

FLIGHT DATA FILE

Flight Plan

STS-50

(Rotated Flight Cycle Trajectory)

Mission Operations Directorate
Operations Division

Final
May 4, 1992

<u>EVENT</u>	<u>CDT</u>		
Launch	11:00	Tue	June 9
EDW Landing	07:29	Mon	June 22

BRNH CHIEF
B. NUTE
DH41
BOND

1



National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

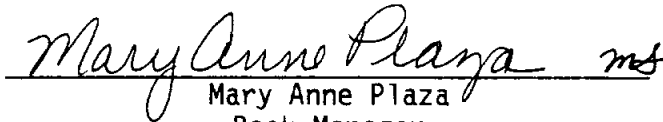


MISSION OPERATIONS DIRECTORATE


STS-50 FLIGHT PLAN


FINAL
May 4, 1992

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	FLT PLN-1247EZ	FLT PLN-1292	FLT PLN-1315
	FLT PLN-1250	FLT PLN-1293A	FLT PLN-1316
	FLT PLN-1251EZ	FLT PLN-1295	FLT PLN-1317
	FLT PLN-1252EZ	FLT PLN-1296	FLT PLN-1318
	FLT PLN-1253EZ	FLT PLN-1297	
	FLT PLN-1254EZ	FLT PLN-1298	MULTI-607
	FLT PLN-1260	FLT PLN-1299	MULTI-620A
	FLT PLN-1274	FLT PLN-1300	MULTI-634
	FLT PLN-1278EZ	FLT PLN-1301	MULTI-635A
	FLT PLN-1282EZ	FLT PLN-1302	MULTI-639
	FLT PLN-1283	FLT PLN-1309	
	FLT PLN-1287	FLT PLN-1310A	EXEMPTIONS:
			36, 37, 39A, 40

AREAS OF TECHNICAL RESPONSIBILITY

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Nominal Timelines	DH4/M. Scheib	483-4471
Pointing	DH4/W. J. Kirscher	483-4364

STS-50 FLIGHT PLAN

LIST OF EFFECTIVE PAGES

FINAL 05/04/92

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(*) - Omit from flight book

STS-50 FLT PLN CUE CARDS

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INTRODUCTION

The STS-50 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 entire flight is shown in the summary level timeline.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive and the requirements of the STS-50 Flight Requirements Document. The Flight Plan, as part of the Flight Data File, meets the specifications of the Rotated Flight Cycle version of the STS-50 Flight Initialization Data Pack.

The flight profile used for this Flight Plan is for a launch date of June 9, 1992, at 11:00 CDT. Orbiter inertial attitudes are expressed relative to a Mean of 1950 (M50) reference frame.

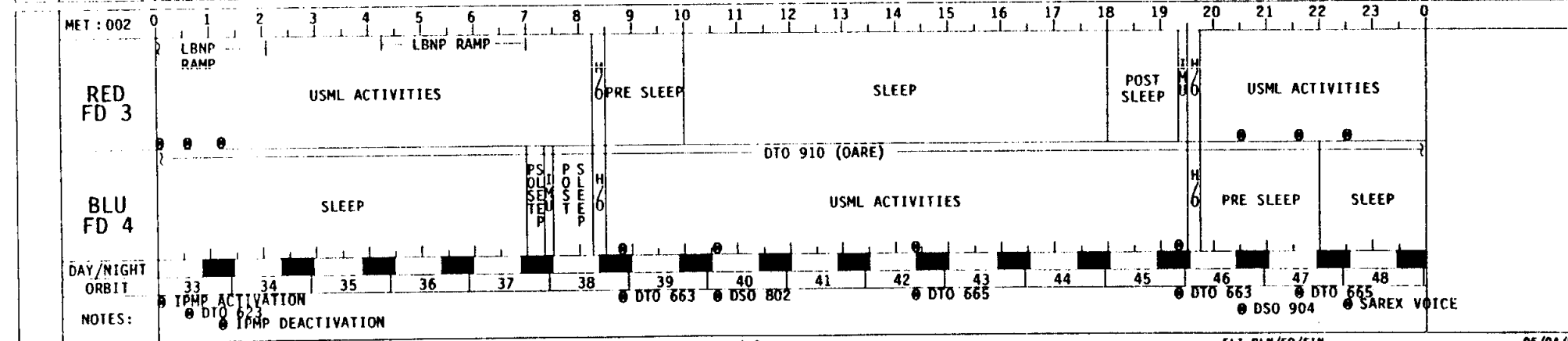
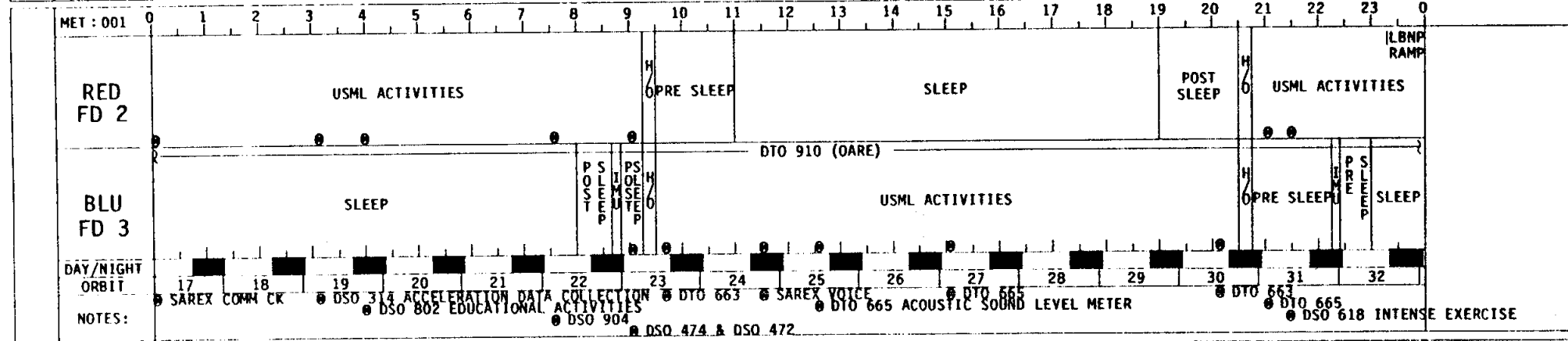
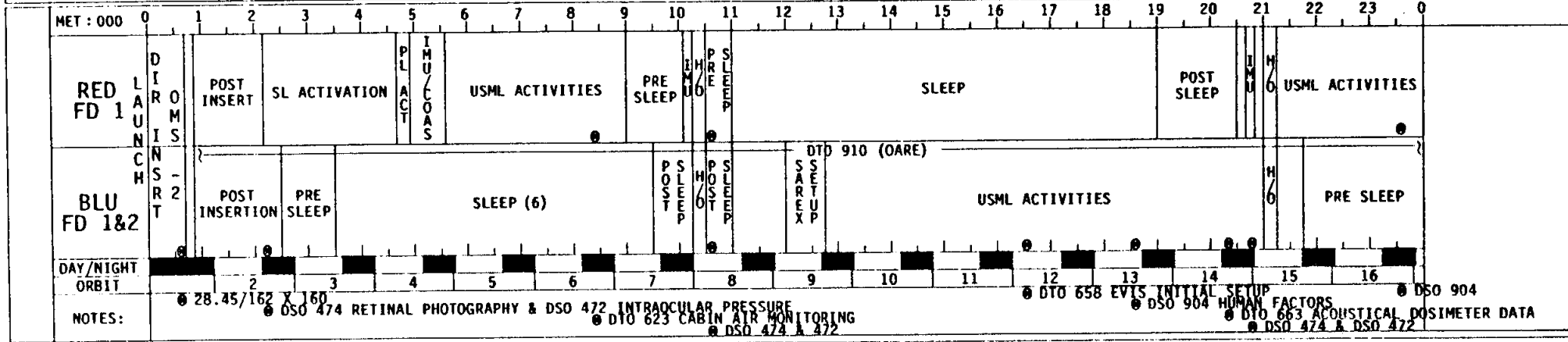
JSC-22359, Crew Scheduling Constraints (Appendix K, CPMP), Basic Rev A, January 1990, has been used to build the timelines contained in this Flight Plan. Exemption 1403 #36 allows a shortened (30 minutes) lunch for MS1 on FD1 to accomplish necessary payload activities. Exemption 1403 #37 allows DSO 472 and 474 to be performed late in FD1 presleep for PS1. This exemption also allows MS2, MS3, and PS2 to perform DSO 472 and 474 prior to 00/03:00 MET. Exemption 1403 #39A deletes the scheduling of exercise for MS1 on FD11, 12, and 13 due to Lower Body Negative Pressure (LBNP) studies. Exemption 1403 #40 allows MS1 payload operations to exceed the allotted 9 hours per shift by 14 minutes. These exemptions have been approved at this time and are reflected in the timelines.

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

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STS-50 OVERVIEW

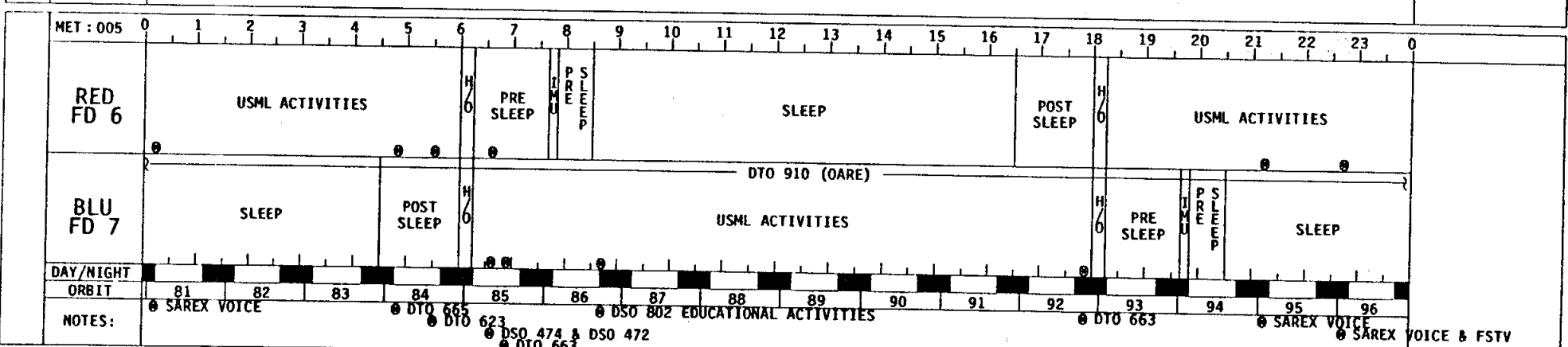
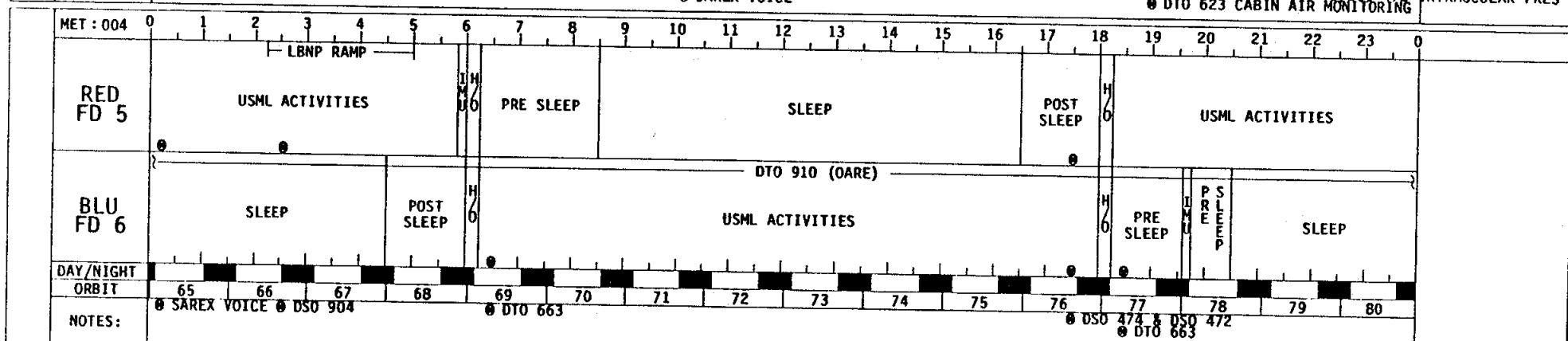
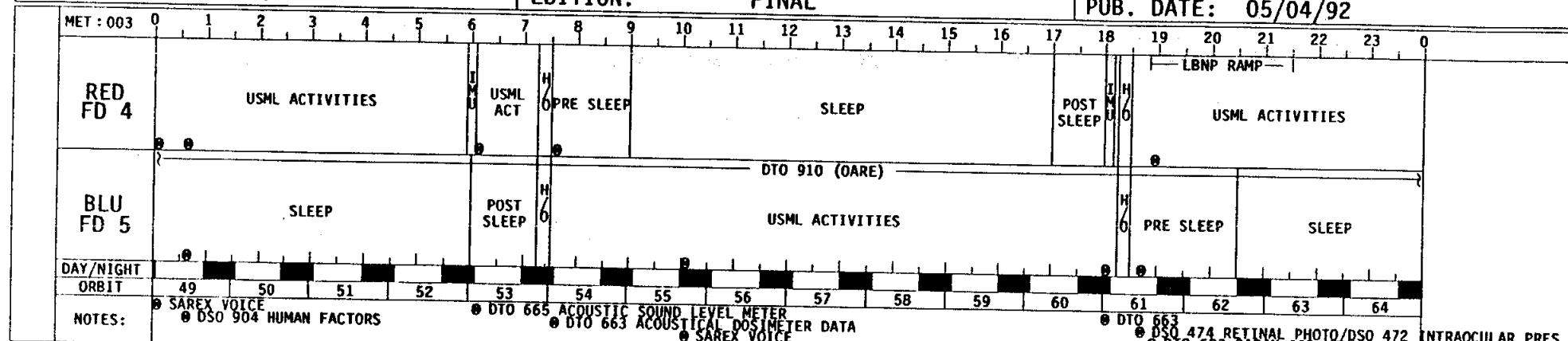
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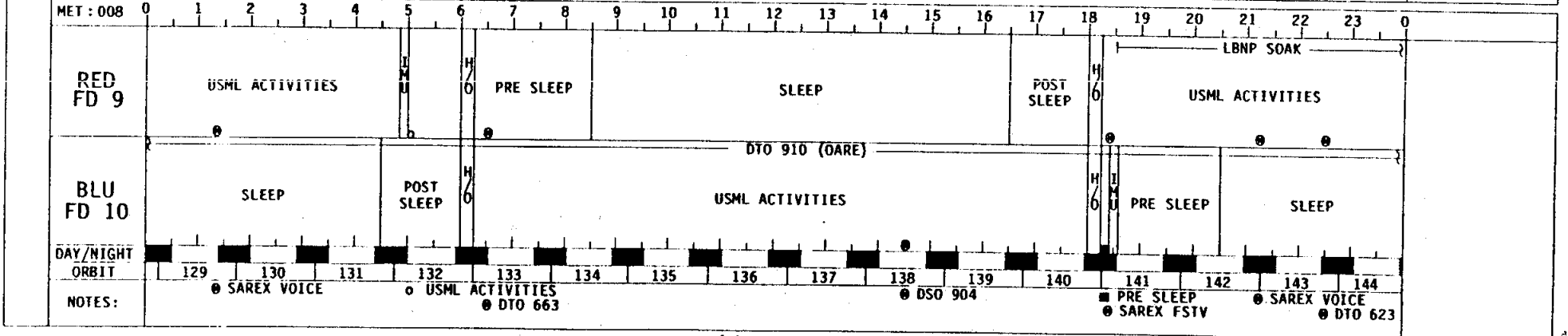
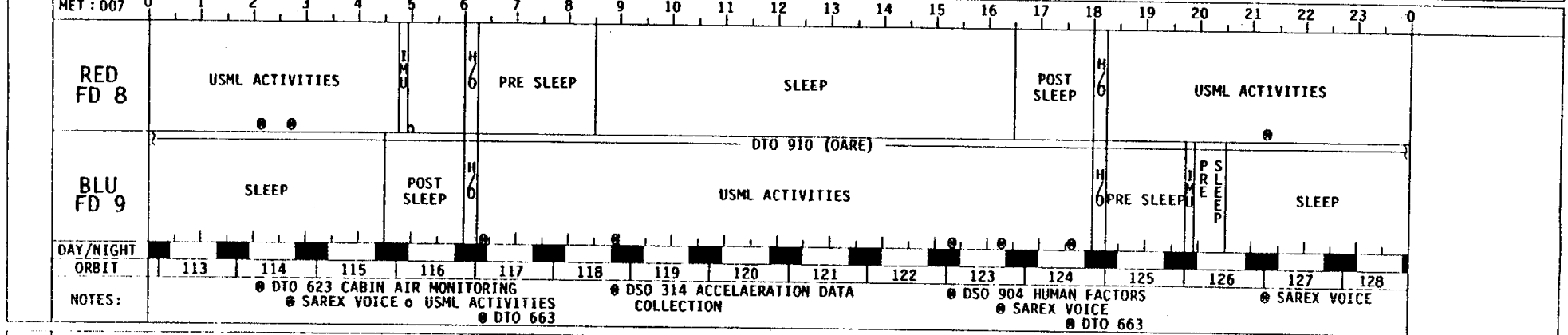
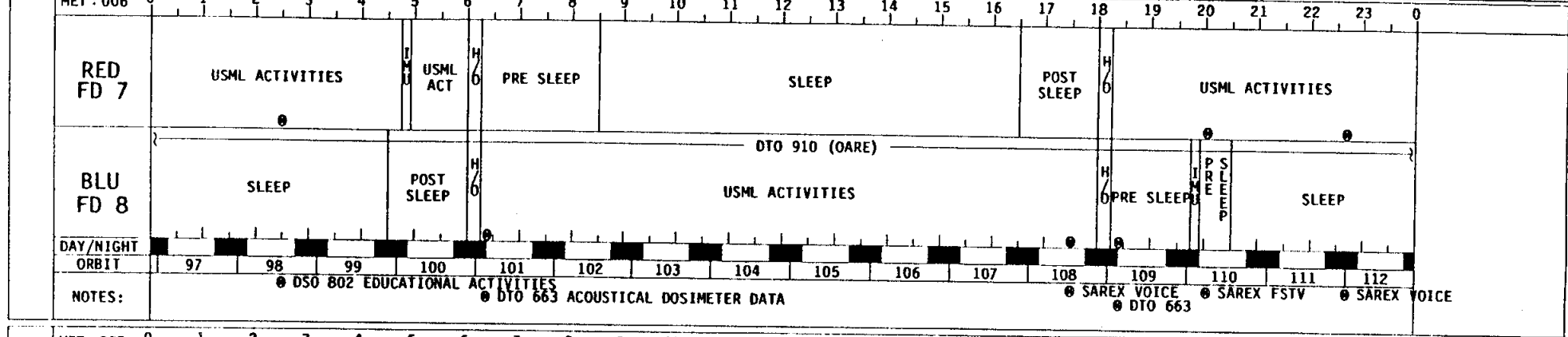


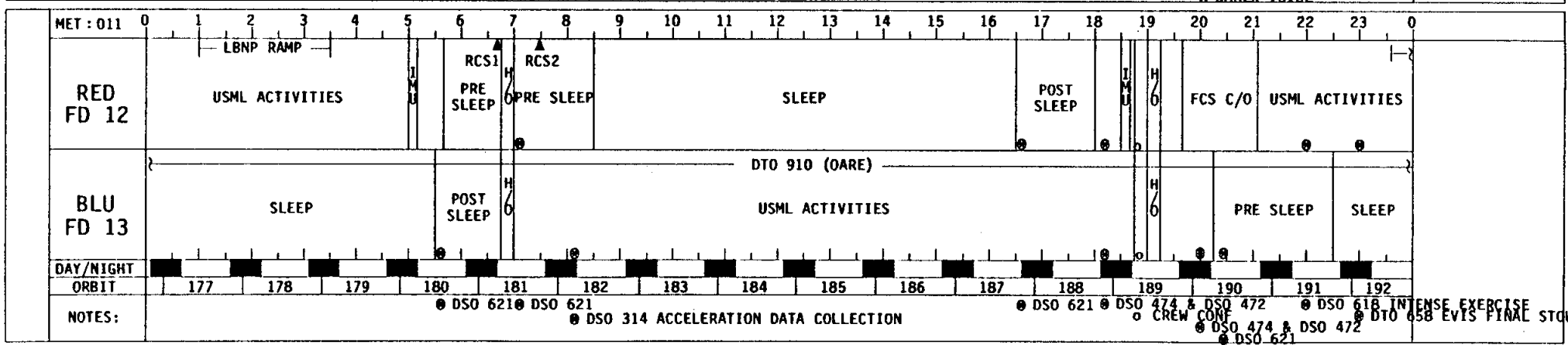
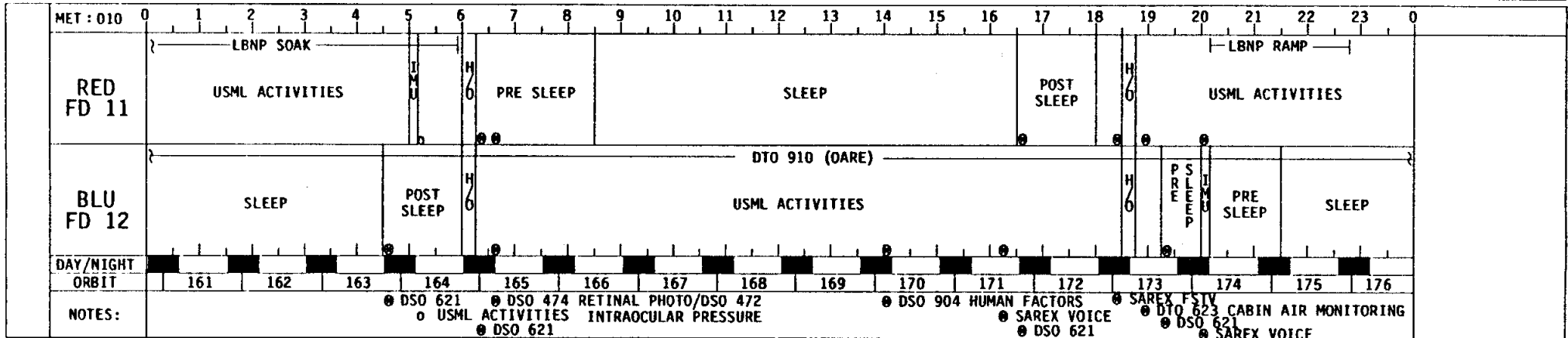
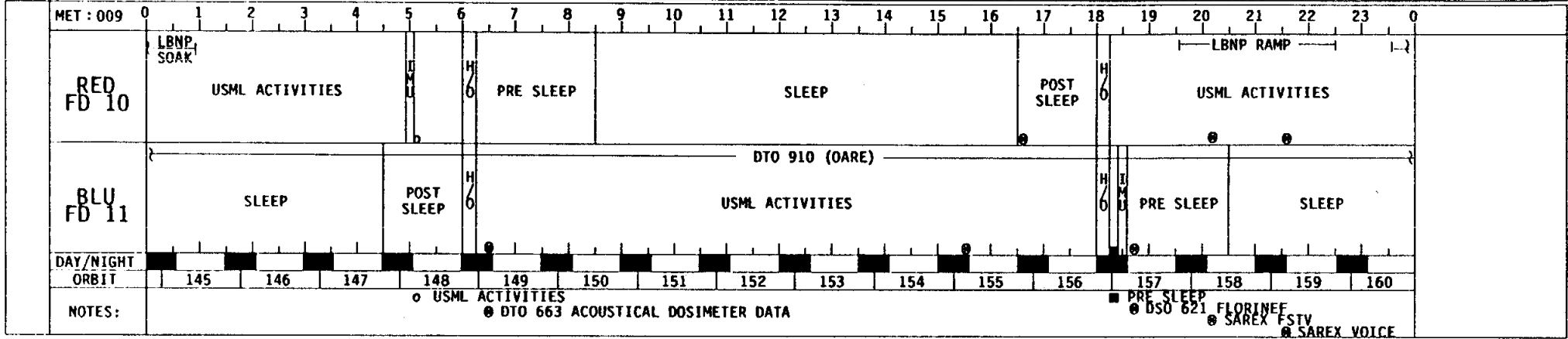
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EDITION: FINAL

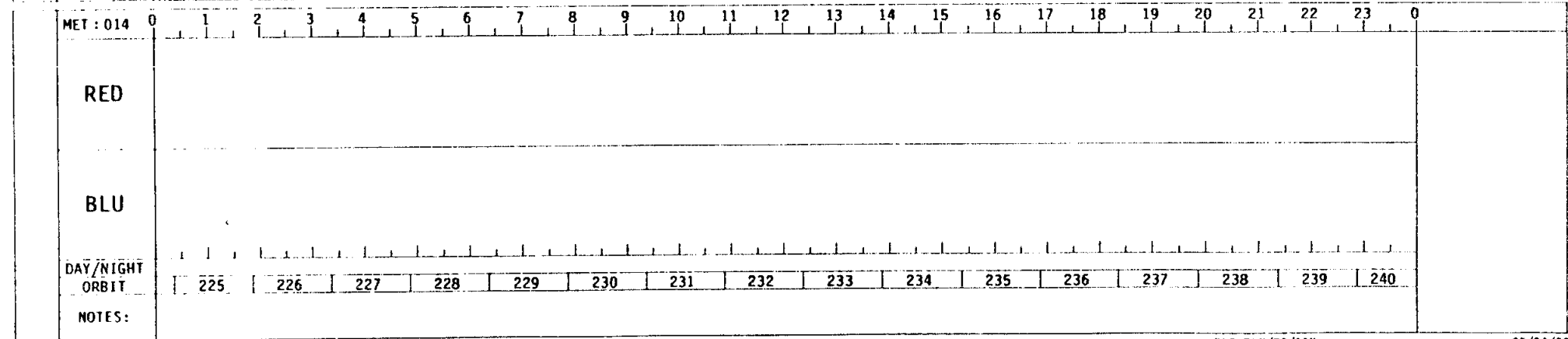
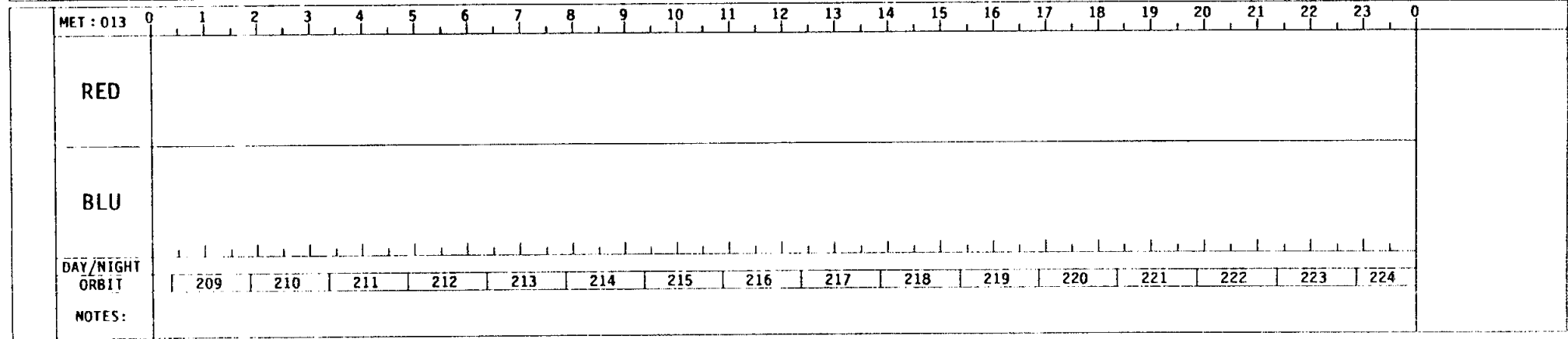
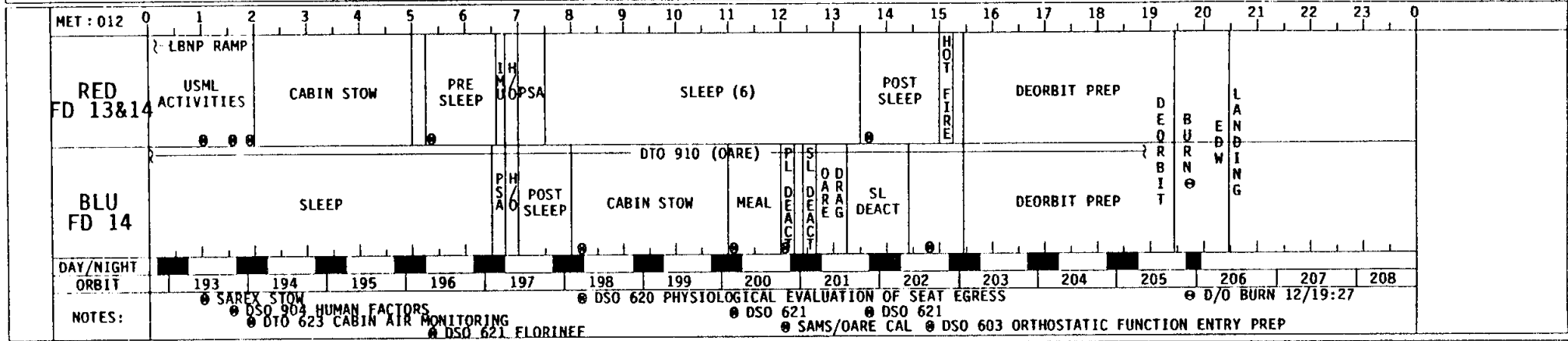
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FLIGHT: STS-50 EDITION: FINAL PUB. DATE: 05/04/92



SUMMARY TIMELINE


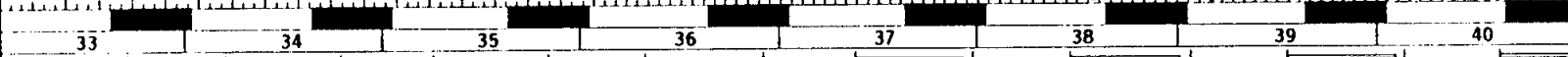

SUMMARY TIMELINE

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CDT	:161	11	12	13	14	15	16	17	18	19	20	21	22	23	
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MET	:000														
RED	CDR		POST INSERTION		P/TV02 SETUP	PAI/CN TGRESS	QUICK ROOM		MEAL			PRE SLEEP	H/O	SLEEP	
	PLT	LAUNCH DIRECT					PCG ACT		MEAL	P/TV11 CGF		PRE SLEEP	H/O	SLEEP	
	MS1		POST INSERTION		INGRESS SL ACTIVATION		PL ACT	SAMS	MEAL	CGF ACT	CGF MANX		PRE SLEEP	H/O	SLEEP
	PS1	INSERTION					PCG ACT		MEAL	GBX CHEK	GBX PCG		PRE SLEEP	H/O	SLEEP
BLUE	MS2		POST INSERTION						SLEEP (6)			POST SLEEP	H/O	POST SLEEP	
	MS3								SLEEP (6)			POST SLEEP	H/O	POST SLEEP	
	PS2								SLEEP (6)			POST SLEEP	H/O	POST SLEEP	
DAY/NIGHT ORBIT															
TDRS															
ATTITUDE															
NOTES:		<ul style="list-style-type: none"> ● DSO 474 RETINAL PHOTOGRAPHY & DSO 472 INTRAOCULAR PRESSURE ○ APU HTR DEACT ■ IMU ALIGN ● AFT STATION ● FWD STATION ● -XLV, -ZVV BIASED ■ APU HTR RECONFIG-A ● DTO 623 CABIN AIR MONITORING △ CGF MANX △ CGF EXP1 ● H/O RED TO BLUE ▶ PRE SLEEP ● DSO 474 RETINAL PHOTOGRAPHY & DSO 472 INTRAOCULAR PRESSURE 													

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
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CDT	:161	23	0	CDT:162	1	2	3	4	5	6	7	8	9	10	11	MET:001
BLU	FD:002	12	13	14	15	16	17	18	19	20	21	22	23	0		
MET	:000															
RED	CDR	SLEEP						POST SLEEP			H/O	BO REF E D C N T G	EXERCISE	ES VI IO S W	FILTER CLEANING	
	PLT	SLEEP						POST SLEEP			I A M U T I G N	H/O	EXERCISE	PCG	D M S E A S U R E	
	MS1	SLEEP						POST SLEEP			H/O	P I L A I N I N G	GBX ZCG	DPM RHEO	GBX ZCG	
	PS1	SLEEP						POST SLEEP			D44 S77 042 80 P E R	H/O	P I L A I N I N G	DPM FILM	PCG	
BLUE	MS2	SAREX-D SETUP	MEAL		P/TV24 SETUP	EVIS INITIAL SETUP		P A I D M U T E R	S D M E S E T U P	EXERCISE			D44 S77 042 80 P E R	H/O	D44 S77 042 80 P E R	PRE SLEEP
	MS3	G B A L O A D	GBA CELL	GBA TRAN	G B A M O L E	MEAL	GBX PCG	EVIS INITIAL SETUP	DPM FILM			EXERCISE	H/O	D44 S77 042 80 P E R	PRE SLEEP	
	PS2	DPM AMBT		MEAL	DPM COAL			D S O S T S C O P E			H/O	D44 S77 042 80 P E R	PRE SLEEP			
DAY/NIGHT																
ORBIT																
TDRS																
ATTITUDE		-XLV, -ZVV BIASED														
NOTES:	<p style="text-align: center;">H/O BLUE TO RED @DTO 658</p> <p style="text-align: center;">@DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION</p> <p style="text-align: center;">@DSO 904 HUMAN FACTORS @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 1)</p> <p style="text-align: center;">@DSO 904 HUMAN FACTORS @DSO 474 RETINAL PHOTOGRAPHY & @DSO 904 HUMAN FACTORS</p> <p style="text-align: center;">(LOCATION 3) DSO 472 INTRAOCULAR PRESSURE (LOCATION 8)</p> <p style="text-align: center;">@DSO 474 & DSO 472</p>															

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
162:16:00/ 163:04:00		001:00:00/ 001:12:00		162:11:00/ 162:23:00		/162 CST	-2.8		JUNE 10, 1992	STS-50	FINAL	05/04/92					
CDT	:162	11	12	13	14	15	16	17	18	19	20	21	22	23			
RED	FD:002	0	1	2	3	4	5	6	7	8	9	10	11	12			
MET	:001																
RED	CDR	SCORM SARREX CK	MEAL		PADM SUSUP DCADPN FLIG	DRACPN FLIG	PADM SUSUP	P/TV25 ACT DSO 802	PADM SUSUP		PROPR V MED	H/O	PRE SLEEP	SLEEP			
	PLT	TV3 ZCG	MEAL	ZCG DOWN		ZCG DOWN	P/TV25 SETUP	P/TV25 ACT DSO 802	ZCG DOWN	NON COM	ESVIT SUP	DM SEAS SUOR 4E	NON COM	IA ML U GN	H/O	PRE SLEEP	SLEEP
	MS1	GBX ZCG	ZCG ACT	MEAL		DPM RHEO							EXERCISE	H/O	PRE SLEEP	SLEEP	
	PS1		GBX SCM	MEAL				GBX PCG				D44 S77 042	H/O	PRE SLEEP	SLEEP		
BLUE	MS2					SLEEP					D44 S77 042	H/O	POST SLEEP	ESVIT IO SW	SARREX V O R I C E		
	MS3					SLEEP							H/O	DPM RHEO	GBA MOLE	GBA CELL	GBA TRAN
	PS2					SLEEP							H/O	EXERCISE		GBX SSWT	
DAY/NIGHT	ORBIT																
TDRS	E M																
ATTITUDE	-XLV, -ZVV BIASED																
NOTES:	HOUSTON @DSO 314 ACCELERATION DATA COLLECTION @DSO 802 EDUCATIONAL ACTIVITIES @H/O RED TO BLUE @OHO BOY SCOUTS @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTO 658 @DSO 904 HUMAN FACTORS (LOCATION 5) @DTO 658 @DSO 474 RETINAL PHOTOGRAPHY/DSO 472 INTRAOCULAR PRESSURE @DTO 663 ACUSTICAL NOISE (STEP 2a) @DTO 663 ACUSTICAL NOISE (STEP 2a)																

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
163:04:00/ 163:16:00		001:12:00/ 002:00:00		162:23:00/ 163:11:00		/162 CST	-1.9		JUNE 10, 1992	STS-50	FINAL	05/04/92						
CDT	:162	23	0	CDT:163	1	2	3	4	5	6	7	8	9	10	11			
BLU	FD:003	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
MET	:001									RED	FD:003				MET:002			
RED	CDR	SLEEP								POST SLEEP	H/O	P/TV21 SETUP	P/TV21 ACT DSO 618	EXERCISE	ESVT IO SW	P/TV21 SETUP	PA/CTT	
	PLT	SLEEP								POST SLEEP	H/O	DTODTO 665665	LOOLOC E F	DSO 618 EXERCISE	NON-GON	GBX PAS2		
	MS1	SLEEP								POST SLEEP	H/O	PLANNING	STDCE IM	AIR MON	DPM FILM	TV14 EDO	LBNP RAMP (OPER)	
	PS1	SLEEP								POST SLEEP	H/O	PLANNING	GBX PCG			LBNP RAMP (SUBJ)		
BLUE	MS2	NON-GON	DTO 665 LOC N	OTO 665 LOC O	MEAL	NON-GON	DTODTO 665665665	LOOLOC D G H	NON-GON	PAD M P	SETUP	NON-GON	ESVT IO SW	EXERCISE	DTO 663	H/O	PRE SLEEP	SLEEP
	MS3	GBA DEV	GBA MOLE		MEAL	GBX PCG								EXERCISE	H/O	PRE SLEEP	SLEEP	
	PS2		GBX SSWT		MEAL		DPM FLOW		DPM FILM					LBNP SET	H/O	PRE SLEEP	SLEEP	
DAY/NIGHT ORBIT		25		26		27		28		29		30		31		32		
TDRS E M		=====		=====		=====		=====		=====		=====		=====		=====		
ATTITUDE								-XLV, -ZVV BIASED										
NOTES:		GBA TRAN DTO 665 ACOUSTIC NOISE SOUND LEVEL DATA				DTO 665 ACOUSTIC NOISE SOUND LEVEL DATA				H/O BLUE TO RED DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION				DTO 658				
										ACOUSTICAL NOISE DOSIMETER DATA (STEP 2b)				DTO 665 ACOUSTIC NOISE SOUND LEVEL DATA				
														DSO 618 EFFECTS OF INTENSE EXERCISE				

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
163:16:00/ 164:04:00		002:00:00/ 002:12:00		163:11:00/ 163:23:00		/163 CST	-0.8		JUNE 11, 1992	STS-50	FINAL	05/04/92				
CDT	:163	11	12	13	14	15	16	17	18	19	20	21	22	23		
RED	FD:003	0	1	2	3	4	5	6	7	8	9	10	11	12		
MET	:002															
RED	CDR	P/CTV 21 IPMP	P/TV21 ACT IPMP		MEAL		P/SETUP			PROINF H/O		PRE SLEEP		SLEEP		
	PLT	IPMP ACT	IPMP ACT		MEAL	PCG			ES VE IT SU P	TA ML U J G N	ES VT IO N S W	H/O	PRE SLEEP	SLEEP		
	MS1			LBNP RAMP (OPER)	MEAL							H/O	PRE SLEEP	SLEEP		
	PS1			LBNP RAMP (SUBJ)	MEAL	PCG					GBX PCG	H/O	PRE SLEEP	SLEEP		
BLUE	MS2				SLEEP						NON MON N	H/O	POST SLEEP	DTO 663 P/TV04 CREW ACT	P/TV25 SETUP	P/TV25 ACT DSO 802
	MS3				SLEEP						PLA N N I N G	H/O	POST SLEEP	VAR HR+		GBX SCM
	PS2				SLEEP						PLA N N I N G	H/O	POST SLEEP	VAR HRBP		DPM OSCL
DAY/NIGHT ORBIT																
TORS																
ATTITUDE		-XLV, -ZVV BIASED														
NOTES:		@DTO 623 CABIN AIR MONITORING @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTO 658 @DTO 663 ACOUSTICAL NOISE DOSIMETER (STEPS 2a,3) @DSO 802 EDUCATIONAL ACTIVITIES @H/O RED TO BLUE														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
164:04:00 / 164:16:00	002:12:00 / 003:00:00	163:23:00 / 164:11:00	/163 CST	0.4		JUNE 11, 1992	STS-50	FINAL	05/04/92		
CDT :163 23 BLU FD:004 12 MET :002	0 CDT:164 1 13 14	2 15	3 16	4 17	5 18	6 19	7 20 FD:004 20	8 21	9 22	10 23	11 0 MET:003

RED	CDR	SLEEP					POST SLEEP	TAM ML UI N	EXERCISE	ES VT IO SW	SA RE X E C I E	
	PLT	SLEEP					POST SLEEP	H/O	ZEM CSE GOA S M O U R N E	EXERCISE	DTO 665 LOC 1	
	MS1	SLEEP					POST SLEEP	H/O	DPM COAL			
	PS1	SLEEP					POST SLEEP	H/O	EXERCISE	GBX ICE	GBX PCG	
BLUE	MS2	MEAL	DTO 665 LOC L	DTO 665 LOC M	P/ T/ V I B	US SL M M E A S	GBX PAS2	ES VE G I T S U M P O N	EXERCISE	DTO 663	PRE SLEEP	SLEEP
	MS3	GBX SCH	MEAL	GBA MOLE	GBA CELL	GBA TRAN	DPM FILM	EXERCISE	H/O	PRE SLEEP	SLEEP	
	PS2	DPM OSCL	DPM OSCL	MEAL	DPM RESN	DPM SURF	H/O	PRE SLEEP	SLEEP			
DAY/NIGHT ORBIT		41 42 43 44 45 46 47 48										
TDRS E W		[Timeline bars]										
ATTITUDE		-XLV, -ZV BIASED										

NOTES: @DTO 665 ACOUSTIC NOISE SOUND LEVEL DATA @AT R7P @H/O BLUE TO RED @LAPORTE, TEXAS @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 2b) @DSO 904 HUMAN FACTORS (LOCATION 4) @DTO 665 ACOUSTIC NOISE SOUND LEVEL DATA @DTO 658

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
164:16:00/ 165:04:00		003:00:00/ 003:12:00		164:11:00/ 164:23:00		/164 CST	1.6		JUNE 12, 1992	STS-50	FINAL	05/04/92		
CDT	:164	11	12	13	14	15	16	17	18	19	20	21	22	23
RED	FD:004	0	1	2	3	4	5	6	7	8	9	10	11	12
MET	:003													
RED	CDR	SAREX VOICE	MEAL			PAD M SET UP			PRIV MED	H/O	PRE SLEEP		SLEEP	
	PLT	DM SE DA S DU OR AE	MEAL		P/TV10 GBX		ES VE IT SU P	IA ML UI G	ES VE IT SU P	WDT AUN SMI TPT E	H/O	PRE SLEEP		SLEEP
	MS1	OP M COAL	MEAL		DPM SURF				ES VE IT SU P	H/O	PRE SLEEP		SLEEP	
	PS1	GBX PCG	MEAL		GBX PCG					H/O	PRE SLEEP		SLEEP	
BLUE	MS2			SLEEP						H/O	POST SLEEP	DTO 663		
	MS3			SLEEP						H/O	POST SLEEP	DTO 663		
	PS2			SLEEP						H/O	POST SLEEP	DTO 663		
DAY/NIGHT ORBIT														
TDRS														
ATTITUDE														
NOTES:		BU.S. SCHOOL @DSO 904 HUMAN FACTORS (LOCATION 7) @H/O RED TO BLUE @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTO 665 ACOUSTIC NOISE SOUND LEVEL DATA @DTO 658 @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEPS 2a,3,2c) @OHIO BOY SCOUTS												

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
165:04:00/ 165:16:00		003:12:00/ 004:00:00		164:23:00/ 165:11:00		/164 CST	3.0	☾	JUNE 12, 1992	STS-50	FINAL	05/04/92						
CDT :164	23	0	CDT:165	1	2	3	4	5	RED	6	7	8	9	10	11	0	MET:004	
BLU FD:005	12	13	14	15	16	17	18	19	FD:005	20	21	22	23					
MET :003																		
RED	CDR	SLEEP					POST SLEEP			H/O	EXERCISE			ES VT IO SW		MEAL		
	PLT	SLEEP					POST SLEEP			LA ML UI GN	H/O	EXERCISE			PS /A TH VS 17		MEAL	
	MS1	SLEEP					POST SLEEP			H/O	LBNP RAMP (OPER)					MEAL		
	PS1	SLEEP					POST SLEEP			H/O	LBNP RAMP (SUBJ)			GBX PCG		MEAL		
BLUE	MS2	MEAL		GBX PAS2		EXERCISE			DTO 663	H/O	PRE SLEEP			SLEEP				
	MS3	NEAL	GBX DPA	GBX MCCC			DPM FILM		EXERCISE		H/O	PRE SLEEP			SLEEP			
	PS2	MEAL	DPM ROTA			DPM SURF					H/O	PRE SLEEP			SLEEP			
DAY/NIGHT		ORBIT																
TDRS		E W																
ATTITUDE		-XLV, -ZVV BIASED																
NOTES:	@H/O BLUE TO RED @DTO 658 ▶ SAMS @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEPS 2d,3) @DSO 474 RETINAL PHOTOGRAPHY & DSO 472 INTRAOCULAR PRESSURE @DTO 623 CABIN AIR MONITORING																	

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
165:16:00/ 166:04:00	004:00:00/ 004:12:00	165:11:00/ 165:23:00	/165 CST	4.4		JUNE 13, 1992	STS-50	FINAL	05/04/92

CDT	RED	FD:005	MET	004	11	12	13	14	15	16	17	18	19	20	21	22	23

RED	CDR	SAREX VOICE		PAYUP							CONF						
	PLT			DM	P/TV14 EDOMP						IA						
BLUE	MS1	DPM RESN			LBNP RAMP (SUBJ)						EXERCISE						
	PS1	GBX ICE			LBNP RAMP (OPER)												
	MS2		SLEEP								POST SLEEP						
	MS3		SLEEP								POST SLEEP		EXERCISE			DPM SURF	
PS2		SLEEP								POST SLEEP					STDCE CF		MEAL

DAY/NIGHT ORBIT

TDRS ATTITUDE

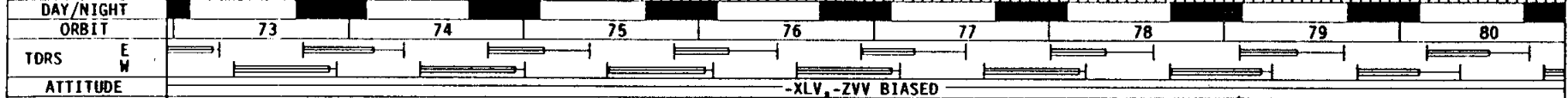


NOTES:

@U.S. SCHOOL @DSO 904 HUMAN FACTORS (LOCATION 6) @H/O RED TO BLUE @AT L2X
 @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION
 @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 2d)
 @DTO 658

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
166:04:00 / 166:16:00	004:12:00 / 005:00:00	165:23:00 / 166:11:00	/165 CST	6.0		JUNE 13, 1992	STS-50	FINAL	05/04/92			
CDT :165 23	0 CDT:166 1	2	3	4	5 RED	6	7	8	9	10	11	0 MET:005
BLU FD:006 12	13	14	15	16	17	18 FD:006 19	20	21	22	23		
MET :004												

RED	CDR	SLEEP			POST SLEEP	H/O	EXERCISE	ES VT IO SM		
	PLT	SLEEP			POST SLEEP	H/O	EXERCISE	FILTER CLEANING		
	MS1	SLEEP			POST SLEEP	H/O	DPM COAL	DPM RESN DPM SURF		
	PS1	SLEEP			POST SLEEP	H/O	GBX WIF	GBX PCG		
BLUE	MS2	MEAL	GBX PAS2	ZCG DOWN	EXERCISE	H/O	PRE SLEEP	PRE SLEEP	SLEEP	
	MS3	DPM SURF	GBA CELL	GBA DEV	GBA TRAN	GBX ZCG+	DPM SURF	SL CNDS TK DUMP	PRE SLEEP	SLEEP
	PS2	STDCE CT			EXERCISE	H/O	PRE SLEEP	SLEEP		



NOTES:

- ① H/O BLUE TO RED @DTO 658
- ② DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION
- ③ DSO 474 RETINAL PHOTOGRAPHY & DSO 472 INTRAOCULAR PRESSURE
- ④ DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEPS 2d,3)

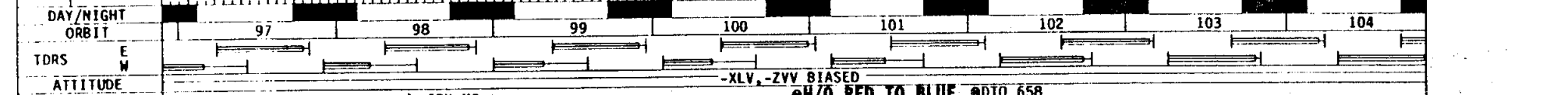
GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
166:16:00/ 167:04:00		005:00:00/ 005:12:00		166:11:00/ 166:23:00		/166 CST	7.6		JUNE 14, 1992	STS-50	FINAL	05/04/92			
CDT	:166	11	12	13	14	15	16	17	18	19	20	21	22	23	
RED	FD:006	0	1	2	3	4	5	6	7	8	9	10	11	12	
MET	:005														
RED	CDR	SAREX VOICE	MEAL		PASTOR			PRE SLEEP		PRE SLEEP		SLEEP			
	PLT		MEAL				DTG 665 LOC J			PRE SLEEP		SLEEP			
	MS1	DPM SURF	MEAL	GBX PCG	GBX CFM1	GBX CFM2	GBX CFM3	EXERCISE		PRE SLEEP		SLEEP			
	PS1		GBX PCG	MEAL				GBX PCG	EXERCISE		PRE SLEEP		SLEEP		
BLUE	MS2		SLEEP					POST SLEEP			P/TV25 SETUP	P/TV25 ACT DSO 802		MEAL	
	MS3		SLEEP					POST SLEEP		GBX PCG	DPM SURF	GBX CFM1	GBX CFM3	GBX CFM4	MEAL
	PS2		SLEEP					POST SLEEP		DPM RESN	VAR HRBP		DPM FILM	MEAL	DPM SURF
DAY/NIGHT ORBIT															
TDRS ATTITUDE															
NOTES:		@U.S. SCHOOL @H/O RED TO BLUE @DSO 802 EDUCATIONAL ACTIVITIES @DTG 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTG 665 ACOUSTIC NOISE SOUND LEVEL DATA @DTG 623 CABIN AIR MONITORING @DSO 474 RETINAL PHOTOGRAPHY & DSO 472 INTRAOCULAR PRESSURE @DTG 663 ACOUSTICAL NOISE DOSIMETER DATA (STEPS 2d,e)													

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
167:04:00/ 167:16:00		005:12:00/ 006:00:00		166:23:00/ 167:11:00		/166 CST	9.3	☉	JUNE 14, 1992	STS-50	FINAL	05/04/92				
CDT	:166	23	0	CDT:167	1	2	3	4	5	6	7	8	9	10	11	MET:006
BLU	FD:007	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
MET	:005															
RED	CDR	SLEEP					POST SLEEP			H/O	EXERCISE			SAREX VOICE & FSTV		
	PLT	SLEEP					POST SLEEP			H/O	EXERCISE			ASC ACT		
	MS1	SLEEP					POST SLEEP			H/O	DPM FILM		DPM COAL		DPM RESN	
	PS1	SLEEP					POST SLEEP			H/O	OFF DUTY					MEAL
BLUE	MS2	MEAL	GBX PAS2		EXERCISE		DTG 663	H/O	PRE SLEEP		PRE SLEEP		SLEEP			
	MS3	MEAL	DPM FILM	GBX NCS		EXERCISE		H/O	PRE SLEEP			SLEEP				
	PS2	DPM SURF			DPM R&O			H/O	PRE SLEEP			SLEEP				
DAY/NIGHT		[Day/Night Cycle Diagram]														
ORBIT		[Orbit Diagram]														
TDRS		[TDRS Diagram]														
ATTITUDE		[Attitude Diagram]														
NOTES:		V CONFIG ORB PCS @H/O BLUE TO RED @DTG 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTG 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 2d) @DTG 658 @LAPORTE, TEXAS @CABIN TEMP CNTL RECONFIG @CRS RECONFIG @U.S. SCHOOLS & CA, JSC, FL														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
167:16:00/ 168:04:00	006:00:00/ 006:12:00	167:11:00/ 167:23:00	/167 CST	11.1		JUNE 15, 1992	STS-50	FINAL	05/04/92

CDT	RED	FD	007	0	11	12	13	14	15	16	17	18	19	20	21	22	23
MET	:006																

RED	CDR	MEAL		SETUP	P/TV25 ACT DSO 802	LAUNCH	PRIV	H/O	PRE SLEEP	SLEEP				
	PLT	ASC MON 1	MEAL		ASC MON 1	P/TV25 SETUP P/TV25 ACT DSO 802	ESVIT SUP	HC UNF SIG PLB	ASC MON 2	DOWNLOAD	H/O	PRE SLEEP	SLEEP	
MS1	MEAL	OFF DUTY				EXERCISE		H/O	PRE SLEEP	SLEEP				
PS1	GBX PCG		GBX PCG		GBX PCG		GBX NC++	H/O	PRE SLEEP	SLEEP				
BLUE	MS2	SLEEP				POST SLEEP		H/O	DTO 663	ASC MON 2	ESVIT SUP	SLM MEAS	DOWNLOAD	MEAL
	MS3	SLEEP				POST SLEEP		H/O	PLANNING	EXERCISE	VAR HR+	GBX NC++	CHV 6	MEAL
	PS2	SLEEP				POST SLEEP		H/O	PLANNING	STDCE CF	VAR HRBP	STDCE CF	STDCE CF	MEAL



NOTES:

- ▶ GBX NC++
- ◉ DSO 802 EDUCATIONAL ACTIVITIES
- ▶ GBX NC++
- ◉ DSO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION
- ◉ DSO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEPS 2d,3)
- ◉ H/O RED TO BLUE
- ◉ DTO 658
- ◉ AT L2S AND BETWEEN L1H & L2H

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
168:04:00/ 168:16:00		006:12:00/ 007:00:00		167:23:00/ 168:11:00		/167 CST	12.9	○	JUNE 15, 1992	STS-50	FINAL	05/04/92					
CDT :167	23	0	CDT:168	1	2	3	4	5	6	7	8	9	10	11	MET:007		
BLU FD:008	12	13		14	15	16	17	18	19	20	21	22	23	0			
MET :006																	
RED	CDR	SLEEP					POST SLEEP	WDT AUN SMI TPT E	POST SLEEP	H/O	WDT AUN SMI TPT E	SAREX V S/G	EXERCISE	EST 10 SW	P/TV12 SSCE	SAREX VOICE	
	PLT	SLEEP					POST SLEEP	H/O	ASC MON2	EXERCISE	SF AS RT EV X	ASC MON2	TV 16 ASC	ASC MON2	DOWNLOAD	USLM MEAS	
	MS1	SLEEP					POST SLEEP	H/O	PLAINNING	DPM ROTA	PLAINNING	SSCE	MEAL				
	PS1	SLEEP					POST SLEEP	H/O	PLAINNING	EXERCISE	PLAINNING	GBX PCG					
BLUE	MS2	MEAL	ASC MON2	ASC MON2	ASC MON2	ASC MON2	ASC MON2	EXERCISE	H/O	DTO 663	PRE SLEEP	PRE SLEEP	SLEEP				
	MS3	MEAL	GBX ZCG +	DPM FILM	GBA CELL	GBA DEEV	GBA TRAN	GBX PAS1	GBX NCS	H/O	PRE SLEEP	SLEEP					
	PS2	STDCE CT	STDCE CT	STDCE CT	STDCE CT	STDCE CT	DPM FILM	EXERCISE	H/O	PRE SLEEP	SLEEP						
DAY/NIGHT ORBIT		105		106		107		108		109		110		111		112	
TDRS E W																	
ATTITUDE																	
NOTES:																	

@H/O BLUE TO RED @TL,GSFC @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTO 658 @ADELAIDE, AUSTRALIA SCHOOL @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 2d) @BETWEEN R80 & R90 @U.S. SCHOOL

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
168:16:00/ 169:04:00		007:00:00/ 007:12:00		168:11:00/ 168:23:00		/168 CST	14.7	☉	JUNE 16, 1992	STS-50	FINAL	05/04/92			
CDT	:168	11	12	13	14	15	16	17	18	19	20	21	22	23	
RED	FD:008	0	1	2	3	4	5	6	7	8	9	10	11	12	
MET	:007														
RED	CDR	MEAL			PAID UP SETUP SARTEX		IA ML UI GN	PR IV E M E D	H/O	PRE SLEEP		SLEEP			
	PLT	NON GON	ASC MON2	MEAL		DT O NON GON	ASC MON2 DOWN LOAD	ES VT IO SM	H/O	PRE SLEEP		SLEEP			
	MS1	MEAL	DPM COMP			DPM FILM	EXERCISE		H/O	PRE SLEEP		SLEEP			
	PS1	MEAL	GBX PCG						H/O	PRE SLEEP		SLEEP			
BLUE	MS2	SLEEP				POST SLEEP		DT O NON GON	H/O	NON GON		DC AG PN FI G	DR AG PN FI G	NON GON	
	MS3	SLEEP				POST SLEEP		PL AN NI NG DA IL + HR	H/O	OFF DUTY				MEAL	
	PS2	SLEEP				POST SLEEP		PL AN NI NG DA IL	H/O	DPM FILM	GBX FILM	CGF PURG	GBX SSWT		
DAY/NIGHT ORBIT															
TDRS E M															
ATTITUDE		-XLV, -ZV BIASED													
NOTES:		◎DTO 623 CABIN AIR MONITORING ◎JOHANNESBURG, S. AFRICA SCHOOL ◎DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION ◎DTO 658 ◎DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 2d) ◎H/O RED TO BLUE ◎DSO 314 ACCELERATION DATA COLLECTION ◎CGF EXP3													

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
169:04:00 / 169:16:00		007:12:00 / 008:00:00		168:23:00 / 169:11:00		/168 CST	16.7	○	JUNE 16, 1992	STS-50	FINAL	05/04/92							
CDT	:168	23	0	CDT:169	1	2	3	4	5	6	7	8	9	10	11	0	MET:008		
BLU	FD:009	12	13		14	15	16	17	18	FD:009	19	20	21	22	23				
MET	:007																		
RED	CDR	SLEEP						POST SLEEP	H/O	EXERCISE			ES VT 10 SW	SAREX VOICE		MEAL			
	PLT	SLEEP						POST SLEEP	H/O	FILTER CLEANING	EXERCISE		P/TV08 DPM			MEAL			
	MS1	SLEEP						POST SLEEP	H/O	DPM COAL		GBX PAS1		GBX PCG	MEAL				
	PS1	SLEEP						POST SLEEP	H/O	EXERCISE		GBX PCG		MEAL					
BLUE	MS2	MEAL		SAREX VOICE		EXERCISE	DTO 663	H/O	PRE SLEEP		PRE SLEEP		SLEEP						
	MS3	DPM LAMP	GBA CELL	GBA DEV	GBA TRAN	DPM FILM	GBX PDE		EXERCISE	H/O	PRE SLEEP		SLEEP						
	PS2	AIR MON	MEAL		OFF DUTY				H/O	PRE SLEEP		SLEEP							
DAY/NIGHT		ORBIT		121		122		123		124		125		126		127		128	
TDRS		E		W															
ATTITUDE																			
NOTES:																			

◎DSO 904 HUMAN FACTORS (LOCATION 1)
 ◎DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION
 ◎SIDNEY, AUSTRALIA SCHOOL
 ◎DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEPS 2d,3)

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
169:16:00/ 170:04:00		008:00:00/ 008:12:00		169:11:00/ 169:23:00		/169 CST	18.6	☉	JUNE 17, 1992	STS-50	FINAL	05/04/92		
CDT	:169	11	12	13	14	15	16	17	18	19	20	21	22	23
RED	FD:009	0	1	2	3	4	5	6	7	8	9	10	11	12
MET	:008													
RED	CDR		VOICE SAR EX		PADM SUSP		IA HUI NG	PR IV MED	H/O	PRE SLEEP		SLEEP		
	PLT	ASC ACT	ASC MON 1		ASC MON 1		ES VIT SUP		H/O	PRE SLEEP		SLEEP		
	MS1	MEAL			DPM COMP		EXERCISE		H/O	PRE SLEEP		SLEEP		
	PS1	MEAL			GBX PCG				H/O	PRE SLEEP		SLEEP		
BLUE	MS2		SLEEP				POST SLEEP		H/O	DTO 663	ASC MON 2	ASC MON 2	ASC MON 2	ASC MON 2
	MS3		SLEEP				POST SLEEP		H/O	EXERCISE	GBX NCS	GBX NCS	GBX NCS	MEAL
	PS2		SLEEP				POST SLEEP		H/O	STDCE CF	STDCE CF		MEAL	
DAY/NIGHT ORBIT														
TORS														
ATTITUDE														
NOTES:		<p> @SWAZILAND SCHOOL @H/O RED TO BLUE @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 2d) @DTO 658 @BETWEEN L3K & L4K AND BETWEEN DDU & R2K </p>												

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
170:04:00/ 170:16:00		008:12:00/ 009:00:00		169:23:00/ 170:11:00		/169 CST	20.6		JUNE 17, 1992	STS-50	FINAL	05/04/92					
CDT	:169	23	0	CDT:170	1	2	3	4	5	6	7	8	9	10	11		
BLU	FD:010	12	13	14	15	16	17	18	19	20	21	22	23				
MET	:008														MET:009		
RED	CDR	SLEEP						POST SLEEP	H/O	EXERCISE	ESTIO SW	SAREX VOICE					
	PLT	SLEEP						POST SLEEP	H/O	EXERCISE	ASC MON2	ASC MON2	ASC MON2	ASC MON2	ASC MON2	ASC MON2	
	MS1	SLEEP						POST SLEEP	H/O	LBNP SOAK (OPER)							
	PS1	SLEEP						POST SLEEP	H/O	LBNP SOAK (SUBJ)							
BLUE	MS2	MEAL	ASC MON2	ASC MON2	ASC MON2	ASC MON2	EXERCISE	H/O	PRE SLEEP	PSIA RLML EUIDTO G663	SLEEP						
	MS3	MEAL	GBX PCG	GBA CELL	GBA TRAN	GBX DFZ	GBX FPM	H/O	PRE SLEEP	SLEEP							
	PS2	STDCE CT	STDCE CT			STDCE CT	EXERCISE	H/O	PRE SLEEP	SLEEP							
DAY/NIGHT ORBIT		137		138		139		140		141		142		143		144	
TDRS E W																	
ATTITUDE		-XLV, -ZVV BIASED															
NOTES:		@ GBX NC++ @DSO 904 HUMAN FACTORS (LOCATION 2) @H/O BLUE TO RED @DTO 658 @U.S. SCHOOL @DTO 623 CABIN AIR MONITORING @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @IL, GSFC @DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEP 2d)															

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
170:16:00/ 171:04:00		009:00:00/ 009:12:00		170:11:00/ 170:23:00		/170 CST	22.6	☉	JUNE 18, 1992	STS-50	FINAL	05/04/92				
CDT	:170	11	12	13	14	15	16	17	18	19	20	21	22	23		
RED	FD:010	0	1	2	3	4	5	6	7	8	9	10	11	12		
MET	:009															
RED	CDR		MEAL		PAD SLEP		IA ML JG A	PR ON F M ED	H/O	PRE SLEEP		SLEEP				
	PLT		MEAL	ASC MONZ			ES VES S T I O N S C A S C M O N Z	ES T I O N S M	H/O	PRE SLEEP		SLEEP				
	MS1	LBNP SOAK (OPER)	MEAL	GBX PCG					H/O	PRE SLEEP		SLEEP				
	PS1	LBNP SOAK (SUBJ)	MEAL		GBX PCG				H/O	PRE SLEEP		SLEEP				
BLUE	MS2		SLEEP					Z C G M O N Z	H/O	POST SLEEP			MEAL			
	MS3		SLEEP					D A I L Y P L A N N I N G	H/O	GBX NCS	GBX NCS	GBX NCS	GBX NCS	GBX NCS	DPM FILM	MEAL
	PS2		SLEEP					D A I L Y P L A N N I N G	H/O		DPM TENS			MEAL		
DAY/NIGHT		[Bar chart showing day/night cycle]														
ORBIT		145 146 147 148 149 150 151 152														
TORS		[Bar chart showing torsion]														
ATTITUDE		-XLV, -ZV BIASED														
NOTES:		▶ GBX NC++ ◉ H/O RED TO BLUE ◊ GBX NC++ ◊ GBX NC++ ◊ GBX NC++ ◉ DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION ■ PCS CONFIG ◉ DTO 658 ◉ DTO 663 ACOUSTICAL NOISE DOSIMETER DATA (STEPS 2d,e)														

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
171:04:00 / 171:16:00		009:12:00 / 010:00:00		170:23:00 / 171:11:00		/170 CST	24.7		JUNE 18, 1992	STS-50	FINAL	05/04/92						
CDT	:170	23	0	CDT:171	1	2	3	4	5	6	7	8	9	10	11	0	MET:010	
BLU	FD:011	12	13	14	15	16	17	18	RED	FD:011	19	20	21	22	23	0		
MET	:009																	
RED	CDR	SLEEP						POST SLEEP	H/O	EXERCISE	SAREX	FSTV	SAREX VOICE	MEAL				
	PLT	SLEEP						POST SLEEP	H/O	EXERCISE	ES	VI	IO	SW	MEAL			
	MS1	SLEEP						POST SLEEP	H/O	PLANNING	LBNP RAMP (OPER)			MEAL	LS	BOS	NAU	PKB
	PS1	SLEEP						POST SLEEP	H/O	PLANNING	LBNP RAMP (SUBJ)			MEAL	LS	BOS	NAP	PKE
BLUE	MS2	MEAL	ZCG	DOWN	ZCG	MON	PSETUP	ES	VI	SUP	EXERCISE	H/O	PRE SLEEP	SLEEP				
	MS3	GBX	PDE	DPM	FILM	GBX	PAS1	GBA	CELL	GBA	TRAN	EXERCISE	H/O	PRE SLEEP	SLEEP			
	PS2	DPM RESN				DPM R&O				H/O	PRE SLEEP	SLEEP						
DAY/NIGHT																		
ORBIT																		
TDRS																		
ATTITUDE		-XLV, -ZVV BIASED																
NOTES:		◆ GBX NC++ ◎H/O BLUE TO RED ◎JSC,MSFC,FL ◎U.S. SCHOOL ◎DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION ◎DSO 621 FLORINEF ◎DSO 621 FLORINEF ◎DTO 658																

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
171:16:00/ 172:04:00		010:00:00/ 010:12:00		171:11:00/ 171:23:00		/171 CST	26.7		JUNE 19, 1992	STS-50	FINAL	05/04/92		
CDT	:171	11	12	13	14	15	16	17	18	19	20	21	22	23
RED	FD:011	0	1	2	3	4	5	6	7	8	9	10	11	12
MET	:010													
RED	CDR				PAIDUP			IA						
	PLT							MDI						
	MS1													
	PS1													
BLUE	MS2													
	MS3													
	PS2													
DAY/NIGHT ORBIT		[Orbit diagram showing day/night cycles]												
TDRS		[TDRS coverage diagram]												
ATTITUDE		[Attitude diagram]												
NOTES:		<p>-XLV, -ZVV BIASED</p> <p>DSO 621 FLORINEF @H/O RED TO BLUE</p> <p>DSO 621</p> <p>DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION</p> <p>DSO 474 RETINAL PHOTOGRAPHY & DSO 472 INTRAOCULAR PRESSURE</p> <p>DTO 658</p> <p>VAR MON</p>												

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
172:04:00/ 172:16:00		010:12:00/ 011:00:00		171:23:00/ 172:11:00		/171 CST	28.7		JUNE 19, 1992	STS-50	FINAL	05/04/92					
CDT	:171	23	0	CDT:172	1	2	3	4	5	RED	6	7	8	9	10	11	MET:011
BLU	FD:012	12	13		14	15	16	17	18	FD:012	19	20	21	22	23	0	
MET	:010																
RED	CDR	SLEEP					POST SLEEP			SFAST SRT EX	H/O	EXERCISE	SAREX VOICE	MEAL			
	PLT	SLEEP					POST SLEEP				H/O	EXERCISE	EST TO SM	FILTER CLEANING	MEAL		
	MS1	SLEEP					POST SLEEP				H/O	ZCG DEAC	LBNP RAMP (OPER)			MEAL	
	PS1	SLEEP					POST SLEEP				H/O	GBX PCG	LBNP RAMP (SUBJ)			MEAL	
BLUE	MS2	DM SE DA S BU DR RE	PAID M	S V O I C E			ES VE IT SU P	EXERCISE	H/O	PRE SLEEP	IA ML UL GN	PRE SLEEP	SLEEP				
	MS3	MEAL	DPM TENS					GBX PAS1	H/O	PRE SLEEP			SLEEP				
	PS2	GBX OTFE	GBX OTFE			GBX OTFE			H/O	PRE SLEEP			SLEEP				
DAY/NIGHT																	
ORBIT	169 170 171 172 173 174 175 176																
TDRS																	
ATTITUDE	-XLV, -ZVV BIASED																
NOTES:	@DSO 904 HUMAN FACTORS (LOCATION 0) @CARNARVON, AUSTRALIA SCHOOL @DSO 621 @DSO 621 FLORINEF @U.S. SCHOOL @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @CA, NSFC @DTO 623 CABIN AIR MONITORING @AT R9K @SAMS @GBX PCG																

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
172:16:00/ 173:04:00		011:00:00/ 011:12:00		172:11:00/ 172:23:00		/172 CST	30.8		JUNE 20, 1992	STS-50	FINAL	05/04/92		
CDT	:172	11	12	13	14	15	16	17	18	19	20	21	22	23
RED	FD:012	0	1	2	3	4	5	6	7	8	9	10	11	12
MET	:011													
RED	CDR					PAD N SUIT UP		PRE SLEEP	RCS BURN	H/O	RCS BURN	PRE SLEEP		SLEEP
	PLT	IM SEALS SUIT					IA ML UI G N	ES VE IT SU P	RCS BURN	H/O		PRE SLEEP		SLEEP
	MS1	GBX PCG			LBNP RAMP (SUBJ)					H/O		PRE SLEEP		SLEEP
	PS1	AIR MON			LBNP RAMP (OPER)		GBX PCG		EXERCISE	H/O		PRE SLEEP		SLEEP
BLUE	MS2			SLEEP				POST SLEEP	H/O	RCS BURN	TRK MNV R	DC AO PN FI G	DR AC PN G	ES VT IO SW
	MS3			SLEEP				POST SLEEP	H/O	PLANNING VARR HR	GBA CELL	GBA TRAN	DPM FILM	DPM LIQD
	PS2			SLEEP				POST SLEEP	H/O	PLANNING VARR HR	EXERCISE			GBXODSBA
DAY/NIGHT ORBIT														
TDRS E W														
ATTITUDE														
NOTES:		<p>BAT R9K</p> <p>①DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION</p> <p>②DSO 621 FLORINEF</p> <p>③DSO 621</p> <p>④CGF EXP4</p> <p>⑤H7O RED TO BLUE</p> <p>⑥-XLV, -ZVV BIASED</p> <p>⑦DSO 314 ACCELERATION DATA COLLECTION</p> <p>⑧DTO 658</p>												

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
173:04:00/ 173:16:00	011:12:00/ 012:00:00	172:23:00/ 173:11:00	/172 CST	32.8		JUNE 20, 1992	STS-50	FINAL	05/04/92					
CDT :172 BLU FD:013 MET :011	23 12	0 13	CDT:173 14	2 15	3 16	4 17	5 18	6 19	7 20	8 21	9 22	10 23	11 0	MET:012

RED	CDR	SLEEP		POST SLEEP		PACT TV23 CON F	CROWN H/O	FCS C/O	AC FR TR	EXERCISE	P/TV24 SETUP	EVIS FINAL STOW
	PLT	SLEEP		POST SLEEP		IA MU JI GN	CROWN H/O	FCS C/O	PCG DEACT	DSO 618 EXERCISE	EVIS FINAL STOW	
BLUE	MS1	SLEEP		POST SLEEP		CROWN H/O	PLANNING DAILY	GBX OTFE	CABIN STOW	SL CNDS TK DUMP	MEAL	LBNP RAMP (SUBJ)
	PS1	SLEEP		POST SLEEP		D44 S77 042 &O PER	CROWN H/O	PTLM ADN IC NR GM	GBA CELL DEAC	GBA UDIS	PCG DEACT	MEAL
BLUE	MS2	MEAL	PAD M SETUP	P/TV23 SETUP	ES VE IT SU F TV	CAC DUK ND F TV	EXERCISE	D44 S77 042 &S U B J	CROWN H/O	D44 S77 042 &O PER	PRE SLEEP	SLEEP
	MS3	MEAL	GBX PAS1	GBX PCG	GBX ZCG+	EXERCISE	CROWN H/O	D44 S77 042 &S U B J	CROWN H/O	D44 S77 042 &S U B J	PRE SLEEP	SLEEP
	PS2	MEAL	DPM TENS	DPM SHUT	CROWN H/O	D44 S77 042 &S U B J	CROWN H/O	D44 S77 042 &S U B J	CROWN H/O	D44 S77 042 &S U B J	PRE SLEEP	SLEEP

DAY/NIGHT	[Day/Night Cycle Diagram]												
ORBIT	184	185	186	187	188	189	190	191	192				
TDRS	[TDRS Diagram]												
ATTITUDE	-XLV, -ZVV BIASED												
NOTES:	@DSO 621 FLORINEF @H/O BLUE TO RED @APU HTR RECONFIG @DTO 658 ERGOMETER VIBRATION ISOLATION SYSTEM EVALUATION @DSO 618 EFFECTS OF INTENSE EXERCISE @APU HTR ACT @DSO 474 RETINAL PHOTOGRAPHY & DSO 472 INTRAOCULAR PRESSURE ISOLATION SYSTEM EVAL @DSO 474 & DSO 472 @DSO 621												

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
173:16:00/ 174:04:00	012:00:00/ 012:12:00	173:11:00/ 173:23:00	/173 CST	34.8		JUNE 21, 1992	STS-50	FINAL	05/04/92

CDT	RED	FD	MET	11	12	13	14	15	16	17	18	19	20	21	22	23
:173	0	013	:012													

RED	CDR	MEAL	SAREX-D STOW	CABIN STOW			PSET UP	PRE SLEEP	PRIV H/O	PRE SLEEP	SLEEP (6)							
	PLT	MEAL	MDI AUN SMI TPT E	DSTO W 9004	DTO 623	WDT AUE SMT P M E	CABIN STOW		I A M U G N	PRE SLEEP	H/O	PRE SLEEP	SLEEP (6)					
	MS1	LBNP RAMP (SUBJ)		LBNP DEACT/STOW		CABIN STOW		GBX SHUT	PRE SLEEP	H/O	PRE SLEEP	SLEEP (6)						
	PS1	LBNP RAMP (OPER)		LBNP DEACT/STOW		PCGG DEACT		CABIN STOW	PRE SLEEP	H/O	PRE SLEEP	SLEEP (6)						
BLUE	MS2	SLEEP						P S L E E P	H/O	POST SLEEP	DSO 620	CABIN STOW	TRK M N V BR	CABIN STOW	P S E T U P	PGO W R P X	MEAL	S M E A S U R E
	MS3	SLEEP						P S L E E P	H/O	POST SLEEP	CABIN STOW						MEAL	
	PS2	SLEEP						P S L E E P	H/O	POST SLEEP	CABIN STOW				MEAL	P S E T U P	S M E A S U R E	

DAY/NIGHT	ORBIT	192	193	194	195	196	197	198	199	200	
TORS	E	[Diagram showing orbital path and attitude]									
ATTITUDE	W	[Diagram showing attitude changes]									

NOTES:
 DSO 904 HUMAN FACTORS
DSO 621 FLORINEF
H/O RED TO BLUE
DSO 620 SEAT EGRESS AT WHEELSTOP (VIDEO CALIBRATION)
DTO 623 CABIN AIR MONITORING
+XLV, -ZV BIASED
DSO 621
DSO 621

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
174:04:00/ 174:16:00	012:12:00/ 013:00:00	173:23:00/ 174:11:00	/173 CST	36.7		JUNE 21, 1992	STS-50	FINAL	05/04/92
CDT :173 BLU FD:014 MET :012	23 12	0 13	CDT:174 1 RED 2 3 4 5 6 7 8 9 10 11	14 FD:014 15 16 17 18 19 20 21 22 23					11 0 MET:013

RED	CDR	SLEEP (6)	POST SLEEP	PRIV NEED	CIR CLOCK	FIR HOT	DEORBIT PREP			
	PLT	SLEEP (6)	POST SLEEP	RCH HOT	FIR HOT	IMU MNV	IAP MLL UIB GD N OPS	DEORBIT PREP	DEORBIT PREP	
BLUE	MS1	SLEEP (6)	POST SLEEP					DEORBIT PREP		EDW LANDING*
	PS1	SLEEP (6)	POST SLEEP	DSO 603				DEORBIT PREP	BUR N*	
	MS2	SAMS OARE CAL	ZLV MNV DR	DARE DRAG TEST	PAE CG TR S	XSI MNV	KS UL L D	DEORBIT PREP	IAP MLL UIB GD N OPS	DEORBIT PREP
MS3			EGRESS				DSO 603	DEORBIT PREP		
PS2		SAMS		DSO 603		FLP LOR UAE IDP DI NG		DEORBIT PREP		

DAY/NIGHT	[Day/Night Cycle]								
ORBIT	200	201	202	203	204	205	206	207	208
TDRS	[TDRS Schedule]								
ATTITUDE	SAMS	DRAG	-XSI	IMU/VERIF			ENTRY		

NOTES:

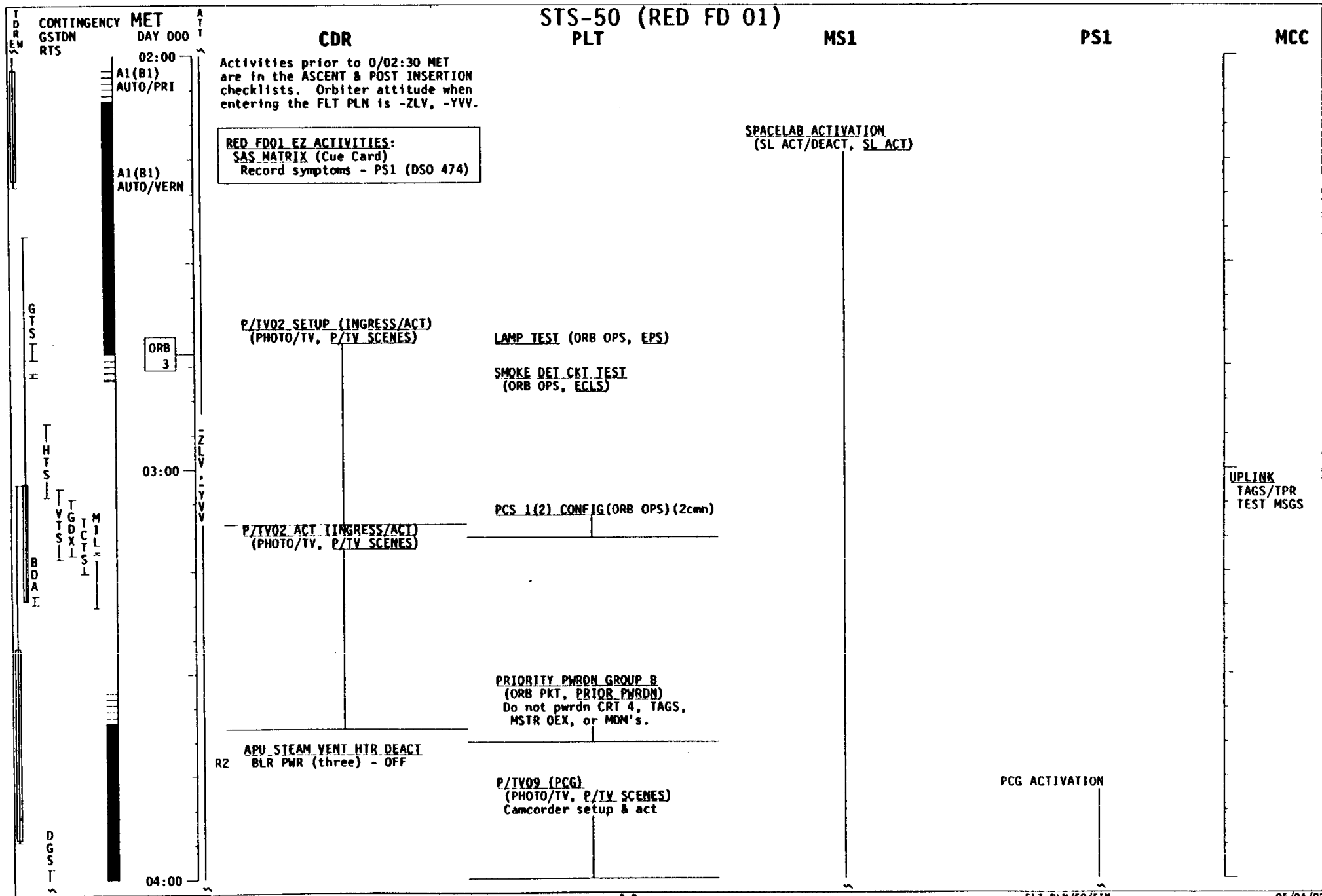
- ◎DTO 910 OEX ORBITAL ACCELERATION RESEARCH EXPERIMENT
- ◎BIASED -ZLV +XVY
- ◎DSO 603 ORTHOSTATIC FUNCTION ENTRY PREP
- ◎DSO 621 FLORINEF
- ◎CABIN TEMP CNTLR OFF
- BURN MNVR
- * DEORBIT BURN 12/19:27
- * EDW LANDING 12/20:29

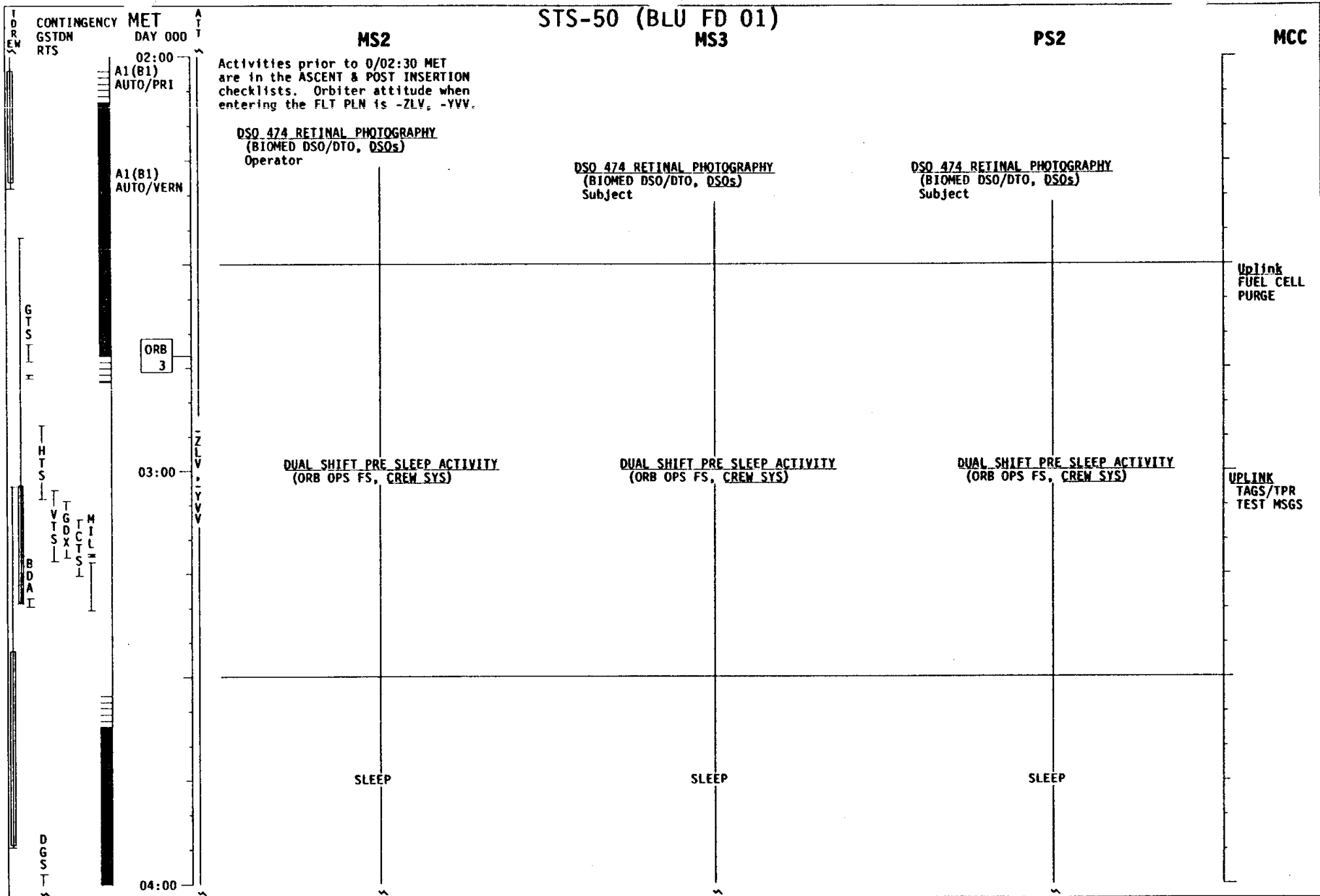
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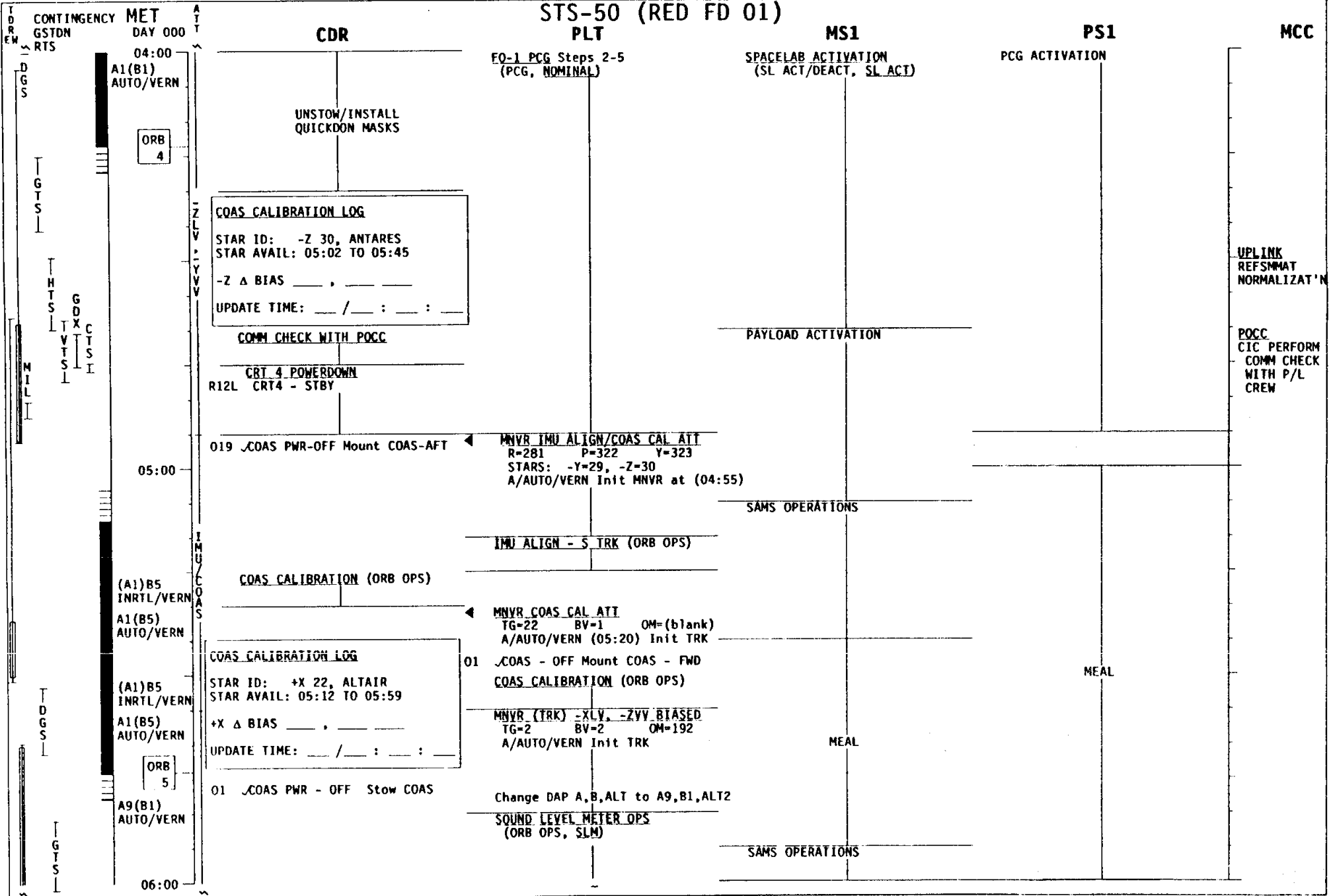
DETAILED TIMELINE

DETAILED
TIMELINE

DETAILED TIMELINE







STS-50 (BLU FD 01)

CONTINGENCY MET
GSTDN DAY 000
RTS

04:00
A1(B1)
AUTO/VERN

ORB
4

05:00

ORB
5

06:00

DR EN
DGS
GTS
HTS
VTSS
M
GTS
GTS

ZLV
YVV
IN
COAS

MS2

SLEEP

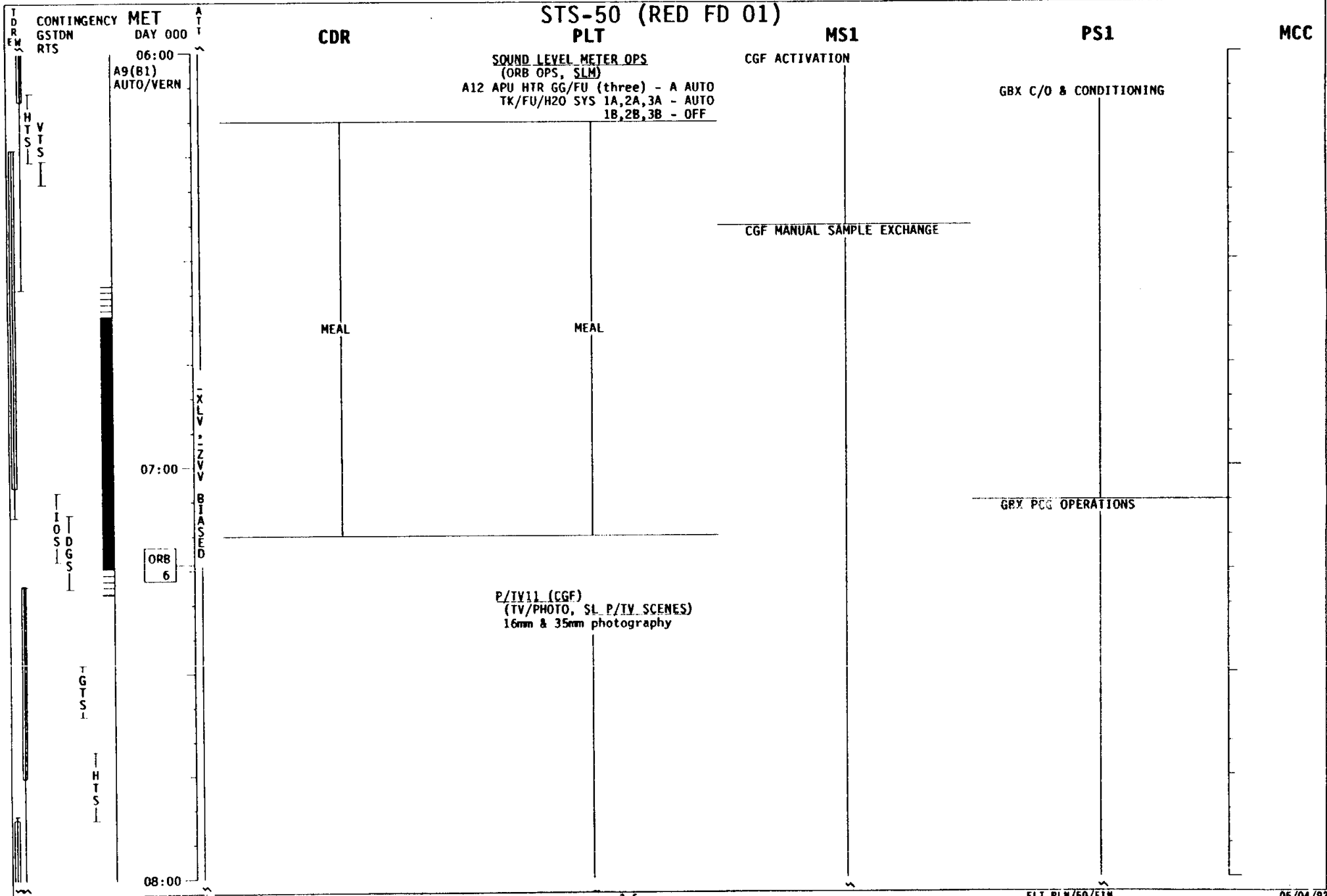
MS3

SLEEP

PS2

SLEEP

MCC



STS-50 (RED FD 01)
PLT

CDR

MS1

PS1

MCC

SOUND LEVEL METER OPS
(ORB OPS, SLM)
A12 APU HTR GG/FU (three) - A AUTO
TK/FU/H2O SYS 1A,2A,3A - AUTO
1B,2B,3B - OFF

CGF ACTIVATION

GBX C/O & CONDITIONING

CGF MANUAL SAMPLE EXCHANGE

MEAL

MEAL

GBX PCG OPERATIONS

P/TV11 (CGF)
(TV/PHOTO, SL P/TV SCENES)
16mm & 35mm photography

MET DAY 000

06:00
A9(B1)
AUTO/VERN

07:00

ORR
6

08:00

STS-50 (BLU FD 01)

CONTINGENCY MET
GSTDN DAY 000
RTS

06:00
A9(B1)
AUTO/VERN

07:00

ORB
6

08:00

T D R E M

H T S I

H T S I

T I O S I G S I

T G T S I

T H T S I

A T T

X L V

Z V V

B I A S E D

MS2

SLEEP

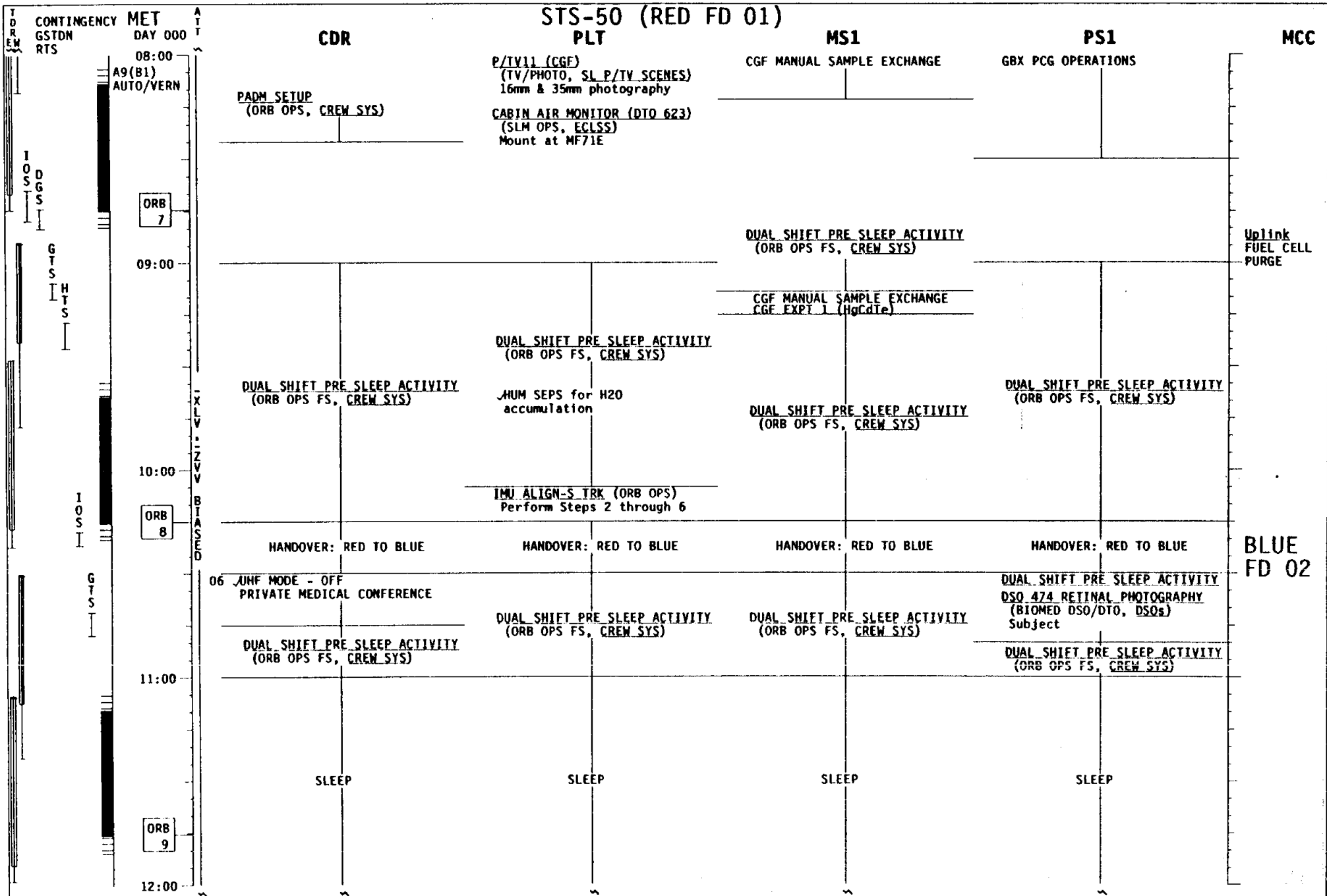
MS3

SLEEP

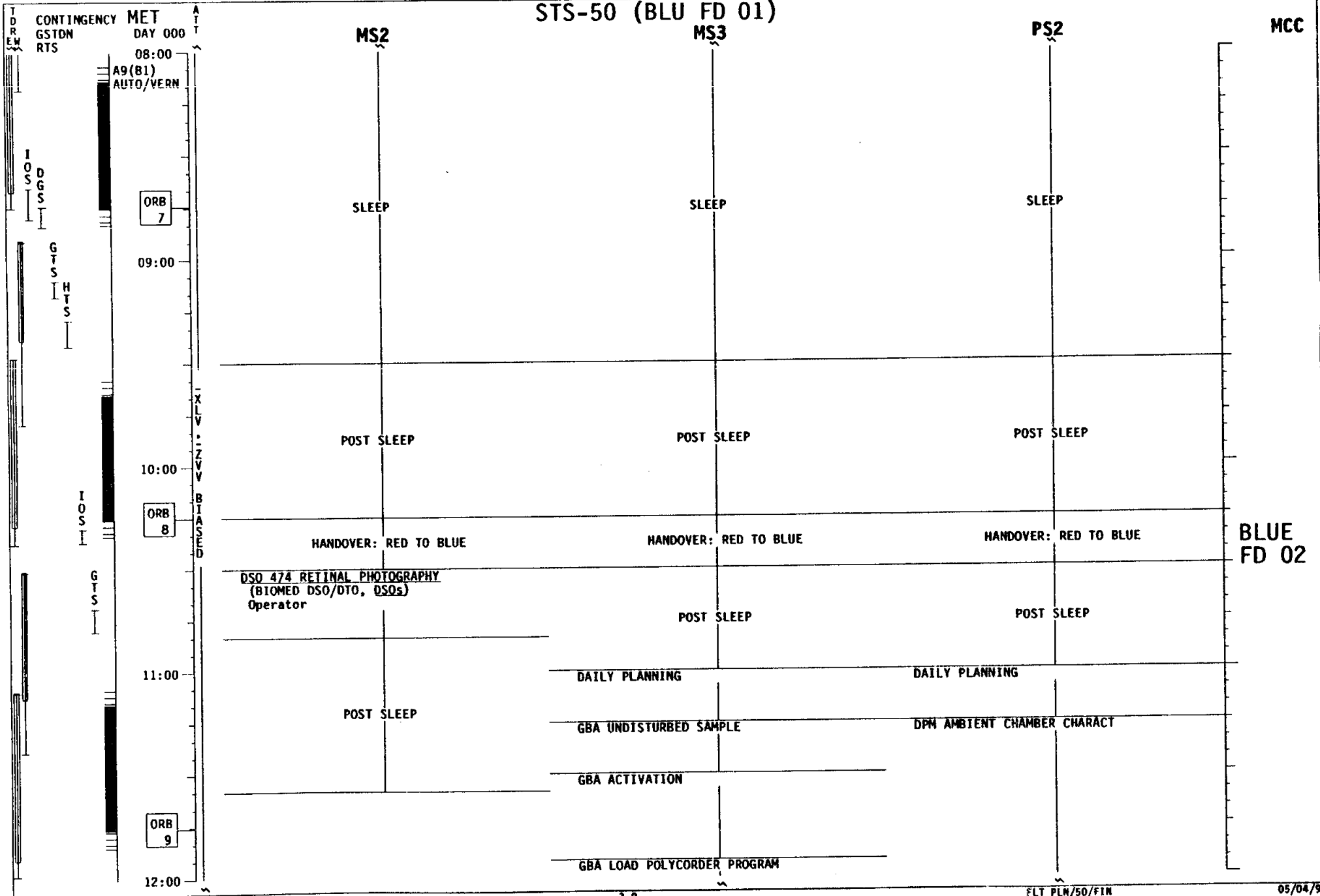
PS2

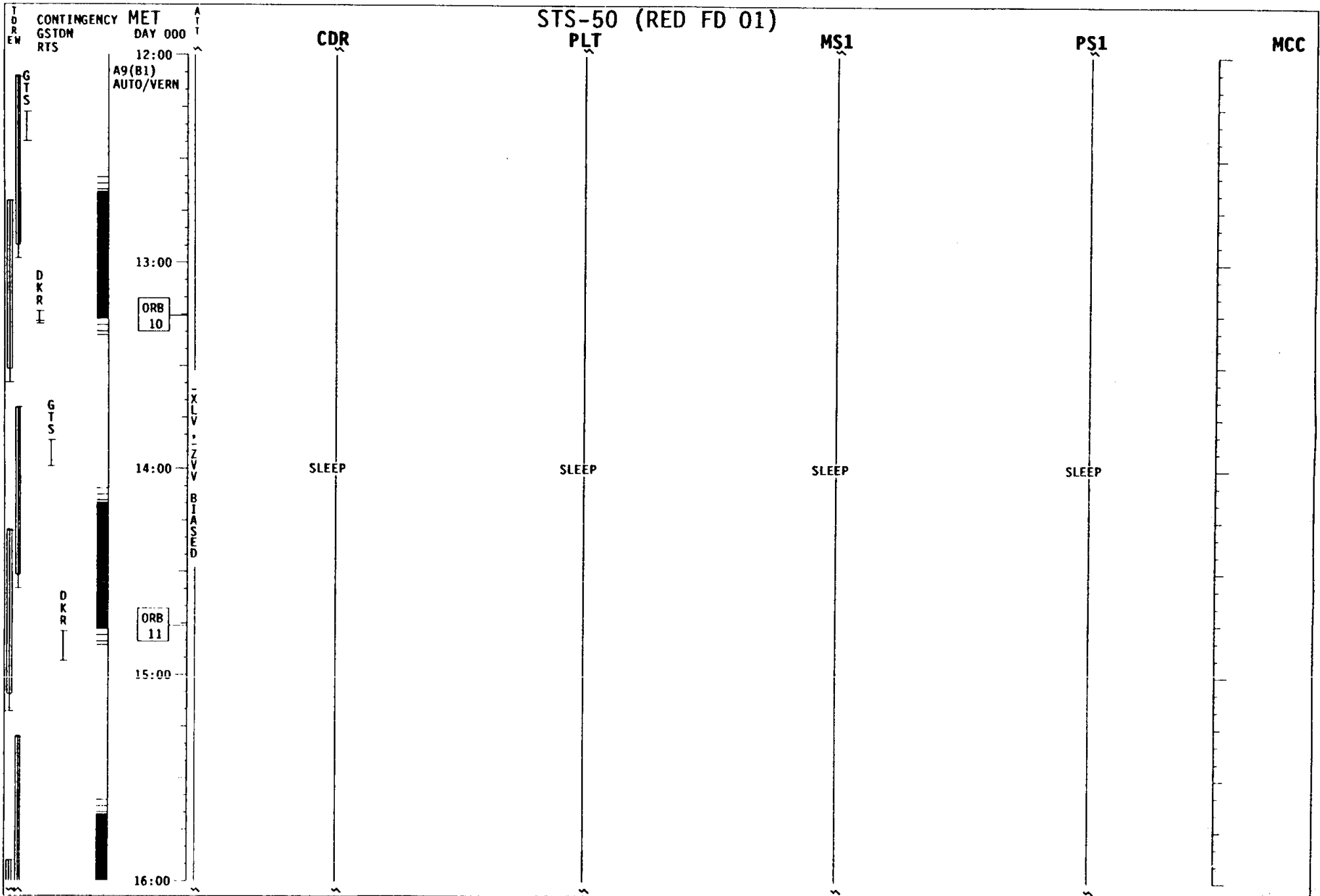
SLEEP

MCC



STS-50 (BLU FD 01)





TDR EM
 CONTINGENCY MET
 GSTDN DAY 000
 RTS
 12:00
 A9(B1)
 AUTO/VERN
 GTS
 DKRI
 GTS
 DKRI
 GTS
 13:00
 ORB
 10
 14:00
 XLV
 ZVV
 BIA
 SE
 D
 15:00
 ORB
 11
 16:00

STS-50 (BLU FD 02)

MS2
 SAREX-D VOICE SETUP
 (PL OPS, SAREX-D)

GBA LOAD POLYCORDER PROGRAM

PS2

DPM AMBIENT CHAMBER CHARACT

MCC

GBA CELLULAR SAMPLE PROCESS

Expect requests for freedrift during DPM AMBIENT CHAMBER CHARACT

BLU FD02 EZ ACTIVITIES:
 CPA OPS (ORB OPS, CREW SYS)
 SAREX-D (PL OPS, SAREX-D)
 SAS MATRIX (Cue Card)
 Record symptoms - MS2,MS3,PS2
 (DSO 474)

GBA XFER POLYCORDER DATA

GBA MOLECULAR SAMPLE PROCESS

MEAL

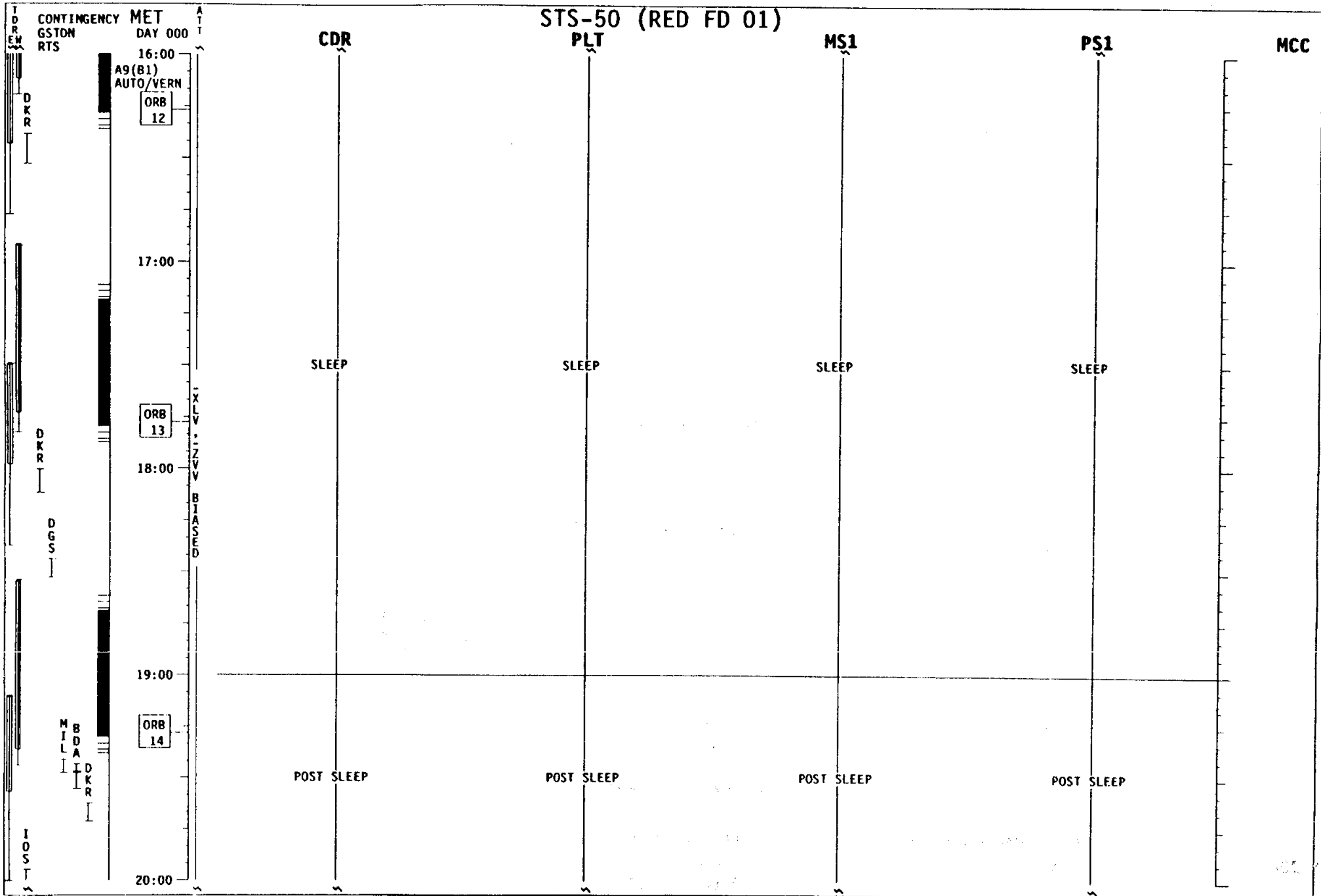
MEAL

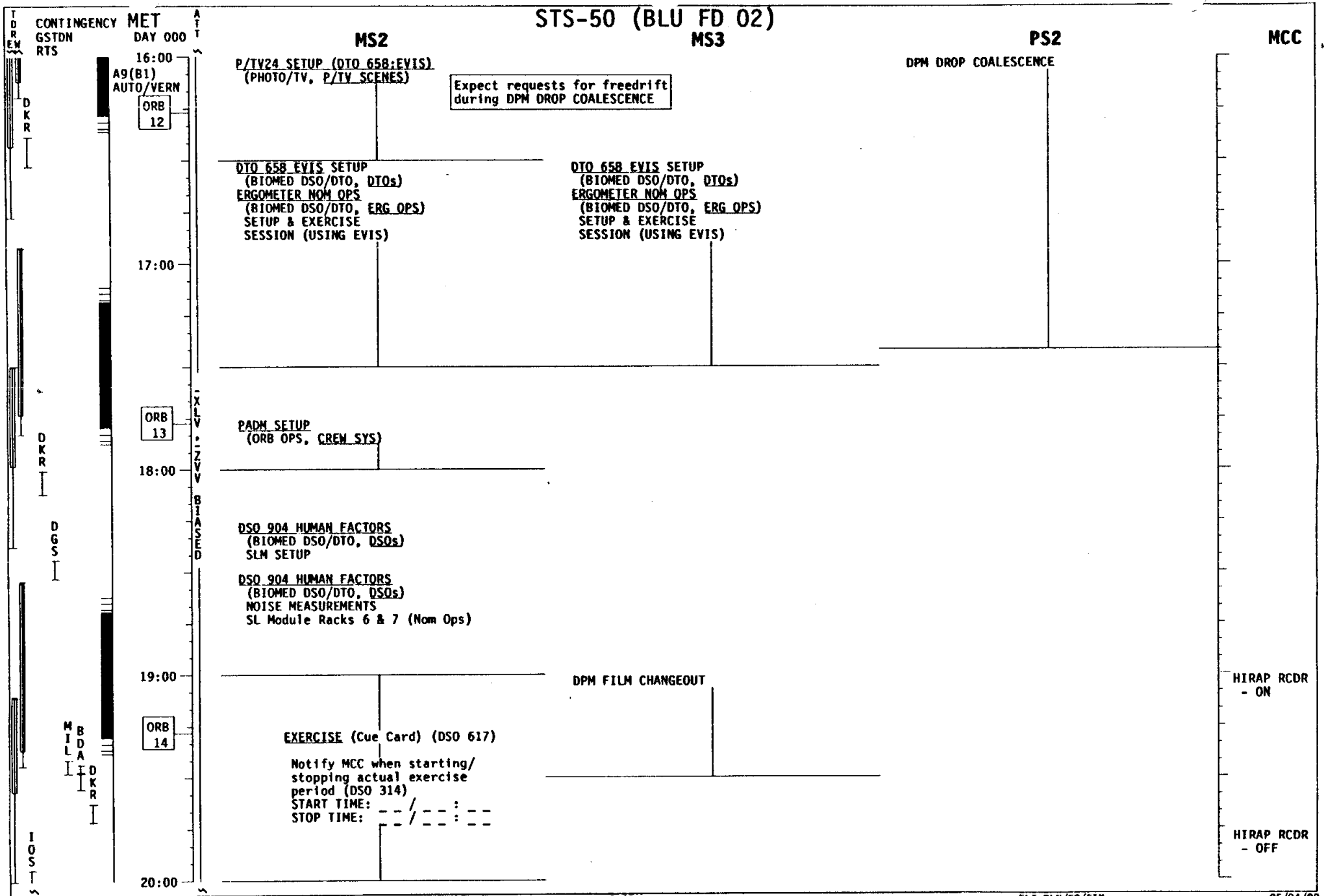
MEAL

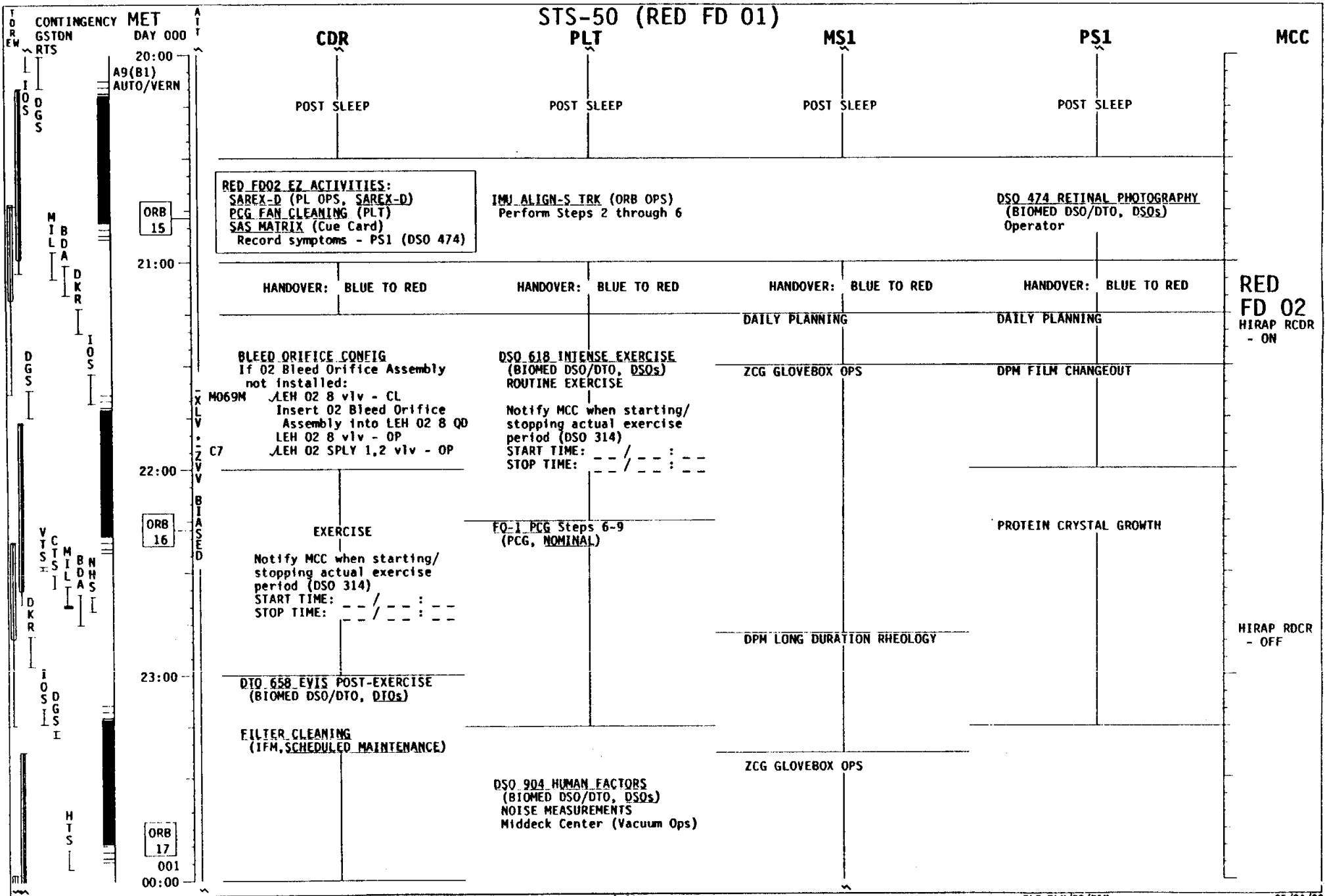
Expect requests for freedrift during DPM DROP COALESCENCE

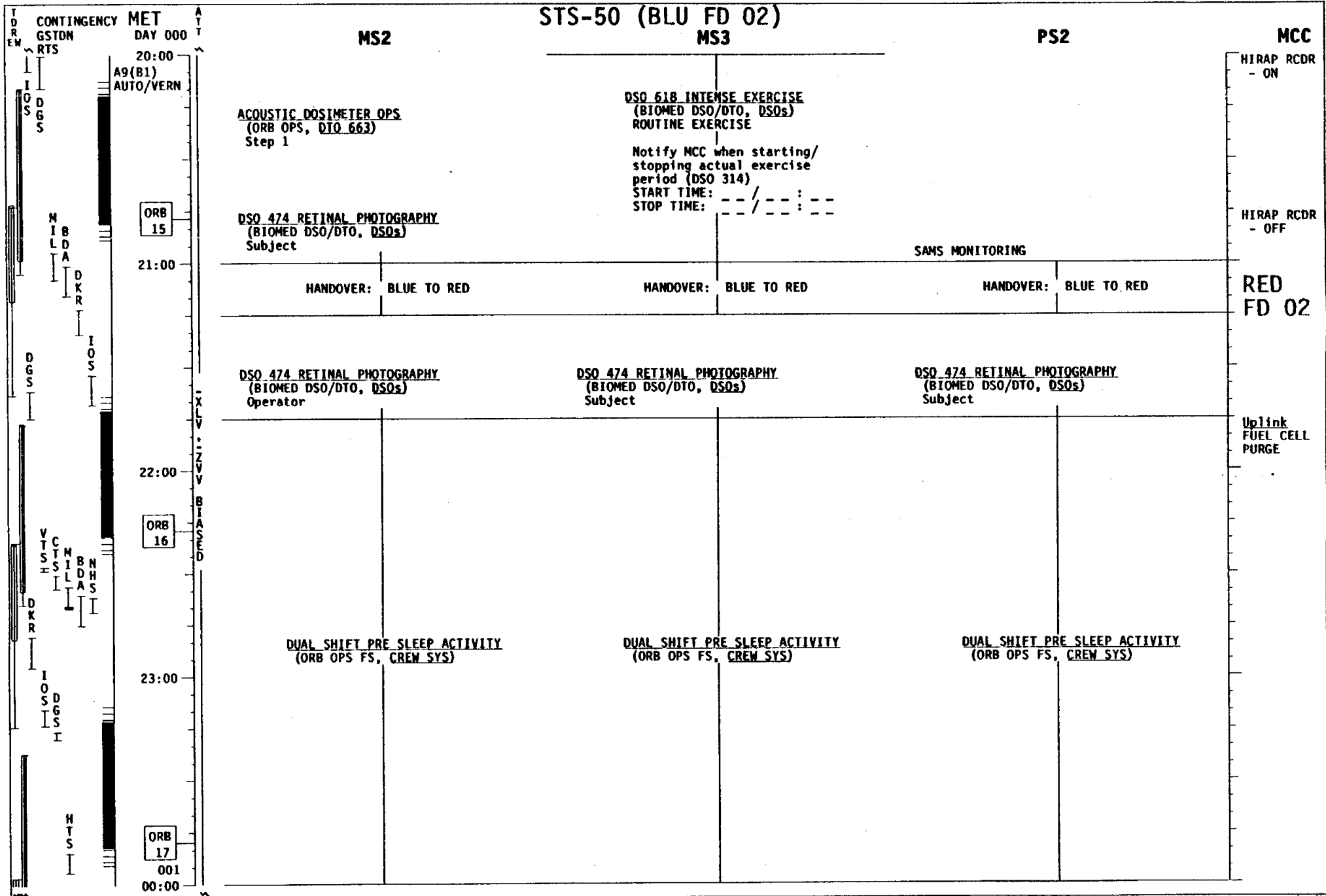
GBX PCG OPERATIONS

DPM DROP COALESCENCE



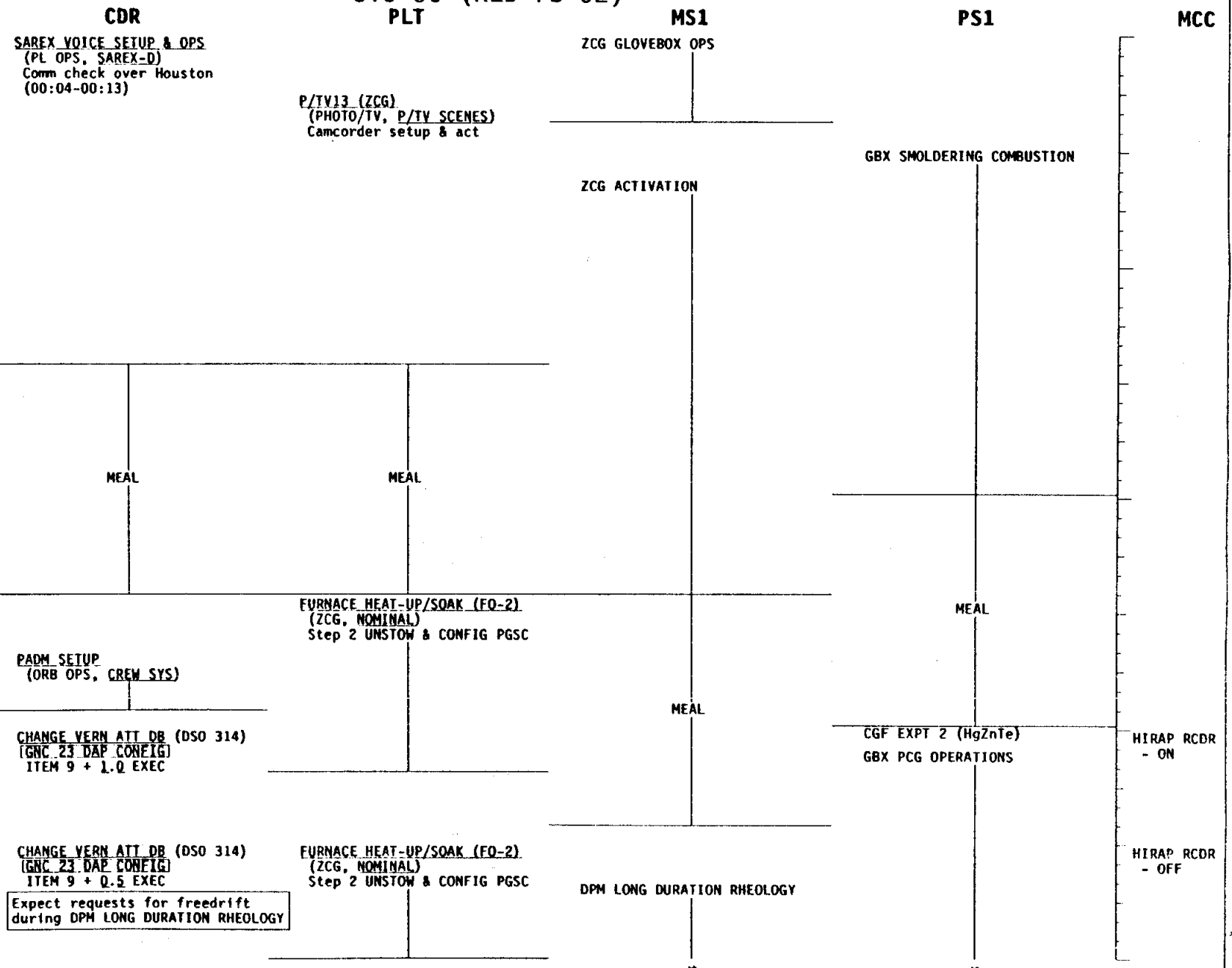






CONTINGENCY MET
 GSTDN DAY 001
 A9(B1)
 AUTO/VERN
 00:00
 VTS VTS VTS VTS VTS VTS VTS VTS
 GDCS GDCS GDCS GDCS GDCS GDCS GDCS GDCS
 B DHAS B DHAS
 MIL MIL MIL MIL MIL MIL MIL MIL
 DKR
 HTS HTS HTS HTS HTS HTS HTS HTS
 VTS VTS VTS VTS VTS VTS VTS VTS
 GDCS GDCS GDCS GDCS GDCS GDCS GDCS GDCS
 B O A I
 GTS GTS GTS GTS GTS GTS GTS GTS
 HTS HTS HTS HTS HTS HTS HTS HTS
 VTS VTS VTS VTS VTS VTS VTS VTS
 GDCS GDCS GDCS GDCS GDCS GDCS GDCS GDCS
 MIL MIL MIL MIL MIL MIL MIL MIL
 01:00
 ORB 18
 02:00
 ORB 19
 03:00
 04:00

STS-50 (RED FD 02)



STS-50 (BLU FD 02)

MS2

MS3

PS2

MCC

CONTINGENCY MET
GSTDN DAY 001
RTS

00:00
A9(B1)
AUTO/VERN

01:00
ORB
18

02:00
ORB
19

03:00

04:00

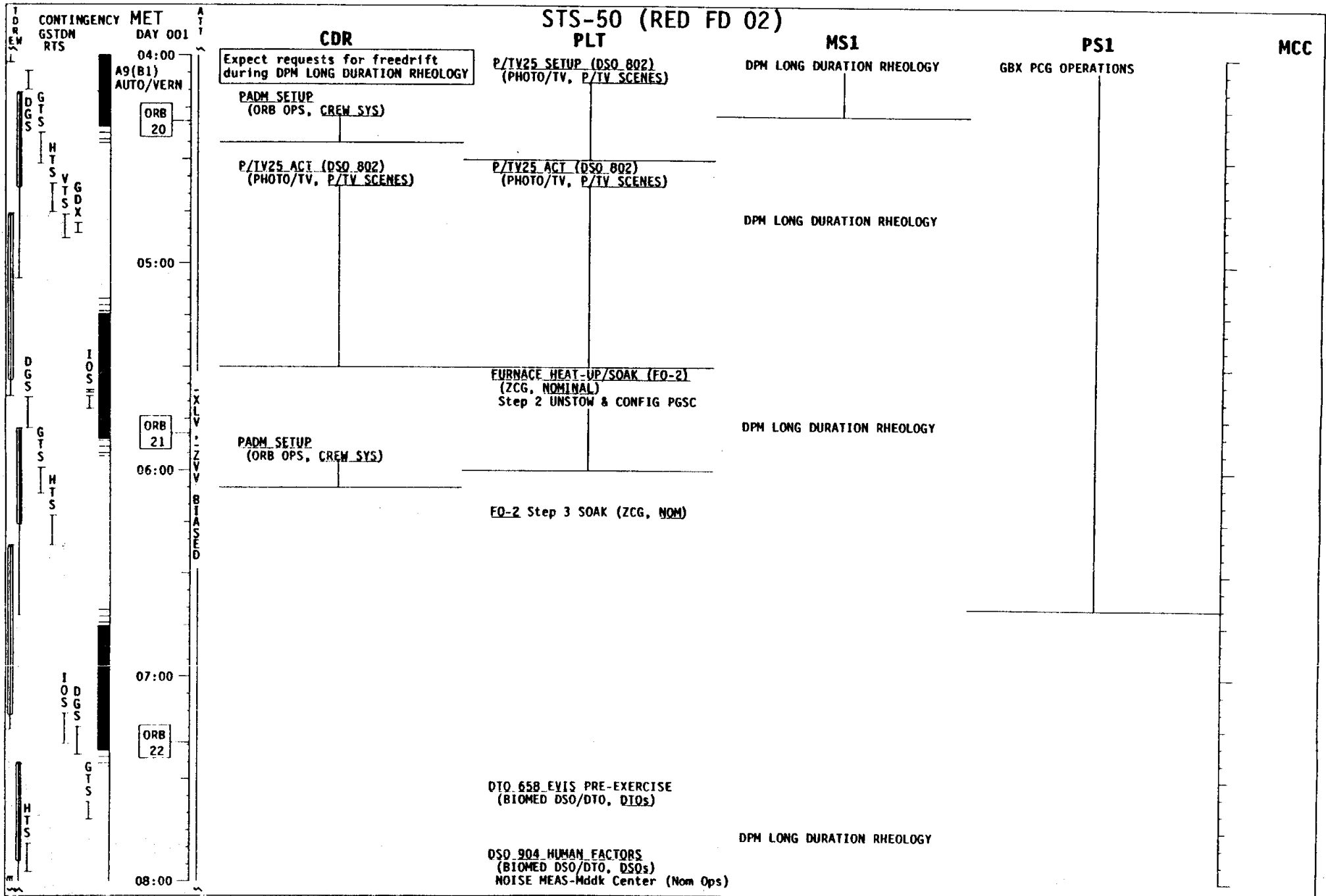
DR
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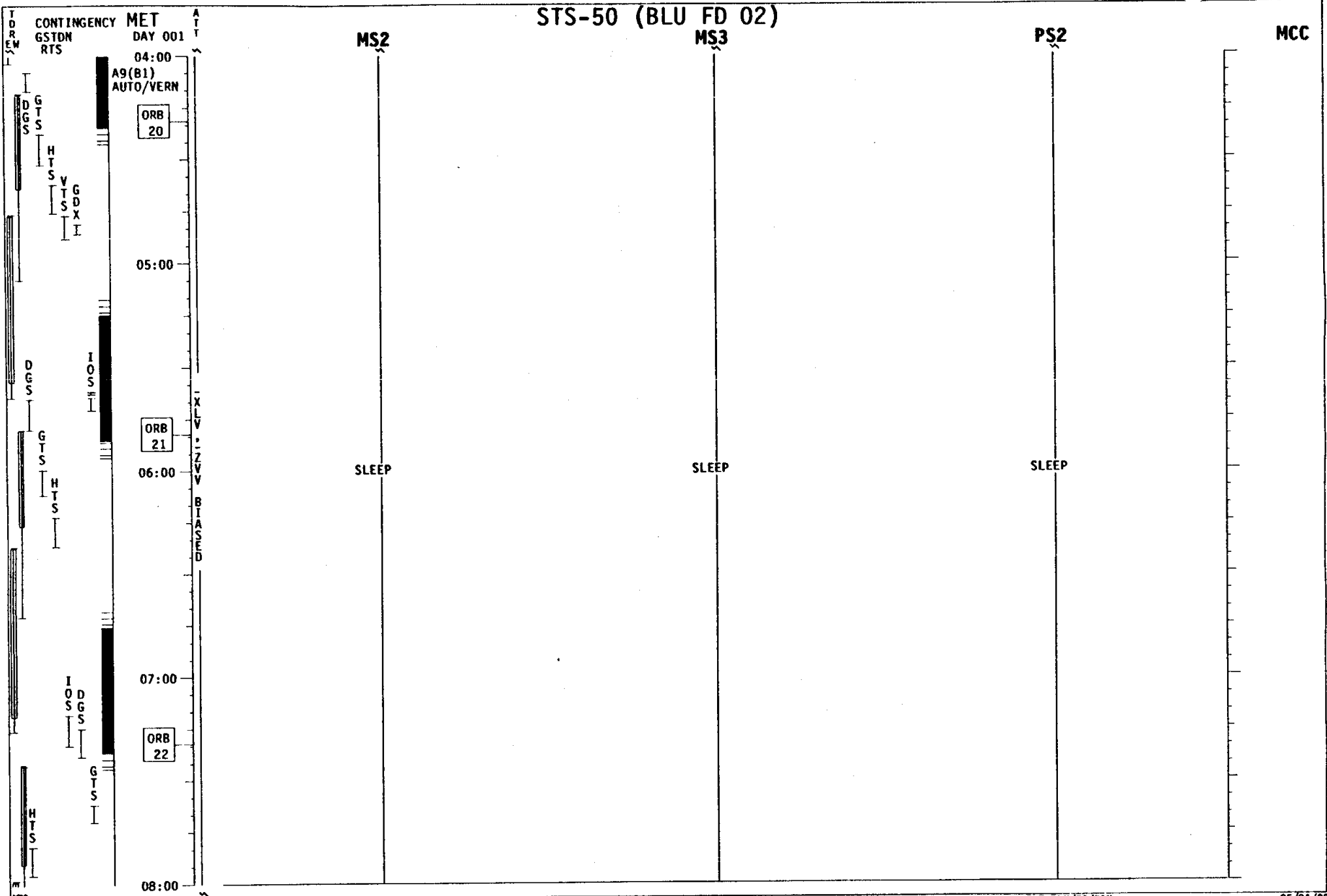
SLEEP

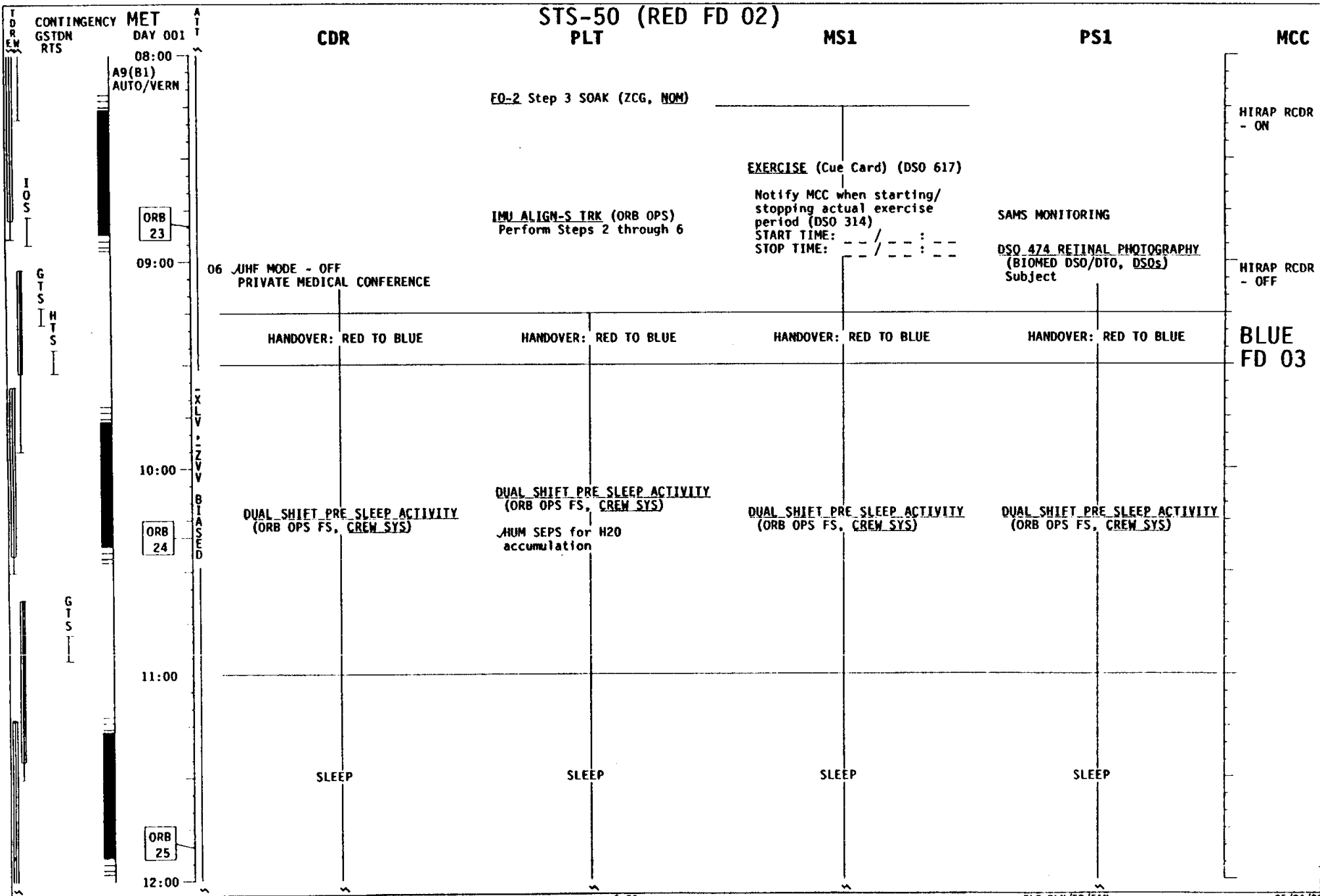
SLEEP

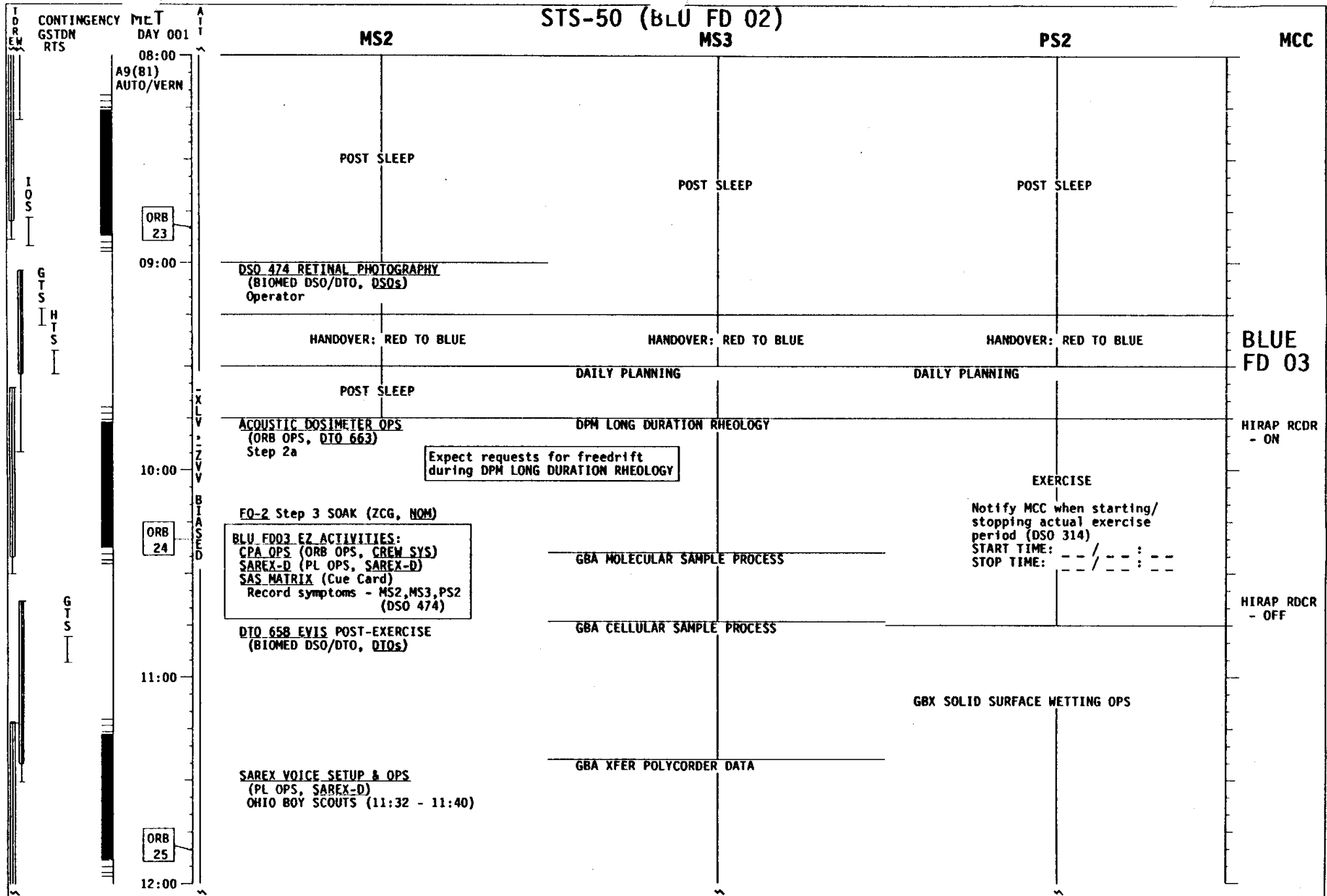
SLEEP

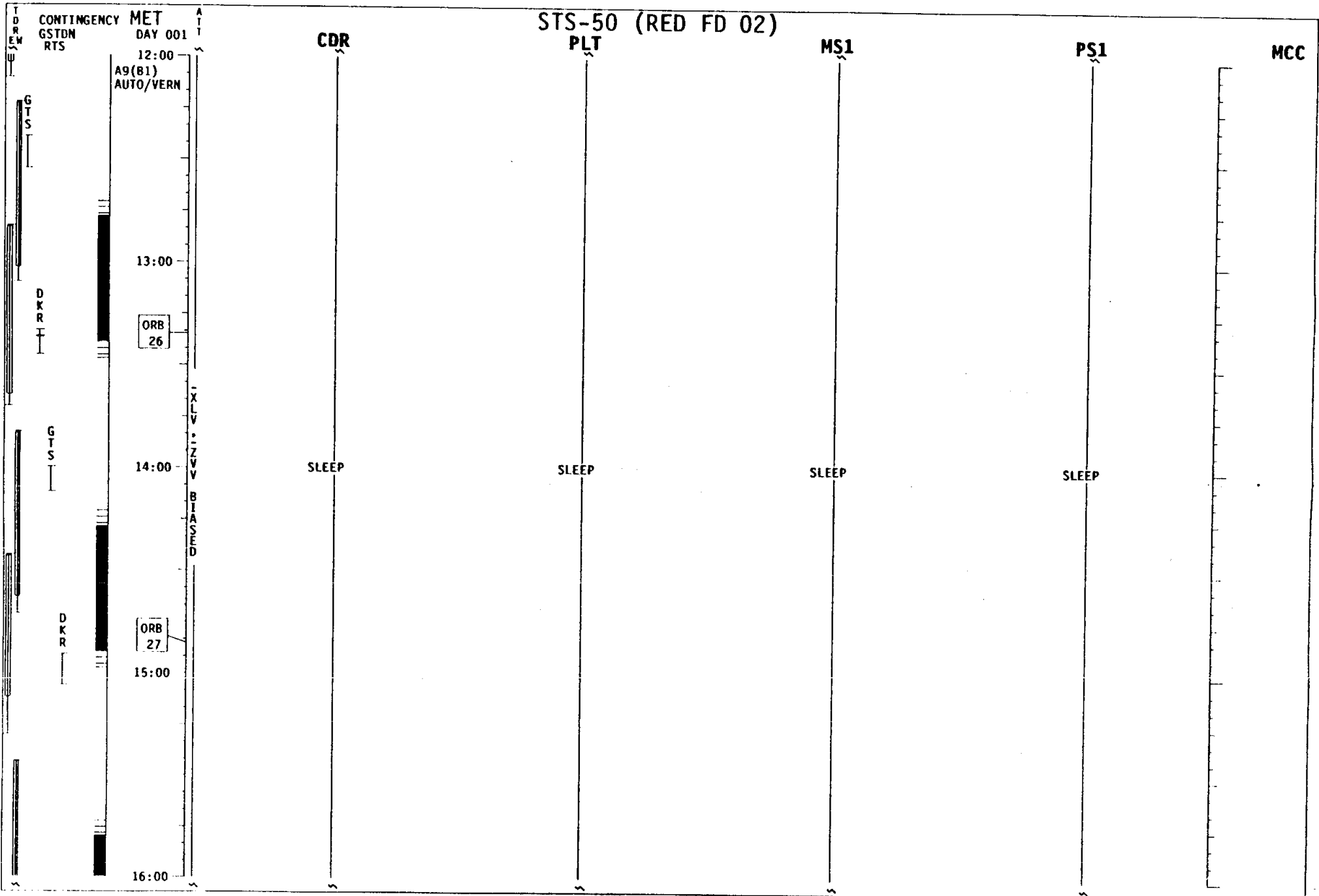


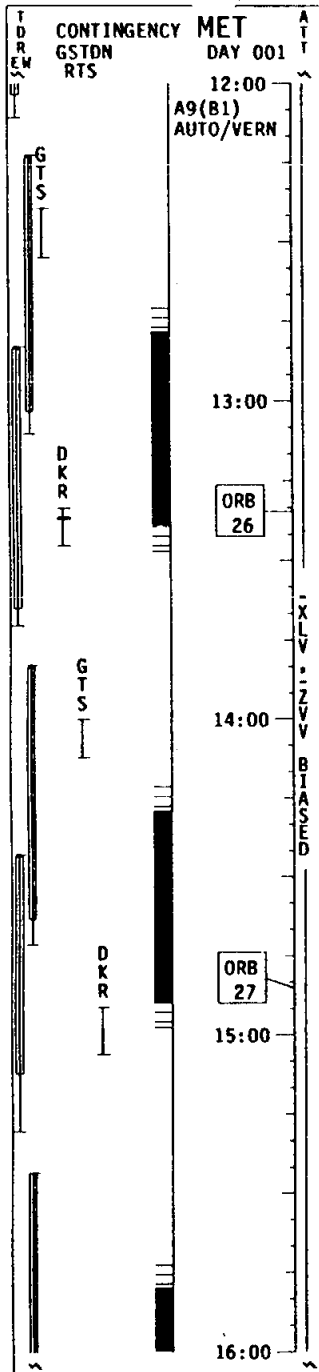
STS-50 (BLU FD 02)











CONTINGENCY MET
GSTDN DAY 001
RTS

STS-50 (BLU FD 03)

MS2

MS3

PS2

MCC

12:00
A9(B1)
AUTO/VERN

EQ-2 Step 3 SOAK (ZCG, NOM)

GBA XFER POLYCORDER DATA
GBA DEVELOPMENTAL SAMPLE

GBX SOLID SURFACE WETTING OPS

GBA MOLECULAR SAMPLE PROCESS

ACOUSTIC SLM OPS (LOC N)
(ORB OPS, DTD 665)
MIDDECK CENTERLINE

13:00

ORB
26

ACOUSTIC SLM OPS (LOC O)
(ORB OPS, DTD 665)
BETWEEN MF430 & MF570

MEAL

MEAL

MEAL

14:00

ORB
27

EQ-2 Step 3 SOAK (ZCG, NOM)

Expect requests for freedrift
during DPM SHAPE & FLOW CHARAC

GBX PCG OPERATIONS

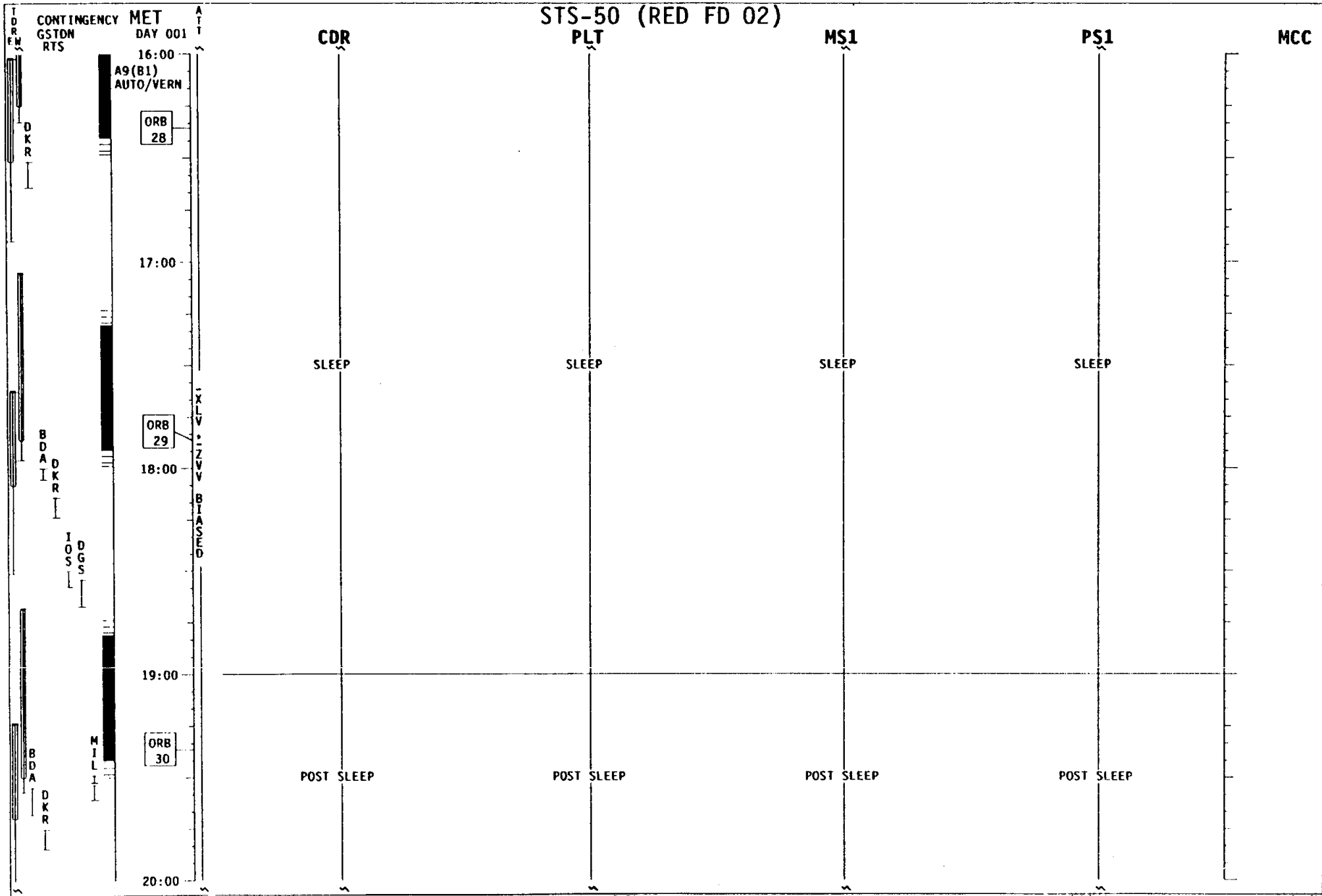
TV04 (PL CREW ACTIVITIES)
DPM SHAPE & FLOW CHARAC

ACOUSTIC SLM OPS (LOC D)
(ORB OPS, DTD 665)
MIDDECK CENTERLINE

ACOUSTIC SLM OPS (LOC G)
(ORB OPS, DTD 665)
BETWEEN W7 & W8

ACOUSTIC SLM OPS (LOC H)
(ORB OPS, DTD 665)
BETWEEN CDR & PLT SEATS

16:00



STS-50 (BLU FD 03)

MS2

MS3

PS2

MCC

TDR FM
 CONTINGENCY MET
 GSTDN DAY 001
 RTS
 16:00
 A9(B1)
 AUTO/VERN
 ORB 28
 DKR
 17:00
 ORB 29
 18:00
 BDA
 DKR
 IOGSS
 BIASED
 19:00
 ORB 30
 BDA
 DKR
 20:00
 MIL

Expect requests for freedrift during DPM SHAPE & FLOW CHARAC

EQ-2 Step 3 SOAK (ZCG, NOM)

DPM SHAPE & FLOW CHARAC

DPM FILM CHANGEOUT

PADM SETUP
(ORB OPS, CREW SYS)

LBNP SETUP

LBNP SETUP

EQ-2 Step 3 SOAK (ZCG, NOM)

DTQ 658 EYIS PRE-EXERCISE
(BIOMED DSO/DTO, DIOs)

HIRAP RCDR
- ON

EXERCISE (Cue Card) (DSO 617)

Notify MCC when starting/
stopping actual exercise
period (DSO 314)
START TIME: -- / -- : --
STOP TIME: -- / -- : --

SAMS MONITORING

~~DSO 618 INTENSE EXERCISE~~
(BIOMED DSO/DTO, DSOs)
ROUTINE EXERCISE

Notify MCC when starting/
stopping actual exercise
period (DSO 314)
(Log on pg 3-27)

CONTINGENCY MET
GSDM DAY 001
RTS A9(B1) AUTO/VERN

20:00

ORB 31

21:00

ORB 32

22:00

ORB 33

00:00

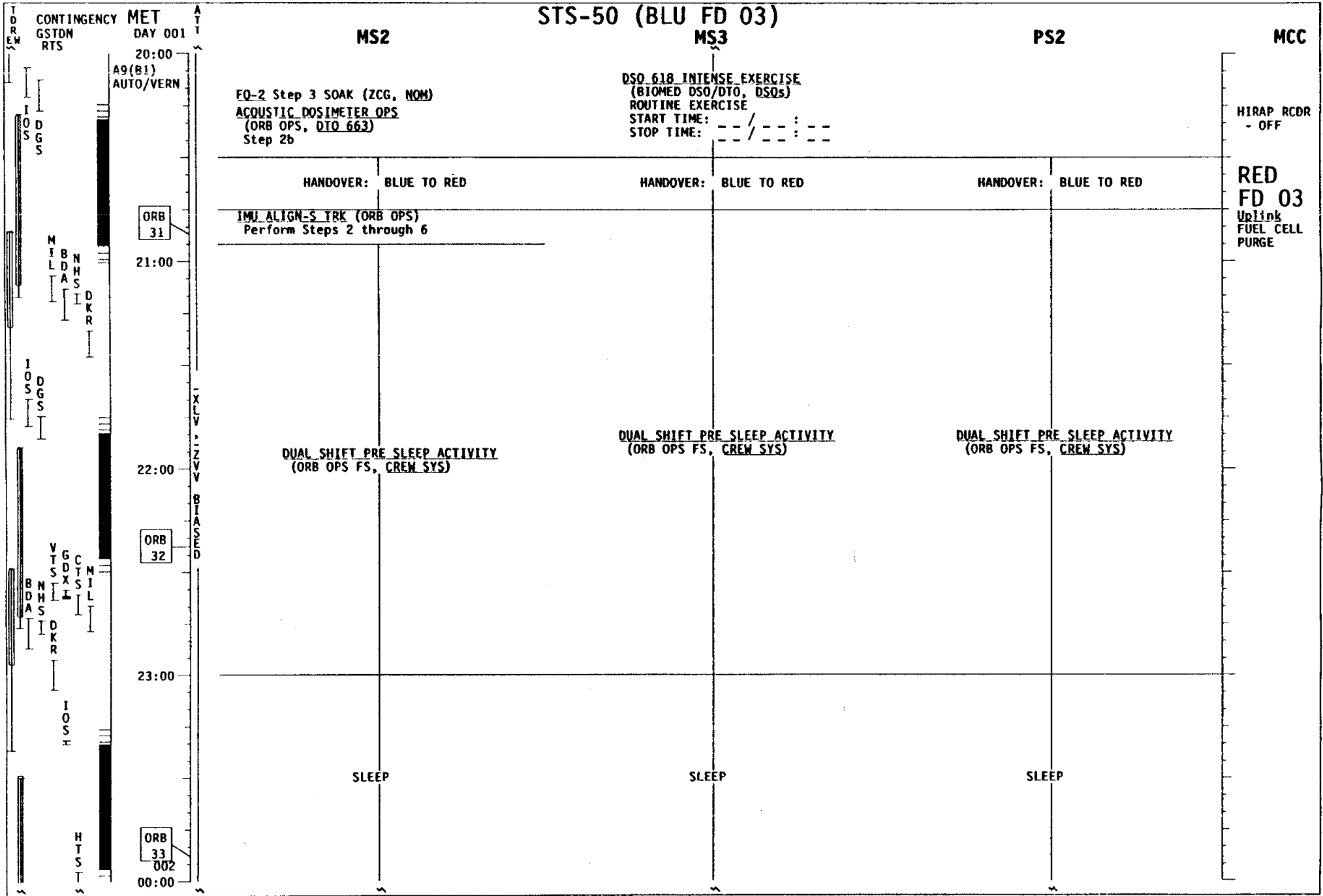
ODGS
MIDAS
BDAS
VDTM
GCTM
XSL
BDAS
MIDAS
ODGS
HYS

DKR
DKR
DKR
DKR

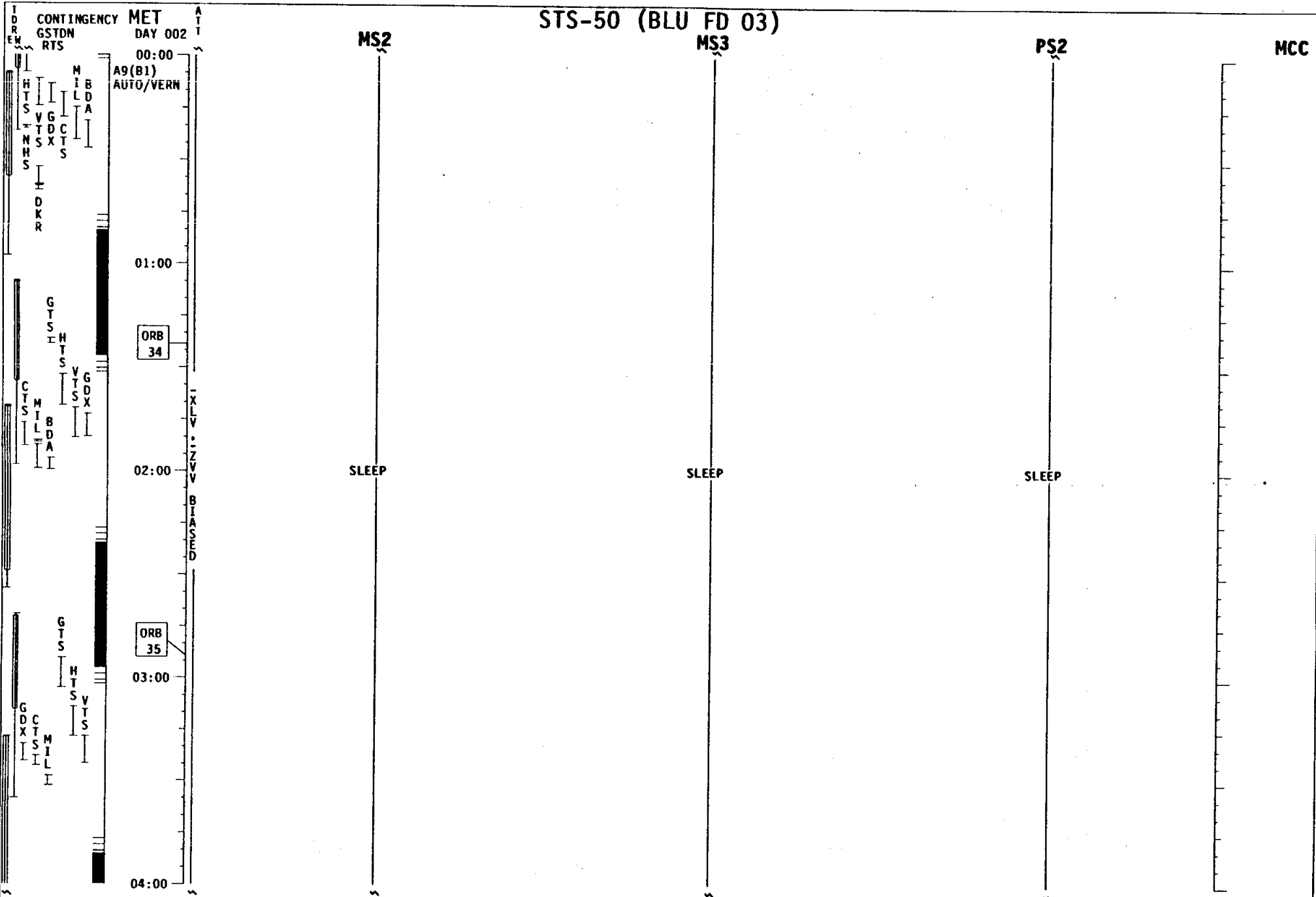
XLV
ZVY
BIASED

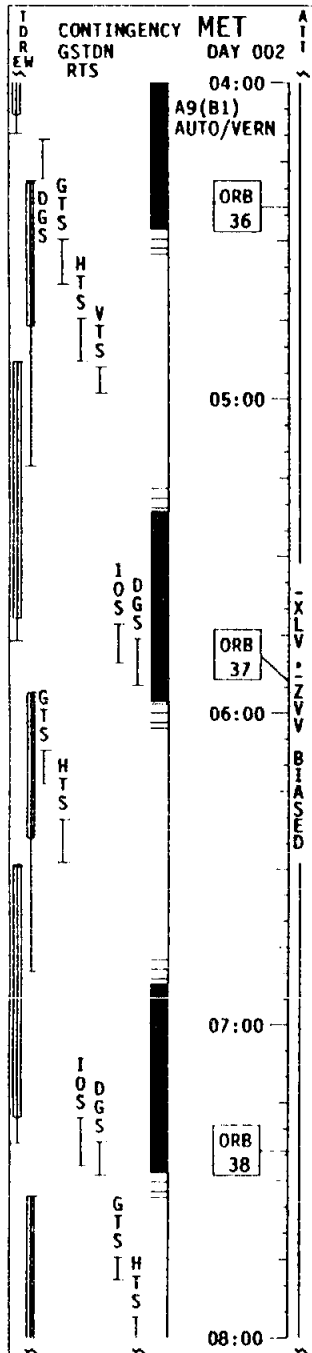
STS-50 (RED FD 02)

	CDR	PLT	MS1	PS1	MCC
	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	
	HANDOVER: BLUE TO RED	HANDOVER: BLUE TO RED	HANDOVER: BLUE TO RED	HANDOVER: BLUE TO RED	RED FD 03
			DAILY PLANNING	DAILY PLANNING	
20:00	P/TV21 SETUP (MIDDECK ACT) (PHOTO/TV, P/TV SCENES) DSO 618	ACOUSTIC SLM OPS (LOC E) (ORB OPS, DTO 665) 3RD BUNK DOWN	STOCE IR IMAGER INSTALL	GBX PCG OPERATIONS	
21:00	P/TV21 ACT (MIDDECK ACT) (PHOTO/TV, P/TV SCENES) DSO 618	ACOUSTIC SLM OPS (LOC F) (ORB OPS, DTO 665) BOTTOM BUNK			
22:00	EXERCISE Notify MCC when starting/ stopping actual exercise period (DSO 314) START TIME: -- / -- : -- STOP TIME: -- / -- : --	DSO 618 INTENSE EXERCISE (BIOMED DSO/DTO, DSOs) INTENSE EXERCISE Notify MCC when starting/ stopping actual exercise period (DSO 314) START TIME: -- / -- : -- STOP TIME: -- / -- : --	MICROBIAL AIR SAMPLING OPS		HIRAP RCDR - ON
23:00	DIO 658 EYIS POST-EXERCISE (BIOMED DSO/DTO, DTOs)	EQ-2 Step 3 SOAK (ZCG, NOM)	TV08 (OPM) DPM FILM CHANGEOUT		HIRAP RCDR - OFF
	P/TV21 SETUP (MIDDECK ACT) (PHOTO/TV, P/TV SCENES) IPMP	EQ-1 PAS OPS Steps 1,5,6,7 (GBX-PAS, NOMINAL)	TV14 (EDOMP)	LBNP RAMP (SUBJECT)	
		RED FD03 EZ ACTIVITIES: SAREX-D (PL OPS, SAREX-D) PCG FAN CLEANING (PLT) SAS MATRIX (Cue Card) Record symptoms - PS1 (DSO 474)	LBNP RAMP (OPERATOR)		
00:00	P/TV21 ACT (MIDDECK ACT) (PHOTO/TV, P/TV SCENES) IPMP				



STS-50 (BLU FD 03)





STS-50 (RED FD 03)

PLT

CDR

MS1

PS1

MCC

EQ-1 PCG Steps 10-13
(PCG, NOMINAL)

EQ-2 Step 3 SOAK (ZCG, NOM)

PROTEIN CRYSTAL GROWTH

LBNP RAMP (SUBJECT)

LBNP RAMP (OPERATOR)

PADM SETUP
(ORB OPS, CREW SYS)

EQ-2 Step 3 SOAK (ZCG, NOM)

QTO 65B EVIS PRE-EXERCISE
(BIOMED DSO/DTO, QTOs)

GBX PCG OPERATIONS

IMU ALIGN-S_TRK (ORB OPS)
Perform Steps 2 through 6

EXERCISE (Cue Card) (DSO 617)

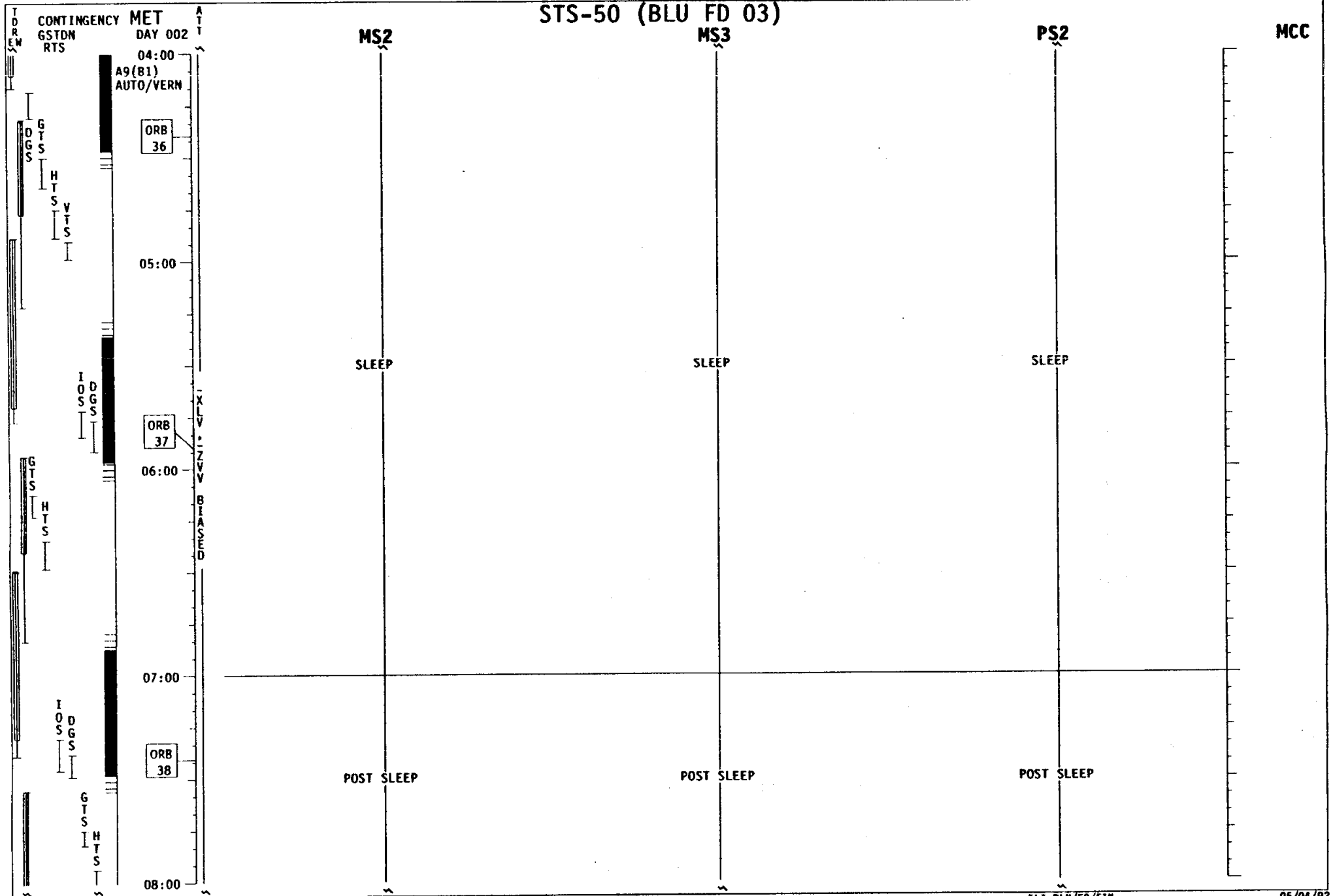
Notify MCC when starting/
stopping actual exercise
period (DSO 314)

START TIME: -- / -- : --
STOP TIME: -- / -- : --

HIRAP RCDR
- ON

HIRAP RCDR
- OFF

STS-50 (BLU FD 03)



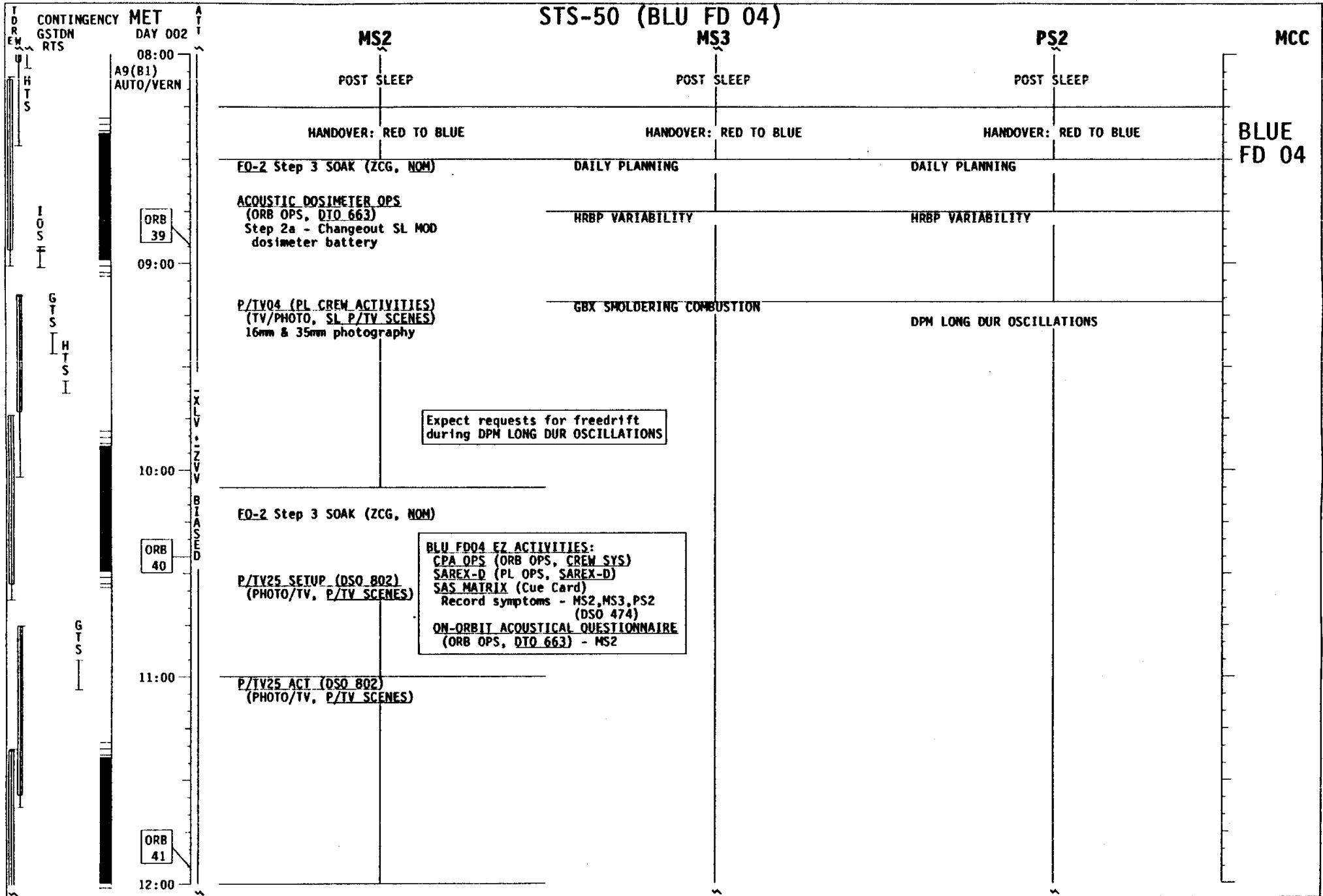
TDR FW
 CONTINGENCY MET
 GSTON DAY 002
 RTS
 HTS
 IOST
 GTS
 HTS
 GTS
 HTS
 GTS
 HTS
 ORB 39
 09:00
 ORB 40
 10:00
 ORB 41
 12:00

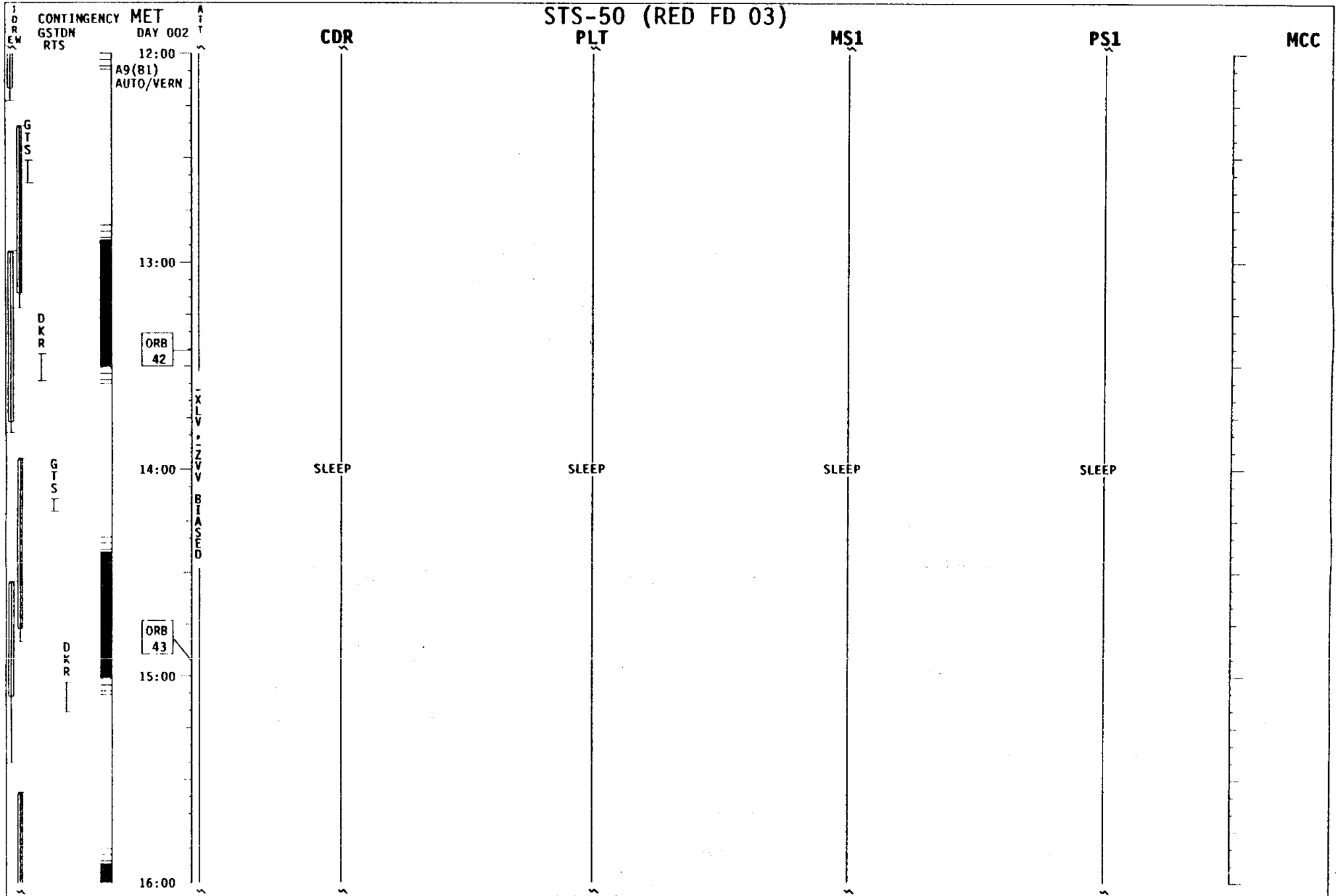
STS-50 (RED FD 03)
 PLT

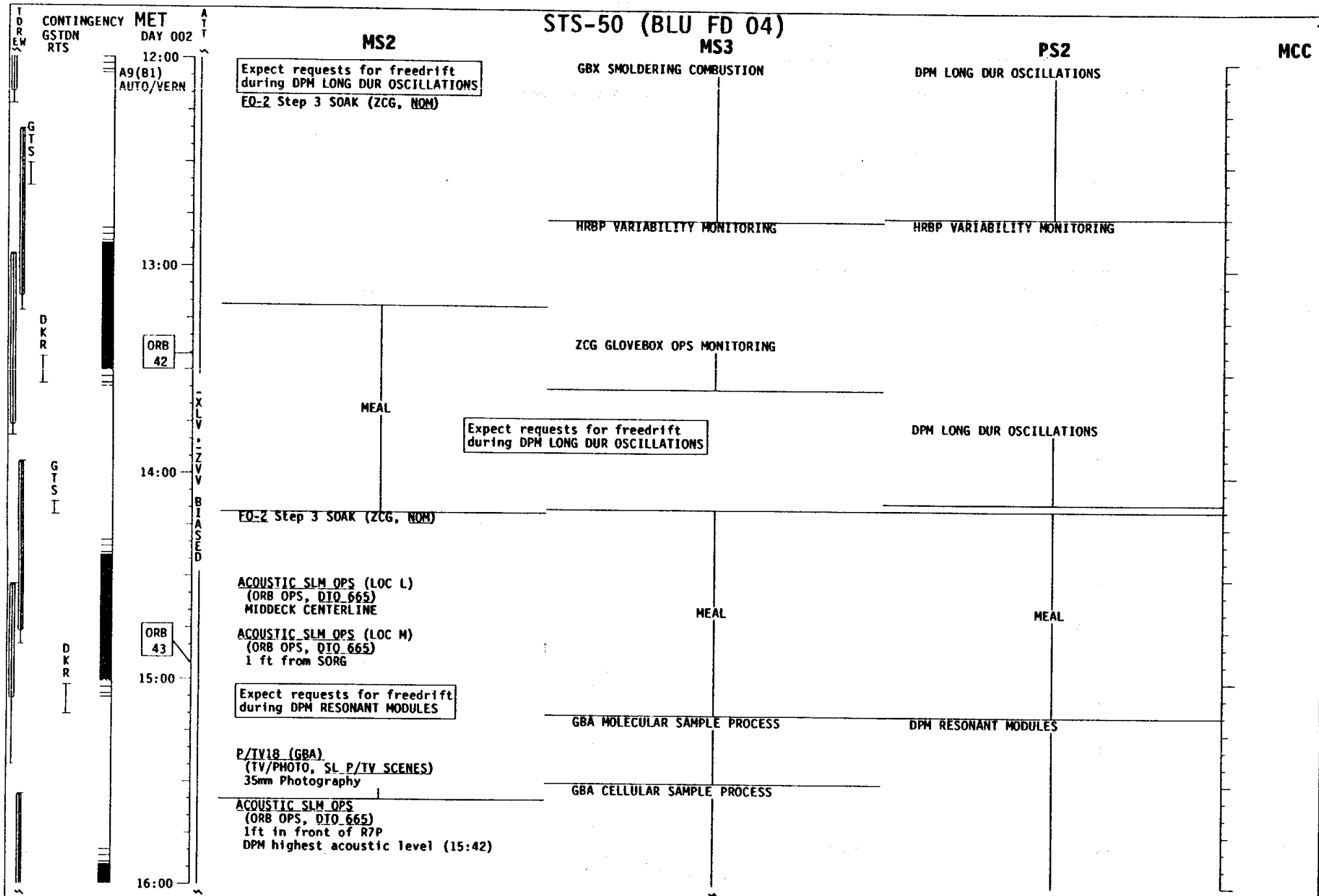
CDR	PLT	MS1	PS1	MCC
06 JHF MODE - OFF PRIVATE MEDICAL CONFERENCE	DTO 658 EVIS POST-EXERCISE (BIOMED DSO/DTO, DIOs)	EXERCISE (Cue Card) (DSO 617) SAMS MONITORING		
HANDOVER: RED TO BLUE	HANDOVER: RED TO BLUE	HANDOVER: RED TO BLUE	HANDOVER: RED TO BLUE	
DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)	
SLEEP	SLEEP	SLEEP	SLEEP	

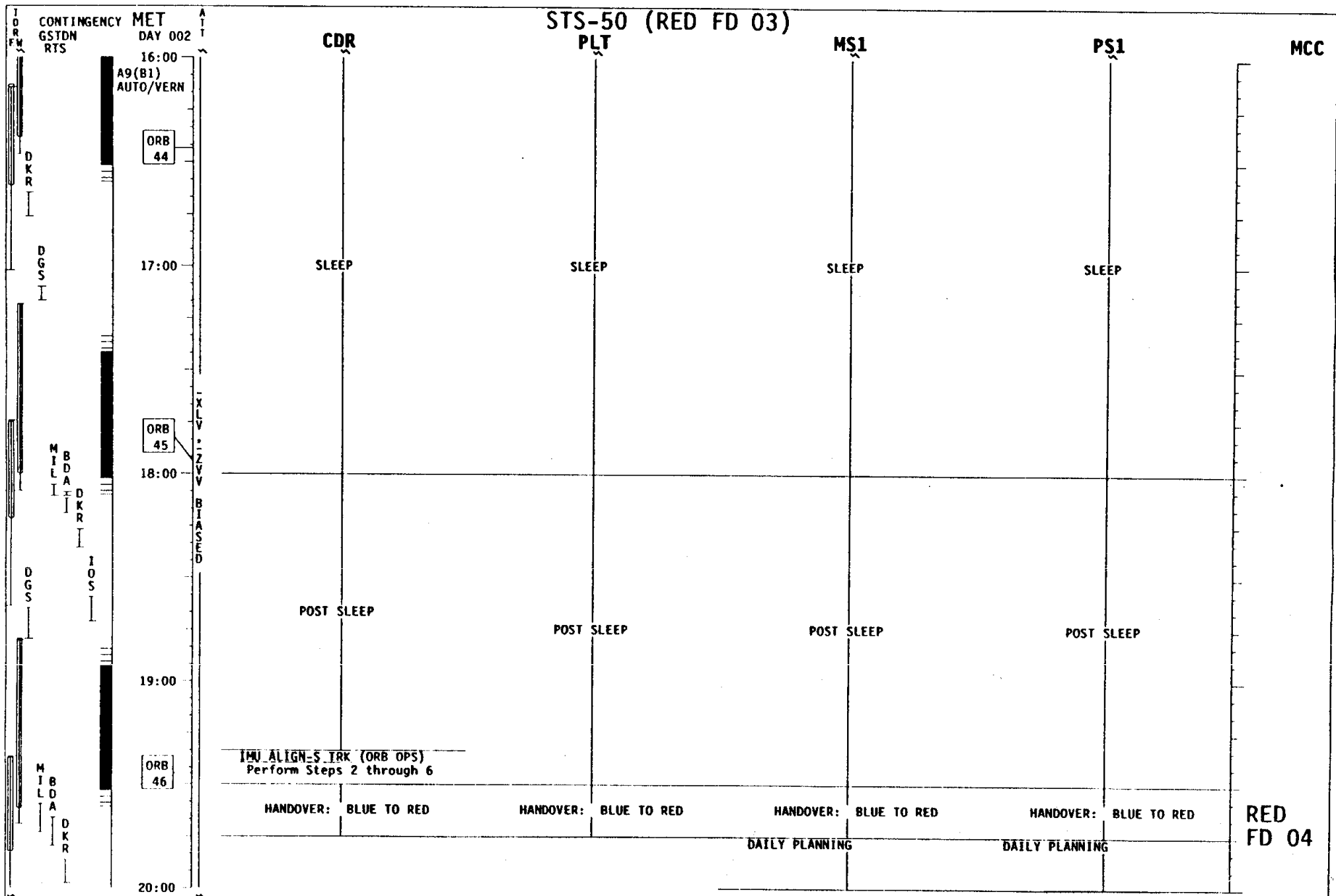
BLUE
 FD 04
 Uplink
 FUEL CELL
 PURGE

X
 L
 V
 :
 Z
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 V
 B
 I
 A
 S
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 D

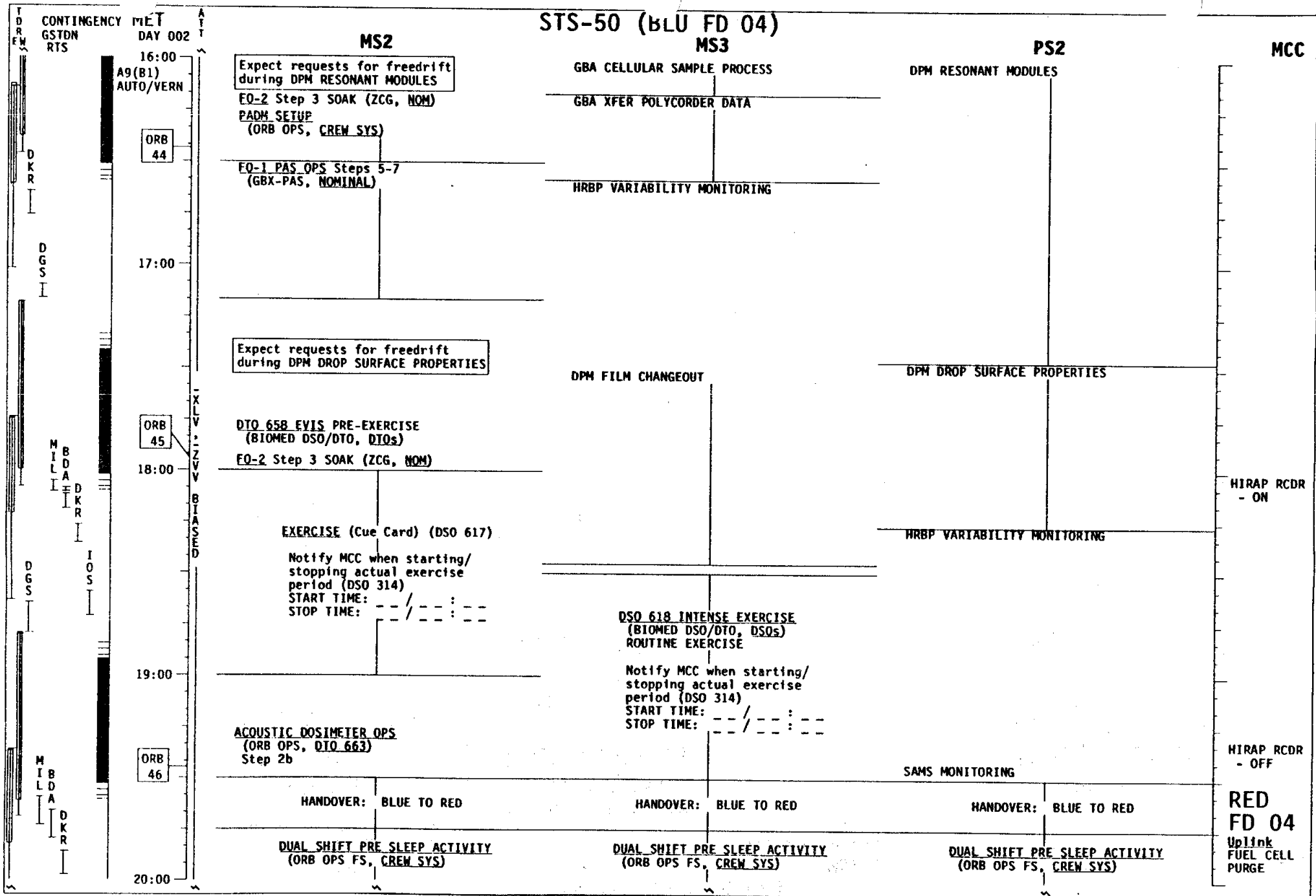


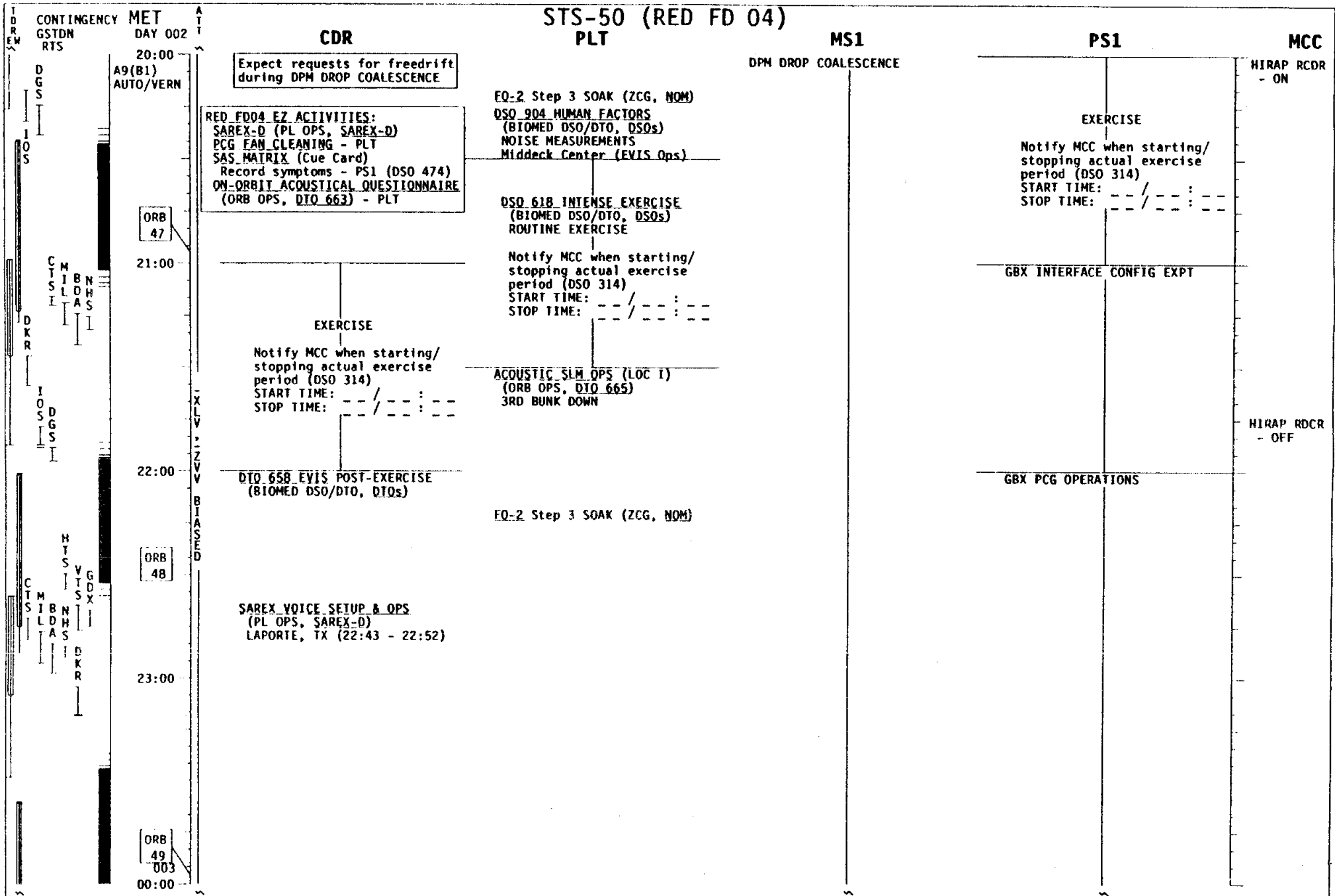




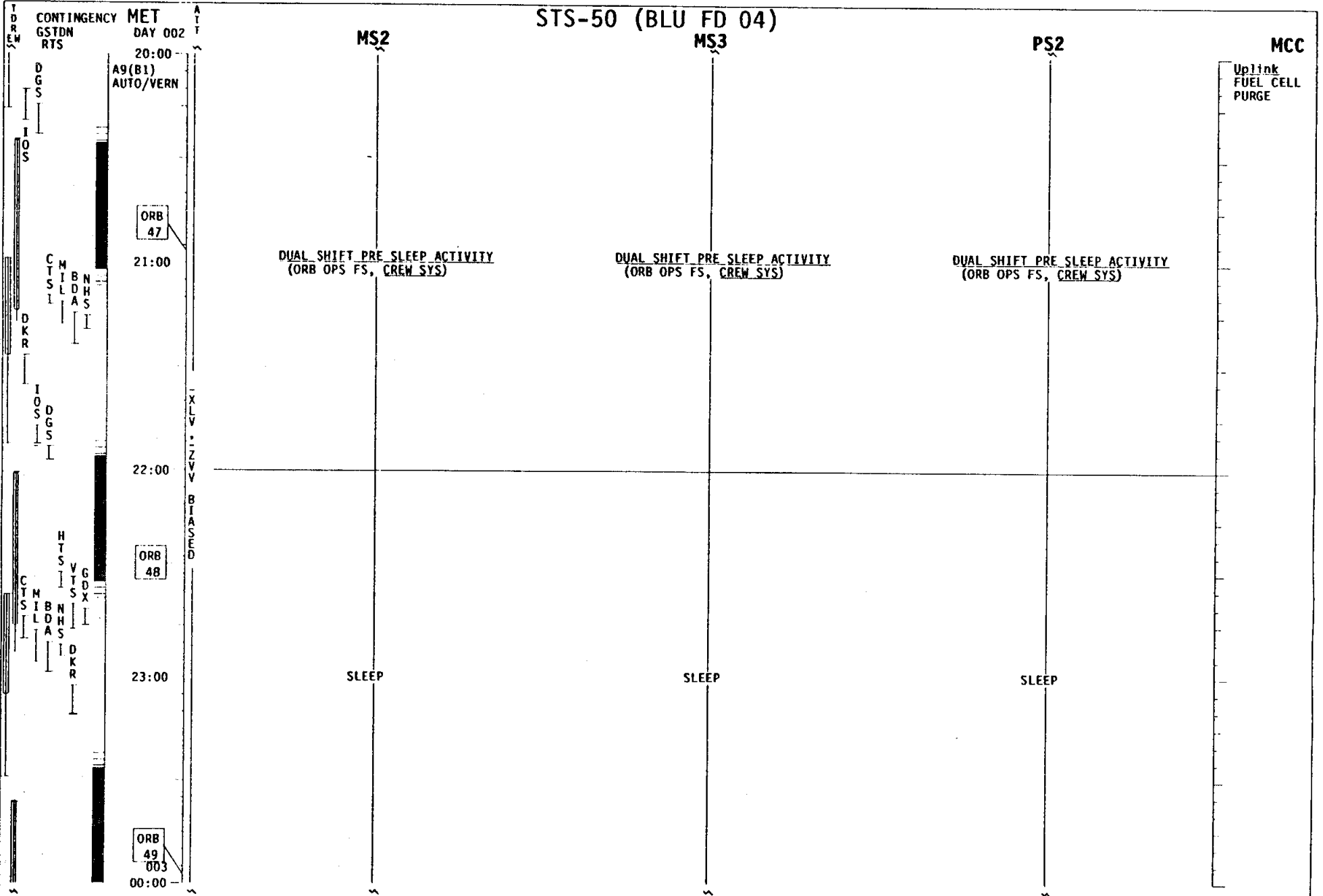


RED
FD 04





STS-50 (BLU FD 04)



STS-50 (RED FD 04)

CONTINGENCY MET
GSTDN DAY 003
RTS
 00:00
 A9(B1)
 AUTO/VERN
 01:00
 02:00
 03:00
 04:00
ORB 50
ORB 51

ORDER
 VTS
 GTS
 HTS
 DKS
 RT
 MILIT
 DGS
 HTS
 VTS
 GDS
 MILIT

CDR
 SAREX VOICE SETUP & OPS
 (PL OPS, SAREX-D)
 U.S. SCHOOL
 (00:04 - 00:27)

FQ-2 Step 3 SOAK (ZCG, NOM)

MS1
 DPM DROP COALESCENCE

PS1
 GBX PCG OPERATIONS

MCC

DSO 904 HUMAN FACTORS
 (BIOMED DSO/DTO, DSQs)
 NOISE MEASUREMENTS
 Fltdeck Center (Nom Ops)

MEAL

MEAL

MEAL

MEAL

DPM DROP SURFACE PROPERTIES

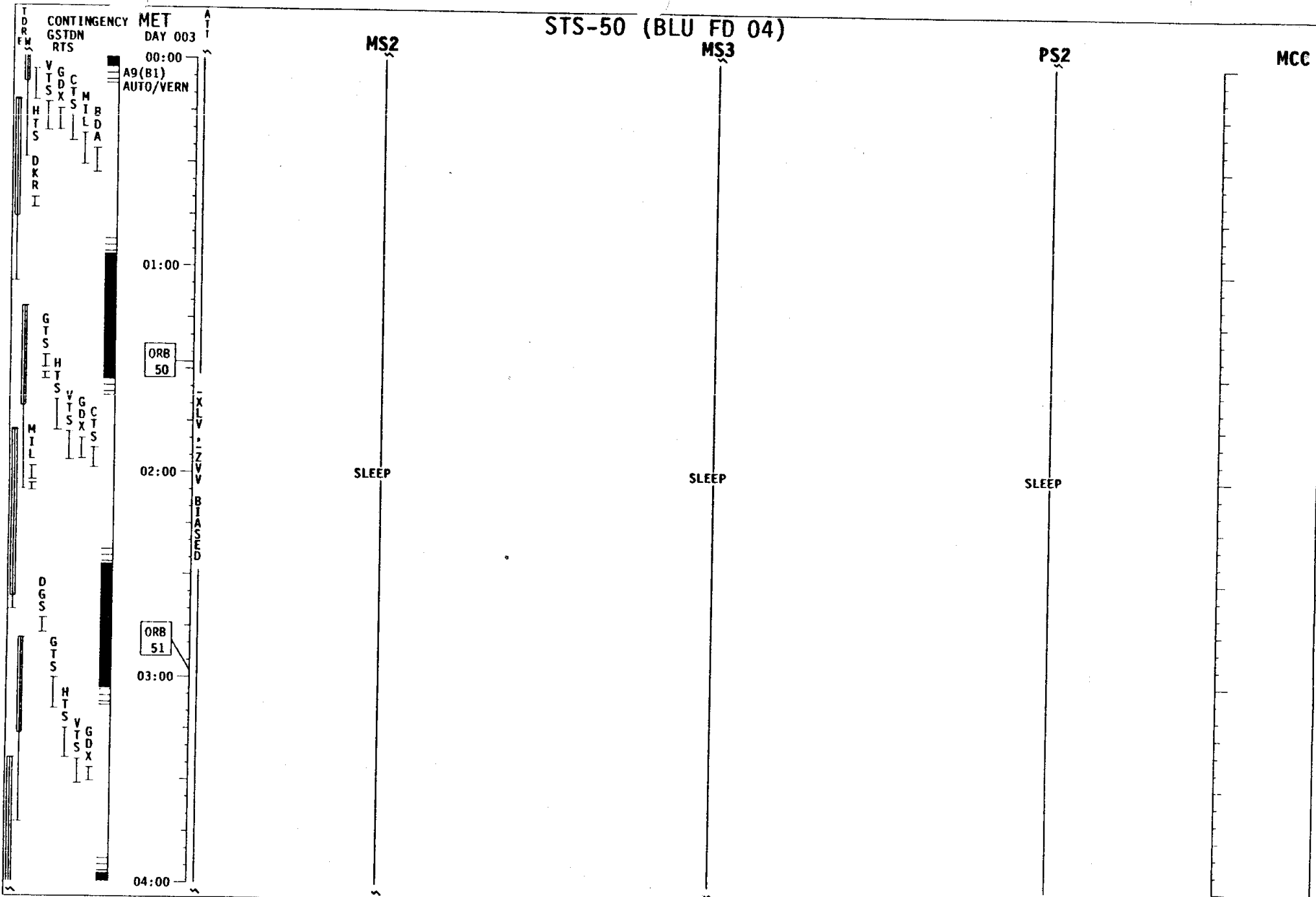
GBX PCG OPERATIONS

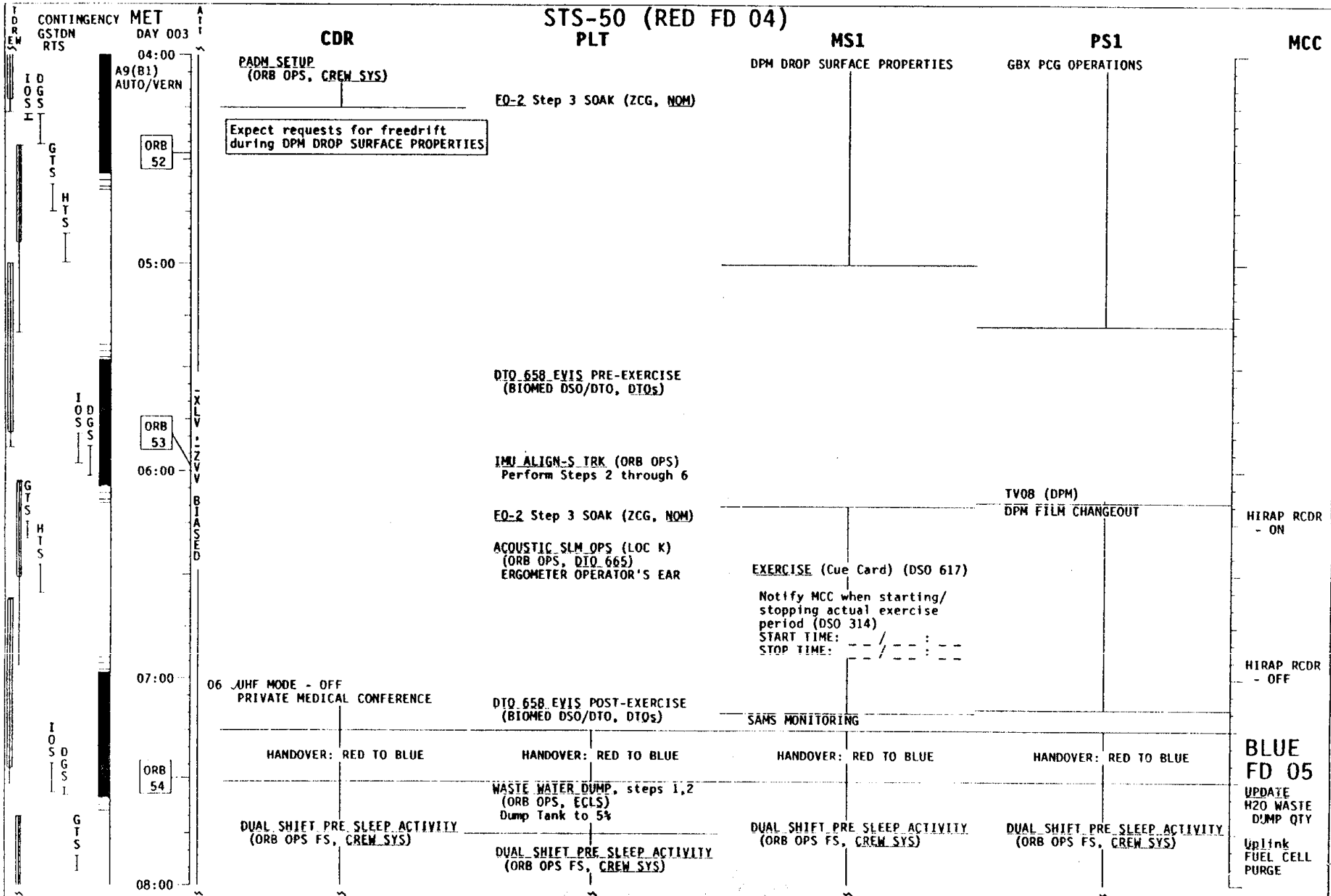
FQ-2 Step 3 SOAK (ZCG, NOM)

Expect requests for freedrift
 during DPM DROP SURFACE PROPERTIES

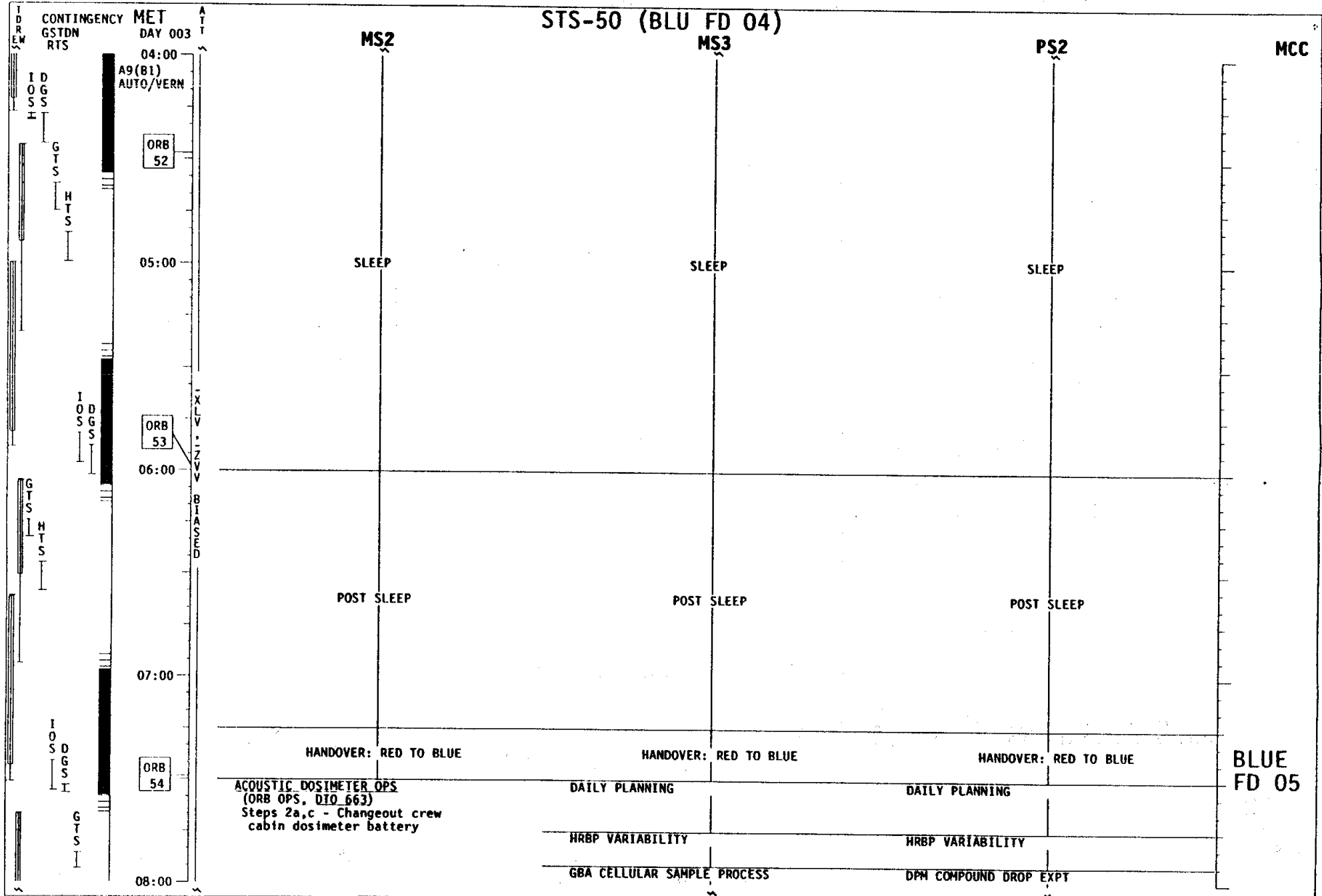
P/TV10 (GBX)
 (TV/PHOTO, SL P/TV SCENES)
 16mm photography

STS-50 (BLU FD 04)

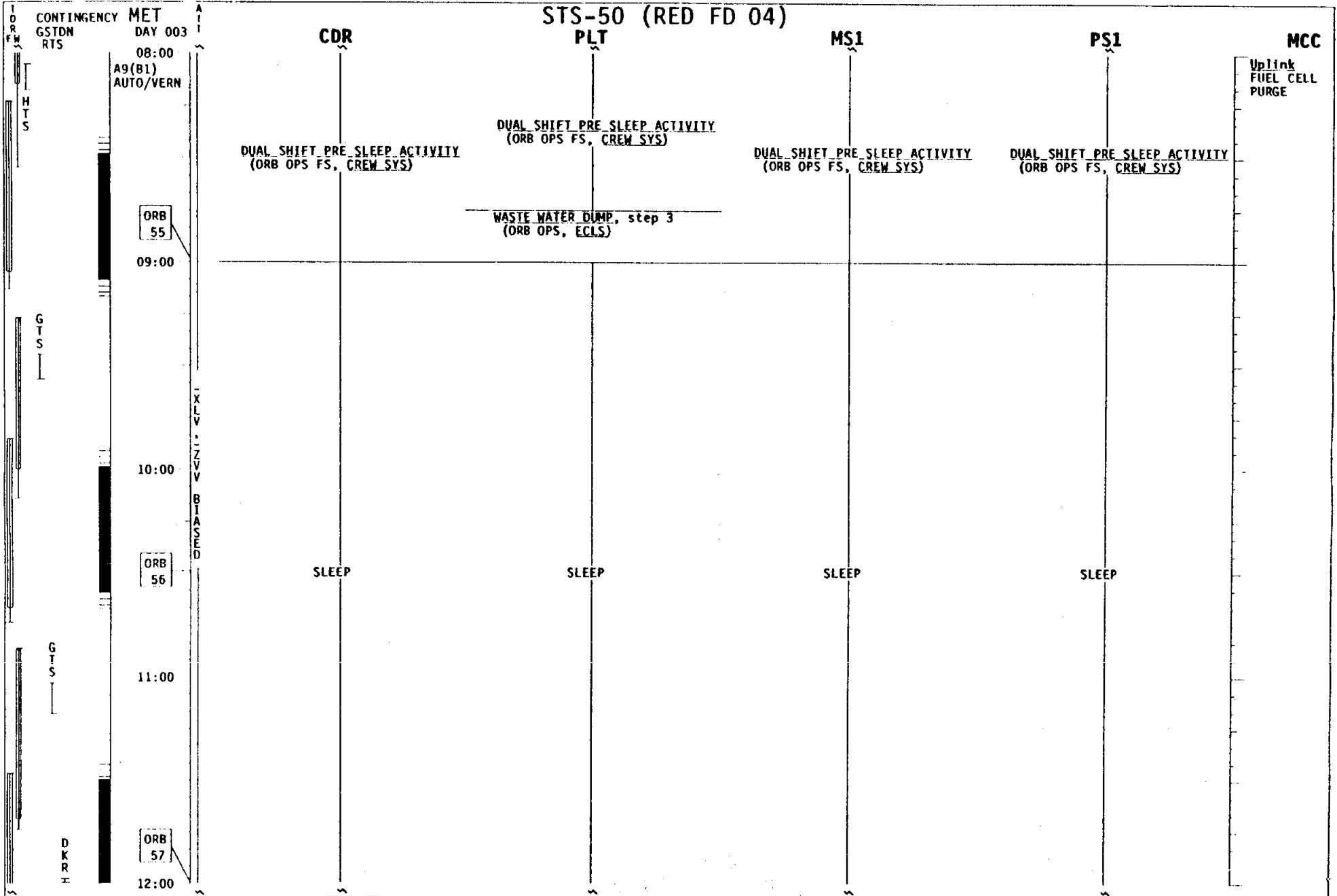


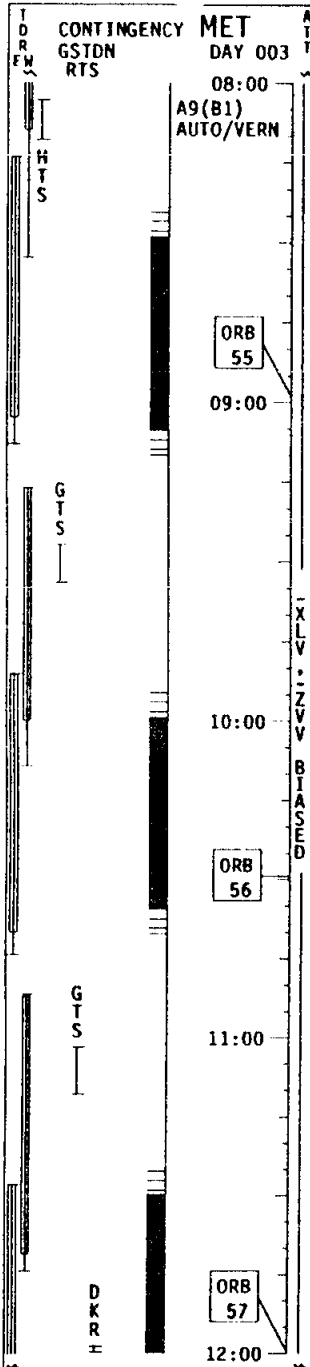


STS-50 (BLU FD 04)



BLUE
FD 05





MS2

EO-2 Step 3 SOAK (ZCG, NOM)

Expect requests for freedrift during DPM COMPOUND DROP EXPT

BLU FD05 EZ ACTIVITIES:
 CPA OPS (ORB OPS, CREW SYS)
 SAREX-D (PL OPS, SAREX-D)
 SAS MATRIX (Cue Card)
 Record symptoms - MS2, MS3, PS2 (DSO 474)

STS-50 (BLU FD 05)
MS3

GBA CELLULAR SAMPLE PROCESS

GBA XFER POLYCORDER DATA

PS2

DPM COMPOUND DROP EXPT

MCC

EO-2 Step 3 SOAK (ZCG, NOM)

SAREX VOICE SETUP & OPS (PL OPS, SAREX-D)
 OHIO BOY SCOUTS (10:10 - 10:18)

GBX DIR POLYMERIZATION OPS

GBX DIR POLYMERIZATION MON

GBX DIR POLYMERIZATION MON

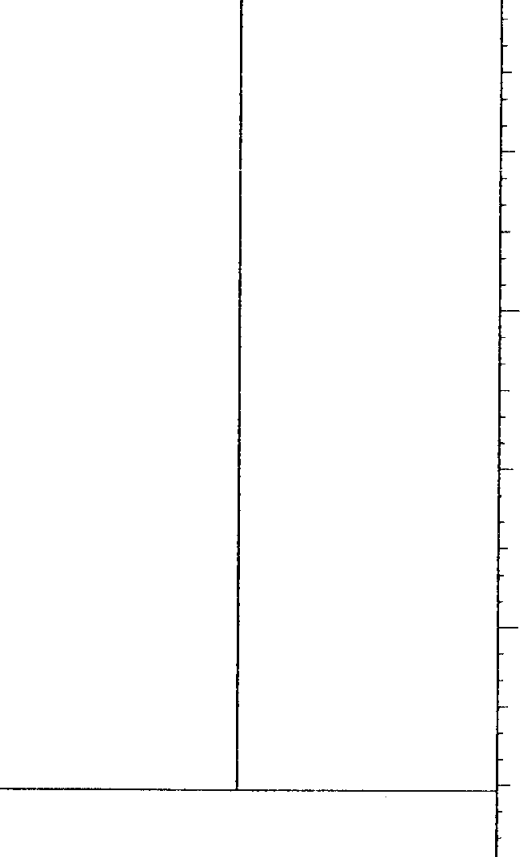
GBX DIR POLYMERIZATION MON

GBX DIR POLYMERIZATION MON

GBX DIR POLYMERIZATION MON

GBX DIR POLYMERIZATION MON

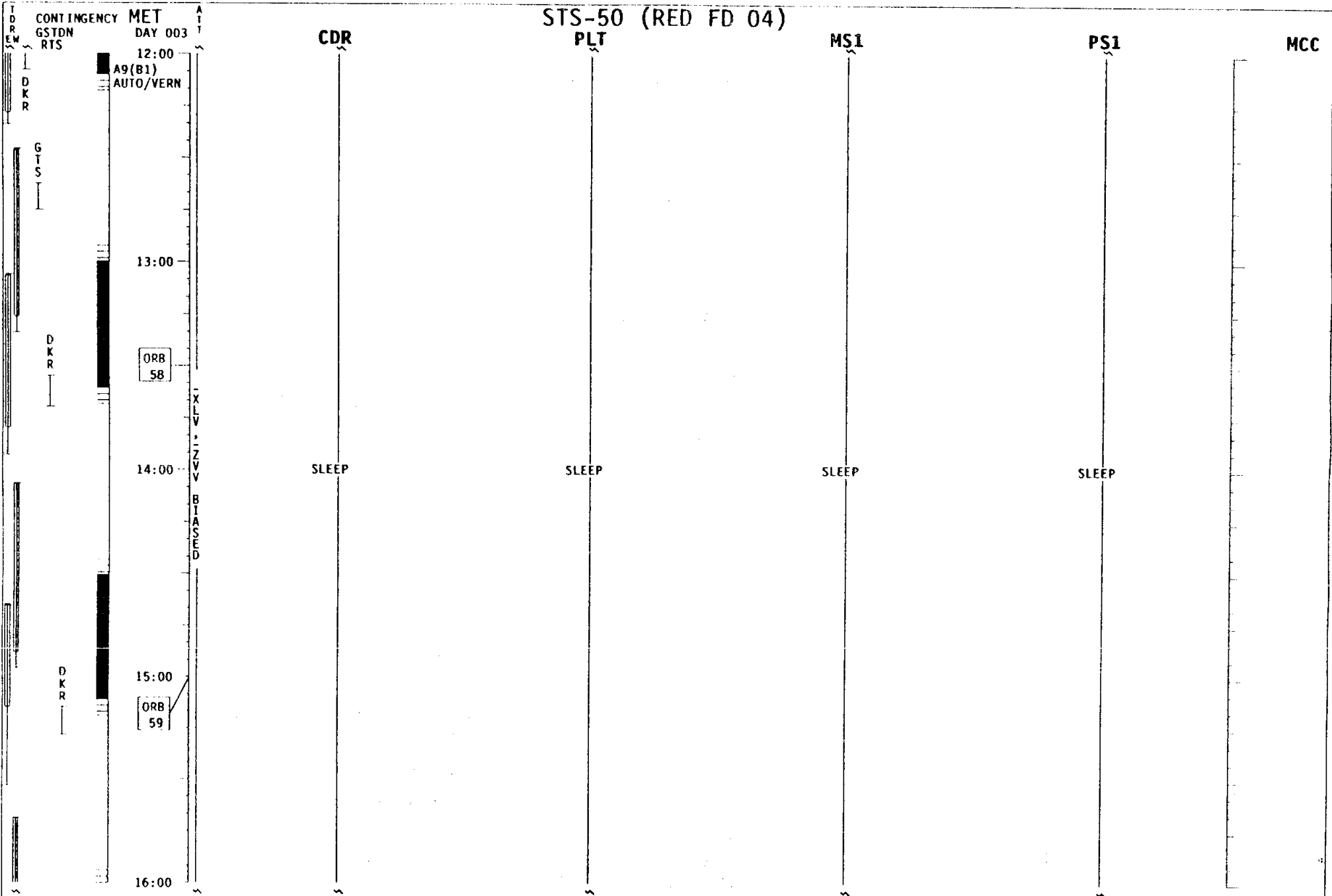
GBX DIR POLYMERIZATION MON



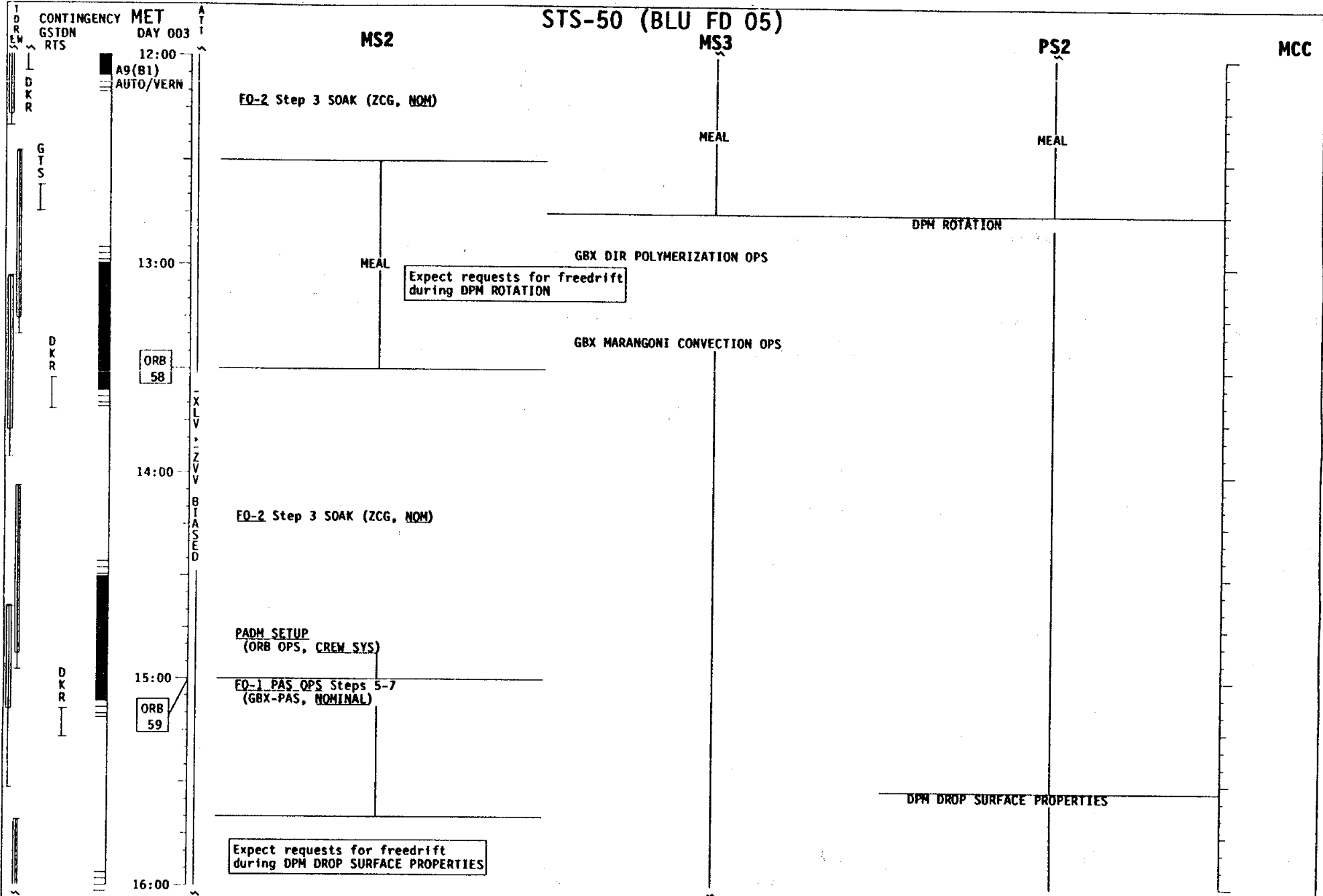
MEAL

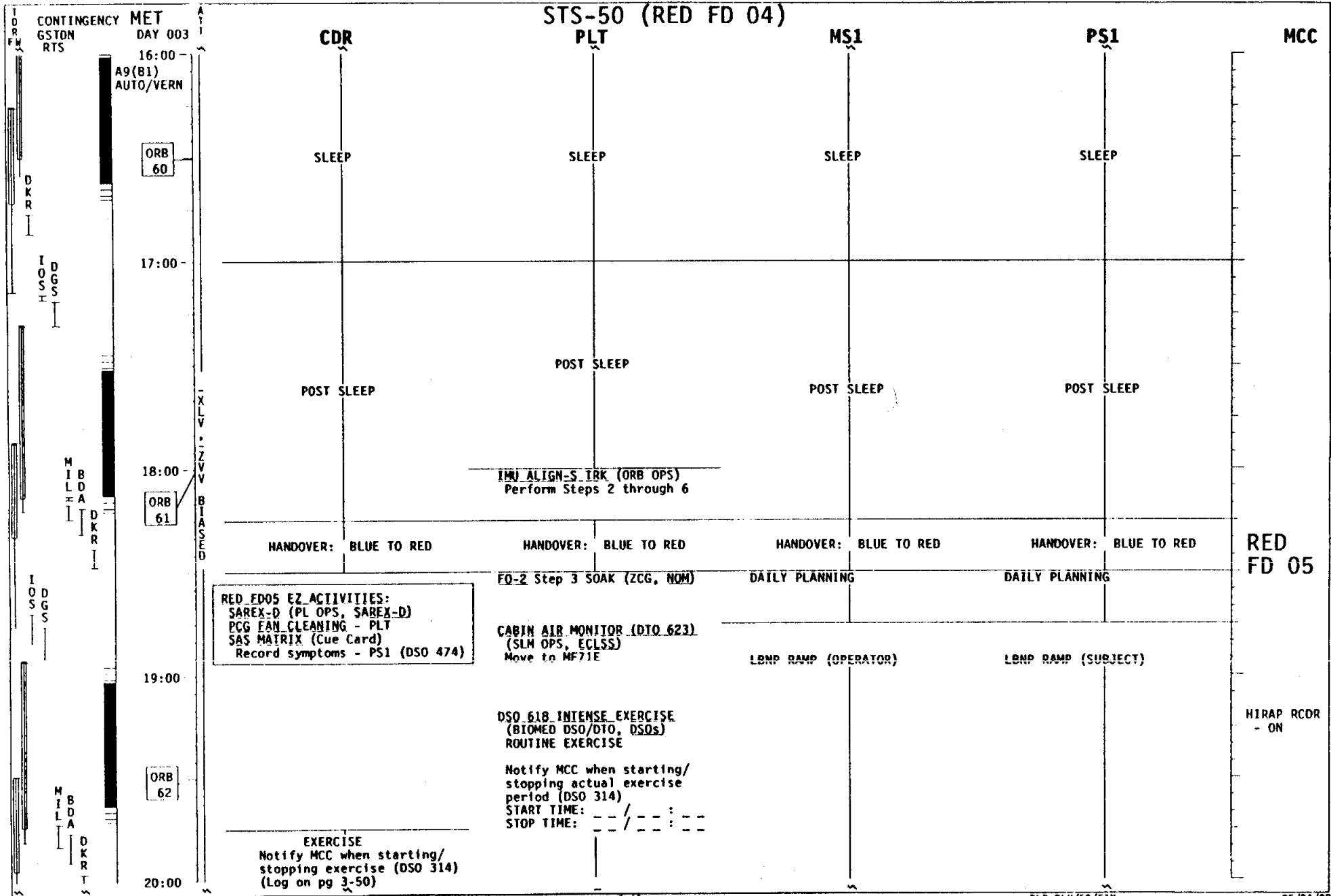
MEAL

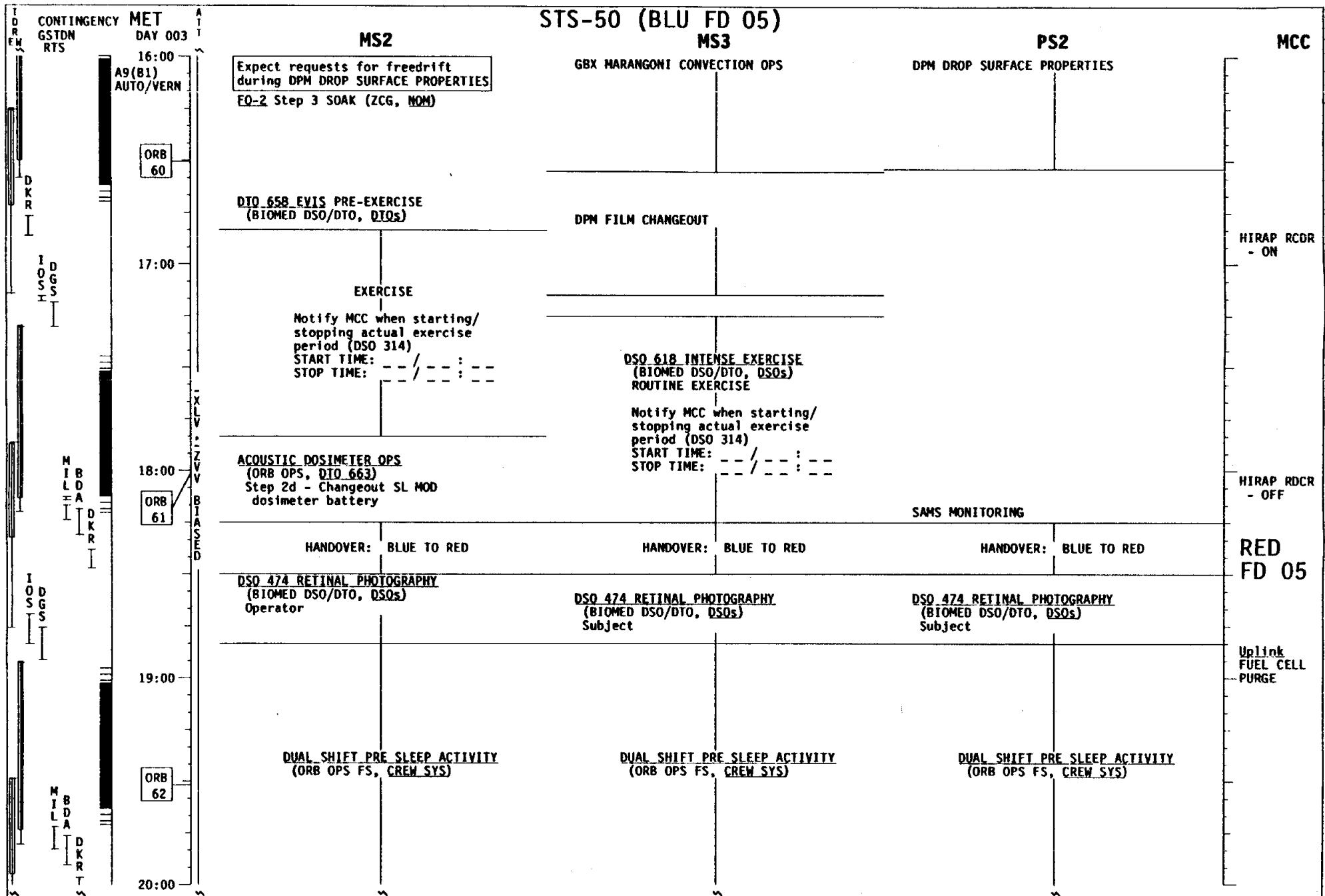
STS-50 (RED FD 04)



STS-50 (BLU FD 05)







STS-50 (RED FD 05)

PLT

DSO 618 INTENSE EXERCISE
(BIOMED DSO/OTO, DSOs)
ROUTINE EXERCISE
EQ-2 Step 3 SOAK (ZCG, NOM)

MS1

LBNP RAMP (OPERATOR)

PS1

LBNP RAMP (SUBJECT)

MCC

CDR

EXERCISE

Notify MCC when starting/
stopping actual exercise
period (DSO 314)
START TIME: -- / -- : --
STOP TIME: -- / -- : --

DTO 658 EVIS POST-EXERCISE
(BIOMED DSO/OTO, DIOs)

HIRAP RDCR
- OFF

P/TV17 (SAMS)
(TV/PHOTO, SL P/TV SCENES)
35mm Photography

SAMS OPERATIONS
GBX PCG OPERATIONS

EQ-2 Step 3 SOAK (ZCG, NOM)

MEAL

MEAL

MEAL

MEAL

DPH RESONANT MODULES

CONTINGENCY MET
GSTDN DAY 003
RTS A9(B1)
AUTO/VERN

20:00

ORB 63

21:00

ORB 64

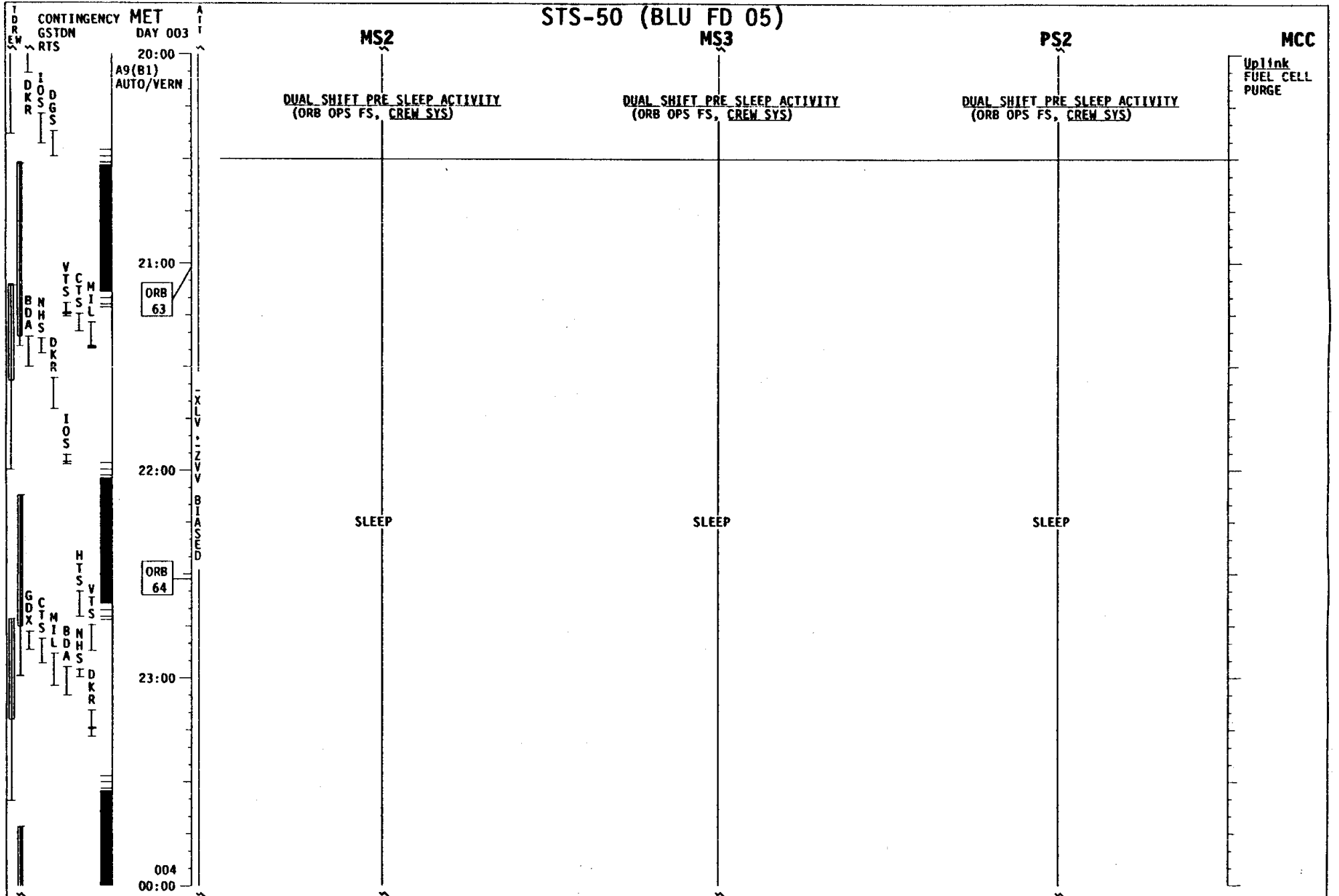
22:00

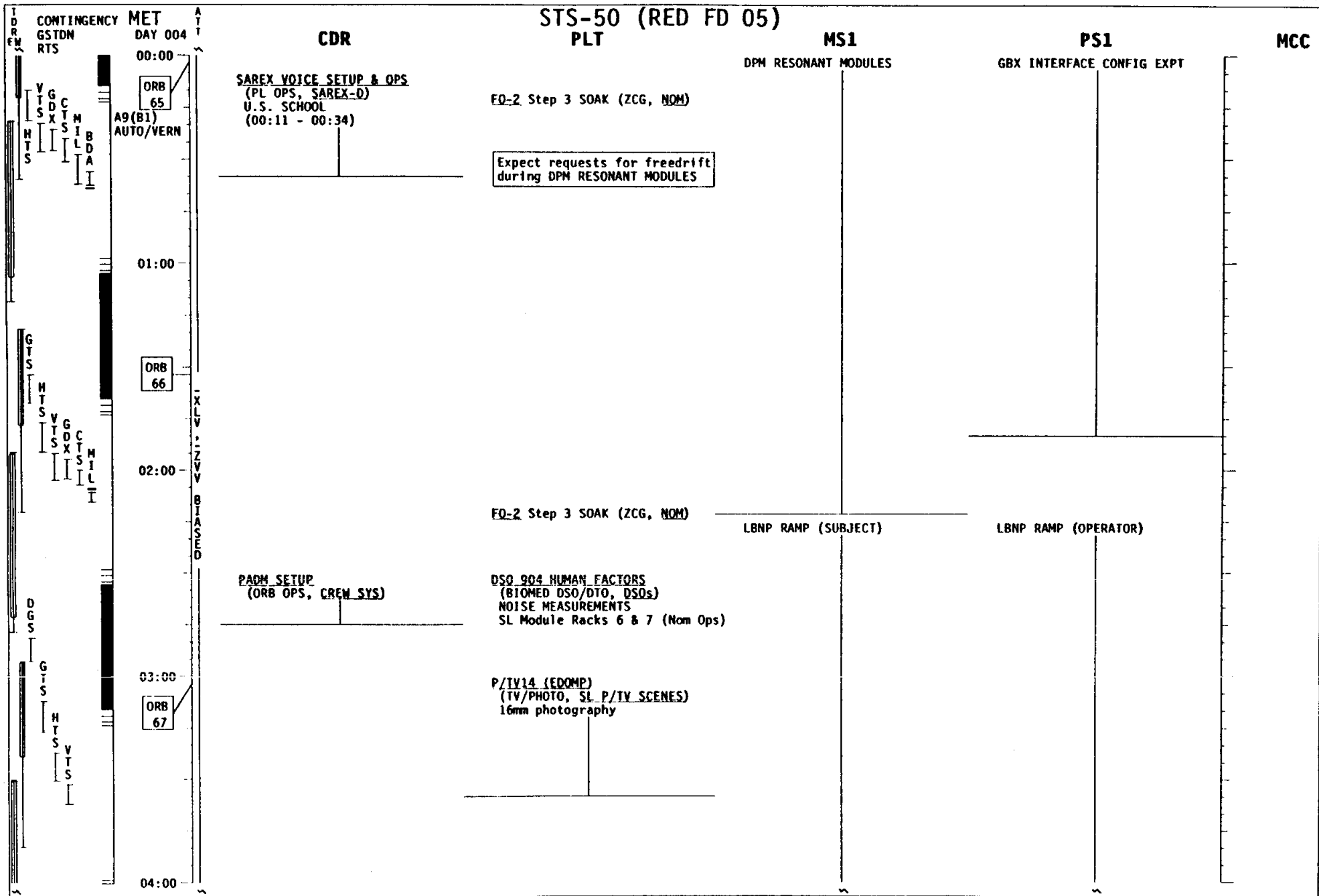
23:00

004
00:00

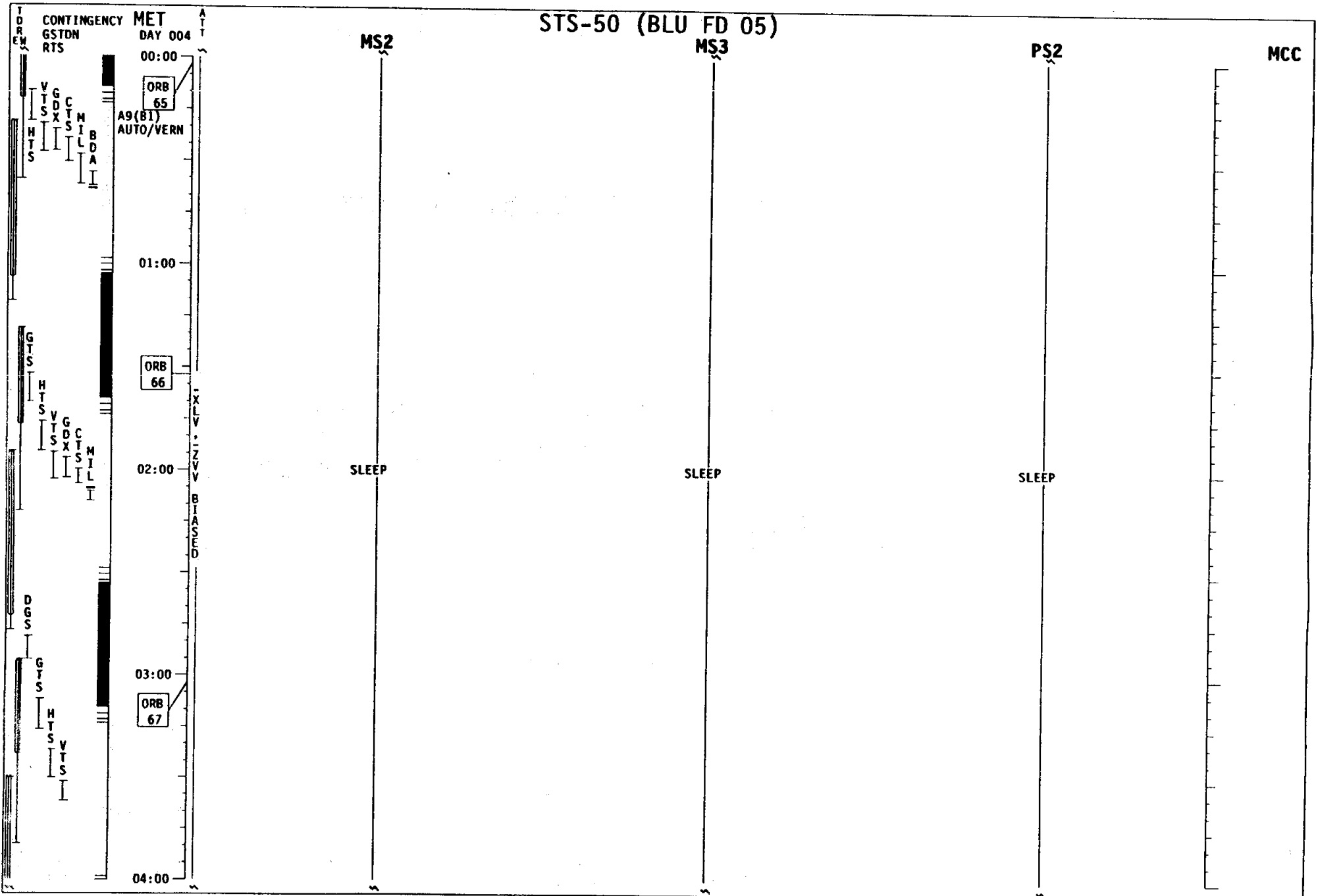
TO REM
DKR
IOS
DGS
VTSL
CHIL
BOA
NHS
DKR
IOS
HTS
GDX
CTSL
MIL
BDAS
HTS
VTSL
NHS
DKR

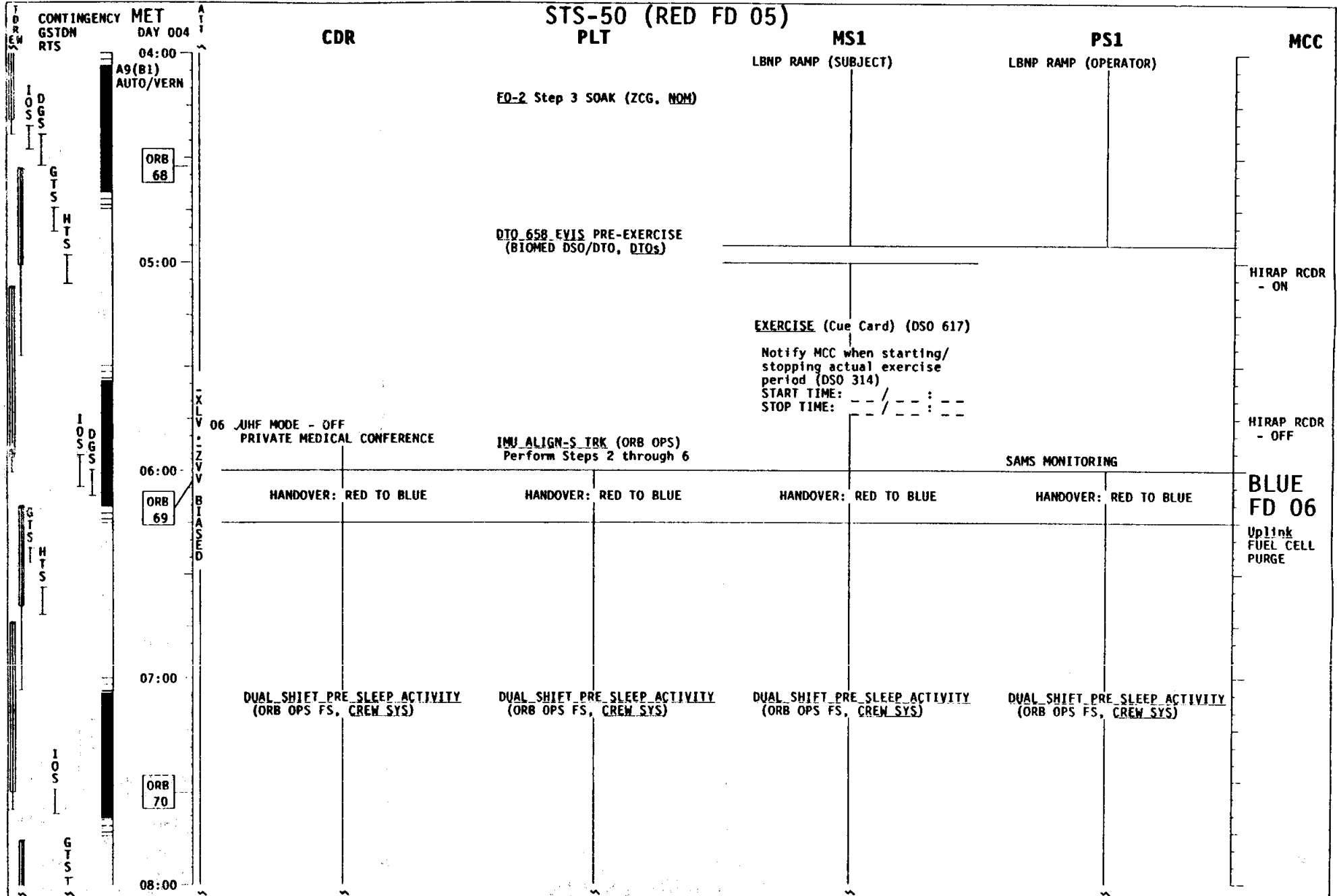
XLV
ZVV
BIASED

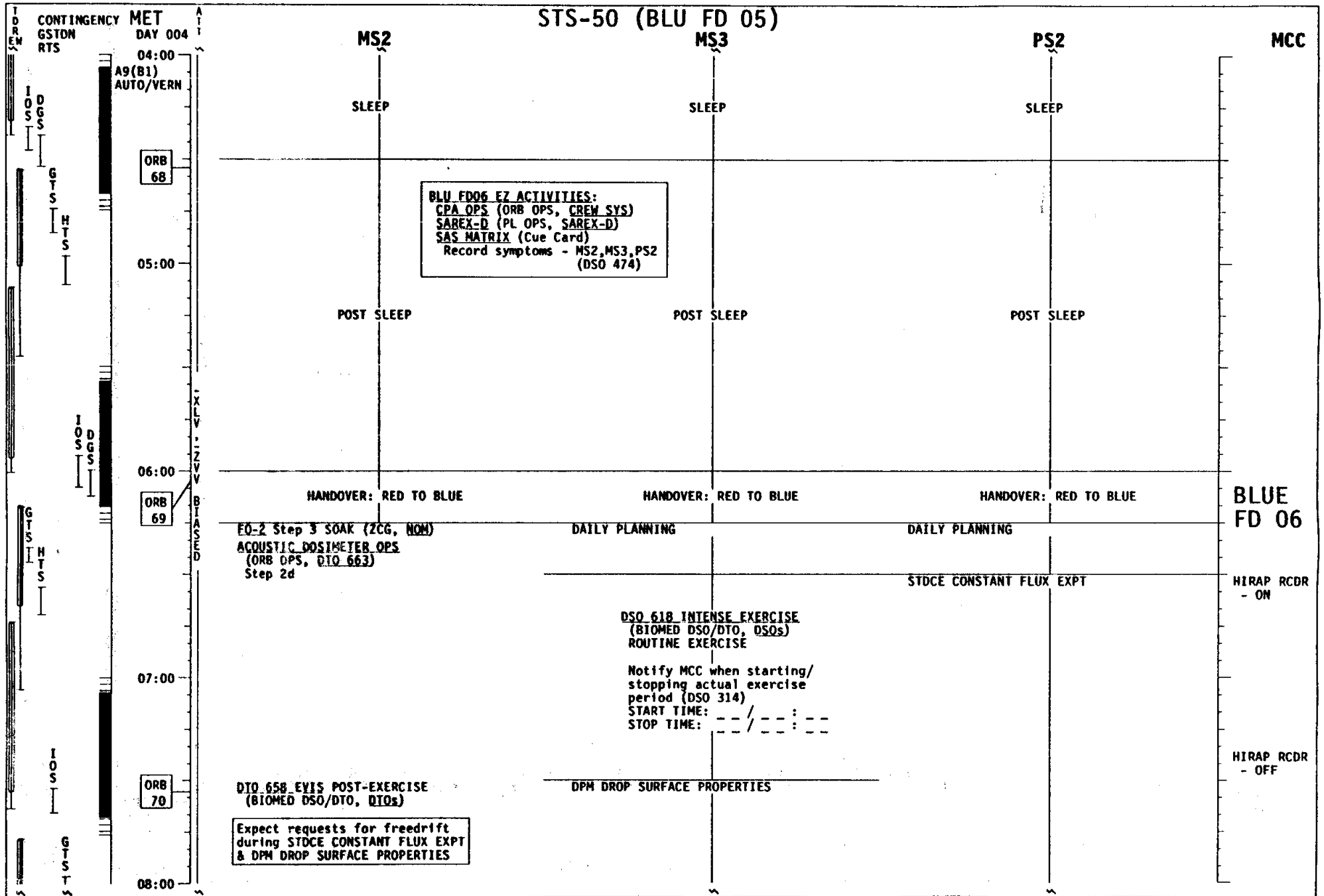




STS-50 (BLU FD 05)







STS-50 (RED FD 05)

CONTINGENCY MET
GSTDN DAY 004
RTS

08:00
A9(B1)
AUTO/VERN

09:00
ORB
71

10:00
ORB
72

11:00

12:00

DR FM
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H
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A
C
K
O
F
F
I
C
E

CDR

PLT

MS1

PS1

MCC

DUAL SHIFT PRE SLEEP ACTIVITY
(ORB OPS FS, CREW SYS)

DUAL SHIFT PRE SLEEP ACTIVITY
(ORB OPS FS, CREW SYS)

DUAL SHIFT PRE SLEEP ACTIVITY
(ORB OPS FS, CREW SYS)

DUAL SHIFT PRE SLEEP ACTIVITY
(ORB OPS FS, CREW SYS)

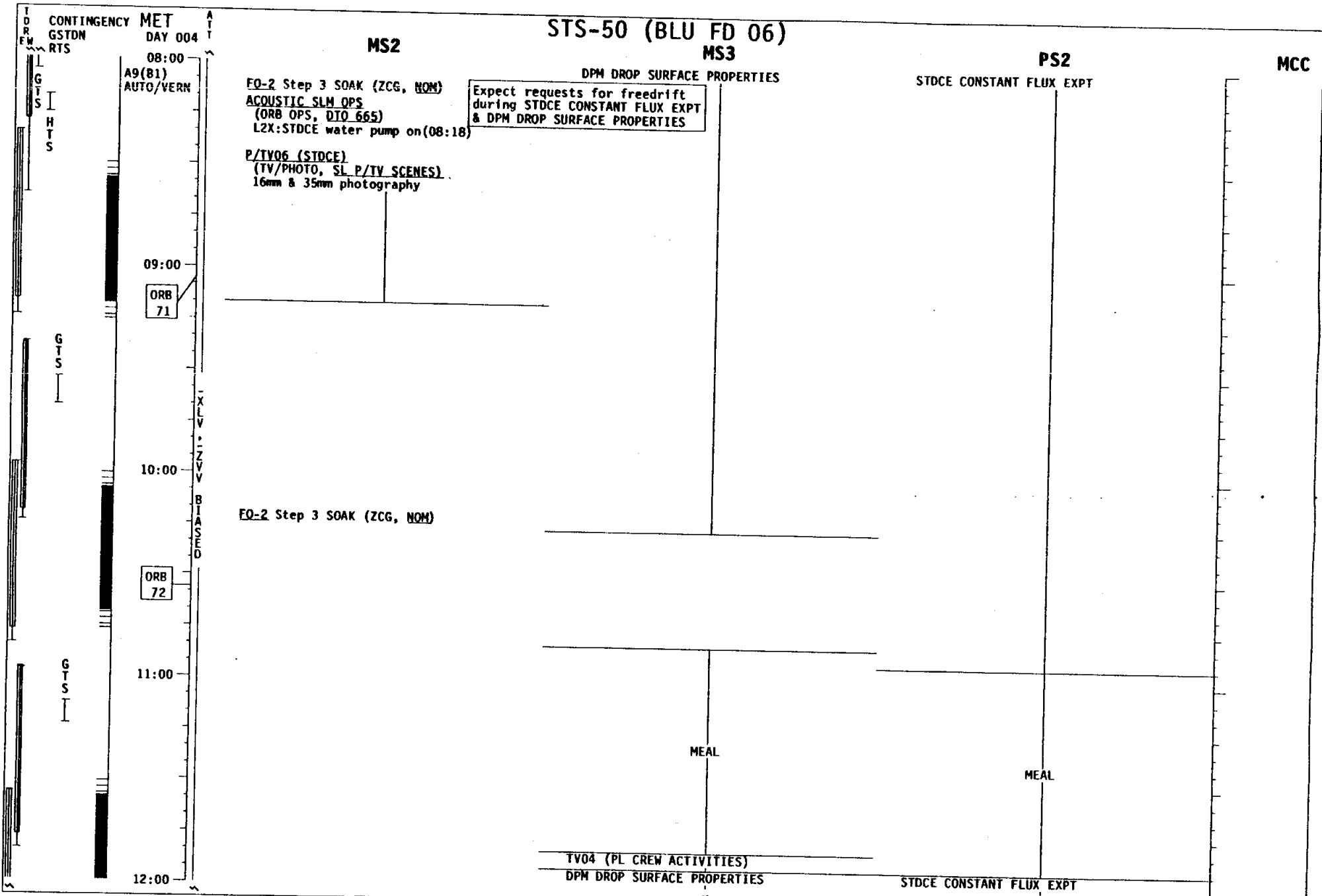
Uplink
FUEL CELL
PURGE

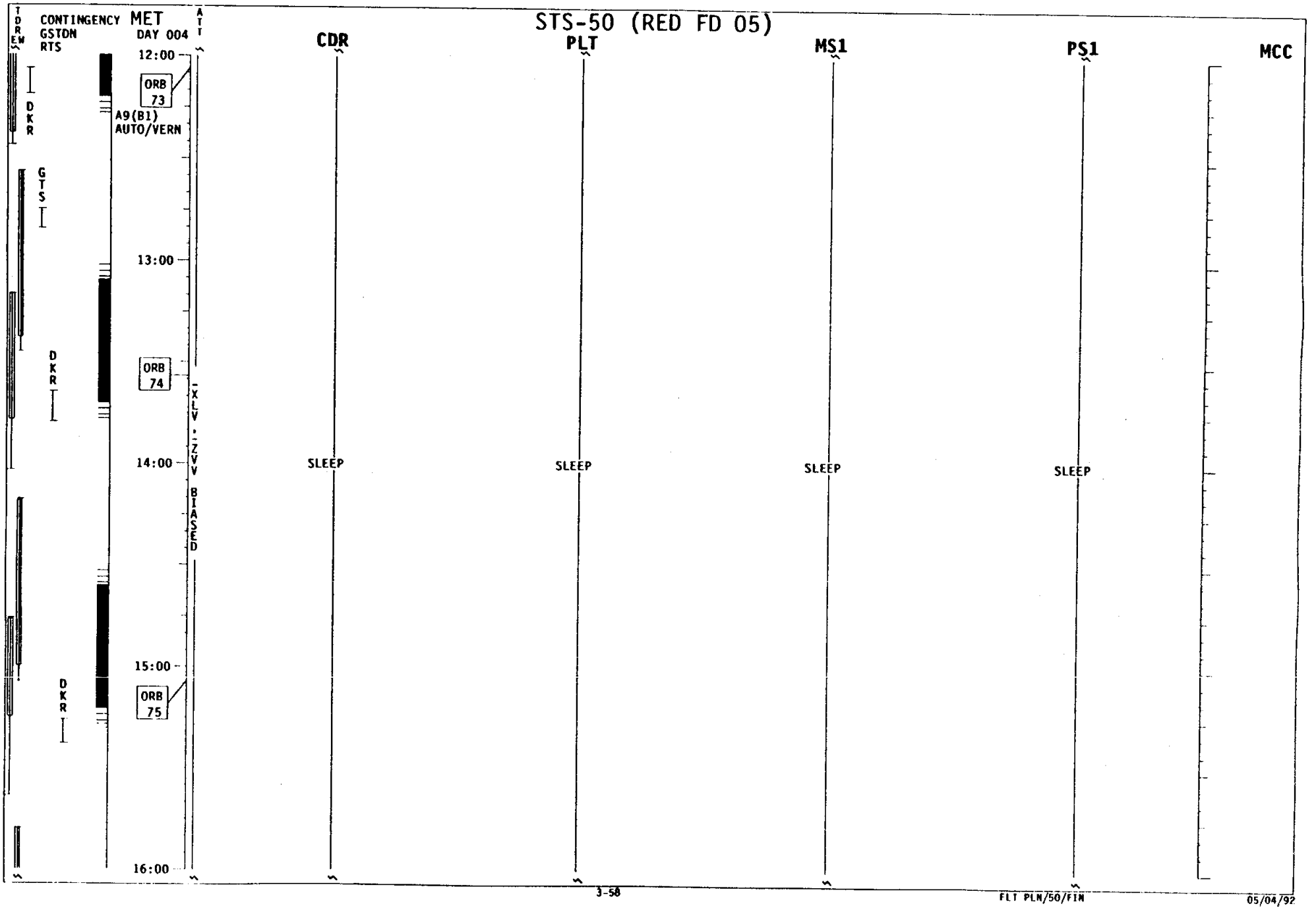
SLEEP

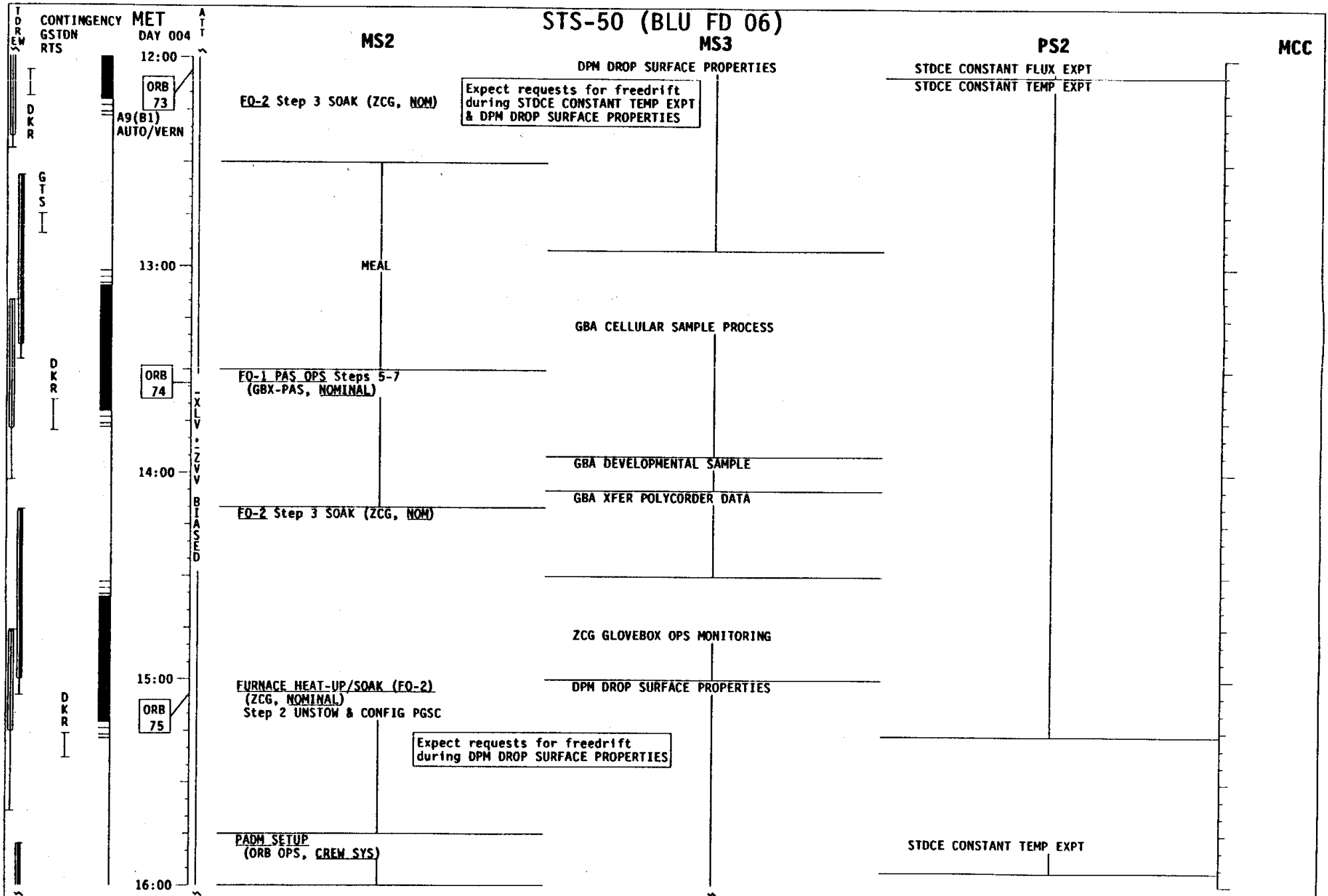
SLEEP

SLEEP

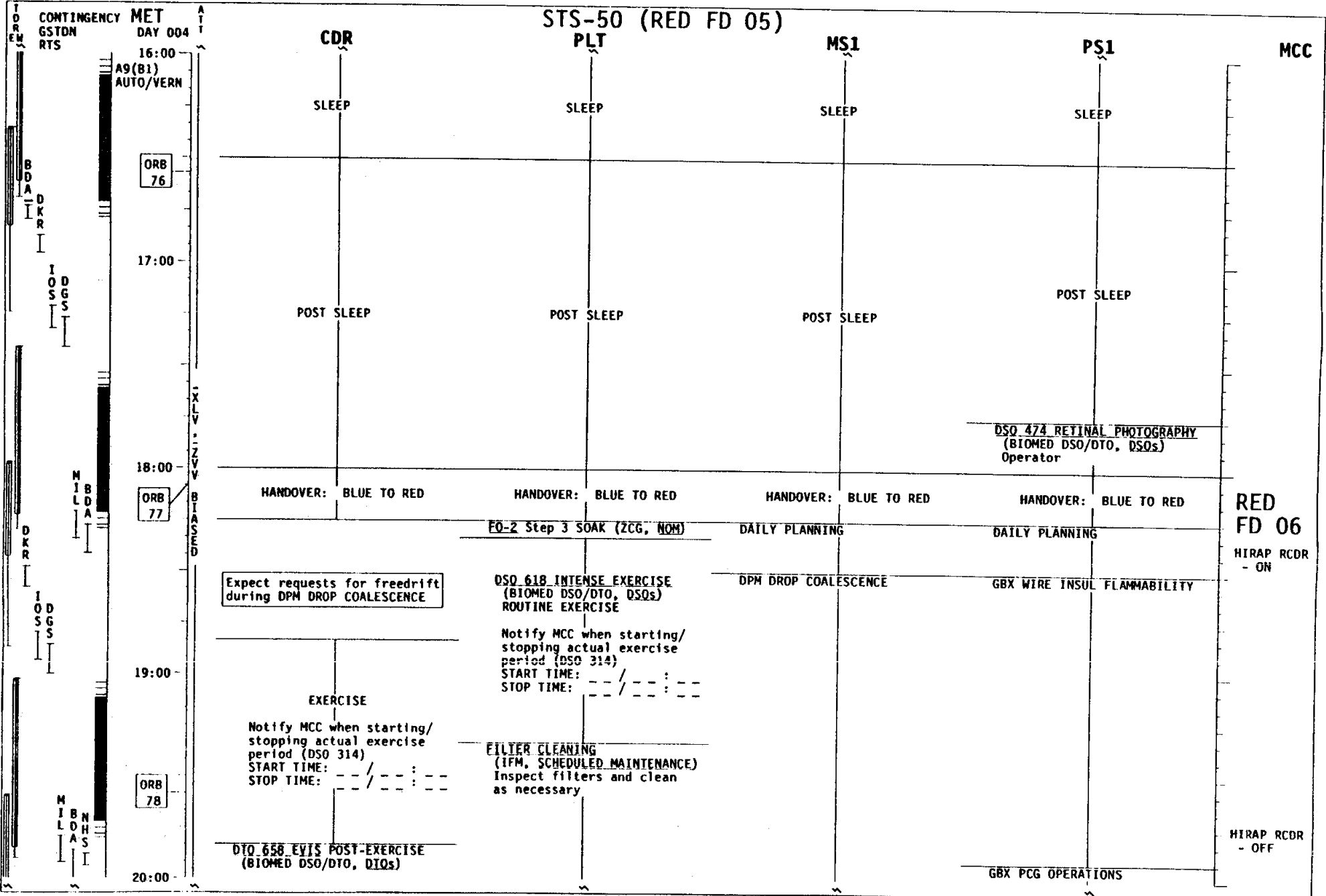
SLEEP







STS-50 (RED FD 05)



CONTINGENCY MET DAY 004
GSTDN RTS
A9(B1) AUTO/VERN

ORB 76

ORB 77

ORB 78

CDR: BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA

PLT: BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA

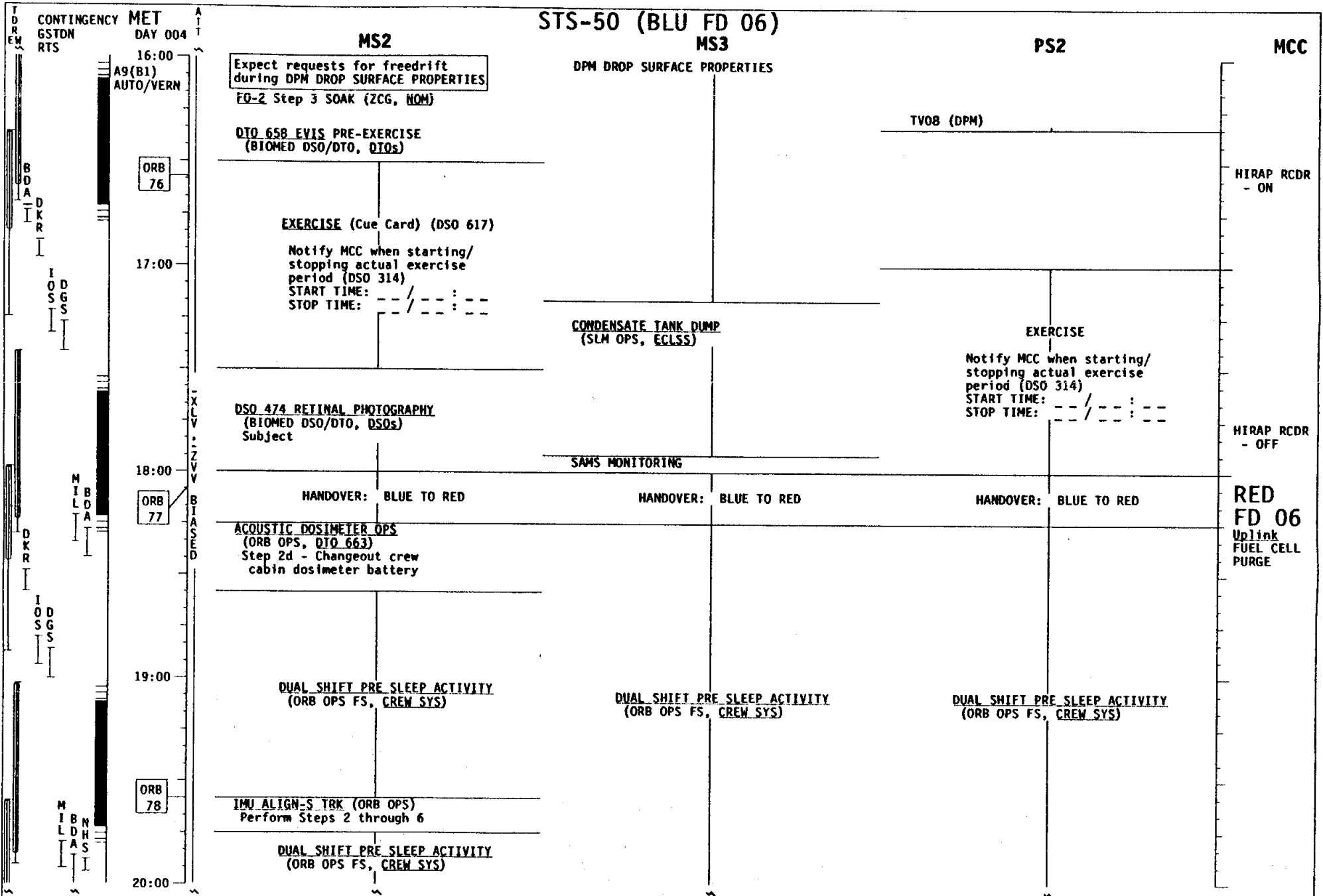
MS1: BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA

PS1: BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA

MCC: BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA, BDA, DKRR, IOGSS, MBLA

RED FD 06
HIRAP RCDR - ON

HIRAP RCDR - OFF



STS-50 (RED FD 06)
PLT

CDR

MS1

PS1

MCC

CONTINGENCY MET
GSTDN DAY 004
RTS
A9(B1)
AUTO/VERN

20:00
21:00
22:00
23:00
005
00:00

DR
EW
BD
A
DO
KR
I
D
GS
R
I
HT
ST
VT
S
G
DT
X
M
SL
LA
BD
A
NH
S
D
KR
HT
S
VT
S
V
DT
X
M
SL
LA
BD
A
D
KR
R
I

XLV
ZVV
BIASED

Expect requests for freedrift during DPM DROP COALESCENCE

FILTER CLEANING (CONT)

DPM DROP COALESCENCE

GBX PCG OPERATIONS

EO-2 Step 3 SOAK (ZCG, NOM)

RED FD06 EZ ACIIVIIIES:
SAREX-D (PL OPS, SAREX-D)
PCG FAN CLEANING - PLT
SAS MATRIX (Cue Card)
Record symptoms - PS1 (DSO 474)

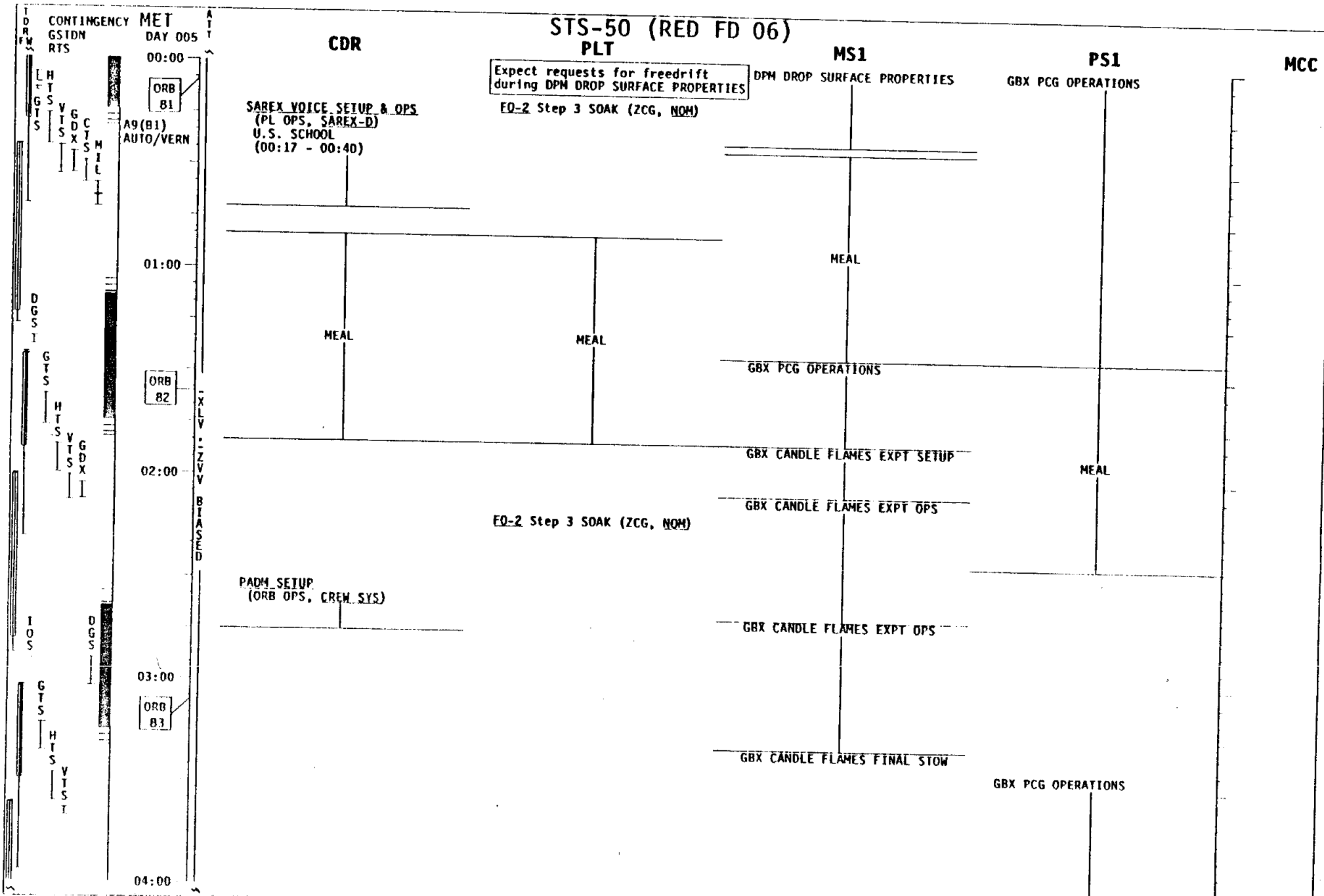
DPM RESONANT MODULES

Expect requests for freedrift during DPM RESONANT MODULES

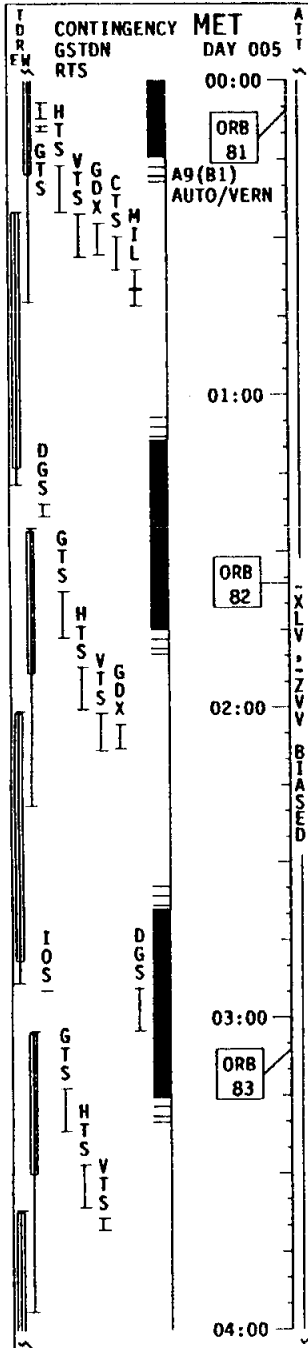
EO-2 Step 3 SOAK (ZCG, NOM)

DPM DROP SURFACE PROPERTIES

Expect requests for freedrift during DPM DROP SURFACE PROPERTIES



STS-50 (BLU FD 06)



MS2

MS3

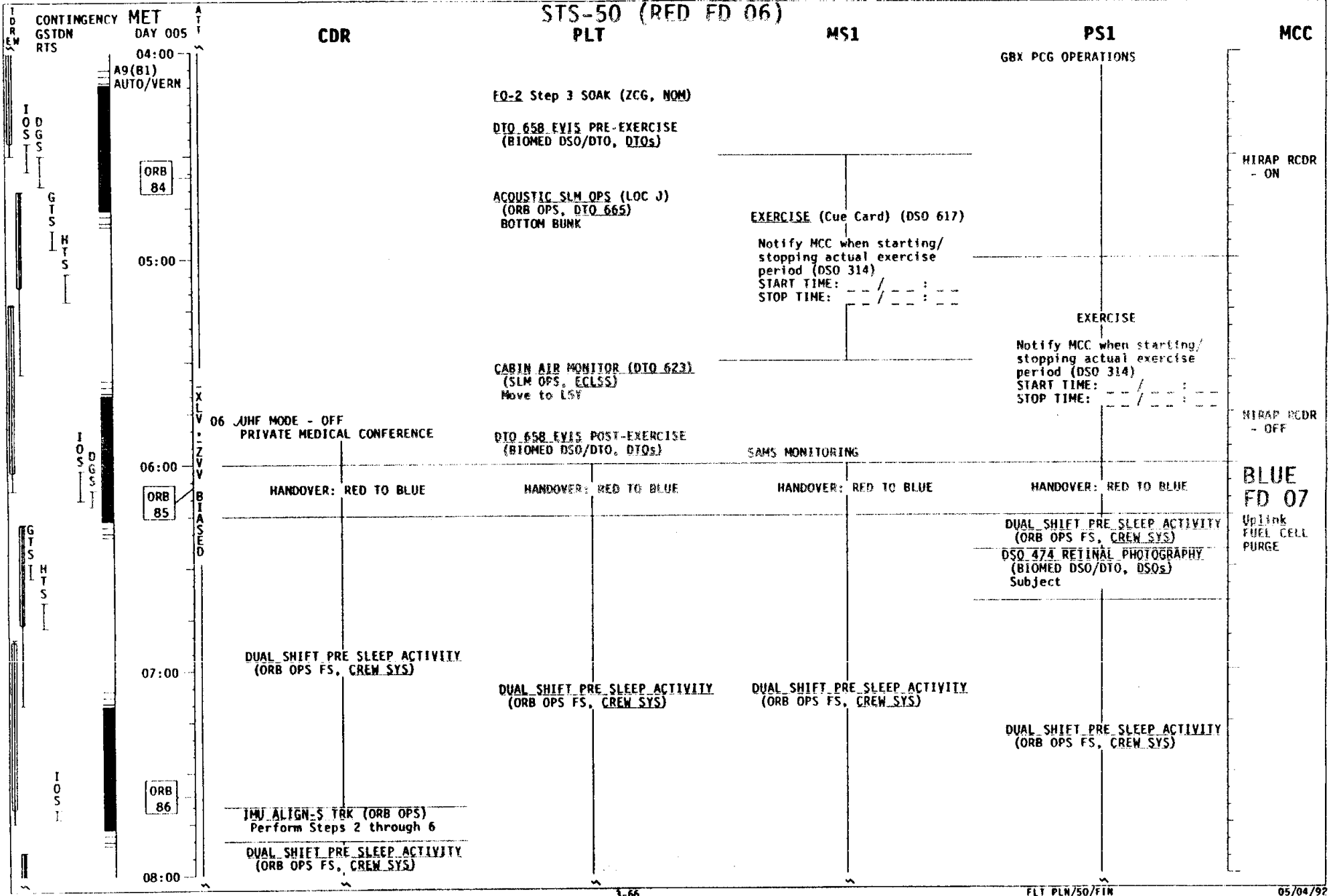
PS2

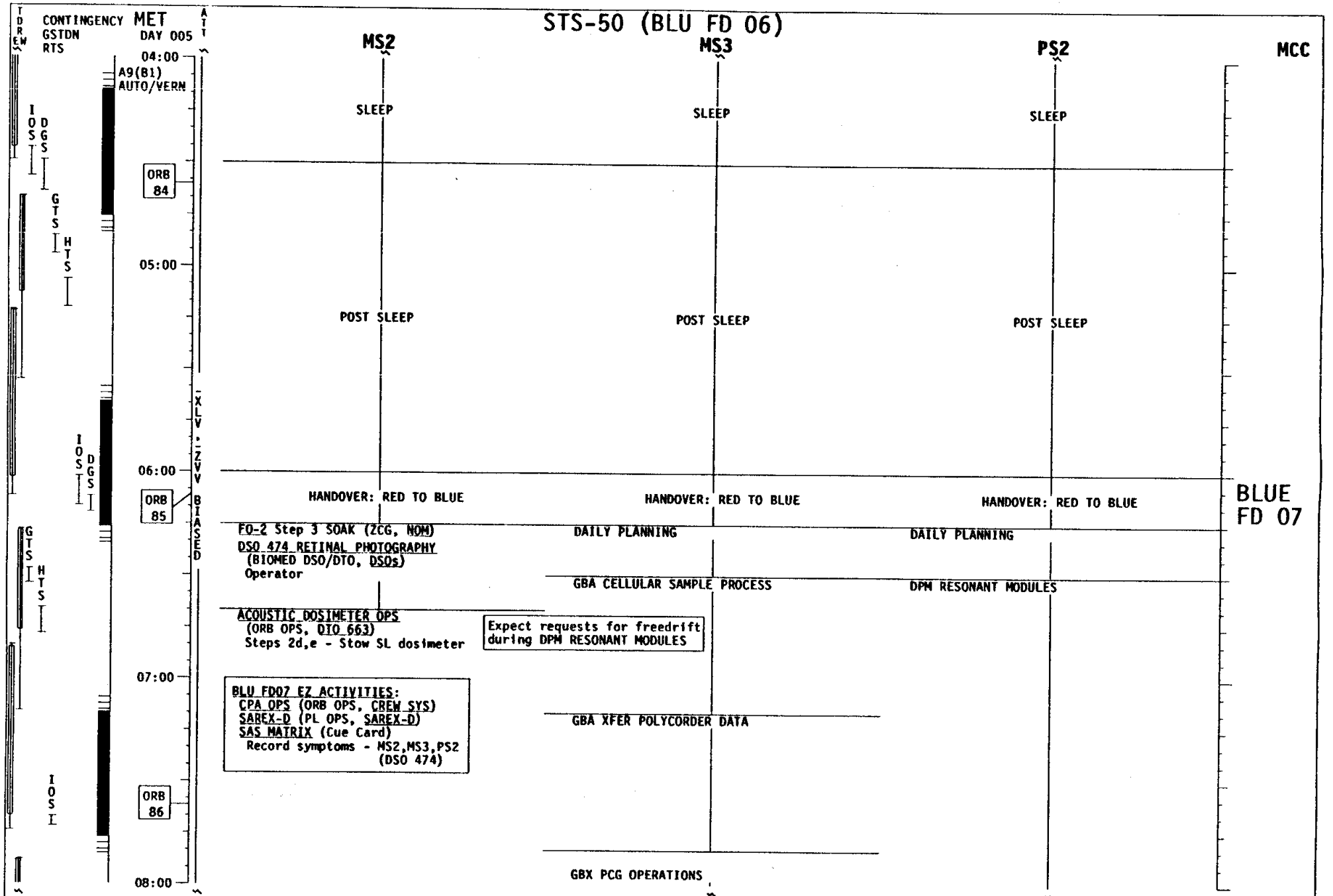
MCC

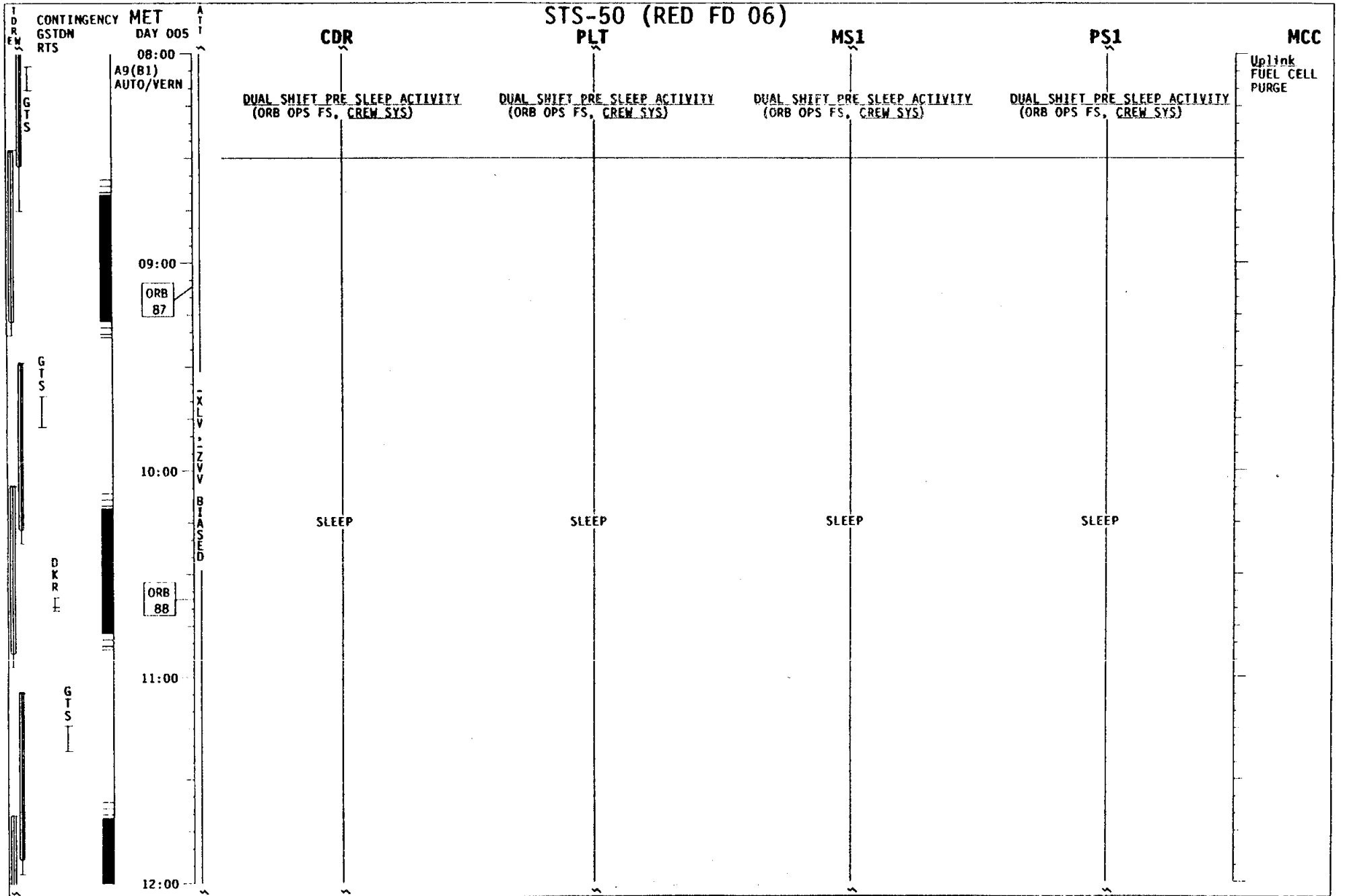
SLEEP

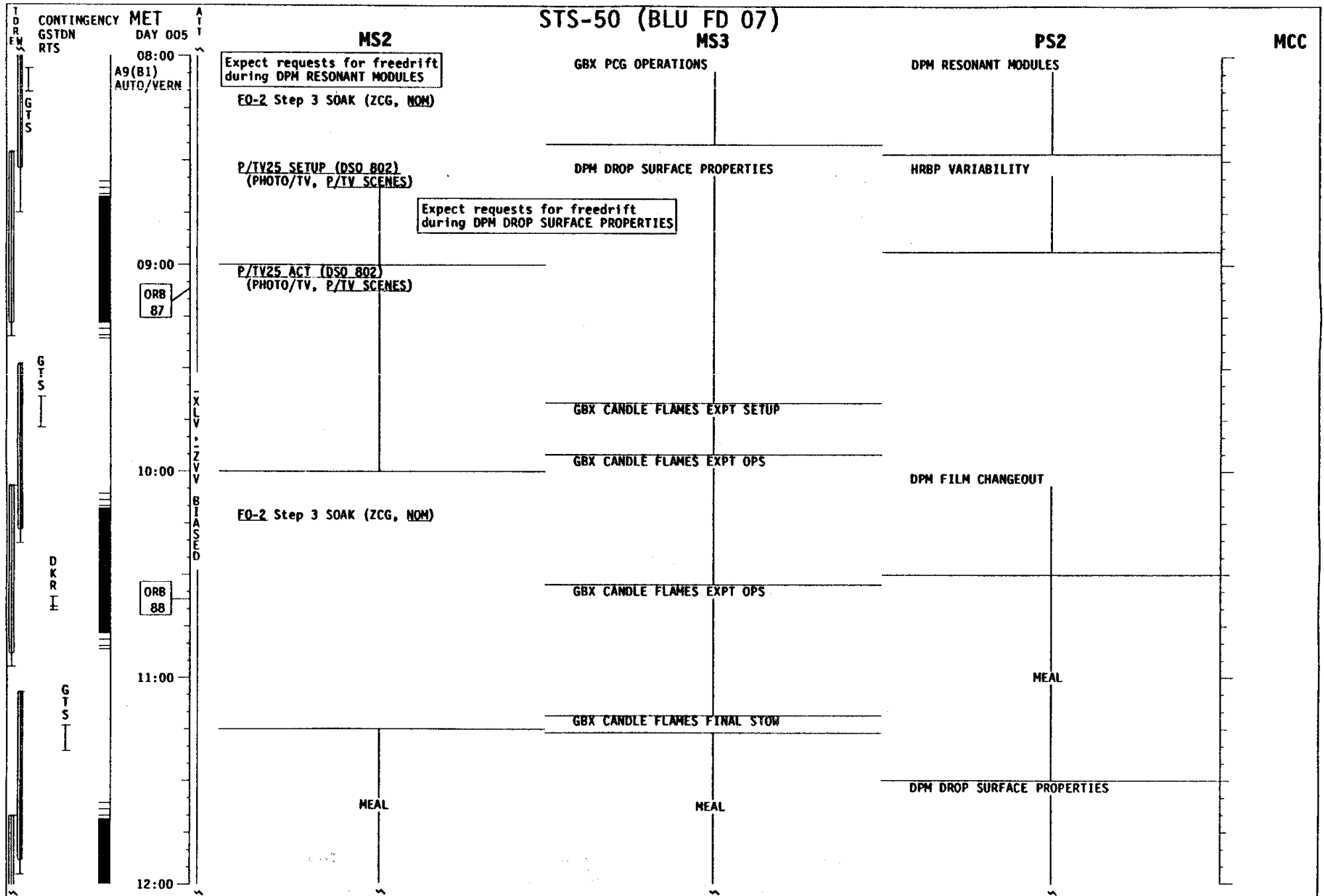
SLEEP

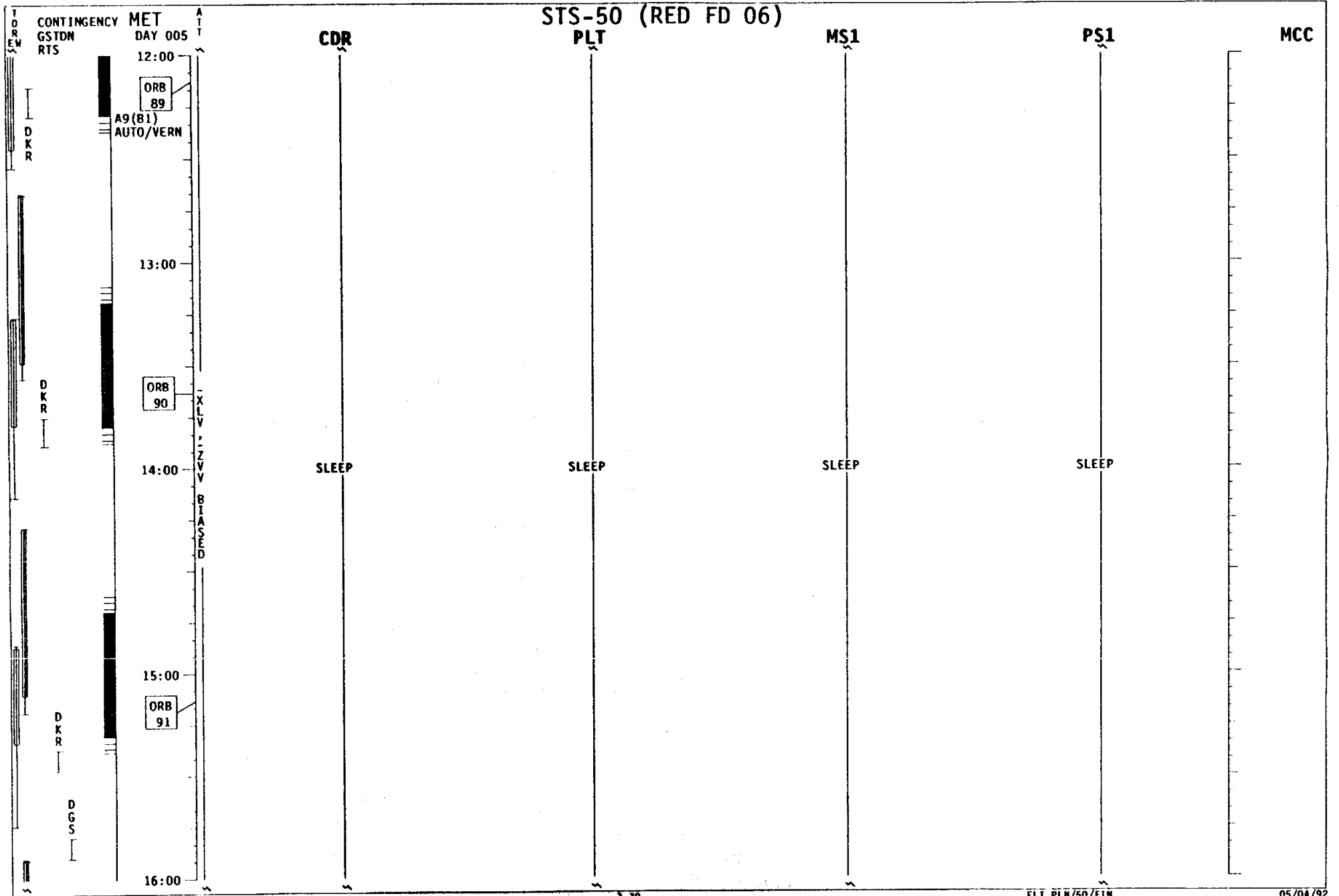
SLEEP



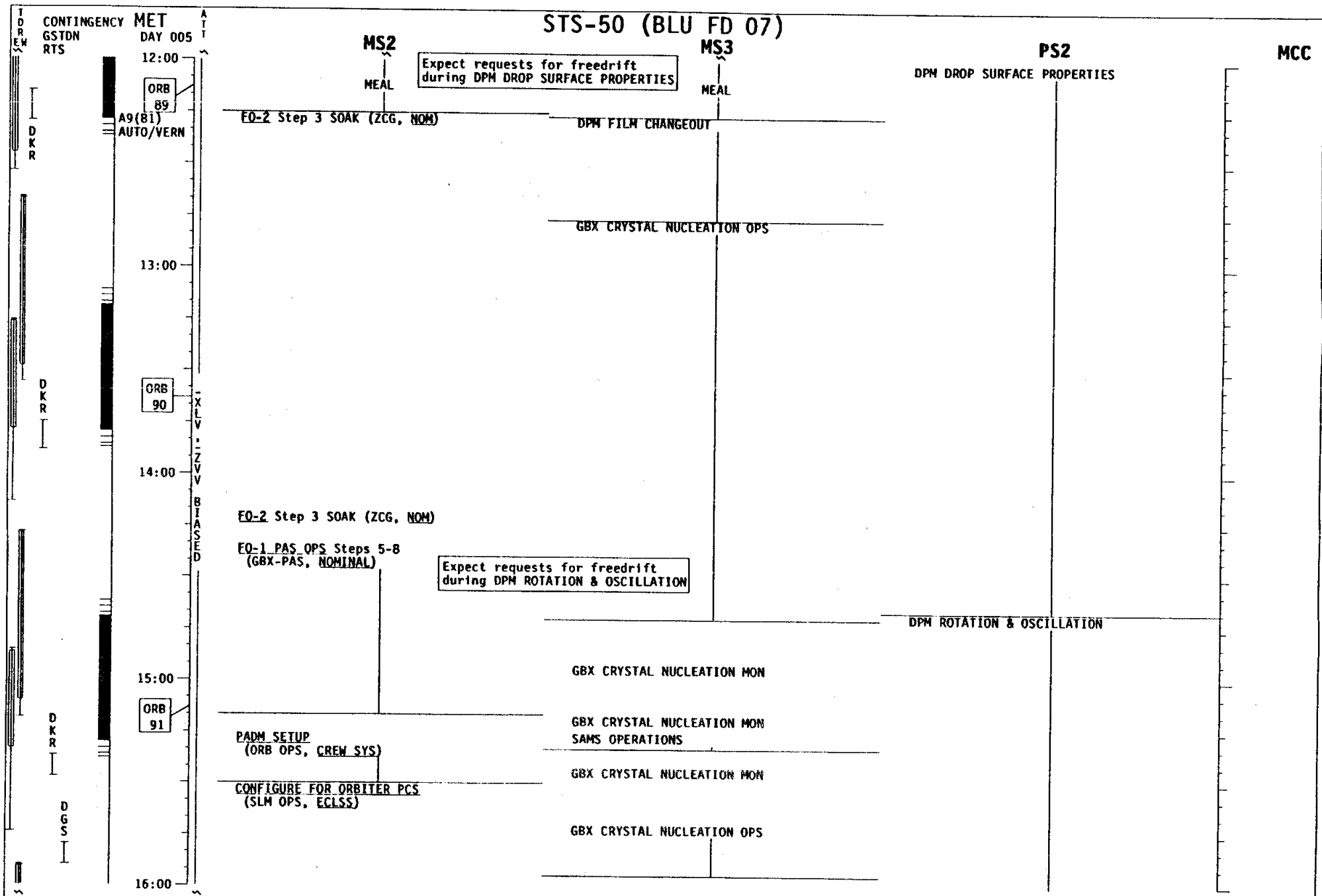




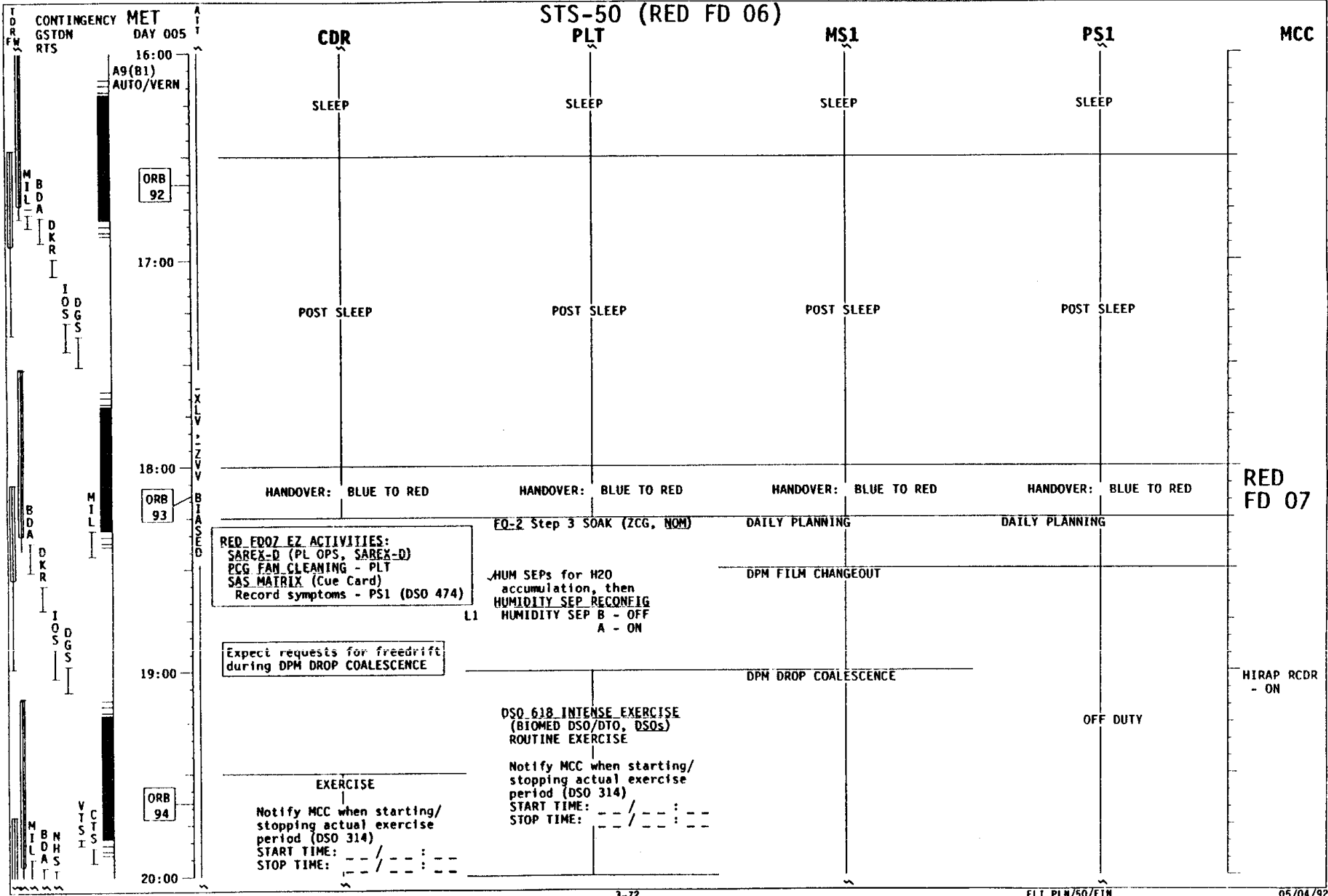


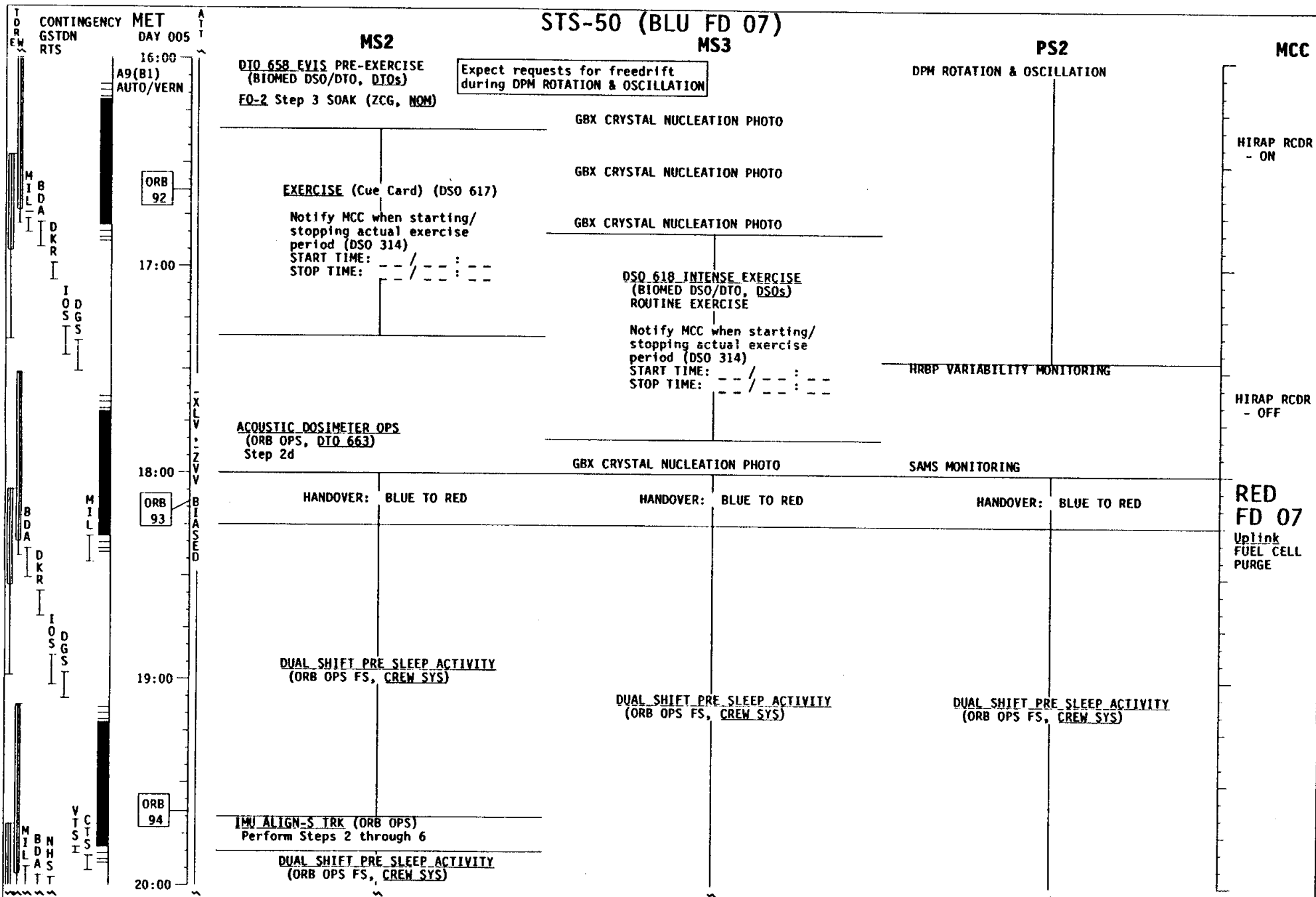


STS-50 (BLU FD 07)

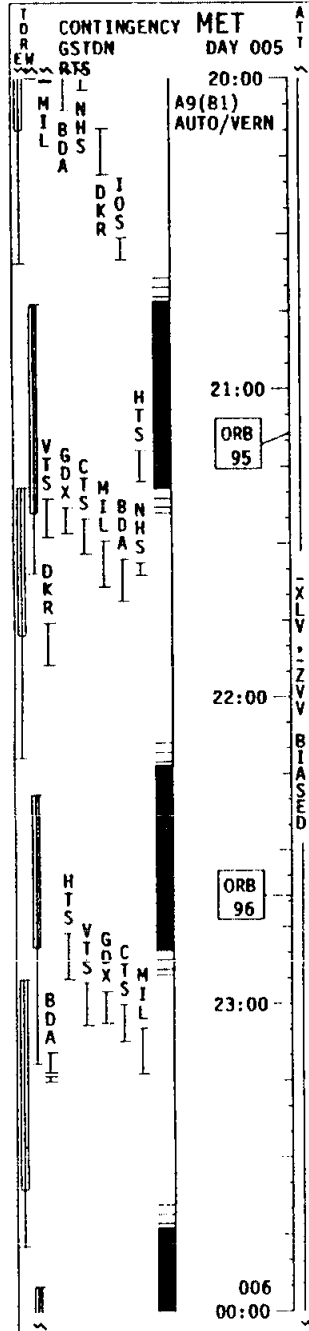


STS-50 (RED FD 06)





STS-50 (RED FD 07)



CDR

EXERCISE

Notify MCC when starting/
stopping actual exercise
period (DSO 314)
START TIME: -- / -- : --
STOP TIME: -- / -- : --

Expect requests for freedrift
during DPM DROP COALESCENCE

EQ-2 Step 3 SOAK (ZCG, NOM)

DTO 658 EVIS POST-EXERCISE
(BIOMED DSO/DTO, DTQs)

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

SAREX VOICE SETUP & OPS
(PL OPS, SAREX-D)
LAPORTE, TX (21:27 - 21:35)

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

Expect requests for freedrift
during DPM RESONANT MODULES

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

FQ-2 Step 3 SOAK (ZCG, NOM)
HEATER RECONFIG-Config B
(ORB OPS, EPS)

SAREX VOICE SETUP & FSTV SETUP
SAREX VOICE OPS & FSTV RECEPTION
(PL OPS, SAREX-D)
VOICE: U.S. SCHOOL (22:47-23:10)
FSTV: CA, JSC, FL (22:57-23:14)

CO2 REM SYS CNTL 1(2) CONFIG
(ORB OPS, ECLS)

EXPERIMENT ACTIVATION (FO-1)
(ASC, NOMINAL)

MS1

DPM DROP COALESCENCE

GBX CRYSTAL NUCLEATION PHOTO
DPM RESONANT MODULES

GBX CRYSTAL NUCLEATION PHOTO

PS1

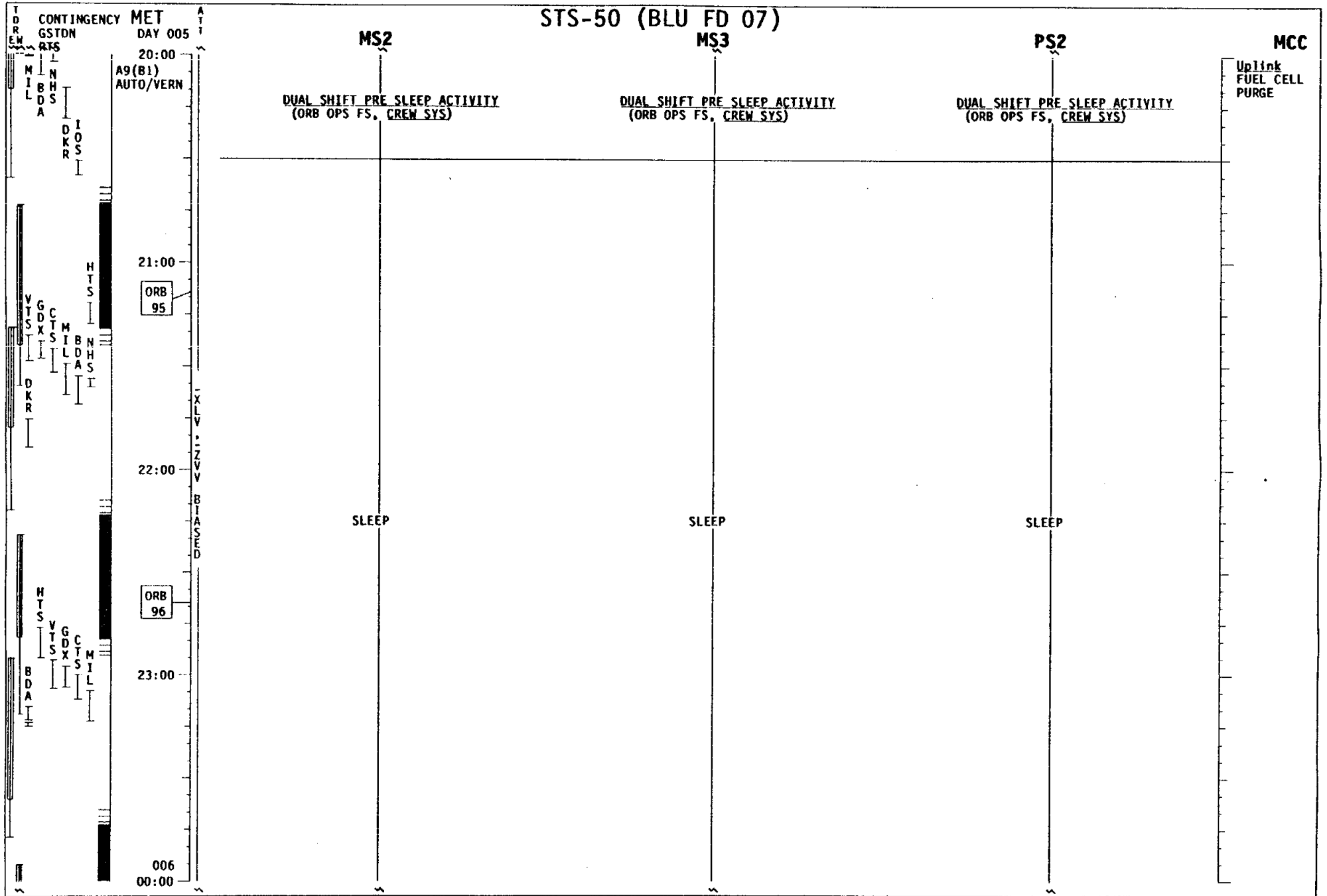
OFF DUTY

MEAL

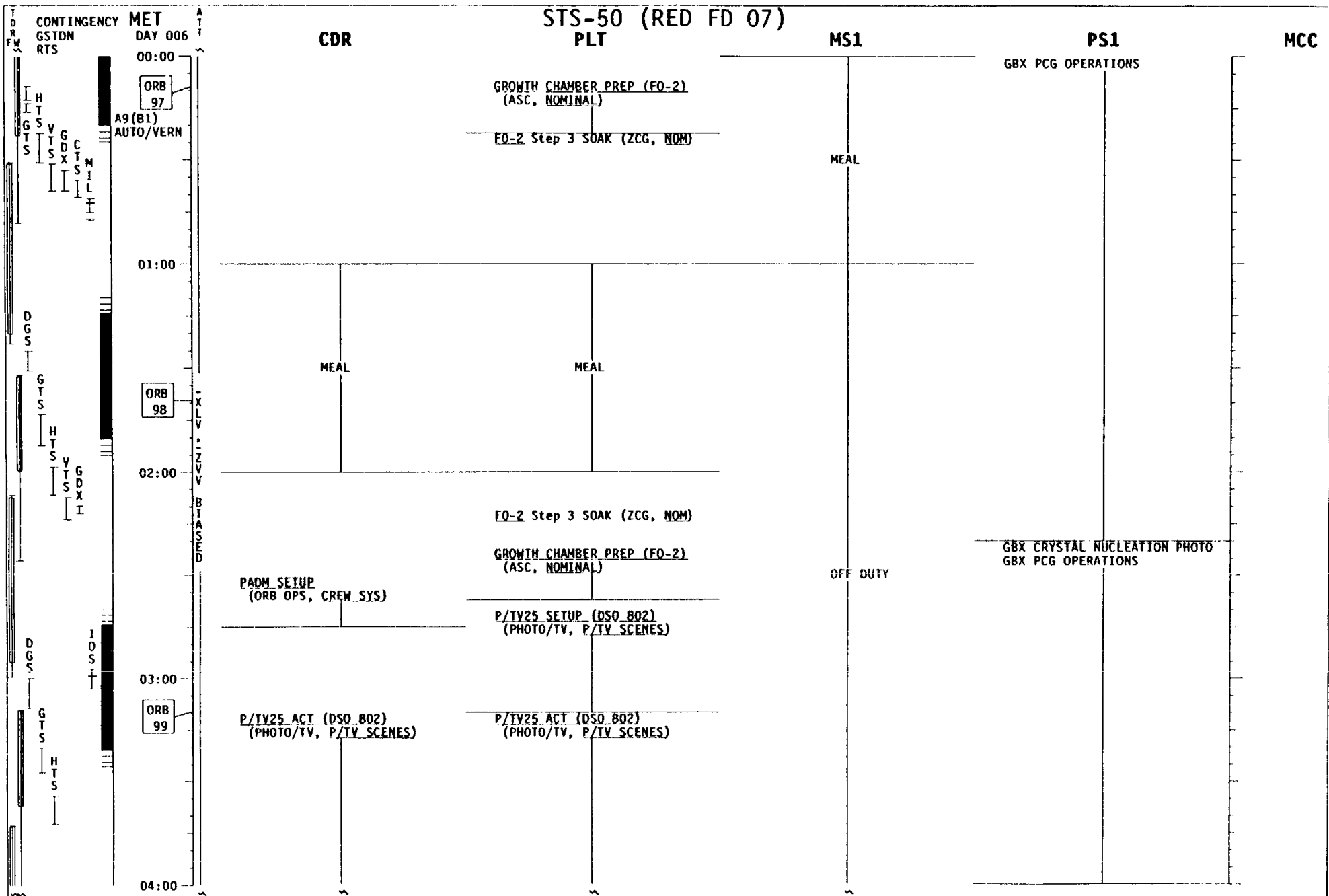
TVO4 (PL CREW ACTIVITIES)
GBX PCG OPERATIONS

MCC

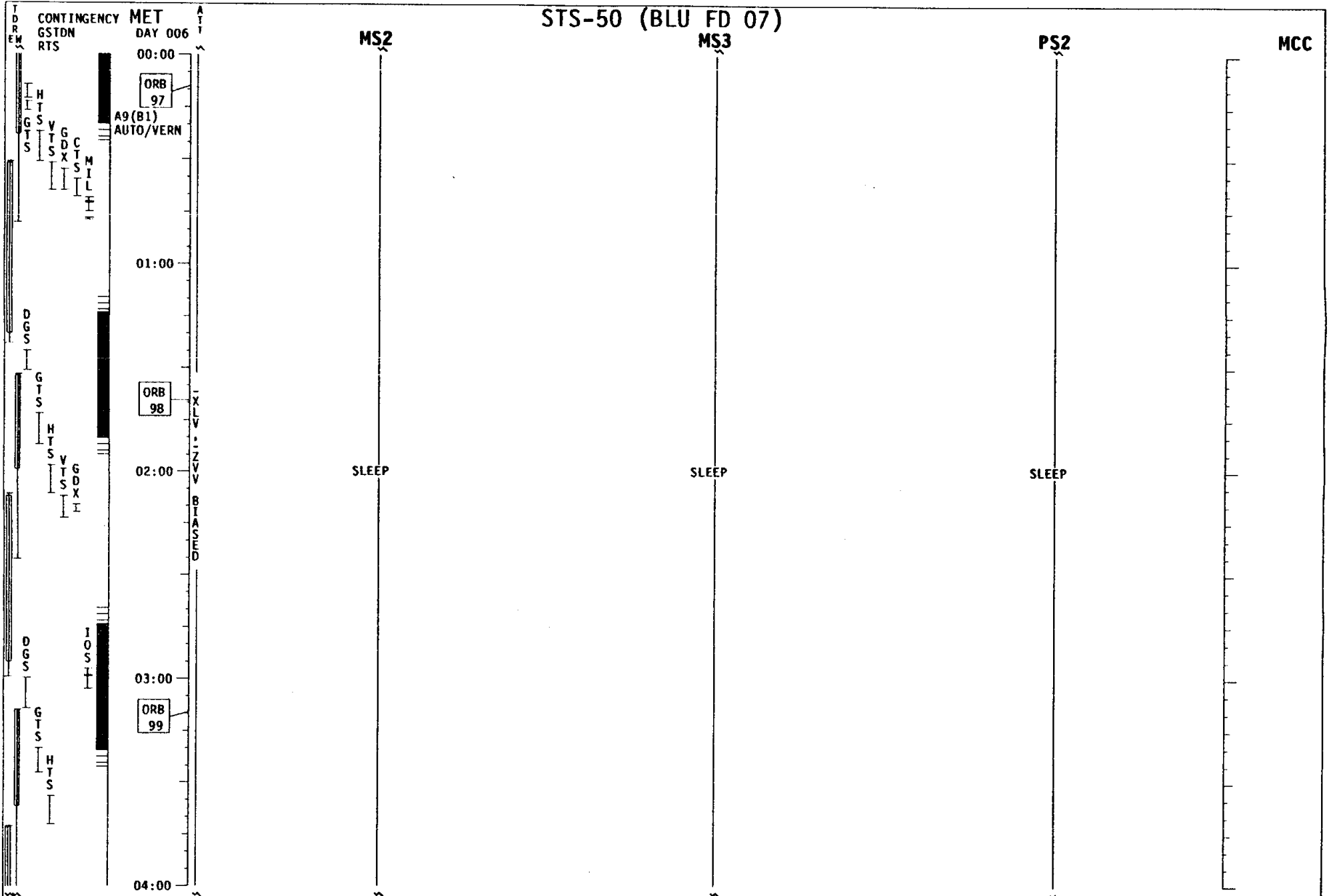
HIRAP RDCR
- OFF

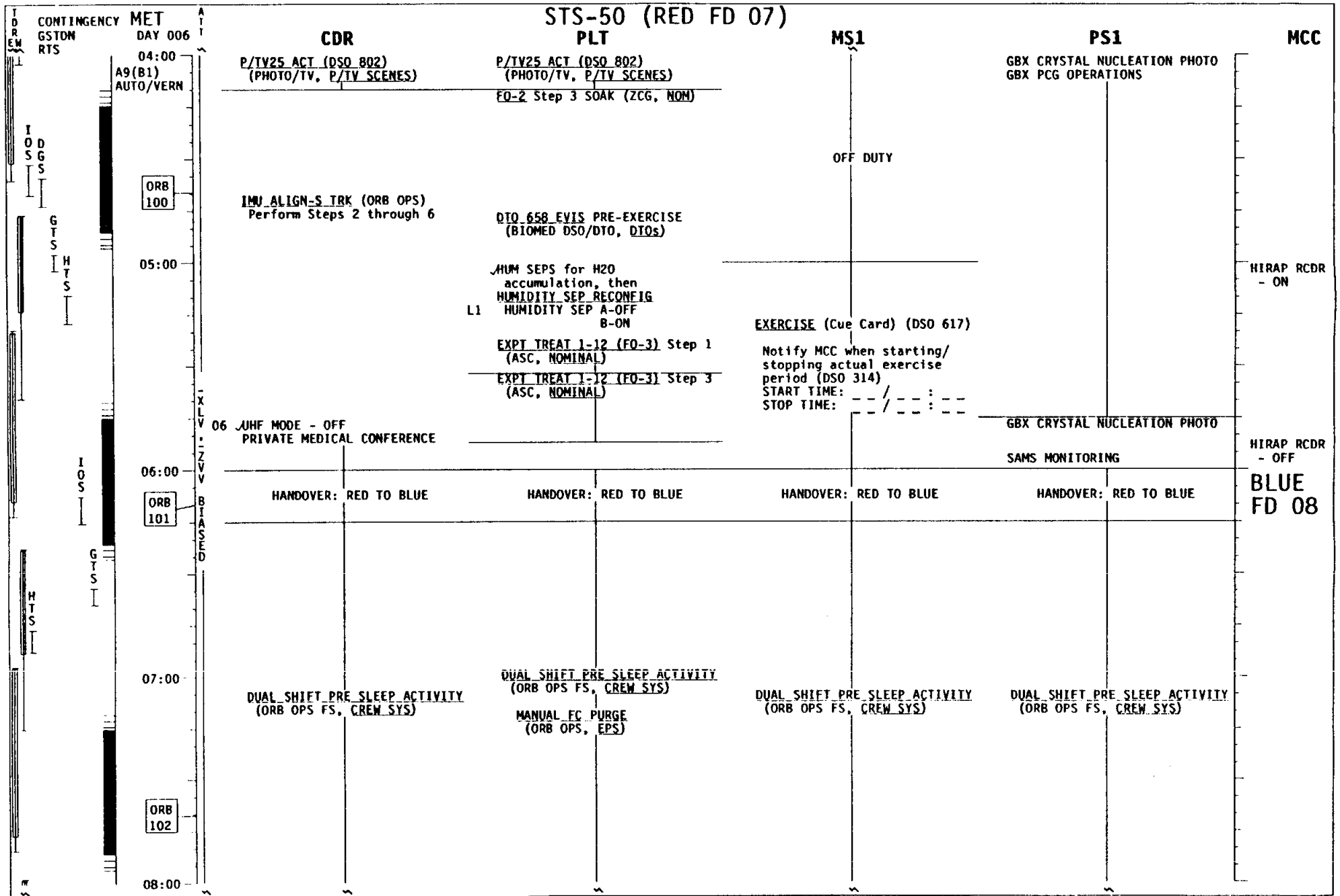


STS-50 (RED FD 07)

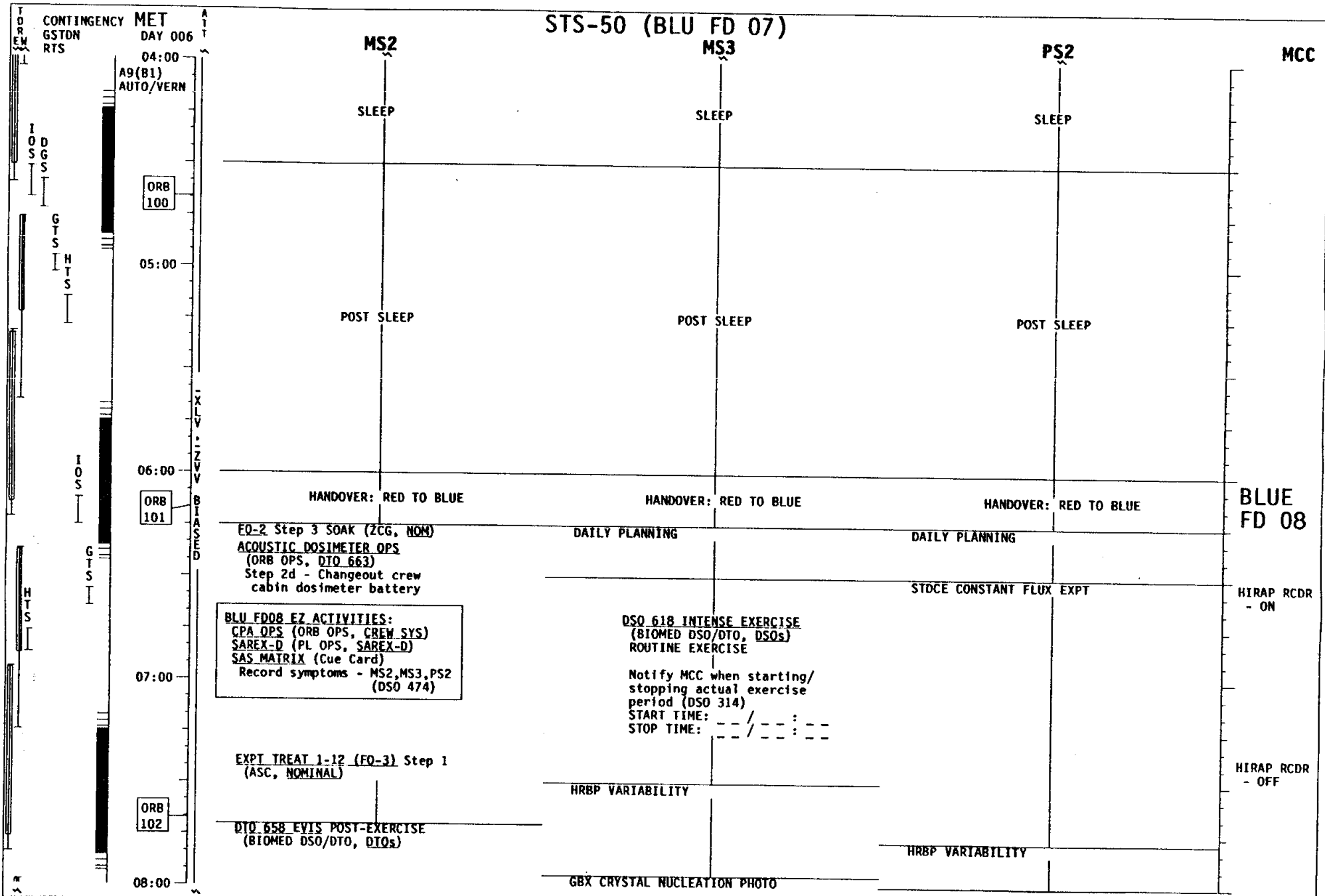


STS-50 (BLU FD 07)

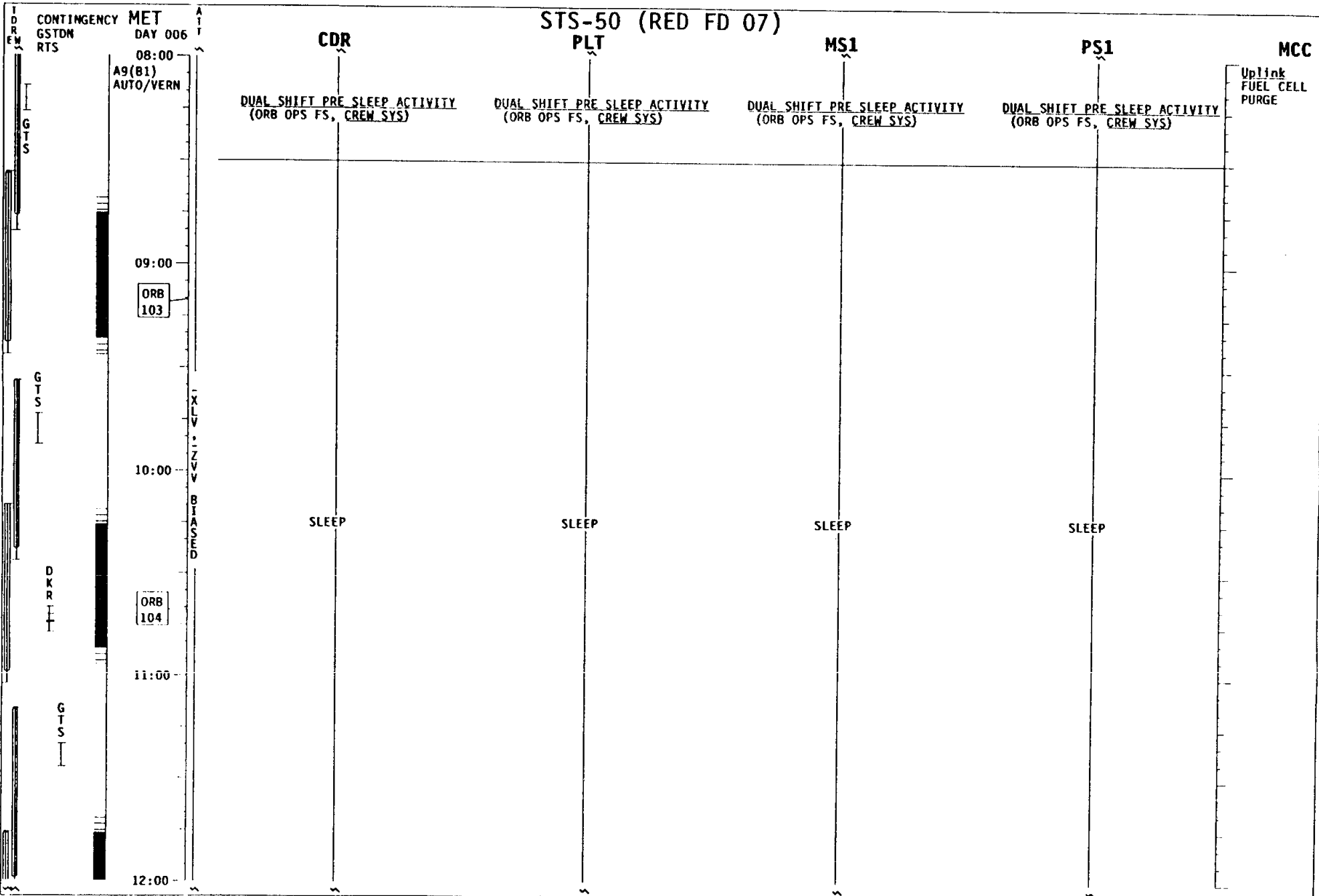


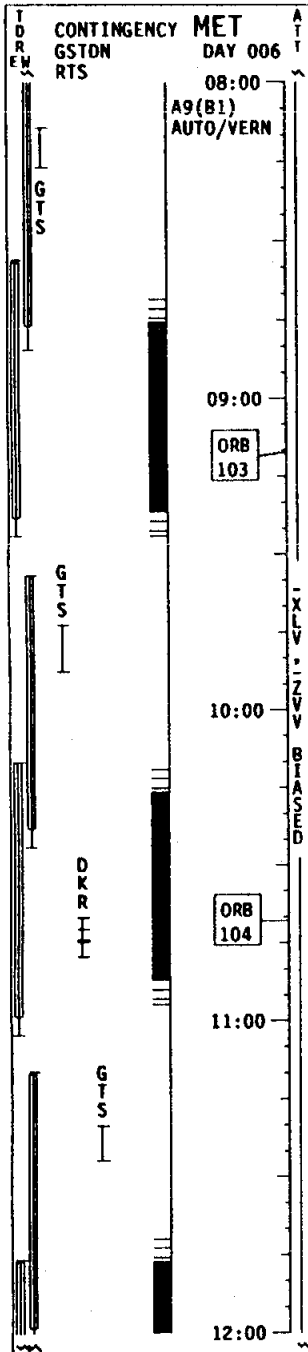


STS-50 (BLU FD 07)



STS-50 (RED FD 07)





MS2
 EO-2 Step 3 SOAK (ZCG, NOM)
 ACOUSTIC SLM OPS
 (ORB OPS, DTG 665)
 1 ft in front of L4S:
 STDCE water pump on (08:15)
 Between L1H and L2H:
 Nom ops/MPE fluid loop/STDCE (08:19)

Expect requests for freedrift during STDCE CONSTANT FLUX EXPT

STS-50 (BLU FD 08)
MS3
 GBX CRYSTAL NUCLEATION PHOTO
 TV06 (STDCE)
 GBX WIRE INSUL FLAMMABILITY

PS2
 STDCE CONSTANT FLUX EXPT

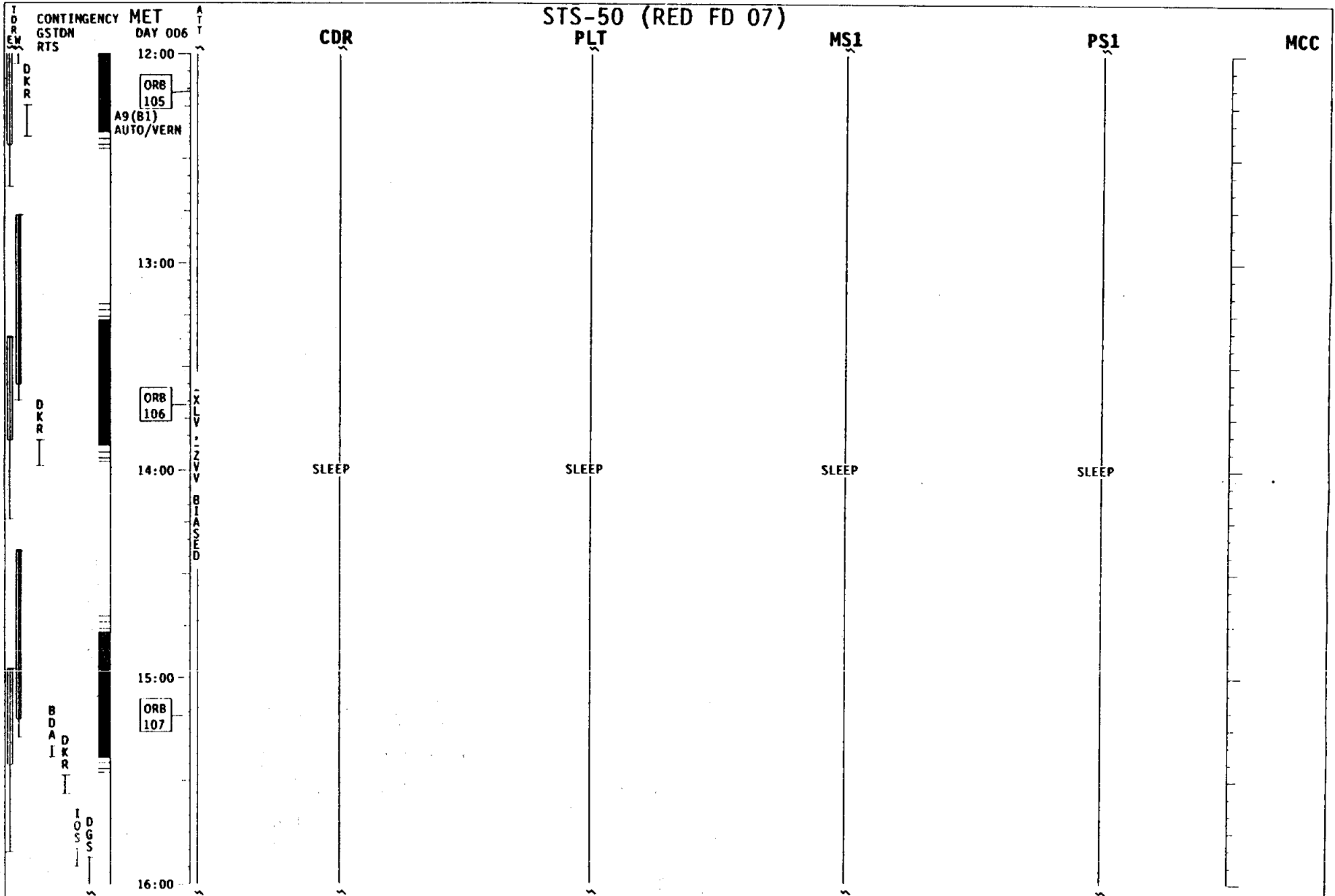
MEAL

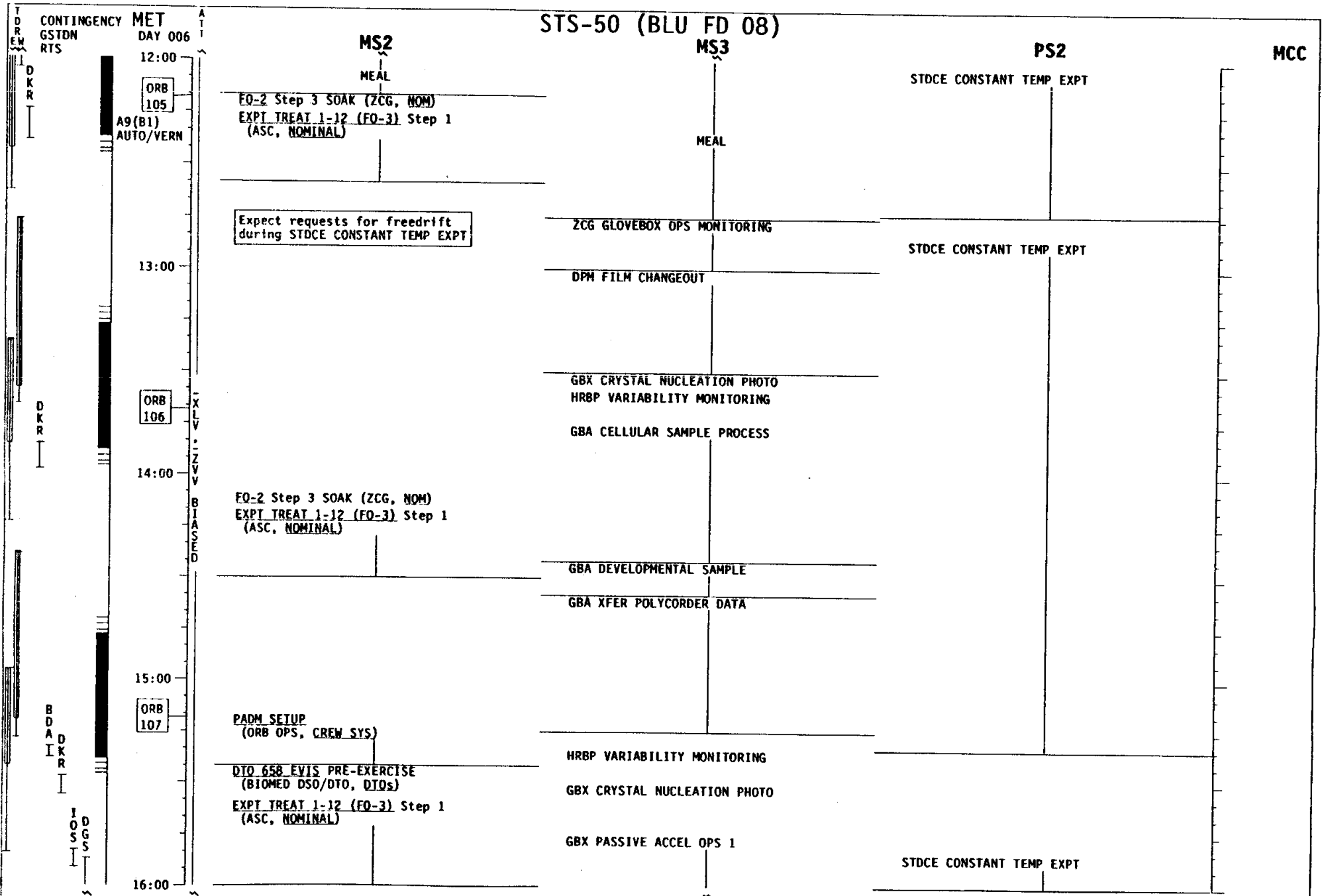
GBX CRYSTAL NUCLEATION PHOTO

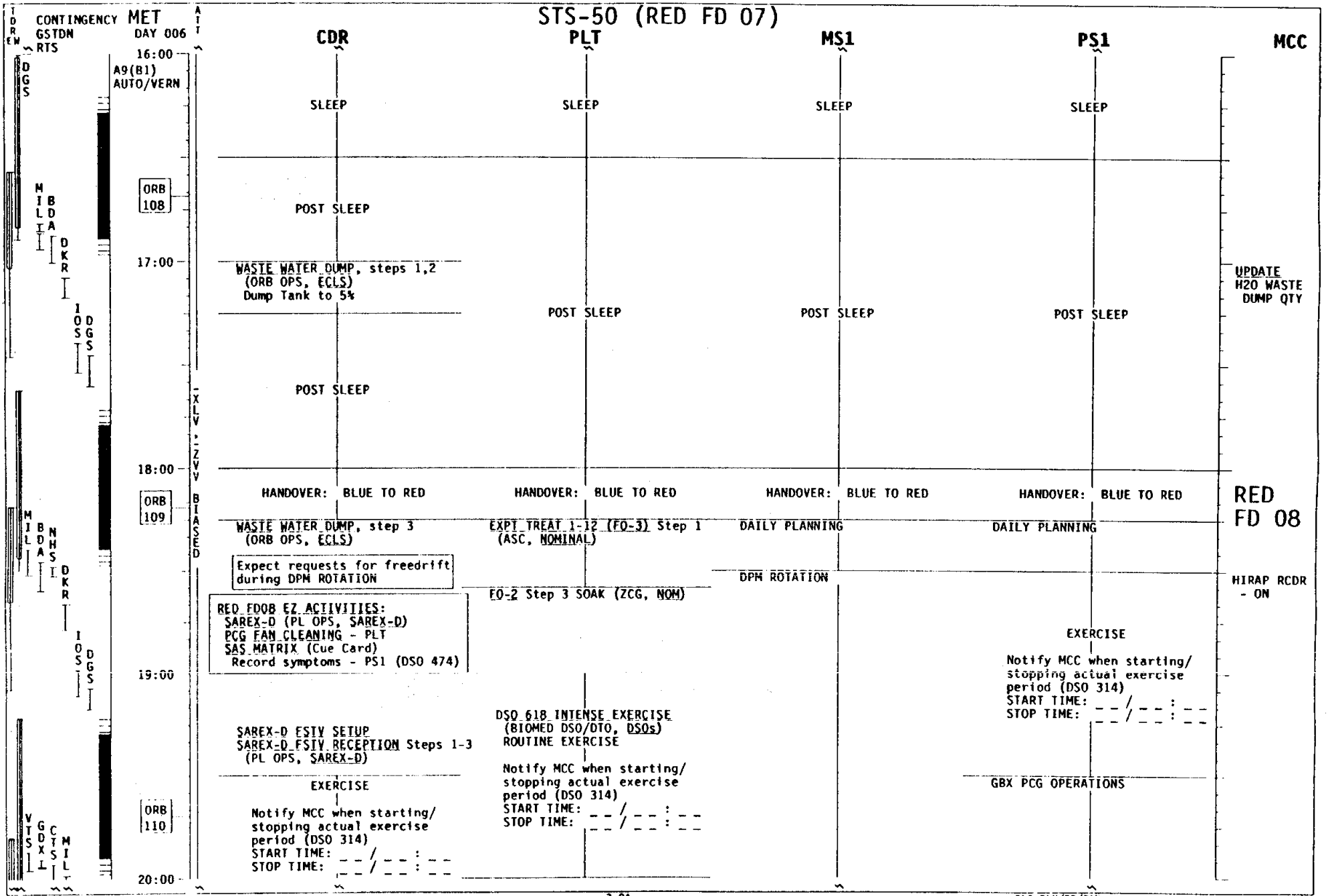
STDCE CONSTANT FLUX EXPT

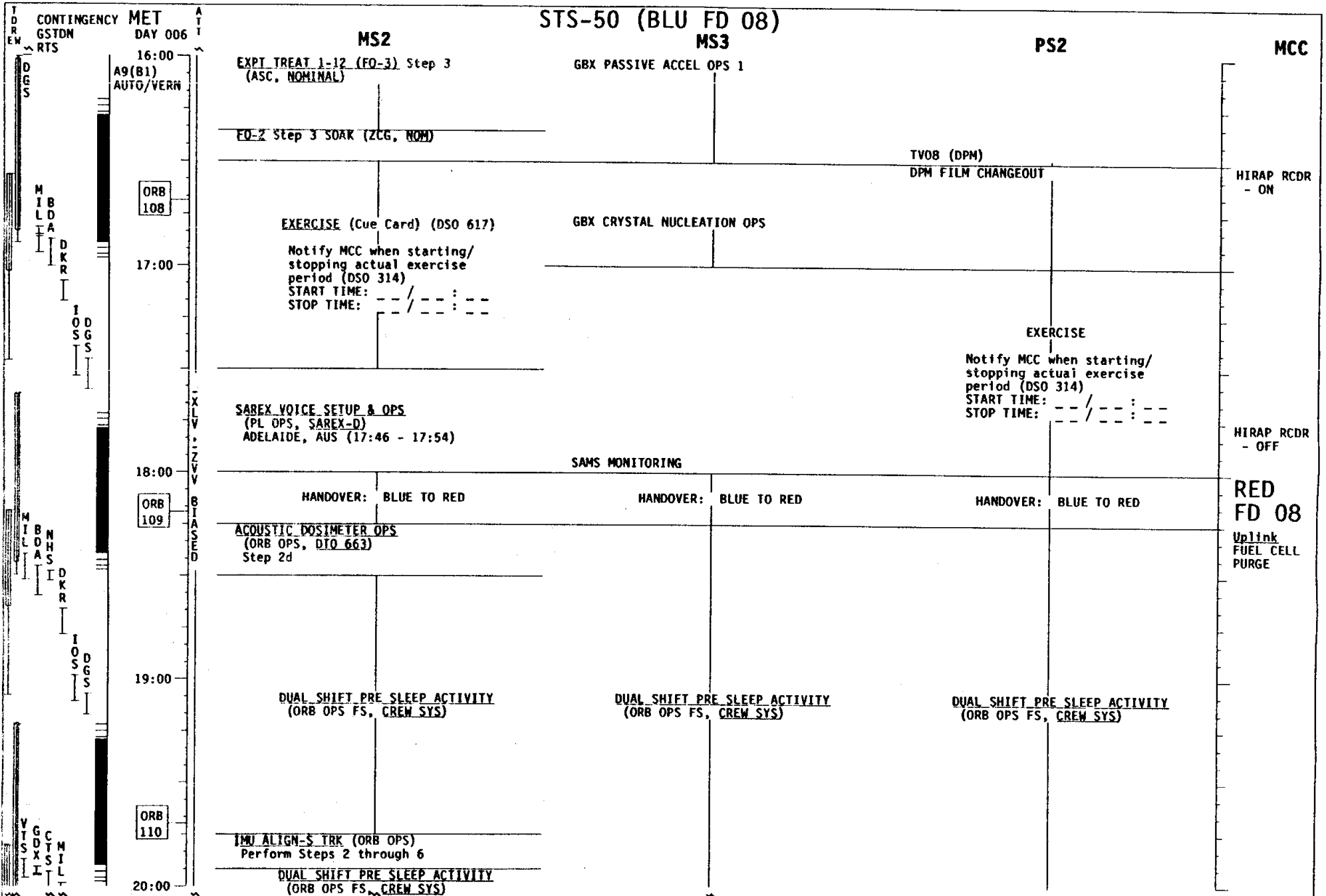
MCC

STS-50 (RED FD 07)









CONTINGENCY MET
GSTDN DAY 006
A9(B1)
AUTO/VERN

20:00

21:00

22:00

23:00

007
00:00

DR EM
U1
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NR
R
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NH
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B
DS
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HTS
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C
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B
D
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HTS
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C
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STS-50 (RED FD 08)

CDR

EXERCISE

Notify MCC when starting/
stopping actual exercise
period (DSO 314)
START TIME: -- / -- : --
STOP TIME: -- / -- : --

DTO 658 EVIS POST-EXERCISE
(BIOMED DSO/DTO, DTQs)

Expect requests for freedrift
during DPM ROTATION

21:00

ORB
111

22:00

ORB
112

23:00

007
00:00

PLT

SAREX FSTV SETUP & RECEPTION
(PL OPS, SAREX-D)
IL, GSFC (20:00 - 20:08)
EQ-2 Step 3 SOAK (ZCG, NOM)

EXPT TREAT 1-12 (FO-3) Step 1
(ASC, NOMINAL)

P/TV16 (ASC)
(PHOTO/TV, P/TV SCENES)
Camcorder setup & act

EXPT TREAT 1-12 (FO-3) Step 1
(ASC, NOMINAL)

EXPT TREAT 1-12 (FO-3) Step 3
(ASC, NOMINAL)

EQ-2 Step 3 SOAK (ZCG, NOM)

P/TV12 (SSCE)
(TV/PHOTO, SL P/TV SCENES)
16mm photography

Expect requests for freedrift
during SSCE EXPT PROCESSING

ACOUSTIC SLM OPS
(ORB OPS, DTO 665)
Between R8Q and R9Q:
SSCE film camr max speed (22:33)

SAREX VOICE SETUP & OPS
(PL OPS, SAREX-D)
U.S. SCHOOL
(22:53 - 23:16)

MS1

DPM ROTATION

TV12 (SSCE)
SSCE PAPER SAMPLE EXPT

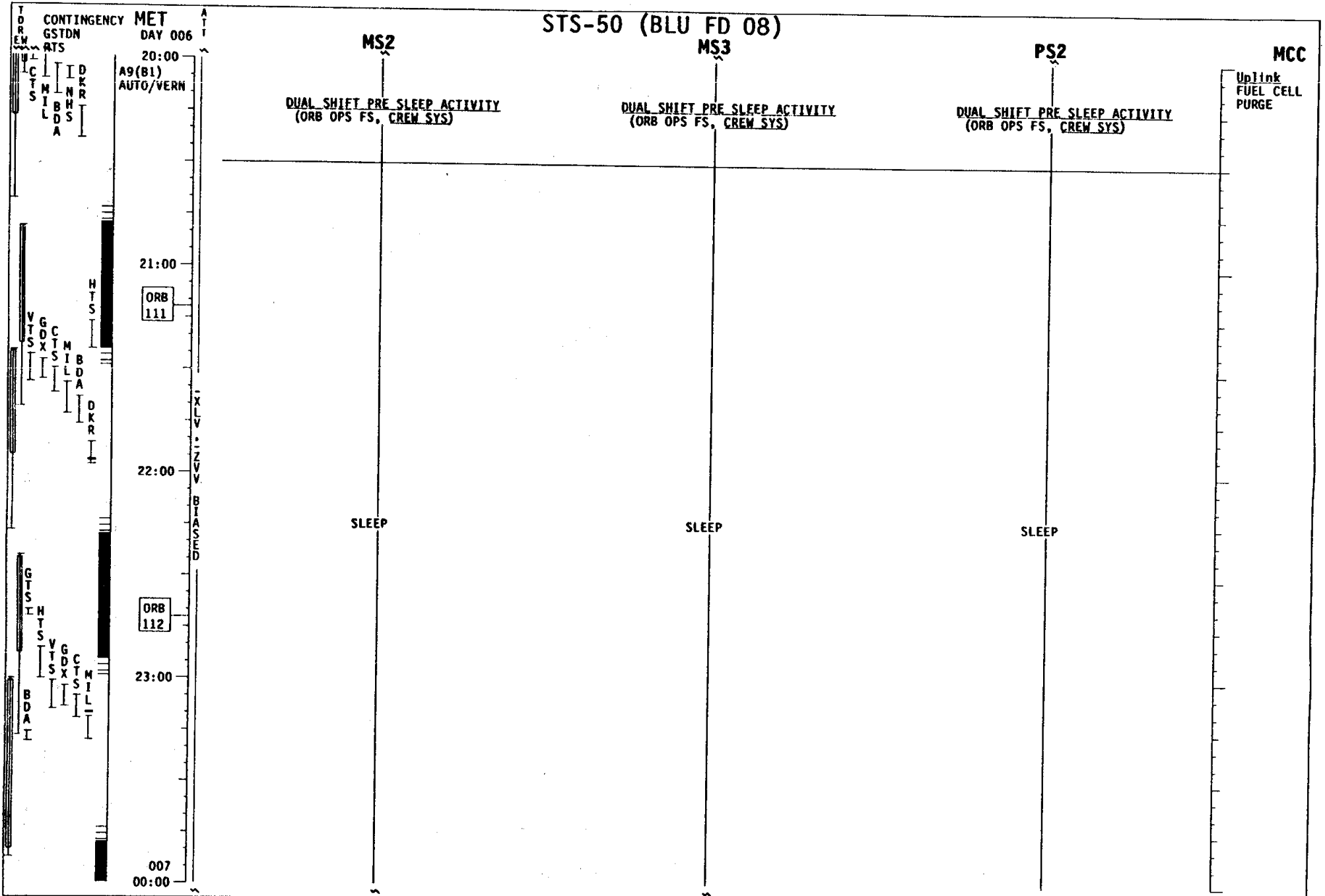
MEAL

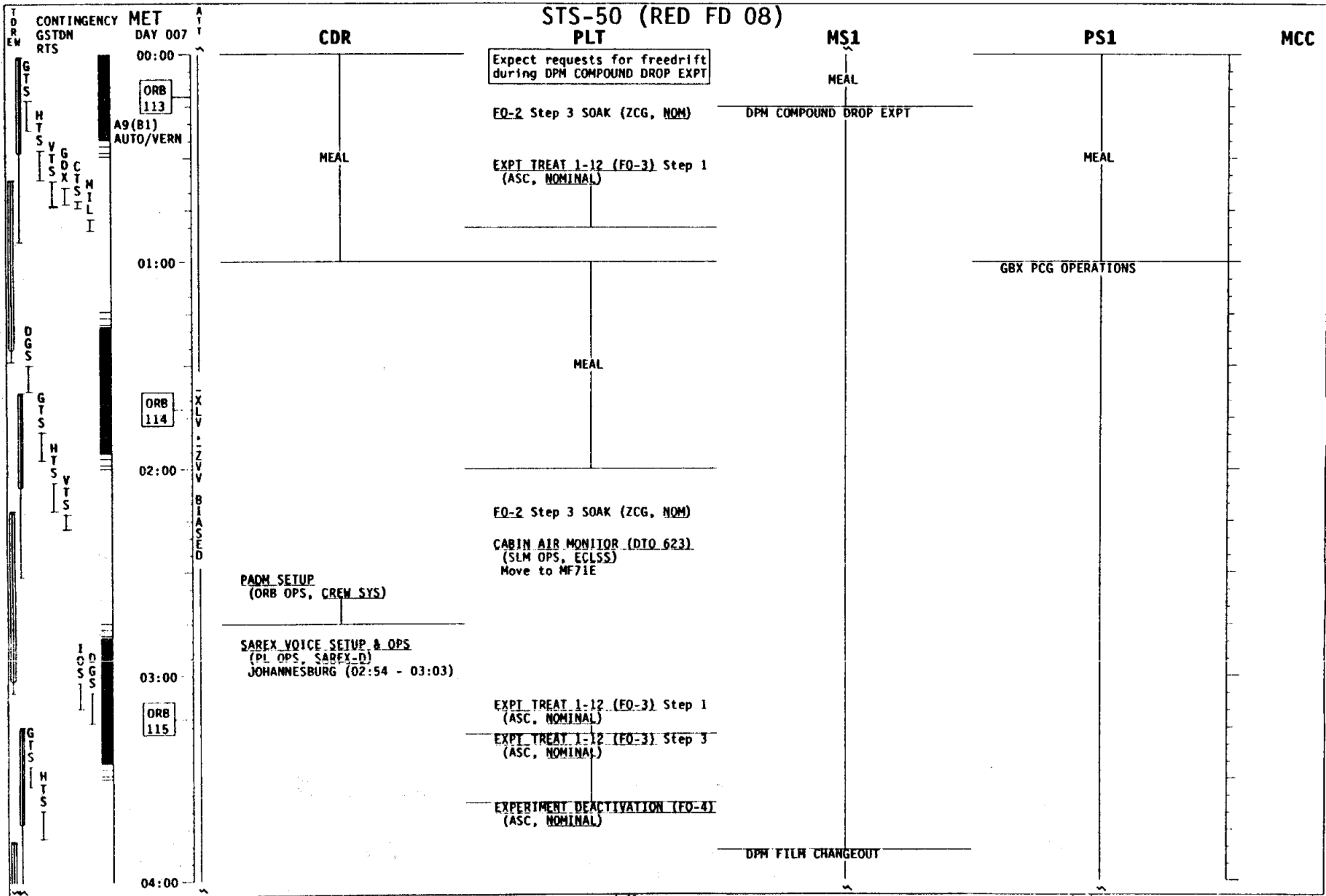
PS1

GBX PCG OPERATIONS

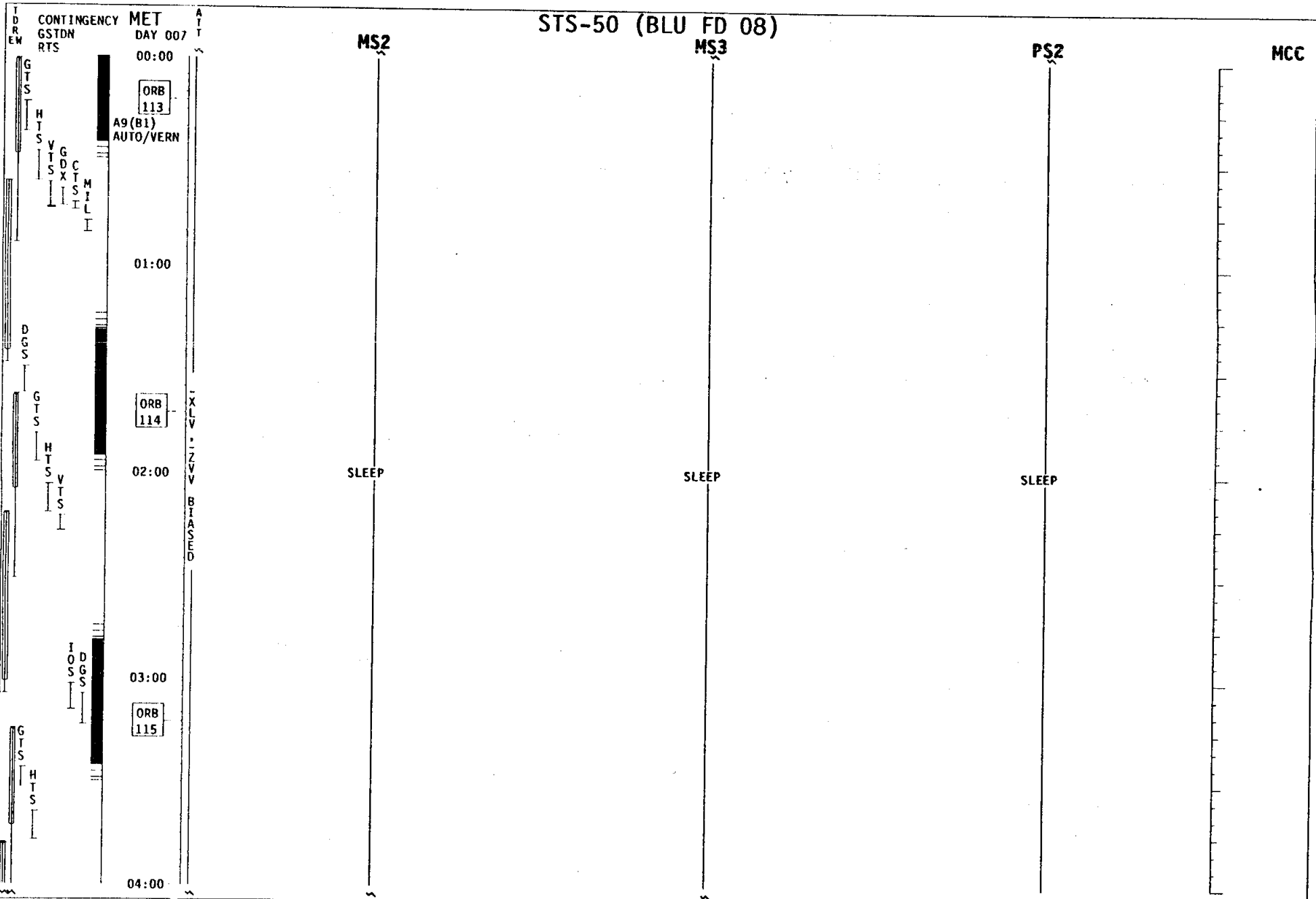
MCC

HIRAP RDCR
- OFF

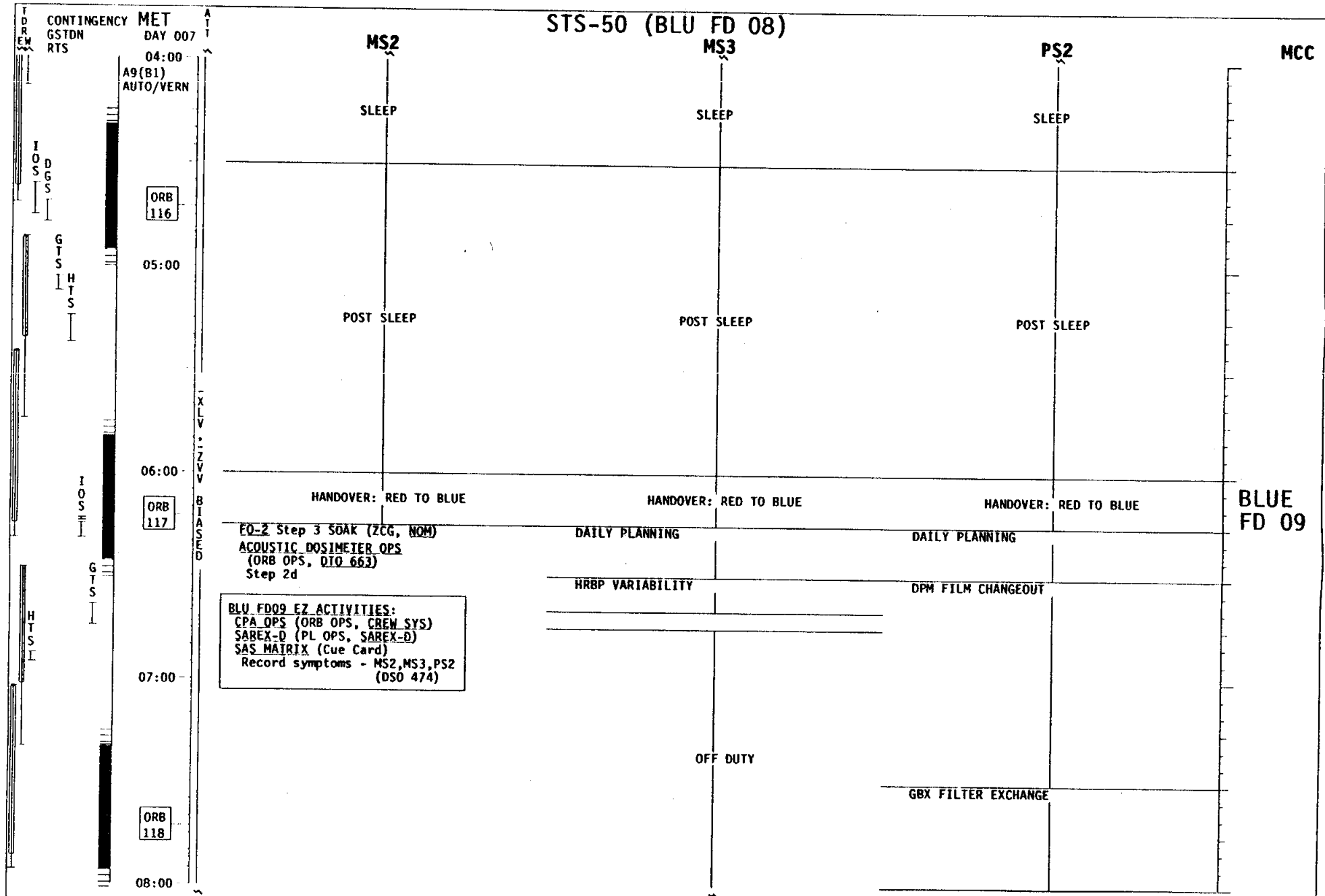


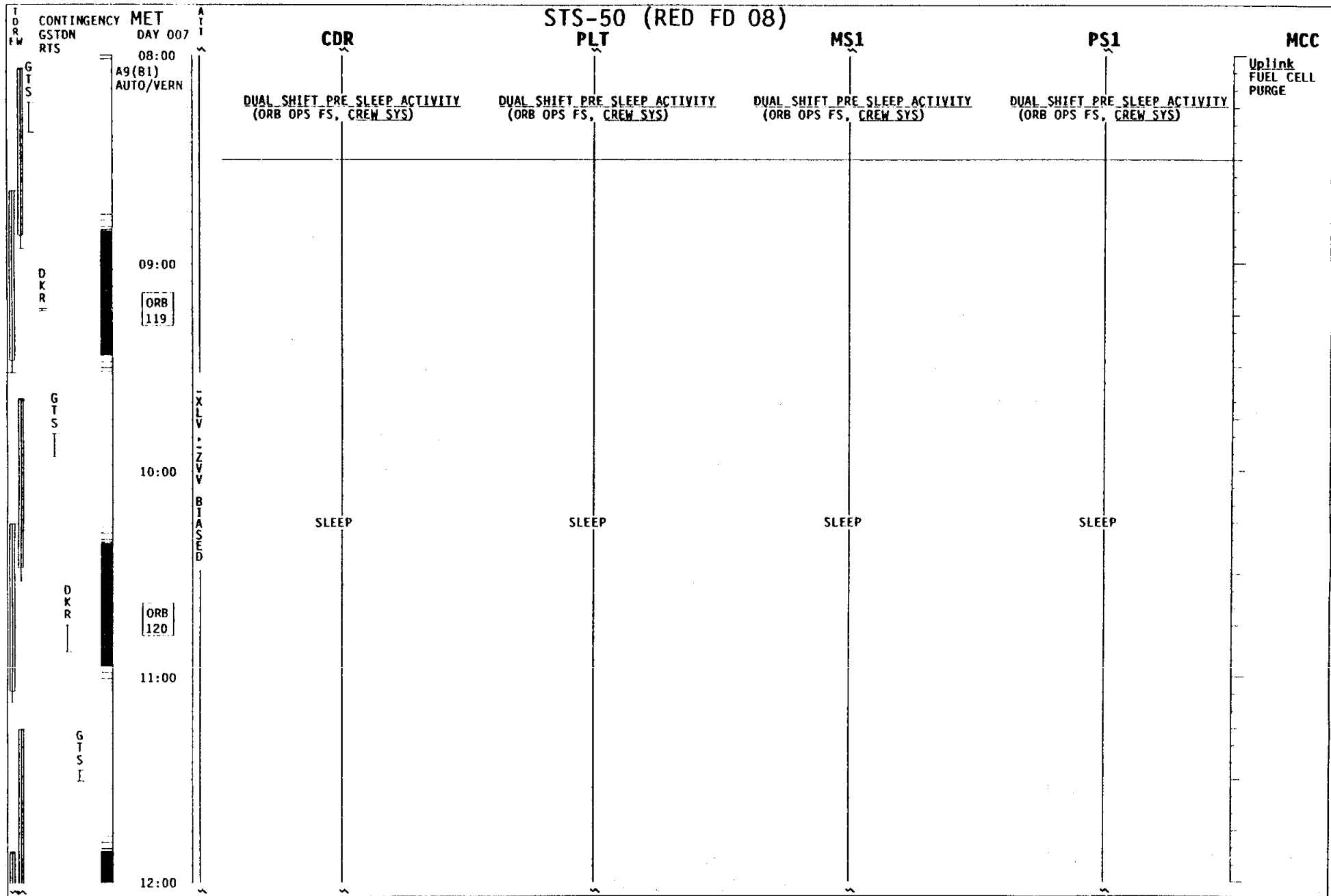


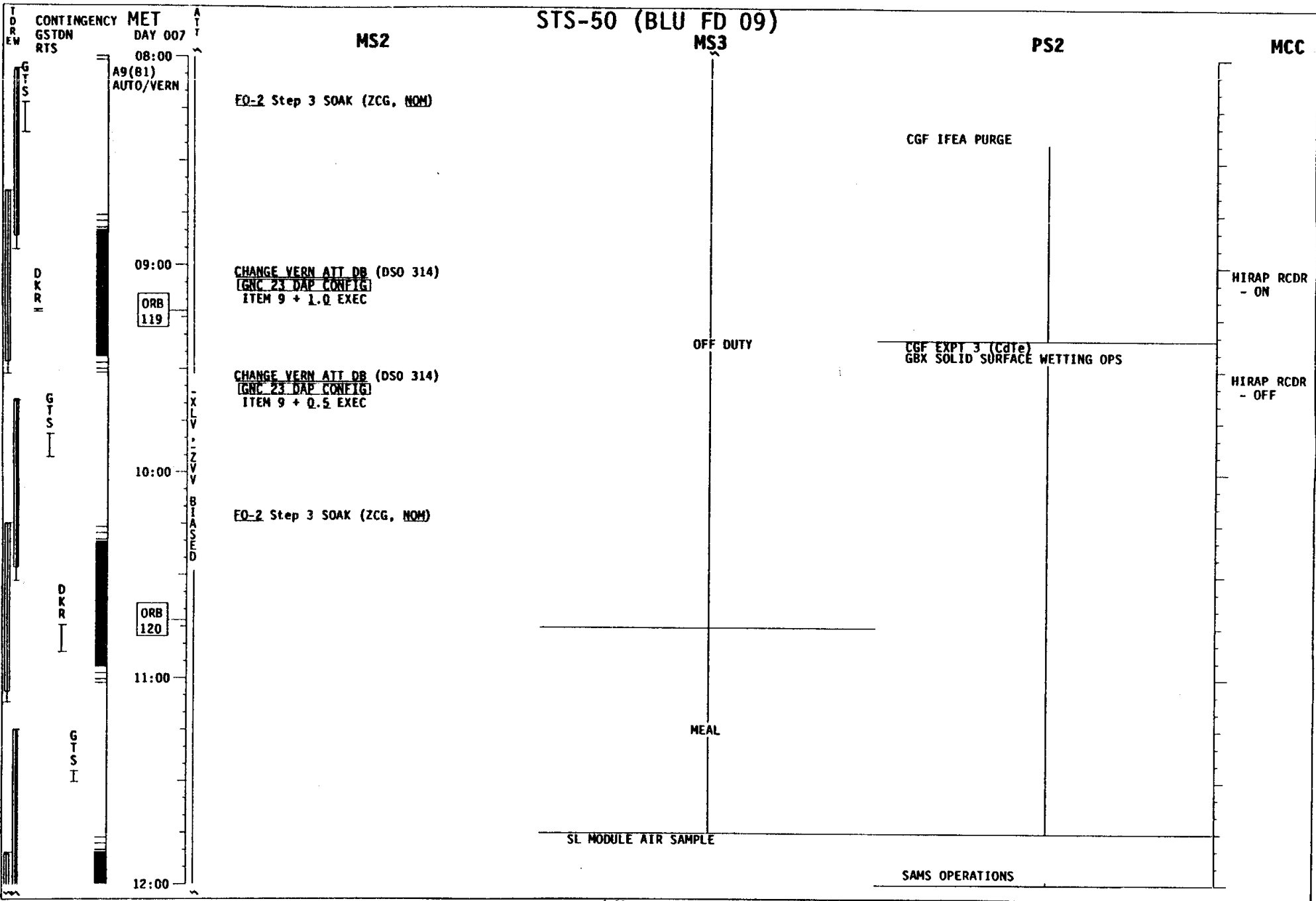
STS-50 (BLU FD 08)

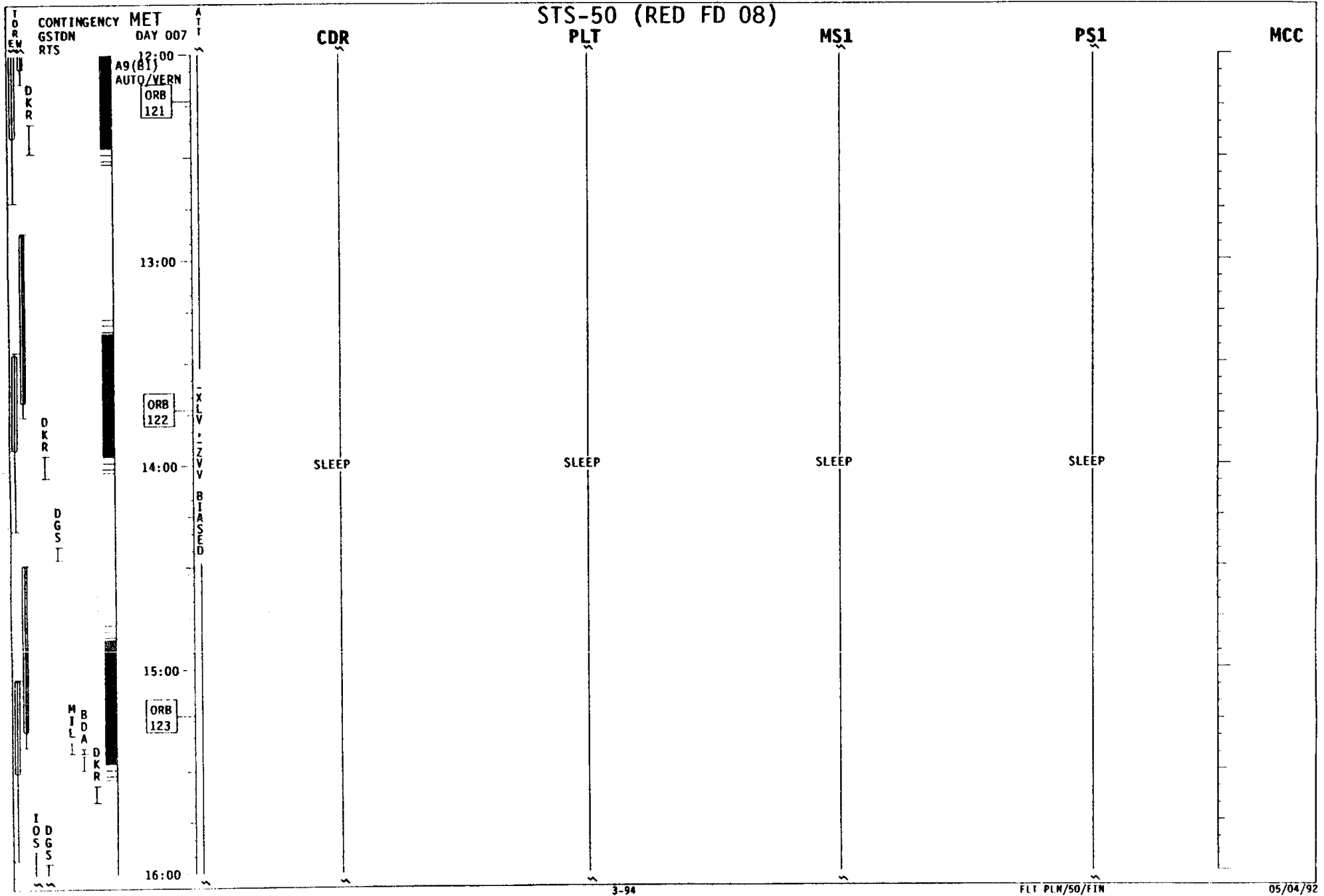


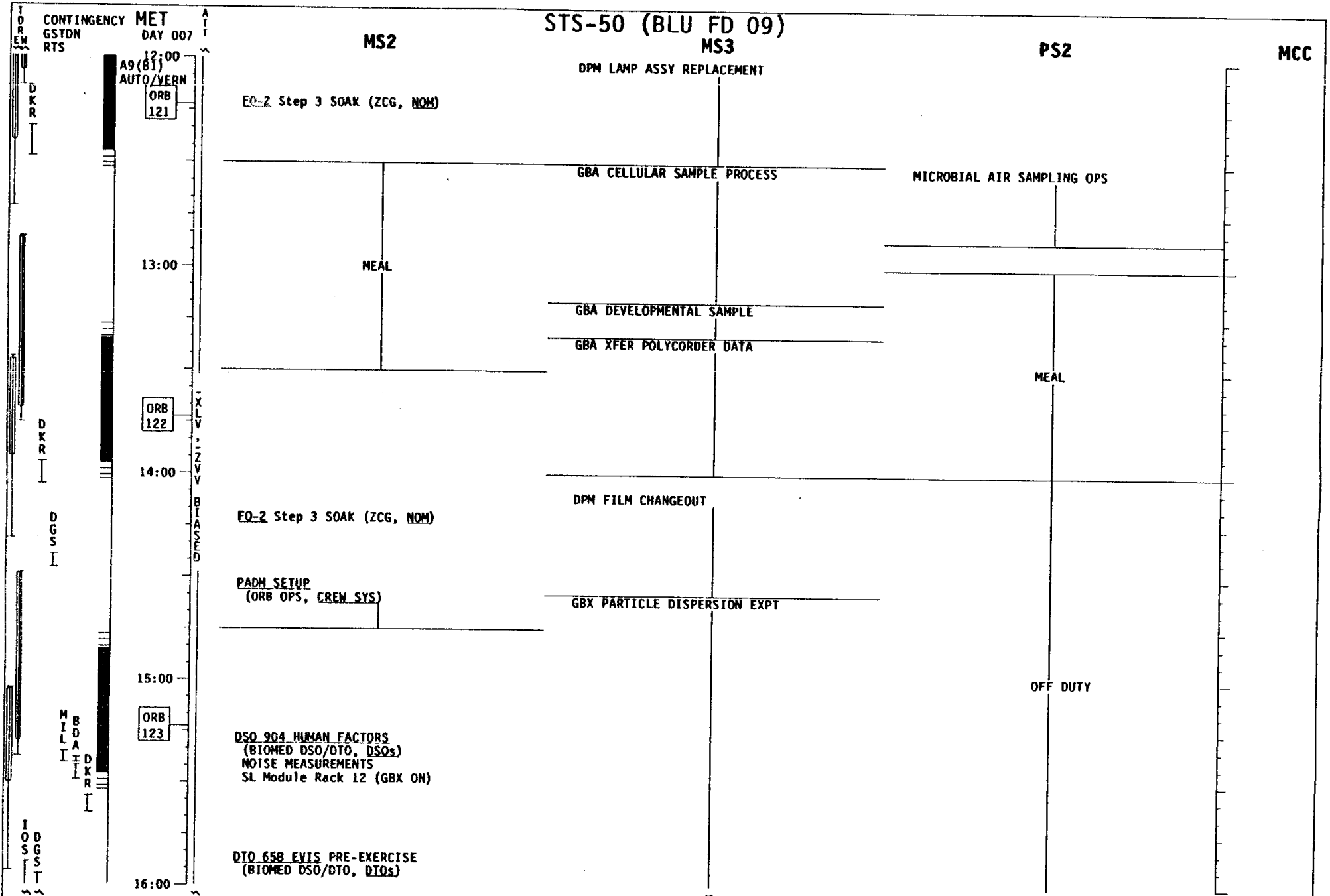
CONTINGENCY MET		STS-50 (RED FD 08)				MCC
GSTDN DAY 007		CDR	PLT	MS1	PS1	
RTS				DPH FILM CHANGEOUT	GBX PCG OPERATIONS	
04:00 A9(B1) AUTO/VERN			EO-2 Step 3 SOAK (ZCG, NOM)			
ORB 116		IMU ALIGN-S TRK (ORB OPS) Perform Steps 2 through 6	DTO 658 EVIS PRE-EXERCISE (BIOMED DSO/DTO, DTQs)			
05:00				EXERCISE (Cue Card) (DSO 617) Notify MCC when starting/ stopping actual exercise period (DSO 314) START TIME: -- / -- : -- STOP TIME: -- / -- : --		HIRAP RCDR - ON
06:00		06 JHF MODE - OFF PRIVATE MEDICAL CONFERENCE	DTO 658 EVIS POST-EXERCISE (BIOMED DSO/DTO, DTQs)		SAMS MONITORING	HIRAP RCDR - OFF
ORB 117		HANDOVER: RED TO BLUE	HANDOVER: RED TO BLUE	HANDOVER: RED TO BLUE	HANDOVER: RED TO BLUE	BLUE FD 09 Uplink FUEL CELL PURGE
07:00		DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW_SYS)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW_SYS)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW_SYS)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW_SYS)	
ORB 118						
08:00						



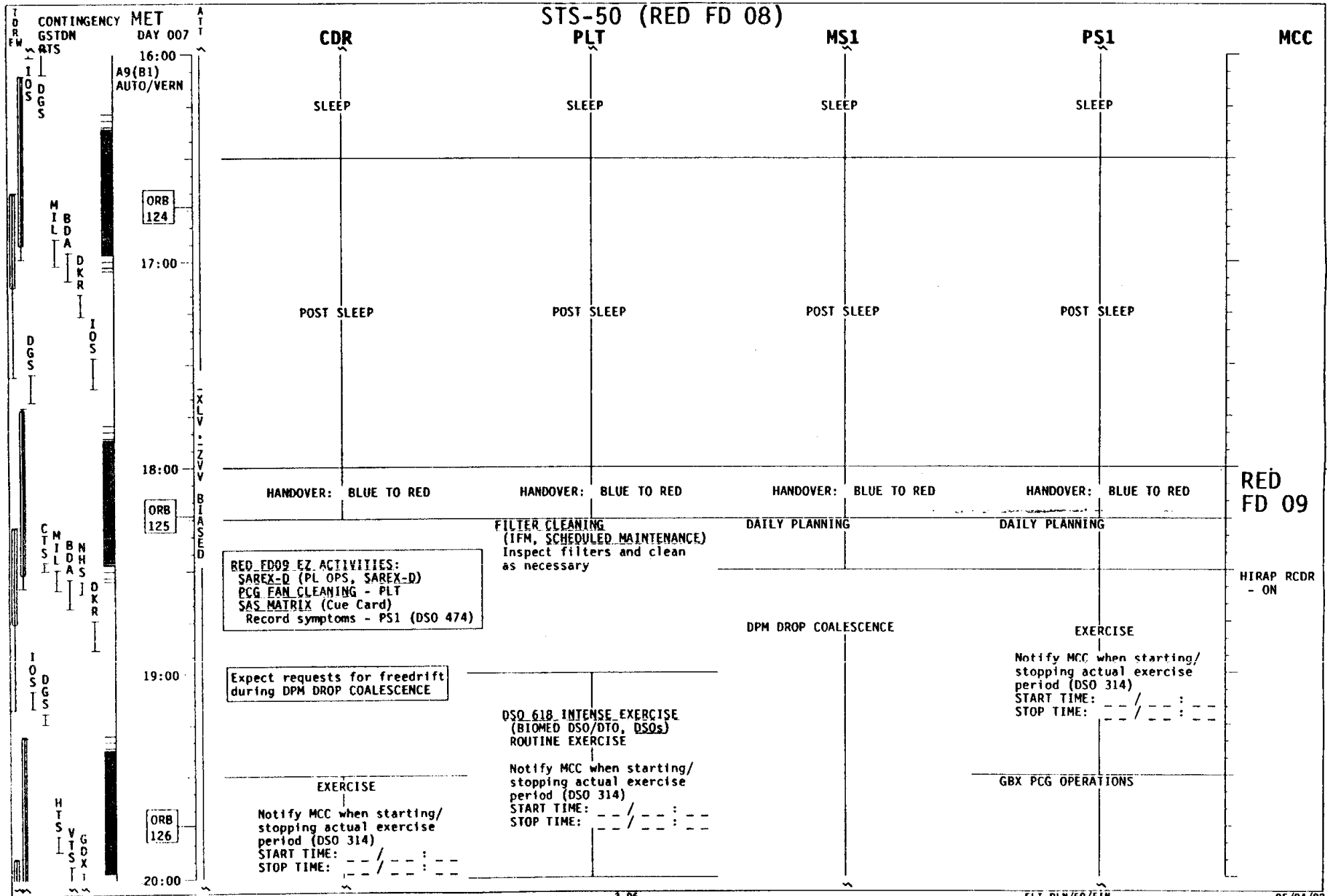




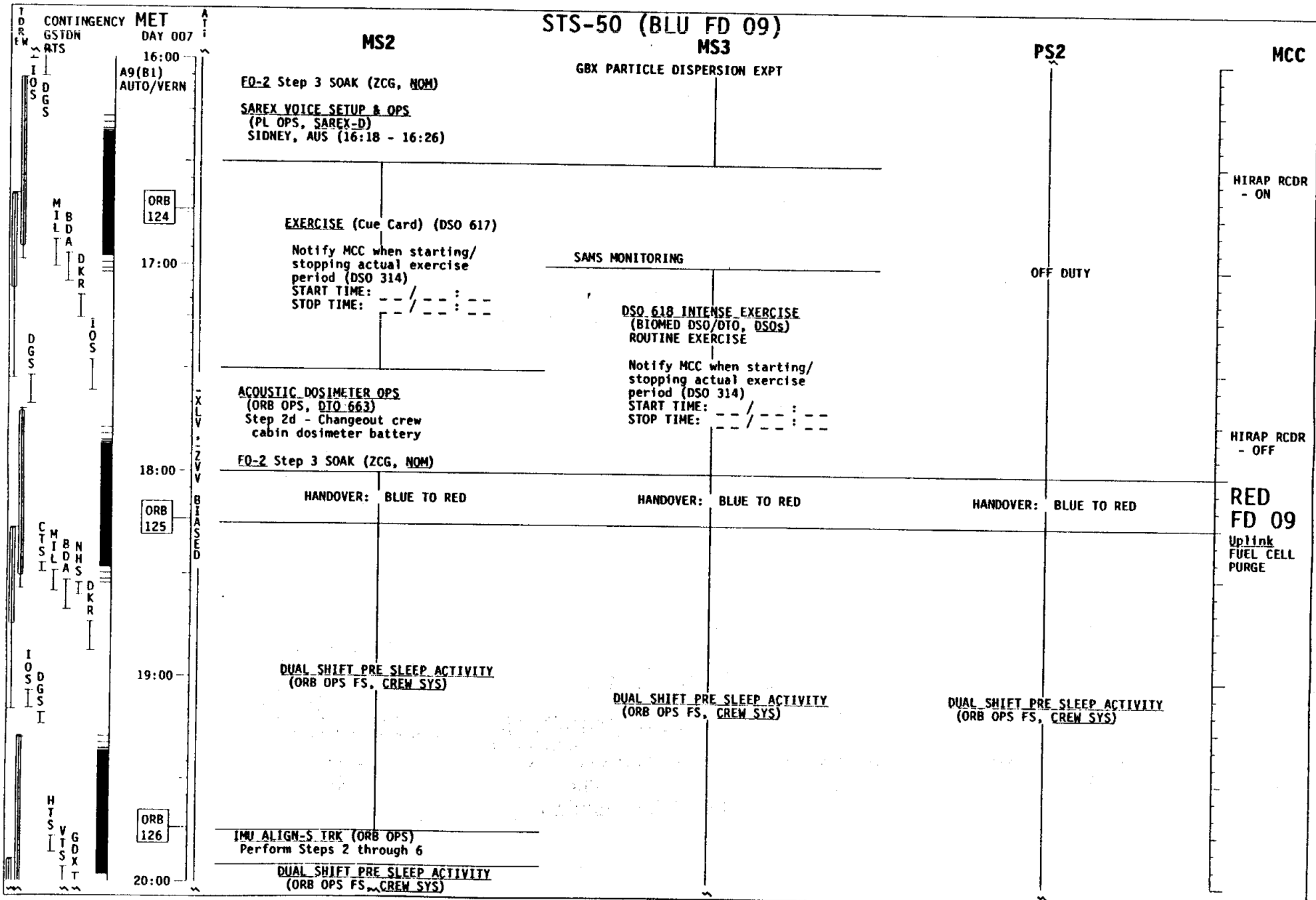




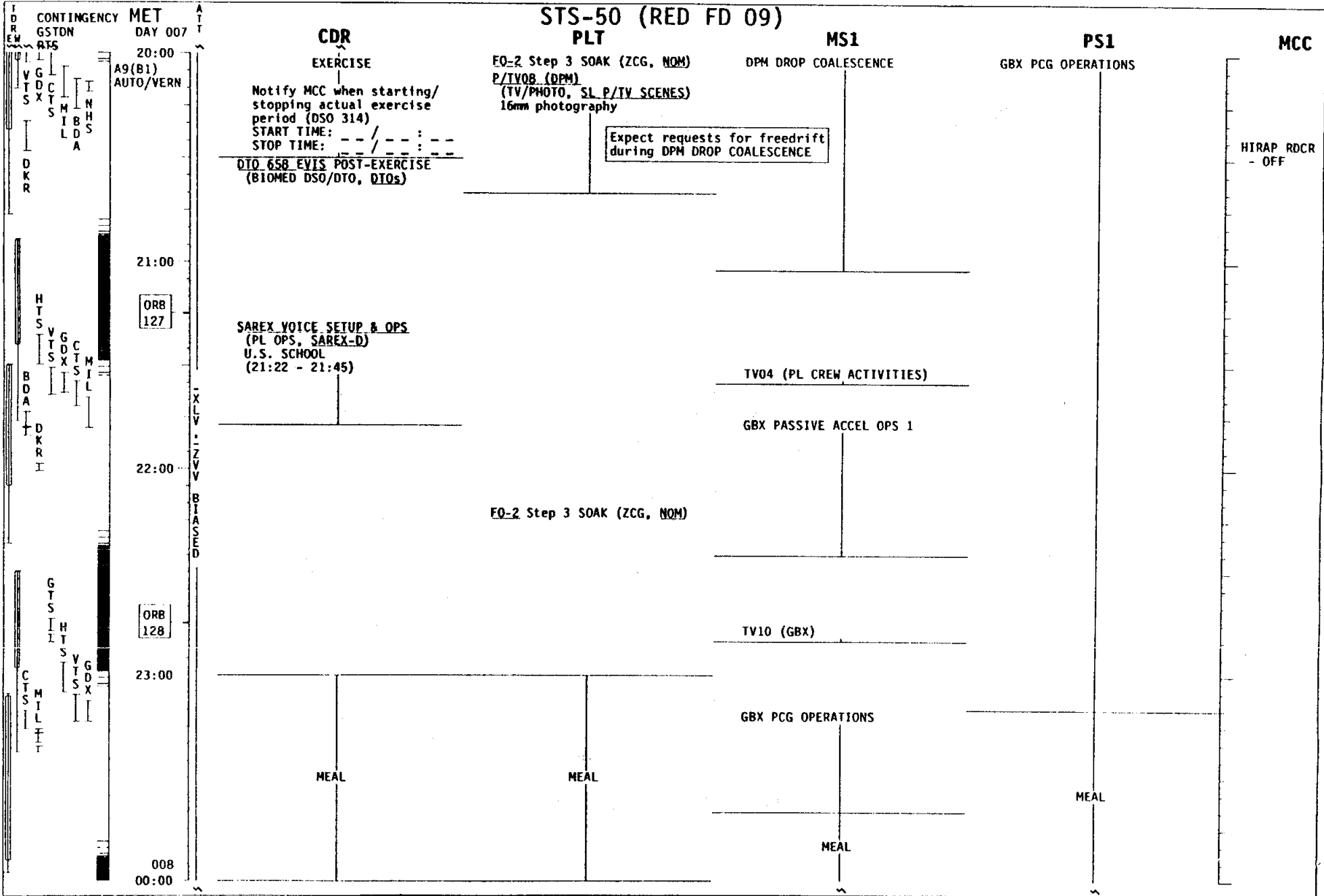
STS-50 (RED FD 08)

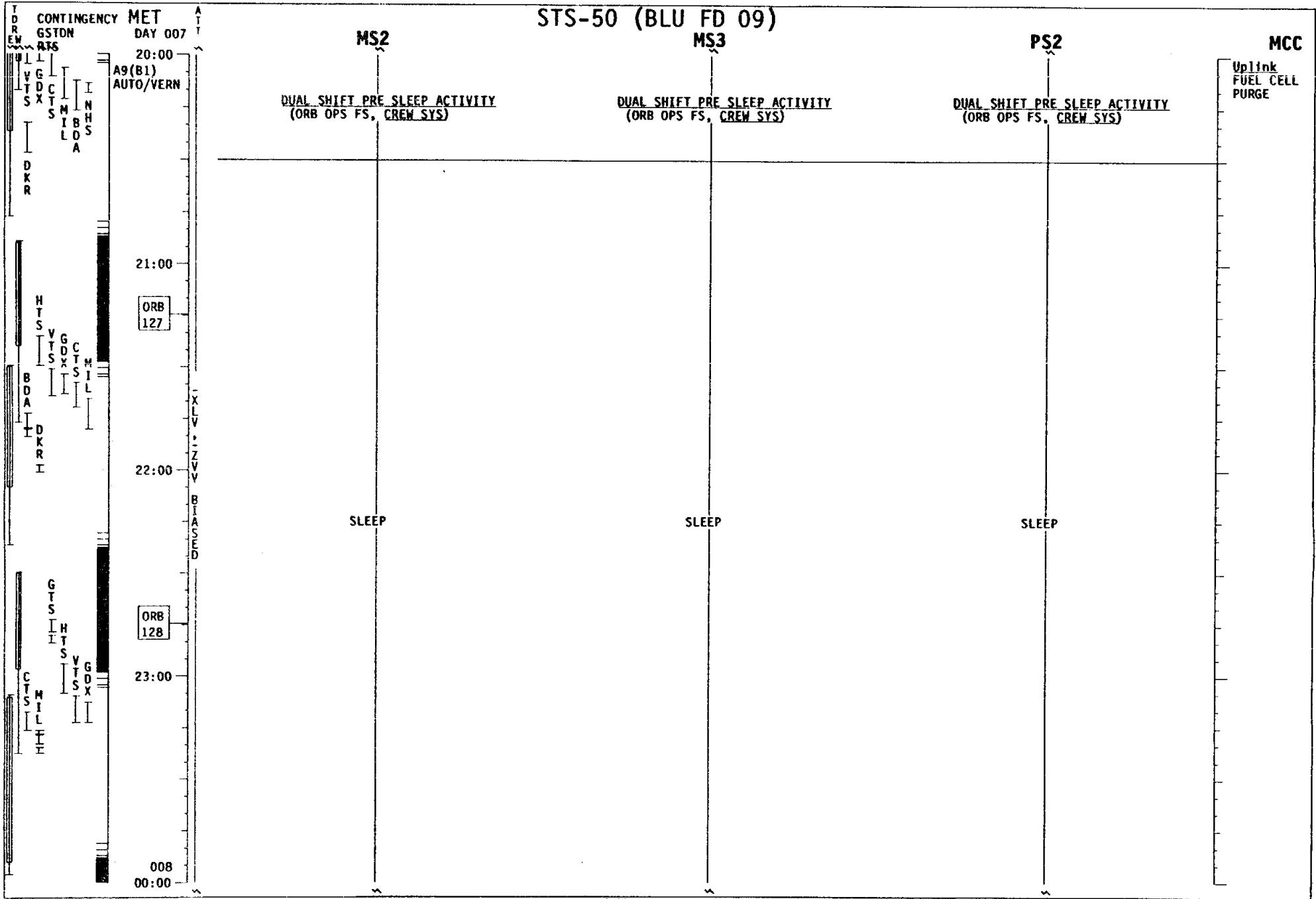


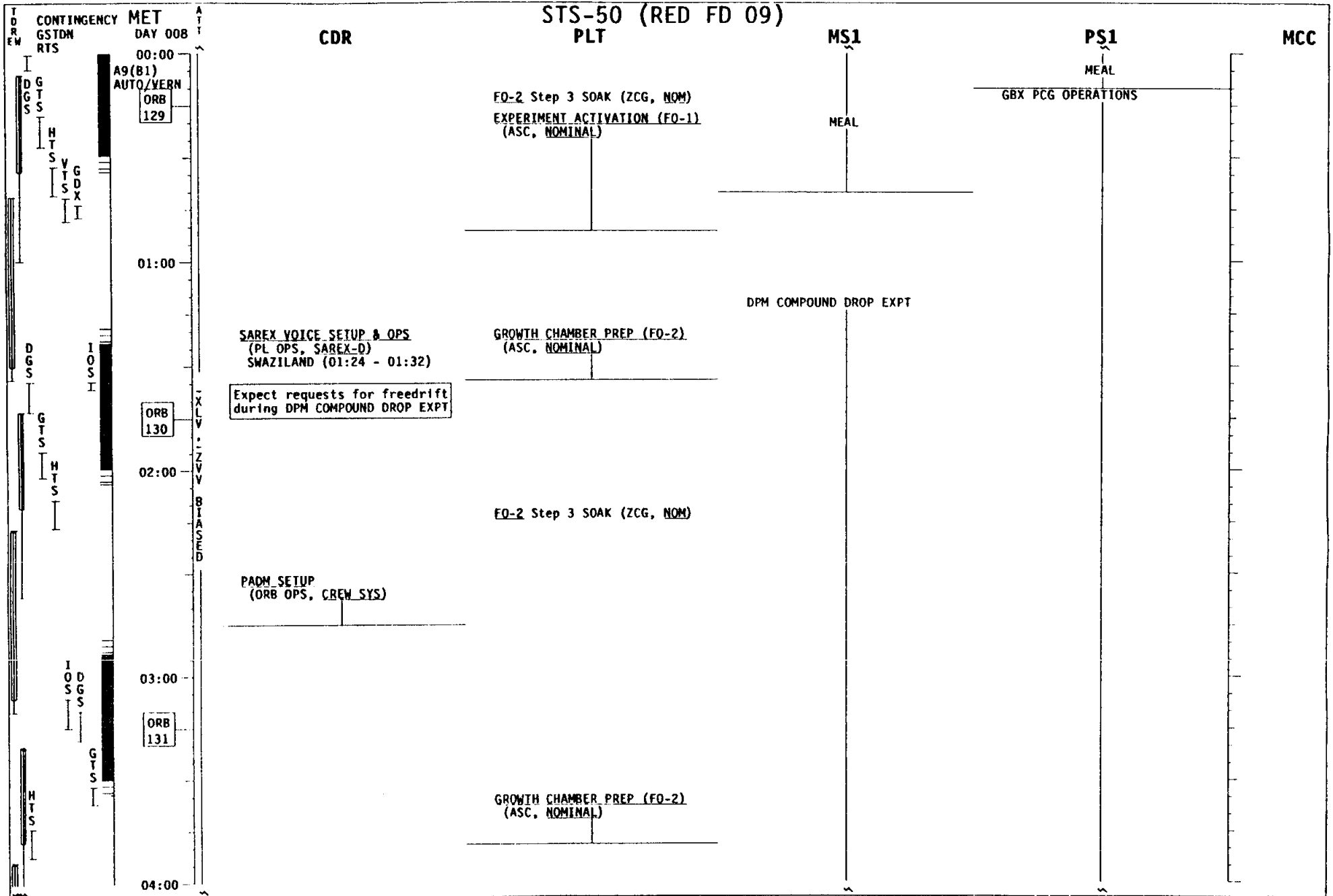
RED FD 09



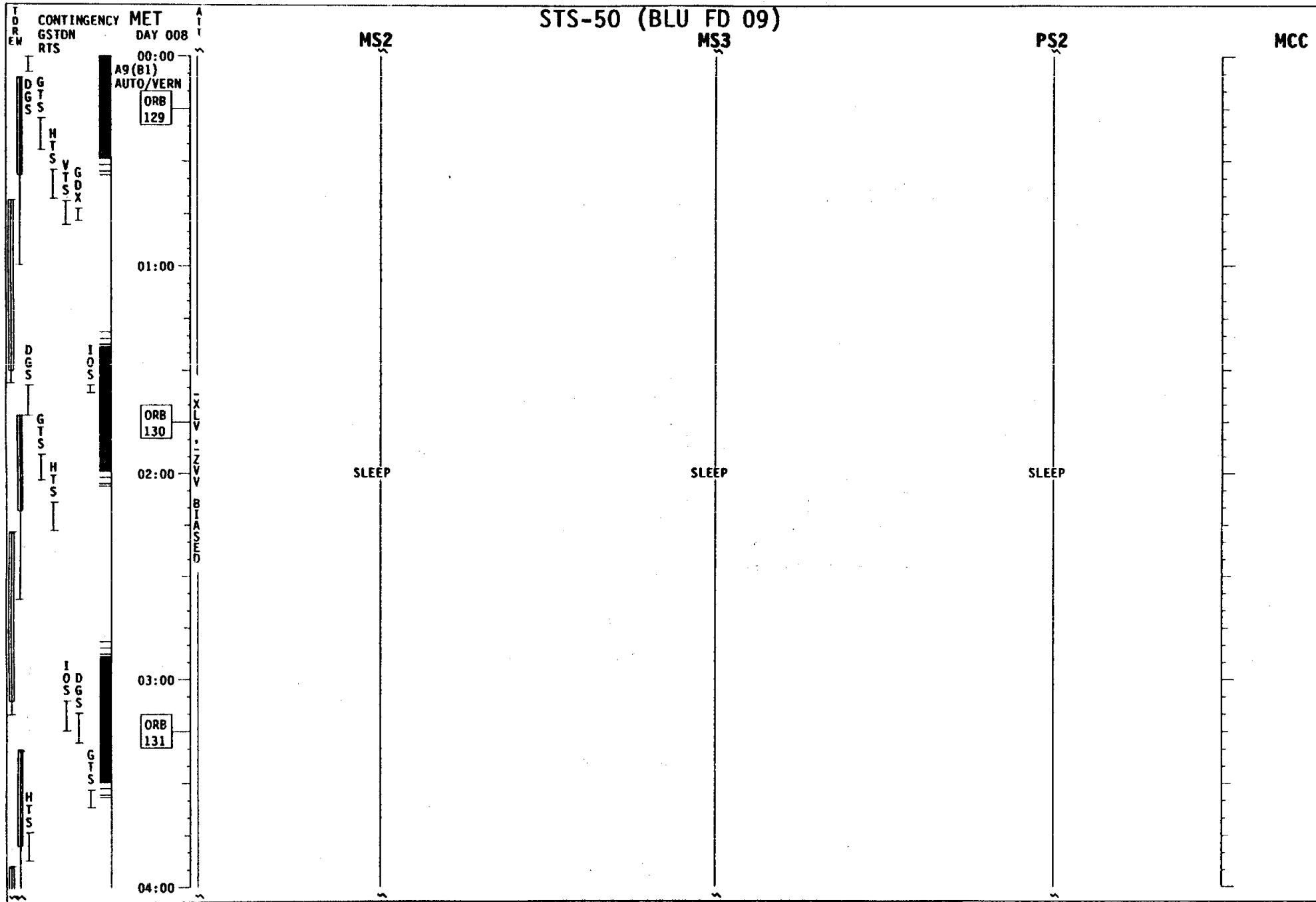
STS-50 (RED FD 09)







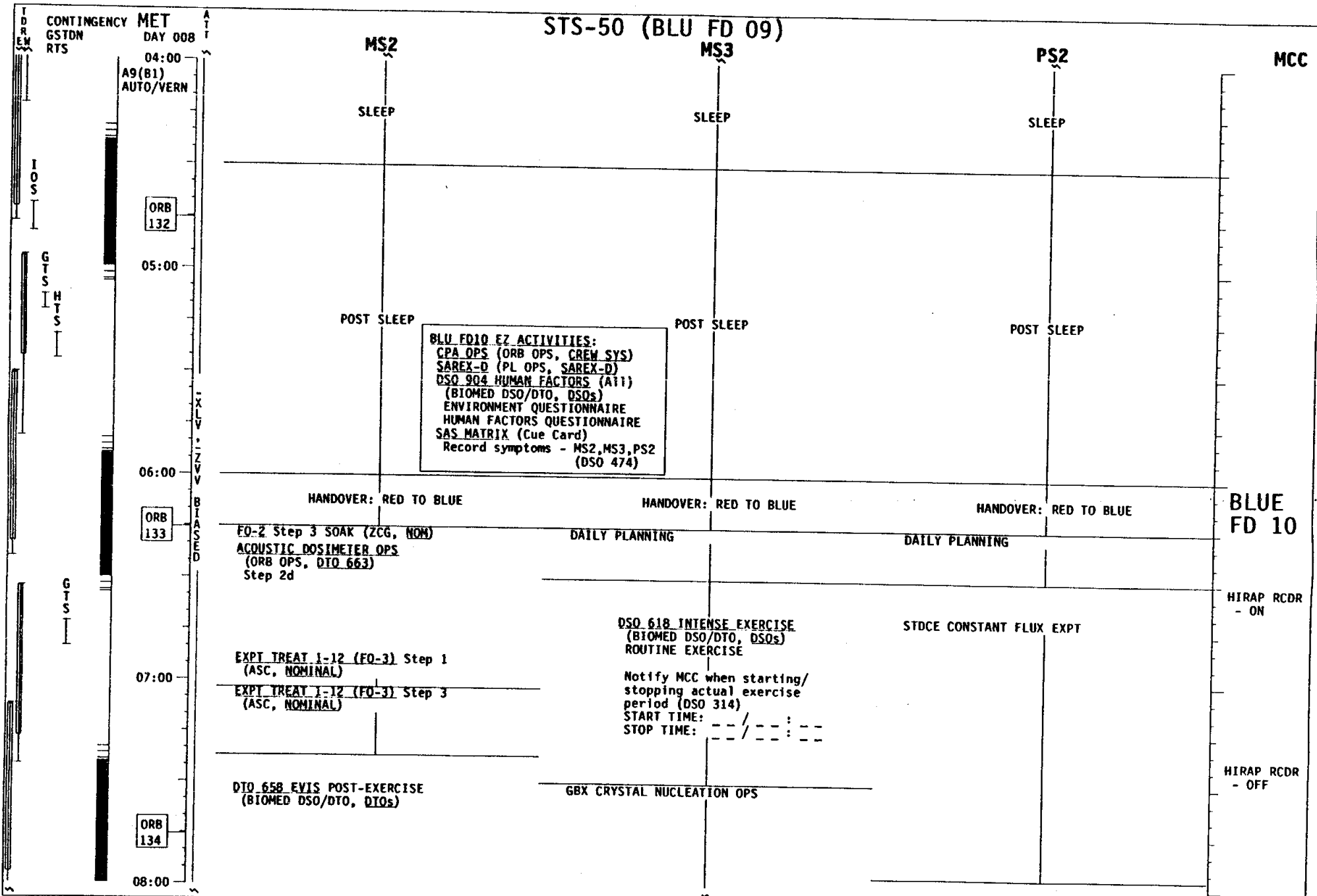
STS-50 (BLU FD 09)



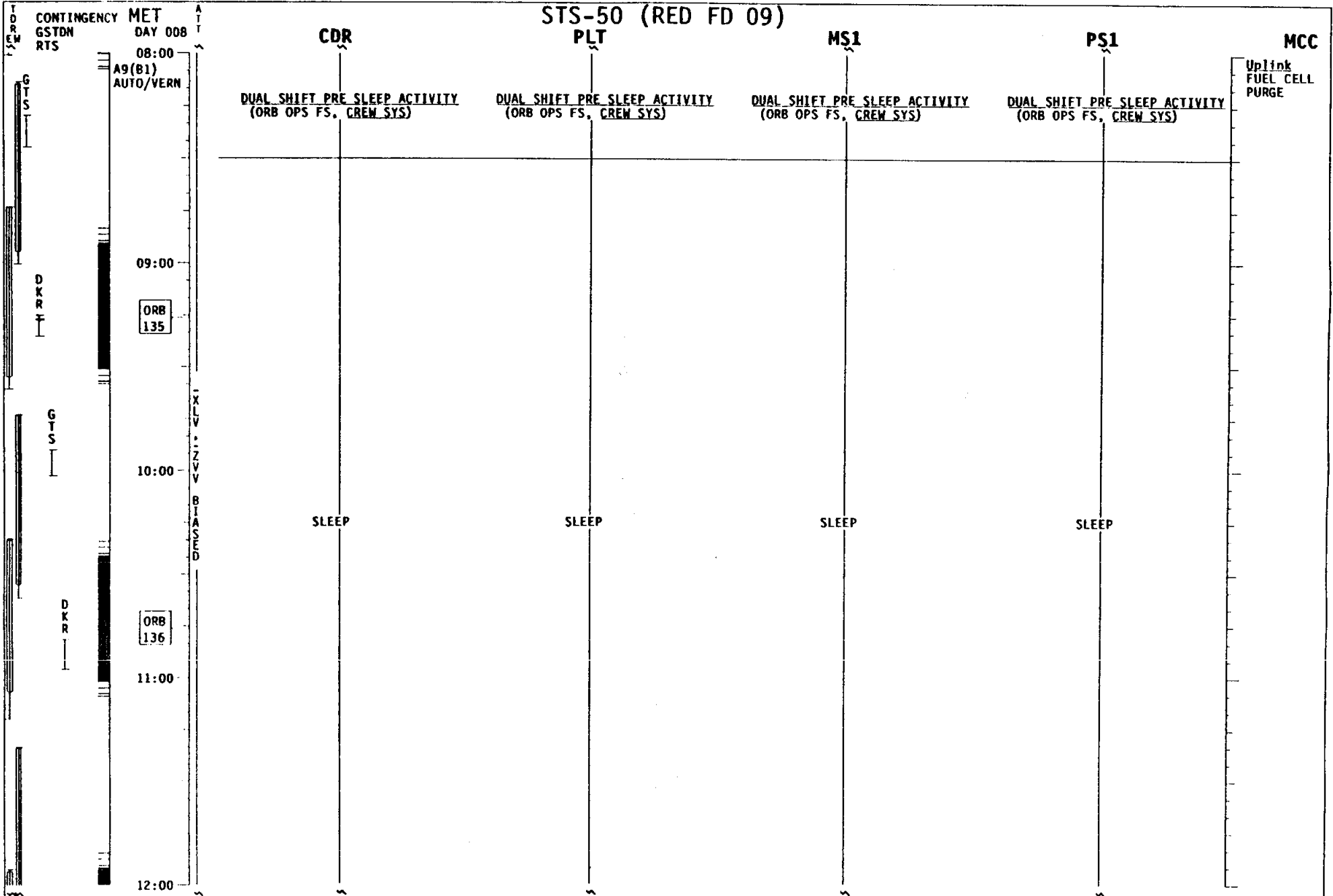
STS-50 (RED FD 09)

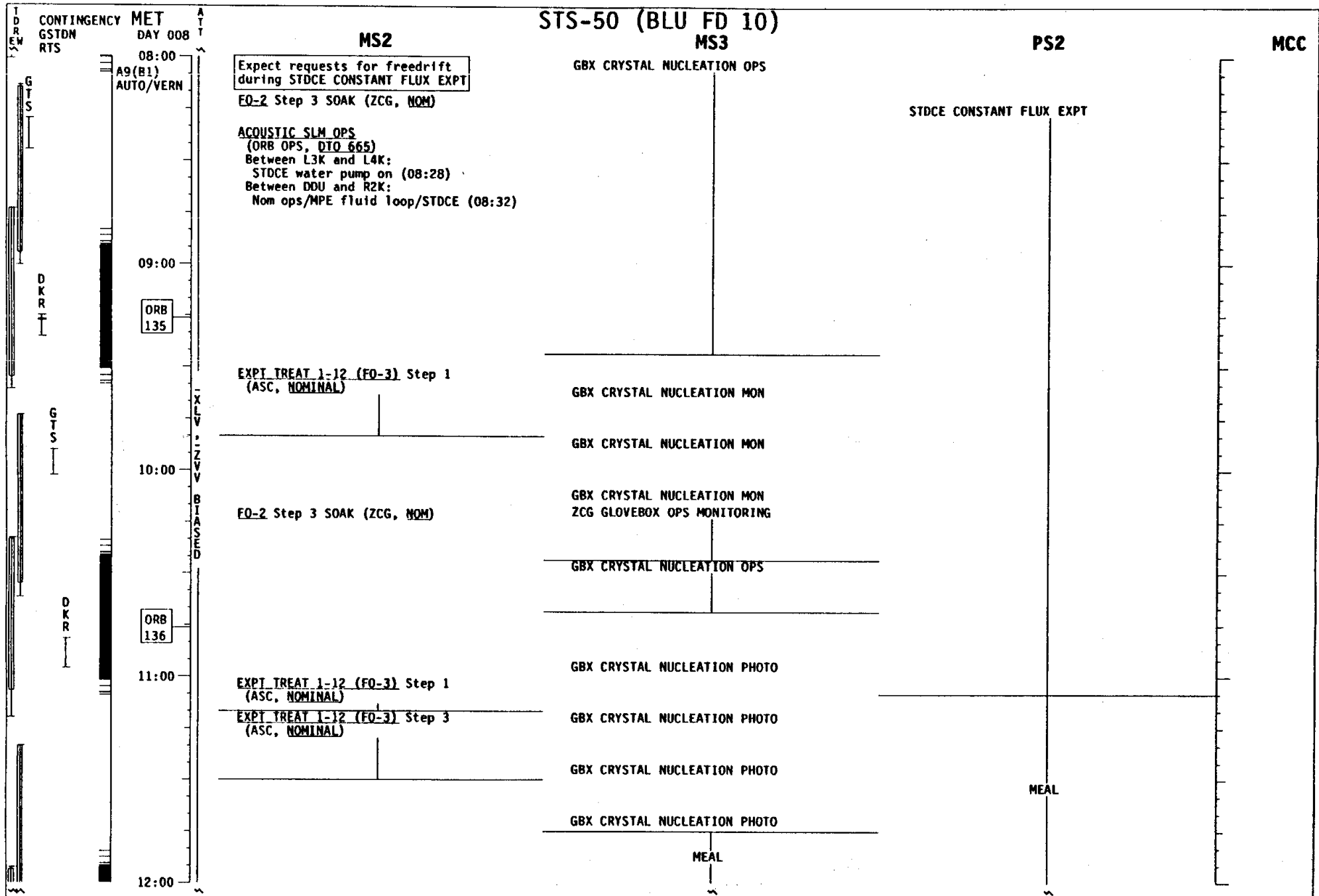
	CDR	PLT	MS1	PS1	MCC
<p>CONTINGENCY GSTDN RTS</p> <p>MET DAY 008</p> <p>04:00 A9(B1) AUTO/VERN</p> <p>ORB 132</p> <p>05:00</p> <p>ORB 133</p> <p>06:00</p> <p>ORB 134</p> <p>07:00</p> <p>08:00</p>	<p>Expect requests for freedrift during DPM COMPOUND DROP EXPT</p> <p>IMJ ALIGN-S TRK (ORB OPS) Perform Steps 2 through 6</p> <p>06 UNF MODE - OFF PRIVATE MEDICAL CONFERENCE</p> <p>HANDOVER: RED TO BLUE</p> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p>	<p>FO-2 Step 3 SOAK (ZCG, NOM)</p> <p>DTO 658 EVIS PRE-EXERCISE (BIOMED DSO/DTO, DTQs)</p> <p>HANDOVER: RED TO BLUE</p> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p>	<p>DPM COMPOUND DROP EXPT</p> <p>EXERCISE (Cue Card) (DSO 617)</p> <p>Notify MCC when starting/ stopping actual exercise period (DSO 314)</p> <p>START TIME: -- / -- : --</p> <p>STOP TIME: -- / -- : --</p> <p>HANDOVER: RED TO BLUE</p> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p>	<p>GBX PCG OPERATIONS</p> <p>SAMS MONITORING</p> <p>HANDOVER: RED TO BLUE</p> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p>	<p></p> <p>HIRAP RCDR - ON</p> <p>HIRAP RCDR - OFF</p> <p>BLU FD 10</p> <p>Uplink FUEL CELL PURGE</p>

STS-50 (BLU FD 09)

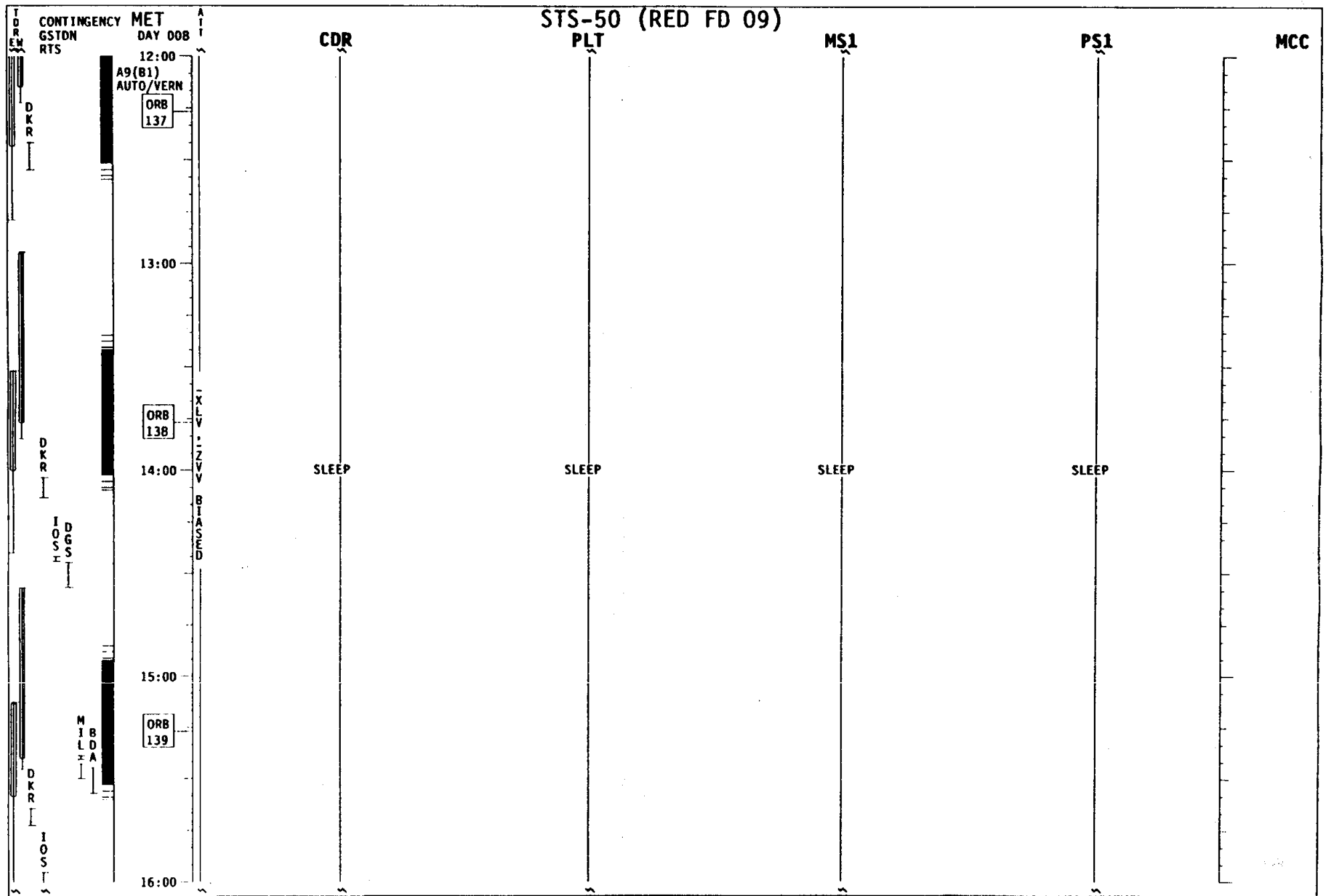


STS-50 (RED FD 09)

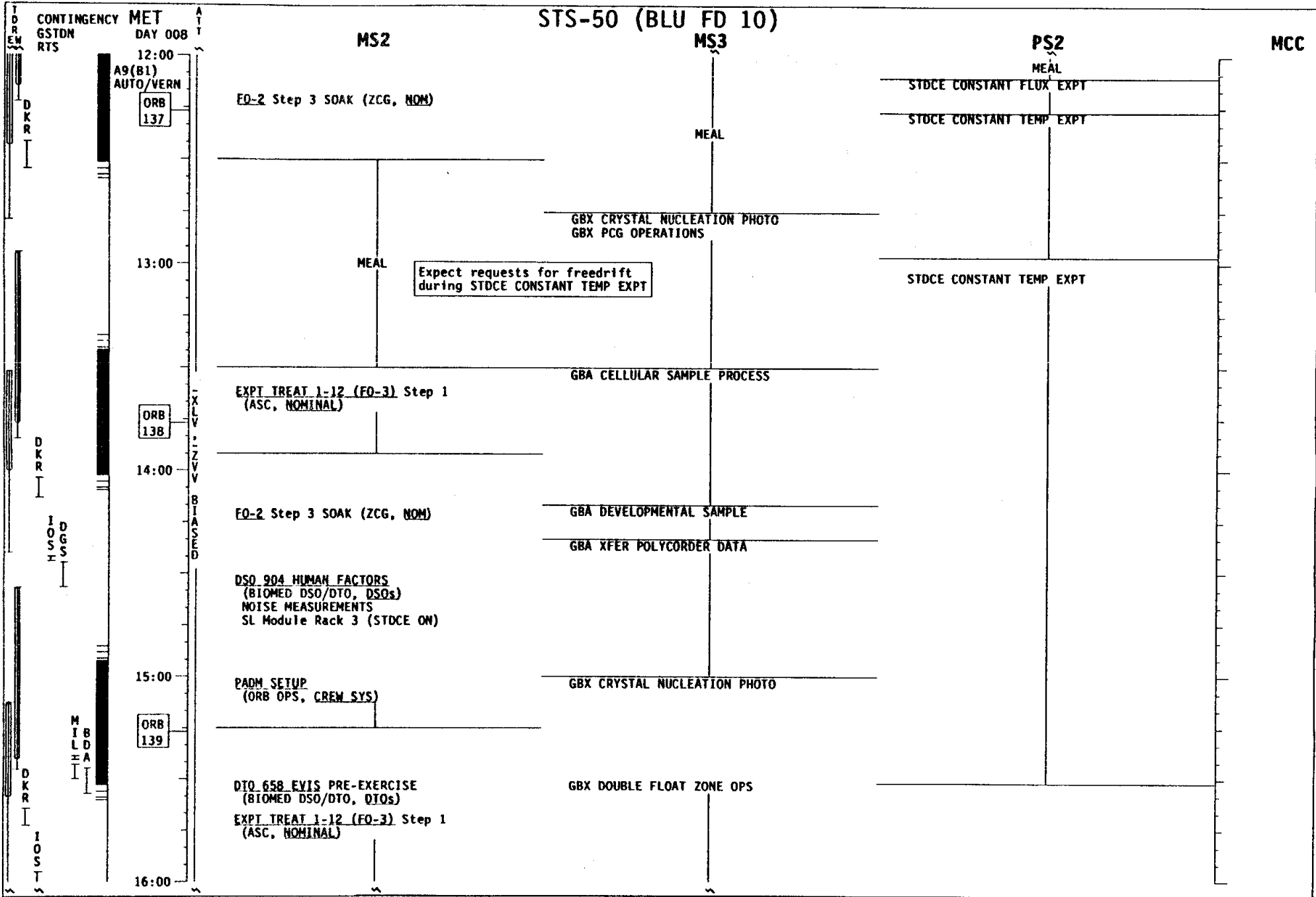




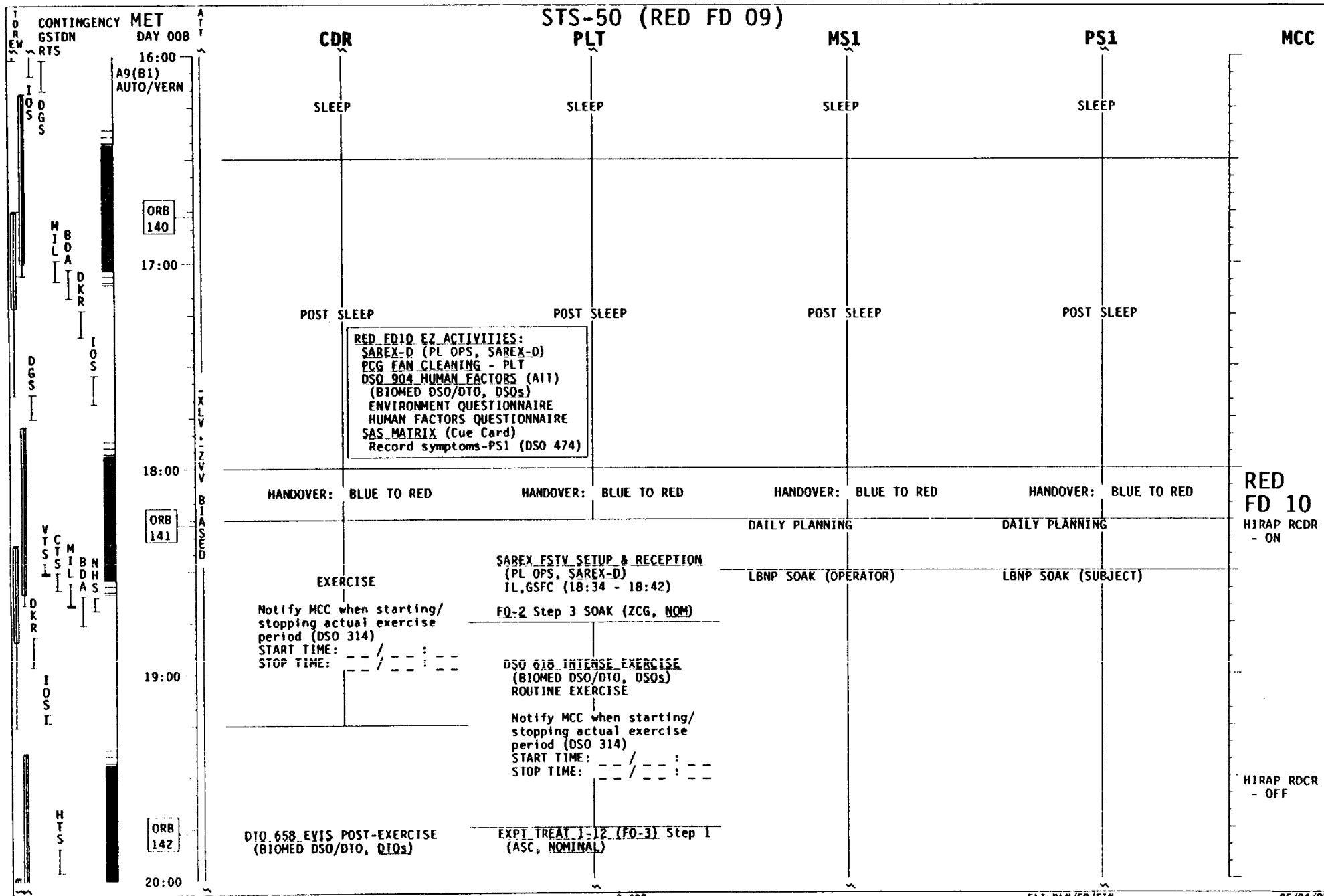
STS-50 (RED FD 09)



STS-50 (BLU FD 10)



STS-50 (RED FD 09)



RED FD 10 EZ ACTIVITIES:
 SAREX-D (PL OPS, SAREX-D)
 PGG FAN CLEANING - PLT
 DSO 904 HUMAN FACTORS (All)
 (BIOMED DSO/DTO, DSOs)
 ENVIRONMENT QUESTIONNAIRE
 HUMAN FACTORS QUESTIONNAIRE
 SAS MATRIX (Cue Card)
 Record symptoms-PS1 (DSO 474)

RED FD 10
 HIRAP RCDR
 - ON

HIRAP RCDR
 - OFF

STS-50 (BLU FD 10)

	MS2	MS3	PS2	
<p>CONTINGENCY MET GSTDN DAY 008 RTS 16:00 A9(B1) AUTO/VERN</p> <p>17:00</p> <p>18:00</p> <p>19:00</p> <p>20:00</p>	<p>EXPT_TREAT 1-12 (FO-3) Step 1 (ASC, NOMINAL)</p> <hr/> <p>EXPT_TREAT 1-12 (FO-3) Step 3 (ASC, NOMINAL)</p> <hr/> <p>EXERCISE (Cue Card) (DSO 617)</p> <p>Notify MCC when starting/ stopping actual exercise period (DSO 314) START TIME: -- / -- : -- STOP TIME: -- / -- : --</p> <hr/> <p>EXPT_TREAT 1-12 (FO-3) Step 1 (ASC, NOMINAL)</p> <hr/> <p>EXPT_TREAT 1-12 (FO-3) Step 3 (ASC, NOMINAL)</p> <hr/> <p>HANDOVER: BLUE TO RED</p> <hr/> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p> <p>IMU ALIGN-S TRK (ORB OPS) Perform Steps 2 through 6</p> <p>ACOUSTIC DOSIMETER OPS (ORB OPS, DTQ 663) Step 2d</p> <hr/> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p>	<p>GBX DOUBLE FLOAT ZONE OPS</p> <hr/> <p>GBX FIBER PULLING OPS</p> <hr/> <p>SAMS MONITORING GBX CRYSTAL NUCLEATION PHOTO STDCE CONSTANT TEMP EXPT</p>	<p>STDCE CONSTANT TEMP EXPT</p> <hr/> <p>EXERCISE</p> <p>Notify MCC when starting/ stopping actual exercise period (DSO 314) START TIME: -- / -- : -- STOP TIME: -- / -- : --</p> <hr/> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p> <hr/> <p>DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)</p>	<p style="text-align: center;">MCC</p> <p>HIRAP RCDR - ON</p> <hr/> <p>HIRAP RCDR - OFF</p> <hr/> <p style="text-align: center;">RED FD 10</p> <p>Uplink FUEL CELL PURGE</p>

I O D G S
 I O S
 M B D A
 I L A
 D K R
 I O S
 D G S
 I O S
 V T S L
 M I L A
 B N D H S
 I L A S
 I
 D K R
 I O S
 I
 H T S

CONTINGENCY MET
 GSTDN DAY 008
 RTS

20:00
 A9(B1)
 AUTO/VERN

21:00
 ORB
 143

22:00
 ORB
 144

23:00

009
 00:00

DR EN
 VTS
 GDS
 CT S
 MIL
 DKR

BNDHAST
 BDA

HITS
 VTS
 GDS
 CT S
 MIL
 BDA

GTS
 HITS
 VTS
 GDS
 CT S
 MIL

XLV
 ZVV
 BIASED

STS-50 (RED FD 10)

CDR

PLT

MS1

PS1

MCC

EXPT TREAT 1-12 (EO-3) Step 1
 (ASC, NOMINAL)
 EQ-2 Step 3 SOAK (ZCG, NOM)

LBNP SOAK (OPERATOR)

LBNP SOAK (SUBJECT)

SAREX VOICE SETUP & OPS
 (PL OPS, SAREX-D)
 U.S. SCHOOL
 (21:27 - 21:50)

EXPT TREAT 1-12 (EO-3) Step 1
 (ASC, NOMINAL)

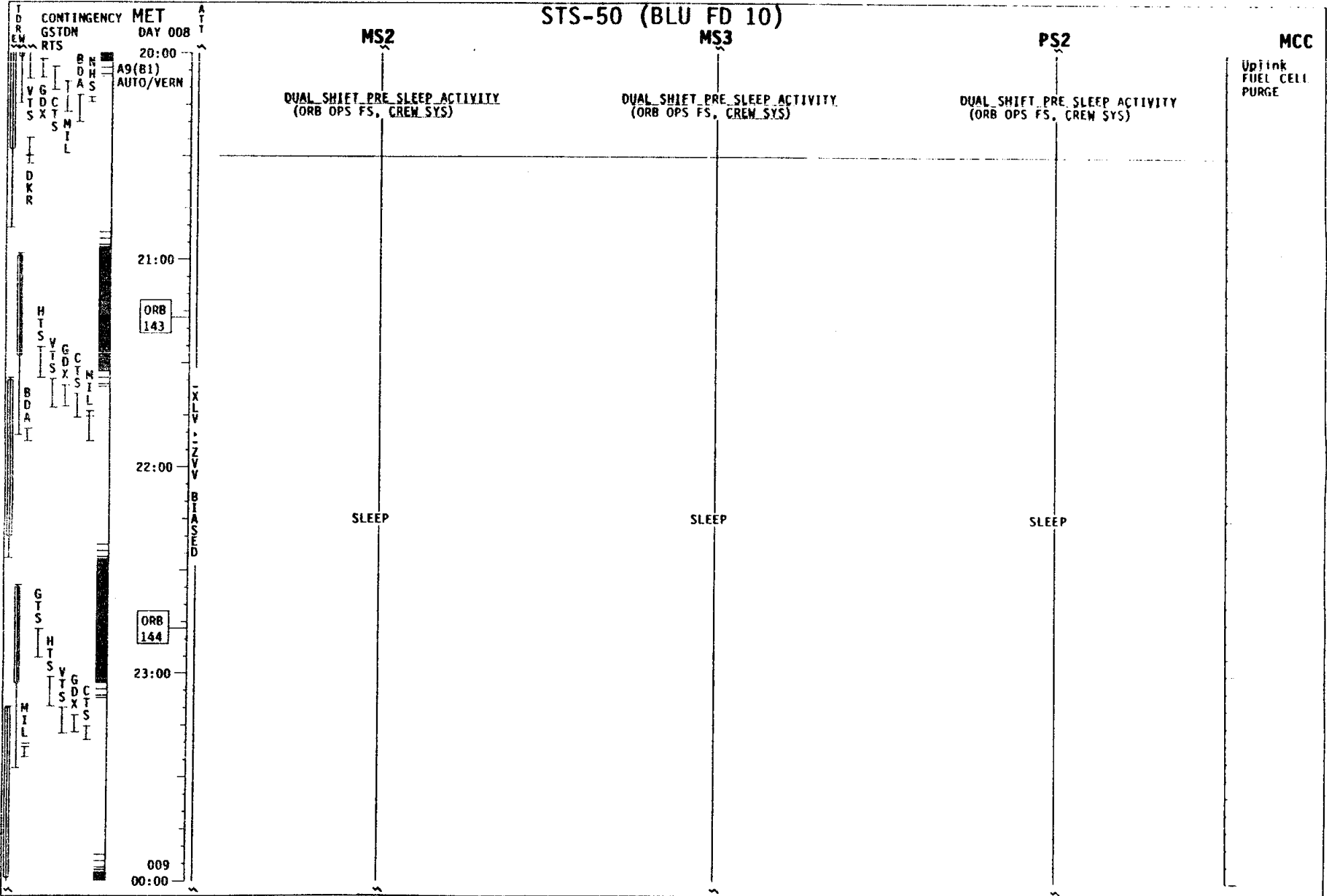
EQ-2 Step 3 SOAK (ZCG, NOM)

CABIN AIR MONITOR (DTO 623)
 (SLM OPS, ECLSS)
 Move to E5Y

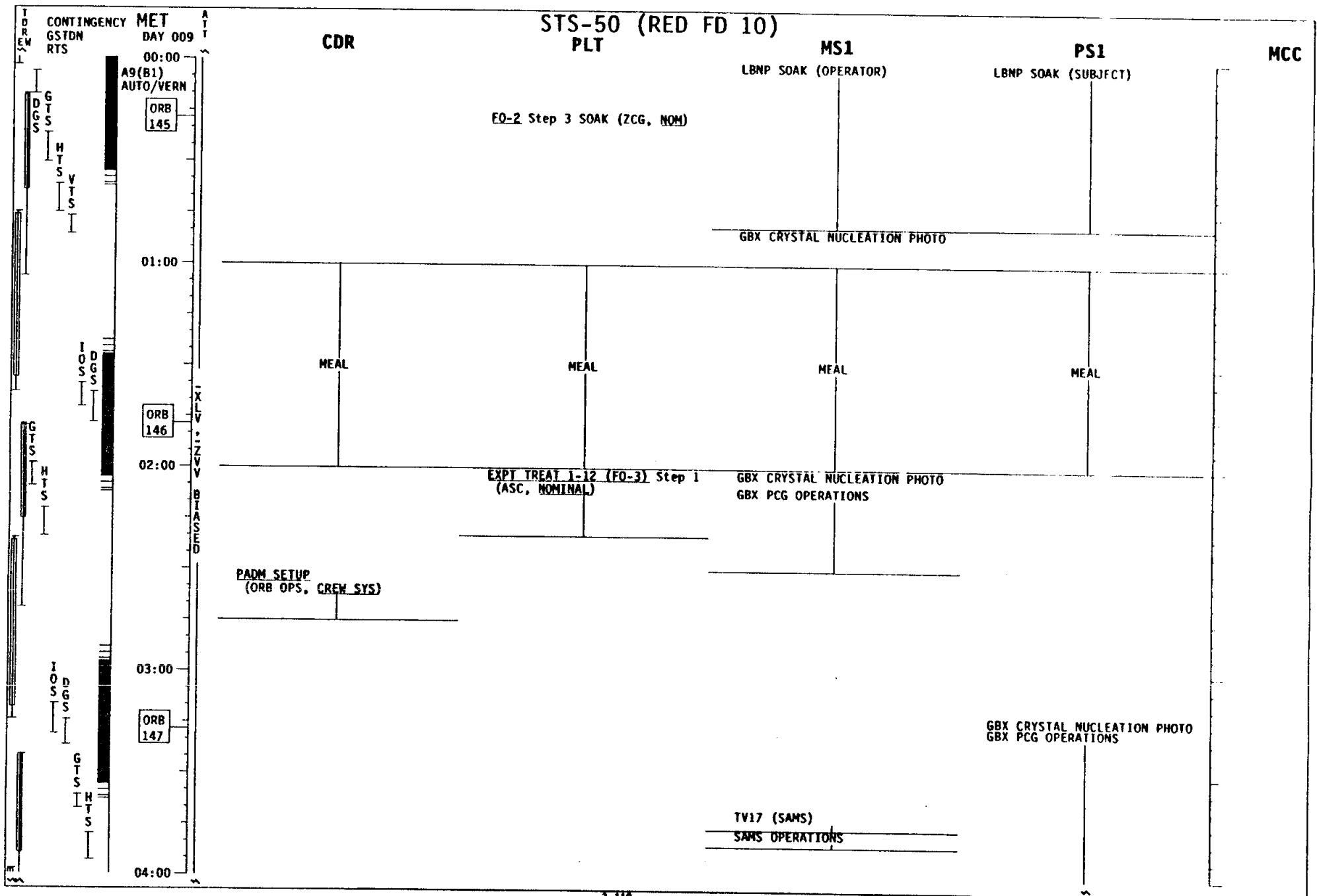
EXPT TREAT 1-12 (EO-3) Step 1
 (ASC, NOMINAL)

EXPT TREAT 1-12 (EO-3) Step 3
 (ASC, NOMINAL)

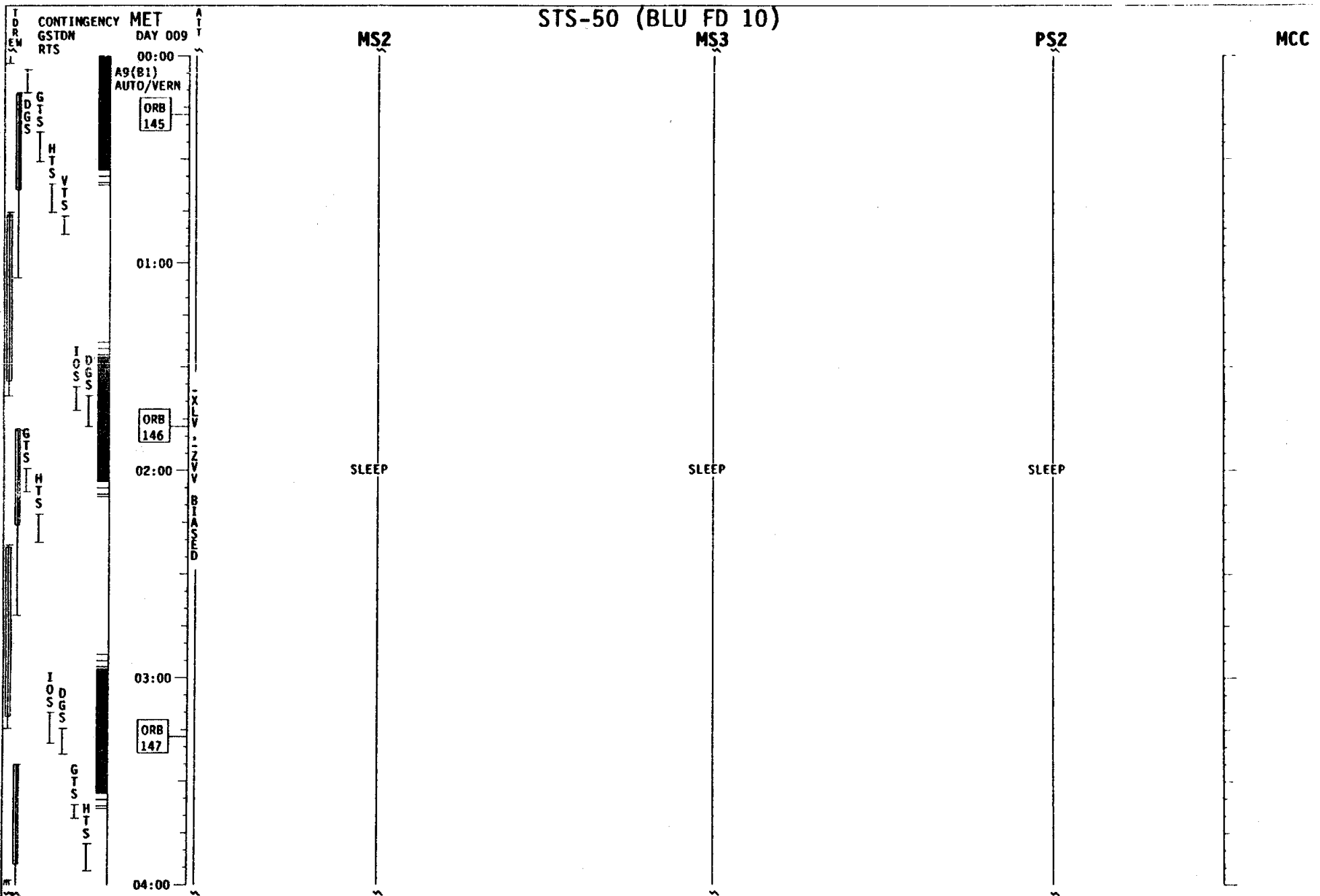
STS-50 (BLU FD 10)

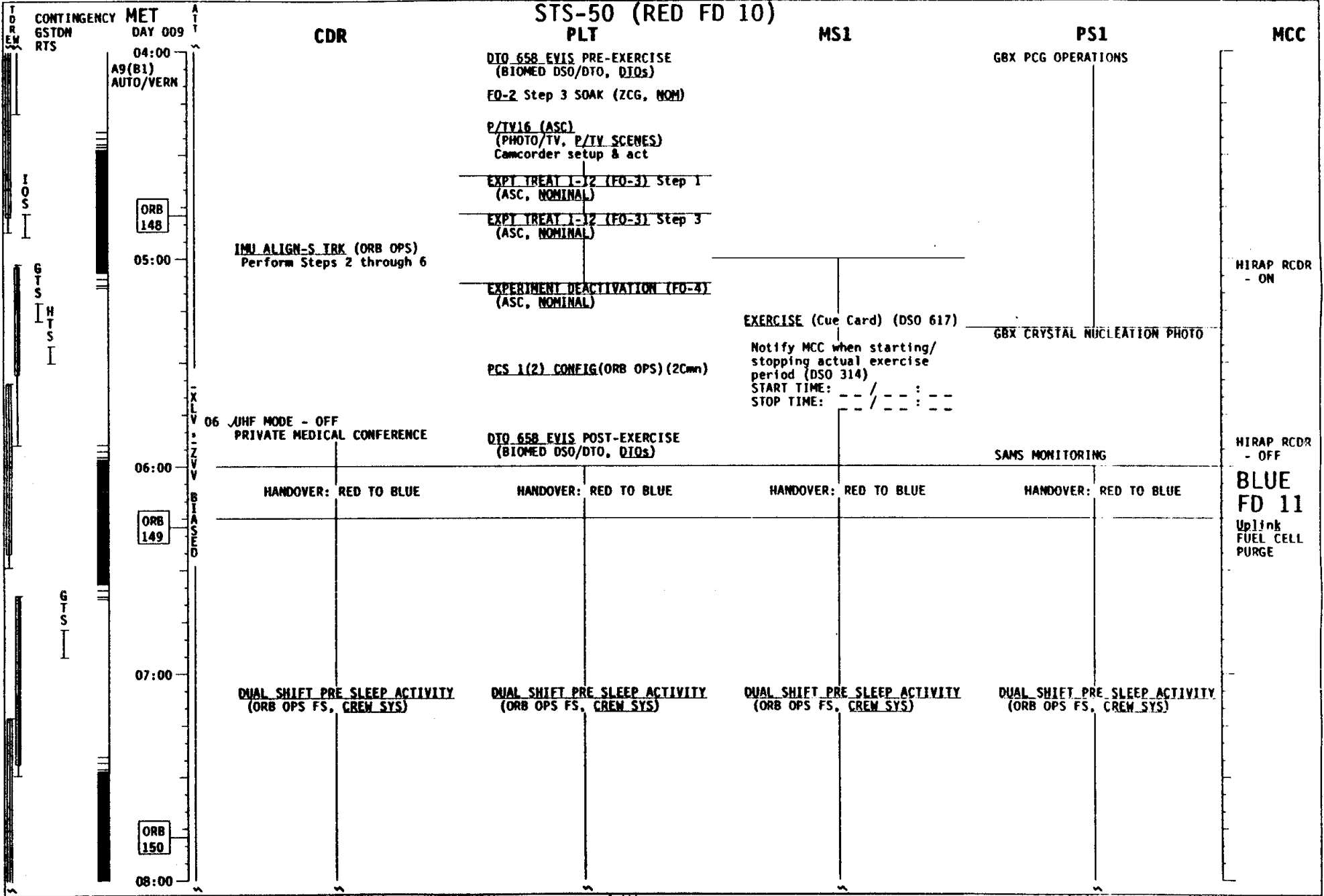


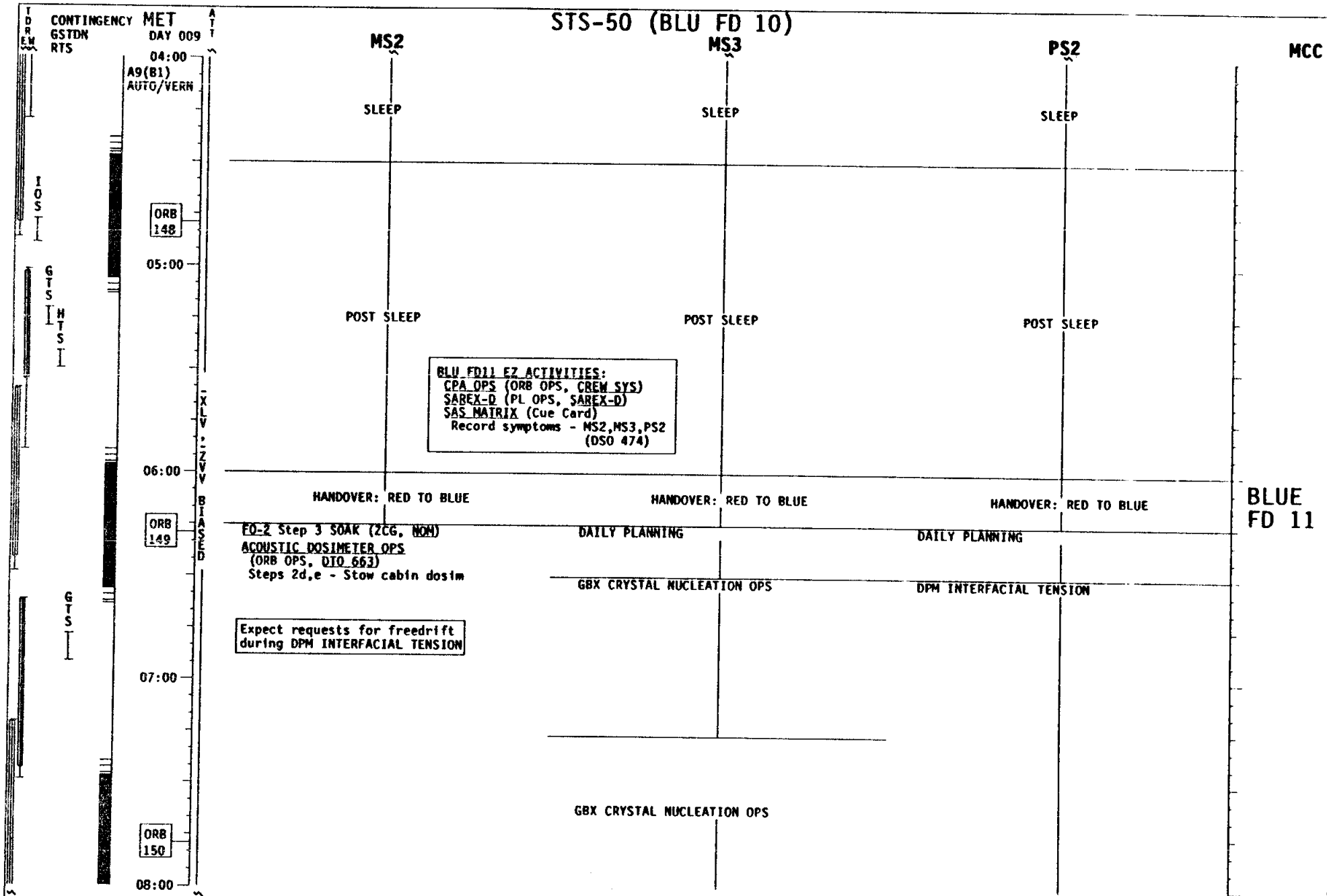
CONTINGENCY	MET	DAY	008	20:00	21:00	22:00	23:00	009	00:00
GSTDN	A9(B1)								
RTS	AUTO/VERN								
DR									
EM									
VT									
TS									
DX									
MS									
IL									
DR									
RR									
HT									
TS									
VS									
GD									
XS									
MS									
IL									
BD									
DA									
HT									
TS									
VS									
GD									
XS									
MS									
IL									
MIL									
HT									
TS									
VS									
GD									
XS									
MS									
IL									

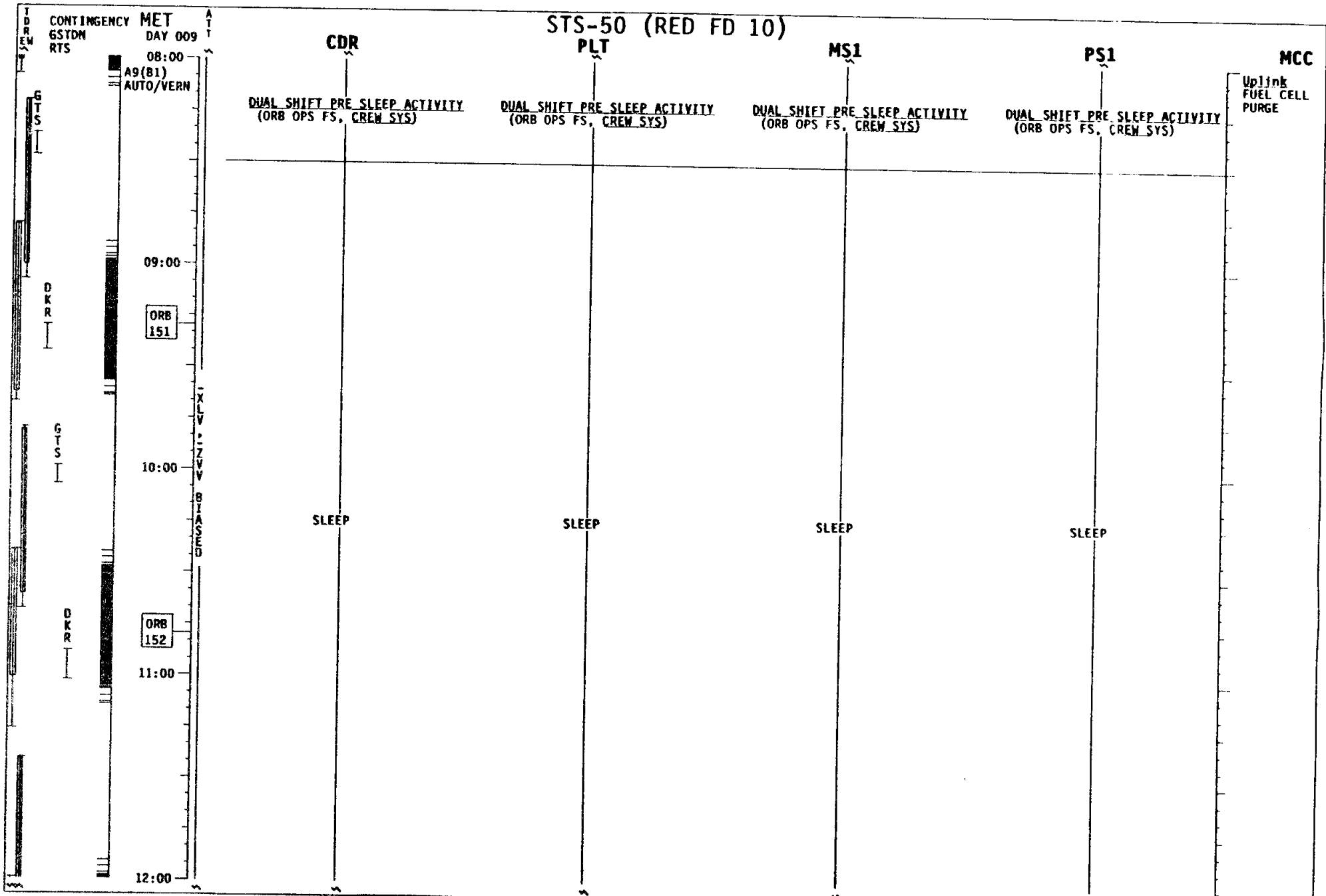


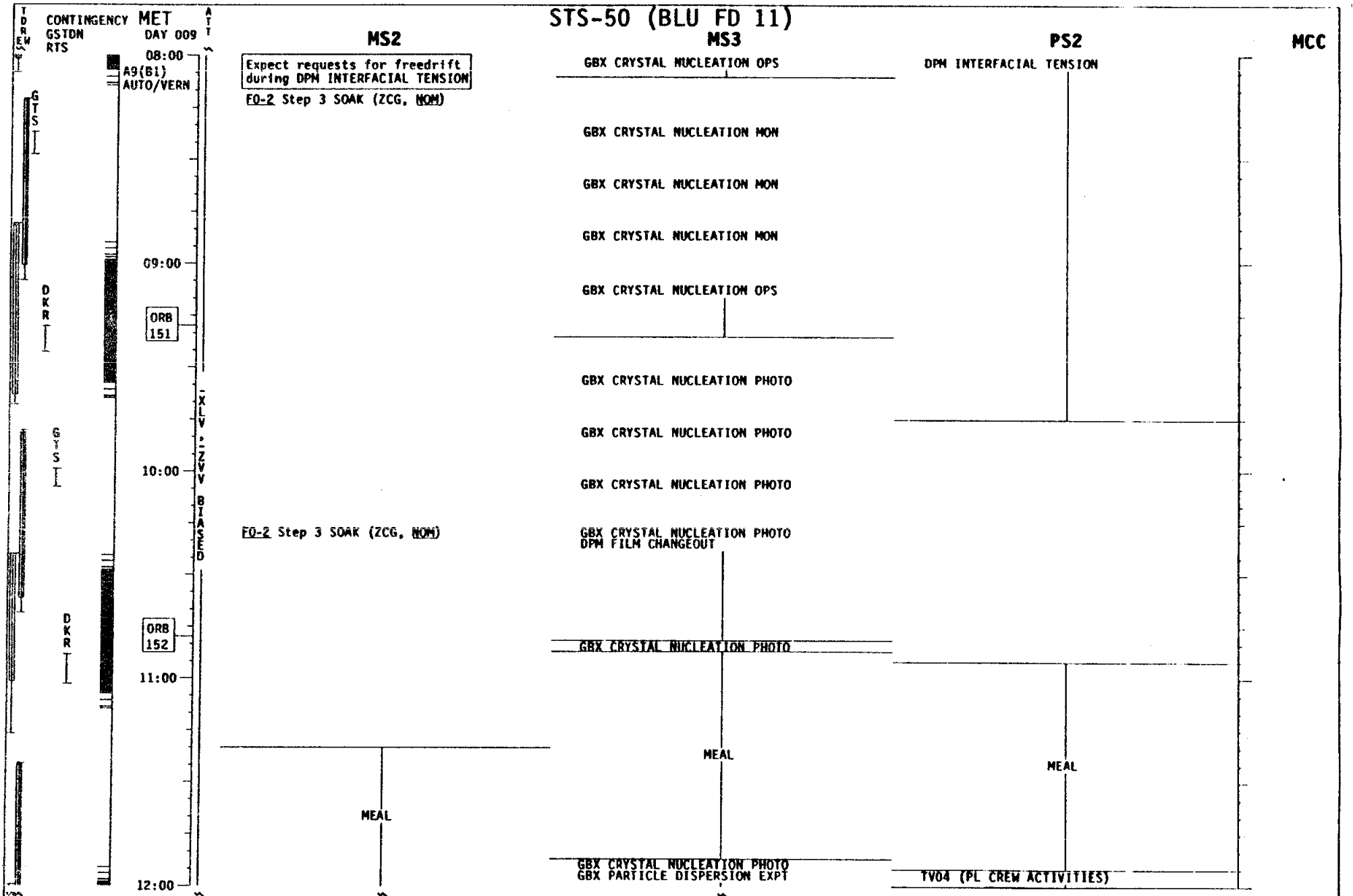
STS-50 (BLU FD 10)



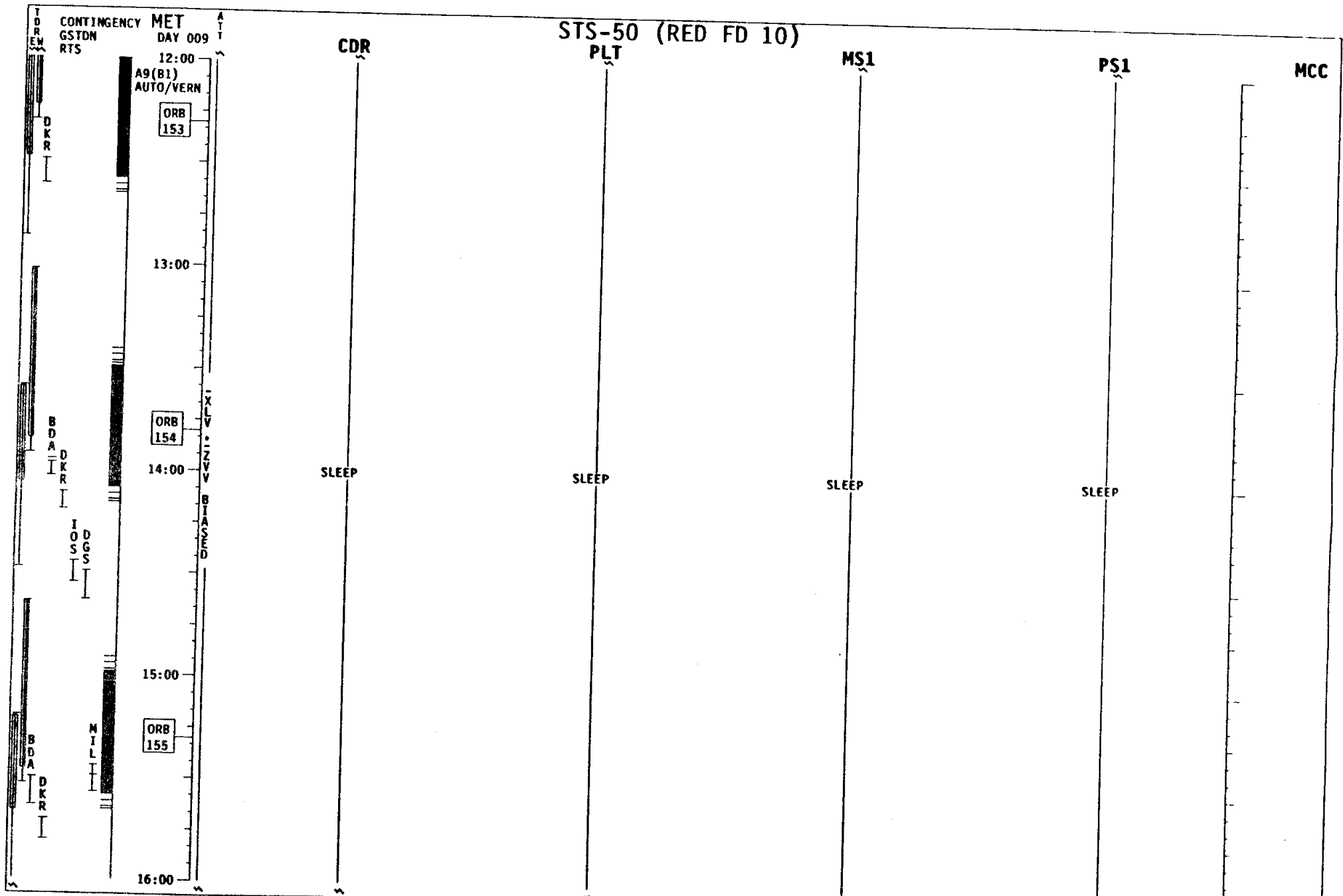








STS-50 (RED FD 10)



STS-50 (BLU FD 11)

MS2

MS3

PS2

MCC

CONTINGENCY MET
GSTDN DAY 009
RTS

12:00

A9(B1)
AUTO/VERN

ORB
153

FO-2 Step 3 SOAK (ZCG, NOM)

Expect requests for freedrift
during DPM RESONANT MODULES

GBX PARTICLE DISPERSION EXPT

DPM RESONANT MODULES

FURNACE HEAT-UP/SOAK (FO-2)
(ZCG, NOMINAL)
Step 2 UNSTOW & CONFIG PGSC

GBX CRYSTAL NUCLEATION PHOTO
GBX PARTICLE DISPERSION EXPT
DPM FILM CHANGEOUT

13:00

GBX PARTICLE DISPERSION EXPT

ORB
154

GBX PARTICLE DISPERSION EXPT
GBX CRYSTAL NUCLEATION PHOTO

14:00

FO-2 Step 3 SOAK (ZCG, NOM)
FO-3 Step 1 DEACT (ZCG, NOM)

Expect requests for freedrift
during DPM ROTATION & OSCILLATION

GBX PARTICLE DISPERSION EXPT
GBX PASSIVE ACCEL OPS I

DPM ROTATION & OSCILLATION

15:00

ORB
155

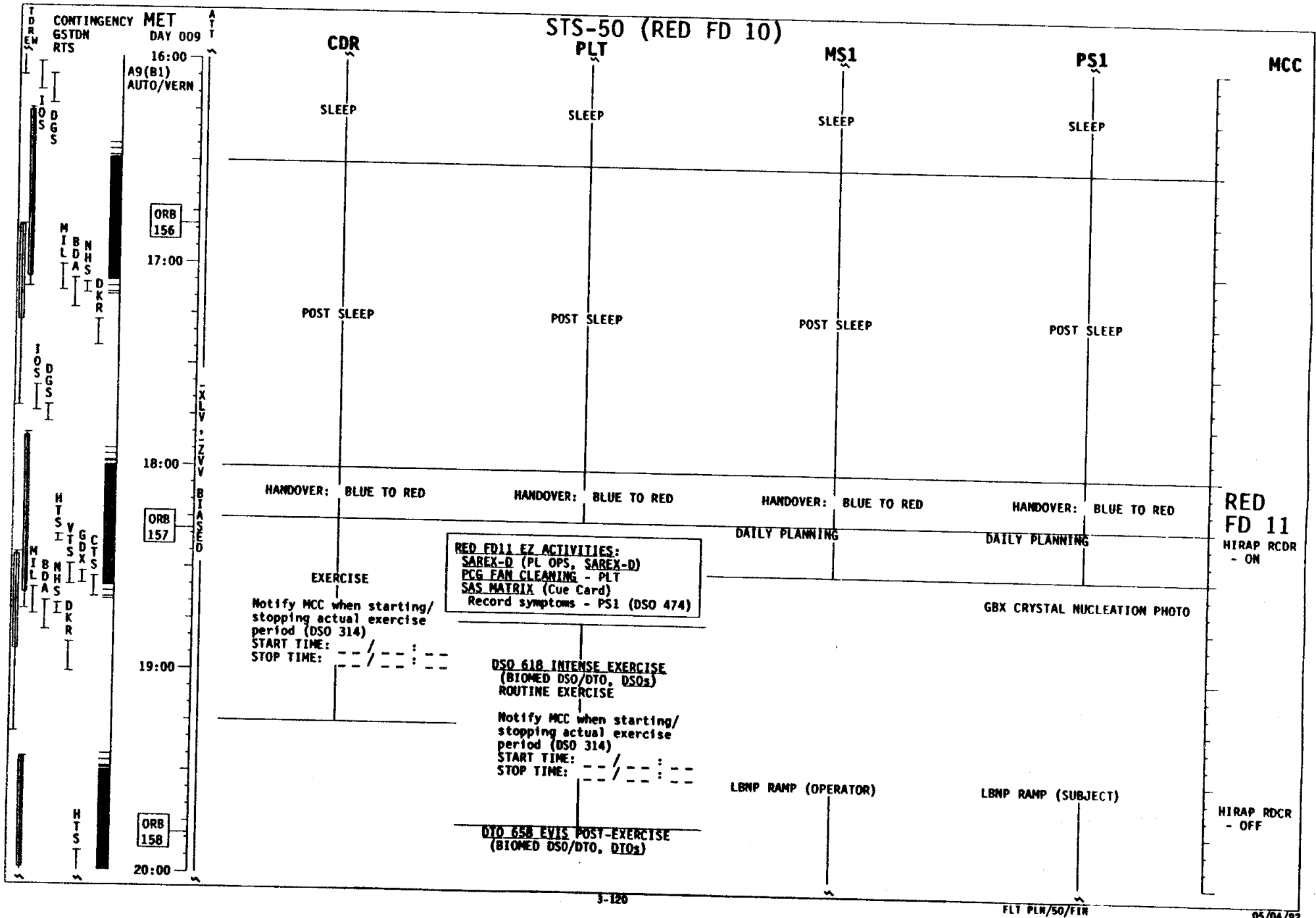
PADM SETUP
(ORB OPS, CREW SYS)

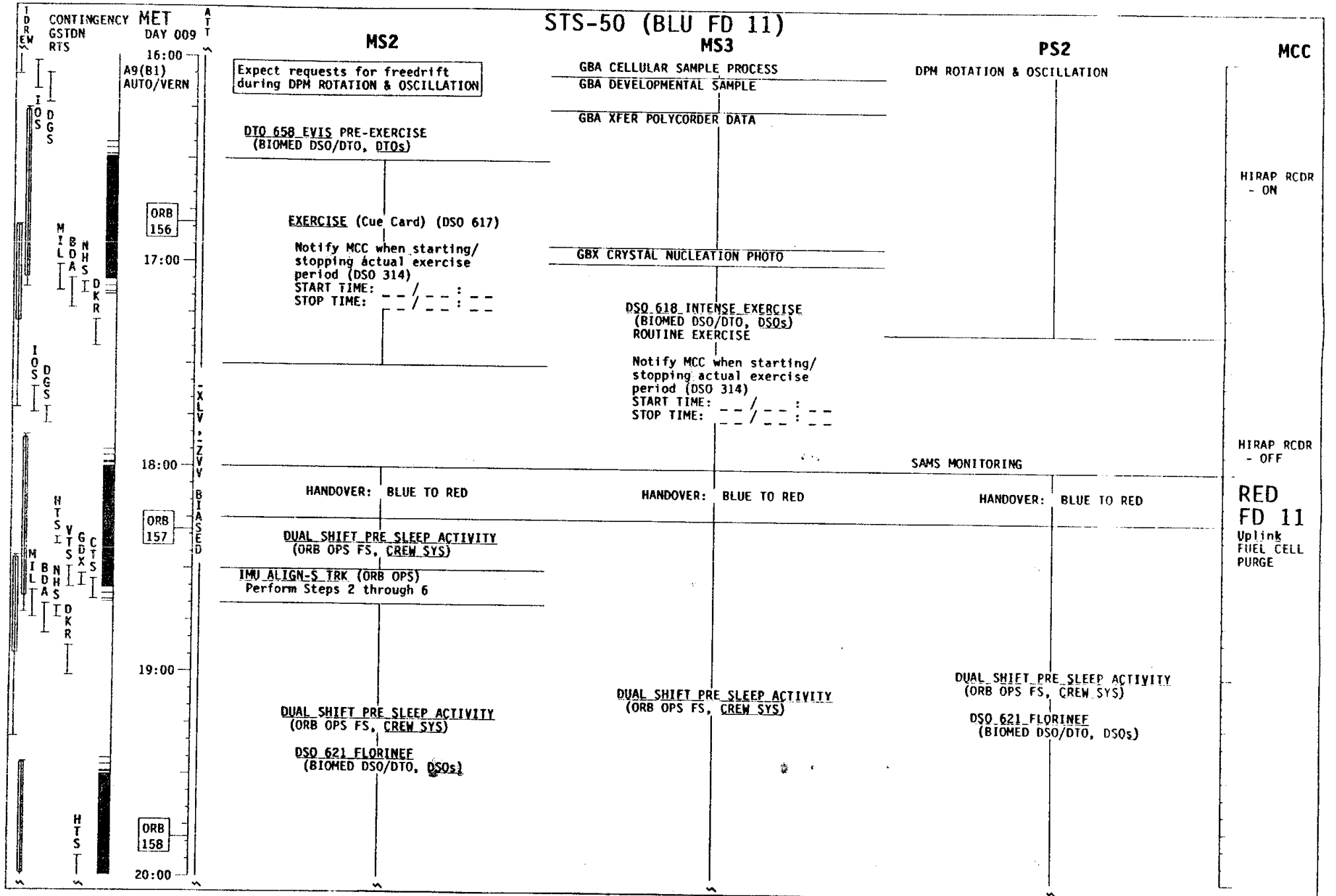
GBX PARTICLE DISPERSION EXPT
GBA CELLULAR SAMPLE PROCESS

16:00

TDR CM
DKR
BDA
DKR
IOS
SS
BDA
DKR
MIL

X
L
V
Z
V
B
I
A
S
E
D





STS-50 (RED FD 11)

CONTINGENCY MET
GSTDN DAY 009
RTS
 20:00
 A9(B1)
 AUTO/VERN
 21:00
 ORB
 159
 22:00
 ORB
 160
 23:00
 010
 00:00

I D R E W
 H T S
 V T S
 D K R
 M I L
 G T S
 H T S
 V T S
 M I L
 D G S
 G T S
 H T S
 V T S
 G D X
 I

CDR

PLT

MS1

PS1

MCC

SAREX ESTV SETUP & RECEPTION
 (PL OPS, SAREX-D)
 JSC,MSFC,FL (20:10 - 20:22)

LBNP RAMP (OPERATOR)

LBNP RAMP (SUBJECT)

SAREX VOICE SETUP & OPS
 (PL OPS, SAREX-D)
 U.S. SCHOOL
 (21:31 - 21:54)

MEAL

MEAL

MEAL

MEAL

LBNP SOAK (SUBJECT)

GBX CRYSTAL NUCLEATION PHOTO
 LBNP SOAK (OPERATOR)

STS-50 (BLU FD 11)

CONTINGENCY MET
 GSTDN DAY 009
 RTS 20:00
 A9(B1)
 AUTO/VERM

HTS
 VDTX
 DTS
 KR I

HILDA
 BDA

GTS
 HTS
 VDTX
 DTS
 KR I

HIL I

DGS
 H

GTS
 HTS
 VDTX
 DTS
 KR I

010
 00:00

MS2

DUAL SHIFT PRE SLEEP ACTIVITY
 (ORB OPS FS, CREW SYS)
 DSO 621 FLORINEE
 (BIOMED DSO/DTO, DSOs)

MS3

DUAL SHIFT PRE SLEEP ACTIVITY
 (ORB OPS FS, CREW SYS)

PS2

DUAL SHIFT PRE SLEEP ACTIVITY
 (ORB OPS FS, CREW SYS)
 DSO 621 FLORINEE
 (BIOMED DSO/DTO, DSOs)

MCC

Up Tank
 FUEL CELL
 PURGE

21:00

ORB
 159

22:00

ORB
 160

23:00

SLEEP

SLEEP

SLEEP

STS-50 (RED FD 11)
PLT

CDR

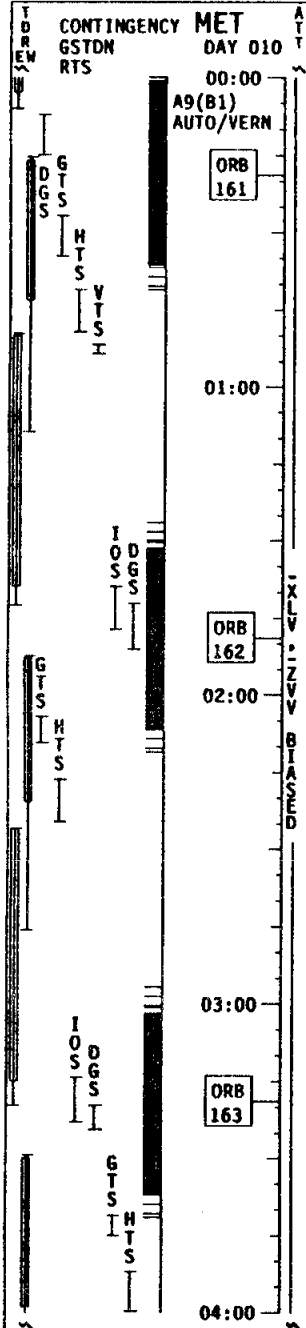
MS1

PS1

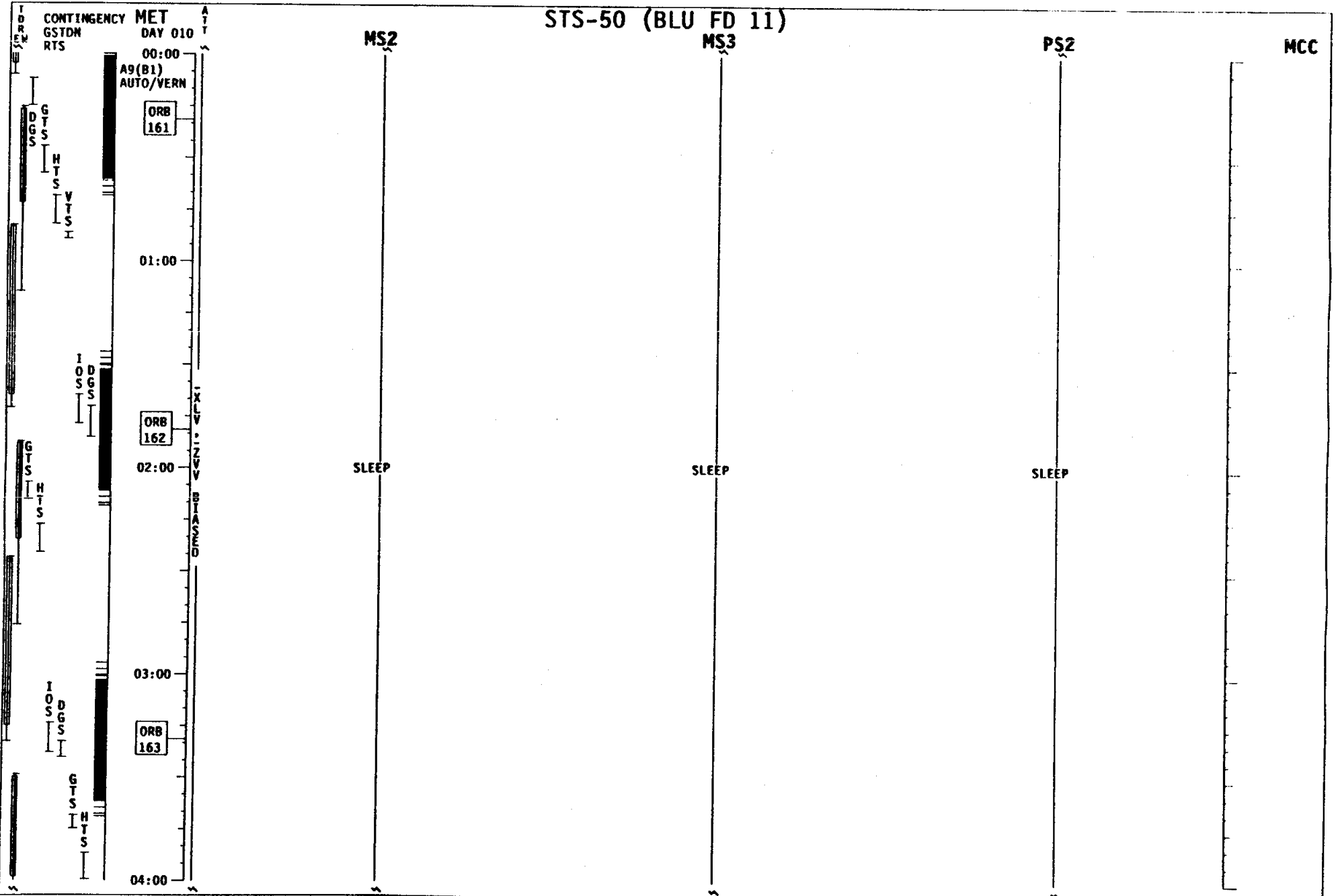
MCC

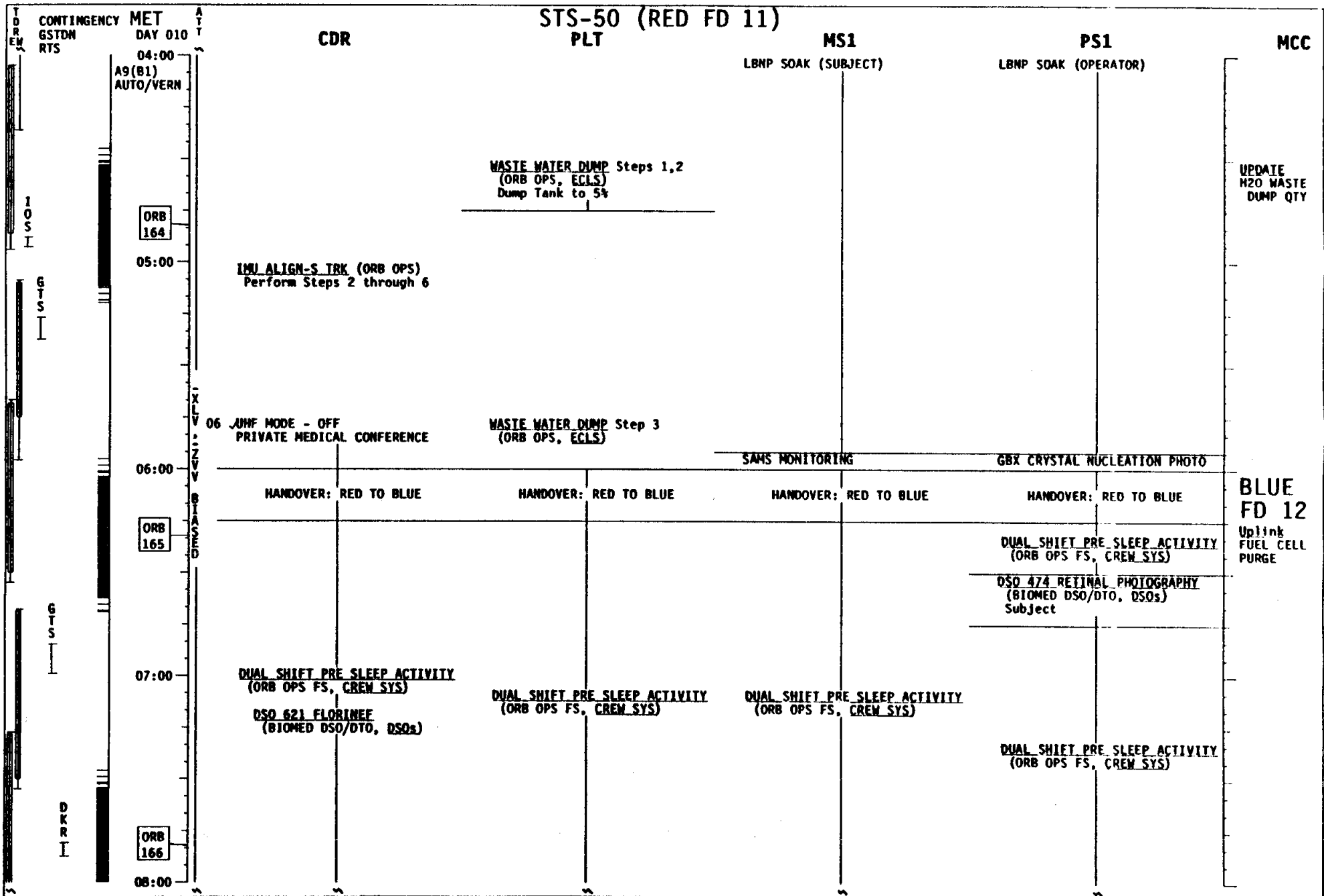
LBNP SOAK (SUBJECT)

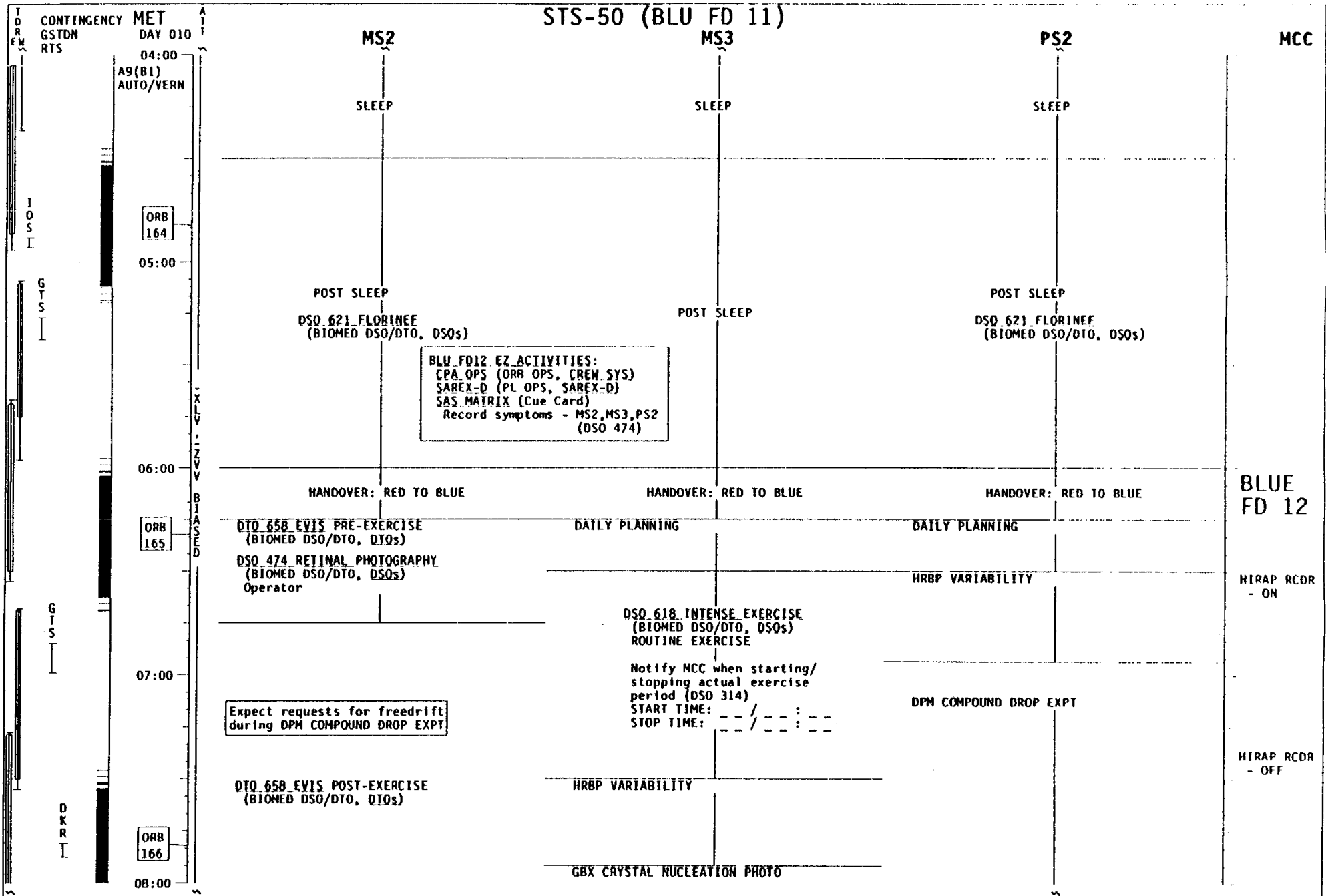
LBNP SOAK (OPERATOR)

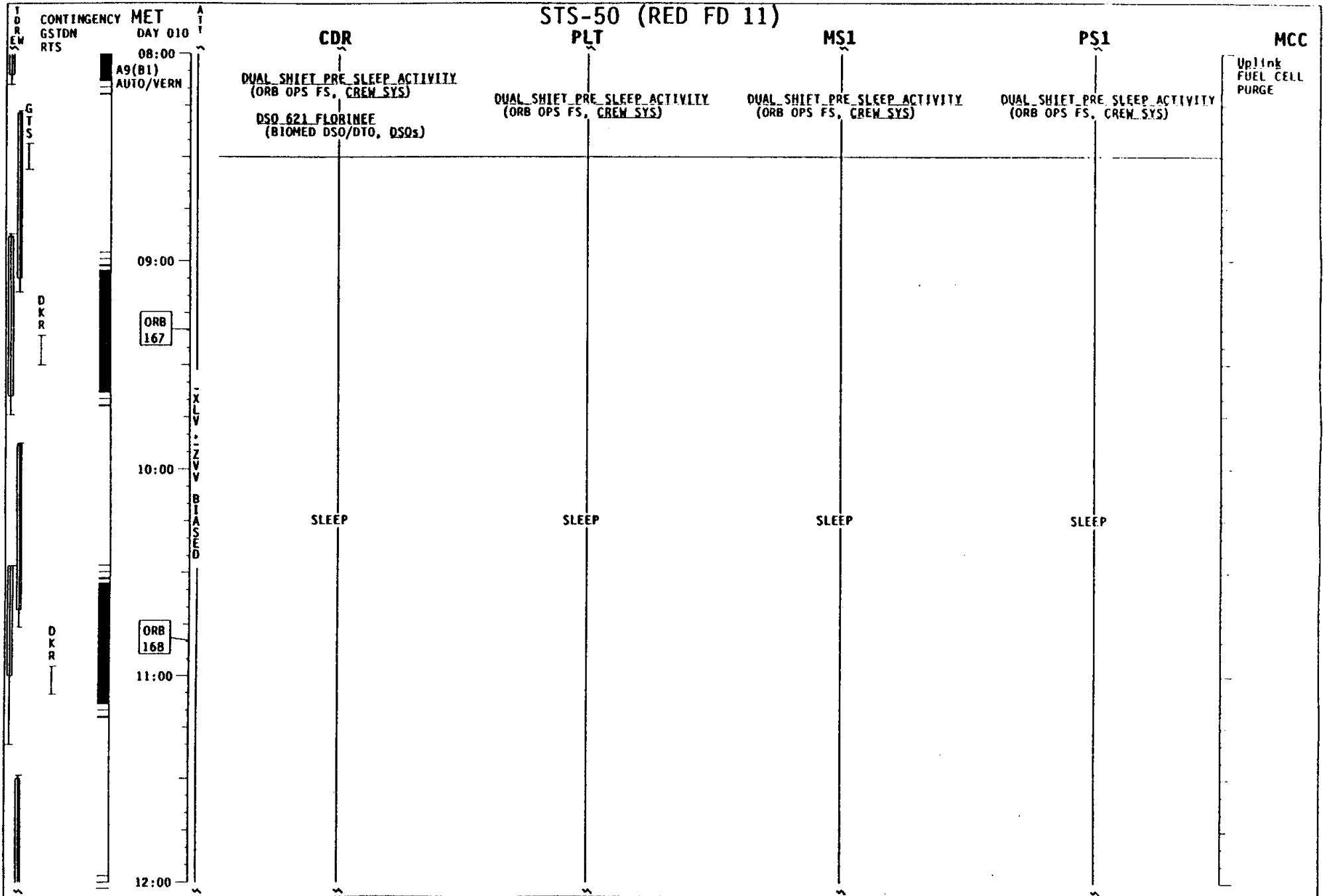


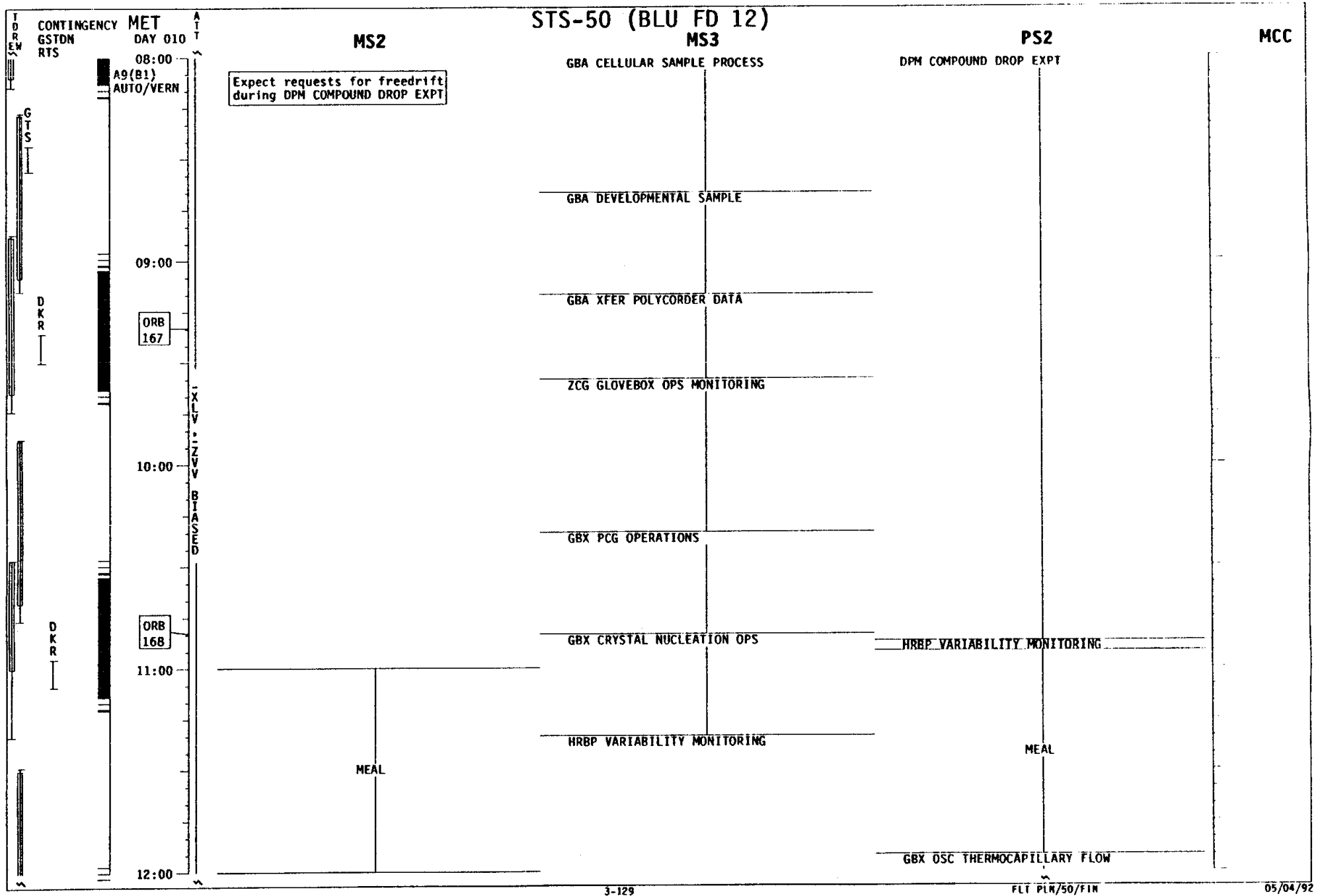
STS-50 (BLU FD 11)



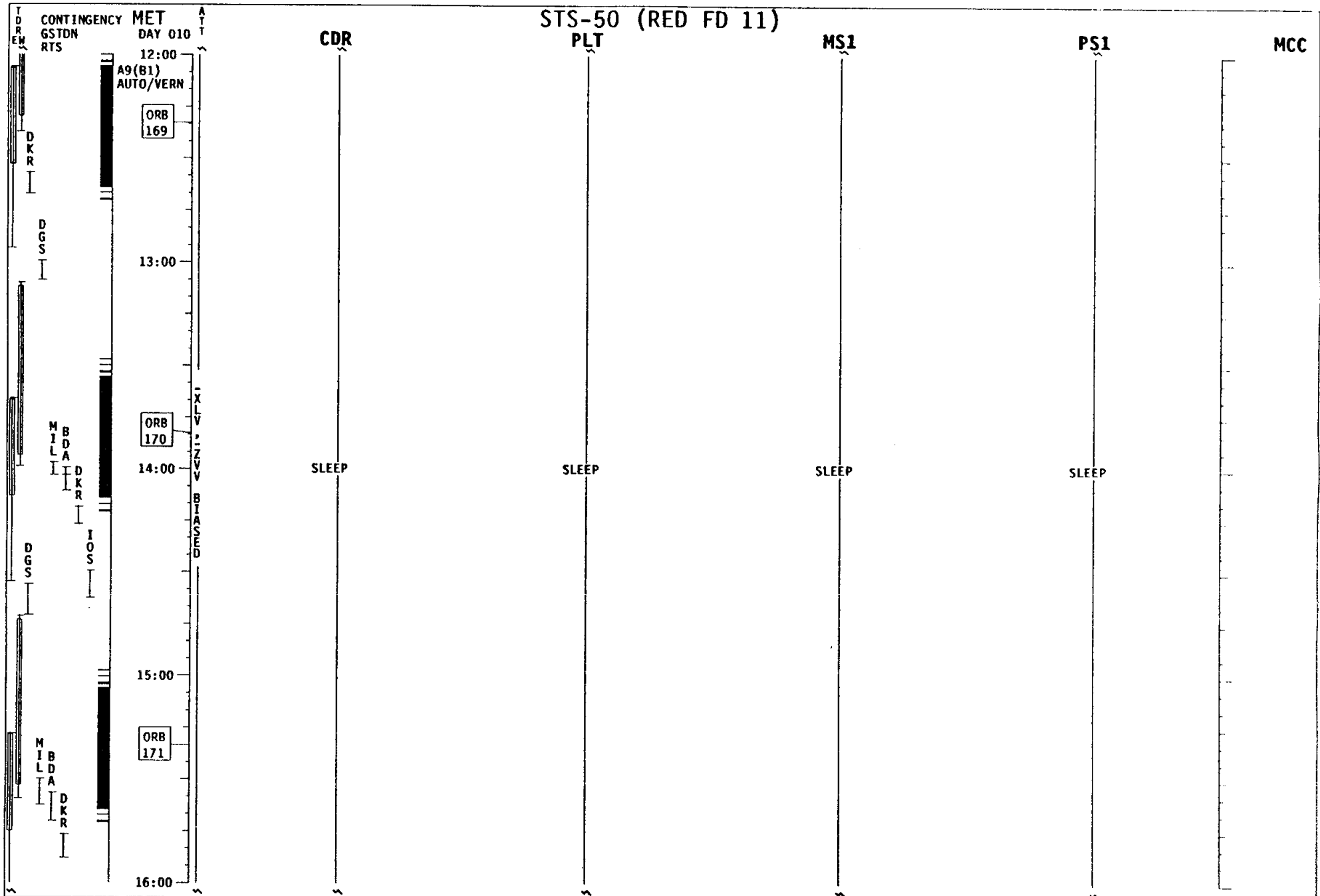


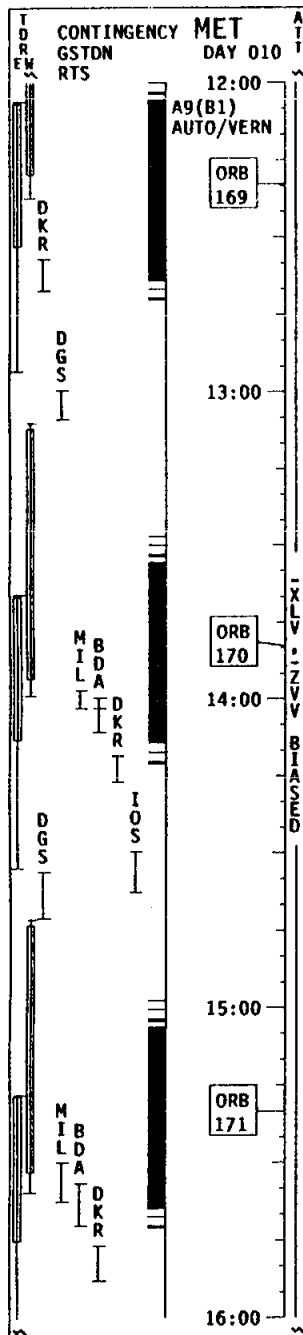






STS-50 (RED FD 11)





STS-50 (BLU FD 12)

MS2

MS3

PS2

MCC

Expect requests for freedrift
during DPM INTERFACIAL TENSION

DSO 904 HUMAN FACTORS
(BIOMED DSO/DTO, DSOs)
NOISE MEASUREMENTS
SL Module Rack 8 (DPM ON)

PADM SETUP
(ORB OPS, CREW SYS)

MEAL

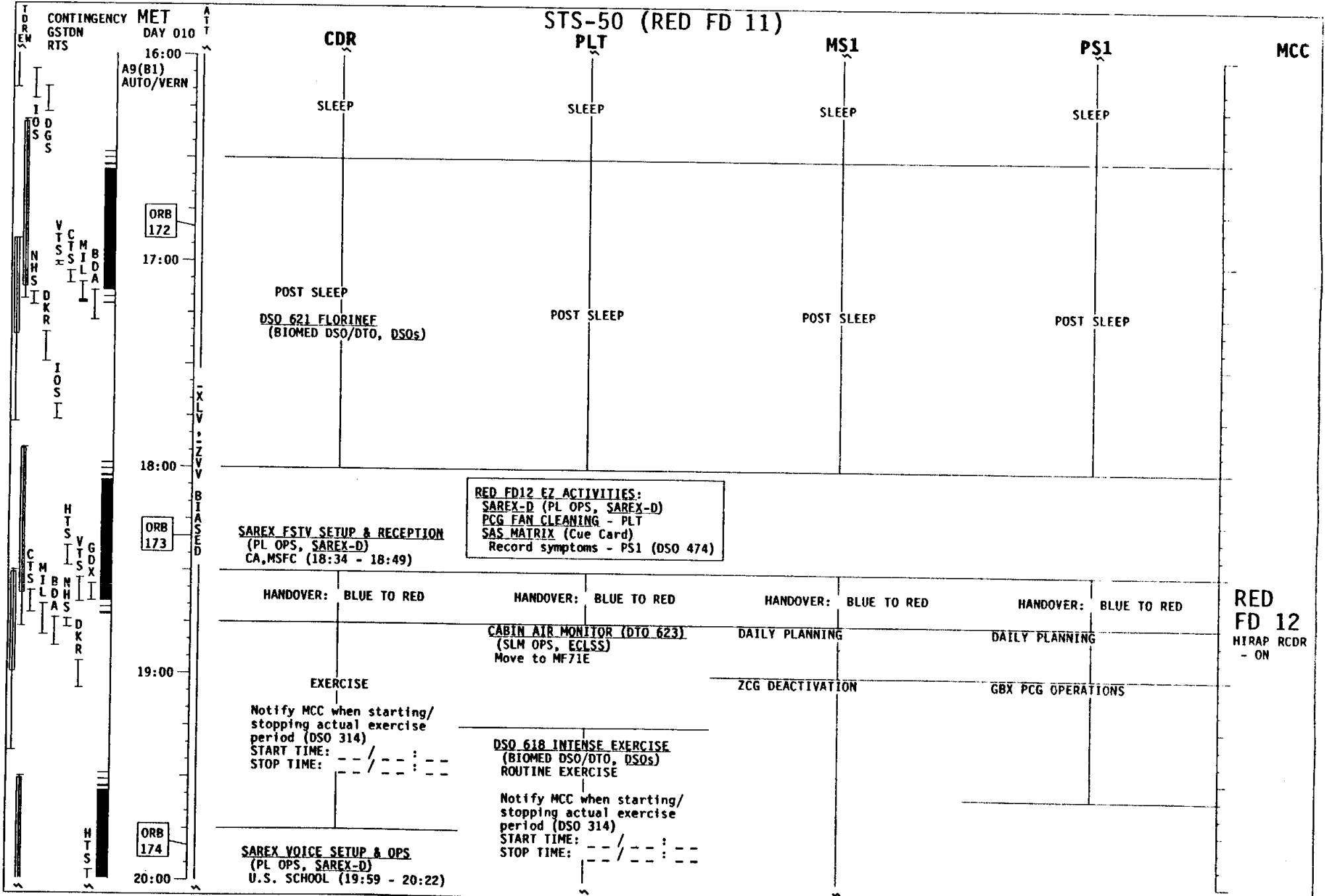
DPM INTERFACIAL TENSION

GBX OSC THERMOCAPILLARY FLOW

HRBP VARIABILITY MONITORING

GBX OSC THERMOCAPILLARY FLOW

STS-50 (RED FD 11)



**RED
FD 12**
HIRAP RCDR
- ON

TDRM
 CONTINGENCY MET
 GSTDM DAY 010
 RTS
 16:00
 A9(81)
 AUTO/VERN
 IODS
 VTS
 NHTS
 CTSS
 MIDA
 BIDA
 DKKR
 IOSI
 17:00
 XVV
 ZVV
 BIAS
 EDD
 HTS
 VTS
 GDXI
 CTSS
 MIDA
 BIDA
 DKKR
 18:00
 ORB 172
 ORB 173
 19:00
 ORB 174
 20:00
 HTST

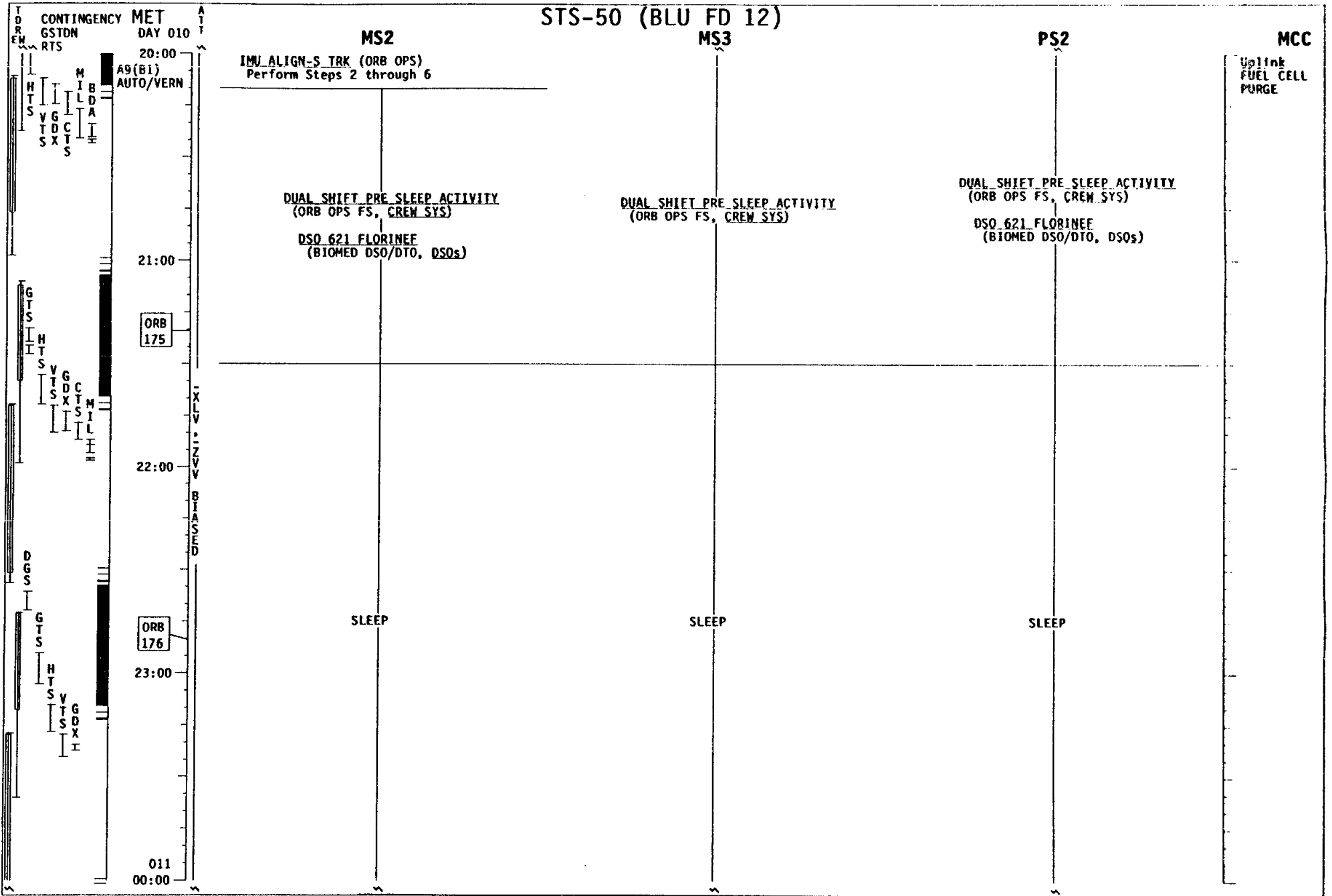
STS-50 (BLU FD 12)

MS2	MS3	PS2	MCC
Expect requests for freedrift during DPM INTERFACIAL TENSION SAREX VOICE SETUP & OPS (PL OPS, SAREX-D) CARNARVON, AUS (16:22 - 16:30)	DPM INTERFACIAL TENSION HRBP VARIABILITY MONITORING	GBX OSC THERMOCAPILLARY FLOW TV04 (PL CREW ACTIVITIES) GBX OSC THERMOCAPILLARY FLOW	
DTO 658_EVIS PRE-EXERCISE (BIOMED DSO/DTO, DIQs)			HIRAP RCDR - ON
EXERCISE (Cue Card) (DSO 617) Notify MCC when starting/stopping actual exercise period (DSO 314) START TIME: -- / -- : -- STOP TIME: -- / -- : --	GBX PASSIVE ACCEL OPS 1	HRBP VARIABILITY MONITORING	HIRAP RCDR - OFF
HANDOVER: BLUE TO RED	HANDOVER: BLUE TO RED	HANDOVER: BLUE TO RED	RED FD 12
DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS) DSO 621 FLORINEF (BIOMED DSO/DTO, DSQs)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS)	DUAL SHIFT PRE SLEEP ACTIVITY (ORB OPS FS, CREW SYS) DSO 621 FLORINEF (BIOMED DSO/DTO, DSQs)	Uplink FUEL CELL PURGE

TDR
 CONTINGENCY MET
 GSTDN DAY 010
 RTS
 20:00
 A9(B1)
 AUTO/VERN
 HTS
 VGS
 TDCT
 SXS
 MILDA
 21:00
 ORB
 175
 HTS
 VGS
 TDCT
 SXS
 MILDA
 22:00
 -XVV
 -ZVV
 BIA
 SE
 D
 DGS
 23:00
 ORB
 176
 HTS
 VGS
 TDCT
 SXS
 011
 00:00

STS-50 (RED FD 12)

CDR	PLT	MS1	PS1	MCC
SAREX VOICE SETUP & OPS (PL OPS, SAREX-D) U.S. SCHOOL (19:59 - 20:22)	DSO 618 INTENSE EXERCISE (BIOMED DSO/DTO, DSOs) ROUTINE EXERCISE DTO 658 FYIS POST-EXERCISE (BIOMED DSO/DTO, DTOs) FILTER CLEANING (IFM, SCHEDULED MAINTENANCE)	ZCG DEACTIVATION LBNP RAMP (OPERATOR)	LBNP RAMP (SUBJECT)	HIRAP RCDR - OFF
MEAL	MEAL	MEAL	MEAL	
ACOUSTIC SLM OPS (ORB OPS, QTO 665) R9K-Micro Air Smplr (00:03)		SAMS OPERATIONS GBX PCG OPERATIONS		



STS-50 (RED FD 12)

PLT

ACOUSTIC SLM OPS
(ORB OPS, DTQ 665)
R9K-Micro Air Smplr (00:03)

MS1

GBX PCG OPERATIONS

PS1

MICROBIAL AIR SAMPLING OPS

MCC

CDR

CONTINGENCY MET
GSTDN DAY 011
RTS

00:00
A9(B1)
AUTO/VERN

ORB
177

01:00

ORB
178

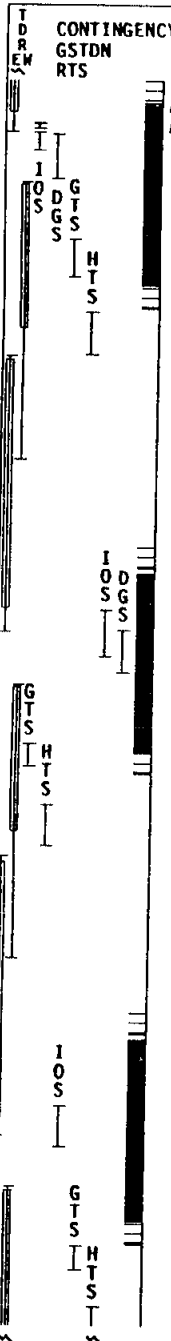
02:00

03:00

ORB
179

04:00

X
L
V
Z
V
B
I
A
S
E
D



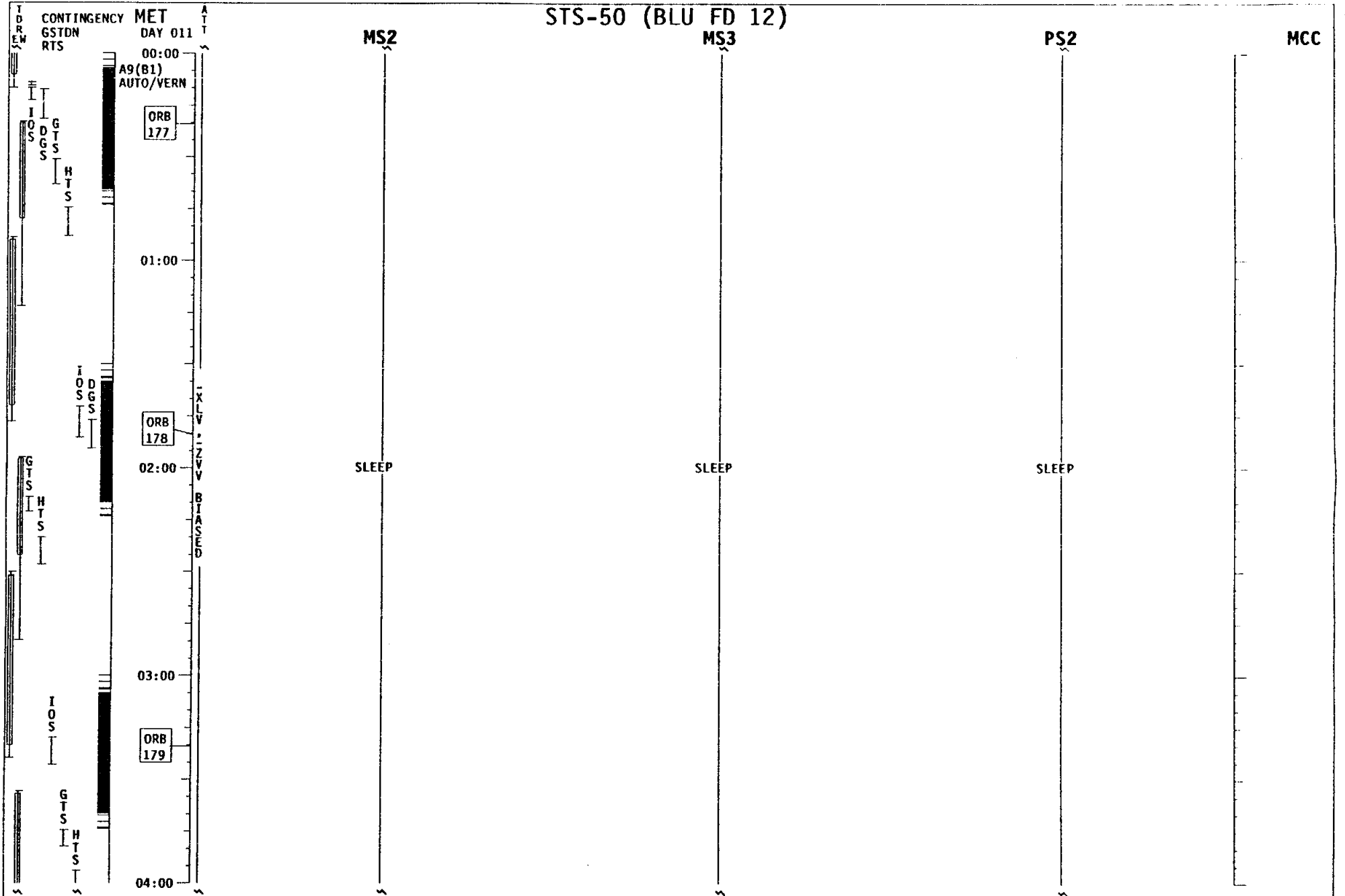
LBNP RAMP (SUBJECT)

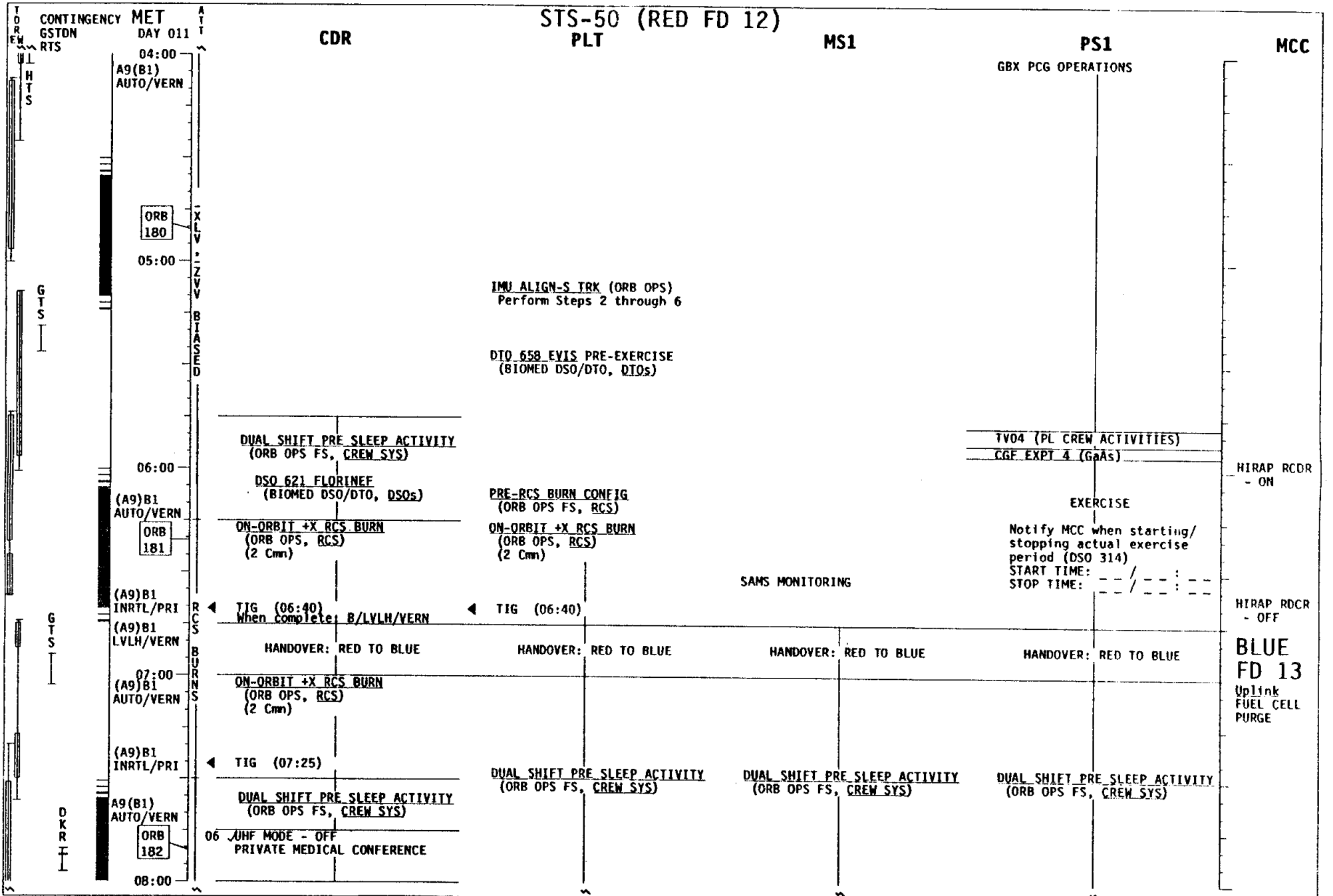
LBNP RAMP (OPERATOR)

PADM SETUP
(ORB OPS, CREW SYS)

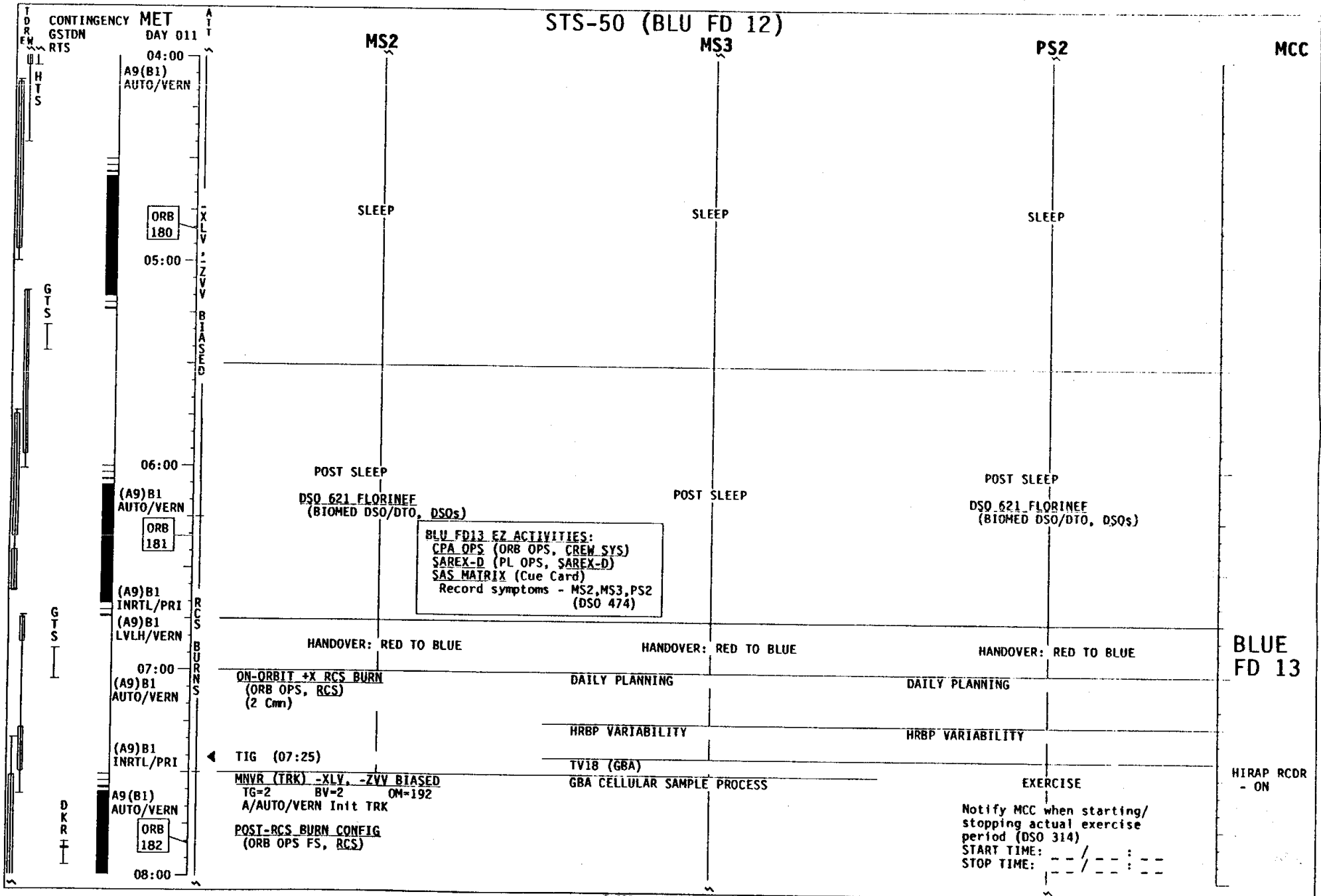
GBX PCG OPERATIONS

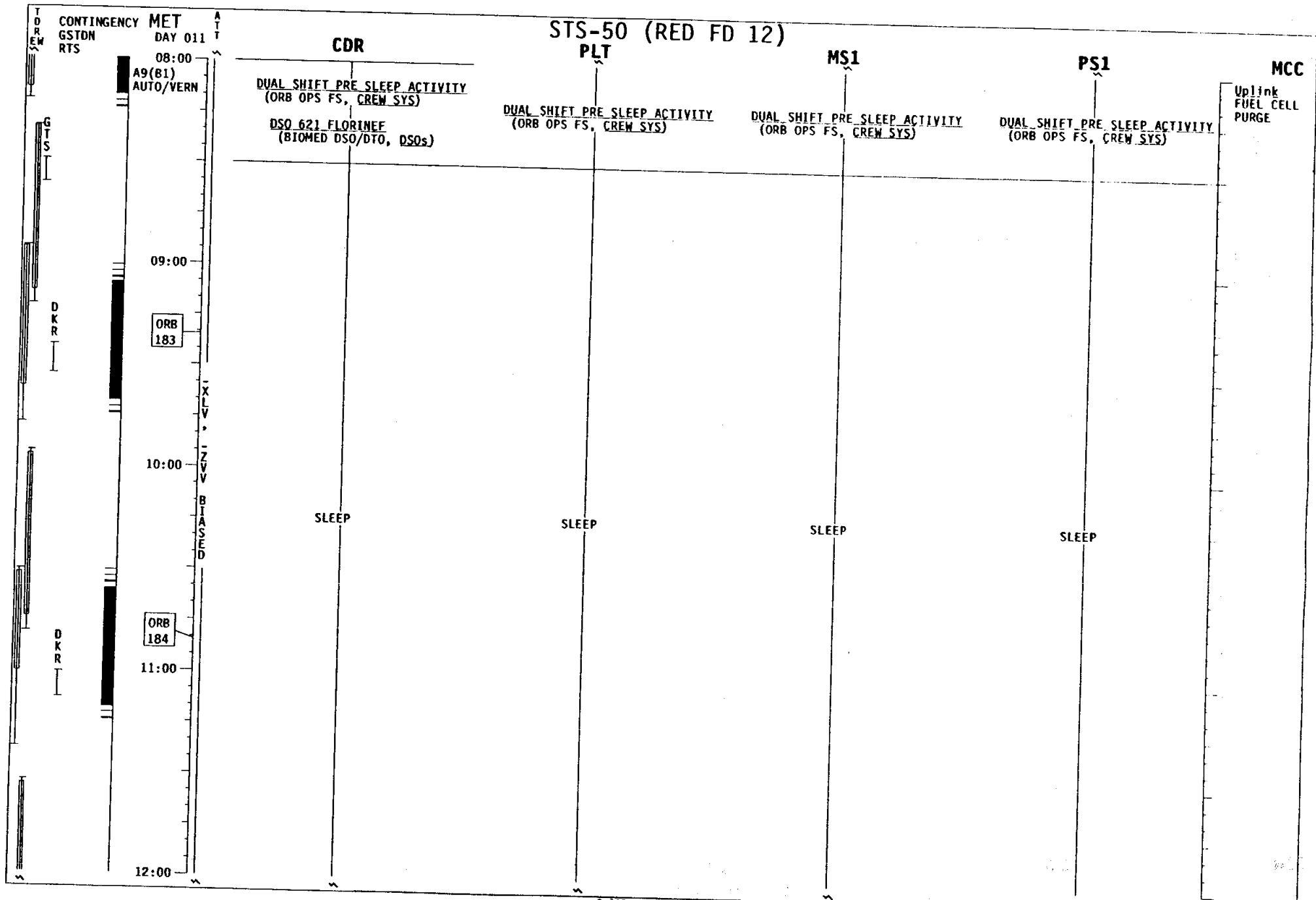
STS-50 (BLU FD 12)

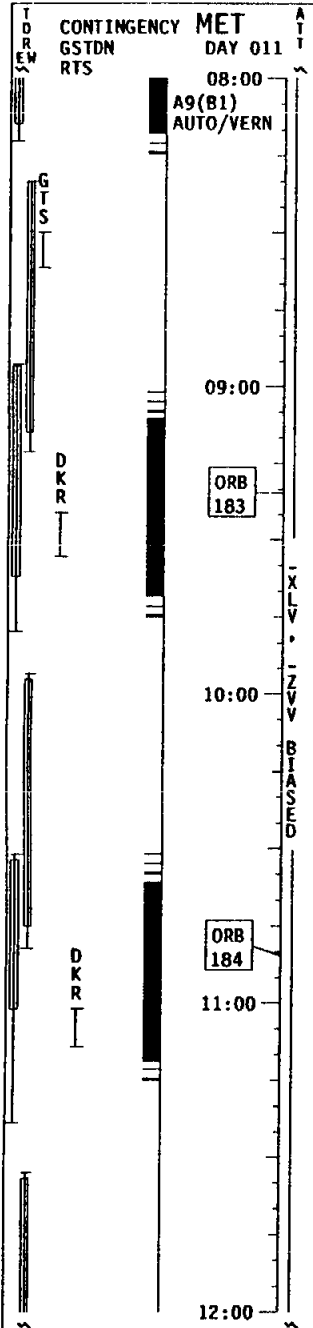




STS-50 (BLU FD 12)







MS2

CHANGE VERN ATT DB (DSO 314)
 (GNC 23 DAP CONFIG)
 ITEM 9 + 1.0 EXEC

CHANGE VERN ATT DB (DSO 314)
 (GNC 23 DAP CONFIG)
 ITEM 9 + 0.5 EXEC

DTO 658 EVIS POST-EXERCISE
 (BIOMED DSO/DTO, DTOS)

Expect requests for freedrift
 during DPM LIQUID/ACOUSTICS

STS-50 (BLU FD 13)
MS3

GBA CELLULAR SAMPLE PROCESS

GBA XFER POLYCORDER DATA

TV08 (DPM)
 DPM FILM CHANGEOUT

DPM LIQUID/ACOUSTICS

PS2

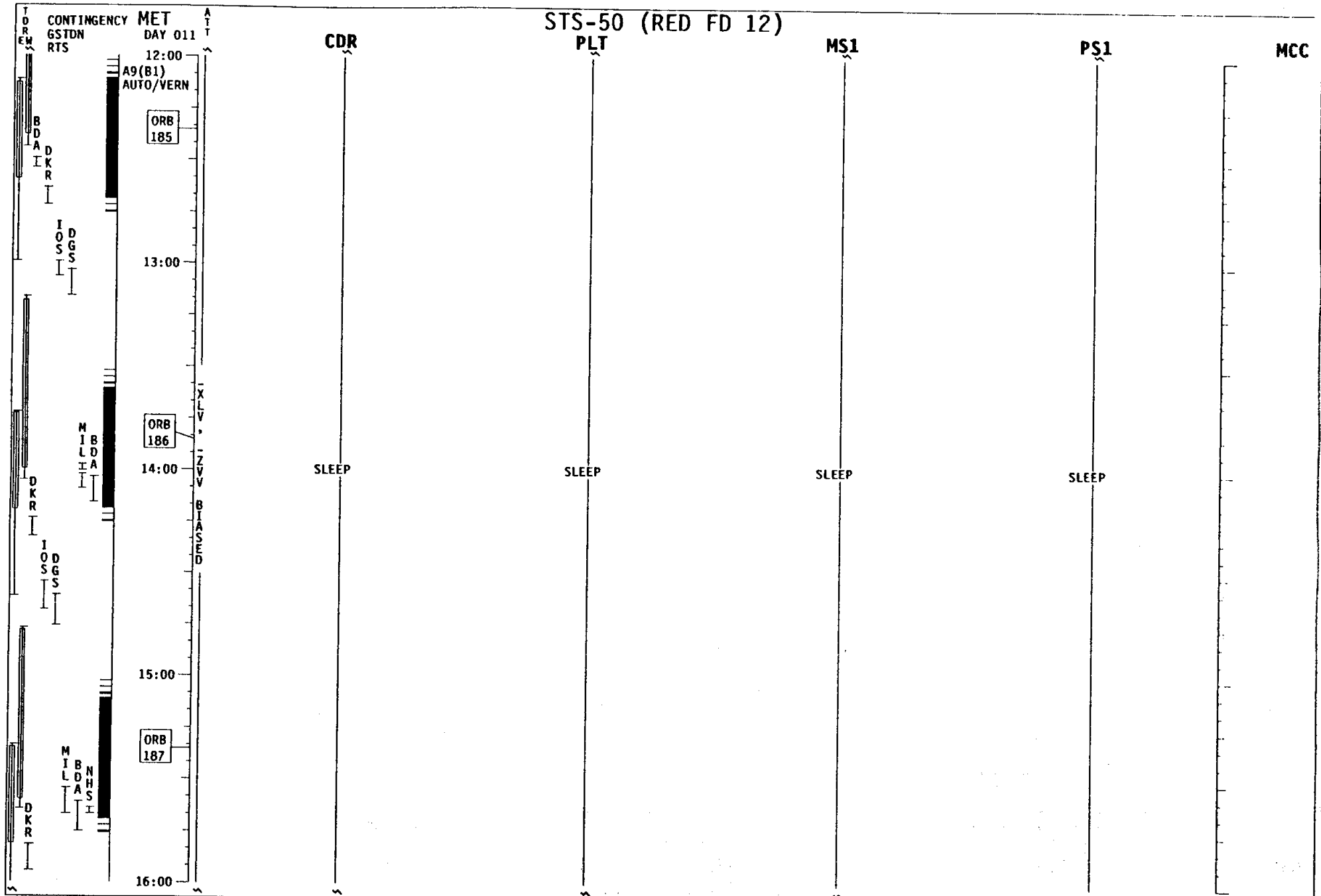
EXERCISE
 Notify MCC when starting/
 stopping actual exercise
 period (DSO 314)
 START TIME: -- / -- : --
 STOP TIME: -- / -- : --

GBX BUBBLE DYNAMICS OPS

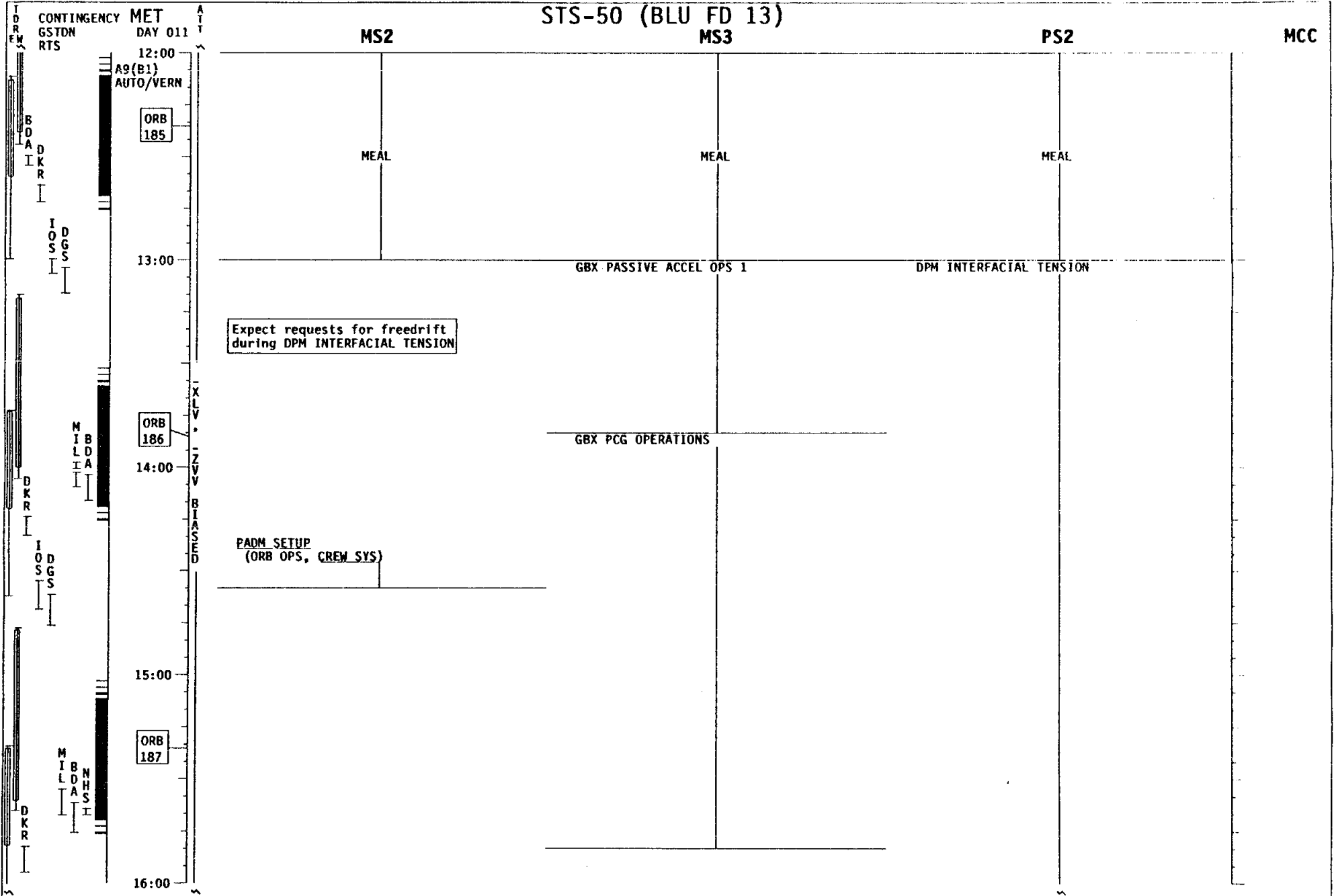
MCC

HIRAP RCDR
 - OFF

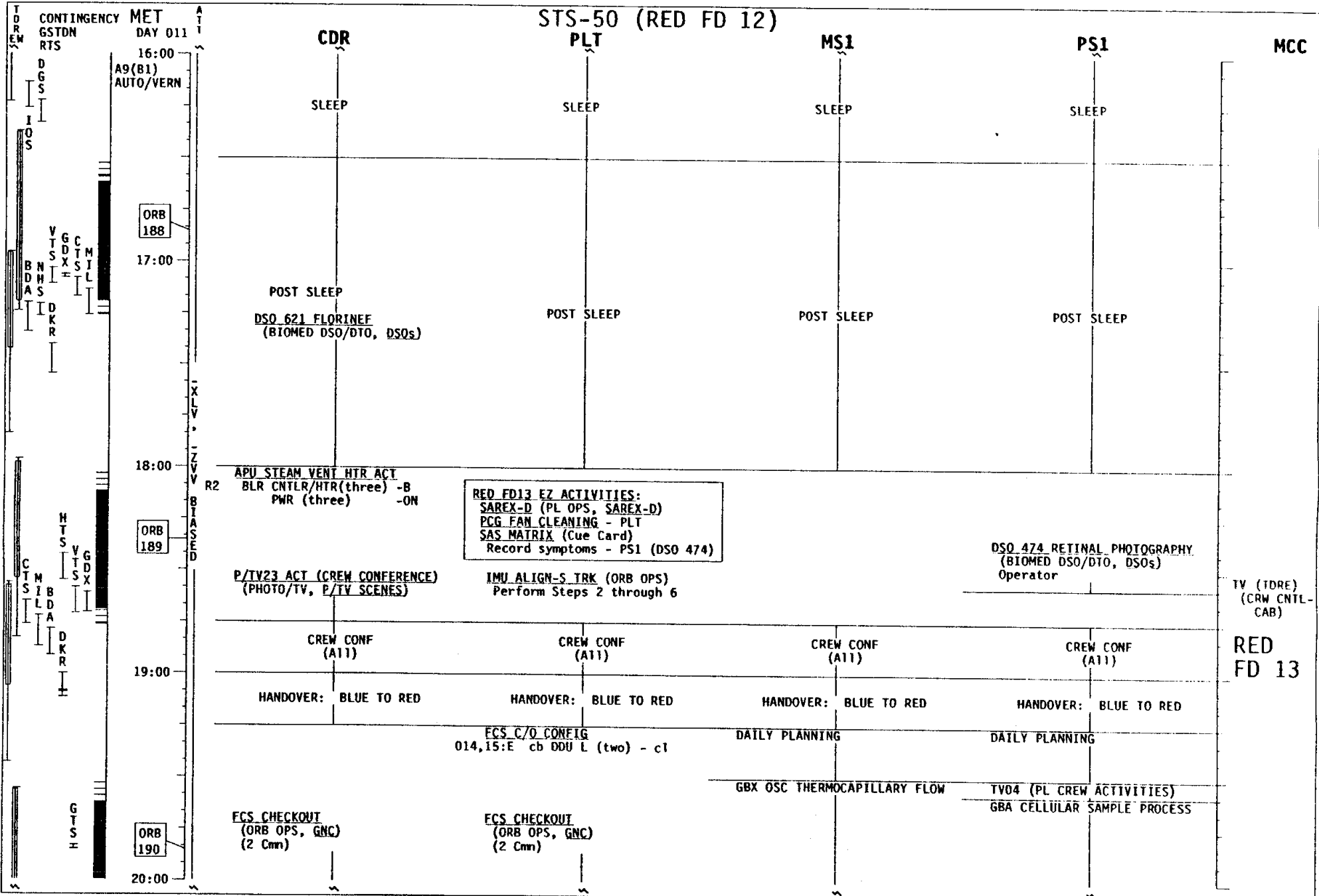
STS-50 (RED FD 12)

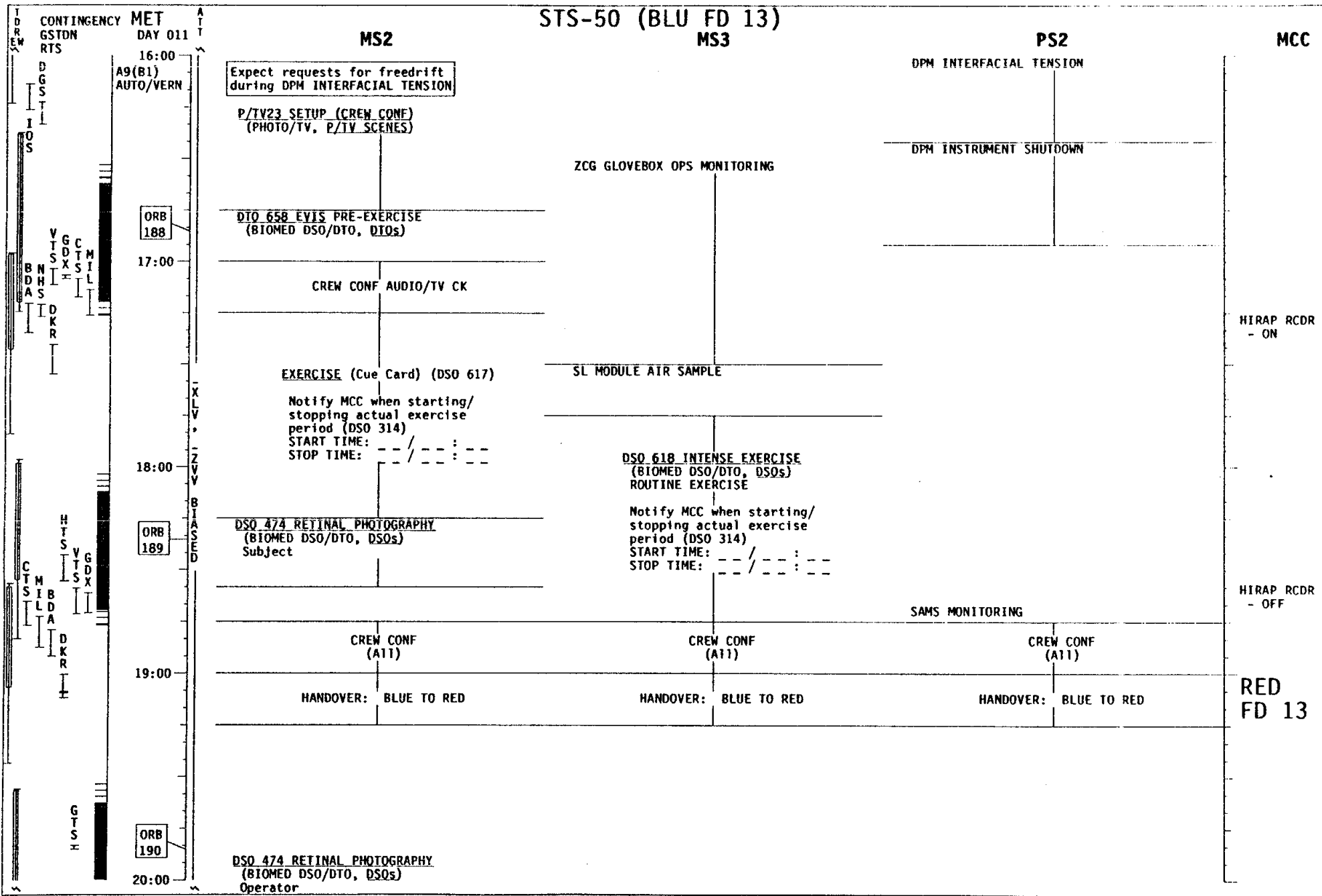


STS-50 (BLU FD 13)

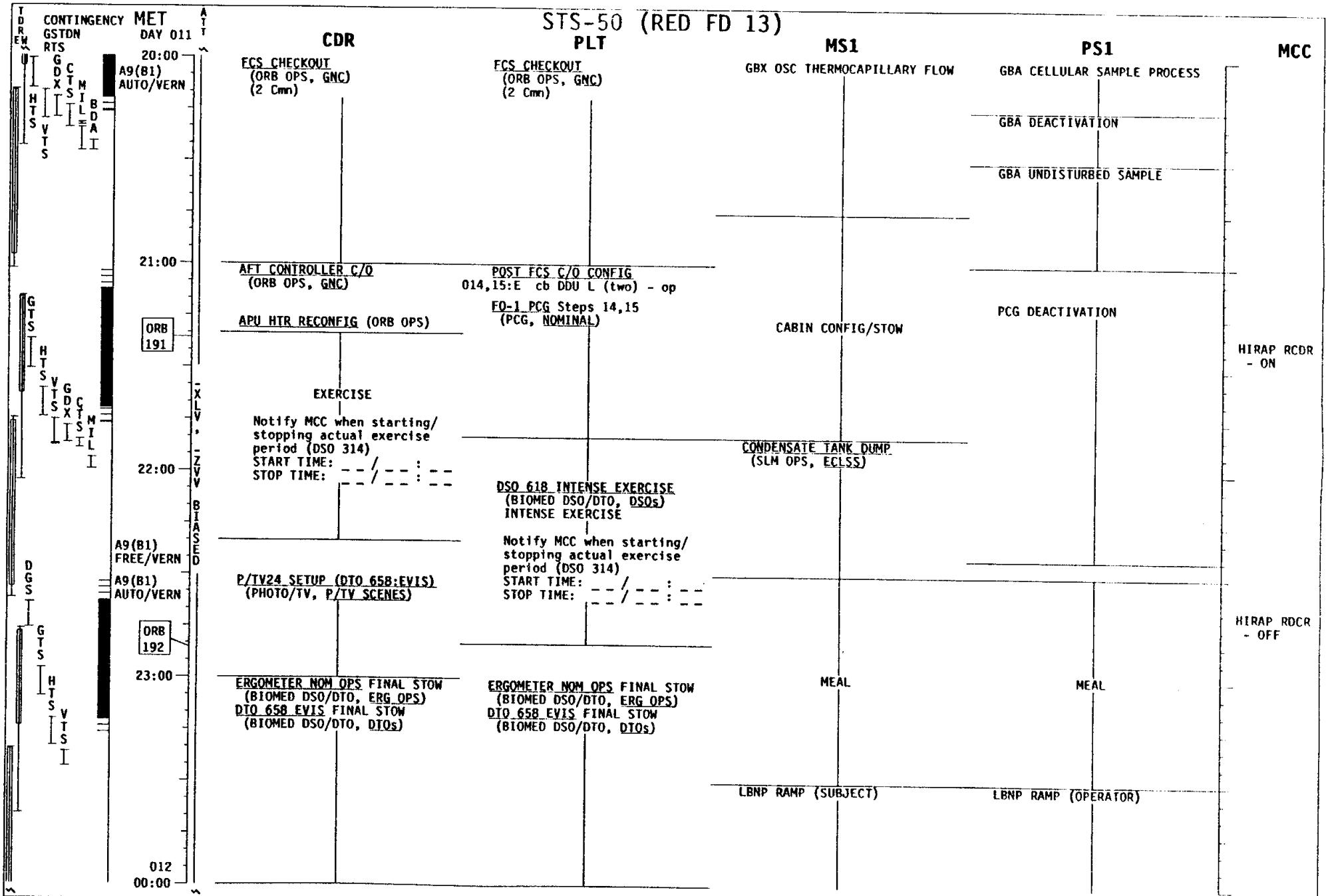


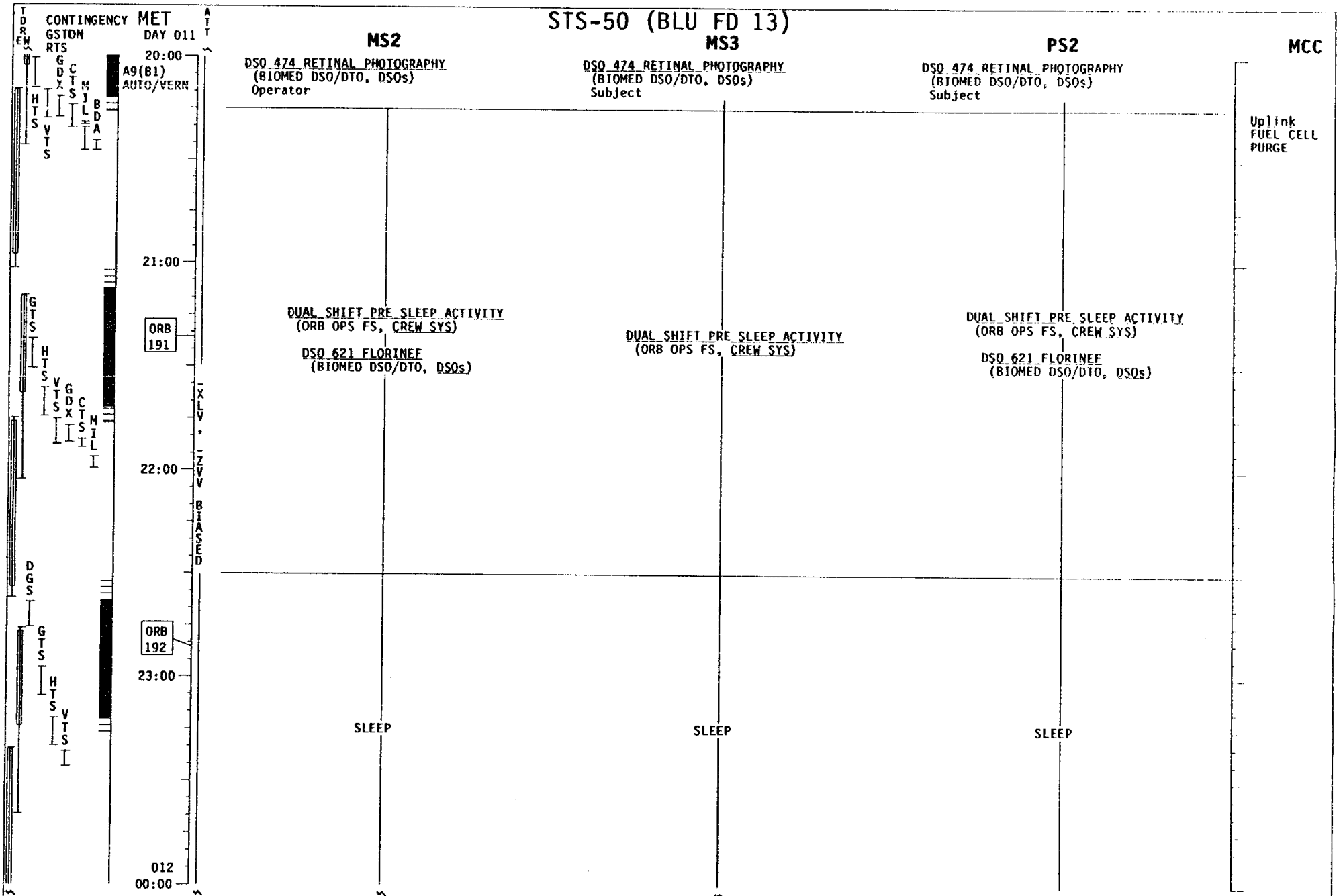
STS-50 (RED FD 12)

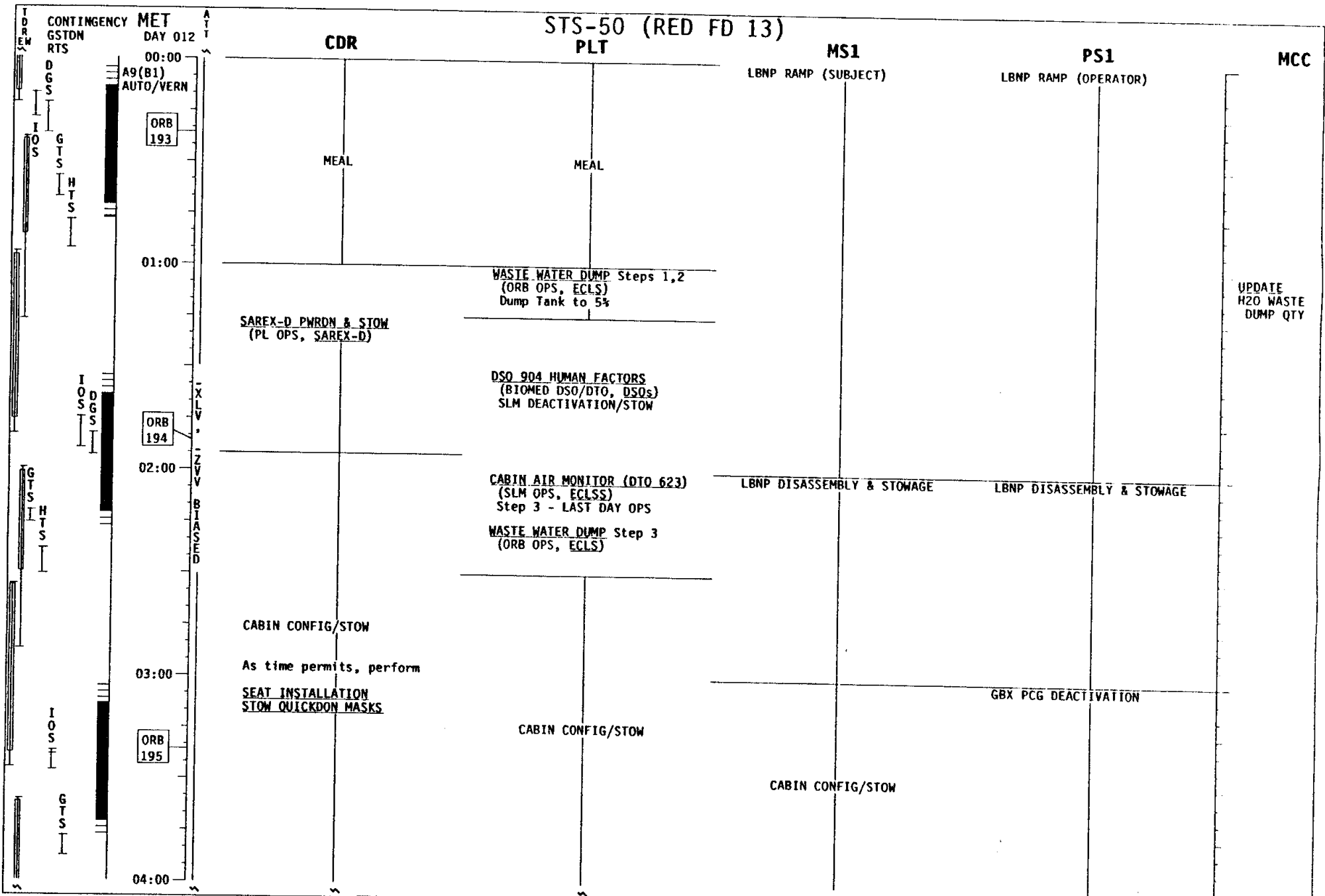




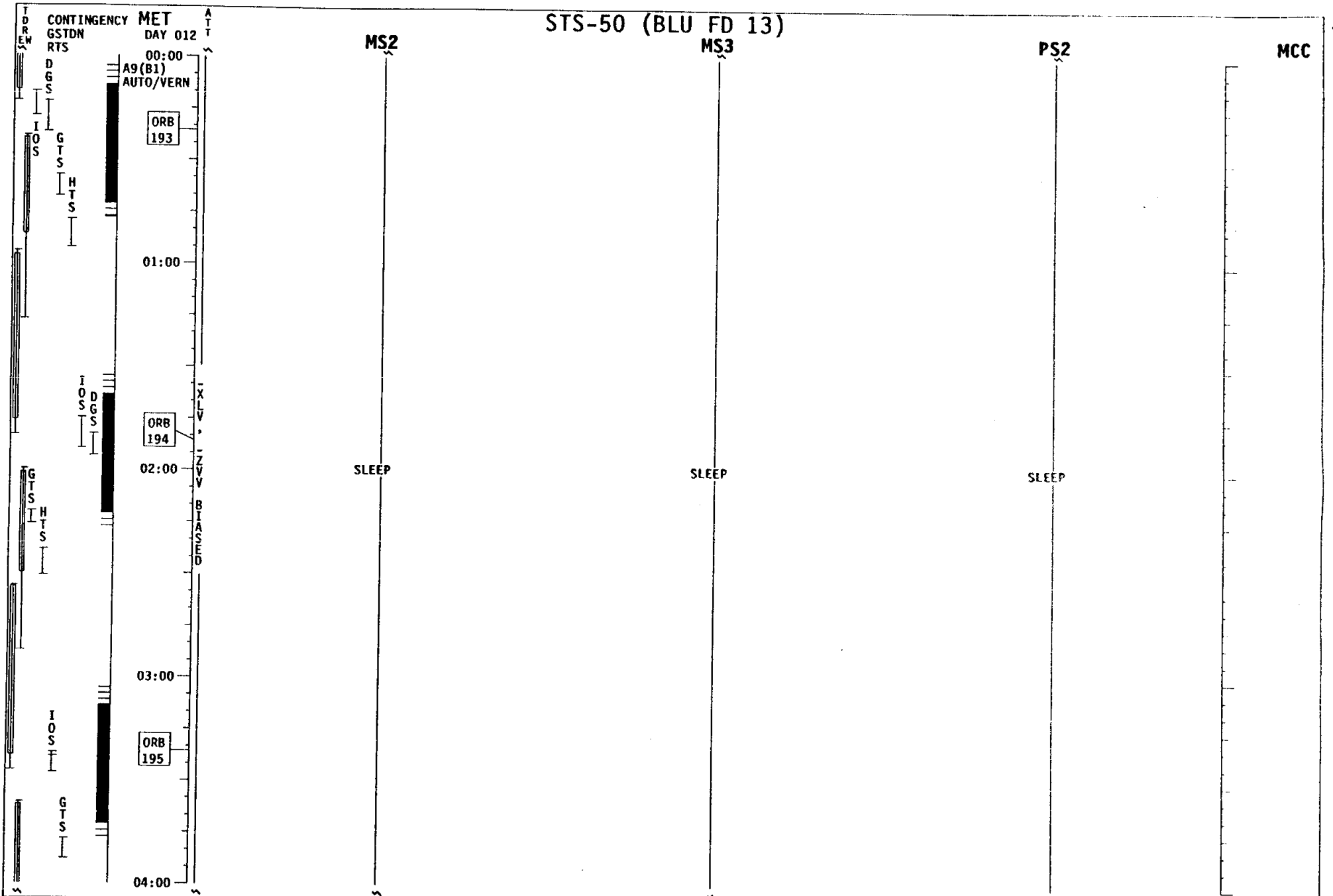
STS-50 (RED FD 13)



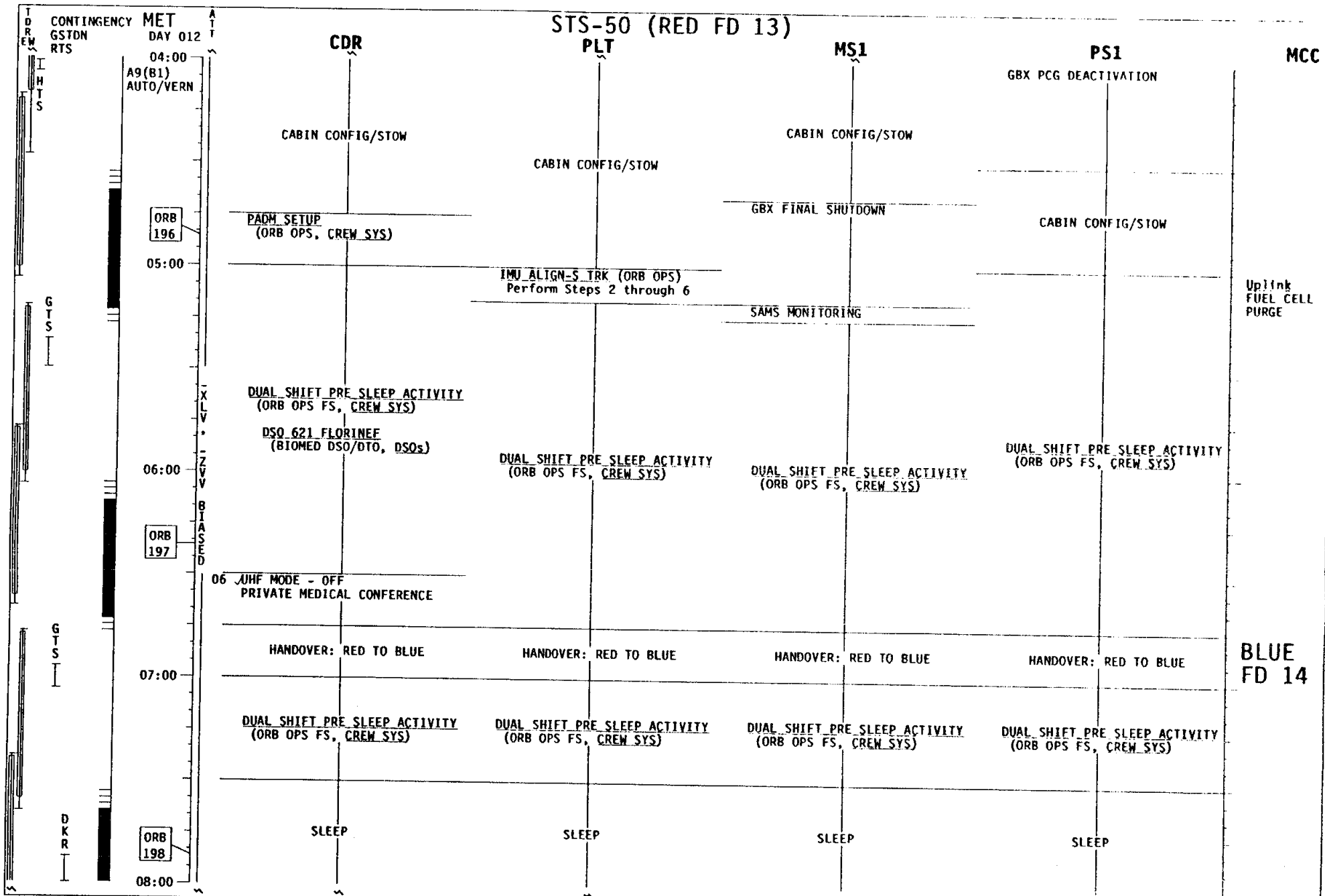


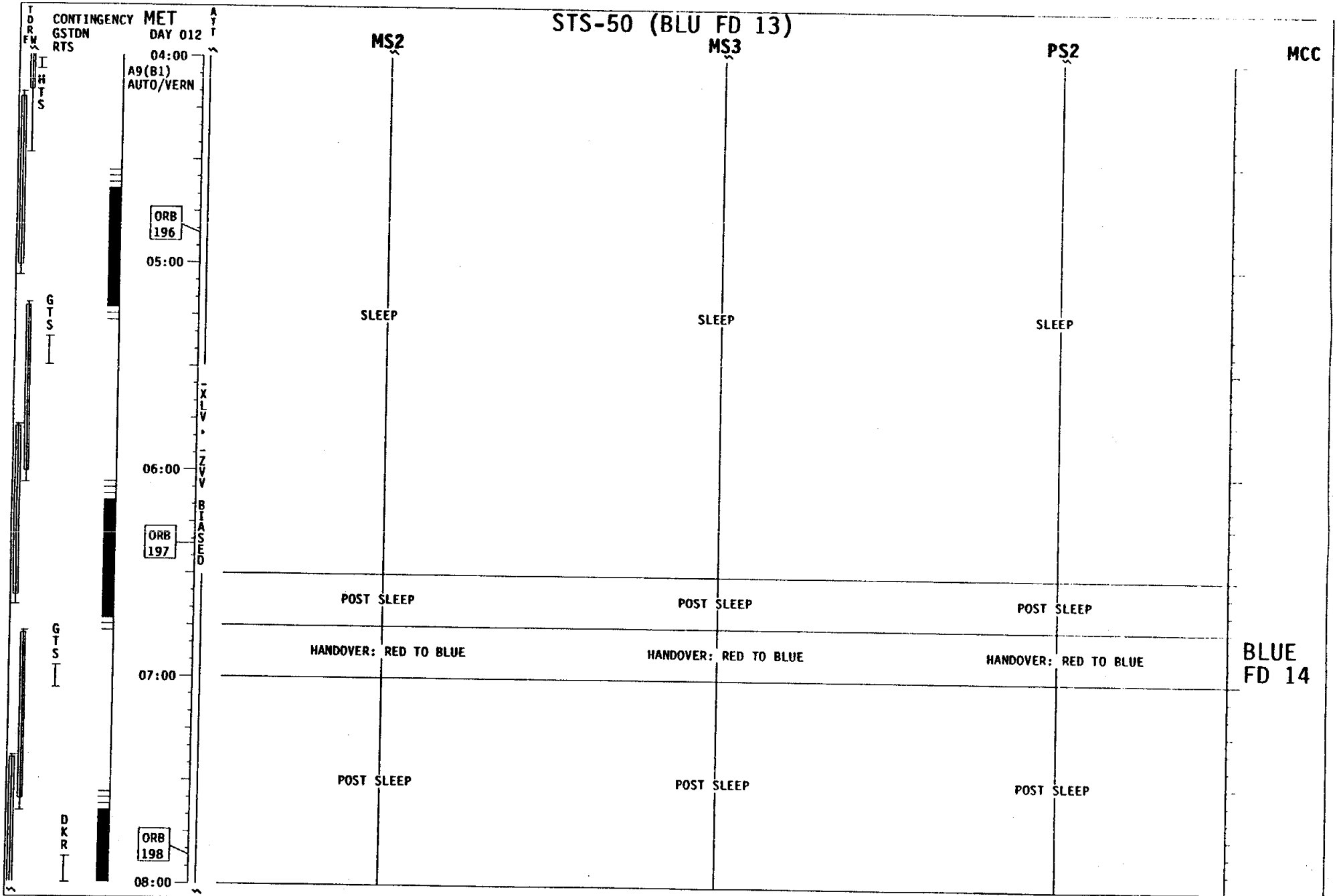


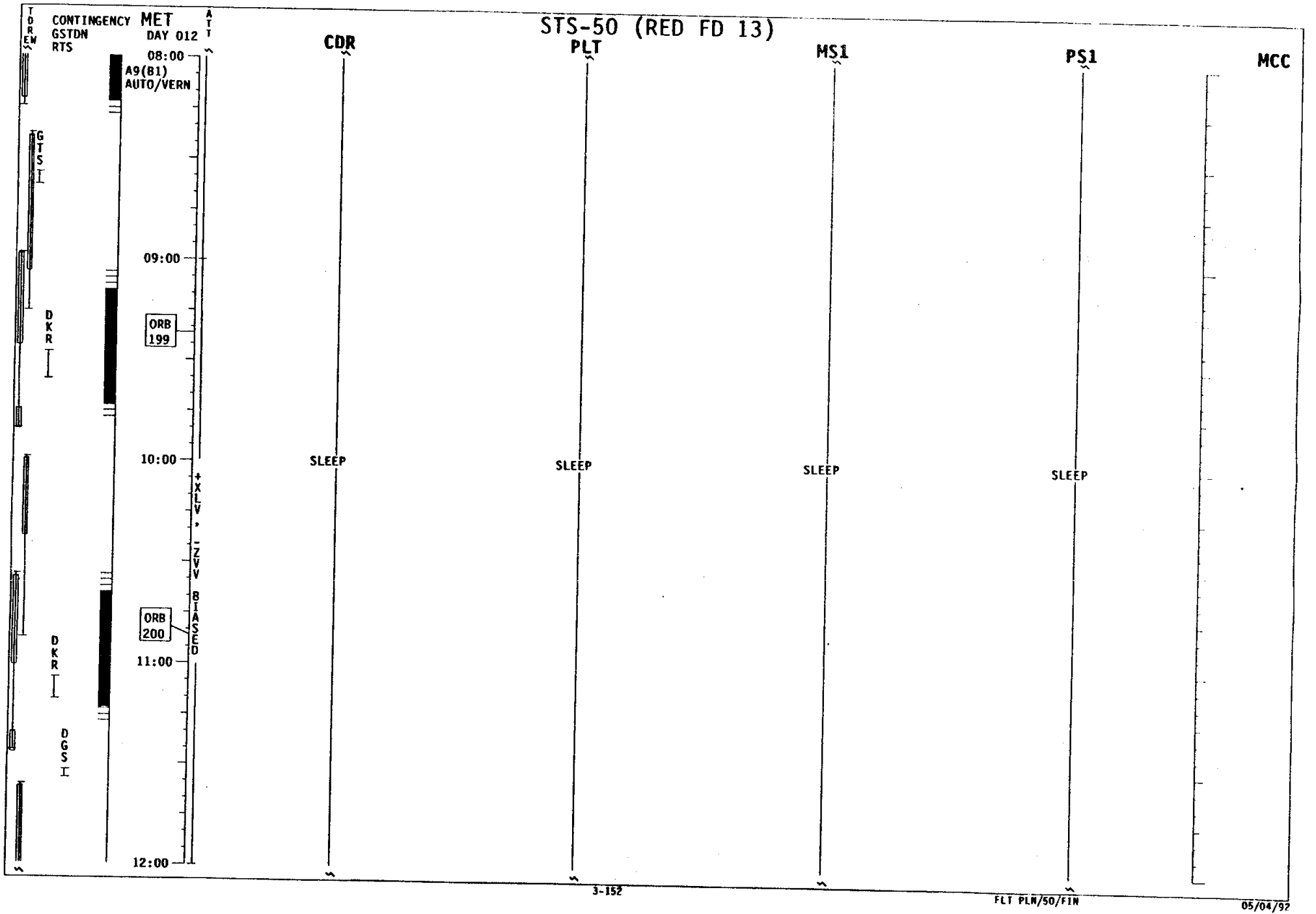
STS-50 (BLU FD 13)

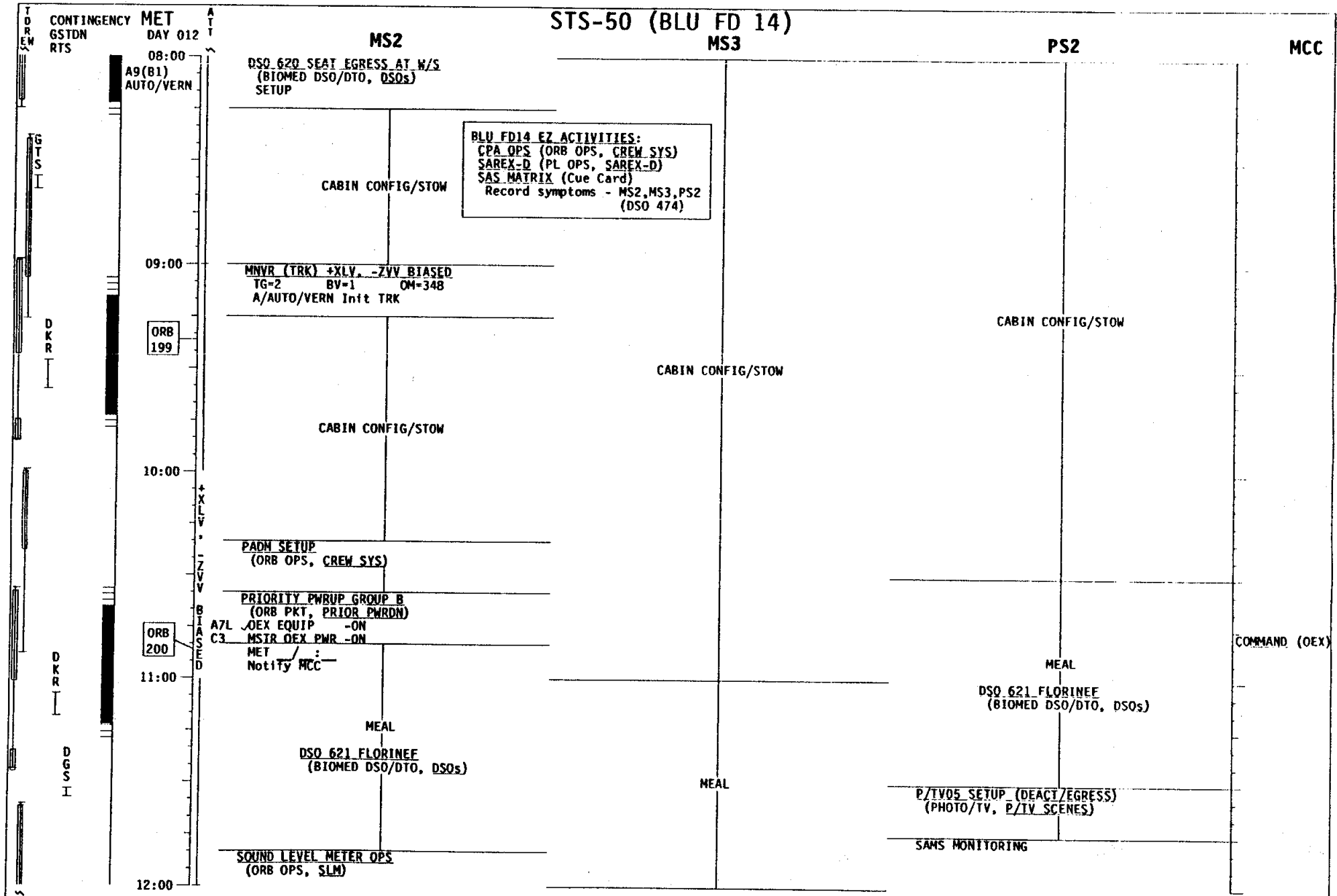


STS-50 (RED FD 13)









STS-50 (BLU FD 14)

MS2

MS3

PS2

MCC

CONTINGENCY MET DAY 012
 GSTDN RTS
 08:00
 A9(B1) AUTO/VERN
 DGR
 DGR
 DGR
 DGR
 09:00
 ORB 199
 10:00
 XLV
 ZVV
 BIASED
 ORB 200
 11:00
 DGR
 DGR
 12:00

DSO 620 SEAT EGRESS AT W/S
 (BIOMED DSO/DTO, DSOs)
 SETUP

CABIN CONFIG/STOW

BLU FD14 EZ ACTIVITIES:
 CPA OPS (ORB OPS, CREW SYS)
 SAREX-D (PL OPS, SAREX-D)
 SAS MATRIX (Cue Card)
 Record symptoms - MS2,MS3,PS2
 (DSO 474)

MNVN (TRK) +XLV, -ZVV BIASED
 TG=2 BV=1 OM=348
 A/AUTO/VERN Init TRK

CABIN CONFIG/STOW

CABIN CONFIG/STOW

CABIN CONFIG/STOW

PADN SETUP
 (ORB OPS, CREW SYS)

PRIORITY PWRUP GROUP B
 (ORB PKT, PRIOR PWRDN)
 A7L JOEX EQUIP -ON
 C3 MSIR JOEX PWR -ON
 MET :
 Notify MCC

MEAL

DSO 621 FLORINEF
 (BIOMED DSO/DTO, DSOs)

MEAL

MEAL

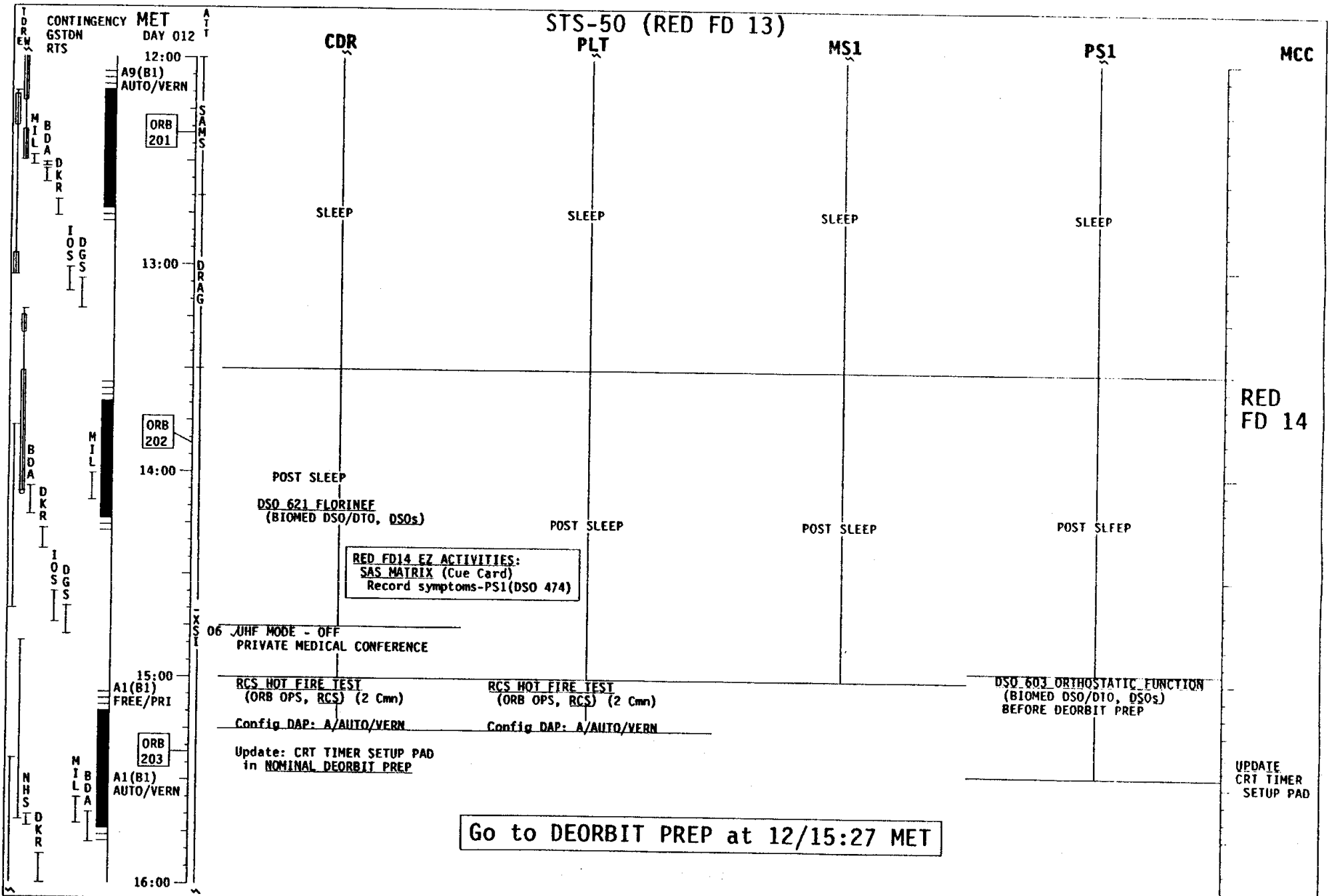
DSO 621 FLORINEF
 (BIOMED DSO/DTO, DSOs)

COMMAND (OEX)

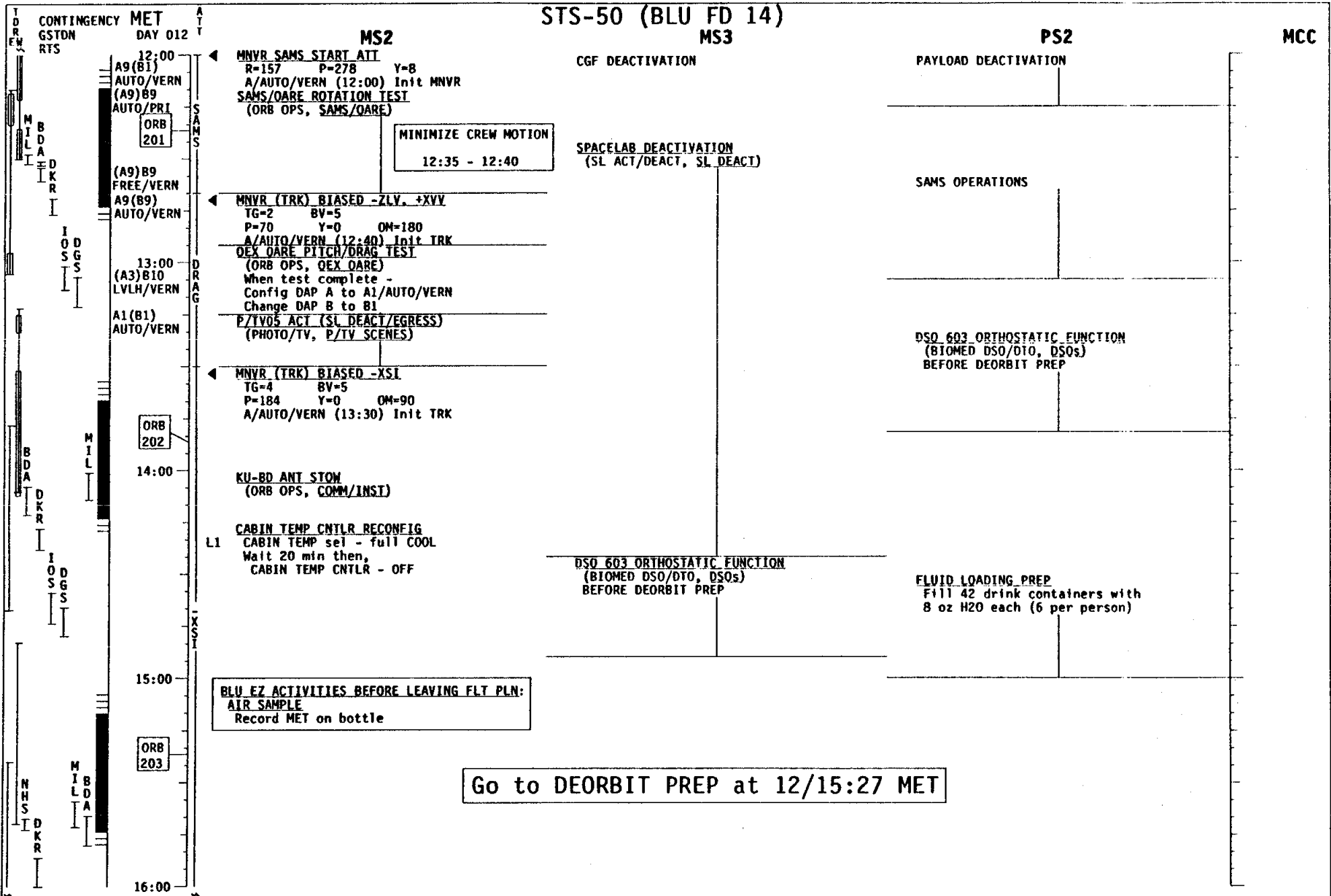
SOUND LEVEL METER OPS
 (ORB OPS, SLM)

P/IVOS SETUP (DEACT/EGRESS)
 (PHOTO/TV, P/IV SCENES)

SAMS MONITORING



STS-50 (BLU FD 14)



Go to DEORBIT PREP at 12/15:27 MET

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CONTINGENCY TIMELINES

KSC LANDING..... 4A-1

CONTINGENCY
TIMELINES

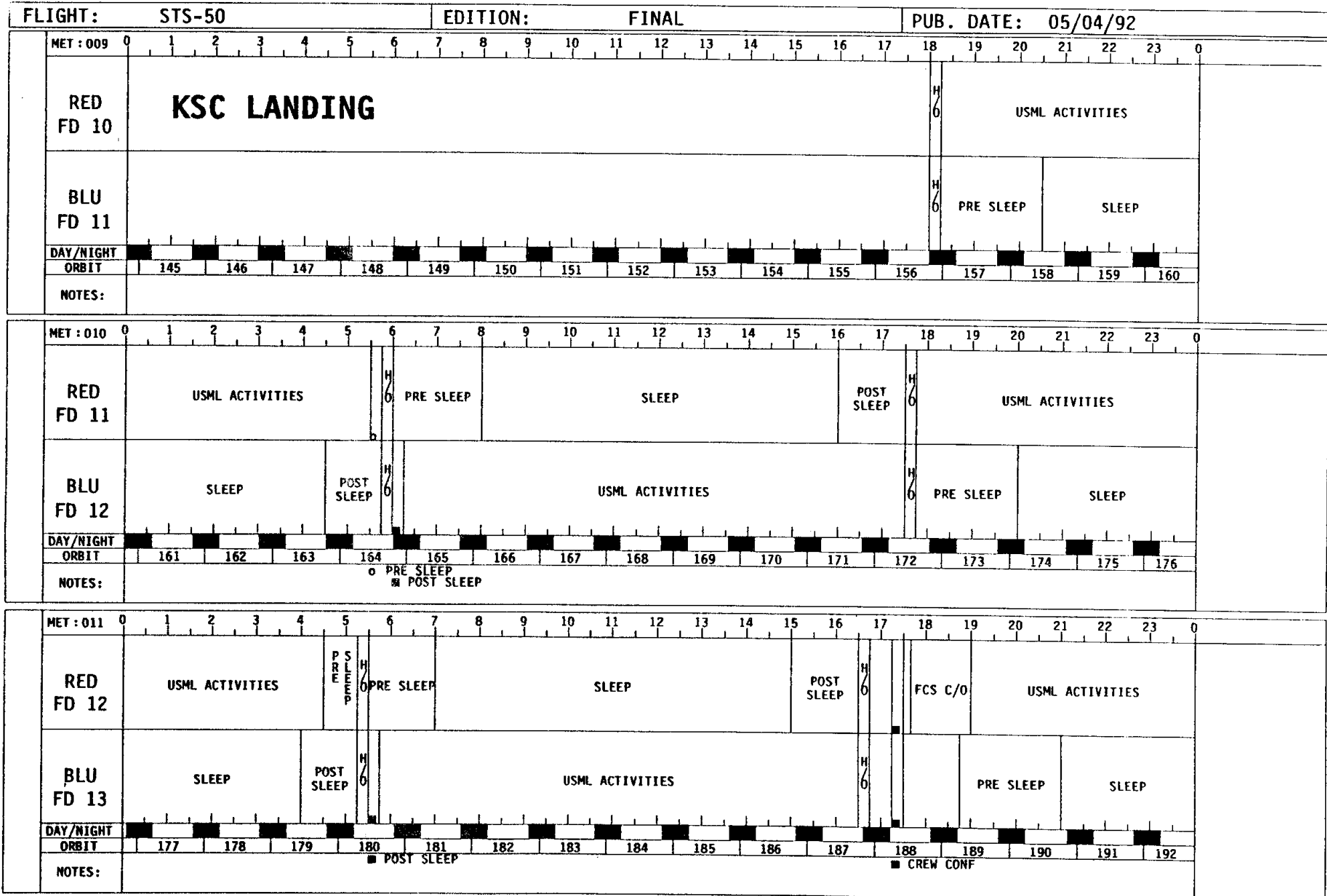
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KSC LANDING

The KSC landing timeline was developed to support a landing at KSC on orbit 205. This timeline is based on the nominal timeline with landing at EDW on orbit 206. In order to accommodate landing at KSC one rev earlier, the crew sleep cycles must be adjusted. The last three Red sleep periods and the last two Blue sleep periods are different from the nominal and are shown on pages 4A-2 and 4A-3.

KSC LANDING

KSC LANDING



FLIGHT: STS-50 EDITION: FINAL PUB. DATE: 05/04/92

MET:012	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0
RED FD13&14	USML ACTIVITIES				PRE SLEEP		SLEEP (6)						POST SLEEP	HOT FIRE	DEORBIT PREP				DEORBIT	KSC LANDING					
BLU FD 14	SLEEP				P/SOFT	SLEEP	POST SLEEP	CABIN STOW		MEAL	P/D	SAMS	SL DEACTIVATION	DEORBIT PREP				BURN							
DAY/NIGHT ORBIT	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208									
NOTES:	o PRE SLEEP																		o 12/19:02						

MET:013	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0
RED	<p>TO MAKE LANDING AT KSC 205 INSTEAD OF EDW 206:</p> <ul style="list-style-type: none"> • LAST 3 RED SLEEPS MOVE EARLIER • LAST 2 BLU SLEEPS MOVE EARLIER 																								
BLU																									
DAY/NIGHT ORBIT	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224									
NOTES:																									

MET:014	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0
RED																									
BLU																									
DAY/NIGHT ORBIT	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240									
NOTES:																									

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RESERVED

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

ATTITUDE TIMELINE

ATTITUDE
TIMELINE

Attitude Timeline

GMT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 000/01:12:00 MET 19:34 161/17:12:00 GMT 19:34	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 90.00	A1 AUTO PRI	DSC 0.200 DB AT 5.00 DB RT 0.20	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y=270.00	POST INSERTION -ZLV -YVV
2 000/04:55:00 MET 05:02:14 161/20:55:00 GMT 21:02:14	INRTL R=281.00 MNVR P=322.00 Y=323.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 180 P 103	-Y: 29 -Z: 30	IMU ALIGN -Z COAS CAL 30: ANTARES
3 000/05:20:00 MET 22:17 161/21:20:00 GMT 22:17	TGT=22 RA= 297.090 BV=1 DEC= 8.738N P= 0.00 Y= 0.00 OM=(blank)	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 178 P 130	INRTL R=296.08 P=341.35 Y=298.36	+X COAS CAL 22: ALTAIR
4 000/05:35:00 MET 47:29 161/21:35:00 GMT 47:29	TGT=2 BV=2 P=180.00 Y= 0.00 OM=192.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 51 P 180	LVLH R=168.00 P= 90.00 Y= 0.00	-XLV -ZVV BIAS CGF
5 011/06:15:00 MET 29:03 172/22:15:00 GMT 29:03	INRTL R=104.00 MNVR P=163.00 Y=324.00	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 317 P 130	TIG: 11/06:40	+X RCS BURN ORB ADJ 1
6 011/06:45:00 MET 172/22:45:00 GMT		B1 LVLH VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 1 P 54	LVLH R=359.42 HOLD P=215.68 Y=359.71	LVLH HOLD
7 011/07:15:00 MET 19:56 172/23:15:00 GMT 19:56	INRTL R=256.00 MNVR P=343.00 Y= 35.00	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 223 P 51	TIG: 11/07:25	+X RCS BURN ORB ADJ 2
8 011/07:30:00 MET 44:29 172/23:30:00 GMT 44:29	TGT=2 BV=2 P=180.00 Y= 0.00 OM=192.00	A9 AUTO VERN	DSC 0.200 DB AT 0.50 DB RT 0.01	EARTH R 0 P 180	LVLH R=168.00 P= 90.00 Y= 0.00	-XLV -ZVV BIAS CGF
9 012/09:00:00 MET 15:00 174/01:00:00 GMT 15:00	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=348.00	A9 AUTO VERN	DSC 0.200 DB AT 0.50 DB RT 0.01	EARTH R 329 P 0	LVLH R=348.00 P=270.00 Y= 0.00	+XLV -ZVV BIAS CGF
10 012/12:00:00 MET 07:39 174/04:00:00 GMT 07:39	INRTL R=157.00 MNVR P=278.00 Y= 8.00	A9 AUTO VERN	DSC 0.200 DB AT 0.50 DB RT 0.01	SUN R 297 P 59		SAMS START ATT
11 012/12:10:00 MET 174/04:10:00 GMT	INRTL BV=5 ROTR P= 0.00 Y= 90.00	B9 AUTO PRI	DSC 1.000 DB AT 3.00 DB RT 0.20		INRTL R=157.00 P=278.00 Y= 8.00	SAMS PITCH ROT
12 012/12:16:00 MET 174/04:16:00 GMT		B9 INRT PRI	DSC 1.000 DB AT 3.00 DB RT 0.20	SUN R 297 P 59	INRTL R=157.00 HOLD P=278.00 Y= 8.00	STOP ROT AFTER 360 DEG

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

Attitude Timeline

GMT/MET	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
012/12:17:00 MET 174/04:17:00 GMT	INRTL BV=1 ROTR P= 0.00 Y= 0.00	B9 AUTO PRI	DSC 1.000 DB AT 3.00 DB RT 0.20		INRTL R=157.00 P=278.00 Y= 8.00	SAMS ROLL ROT
012/12:23:00 MET 174/04:23:00 GMT		B9 INRT PRI	DSC 1.000 DB AT 3.00 DB RT 0.20	SUN R 297 P 59	INRTL R=157.00 HOLD P=278.00 Y= 8.00	STOP ROT AFTER 360 DEG
012/12:24:00 MET 174/04:24:00 GMT	INRTL BV=5 ROTR P=270.00 Y= 0.00	B9 AUTO PRI	DSC 1.000 DB AT 3.00 DB RT 0.20		INRTL R=157.00 P=278.00 Y= 8.00	SAMS YAW ROT
012/12:30:00 MET 174/04:30:00 GMT		B9 INRT PRI	DSC 1.000 DB AT 3.00 DB RT 0.20	SUN R 297 P 59	INRTL R=157.00 HOLD P=278.00 Y= 8.00	STOP ROT AFTER 360 DEG
012/12:30:01 MET 174/04:30:01 GMT	BEGIN 5 MIN FREE DRIFT					
012/12:40:00 MET 47:19 174/04:40:00 GMT 47:19	TGT=2 BV=5 P= 70.00 Y= 0.00 OM=180.00	A9 AUTO VERN	DSC 0.200 DB AT 0.50 DB RT 0.01	EARTH R 0 P 70	LVLH R=180.00 P=340.00 Y= 0.00	OARE VARIABLE DRAG
012/12:55:00 MET 174/04:55:00 GMT	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=0.058	B10 LVLH VERN	DSC 0.200 DB AT 10.0 DB RT 0.50		LVLH R=180.00 P=340.00 Y= 0.00	GG TORQUE INDUCED LVLH ROT
012/13:15:00 MET 174/05:15:00 GMT		A3 LVLH VERN	DSC 0.008 DB AT 0.07 DB RT 0.01	EARTH R 0 P 0	LVLH R=180.00 HOLD P=270.40 Y= 0.00	WHEN P = 270 DAP: LVLH
012/13:30:00 MET 41:12 174/05:30:00 GMT 41:12	TGT=4 RA= 84.255 BV=5 DEC= 23.340N P=184.00 Y= 0.00 OM= 90.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 101 P 175	INRTL R=308.66 P= 96.91 Y=297.00	-XSI
012/16:27:00 MET 35:39 174/08:27:00 GMT 35:39	INRTL R=287.00 MNVR P=335.00 Y=293.00	A1 AUTO PRI	DSC 0.200 DB AT 5.00 DB RT 0.20	SUN R 199 P 141		IMU ALIGN -Y: 29 -Z: 53
012/16:41:00 MET 44:30 174/08:41:00 GMT 44:30	INRTL R=344.00 MNVR P=321.00 Y= 20.00	B1 AUTO PRI	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN R 128 P 57		IMU VERIF -Y: 43 -Z: 28
012/19:12:00 MET 15:46 174/11:12:00 GMT 15:46	INRTL R=220.00 MNVR P= 46.00 Y= 20.00	B1 AUTO PRI	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN R 246 P 88		DEORB BURN

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

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STS-50 DAP BOOK

DAP A CONFIGURATIONS

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

*I-LOADED OPS-2 DAP Configuration

DAP B CONFIGURATIONS

	ITEM #	B1*	B2	B3	B4	B5	B6	B7	B8	B9	B10
<u>TRANSLATION</u>											
PULSE ft/sec	15	0.02	0.02	0.02	0.02	0.02		0.05	0.01	0.02	0.02
<u>ROTATION</u>											
DSC RT NORM °/sec	16	0.500	0.200	0.200	0.200	0.200		0.500	0.200	1.000	0.200
VERN °/sec	17	0.200	0.200	0.200	0.008	0.016		0.200	0.200	0.200	0.200
PULSE NORM °/sec	18	0.04	0.04	0.04	0.04	0.04		0.04	0.04	0.04	0.04
VERN °/sec	19	0.002	0.002	0.002	0.002	0.002		0.002	0.002	0.002	0.002
COMP NORM °/sec	20	.00	.00	.00	.00	.00		.00	.00	.00	.00
VERN °/sec	21	.000	.000	.000	.000	.000		.000	.000	.000	.000
<u>DEADBAND</u>											
ATT NORM (deg)	22	3.00	3.00	3.00	0.30	3.00		2.00	2.00	3.00	10.00
VERN (deg)	23	1.000	1.000	1.000	0.100	0.033		1.000	1.000	1.000	10.000
RATE NORM °/sec	24	0.20	0.20	0.20	0.20	0.20		0.20	0.20	0.20	0.50
VERN °/sec	25	.020	.020	.020	.010	.020		.020	.020	.020	.500
<u>JET OPT</u>											
P	26	1	3	1	3	3		1 or 3	1	3	3
Y	27	1	3	1	3	3		1 or 3	1	3	3
<u>CNTL ACCEL</u>	28	0	0	0	0	0		0	0	0	0

*I-LOADED OPS-2 DAP Configuration

ALT DAP CONFIGURATIONS

	ITEM #	ALT1*	ALT2
RATE DEADBAND	32	0.200	0.070
JET OPTION	33	1	3
NUMBER OF JETS	34	2	1
ON TIME	35	0.08	0.08
DELAY	36	0.00	1.00

*I-LOADED OPS-2 DAP Configuration



<u>DAP</u>	<u>PURPOSE</u>	<u>DAP</u>	<u>PURPOSE</u>
A1	- NOMINAL IMU ALIGN LOSS OF VERN (NOSE & TAIL)	B1	- NOMINAL PRCS IMU ALIGN OMS & RCS BURNS
A2	- PTC	B2	- LOSS OF VERN (TAIL ONLY)
A3	- GG	B3	- LOSS OF VERN (NOSE & TAIL)
A4	- PRE/POST DEPLOY		GG MNVR
A5	- IMU ROTATION	B4	- SSUS DEPLOY
A6	- LOSS OF VERN (TAIL ONLY)	B5	- COAS CAL
A7	- RENDEZVOUS	B6	- (Blank)
A8	- PROX OPS	B7	- RENDEZVOUS
A9	- USML OPS	B8	- PROX OPS
		B9	- SAMS/OARE
		B10	- OEX/OARE

FLT PLN-1a/50/0/A



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FLT PLN-1b/50/0/A



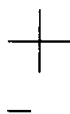


DAP A

FLT PLN-2a/50/0/A



A1



DAP A1

PURPOSE:

NOMINAL
IMU ALIGN
LOSS OF VERN
(NOSE & TAIL)



A1



0.1 0	1	TRANSLATION
		PULSE
		ROTATION
0.2 0 0	2	DSC RT NORM
0.2 0 0	3	VERN
0.1 0 0	4	PULSE NORM
0.0 1 0	5	VERN
.0 0 0	6	COMP NORM
.0 0 0	7	VERN

		DEADBAND
5.0 0	8	ATT NORM
1.0 0 0	9	VERN

0.2 0	10	RATE	NORM
.0 2 0	11		VERN

1	12	JET OPT	P
1	13		Y

0 14 CNTL ACCEL

FLT PLN-2b/50/0/A



FLT PLN-3a/50/0/A



A2



+

A1

DAP A2

PURPOSE:
PTC

FLT PLN-3b/50/0/A

+

+

+

+

A2

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

FLT PLN-4a/50/0/A

A3

+

A2

DAP A3

PURPOSE:
GG

FLT PLN-4b/50/0/A

+

+

+

+

A3

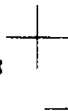
		TRANSLATION	
0.1	0	1	PULSE
		ROTATION	
0.2	0 0	2	DSC RT NORM
0.0	0 0	3	VERN
0.1	0	4	PULSE NORM
0.0	1 0	5	VERN
0.0	0 0	6	COMP NORM
0.0	0 0	7	VERN
		DEADBAND	
1.0	0	8	ATT NORM
0.0	7 0	9	VERN
0.2	0	10	RATE NORM
0.1	0	11	VERN
1		12	JET OPT P
3		13	Y
0		14	CNTL ACCEL

FLT PLN-5a/50/0/A

A4



A3



DAP A4

PURPOSE:
PRE/POST DEPLOY

FLT PLN-5b/50/0/A



A4

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

FLT PLN-6a/50/0/A

A5



A4

DAP A5

PURPOSE:
IMU ROTATION

FLT PLN-6b/50/0/A



A5

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

FLT PLN-7a/50/0/A

A6



A5

DAP A6

PURPOSE:

LOSS OF VERN
(TAIL ONLY)

FLT PLN-7b/50/0/A

A6

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

FLT PLN-8a/50/0/A

A7

A6

DAP A7

PURPOSE:

RENDEZVOUS

FLT PLN-8b/50/0/A

A7

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

FLT PLN-9a/50/0/A

A8



A7



DAP A8

PURPOSE:
PROX OPS

0.0 5

1 TRANSLATION
PULSE

0.2 0 0

2 ROTATION

0.2 0 0

DSC RT NORM

0.1 0 0

3 VERN

0.0 1 0

4 PULSE NORM

.0 0 0

5 VERN

.0 0 0

6 COMP NORM

.0 0 0

7 VERN

DEADBAND

2.0 0 0

8 ATT NORM

1.0 0 0

9 VERN

0.2 0 0

10 RATE NORM

.0 2 0

11 VERN

1

12 JET OPT P

1

13 Y

0

14 CNTL ACCEL

FLT PLN-9b/50/0/A

FLT PLN-10a/50/0/A



A9



A8

DAP A9

PURPOSE:
USML OPS

0.1 0

1 TRANSLATION
PULSE

0.2 0 0

2 ROTATION

0.2 0 0

DSC RT NORM

0.1 0 0

3 VERN

0.0 1 0

4 PULSE NORM

.0 0 0

5 VERN

.0 0 0

6 COMP NORM

.0 0 0

7 VERN

DEADBAND

3.0 0 0

8 ATT NORM

0.5 0 0

9 VERN

0.2 0 0

10 RATE NORM

.0 1 0

11 VERN

3

12 JET OPT P

3

13 Y

0

14 CNTL ACCEL

FLT PLN-10b/50/0/A

FLT PLN-11a/50/0/A





A9

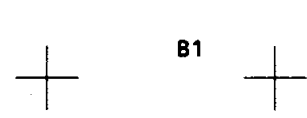


DAP B

FLT PLN-11b/50/0/A



FLT PLN-12a/50/0/A



B1



DAP B1

B1

PURPOSE:

NOMINAL
PRCS IMU ALIGN
OMS & RCS BURNS

15	0.0	2
16	0.5	0 0
17	0.2	0 0
18	0.0	4
19	0.0	2
20	.0	0
21	.0	0

22	3.0	0
23	1.0	0 0

24	0.2	0
25	.0	2 0

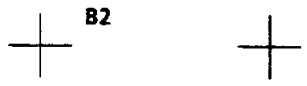
26		1
27		1

28		0
----	--	---

FLT PLN-12b/50/0/A



FLT PLN-13a/50/0/A



B2



DAP B2

PURPOSE:

LOSS OF VERN
(TAIL ONLY)

FLT PLN-13b/50/0/A

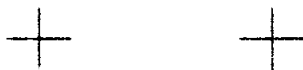


DAP B3

PURPOSE:

LOSS OF VERN
(NOSE & TAIL)
GG MNVR

FLT PLN-14b/50/0/A



B2

15	0.0	2
16	0.2	0 0
17	0.2	0 0
18	0.0	4
19	0.0	2
20	.0	0
21	.0	0
22	3.0	0
23	1.0	0 0
24	0.2	0
25	.0	2 0
26		3
27		3
28		0

FLT PLN-14a/50/0/A



B3

15	0.0	2
16	0.2	0 0
17	0.2	0 0
18	0.0	4
19	0.0	2
20	.0	0
21	.0	0
22	3.0	0
23	1.0	0 0
24	0.2	0
25	.0	2 0
26		1
27		1
28		0

FLT PLN-15a/50/0/A





B3

DAP B4

PURPOSE:
SSUS DEPLOY

FLT PLN-15b/50/0/A

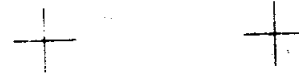
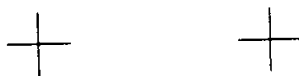


B4

DAP B5

PURPOSE:
COAS CAL

FLT PLN-16b/50/0/A



B4

15	0.0 2
16	0.2 0 0
17	0.0 0 8
18	0.0 0 4
19	0.0 0 2
20	.0 0 0
21	.0 0 0
22	0.3 0
23	0.1 0 0
24	0.2 0
25	.0 1 0
26	3
27	3
28	0

FLT PLN-16a/50/0/A



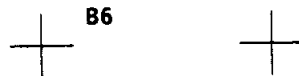
B5



B5

15	0.0 2
16	0.2 0 0
17	0.0 1 6
18	0.0 0 4
19	0.0 0 2
20	.0 0 0
21	.0 0 0
22	3.0 0
23	0.0 3 3
24	0.2 0
25	.0 2 0
26	3
27	3
28	0

FLT PLN-17a/50/0/A



B6

+

85

+

DAP B6

PURPOSE:
(Blank)

FLT PLN-17b/50/0/A

+

+

+

B6

+

DAP B7

PURPOSE:
RENDEZVOUS

FLT PLN-18b/50/0/A

+

+

+

+

B6

15	-. - -
16	-. - -
17	-. - -
18	-. - -
19	-. - -
20	-. - -
21	-. - -
22	-. - -
23	-. - -
24	-. - -
25	-. - -
26	-
27	-
28	-

FLT PLN-18a/50/0/A

+

B7

+

+

+

B7

15	0.0 5
16	0.5 0 0
17	0.2 0 0
18	0.0 4
19	0.0 2
20	.0 0 0
21	.0 0 0
22	2.0 0
23	1.0 0 0
24	0.2 0
25	.0 2 0
26	1 or 3
27	1 or 3
28	0

FLT PLN-19a/50/0/A

+

B8

+



B7

DAP B8

PURPOSE:
PROX OPS

FLT PLN-19b/50/0/A



B8

DAP B9

PURPOSE:
SAMS/OARE

FLT PLN-20b/50/0/A



B8

15	0.0 1
16	0.2 0 0
17	0.2 0 0
18	0.0 4
19	0.0 0 2
20	.0 0 0
21	.0 0 0
22	2.0 0
23	- 1.0 0 0
24	0.2 0
25	.0 2 0
26	1
27	1
28	0

FLT PLN-20a/50/0/A



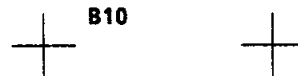
B9



B9

15	0.0 2
16	1.0 0 0
17	0.2 0 0
18	0.0 4
19	0.0 0 2
20	.0 0 0
21	.0 0 0
22	3.0 0
23	- 1.0 0 0
24	0.2 0
25	.0 2 0
26	3
27	3
28	0

FLT PLN-21a/50/0/A



B10

+

89

+

DAP B10

PURPOSE:

OEX/OARE

+

+

B10

15 0.0 2

16 0.2 0 0

17 0.2 0 0

18 0.0 4

19 0.0 0 2

20 .0 0 0

21 .0 0 0

22 1 0.0 0

23 1 0.0 0 0

24 0.5 0

25 .5 0 0

26 3

27 3

28 0

FLT PLN-21b/50/0/A

FLT PLN-22a/50/0/A

+

+

+

+

+

B10

+

+

DAP PURPOSE

ALT1 - NOMINAL

I-LOAD

ALT2 - USML OPS

LOSS OF

VERNS

FLT PLN-23a/50/0/A

+

ALT1

+

FLT PLN-22b/50/0/A

+

+

+	+	+	+
---	---	---	---

DAP ALT1

ALT1

PURPOSE:

NOMINAL I-LOAD

RATE DB	
32	<u>0.2 0 0</u>
JET OPT	
33	<u>1</u>
# JETS	
34	<u>2</u>
ON TIME	
35	<u>- 0.0 8</u>
DELAY	
36	<u>- 0.0 0</u>

FLT PLN-23b/50/0/A

FLT PLN-24a/50/0/A

+	+	+	+
---	---	---	---

ALT2

+	+	+	+
---	---	---	---

DAP ALT2

ALT2

PURPOSE:

USML OPS
LOSS OF
VERNS

RATE DB	
32	<u>0.0 7 0</u>
JET OPT	
33	<u>3</u>
# JETS	
34	<u>1</u>
ON TIME	
35	<u>- 0.0 8</u>
DELAY	
36	<u>- 1.0 0</u>

FLT PLN-24b/50/0/A

FLT PLN-25a/50/0/A

+	+	+	+
---	---	---	---

ALT1



FLT PLN-25b/50/0/A



ALT2



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
CNTL ACCEL	= 0 Orbiter Alone = 1 thru 5 not used
PRI JET OPT	= 1 Normal = 2 Nose only = 3 Tail only
ALT JET OPT	= 1 Normal = 2 Illegal entry = 3 Tail only

FLT PLN-26a/50/0/A



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FLT PLN-26b/50/0/A



STS-50
FLIGHT PLAN NOTES

FLT PLN NOTES

FLIGHT PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION

The STS-50 (OV102) launch from KSC on June 9, 1992, will be into a 162 by 160 nm orbit at an inclination of 28.45 degrees. The mission duration will be 13 days with the capability of 2 additional days for contingency operations and weather avoidance. Nominal landing occurs at EDW on June 22, 1992.

Landing opportunities are:

		<u>Landing Orbit No.</u>	<u>Site</u>	<u>Local Time</u>
Nominal	Primary	206	EDW	05:29 PDT
	One Rev. Late	207	EDW	07:04 PDT
	Alternate	205	KSC	07:02 EDT
	Weather Alt.	206	KSC	08:37 EDT
	Weather Alt.	206	NOR	06:31 MDT
1 Day Late	Primary	222	EDW	05:31 PDT
	One Rev. Late	223	EDW	07:06 PDT
	Alternate	221	KSC	07:04 EDT
	Weather Alt.	222	KSC	08:39 EDT
	Weather Alt.	222	NOR	06:33 MDT
2 Days Late	Primary	238	EDW	05:32 PDT
	Alternate	237	KSC	07:06 EDT
	Weather Alt.	238	NOR	06:35 MDT

MAJOR EVENTS

LAUNCH (KSC) June 9, 1992
 MET (DD/HH:MM:SS) 0/00:00:00
 Day of year 161
 CDT/GMT 11:00/16:00

OMS-2
 MET (DD/HH:MM) 0/00:42
 DV (fps) 221
 ORBIT ha/hp (nm) 162/160

DEORBIT BURN
 MET (DD/HH:MM) 12/19:27
 DV (fps) 274

LANDING (EDW)
 MET (DD/HH:MM) 12/20:29
 Day of year 174
 CDT/GMT 07:29/12:29

FLT PLN NOTES

B. CREW

1. There will be seven crewmembers flying this mission with each specialist assigned to the following tasks:
 - CDR - Richard N. Richards
 - PLT - Kenneth D. Bowersox
 - MS1 - Bonnie J. Dunbar
 - MS2 - Ellen S. Baker
 - MS3 - Carl J. Meade
 - PS1 - Lawrence DeLucas
 - PS2 - Eugene Trinh
2. The crewmembers responsible for performing an EVA, should one become necessary, are: MS2 as EV1, MS3 as EV2, and PLT as IV.

C. ORBITER SYSTEMS

1. Communications and Instrumentation
 - a. The Operational Instrumentation (OI) system will nominally be managed from the ground through uplink real-time commands (RTCs) coordinated with the crew.
 - b. TDRS coverage is assumed to be supported by TDRS-E (41 degrees W) and TDRS-W (174 degrees W) and is the prime mode of communication coverage. TDRS-W is shared with many other users and may have to be given up for periods of time.
 - c. There are five Ground Network (GN) sites available for on-orbit contingency support: MIL (MLX), BDA (BDX), DKR, DFR, and GDY. (Note: DFR is not shown in this Flight Plan.) MAD (MAX) and CAN are available for emergency support (2-hour lead time is required).
 - d. TDRS Ku-band is the prime mode of real-time TV; however, there are also two GN sites available as backup: GDY and MIL (MLX) (90-minute lead time required).
 - e. RTS sites are available for contingency support or when scheduled in advance (4-hour lead time required): HTS, GTS, VTS, IOS, CTS, NHS, TCS, and DGS.
 - f. TDRS-E and TDRS-W are available to support Ku-band uplink (e.g., TAGS).
 - g. S-band HDR uplink (e.g., Teleprinter) is available through TDRS-E and TDRS-W.
 - h. TDRS-E and TDRS-W are available for ascent and entry support. IOS (RTS site) is available for UHF voice in an emergency (2-hour lead time required).
 - i. Early TDRS handovers are planned throughout the mission for all TDRS passes except on orbits 1 through 4 and orbit 200 through landing.

2. Television/Photography

- a. Two camcorders are available for in-cabin coverage. There will also be four PLB TV cameras. There are three different lens assemblies for the PLB cameras (color, monochrome, and wide-angle lens assembly). The type of lens assembly for each PLB camera is documented in the Flight Requirements Document.
- b. The Orbiter has one video tape recorder available which uses 30-minute cassettes.
- c. Three camera systems are available: 35mm, 16mm, and 70mm.

D. PAYLOADS

1. United States Microgravity Laboratory - 1 (USML-1)

USML-1 is a mission of various experiments which focus on micro-gravity materials processing technology and other science and research requiring the low gravity environment of Earth orbit. It will include a long Spacelab Transfer Tunnel (SST) and a long module made up of a core segment and an experiment segment to be located in the cargo bay. Some experiments will also be installed in the Orbiter middeck locker spaces.

a. USML-1 Module Experiments

(1) Crystal Growth Furnace (CGF)

The CGF experiment consists of a large structure that has three furnaces (high temp, low temp, adiabatic) and a carousel mechanism that places material samples into the processing mechanism. The CGF dictates the Orbiter attitude since it requires that the long axis of the furnace be pointed along the velocity vector. Four different CGF samples will be processed with run durations of 1, 2, 4, and 6 days.

(2) Surface Tension Driven Convection Experiment (STDCE)

The purpose of STDCE is to study how thermocapillary flow affects containerless materials processing. In the experiment, a 4-inch diameter by 2-inch deep container of silicone oil is heated and data is collected on the velocity profile of the cross section of the oil. Two different methods of heating are used: surface heating by a CO2 laser and internal heating by a heater cartridge. The effects of both are studied.

(3) Drop Physics Module (DPM)

DPM studies containerless materials processing. With the use of acoustic waves, a drop of a particular material will be held in the middle of a container.

(4) Glovebox (GBX)

The glovebox will house many experiments to be conducted in a closed environment. These will include combustion experiments using wire insulation, candles, etc.

(5) Space Acceleration Measurement System (SAMS)

SAMS will measure the accelerations of the module experiments with the use of three triaxial sensor heads and an optical drive.

(6) Solid Surface Combustion Experiment (SSCE)

SSCE will burn pieces of paper and other materials to study flame propagation in space.

(7) Generic Bioprocessing Apparatus (GBA)

GBA is a self-contained mixing and heating module used to process biological fluid samples. The experiment hardware is located in the SMIDEX rack in the module, and refrigerated samples (4°C) will be kept in the GBA Refrigerator/Incubator Module (R/IM) located in the middeck.

(8) Extended Duration Orbiter Medical Project (EDOMP)

(a) In-Flight Lower Body Negative Pressure (LBNP)

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

(b) Blood Pressure Variability During Spaceflight

The objective of this experiment is to determine whether arterial blood pressure and heart rate exhibit less variability in a microgravity environment than on Earth. The data will be used to investigate whether reduced blood pressure variability in-flight, if any, is correlated with the extent of baroreflex attenuation that has been measured postflight. Integrity of the baroreceptor function is required for the appropriate blood pressure responses to the orthostatic stresses imposed by entry, landing, and egress. The crewmember will wear blood pressure and electrocardiograph equipment for two flight days on orbit.

(c) Air Monitoring Instrument Evaluation and Atmosphere Characterization

This experiment will evaluate and verify the microbial air sampler (MAS) to ensure proper

function and operations in-flight. In addition, data will be collected on contaminant levels to establish baseline levels and to evaluate potential risks to crew health and safety.

b. USML-1 Middeck Experiments

(1) Protein Crystal Growth (PCG)

The primary objective of PCG is to produce large high-quality crystals of selected proteins while under controlled conditions of microgravity. There will be two R/IMs on the Orbiter middeck, one at 22°C and one at 4°C.

(2) Zeolite Crystal Growth (ZCG)

ZCG will try to synthesize large zeolite crystals made up of a complex arrangement of silica and alumina. Because of its molecular sieve characteristics, zeolite is used for highly selective catalysts, absorbents, and ion exchange materials.

(3) Astroculture (ASC)

ASC is essentially a hydroponic experiment that will be conducted in a microgravity environment. Its fluid system will spray a nutrient solution on the roots of several plants.

(4) Generic Bioprocessing Apparatus (GBA)

Refer to a. (7).

2. Investigations Into Polymer Membrane Processing (IPMP)

The research objective of the IPMP payload is to flash evaporate mixed solvent systems in the absence of convection to control the porosity of the polymer membrane. The crewmember will activate the system during a period of low 'G' and deactivate the test after the appropriate amount of time.

3. Shuttle Amateur Radio Experiment - II (SAREX-II)

The SAREX-II payload provides voice communications between the Orbiter and amateur radio operators on the Earth. The SAREX will be operated at the discretion of the licensed crewmember. Crewmembers are licensed radio operators for STS-50. SAREX will fly a modified configuration D on STS-50.

4. Ultraviolet Plume Instrument (UVPI)

The UVPI is an instrument on the Low-power Atmospheric Compensation Experiment (LACE) satellite in orbit at 43 degrees inclination and approximately 290 nm altitude. It is desired to use the Orbiter during cooperative encounters of the LACE satellite to obtain imagery and/or signature data to support the calibration of the UVPI space-based sensors and to observe Orbiter events.

E. ON-ORBIT DTOS

1. Cabin Air Monitoring (DTO 623)

This DTO will use the solid sorbent sampler to continuously sample the Orbiter atmosphere throughout the flight. The solid sorbent sampler is to be flown on all Spacelab manned module flights. For STS-50, the solid sorbent sampler will alternate readings between the middeck and the Spacelab module.

2. Foot Restraint Evaluation (DTO 655)

The purpose of this DTO is to evaluate a new conceptual design for foot restraints. The crew will comment on ease of ingress/egress, if pitch is required in design, foot loop size and spacing, fit and comfort, as well as base plate size. The foot restraints will be used in the Spacelab module during Spacelab experiment operations.

3. Evaluation of the Ergometer Vibration Isolation System (EVIS) (DTO 658)

The purpose of this DTO is to measure the magnitude and frequency of the vibration generated in the Spacelab and Orbiter middeck by the cycle ergometer with EVIS on specific areas of the Spacelab and the middeck. The crew will also comment on ease of setup and stowage, impact on exercise activities, as well as activities in the middeck.

4. Acoustical Noise Dosimeter Data (DTO 663)

The primary purpose of this DTO is to obtain baseline data of time-averaged acoustical noise levels for the middeck (crew sleep station, airlock) and the module (location OH7) during daytime and nighttime operations using an audio dosimeter.

5. Acoustical Noise Sound Level Data (DTO 665)

The purpose of this DTO is to obtain baseline data of octave-band acoustical noise levels for the middeck and flight deck using a Spacelab analog sound level meter. The Spacelab sound level meter will also be used to record eight sound level readings for the USML-1 payload.

6. Orbiter Experiment (OEX) Orbital Acceleration Research Experiment (OARE) (DTO 910)

OARE will acquire accurate measurement data on low-level aerodynamic acceleration on the Orbiter principal axes during orbit and reentry. Its instruments have 'nano-g' measurement capability, and are therefore more sensitive than SAMS.

F. ON-ORBIT DSOs

1. OV102 Acceleration Data Collection to Support Microgravity Disturbances (DSO 314)

The purpose of this DSO is to measure Orbiter accelerations during thruster firings, crew exercise, and other disturbances using the High Resolution Acceleration Package (HIRAP). This data will be used to define the acceleration environment of the Orbiter during microgravity experiments.

2. Intraocular Pressure (DSO 472)

The purpose of this DSO is to establish a database of changes in intraocular pressures that can be used to evaluate crew health. The handheld tonometer will be validated as a tool for diagnostic and scientific data collection on-orbit.

3. Retinal Photography (DSO 474)

The purpose of this DSO is to analyze retinal photography taken on-orbit and determine if microgravity-induced cephalad fluid shifts elevate intracranial pressure. It will also certify equipment to provide retinal images for diagnostic and investigative purposes.

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

The objective of this DSO is to measure the changes in orthostatic function of crewmembers during the actual stresses of entry, landing, and egress from the Orbiter. Crewmembers will don equipment prior to donning the LES during deorbit preparation. Equipment consists of a blood pressure monitor, accelerometers, an Impedance Cardiograph, and Transcranial Doppler hardware. The crewmember wears the equipment and records verbal comments throughout entry.

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

DSO 613 will characterize the extent and pattern of changes in plasma volume during spaceflight of up to 16 days duration. It will also determine whether resting levels of catecholamines are elevated immediately after flight, and whether catecholamine release in response to varying degrees of orthostatic and cardiovascular stresses is impaired after spaceflight. There are no in-flight requirements for this DSO.

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

The objective of this DSO is to characterize head and body movement along with gaze stability during exercise. Changes in these parameters due to the microgravity environment could impair a crewmember's ability to perform an emergency egress from the vehicle. There are no in-flight requirements for this DSO.

7. Evaluation of Functional Skeletal Muscle Performance Following Spaceflight (DSO 617)

The purpose of this DSO is to determine the physiological effect of long duration spaceflight on skeletal muscle strength, endurance, and power. On-orbit activities consist of maintaining an exercise log.

8. Effects of Intense Exercise During Spaceflight on Aerobic Capacity and Orthostatic Function (DSO 618)

The purpose of this DSO is to evaluate the effects of cycle ergometer exercise prior to landing with similar exercise performed immediately postflight, to quantify deconditioning that occurs over the duration of the flight, and to compare pre-flight, in-flight, and postflight heart rate responses to cycle ergometry.

9. Physiological Evaluation of Astronaut Seat Egress Ability at Wheel Stop (DSO 620)

The purpose of this DSO is to determine the nature and magnitude of equilibrium control, effect of head position on postural stability, and vision as it affects stability immediately postflight. This DSO will enable the design of appropriate countermeasures to ensure the crew can perform an emergency egress.

10. In-Flight Use of Mineralocorticoid to Improve Orthostatic Intolerance Postflight (DSO 621)

The purpose of this DSO is to evaluate mineralocorticoid's, commonly known as Florinef, effects on postflight orthostatic tolerance using heart rate, blood pressure, and stroke volume, as well as other cardiovascular responses to orthostatic stresses.

11. Educational Activities (DSO 802)

The purpose of this DSO is to use spaceflight to motivate students toward careers in engineering, science, and mathematics. This will be accomplished by live downlink of educational activities performed by the crew and production of video lessons with scenes recorded both on-orbit and on the ground.

12. Documentary Television (DSO 901)

The DSO requires live television transmission or VTR dumps of crew activities and spacecraft functions which include: Payload Bay Views, STS and Payload Crew Activities, VTR Downlink of Crew Activities, In-Flight Crew Conference, and unscheduled TV Activities.

13. Documentary Motion Picture Photography (DSO 902)

The DSO 902 requires documentary and public affair motion picture photography of significant activities which best depicts the basic capabilities of the space shuttle and key objectives. This DSO includes motion picture photography of spacelab module activities, flight deck activities, middeck activities, and any unscheduled motion picture photography.

14. Documentary Still Photography (DSO 903)

The DSO 903 requires still photography of crew activities in the Orbiter and Spacelab and mission-related scenes of general public and historical interest. Still photography with 70mm format for exterior photography and 35mm format for interior photography is required.

15. Assessment of Human Factors (DSO 904)

This DSO will analyze data from the digital sound level meter recording device in the middeck, flight deck, and module, relative to crew comments and crew performance. In addition, it will evaluate human-machine interactions during routine Spacelab operations (e.g., stowage, hand and foot restraints, wire and cable interface, etc.)

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