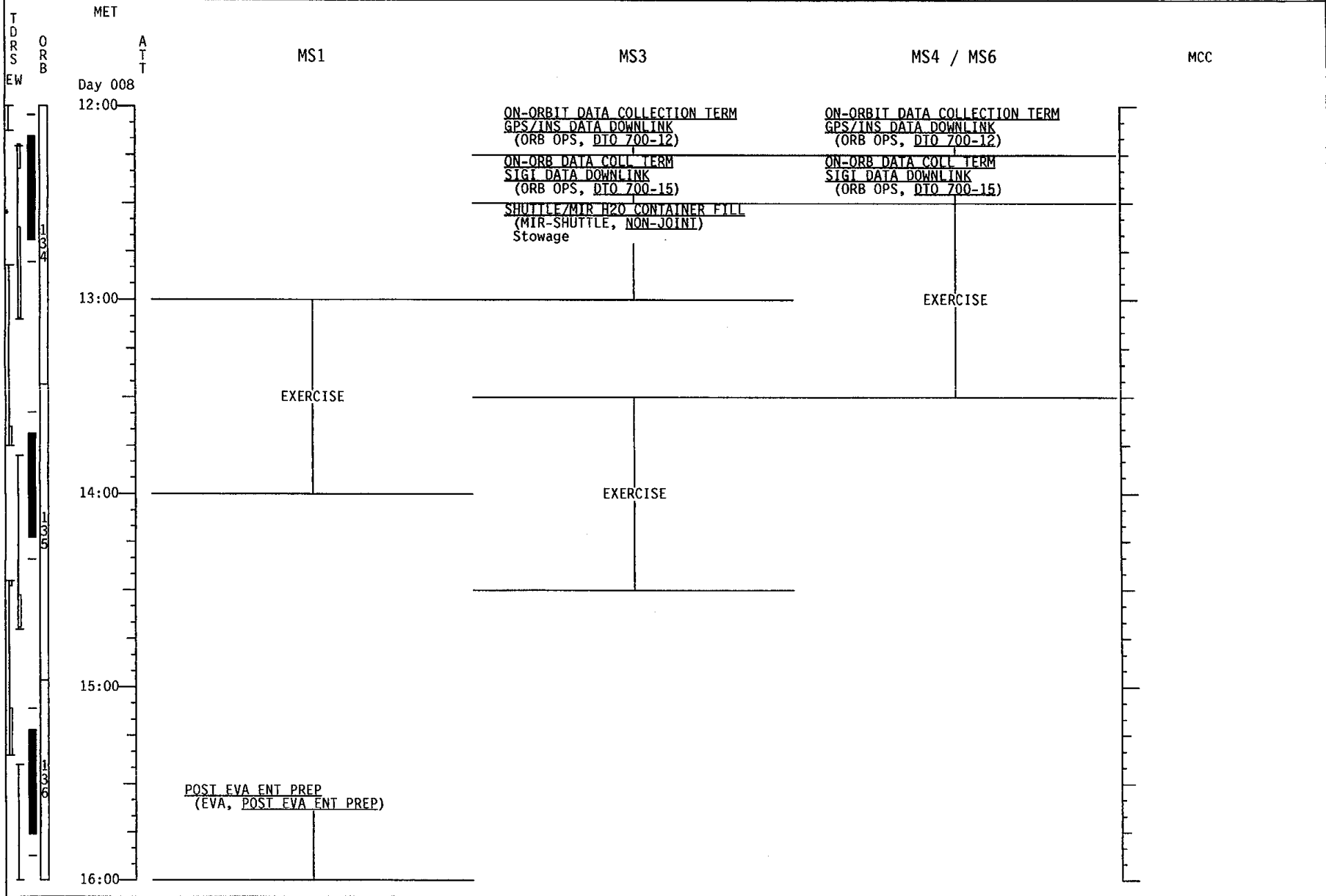
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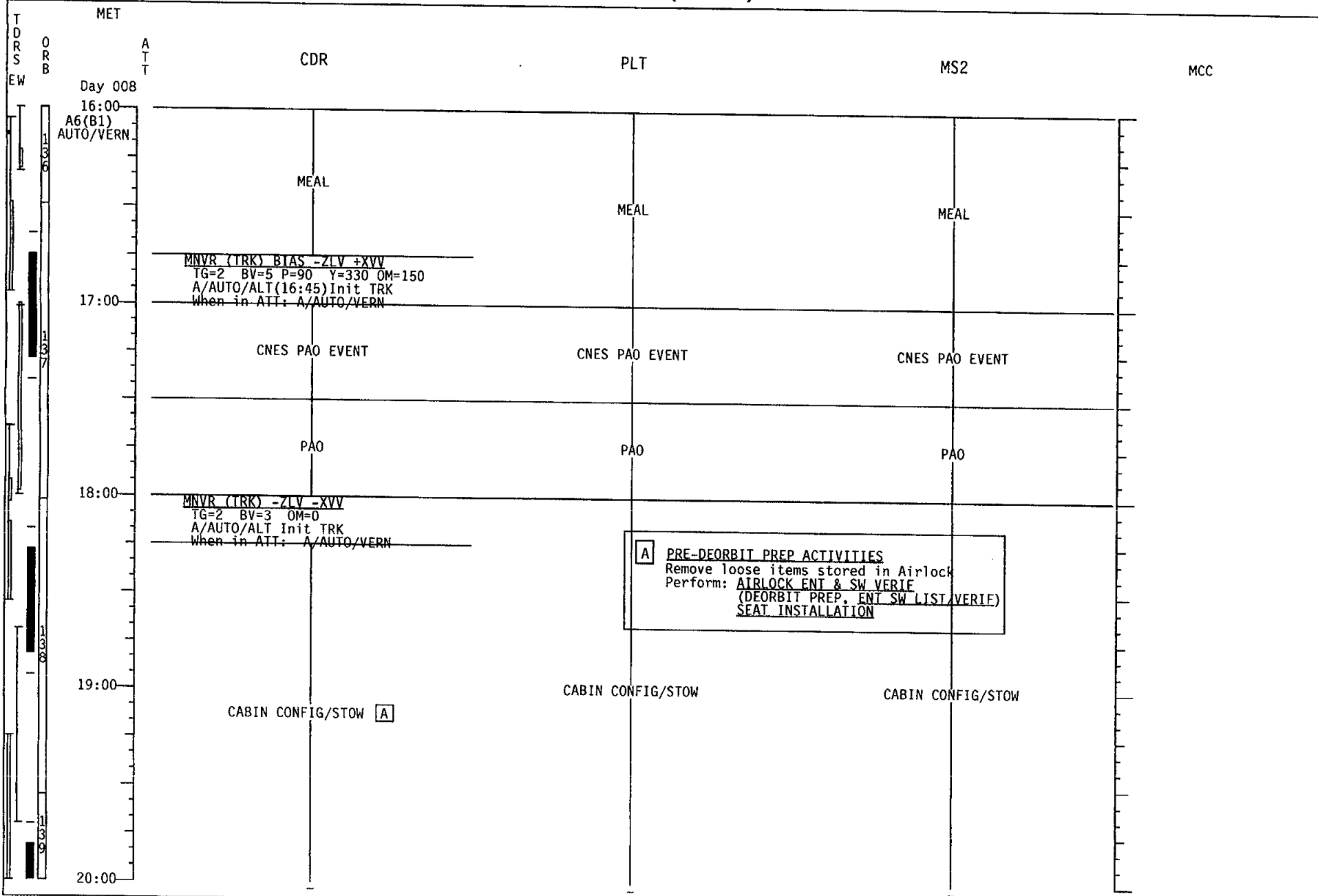
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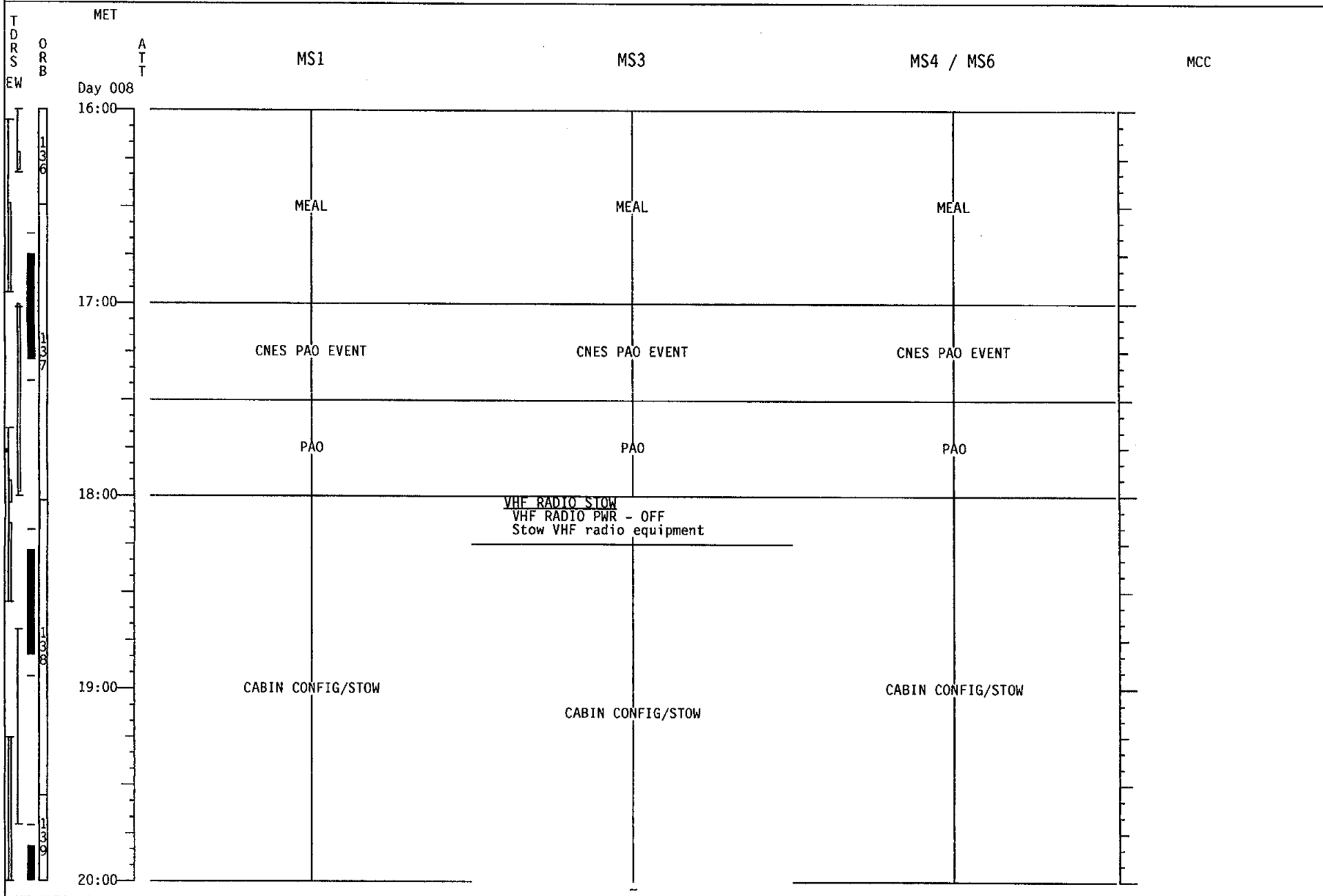
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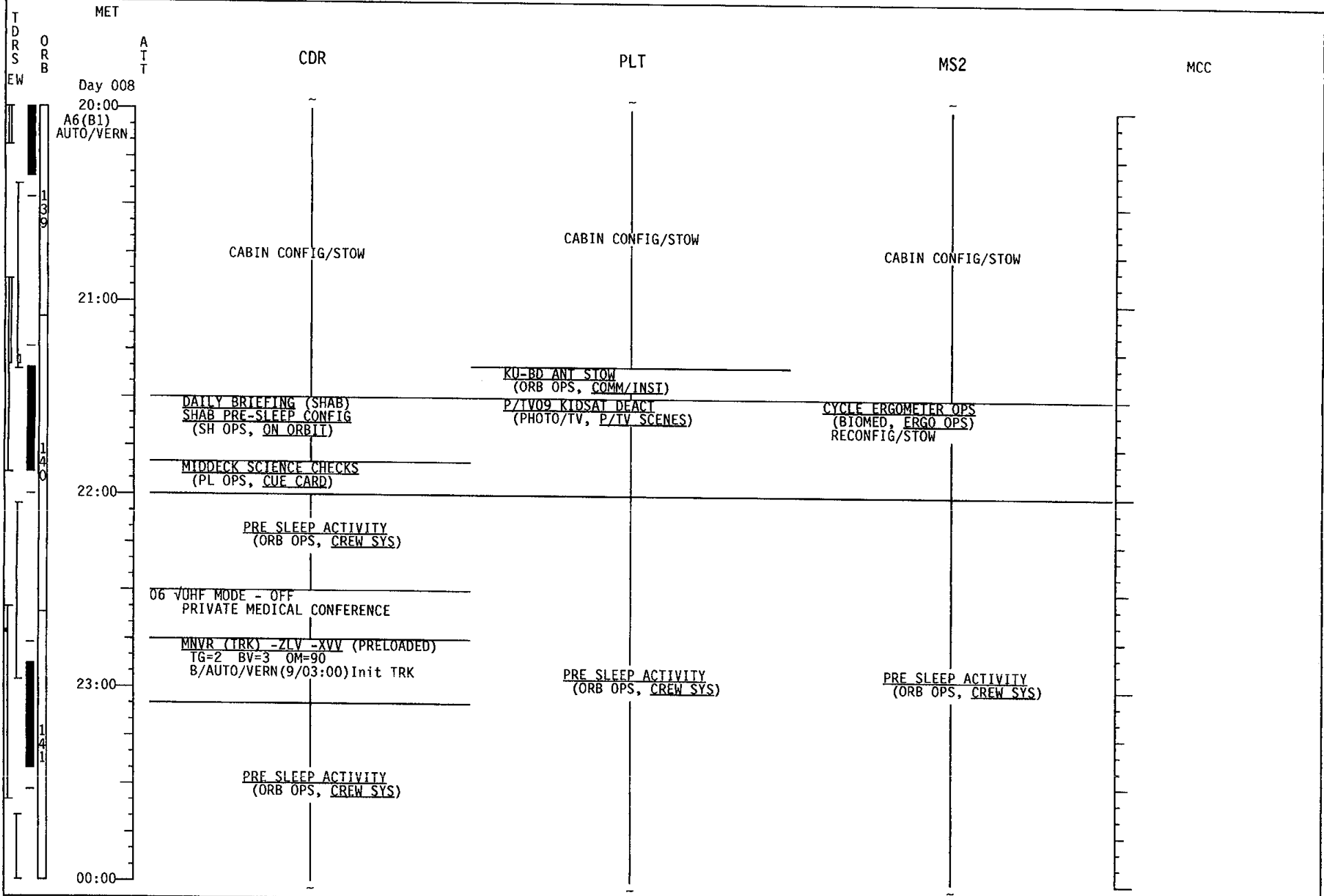
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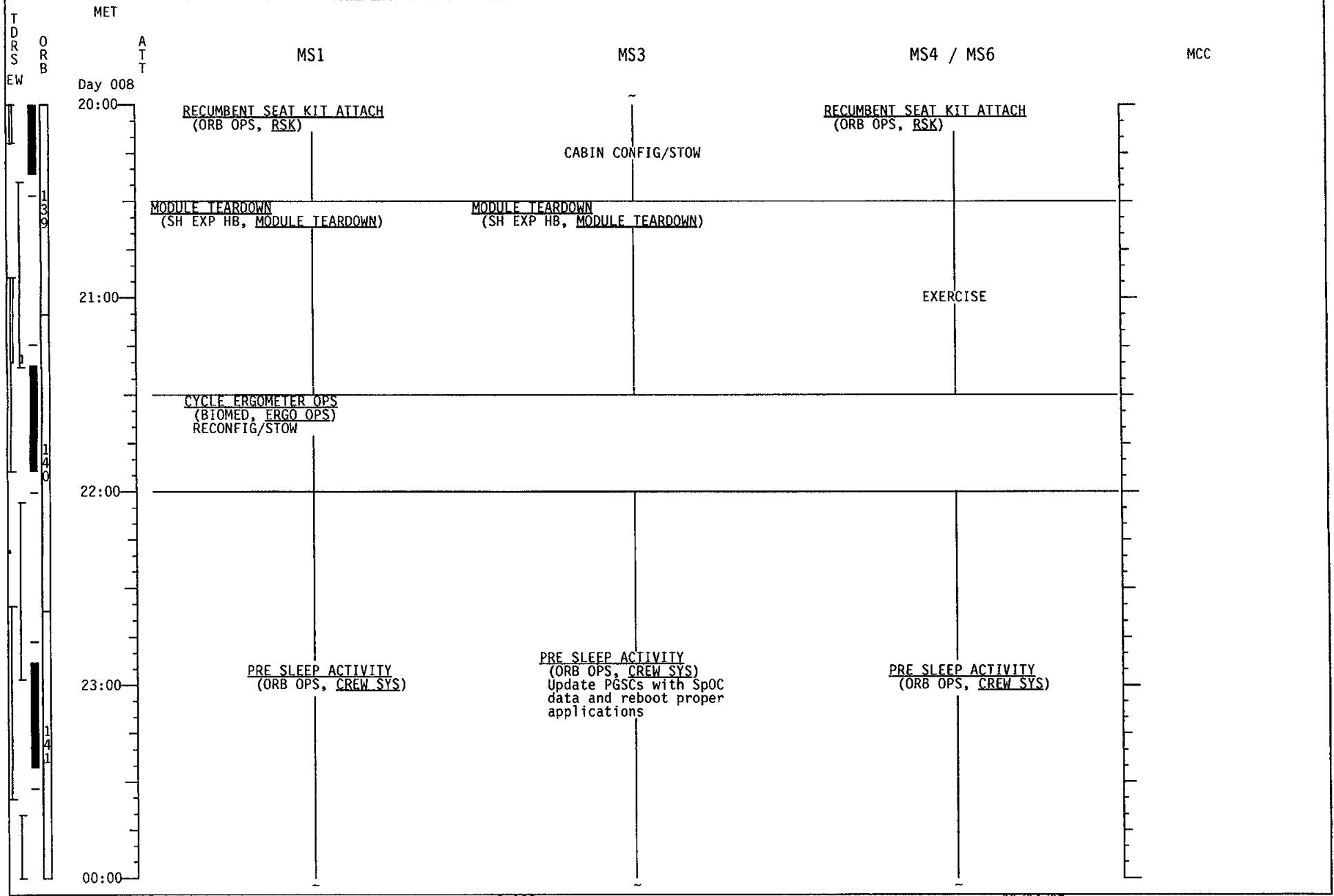
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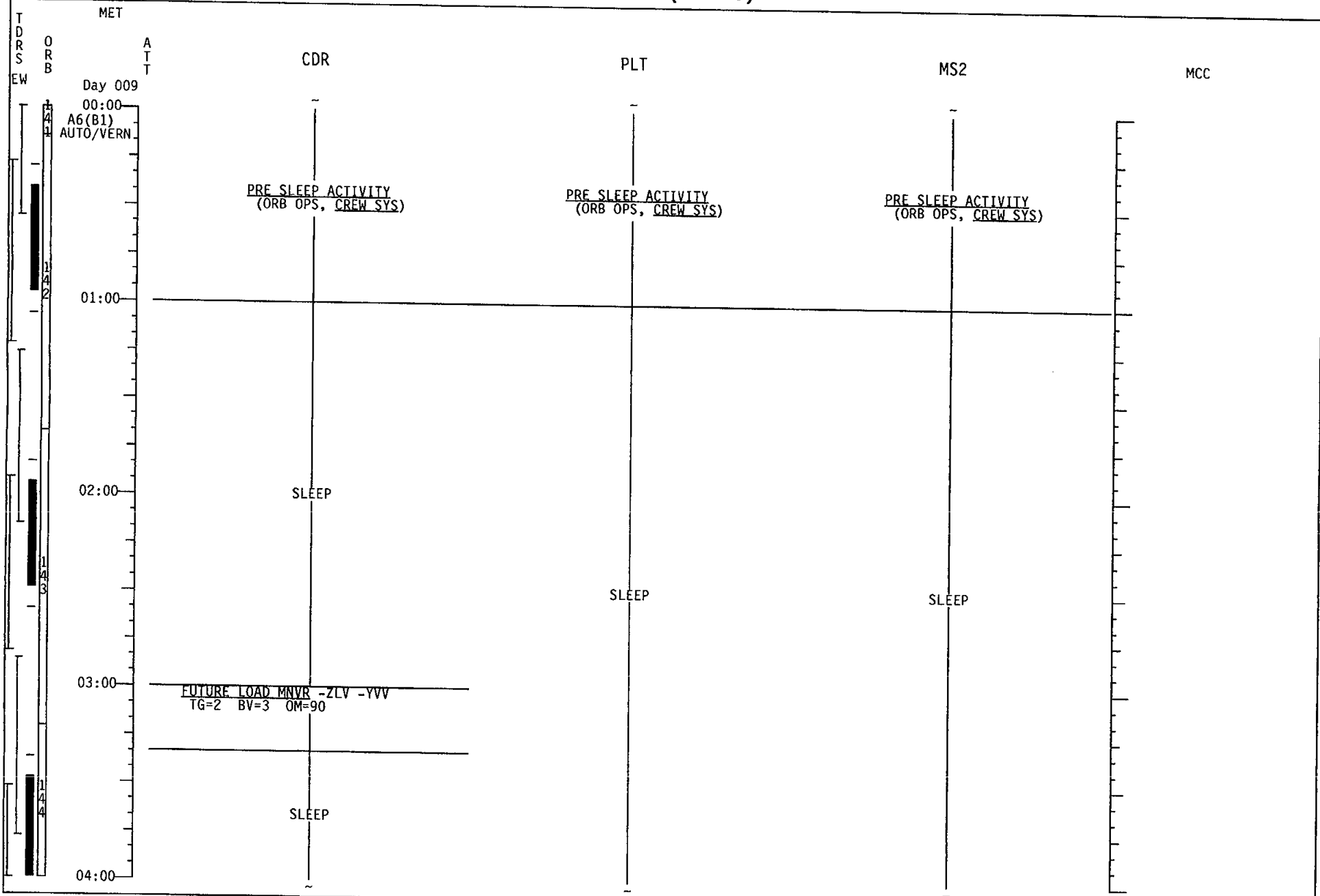
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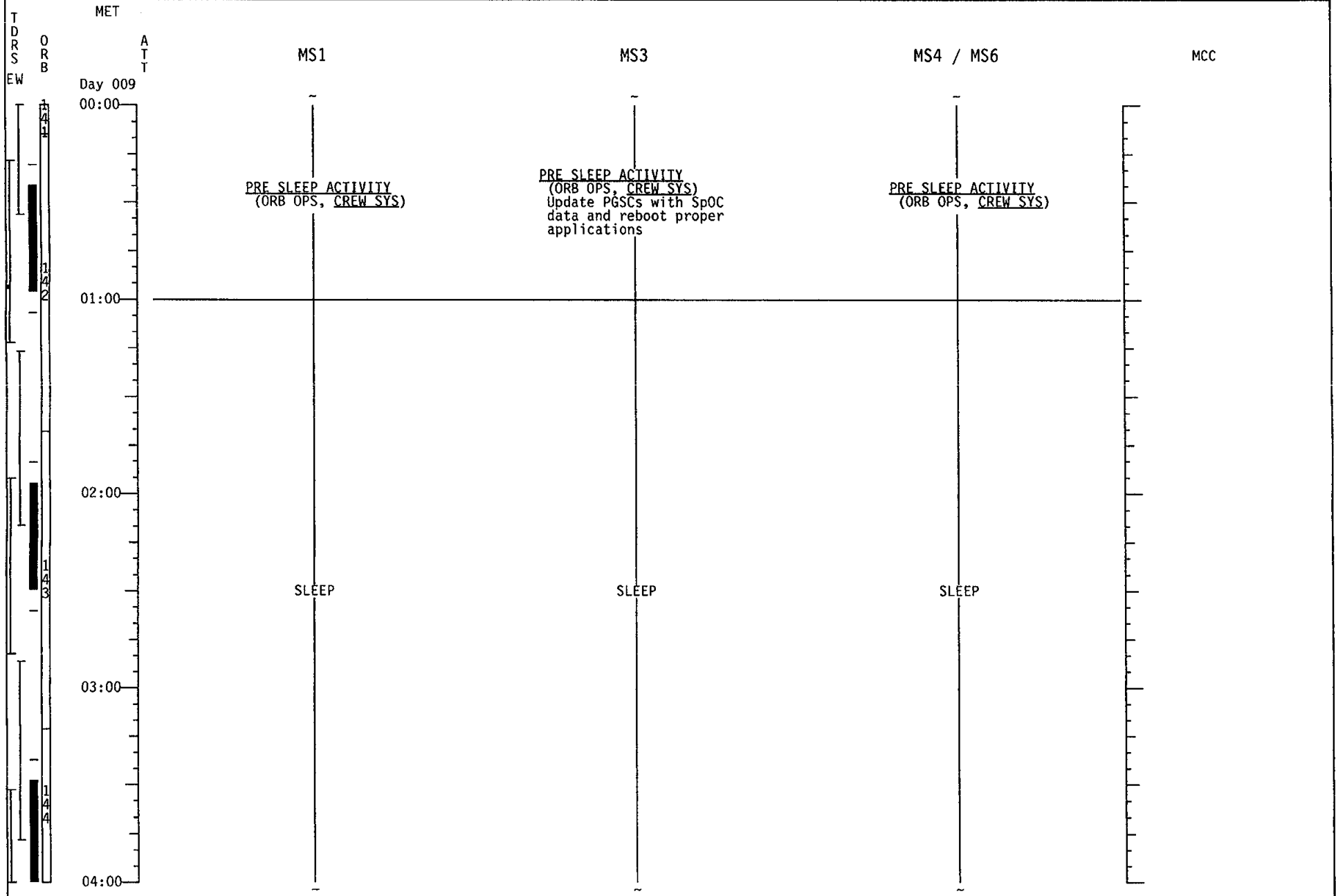
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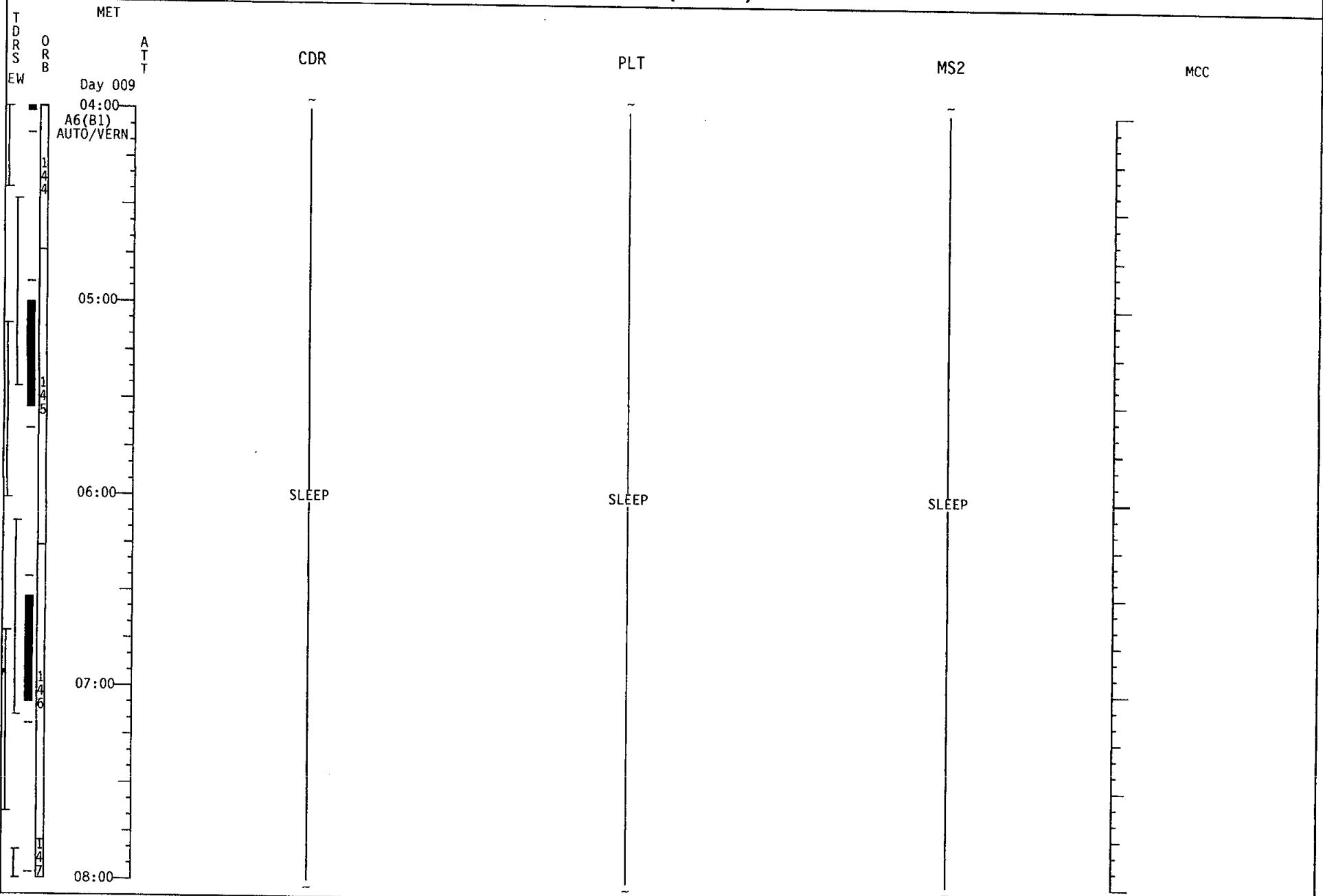
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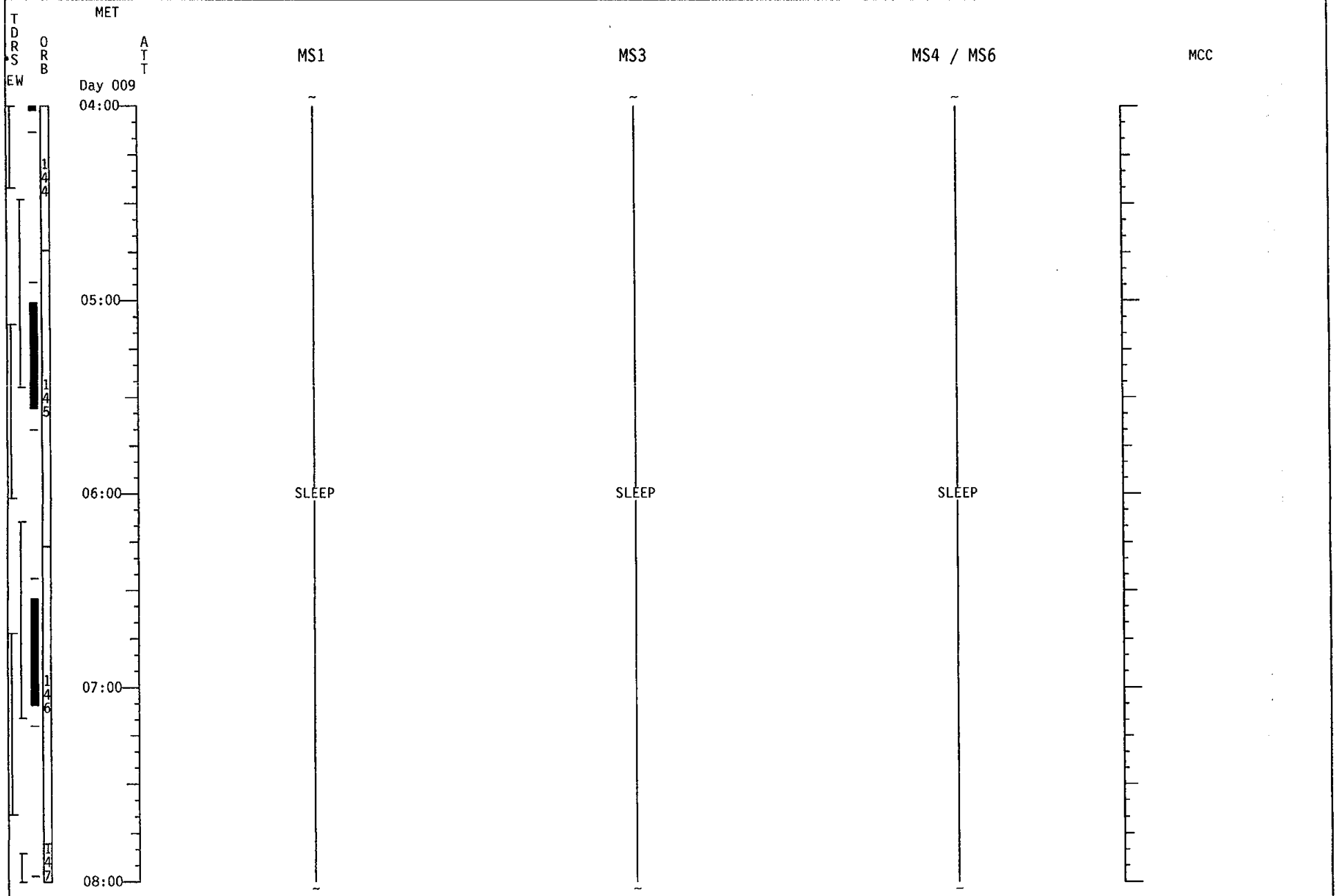
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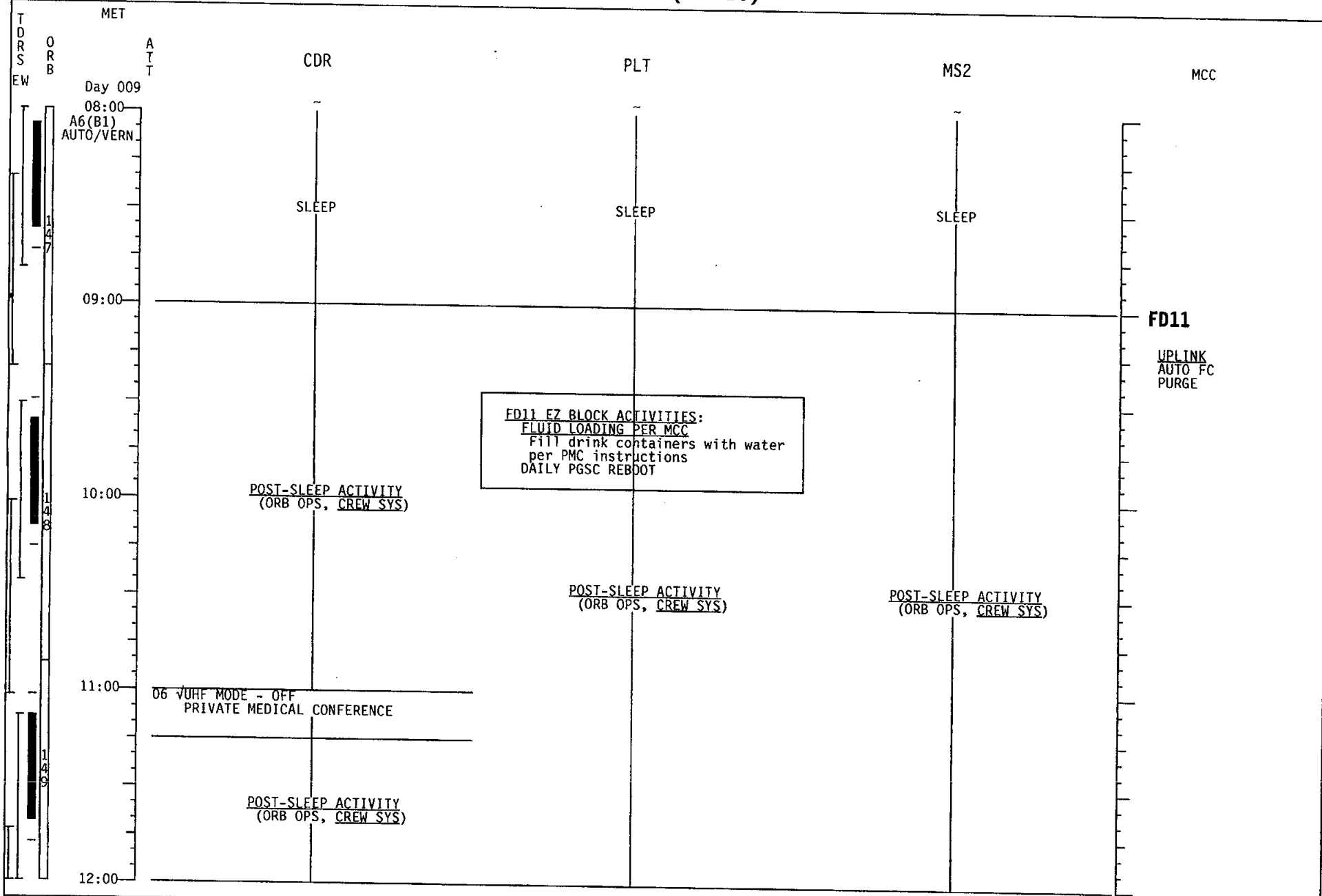
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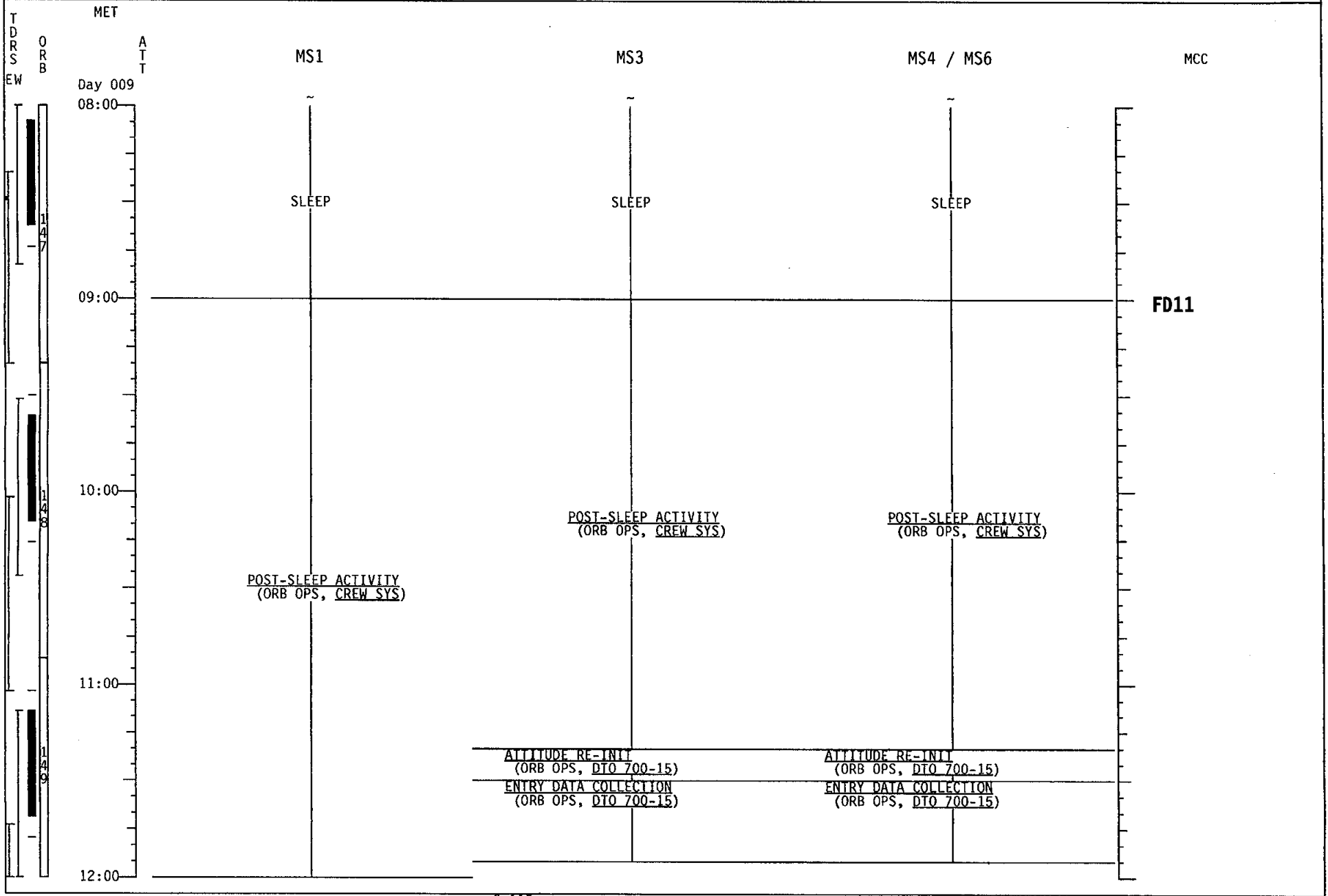
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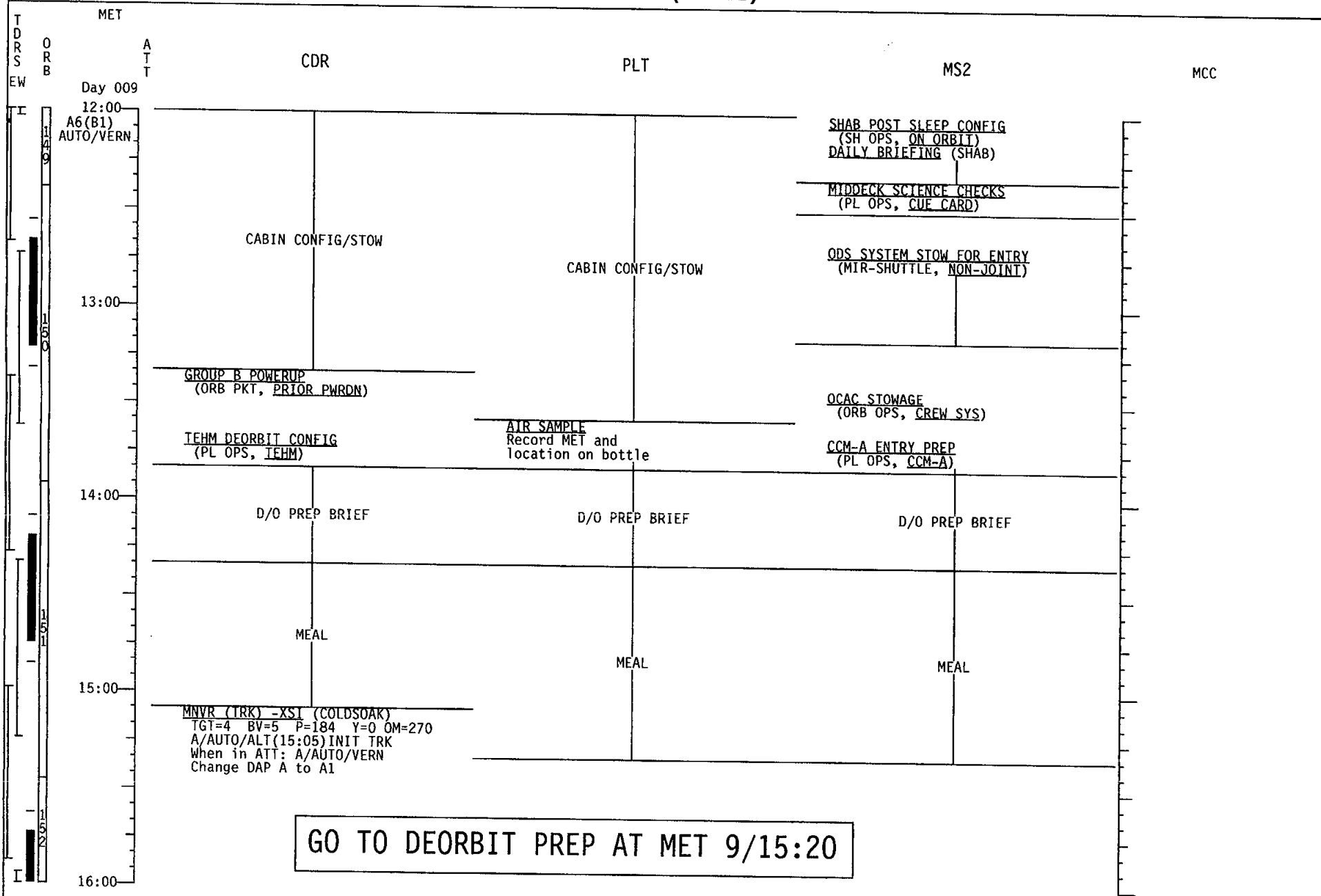
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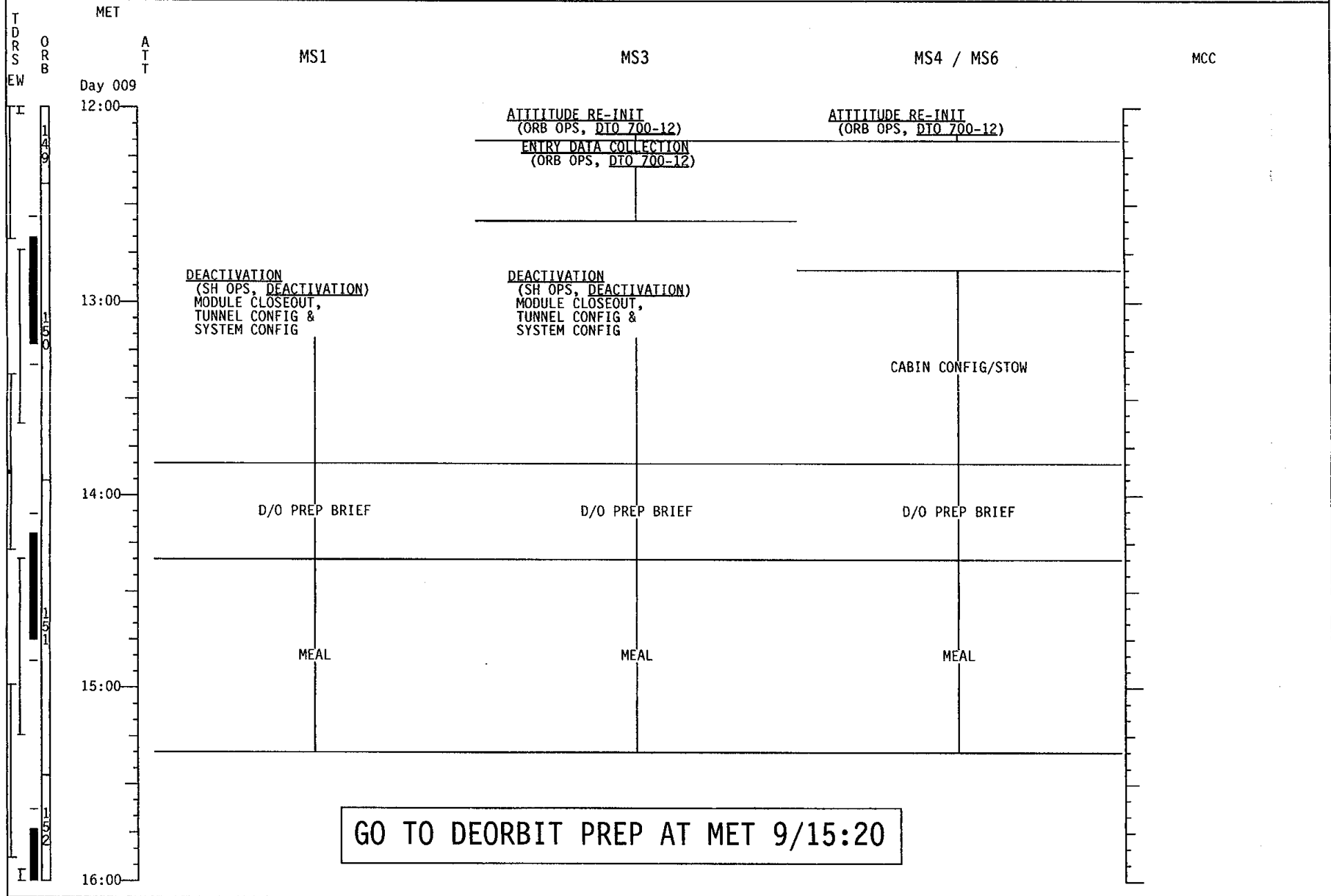
STS-86 (FD 10)



STS-86 (FD 11)



STS-86 (FD 11)



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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; OMS & RCS BURNS
A2	- PTC	B2	- LOSS OF VERNIS (TAIL ONLY)
A3	- GG	B3	- LOSS OF VERNIS (NOSE & TAIL)
A4	- PRE/POST DEPLOY	B4	- SSUS DEPLOY
A5	- LOSS OF VERNIS (NOSE & TAIL)	B5	- COAS CAL
A6	- LOSS OF VERN (TAIL ONLY) MIN PROP VERN	B7	- RENDEZVOUS
A7	- RENDEZVOUS	B8	- CORRIDOR
A8	- CORRIDOR	B9	- DOCKING
A9	- DOCKING	B10	- FLYAROUND
A10	- FLYAROUND	B12	- MATED STACK TIGHT CONTROL
A12	- MATED STACK MNVRS & HOLD	B13	- FAILED CAPTURE
A13	- FAILED CAPTURE		
A14	- SLM		

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

CNT ACC = 0 UNLOADED
 = 1-5 NOT USED

STS-86 GENERIC DAP A CONFIGURATIONS

	ITEM #	A1	A2	A3	A4	A5
PRI						
ROT RATE	10	0.2000	0.4000	0.2000	0.5000	0.2000
ATT DB	11	5.00	1.00	1.00	3.00	5.00
RATE DB	12	0.20	0.20	0.20	0.20	0.20
ROT PLS	13	0.10	0.10	0.10	0.10	0.10
COMP	14	.000	.000	.000	.000	.000
P OPTION	15	ALL	ALL	ALL	ALL	ALL
Y OPTION	16	ALL	ALL	TAIL	ALL	ALL
TRAN PLS	17	0.10	0.10	0.10	0.10	0.10
ALT						
RATE DB	18	0.200	0.200	0.200	0.200	0.070
JET OPT	19	ALL	ALL	ALL	ALL	ALL
# JETS	20	2	2	2	2	1
ON TIME	21	0.08	0.08	0.08	0.08	0.08
DELAY	22	0.00	0.00	0.00	0.00	0.00
VERN						
ROT RATE	23	0.2000	0.4000	0.0080	0.2000	0.2000
ATT DB	24	1.000	1.000	0.070	1.000	1.000
RATE DB	25	.020	.020	.010	.020	.020
ROT PLS	26	0.010	0.010	0.010	0.010	0.010
COMP	27	.000	.000	.000	.000	.000
CNTL ACC	28	0	0	0	0	0
PURPOSE		NOMINAL	PTC	GG	PRE/ POST DEPLOY	LOSS OF VERN (N/T)

STS-86 GENERIC DAP B CONFIGURATIONS

	ITEM #	B1	B2	B3	B4	B5
PRI						
ROT RATE	30	0.5000	0.2000	0.2000	0.2000	0.2000
ATT DB	31	3.00	3.00	3.00	0.30	3.00
RATE DB	32	0.20	0.20	0.20	0.20	0.20
ROT PLS	33	0.04	0.04	0.04	0.04	0.04
COMP	34	.000	.000	.000	.000	.000
P OPTION	35	ALL	TAIL	ALL	TAIL	TAIL
Y OPTION	36	ALL	TAIL	ALL	TAIL	TAIL
TRAN PLS	37	0.10	0.02	0.02	0.02	0.02
ALT						
RATE DB	38	0.200	0.070	0.070	0.200	0.200
JET OPT	39	ALL	TAIL	ALL	ALL	ALL
# JETS	40	2	1	1	2	2
ON TIME	41	0.08	0.08	0.08	0.08	0.08
DELAY	42	0.00	0.00	0.00	0.00	0.00
VERN						
ROT RATE	43	0.2000	0.2000	0.2000	0.0080	0.0160
ATT DB	44	1.000	1.000	1.000	0.100	0.033
RATE DB	45	.020	.020	.020	.010	.020
ROT PLS	46	0.002	0.002	0.002	0.002	0.002
COMP	47	.000	.000	.000	.000	.000
CNTL ACC	48	0	0	0	0	0
PURPOSE		NOM; OMS & RCS BURNS	LOSS OF VERN (TAIL ONLY)	LOSS OF VERN (N & T)	SSUS DEPLOY	COAS CAL

STS-86 FLIGHT SPECIFIC DAP A CONFIGURATIONS

	ITEM #	A6	A7	A8	A9	A10	A12	A13	A14
PRI									
ROT RATE	10	0.2000	0.2000	0.2000	0.0500	0.1300	0.1000	0.0500	0.1000
ATT DB	11	5.00	2.00	1.00	0.50	2.00	5.00	1.00	0.30
RATE DB	12	0.20	0.20	0.10	0.10	0.10	0.20	0.10	0.20
ROT PLS	13	0.10	0.10	0.10	0.10	0.10	0.04	0.10	0.10
COMP	14	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	15	TAIL	ALL	TAIL	TAIL	TAIL	TAIL	TAIL	ALL
Y OPTION	16	TAIL	ALL	TAIL	TAIL	TAIL	TAIL	TAIL	ALL
TRAN PLS	17	0.10	0.10	0.05	0.05	0.05	0.01	0.05	0.10
ALT									
RATE DB	18	0.070	0.100	0.200	0.200	0.200	0.070	0.200	0.070
JET OPT	19	TAIL	ALL	ALL	ALL	ALL	TAIL	ALL	TAIL
# JETS	20	1	2	2	2	2	3	2	2
ON TIME	21	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	22	0.00	0.00	0.00	0.00	0.00	11.28	0.00	0.00
VERN									
ROT RATE	23	0.0500	0.0160	0.2000	0.0500	0.1300	0.1500	0.0500	0.0450
ATT DB	24	1.000	1.000	1.000	0.500	2.000	5.000	1.000	0.100
RATE DB	25	.020	.020	.020	.020	.020	.050	.020	.020
ROT PLS	26	0.010	0.010	0.010	0.050	0.050	0.002	0.050	0.010
COMP	27	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28	0	0	0	0	0	7	0	0
PURPOSE		FWD PROP SAVINGS	RNDZ	CORRIDOR	DOCKING	FLY AROUND	MATED STACK MNVRS & HOLD	FAILED CAPTURE	SLM

Note: **BOLD/ITALICS** = not l-Loaded

STS-86 FLIGHT SPECIFIC DAP B CONFIGURATIONS

	ITEM #	B7	B8	B9	B10	B12	B13
PRI							
ROT RATE	30	0.5000	0.2000	0.0500	0.1300	0.0500	0.0500
ATT DB	31	2.00	1.00	0.50	2.00	5.00	1.00
RATE DB	32	0.20	0.10	0.10	0.10	0.20	0.10
ROT PLS	33	0.04	0.04	0.04	0.04	0.04	0.04
COMP	34	.000	.000	.000	.000	.000	.000
P OPTION	35	ALL	TAIL	TAIL	TAIL	TAIL	TAIL
Y OPTION	36	ALL	TAIL	TAIL	TAIL	TAIL	TAIL
TRAN PLS	37	0.05	0.01	0.01	0.01	0.01	0.01
ALT							
RATE DB	38	0.100	0.200	0.200	0.200	0.070	0.200
JET OPT	39	ALL	ALL	ALL	ALL	TAIL	ALL
# JETS	40	2	2	2	2	3	2
ON TIME	41	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42	0.00	0.00	0.00	0.00	11.28	0.00
VERN							
ROT RATE	43	0.2000	0.2000	0.0500	0.1300	0.0500	0.0500
ATT DB	44	1.000	1.000	0.500	2.000	1.000	1.000
RATE DB	45	.020	.020	.020	.020	.050	.020
ROT PLS	46	0.002	0.002	0.020	0.020	0.002	0.020
COMP	47	.000	.000	.000	.000	.000	.000
CNTL ACC	48	0	0	0	0	7	0
PURPOSE		RNDZ	CORRIDOR	DOCKING	FLY- AROUND	MATED STACK TIGHT CONTROL	FAILED CAPTURE

Note: **BOLD/ITALICS** = not I-Loaded

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

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ATTITUDE TIMELINE

ATTITUDE
TIMELINE

Attitude Timeline

MET/GMT	MNVR OPTION	DAP		E/S	REF ATT/REMARKS	EVENT
1 000/00:35:00 MET 269/03:09:00 GMT	INRTL R=191.00 MNVR P= 81.00 Y=318.00	TRN AUTO PRI	RATE 0.5000 DB AT 3.50 DB RT 0.20	SUN R 162 P 94	TIG = 0/00:43 LVLH 180/348/0	OMS-2 TVR 180 Posigrade
2 000/01:12:00 MET 20:42 269/03:46:00 GMT 54:42	TGT=2 BV=5 P=270.00 Y= 0.00 OM=180.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 180 P 90	LVLH R=180.00 P=180.00 Y= 0.00	Post Insertion +ZLV -XVV (SOPA)
3 000/03:30:00 MET 38:00 269/06:04:00 GMT 12:00	INRTL R=191.00 MNVR P= 81.00 Y=318.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 162 P 94	TIG = 0/03:41	NC-1 (OMS) TVR 180 Posigrade
4 000/03:43:00 MET 57:34 269/06:17:00 GMT 31:34	TGT=2 BV=5 P= 90.00 Y=315.00 OM= 0.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 315 P 90	LVLH R= 45.00 P=180.00 Y= 0.00	BIAS -ZLV -XVV Water & Kidsat
5 000/15:00:00 MET 12:55 269/17:34:00 GMT 46:55	INRTL R=145.00 MNVR P=258.00 Y= 66.00	B1 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 46 P 88	TIG = 0/15:14 LVLH 180/348/0	NC-2 (OMS) TVR 180 Posigrade
6 000/15:20:00 MET 34:39 269/17:54:00 GMT 18:08:39	TGT=2 BV=5 P= 90.00 Y=315.00 OM= 0.00	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 315 P 90	LVLH R= 45.00 P=180.00 Y= 0.00	BIAS -ZLV -XVV Water & Kidsat
7 000/20:33:48 MET 269/23:07:48 GMT					TIG = 0/20:34	NPC Multi-Axis
8 000/20:40:00 MET 45:53 269/23:14:00 GMT 19:53	INRTL R=328.60 MNVR P=298.40 Y= 9.70 DAPS to A14 B2	B2 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.070	SUN R 209 P 120	-Z: 58 DENEK ALGEI -Y: 110 ZETA HERCUL	SLM-1 58 AOS: 0/20:48 LOS: 0/21:38
9 000/20:59:00 MET 21:06:30 269/23:33:00 GMT 40:30	INRTL R=292.60 MNVR P=224.20 Y=302.50	B2 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.070	SUN R 209 P 65	-Z: 58 Eigen P = 87.7 Y = 358 OM= 90	SLM-2
10 000/21:12:00 MET 19:16 269/23:46:00 GMT 53:16	INRTL R=296.50 MNVR P=192.90 Y= 24.50	B2 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.070	SUN R 305 P 31	-Z: 110	SLM-3 110 AOS: 0/20:47 LOS: 0/21:39
11 000/21:24:00 MET 20 269/23:58:00 GMT 20	INRTL R=300.50 MNVR P=192.70 Y= 25.10	B2 AUTO ALT	RATE 0.2000 DB AT 3.00 DB RT 0.070	SUN R 302 P 31	-Z: 110	SLM-4
12 000/21:30:00 MET 42:45 270/00:04:00 GMT 16:45	TGT=2 BV=5 P= 90.00 Y=315.00 OM= 0.00 DAPS TO A6, B1	A6 AUTO ALT	RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 315 P 90	LVLH R= 45.00 P=180.00 Y= 0.00	BIAS -ZLV -XVV Water & Kidsat

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
13 001/01:00:00 MET 13:15 270/03:34:00 GMT 47:15	INRTL R=213.00 MNVR P= 76.00 Y=291.00	A6 AUTO ALT RATE 0.2000 DB AT 5.00 DB RT 0.070	SUN R 134 P 92	TIG = 01/01:13 LVLH 180/348/0	NC-3 (OMS) TVR 180 Posigrade
14 001/01:20:00 MET 34:19 270/03:54:00 GMT 04:08:19	TGT=2 BV=5 P= 90.00 Y=315.00 OM= 0.00	A6 AUTO ALT RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 315 P 90	LVLH R= 45.00 P=180.00 Y= 0.00	BIAS -ZLV -XVV Water & Kidsat
15 001/10:00:00 MET 25:14 270/12:34:00 GMT 59:14	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A6 AUTO VERN RATE 0.0650 DB AT 1.000 DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV +YVV (Future Loaded)
16 001/13:15:00 MET 27:05 270/15:49:00 GMT 16:01:05	INRTL R= 44.50 MNVR P= 87.20 Y=292.30 DAPS to A7, B7	A7 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 313 P 87	TIG = 1/13:31 LVLH 0/12/0	NC-4 (OMS) TVR 0 Posigrade
17 001/13:35:00 MET 38:55 270/16:09:00 GMT 12:55	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B7 AUTO PRI RATE 0.5000 DB AT 2.00 DB RT 0.20	EARTH R 347 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	-Z TGT TRACK S TKR NAV PASS
18 001/14:50:00 MET 53:57 270/17:24:00 GMT 27:57	INRTL R= 38.60 MNVR P= 80.73 Y=290.00	A7 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 313 P 89	TIG = 1/15:04 LVLH 0/12/0	TI BURN (OMS) TVR 0 Posigrade
19 001/15:08:00 MET 11:55 270/17:42:00 GMT 45:55	TGT=2 BV=1 P= 0.00 Y= 0.00 OM= 0.00	B7 AUTO PRI RATE 0.5000 DB AT 2.00 DB RT 0.20	EARTH R 167 P 0	LVLH R= 0.00 P=270.00 Y= 0.00	-Z TGT TRACK
20 001/15:12:00 MET 43:15 270/17:46:00 GMT 18:17:15	TGT=2 BV=5 P=345.00 Y= 0.00 OM= 0.00	B7 AUTO VERN RATE 0.0080 DB AT 1.000 DB RT 0.020	EARTH R 180 P 15	LVLH R= 0.00 P=285.00 Y= 0.00	-Z TGT TRACK
21 001/15:45:00 MET 51:57 270/18:19:00 GMT 25:57	TGT=2 BV=5 P=340.00 Y= 0.00 OM= 0.00	B7 AUTO VERN RATE 0.0120 DB AT 1.000 DB RT 0.020	EARTH R 180 P 20	LVLH R= 0.00 P=290.00 Y= 0.00	-Z TGT TRACK
22 001/16:20:00 MET 24:10 270/18:54:00 GMT 58:10	TGT=2 BV=5 P=315.00 Y= 0.00 OM= 0.00	B7 AUTO VERN RATE 0.1000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 45	LVLH R= 0.00 P=315.00 Y= 0.00	-Z TGT TRACK
23 001/16:35:00 MET 39:48 270/19:09:00 GMT 13:48	TGT=2 BV=5 P=285.00 Y= 0.00 OM= 0.00	B7 AUTO VERN RATE 0.1040 DB AT 1.000 DB RT 0.020	EARTH R 180 P 75	LVLH R= 0.00 P=345.00 Y= 0.00	-Z TGT TRACK
24 001/16:45:00 MET 46:15 270/19:19:00 GMT 20:15	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 0.00	A7 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y= 0.00	ESTABLISH REAR

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
25 001/17:54:00 MET 270/20:28:00 GMT	TGT=2 BV=5 P=270.00 Y= 0.00 OM= 90.00	A7 AUTO VERN	RATE 0.2000 DB AT 1.000 DB RT 0.020			Start Tail Fwd Mnvr to Dock +ZLV -XVV
26 001/17:56:00 MET 18:09:00 270/20:30:00 GMT 43:00	*** MNVR INTERRUPT *** TGT=2 BV=5 P=270.00 Y= 0.00 OM=180.00	A7 AUTO ALT	RATE 0.2000 DB AT 2.00 DB RT 0.200	EARTH R 180 P 90	LVLH R=180.00 P=180.00 Y= 0.00	Docking Att. +ZLV -XVV
27 001/18:23:00 MET 270/20:57:00 GMT						FINAL APPROACH KU to COMM @ RNG = 100 ft
28 001/18:56:00 MET 270/21:30:00 GMT						DOCKING 1/18:56 SHK AOS+ 3 min
29 001/19:00:00 MET 270/21:34:00 GMT	DAPS to A12,B12					FREE DRIFT
30 001/19:08:00 MET 18:10 270/21:42:00 GMT 52:10	INRTL R= 45.32 MNVR P= 3.41 Y=343.89	A12 AUTO VERN	RATE 0.1500 DB AT 5.000 DB RT 0.050	SUN R 239 P 159	002/04:00:35	IO 5.1/+141/0 SUN P=191 Y=342 OM=239
31 002/13:30:00 MET 48:54 271/16:04:00 GMT 22:54	INRTL R=170.26 MNVR P=169.62 Y= 11.91	A12 AUTO VERN	RATE 0.1500 DB AT 5.000 DB RT 0.050	SUN R 127 P 18		THERMAL RECOV. (Russian 1a)
32 002/15:45:00 MET 271/18:19:00 GMT	FREE DRIFT					FREE DRIFT MISDE
33 002/16:00:00 MET 271/18:34:00 GMT						RETURN to ATT CONTROL
34 002/16:19:00 MET 271/18:53:00 GMT		B12 FREE VERN	RATE 0.0500 DB AT 1.000 DB RT 0.050	SUN R 127 P 18	INRTL R=170.26 HOLD P=169.62 Y= 11.91	CNTL H/O TO MIR ORB FREE DRIFT MISDE MIR JET
35 002/16:26:00 MET 271/19:00:00 GMT		B12 INRT VERN	RATE 0.0500 DB AT 1.000 DB RT 0.050	SUN R 127 P 18	INRTL R=170.26 HOLD P=169.62 Y= 11.91	CNTL H/O TO ORB
36 002/19:30:00 MET 49:10 271/22:04:00 GMT 23:10	INRTL R= 38.19 MNVR P=359.66 Y=344.19	A12 AUTO VERN	RATE 0.1500 DB AT 5.000 DB RT 0.050	SUN R 237 P 159	003/04:38:49	IO 5.1/+141/0 SUN P=192 Y=343 OM=239

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
37 003/12:10:00 MET 20:22 272/14:44:00 GMT 54:22	TGT=2 BV=5 P=226.30 Y= 5.80 OM=274.30	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	EARTH R 172 P 133	LVLH R= 83.87 P= 79.79 Y=314.30	GO 4.1 WASTE DUMP
38 003/14:10:00 MET 22:51 272/16:44:00 GMT 56:51	INRTL R= 33.99 MNVR P=357.78 Y=344.65	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 236 P 159	003/18:30:22	IO 5.1/+141/0 SUN P=192 Y=343 OM=118
39 003/21:30:00 MET 49:19 273/00:04:00 GMT 23:19	INRTL R=170.26 MNVR P=169.62 Y= 11.91	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 124 P 19		THERMAL RECOV. (Russian 1a)
40 004/03:30:00 MET 04:28:23 273/06:04:00 GMT 07:02:23	INRTL R= 29.84 MNVR P=356.16 Y=345.20	B12 RATE 0.0500 AUTO DB AT 1.000 VERN DB RT 0.050	SUN R 237 P 159	004/08:21:54	IO 5.1/+141/0 SUN P=192 Y=343 OM=239 Future Loaded
41 004/11:00:00 MET 19:28 273/13:34:00 GMT 53:28	INRTL R=170.26 MNVR P=169.62 Y= 11.91	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 123 P 20		THERMAL RECOV. (Russian 1a)
42 004/17:00:00 MET 19:37 273/19:34:00 GMT 53:37	INRTL R= 24.78 MNVR P=354.52 Y=346.00	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 238 P 159	005/01:18:13	IO 5.1/+141/0 SUN P=191 Y=342 OM=239
43 005/11:55:00 MET 12:05:16 274/14:29:00 GMT 39:16	TGT=2 BV=5 P=226.30 Y= 5.80 OM=274.30	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	EARTH R 172 P 133	LVLH R= 83.87 P= 79.79 Y=314.30	GO 4.1 WASTE DUMP
44 005/13:40:00 MET 50:24 274/16:14:00 GMT 24:24	INRTL R= 20.75 MNVR P=353.48 Y=346.67	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 240 P 159	005/15:09:43	IO 5.1/+141/0 P=191 Y=342 OM=239
45 005/16:00:00 MET 18:59 274/18:34:00 GMT 52:59	INRTL R=193.90 MNVR P=161.87 Y= 4.74	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 127 P 19		THERMAL RECOV. (Russian 2a)
46 005/22:00:00 MET 19:05 275/00:34:00 GMT 53:05	INRTL R= 16.89 MNVR P=352.73 Y=347.26	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 242 P 159	006/05:01:10	IO 5.1/+141/0 P=190 Y=342 OM=239
47 006/12:00:00 MET 19:05 275/14:34:00 GMT 53:05	INRTL R=193.90 MNVR P=161.87 Y= 4.74	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 125 P 19		THERMAL RECOV. (Russian 2a)
48 006/18:00:00 MET 19:14 275/20:34:00 GMT 53:14	INRTL R= 10.77 MNVR P=352.01 Y=348.03	A12 RATE 0.1500 AUTO DB AT 5.000 VERN DB RT 0.050	SUN R 247 P 159	007/04:06:49	IO 5.1/+141/0 P=188 Y=341 OM=240

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
49 007/12:00:00 MET 34:59 276/14:34:00 GMT 15:08:59	TGT=2 BV=5 P=270.00 Y= 0.00 OM=180.00	B12 AUTO DB AT 1.000 VERN DB RT 0.050	RATE 0.0500 EARTH R 180 P 90	LVLH R=180.00 P=180.00 Y= 0.00	+ZLV -XVV Undock Attitude
50 007/13:12:00 MET 276/15:46:00 GMT	DAPS to A6,B1			Daily Orbit 1	UNDOCKING 7/13:12 DJS AOS+ 3 min
51 007/13:15:00 MET 276/15:49:00 GMT	LVLH ROTR FREE ROTATION ABOUT -Y AXIS RATE=0.130	A7 LVLH DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 180 P 90	LVLH R=180.00 P=180.00 Y= 0.00	fly around
52 007/14:47:20 MET 276/17:21:20 GMT		A7 LVLH DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 180 P 90	LVLH R=180.00 HOLD P=180.20 Y= 0.00	hold for sep +Rbar
53 007/15:10:00 MET 17:30 276/17:44:00 GMT 51:30	TGT=2 BV=5 P=270.00 Y= 0.00 OM=270.00	A6 AUTO DB AT 5.00 ALT DB RT 0.070	RATE 0.2000 EARTH R 180 P 90	LVLH R= 0.00 P= 0.00 Y=270.00	+ZLV +YVV for waste dump & EPS
54 007/17:05:00 MET 20:00 276/19:39:00 GMT 54:00	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 0.00	A6 AUTO DB AT 5.00 ALT DB RT 0.070	RATE 0.2000 EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 0.00	-ZLV -XVV
55 008/16:45:00 MET 57:35 277/19:19:00 GMT 31:35	TGT=2 BV=5 P= 90.00 Y=330.00 OM=150.00	A6 AUTO DB AT 5.00 ALT DB RT 0.070	RATE 0.2000 EARTH R 330 P 90	LVLH R=210.00 P= 0.00 Y=330.00	BIAS -ZLV +XVV KU FOR PAO
56 008/18:00:00 MET 11:32 277/20:34:00 GMT 45:32	INRTL R=123.00 MNVR P=161.00 Y=293.00	A6 AUTO DB AT 5.00 ALT DB RT 0.070	RATE 0.2000 SUN R 310 P 58		Orbit Adjust Burn Tig 18:25
57 008/18:30:00 MET 32:37 277/21:04:00 GMT 06:37	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 0.00	A6 AUTO DB AT 5.00 ALT DB RT 0.070	RATE 0.2000 EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 0.00	-ZLV -XVV
58 009/03:00:00 MET 30:00 278/05:34:00 GMT 06:04:00	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	B12 AUTO DB AT 1.000 VERN DB RT 0.050	RATE 0.0500 EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV -YVV THERMAL COND.
59 009/15:05:00 MET 15:36 278/17:39:00 GMT 49:36	TGT=4 BV=5 P=184.00 Y= 0.00 OM=270.00 RA= 190.902 DEC= -4.688S	A6 AUTO DB AT 5.00 ALT DB RT 0.070	RATE 0.2000 SUN R 180 P 176	INRTL R=330.57 P=351.68 Y= 12.85	-XSI Coldsoak
60 009/16:22:00 MET 278/18:56:00 GMT	INRTL R=165.00 MNVR P=315.00 Y=311.00	A1 AUTO DB AT 1.000 VERN DB RT 0.020	RATE 0.2000 EARTH R 180 P 90	IMU Pair -Z:44 -Y:52	D/O IMU ALIGN

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP		E/S	REF ATT/REMARKS	EVENT
61 009/16:35:00 MET 38:20 278/19:09:00 GMT 12:20	*** MNVR INTERRUPT *** INRTL R=126.00 MNVR P=303.00 Y= 44.00	E1 AUTO PRI	RATE 0.5000 DB AT 3.00 DB RT 0.20	SUN R 34 P 124	Verif Pair -Z:55 -Y:57	D/O IMU VERIF
62 009/16:51:00 MET 52:29 278/19:25:00 GMT 26:29	INRTL R= 96.00 MNVR P=325.00 Y= 9.00	TRN AUTO PRI	RATE 0.5000 DB AT 3.50 DB RT 0.20	SUN R 90 P 150	Sun P = 180 Y = 30 OM= 148	D/O THERMAL & COMM
63 009/19:13:00 MET 18:17 278/21:47:00 GMT 52:17	INRTL R=253.00 MNVR P=307.00 Y=347.00	TRN AUTO PRI	RATE 0.5000 DB AT 3.50 DB RT 0.20	SUN R 312 P 127	TIG 09/19:20	D/O BURN
64 009/19:30:00 MET 33:02 278/22:04:00 GMT 07:02	INRTL R=140.50 MNVR P=179.00 Y=291.90	TRN AUTO PRI	RATE 0.5000 DB AT 3.50 DB RT 0.20	SUN R 314 P 57		MM303 INRTL
65 009/19:50:00 MET 278/22:24:00 GMT		TRN LVLH VERN	RATE 0.5000 DB AT 3.500 DB RT 0.200	EARTH R 180 P 130	LVLH R= 0.02 HOLD P= 40.03 Y=359.97	EI -5 LVLH
66 009/20:24:00 MET 278/22:58:00 GMT						landing

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

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FLIGHT PLAN NOTES

FLIGHT PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

FLIGHT PLAN
NOTES

A. FLIGHT DESCRIPTION

Orbiter: OV104/Atlantis
 Inclination: 51.6°
 Insertion Altitude: 160 nm
 Mir Docking Altitude: 212 X 209 nm
 Duration: 10 + 1 day
 (6 docked days, +1 for Wx/Contingency)

B. SHUTTLE/MIR MISSION-7 (S/MM-07) OVERVIEW

The primary objectives of S/MM-07 are docking and exchange of MS-5 and MS-6; transfer of science equipment and Russian materials; performance of an STS-based EVA to retrieve the Mir Environmental Effects Payload and performance of Risk Mitigation Experiments (RMEs) in support of Phase 1 program requirements. A double Spacehab module is used to transport transfer items and conduct microgravity and life science investigations.

C. MAJOR EVENTS

<u>EVENT</u>	<u>MET</u>	<u>CDT</u>	<u>ΔV (FPS)</u>	<u>HP/HA (nm)</u>
Launch	00/00:00	21:34	--	--
OMS-2	00/00:43	22:17	166	160/135
NC1	00/03:43	01:17	89	189/160
NC2	00/15:14	12:48	82	211/180
NC3	01/02:43	00:17	3	211/182
NC4	01/13:31	11:05	29	211/198
Ti	01/15:04	12:38	9	212/203
Docking (DO3)	01/18:56	16:30	--	212/209
Undocking (DO1)	07/13:12	10:46	--	212/209
Deorbit	09/19:20	16:54	--	--
Landing	09/20:24	17:58	--	--

D. CREW

STS-86

CDR - James D. Wetherbee
 PLT (IV) - Mike Bloomfield
 MS1 (EV2) - Vladimir Titov
 MS2 (EV1) - Scott Parazynski
 MS3 - Jean-Loup Chretien
 MS4 - Wendy B. Lawrence
 MS5 - Dave Wolf
 MS6 - C. Michael Foale

Mir-24

CDR - Anatoly Solovyov
 ENG - Pavel Vinogradov

E. COMMUNICATIONS

TDRS Support:

East (41° W), West (174° W), Z (85° E)

Backup Real-Time TV:

Goldstone - GDS(GDX), Merritt Island - MIL(MLX)

Backup Comm for Russian use:

Wallops (WLP), Dryden (DFC)

Contingency GSTDN:

(MLX*), Bermuda - BDA(BDX*), Goldstone - GDS(GDX*), and WLP

Contingency RTS:

Hawaii (HTS), Goldstone (GTS), Vandenburg (VTS),

Indian Ocean (IOS*), CGS, Diego Garcia (DGS),

Oak Hanger (OTS*), and New Hampshire (NHS)

*UHF capability

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

MIR

Altair:

West (16° W)

Ground Sites:

Shelkovo (SHK), Dzhusali (DJS), Kolpashevo (KLP), Ulan-Udeh (ULD),

Ussurisk (USK), Petropavlosk-Kamchatski (PPK), and St. Petersburg (SPB)

F. TELEVISION/PHOTOGRAPHY

The CCTV systems provide one wide-angle Camera and one Camcorder for in-cabin coverage. There will be four PLB Color TV Cameras and two docking Color TV Cameras (mounted on the ODS truss and the airlock centerline). In addition, two Electronic Still Cameras (ESC-II) will be flown.

G. RUSSIAN LOGISTICS

The major transfer items going up are containers of food, water, hygiene supplies, clothing, film, seven batteries, current converter, cosmonaut family packs and psychological support packs, Wolf Soyuz seat liner (IELK), water containers (EDV), and one gyrodyne. The major items coming down are a navigation unit (Kurs), empty food containers, and Foale Soyuz seat liner.

H. SPACEHAB

The double module will be accommodating soft stowage bags, lockers, rack mounted experiments, and supporting subsystems. The Spacehab environmental control system is designed to accommodate two crewmembers on a continuous basis. Additional crewmembers are accommodated for brief periods at the expense of reduced cabin air heat rejection capability. Payload summaries are given in the following paragraphs:

1. RUSSIAN CARGO

The Russian cargo items are located in the Spacehab module in soft stowage bags, lockers, and a Spacehab double rack. The crew will be required to detach these items from the module and transfer them to the docking tunnel where they will be transferred to the Mir.

2. POWERED TRANSFER ITEMS

CGBA and BIO3D will be transferred from the shuttle and installed with power and data connections in Priroda. These have power interruption limits. Daily status checks by crewmembers are required.

I. MIDDECK SCIENCE

The middeck science complement consists of various experiment packages transferred to and from Mir. These are listed in the Flight Requirements Document (FRD).

J. KIDSAT

The KidSat payload will provide students, grades K-12, access to real-time images of the Earth from their own observing instruments in space, and will incorporate these images into a full range of disciplinary and interdisciplinary study. The overall objective of KidSat is to engage teachers and students in a collaborative learning process by conducting scientific investigations during human space exploration using existing NASA resources. Earth observations will be conducted on-board the orbiter using the Electronic Still Camera (ESC) which will be installed in the starboard overhead window. Script files uplinked from the ground will command the ESC to photograph specific land areas. These images will then be downlinked real-time via OCA during periods of Ku coverage.

K. COSMIC RADIATION EFFECTS AND ACTIVATION MONITOR (CREAM)

CREAM consists of active and passive units. On FD3 the units will be transferred and installed on Mir. Crewmembers will move the active monitor every 48 hours. Five passive dosimeters will remain on board.

L. SHUTTLE IONOSPHERIC MODIFICATION WITH PULSED LOCAL EXHAUST (SIMPLEX)

The SIMPLEX is an experiment of opportunity with no manifested hardware. The hardware utilizes orbiter OMS thruster firings to create ionospheric disturbances for observation by ground-based radar sites. One radar site (Arecibo) will also use a low-level laser to observe the thruster firing. The objective of SIMPLEX is to determine the source of Very High Frequency (VHF) radar echoes.

M. CELL CULTURE MODULE - CONFIG A (CCM-A)

The objectives of this payload are to validate models for muscle, bone, and endothelial cell biochemical and functional loss induced by microgravity stress; to evaluate cytoskeleton, metabolism, membrane integrity and protease activity in target cells; and to test tissue loss pharmaceuticals for efficacy.

N. COMMERCIAL PROTEIN CRYSTAL GROWTH (CPCG)

The CPCG payload is designed to conduct experiments which will supply information on the scientific methods and commercial potential for growing large high-quality protein crystals in microgravity.

O. SEEDS IN SPACE II

The SEEDS-II experiment will passively expose a group of tomato seeds to the vacuum of space. SEEDS-II does not require any power or crew interaction. The payload will be self-contained within a standard unsealed 2.5 ft³ GAS canister.

P. RISK MITIGATION EXPERIMENTS (RMEs)

1. MIR ENVIRONMENTAL EFFECTS PAYLOAD (MEEP) (RME 1304)

Four MEEP experiments will be retrieved via EVA, stowed in the payload bay in the Passive Experiment Carrier (PEC), and returned. The MEEP experiments were mounted on the handrails of the Mir 1 Docking Module (DM) on STS-76. The four experiments are the Polished Plate Micrometeoroid Debris (PPMD), Orbital Debris Collector (ODC), Passive Optical Sample Assembly (POSA) I and II.

2. ESA PROXIMITY OPERATIONS SENSOR (RME 1314)

The function of the ESA proximity ops sensor is to perform Rendezvous Sensor (RVS) and Relative Global Positioning Satellite (RGPS) experiments and evaluate the performance of the related technology. The results of the experiment are to be used to evaluate technology which will be applied to space and ground systems used during TV rendezvous and proximity operations with the International Space Station (ISS). The mission objectives are performed during rendezvous and during separation with the Russian space station Mir by gathering data using one Global Positioning Satellite (GPS) receiver and two antennas mounted on the Mir. Data are also gathered during proximity operations using the RVS mounted in the orbiter and retroreflectors mounted on the Mir.

3. MIR STRUCTURAL DYNAMICS EXPERIMENT (RME 1317)

This experiment obtains structural dynamics response data on the Mir and shuttle/Mir mated configuration from shuttle docking, day/night and night/day transitions, Mir and shuttle thruster firings and crew activity onboard the Mir. Data will also be recorded during quiescent periods defined as no crew exercise and non-quiescent periods defined as treadmill or ergometer activity.

4. RADIATION MONITORING EXPERIMENT-III (RME-III) (RME 1320)

The RME-III equipment consists of two handheld instruments with replaceable memory modules that will be transferred to Mir for datataking, then returned to the shuttle prior to undocking.

5. SPACE STATION - TEST OF PCS HARDWARE (RME 1332)

This RME will test the suitability of PCS hardware in an ISS radiation environment. Two PCS laptop computers and 1553 PC cards will be tested. The PCS memory susceptibility to single event upsets (SEUs) will be measured. One TPCS unit will remain on Mir.

Q. ON-ORBIT DETAILED TEST OBJECTIVES (DTOs)

1. TUNED NOTCH FILTER (DTO 259)

The notch filters are added to the shuttle FCS feedback loop to attenuate vibrational frequencies and assure DAP stability. DTO 259 is designed to gather data on the impact of reduced conservatism in notch filter design. Results of the DTO will aid in ISS design and verification of Mir models.

2. EVA HARDWARE FOR FUTURE EVA MISSIONS (DTO-671)

The primary objective to this experiment is to test EVA hardware for future EVA activity.

3. ORBITER SPACE VISION SYSTEM FLIGHT VIDEO TAPING (OSVS)
(DTO-700-10)

OSVS taping records camera video of targets mounted on the Orbiter Docking System (ODS) and Mir Docking Module (DM) under varying on-orbit conditions for postflight analysis. Planned video consists of selected OSVS targets over one crew sleep period. Still photography of the DM targets will also be performed.

4. GLOBAL POSITIONING SYSTEM/INERTIAL NAVIGATION SYSTEM (GPS/INS)
(DTO 700-12)

DTO 700-12 demonstrates GPS/INS inertial navigation performance in a space vehicle environment during all mission phases. GPS/INS data recorded during ascent, on-orbit, and entry along with orbiter GPS data will be transferred to a dedicated PGSC and will be periodically downlinked.

5. SPACE INTEGRATED GLOBAL POSITIONING SYSTEM/INERTIAL
NAVIGATION SYSTEM (SIGI) (DTO 700-15)

The SIGI is intended to replace the shuttle onboard TACAN and, eventually, the HAINS Inertial Measurement Units. The SIGI DTO will mitigate the technical and schedule risks of applying this new technology to the shuttle navigation systems by evaluating the system's performance in space flight. The SIGI unit will be mounted in Avionics Bay 3B and will be commanded by the PGSC.

6. S-BAND SEQUENTIAL STILL VIDEO (SSV) DEMONSTRATION (DTO 700-16)

SSV will demonstrate the ability of downlinking sequential still video using the shuttle S-Band system. This DTO will verify that there are no engineering anomalies produced by integrating SSV into the existing system. It will also solicit feedback from the Shuttle Program Operations, Crew and Payload users as to the usefulness of this new capability.

7. MICROMETEOROID/ORBITAL DEBRIS PHOTO AND VIDEO SURVEY OF MIR
(DTO-1118)

This DTO conducts a photographic and video survey of Mir from the shuttle to assess the overall condition of Mir, document shuttle approach and separation, assess relative motion, and analyze plume impingement. Real-time or recorded video will be downlinked when practical.

8. STATION DOCKING TARGET EVALUATION (SDTE) (DTO 1213)

The objective of SDTE is to gain experience using the ISS designed axial docking target photometal decal. This knowledge will be used to assist in rendezvous and docking simulation training for ISS missions.

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**CUE CARD
CONFIGURATION**

CUE CARD CONFIGURATION

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STS-86 GENERIC DAP A CONFIGURATIONS

	ITEM #	A1	A2	A3	A4	A5
PRI						
ROT RATE	10	0.2000	0.4000	0.2000	0.5000	0.2000
ATT DB	11	5.00	1.00	1.00	3.00	5.00
RATE DB	12	0.20	0.20	0.20	0.20	0.20
ROT PLS	13	0.10	0.10	0.10	0.10	0.10
COMP	14	.000	.000	.000	.000	.000
P OPTION	15	ALL	ALL	ALL	ALL	ALL
Y OPTION	16	ALL	ALL	TAIL	ALL	ALL
TRAN PLS	17	0.10	0.10	0.10	0.10	0.10
ALT						
RATE DB	18	0.200	0.200	0.200	0.200	0.070
JET OPT	19	ALL	ALL	ALL	ALL	ALL
# JETS	20	2	2	2	2	1
ON TIME	21	0.08	0.08	0.08	0.08	0.08
DELAY	22	0.00	0.00	0.00	0.00	0.00
VERN						
ROT RATE	23	0.2000	0.4000	0.0080	0.2000	0.2000
ATT DB	24	1.000	1.000	0.070	1.000	1.000
RATE DB	25	.020	.020	.010	.020	.020
ROT PLS	26	0.010	0.010	0.010	0.010	0.010
COMP	27	.000	.000	.000	.000	.000
CNTL ACC	28	0	0	0	0	0
PURPOSE		NOMINAL	PTC	GG	PRE/ POST DEPLOY	LOSS OF VERN (N/T)

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TOP
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'STS-86 GENERIC DAP A CONFIGURATIONS'
HINGE

STS-86 GENERIC DAP B CONFIGURATIONS

	ITEM #	B1	B2	B3	B4	B5
PRI						
ROT RATE	30	0.5000	0.2000	0.2000	0.2000	0.2000
ATT DB	31	3.00	3.00	3.00	0.30	3.00
RATE DB	32	0.20	0.20	0.20	0.20	0.20
ROT PLS	33	0.04	0.04	0.04	0.04	0.04
COMP	34	.000	.000	.000	.000	.000
P OPTION	35	ALL	TAIL	ALL	TAIL	TAIL
Y OPTION	36	ALL	TAIL	ALL	TAIL	TAIL
TRAN PLS	37	0.10	0.02	0.02	0.02	0.02
ALT						
RATE DB	38	0.200	0.070	0.070	0.200	0.200
JET OPT	39	ALL	TAIL	ALL	ALL	ALL
# JETS	40	2	1	1	2	2
ON TIME	41	0.08	0.08	0.08	0.08	0.08
DELAY	42	0.00	0.00	0.00	0.00	0.00
VERN						
ROT RATE	43	0.2000	0.2000	0.2000	0.0080	0.0160
ATT DB	44	1.000	1.000	1.000	0.100	0.033
RATE DB	45	.020	.020	.020	.010	.020
ROT PLS	46	0.002	0.002	0.002	0.002	0.002
COMP	47	.000	.000	.000	.000	.000
CNTL ACC	48	0	0	0	0	0
PURPOSE		NOM; OMS & RCS BURNS	LOSS OF VERN (TAIL ONLY)	LOSS OF VERN (N & T)	SSUS DEPLOY	COAS CAL

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STS-86 FLIGHT SPECIFIC DAP A CONFIGURATIONS

	ITEM #	A6	A7	A8	A9	A10	A12	A13	A14
PRI									
ROT RATE	10	0.2000	0.2000	0.2000	0.0500	0.1300	0.1000	0.0500	0.1000
ATT DB	11	5.00	2.00	1.00	0.50	2.00	5.00	1.00	0.30
RATE DB	12	0.20	0.20	0.10	0.10	0.10	0.20	0.10	0.20
ROT PLS	13	0.10	0.10	0.10	0.10	0.10	0.04	0.10	0.10
COMP	14	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	15	TAIL	ALL	TAIL	TAIL	TAIL	TAIL	TAIL	ALL
Y OPTION	16	TAIL	ALL	TAIL	TAIL	TAIL	TAIL	TAIL	ALL
TRAN PLS	17	0.10	0.10	0.05	0.05	0.05	0.01	0.05	0.10
ALT									
RATE DB	18	0.070	0.100	0.200	0.200	0.200	0.070	0.200	0.070
JET OPT	19	TAIL	ALL	ALL	ALL	ALL	TAIL	ALL	TAIL
# JETS	20	1	2	2	2	2	3	2	2
ON TIME	21	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	22	0.00	0.00	0.00	0.00	0.00	11.28	0.00	0.00
VERN									
ROT RATE	23	0.0500	0.0160	0.2000	0.0500	0.1300	0.1500	0.0500	0.0450
ATT DB	24	1.000	1.000	1.000	0.500	2.000	5.000	1.000	0.100
RATE DB	25	.020	.020	.020	.020	.020	.050	.020	.020
ROT PLS	26	0.010	0.010	0.010	0.050	0.050	0.002	0.050	0.010
COMP	27	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28	0	0	0	0	0	7	0	0
PURPOSE		FWD PROP SAVINGS	RNDZ	CORRIDOR	DOCKING	FLY-AROUND	MATED STACK MNVRS & HOLD	FAILED CAPTURE	SLM

Note: **BOLD/ITALICS** = not l-Loaded

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STS-86 FLIGHT SPECIFIC DAP B CONFIGURATIONS

	ITEM #	B7	B8	B9	B10	B12	B13
PRI							
ROT RATE	30	0.5000	0.2000	0.0500	0.1300	0.0500	0.0500
ATT DB	31	2.00	1.00	0.50	2.00	5.00	1.00
RATE DB	32	0.20	0.10	0.10	0.10	0.20	0.10
ROT PLS	33	0.04	0.04	0.04	0.04	0.04	0.04
COMP	34	.000	.000	.000	.000	.000	.000
P OPTION	35	ALL	TAIL	TAIL	TAIL	TAIL	TAIL
Y OPTION	36	ALL	TAIL	TAIL	TAIL	TAIL	TAIL
TRAN PLS	37	0.05	0.01	0.01	0.01	0.01	0.01
ALT							
RATE DB	38	0.100	0.200	0.200	0.200	0.070	0.200
JET OPT	39	ALL	ALL	ALL	ALL	TAIL	ALL
# JETS	40	2	2	2	2	3	2
ON TIME	41	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42	0.00	0.00	0.00	0.00	11.28	0.00
VERN							
ROT RATE	43	0.2000	0.2000	0.0500	0.1300	0.0500	0.0500
ATT DB	44	1.000	1.000	0.500	2.000	1.000	1.000
RATE DB	45	.020	.020	.020	.020	.050	.020
ROT PLS	46	0.002	0.002	0.020	0.020	0.002	0.020
COMP	47	.000	.000	.000	.000	.000	.000
CNTL ACC	48	0	0	0	0	7	0
PURPOSE		RNDZ	CORRIDOR	DOCKING	FLY- AROUND	MATED STACK TIGHT CONTROL	FAILED CAPTURE

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AA10/BUIS, A.
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AD60/MC MILLAN, B.J.
AD75/STS DATA MGMT
AE70/GALLARDO, J.A.
AE85/BRYON, K.
FA19/FERGUS, E.M.
FA35/GULSBY, J.A.
FA43/SINCLAIR, G.M.
FA99/LARSON, J.J.
FB13/INGRAM, K.
FB14/ITO, J.K.
FB75/MC DERMOTT, W.A.
FC94/GOOSSENS, M.H.
FC94/IMPASTATO, J.
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