

Flight Data File Crew Activity Plan

STS 51-B

Spacelab 3

Mission Operations Directorate
Operations Division

Final
March 19, 1985

EVENT:	CDT		
Launch	11:00	Mon	Apr 29
Press Conference	21:45	Thu	May 2
NUSAT Deploy	20:35	Sun	May 5
GLOMR Deploy	20:55	Sun	May 5
Landing	07:59	Mon	May 6



National Aeronautics and
Space Administration

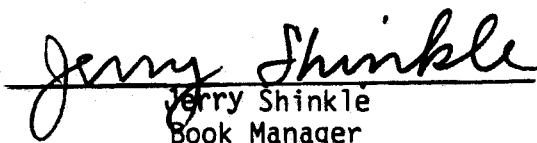
Lyndon B. Johnson Space Center
Houston, Texas

MISSION OPERATIONS DIRECTORATE


STS 51-B CREW ACTIVITY PLAN
SPACELAB 3

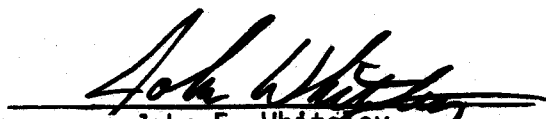
FINAL
March 19, 1985

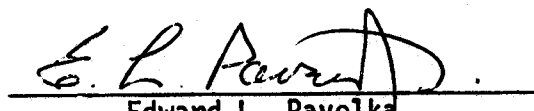
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This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted on standard JSC form 482 to DH4/FDF Manager, Bldg 4, Room 352, 713-483-2868.

Comments concerning this document may be addressed to DH4/Jerry Shinkle Bldg 4, Rm 343A, 713-483-2201.

Changes to the distribution list should be submitted in writing to DH4/Gwen Butler, Bldg 4, Rm 373, 713-483-5224.

Incorporates 482

No: CAP-287	CAP-310	CAP-320
CAP-301	CAP-312	CAP-321
CAP-304	CAP-313	CAP-322
CAP-308	CAP-315	CAP-328
CAP-309	CAP-316	

ACKNOWLEDGMENTS

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STS 51-B CREW ACTIVITY PLAN

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3-63..... CAP/51-B/FIN
3-64..... CAP/51-B/FIN
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3-66..... CAP/51-B/FIN
3-67..... CAP/51-B/FIN
3-68..... CAP/51-B/FIN
4-1..... CAP/51-B/FIN
4-2..... CAP/51-B/FIN
4-3..... CAP/51-B/FIN
4-4..... CAP/51-B/FIN
4-5..... CAP/51-B/FIN
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6-4..... CAP/51-B/FIN
7-1..... CAP/51-B/FIN
7-2..... CAP/51-B/FIN
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STS 51-B DAP CUE CARDS

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DAP A1.....	5-5	CAP/51-B/O/FIN
A1.....	5-5	CAP/51-B/O/BAS
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A4.....	5-7	CAP/51-B/O/BAS
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A5.....	5-7	CAP/51-B/O/BAS
DAP A6.....	5-8	CAP/51-B/O/BAS
A6.....	5-8	CAP/51-B/O/BAS
Blank.....	5-8	CAP/51-B/O/BAS
DAP B TOC.....	5-8	CAP/51-B/O/FIN
DAP B1.....	5-9	CAP/51-B/O/FIN
B1.....	5-9	CAP/51-B/O/BAS
DAP B2.....	5-9	CAP/51-B/O/BAS
B2.....	5-9	CAP/51-B/O/BAS
DAP B3.....	5-10	CAP/51-B/O/BAS
B3.....	5-10	CAP/51-B/O/BAS
DAP B4.....	5-10	CAP/51-B/O/BAS
B4.....	5-10	CAP/51-B/O/BAS
DAP B5.....	5-11	CAP/51-B/O/BAS
B5.....	5-11	CAP/51-B/O/BAS A
DAP B6.....	5-11	CAP/51-B/O/BAS A
B6.....	5-11	CAP/51-B/O/BAS A
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INTRODUCTION

The 51-B Crew Activity Plan is the flight data 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.

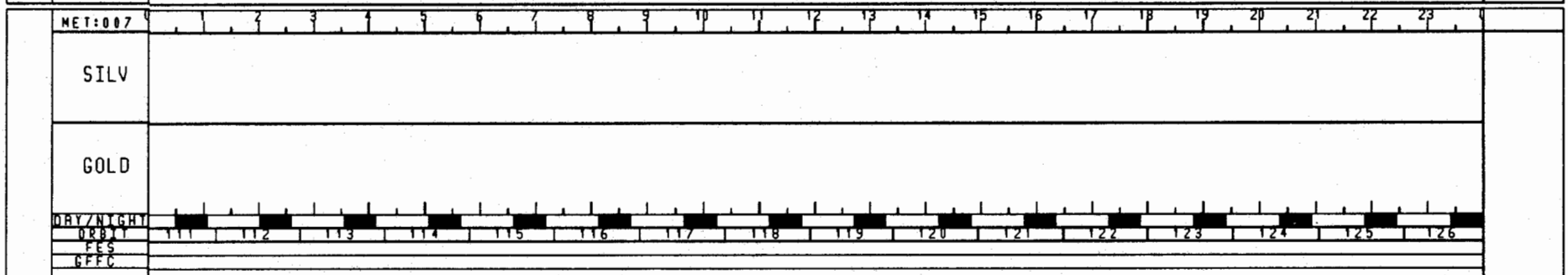
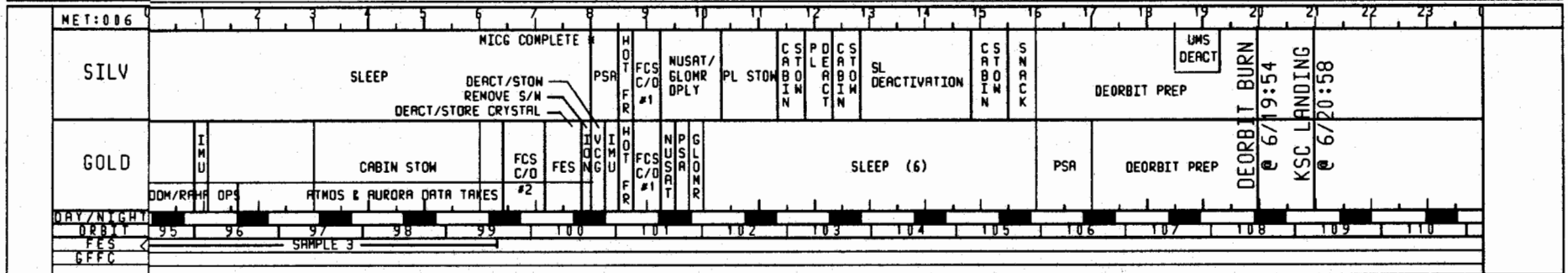
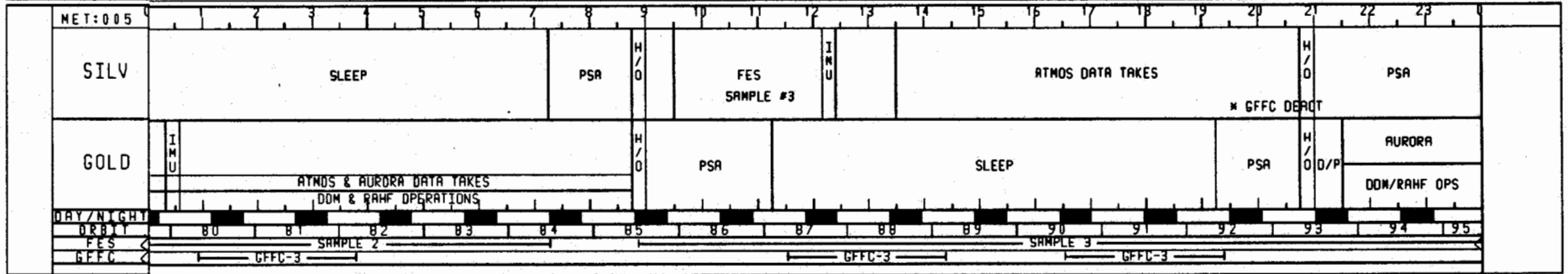
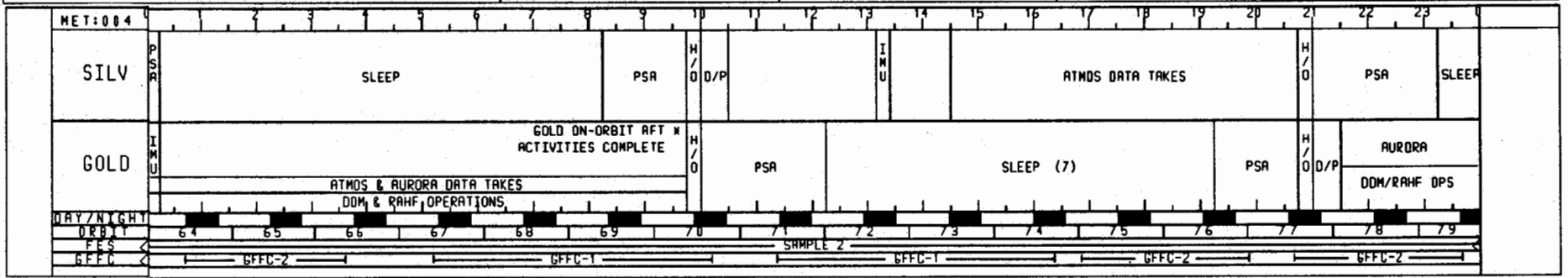
This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive and the requirements of the 51-B Flight Requirements Document (Revision C, January 1985).

The flight profile (OFP Cycle 3 trajectory data) used for this Crew Activity Plan is for a launch date of April 30, 1985.

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51-B OVERVIEW

FLIGHT STS 51-B												EDITION FINAL						PUB. DATE 3/19/85							
MET:000	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																								
SILV	POST INSERTION	SL ACTIVATION	PSA	SLEEP (6)								PSA	H/O	VMFC	I/M U	VMFC	VCG	VMFC	G A F C T	FES SAMPLE #1				H/O	PSA
GOLD	ASCENT	UMS ACT	SL ACTIVATION	PARACT	SAL	FES ACT	VCG S/U	VMFC	H/O	PSA	* START MCG CRYSTAL GROWTH						* START VCG CRYSTAL GROWTH			SLEEP	PSA	H/O	OP	SAL	
DAY/NIGHT	RESEARCH ANIMAL HOLDING FACILITY (RAHF) OBS																								
ORBIT	SAMPLE 1																								
FES	GFFC-1																								
GFFC																									
MET:001	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																								
SILV	PSA	SLEEP								PSA	H/O	P	I/M U	ATMOS DATA TAKES						H/O	PSA				
GOLD	I/M U	* REMOVE/STOP VMFC				SAL DSD 437	DSD 453	H/O	PSA	SLEEP (7)						PSA	H/O	OP	I/M U	DDM OPS					
DAY/NIGHT	ATMOS & AURORA DATA TAKES DDM & RAHF OPERATIONS																								
ORBIT	SAMPLE 1																								
FES	GFFC-2																								
GFFC	GFFC-1																								
MET:002	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																								
SILV	PSA	SLEEP								PSA	H/O	FES	I/M U	FES SAMPLE #2	* IONS C/O & LOAD S/W		FES SAMP #2	ATMOS DATA TAKES				H/O	PSA		
GOLD	DSD 437				ATMOS & AURORA DATA TAKES				H/O	PSA	SLEEP						PSA	H/O	OP	I/M U	DDM OPS				
DAY/NIGHT	DDM & RAHF OPERATIONS																								
ORBIT	SAMPLE 1																								
FES	GFFC-2																								
GFFC	GFFC-2																								
MET:003	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																								
SILV	PSA	SLEEP								PSA	H/O	D/P	T V I 3	I/M U	CND S TK DUMP		SILVER ON-ORBIT AFT * ACTIVITIES COMPLETE				H/O	PSA			
GOLD	DSD 437				ATMOS & AURORA DATA TAKES				H/O	PSA	T V I 3	PSA	* PRESS CONFERENCE		SLEEP				PSA	H/O	D/P	AURORA DDM OPS			
DAY/NIGHT	DDM & RAHF OPERATIONS																								
ORBIT	SAMPLE 2																								
FES	GFFC-2																								
GFFC	GFFC-2																								



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SUMMARY TIMELINE

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
121:04:00 / 121:16:00	000:12:00 / 001:00:00	120:23:00 / 121:11:00	/ 121 GMT	-23.5	○	APRIL 30, 1985	STS 51-B	FINAL	3/19/85				
CDT :120	0	2	3	4	5	6	7	8	9	10	11		
MET :000	12	13	14	15	16	17	18	19	20	21	22	23	0
GOLD	CDR											STATUS REPORT	
	MS1	H/O PRE SLEEP ACT	SLEEP							POST SLEEP ACT	H/O D/POON AFT	STATUS REPORT	
	MS3											D/POON AFT	
	PSF											DON AFT TV04	
DAY/NIGHT	[Day/Night Cycle Bar]												
ORBIT	9	10	11	12	13	14	15	16					
EARTH TRACE W/SAA	[Earth Trace Map]												
6STDN COVERAGE	-GDS -AGO -HRW -ACN -GMM -DKR -MAD -BDA -MAD -YAR -MIL -BDA -YAR												
TDRS E M	[TDRS Coverage Bars]												
ATTITUDE	TRIM	VNFC#3	IMU	VNFC#4	VNFC#5	VNFC#6	B/-XLV+YVV						
H2O INH	[H2O INH Bars]												
TV EVENT	TV05H [TV05] TV05H TV05H												
NOTES:	● STATUS REPORT												

GMT (D:H:M)		MET (O:H:M)		CDT (D:H:M)		FD/ ODY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
121:04:00 / 121:16:00		000:12:00 / 001:00:00		120:23:00 / 121:11:00		/ 121 GMT	-23.5	☉	APRIL 30, 1985	STS 51-B	FINAL	3/19/85
CDT : 120 23		CDT: 121 13										
MET : 000 12												
SILVER	PLT	RCS BURN	AUTO MNRV	PWR DN GRP B	I U C R A	AUTO MNRV	AUTO MNRV	AUTO MNRV	LUNCH	TRK MNRV	E C L S S C / O	
	MS2	H/O D/P	VNFC	ENGINEERING	VNFC	VNFC	LUNCH	TV05	VNFC	BFFC-1	TV05	VITR-OPS
	PSM	DDN AFT	D/P	FES-1	VCG	VCG-MON 1	FES-1	LUNCH	FES-1	FES-1	FES-1	DOFF AFT
DAY/NIGHT	[Day/Night Cycle]											
ORBIT	9 10 11 12 13 14 15 16											
EARTH TRACE M/SRA	[Earth Trace Map]											
GSTON COVERAGE	-GOS -AGO -HAN -HAN -ACN -GMM -AGO -DKR -MAD -BDA -MAD -YAR -MIL -BDA -YAR											
TDRS E M	[TDRS Coverage]											
ATTITUDE H2O INH	TRIM VNFC#3 IMU VNFC#4 VNFC#5 VNFC#6 B/-XLV-YVV											
TV EVENT	TV05 TV05 TV05											
NOTES:	● STATUS REPORT											

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ ODY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
121:16:00/ 122:04:00		001:00:00/ 001:12:00		121:11:00/ 121:23:00		/ 121 GMT	-25.1	☉	MAY 1, 1985	STS 51-B	FINAL	3/19/85	
CDT : 121		12		13		14		15		16		17	
MET : 001		1		2		3		4		5		6	
GOLD	CDR	AURORA P/TV		AURORA P/TV		LUNCH		LUNCH		ASTM OUTSP P/TV		ASTM OUTSP P/TV	
	MS1	LUNCH		VMFC STDW		LUNCH		VMFC STDW		TV-PARK		H/O PRE SLEEP ACT	
	MS3	ARC-F02E		LUNCH		ARC-F02F		MICROBIAL SAMPLES		TV06		ARC-F02C	
	PSF	DDM-1/2		DDM-1/2		LUNCH		DDM-1/2				DOFF BETT	
DRY/NIGHT													
ORBIT	17		18		19		20		21		22		
EARTH TRACE W/SAA													
6STDN COVERAGE	-MIL -BDA -MAD -GDS -MAD -HAW -GDS -HAW -BDA -DKR -ACN -YAP -GMM -BDA -MIL -ACN -YAP -GMM -BDA -YAR -GDS -MIL -R60 -GDS R60												
TORS E M													
ATTITUDE	B/-XLV+YVV												
H2D INH													
TV EVENT	TV04		TV19		TV18		TV19		TV18		TV06		
NOTES:	• AURORA • AURORA • FES-MON1 • AURORA • DSO 0437 MICROBIAL MONITORING OF SPACELAB 3 • DSO 0453 COMBINED BLOOD INVESTIGATION • DSO 0453 COMBINED BLOOD INVESTIGATION • STATUS REPORT												

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
121:16:00 / 122:04:00		001:00:00 / 001:12:00		121:11:00 / 121:23:00		/ 121 GMT	-25.1	☉	MAY 1, 1985	STS 51-B	FINAL	3/19/85		
CDT : 121		11	12	13	14	15	16	17	18	19	20	21	22	23
MET : 001		0	1	2	3	4	5	6	7	8	9	10	11	12
SILVER	PLT											FLTR IFM		
	MS2	PRE SLEEP ACT	SLEEP						POST SLEEP ACT	H/O D/P	V T R - O P S			
	PSM											DOO AFT	V C C - M O N T	
DAY/NIGHT														
ORBIT														
EARTH TRACE W/SAA														
GSTDN COVERAGE														
TDRS E M														
ATTITUDE														
H2O INH														
TV EVENT														
NOTES:														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																
122:16:00 / 123:04:00	002:00:00 / 002:12:00	122:11:00 / 122:23:00	/ 122 GMT	-28.2	☉	MAY 2, 1985	STS 51-B	FINAL	3/19/85																
CDT: 122	12	13	14	15	16	17	18	19	20	21	22	23													
MET: 002	1	2	3	4	5	6	7	8	9	10	11	12													
GOLD	CDR	AURORA P/TV	P/TV SETUP	0 T O 0623	AURORA P/TV	P/TV ACT	AURORA P/TV	LUNCH	AURORA P/TV	LUNCH	ASTROUS P/TV	VTR-OPPS	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV	ASTROUS P/TV		
	MS1	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	AURORA	
	MS3	ARC-F02A	ARC-F02E	ARC-F02B	ARC-F02C	ARC-F02D	ARC-F02E	ARC-F02F	ARC-F02G	ARC-F02H	ARC-F02I	ARC-F02J	ARC-F02K	ARC-F02L	ARC-F02M	ARC-F02N	ARC-F02O	ARC-F02P	ARC-F02Q	ARC-F02R	ARC-F02S	ARC-F02T	ARC-F02U	ARC-F02V	
	PSF	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	DDM-0/E	
DAY/NIGHT	DAY		NIGHT		DAY		NIGHT		DAY		NIGHT		DAY		NIGHT		DAY		NIGHT		DAY		NIGHT		
ORBIT	32	33	34	35	36	37	38	39	40																
EARTH TRACE W/SAA																									
GSTDN COVERAGE	-YAR -GOS -MIL -MAD -GOS -MAD -HAW -DKR -RCN -YAR -GWN -BDR -MIL -GOS -AGO																								
TDRS																									
ATTITUDE	B/-XLV+YVV																								
H2O INH																									
TV EVENT	TV18	TV26	TV19	TV28	TV19	TV18	TV04	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23	TV23
NOTES:	<ul style="list-style-type: none"> • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA • AURORA 																								

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
122:16:00 / 123:04:00		002:00:00 / 002:12:00		122:11:00 / 122:23:00		/ 122 GMT	-28.2	○	MAY 2, 1985	STS 51-B	FINAL	3/19/85					
CDT :122		12		13		14		15		16		17					
MET :002		1		2		3		4		5		6					
SILVER	PLT											19	20	21	22	23	
	MS2	PRCT SLEEP	SLEEP										19	20	21	22	23
	PSM												19	20	21	22	23
DAY/NIGHT		ORBIT		EARTH TRACE W/SAR		GSTON COVERAGE		TORS		ATTITUDE		H2O INH		TV EVENT		NOTES:	
		32 33 34 35 36 37 38 39 40				-YAR -GDS -MIL -MAD		-GDS -MAD -DKR -ACN		-ACN -YAR -GMM -BDA -MIL		-GDS -MIL -GDS -MAD		-YAR -GMM			

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
123:16:00/ 124:04:00		003:00:00/ 003:12:00		123:11:00/ 123:23:00		/ 123 GMT	-31.0	☉	MAY 3, 1985	STS 51-B	FINAL	3/19/85				
CDT : 123		12		13		14		15		16		17				
MET : 003		1		2		3		4		5		6				
GOLD	CDR	AURORA P/TV	OTD 0623	AURORA P/TV	LUNCH	AURORA P/TV	VT-R OPS	SETUP P/TV	SETUP P/TV	SETUP P/TV	SETUP P/TV	SETUP P/TV	SETUP P/TV			
	MS1	TV119	TV119	TV119	TV07	TV119	TV119	TV119	TV119	TV119	TV119	TV119	TV119			
	MS3	TV10	ARC-F02A	ARC-F02E	ARC-F02F	MICROBIAL SAMPLES	LUNCH	ARC-F02C	ARC-F02D	ARC-F02E	ARC-F02F	BLOOD WORK	DOFF AFT			
	PSF	ODM-0/E	LUNCH	LUNCH	ODM-0/E	ODM-0/E	TV13	DOFF AFT	DOFF AFT	DOFF AFT	DOFF AFT	DOFF AFT	DOFF AFT			
DAY/NIGHT	48		49		50		51		52		53		54		55	
ORBIT	[Orbit diagram showing Earth trace and ground track]															
EARTH TRACE W/SAR	[Earth trace diagram]															
GSTN COVERAGE	-MAD -GOS -MAD -HAM -GOS -MAD -HAM -BDA -DKR -ACN -MIL -ACN -YAR -GWM -MIL -BOA -GOS -MIL -AGO -GOS -AGO															
TDRS	[TDRS coverage diagram]															
ATTITUDE	B/-XLV+YV															
H2O INH	[H2O inhibition diagram]															
TV EVENT	TV19 TV10 TV19 TV07 TV19 TV07 TV18 TV13															
NOTES:	<ul style="list-style-type: none"> • AURORA • AURORA • AURORA • AURORA • CONFIG FOR DRB PCS • ARC-F02 • STATUS REPORT • AURORA • OTD 0623 CABIN AIR MONITORING • AURORA • OSD 0437 MICROBIAL MONITORING OF SPACELAB 3 • OSD 0453 COMBINED BLOOD INVESTIGATION • OSD 0453 COMBINED BLOOD INVESTIGATION 															

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
123:16:00/ 124:04:00		003:08:00/ 003:12:00		123:11:00/ 123:23:00		/ 123 GMT	-31.0	○	MAY 3, 1985	STS 51-B	FINAL	3/19/85						
CDT : 123 11		12		13		14		15		16		17						
MET : 003 0		1		2		3		4		5		6						
										003:124 SILV FDS		9						
												10						
												11						
												12						
SILVER	PLT											P/TV SETUP	P/TV ACT	TV RECORD				
	MS2	PARCT SLEEP	SLEEP										POST SLEEP ACT	H/O	D/P	PROFILING	PERFORMANCE	GFC - FLM
	PSM												D/P			DON AFT		
DAY/NIGHT		[Day/Night Cycle]																
ORBIT		48	49	50	51	52	53	54	55									
EARTH TRACE N/SAA		[Earth Trace Map]																
GSTDN COVERAGE		-MAD -GDS -MAD -HAW -GDS -MAD -HAW -BDR -DKR -ACN -MIL -RCN -YAR -GWM -MIL -RCN -YAR -GDS -MIL -AGD -GDS -AGD																
TORS E N		[TORS E N]																
ATTITUDE		B/-XLV-YVV																
H2O INH		[H2O INH]																
TV EVENT		TV19	TV18	TV19	TV07	TV19	TV07	TV18					TV13					
NOTES:																		

GMT (D:H:M)	MET (D:H:M)	CDT (O:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
124:04:00 / 124:16:00	003:12:00 / 004:00:00	123:23:00 / 124:11:00	/ 124 GMT	-32.4	☉	MAY 3, 1985	STS 51-B	FINAL	3/19/85
CDT :123 23									
MET :003 12	CDT:124 13								
PLT									
MS2									
PSM									
BAY/NIGHT									
ORBIT	56	57	58	59	60	61	62	63	
EARTH TRACE W/SAA									
GSTDN COVERAGE	-HAW -HAW -ACN -OKR -GMM -RGO -OKR -ACN -MAD -GMM -RGO -MAD -YAR -MIL -MAD -YAR -MIL -BDR -MAD -YAR								
TDRS E H									
ATTITUDE	B/-XLV-YVV								
H2O INH	TV20H TV17H TV18 TV19H								
TV EVENT									
NOTES:	<input type="checkbox"/> FC PURGE HTR ON <input checked="" type="checkbox"/> MANUAL <input type="checkbox"/> FC PURGE HTR OFF <input checked="" type="checkbox"/> STATUS REPORT								

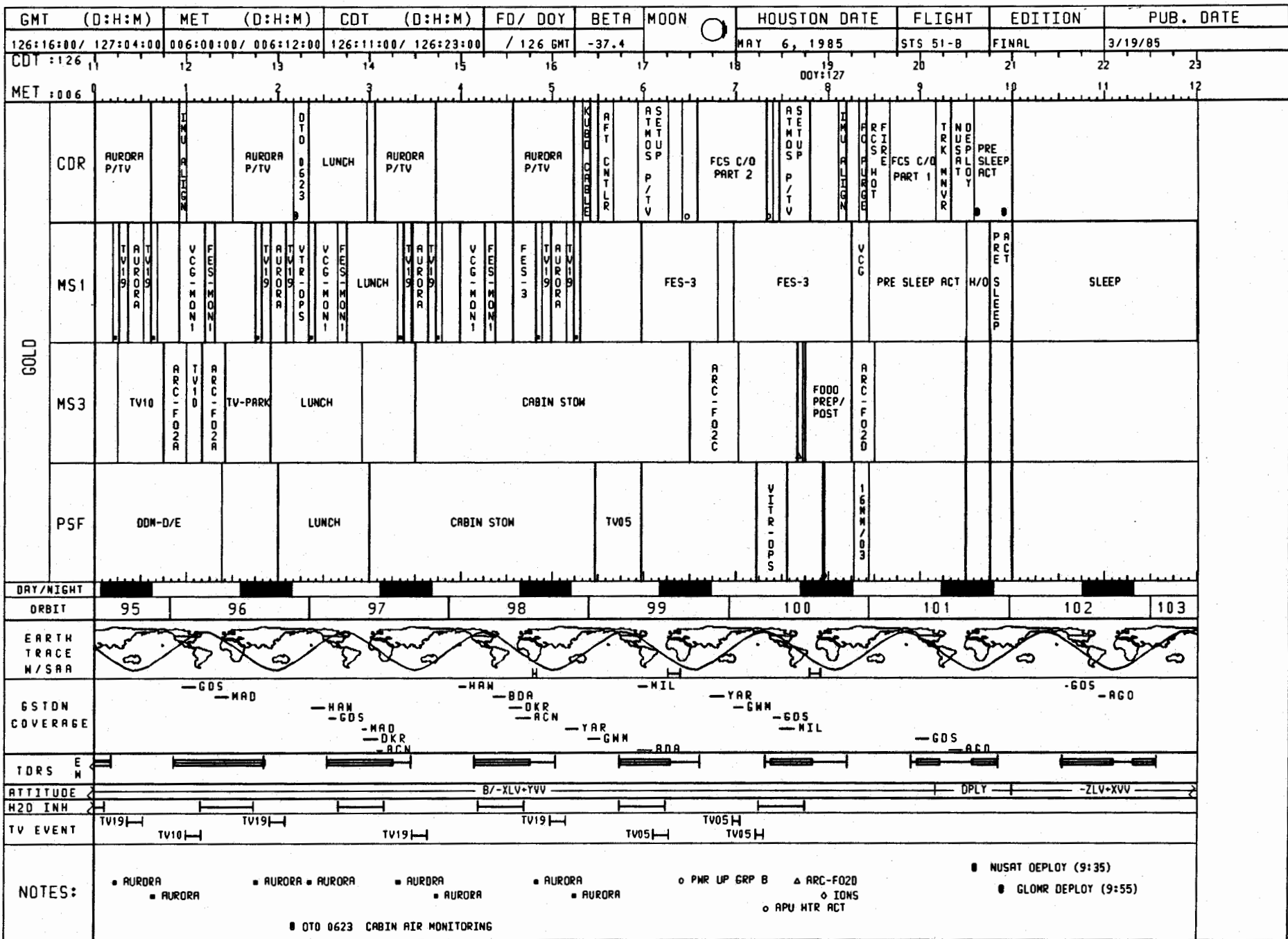
GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE															
124:16:00 / 125:04:00		004:00:00 / 004:12:00		124:11:00 / 124:23:00		/ 124 GMT	-33.6	○	MAY 4, 1985	STS 51-B	FINAL	3/19/85															
CDT :124		11		12		13		14		15		16		17		18		19		20		21		22		23	
MET :004		0		1		2		3		4		5		6		7		8		9		10		11		12	
SILVER	PLT																					FLTR IPM					
	MS2	PARACT S SLMWTS	SLEEP															POST SLEEP ACT	H/O	D/P	REACT 1						
	PSM																			0/P	REACT 2	REACT 2	REACT 2	REACT 2			
DAY/NIGHT		ORBIT		64		65		66		67		68		69		70		71									
EARTH TRACE W/SAA																											
GSTDN COVERAGE		-GDS -MIL -MAD -GDS -MAD -MAD -DKR -RGN -HAN -HAN -BDR -DKR -RGN -YAR -GMM -BDR -MIL -YAR -GMM -GDS -GDS -AGO -GDS -AGO																									
TDRS																											
ATTITUDE		B/-XLV+YVV																									
H2O INH																											
TV EVENT		TV10 TV19 TV19 TV18 TV18 TV18 TV09 TV19 TV18																									
NOTES:		■ FILTER CLEANING																									

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
125:04:00 / 125:16:00		004:12:00 / 005:00:00		124:23:00 / 125:11:00		/ 125 GMT	-34.7		MAY 4, 1985	STS 51-B	FINAL	3/19/85
CDT: 124 23		MET: 004 12		CDT: 125 13								
SILVER	PLT	FLTR		ASTM		LUNCH		ASTM		ASTM		
	MS2	VITR		LUNCH		LUNCH		LUNCH		H/D		SLEEP
	PSM	LUSI		LUNCH		LUNCH		LUNCH		LUNCH		
DAY/NIGHT		ORBIT		EARTH TRACE W/SRA		GSTN COVERAGE		TDRS E M		ATTITUDE H2D INH		TV EVENT
		72 73 74 75 76 77 78 79								B/-XLV+YVV		TV17H TV18 TV19P
NOTES:		FILTER CLEANING								STATUS REPORT		

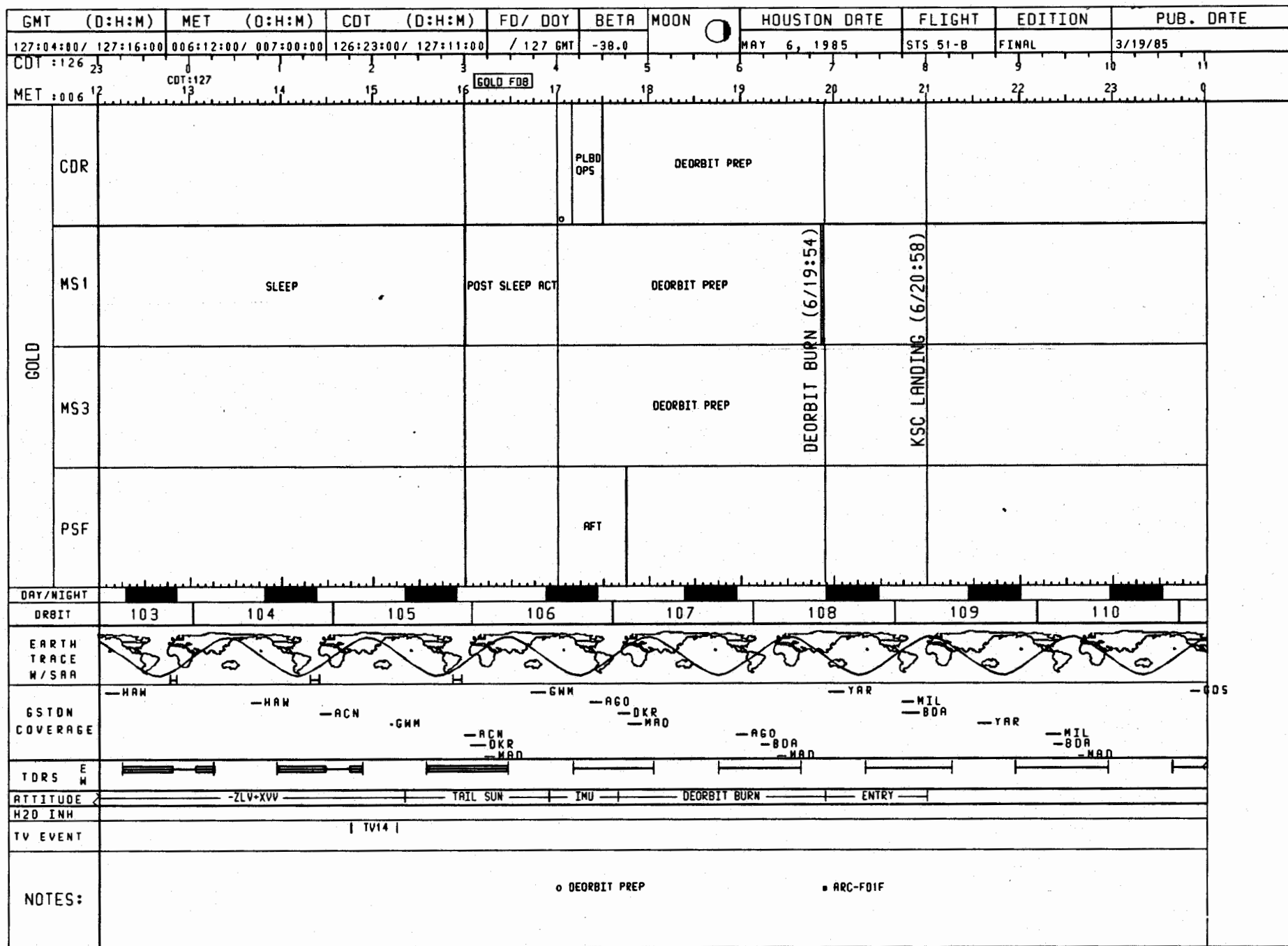
GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY		BETA		MDOON		HOUSTON DATE		FLIGHT		EDITION		PUB. DATE									
125:16:00 / 126:04:00		005:00:00 / 005:12:00		125:11:00 / 125:23:00		/ 125 GMT		-35.7		O		MAY 5, 1985		STS 51-B		FINAL		3/19/85									
CDT : 125		12		13		14		15		16		17		18		19		20		21		22		23			
MET : 005		0		1		2		3		4		5		6		7		8		9		10		11		12	
GOLD	CDR	AURORA P/TV		AURORA P/TV		AURORA P/TV		LUNCH		AURORA P/TV		VTR-OPPS		ASTMOUSP P/TV		ASTMOUSP P/TV		H/D									
	MS1	LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		FES-3		PRE SLEEP ACT		SLEEP			
	MS3	ARC-F02E		ARC-F02F		MICROBIAL SAMPLES		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		BLOOD WORK							
	PSF	DDM-0/E		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		H/D							
DAY/NIGHT																											
ORBIT																											
EARTH TRACE W/SAA																											
GSTDN COVERAGE																											
TORS																											
ATTITUDE																											
H2O INH																											
TV EVENT																											
NOTES:																											

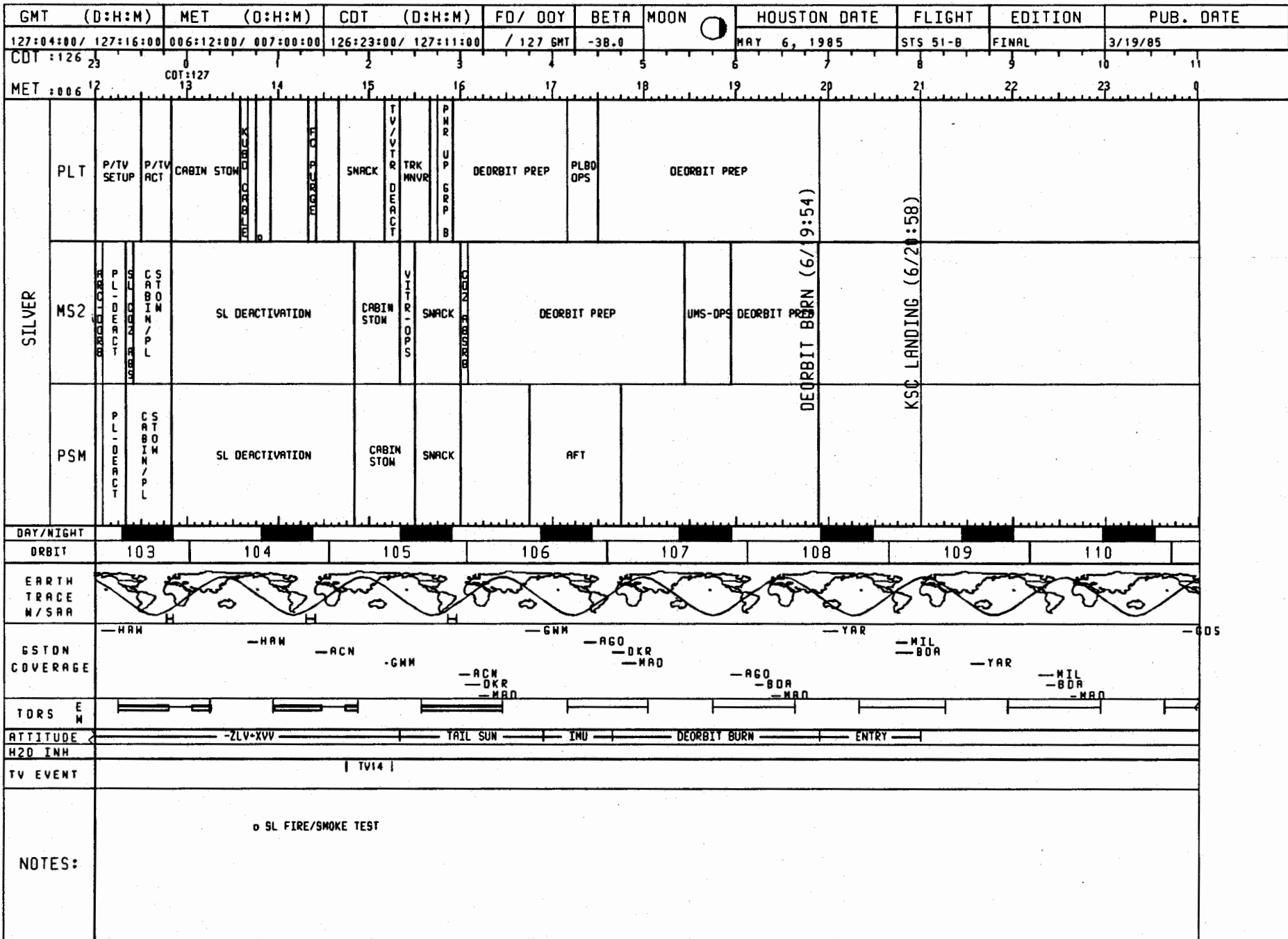
GMT (O:H:M)		MET (O:H:M)		CDT (O:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
125:16:00 / 126:04:00		005:00:00 / 005:12:00		125:11:00 / 125:23:00		/ 125 GMT	-35.7	☉	MAY 5, 1985	STS 51-B	FINAL	3/19/85					
CDT : 125		12	13	14	15	16	17	18	19	20	21	22	23				
MET : 005		1	2	3	4	5	6	7	8	9	10	11	12				
SILVER	PLT																
	MS2	SLEEP							POST SLEEP ACT		VTR OPS	D/P	ARRI/END	SILVER OPS	ARRI/END	VTR OPS	GFCL3
	PSM										FES-3						
DAY/NIGHT																	
ORBIT		79	80	81	82	83	84	85	86	87							
EARTH TRACE W/SAR																	
GSTDN COVERAGE		-GDS -MAD -HAW -GDS -MAD -OKR -BDA -OKR -RCN -YAR -GWN -RCN -YAR -GWN -MIL -BDA -YAR -GDS -MAD -OKR -HAW															
TDRS E W																	
ATTITUDE H2O INH		B/-XLV+YV															
TV EVENT		TV10	TV19	TV19	TV19	TV18	TV18	TV23	TV23	TV23	TV23						
NOTES:																	

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
126:04:00 / 126:16:00	005:12:00 / 006:00:00	125:23:00 / 126:11:00	/ 126 GMT	-36.6	☉	MAY 5, 1985	STS 51-B	FINAL	3/19/85
CDT: 125 23	MET: 005 12	CDT: 126 13							
PLT	ASFT ATM OUP P/T/V	LUNCH	ASFT ATM OUP P/T/V	ASFT ATM OUP P/T/V	ASFT ATM OUP P/T/V	ASFT ATM OUP P/T/V			
MS2		LUNCH		UMS-CAL			H/D	PRE SLEEP ACT	
PSM	FES-3		LUNCH						
DAY/NIGHT	[Day/Night Cycle]								
ORBIT	87	88	89	90	91	92	93	94	95
EARTH TRACE M/SAR	[Earth Trace Map]								
ESTON COVERAGE	-HAM -ACN -DKR -GMM -AGD -MAD -YAR -NIL -BDA -MAD -YAR -GDS								
TDRS	[TDRS Coverage]								
ATTITUDE	B/-XLV=YVV								
H2O INH	[H2O INH]								
TV EVENT	TV17H TV18 TV19								
NOTES:	● ATMOS P/T/V SETUP ▲ FES-2 ● STATUS REPORT								



GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
126:16:00 / 127:04:00		006:00:00 / 006:12:00		126:11:00 / 126:23:00		/ 126 GMT	-37.4	☉	MAY 6, 1985	STS 51-B	FINAL	3/19/85					
CDT : 126		11	12	13	14	15	16	17	18	19	20	21	22	23			
MET : 006		0	1	2	3	4	5	6	7	8	9	10	11	12			
SILVER	PLT									POST SLEEP ACT	SCR HOT MAYBE	FCS C/D PART 1	NUSAT DEPLOY	GLOMR DEPLOY	T K K R M N V R	P L I S T O M S T R U C T U R E D M O D E S	CABIN STOM
	MS2	SLEEP								POST SLEEP ACT		NUSAT DEPLOY	GLOMR DEPLOY	P L I S T O M S	V I R I O S	P L I S T O M	ARC-DORB
	PSM									POST SLEEP ACT		H/O D/P		PL-STOM		P/TV SETUP	
DAY/NIGHT	[Day/Night Cycle]																
ORBIT	95	96	97	98	99	100	101	102	103								
EARTH TRACE W/SAR	[Earth Trace]																
ESTON COVERAGE	-GDS -HAD -HAM -GDS -HAD -DKR -ACN -HAM -BOA -DKR -ACN -YAR -GWN -MIL -YAR -GWN -GDS -MIL -GDS -AGD																
TDRS E W	[TDRS Coverage]																
ATTITUDE H2D INH	B/-XLV+YVV DPLY -ZLV+XVV																
TV EVENT	TV19H	TV10H	TV19H	TV19H	TV19H	TV05H	TV05H										
NOTES:	<ul style="list-style-type: none"> ● NUSAT DEPLOY (9:35) ● GLOMR DEPLOY (9:55) 																



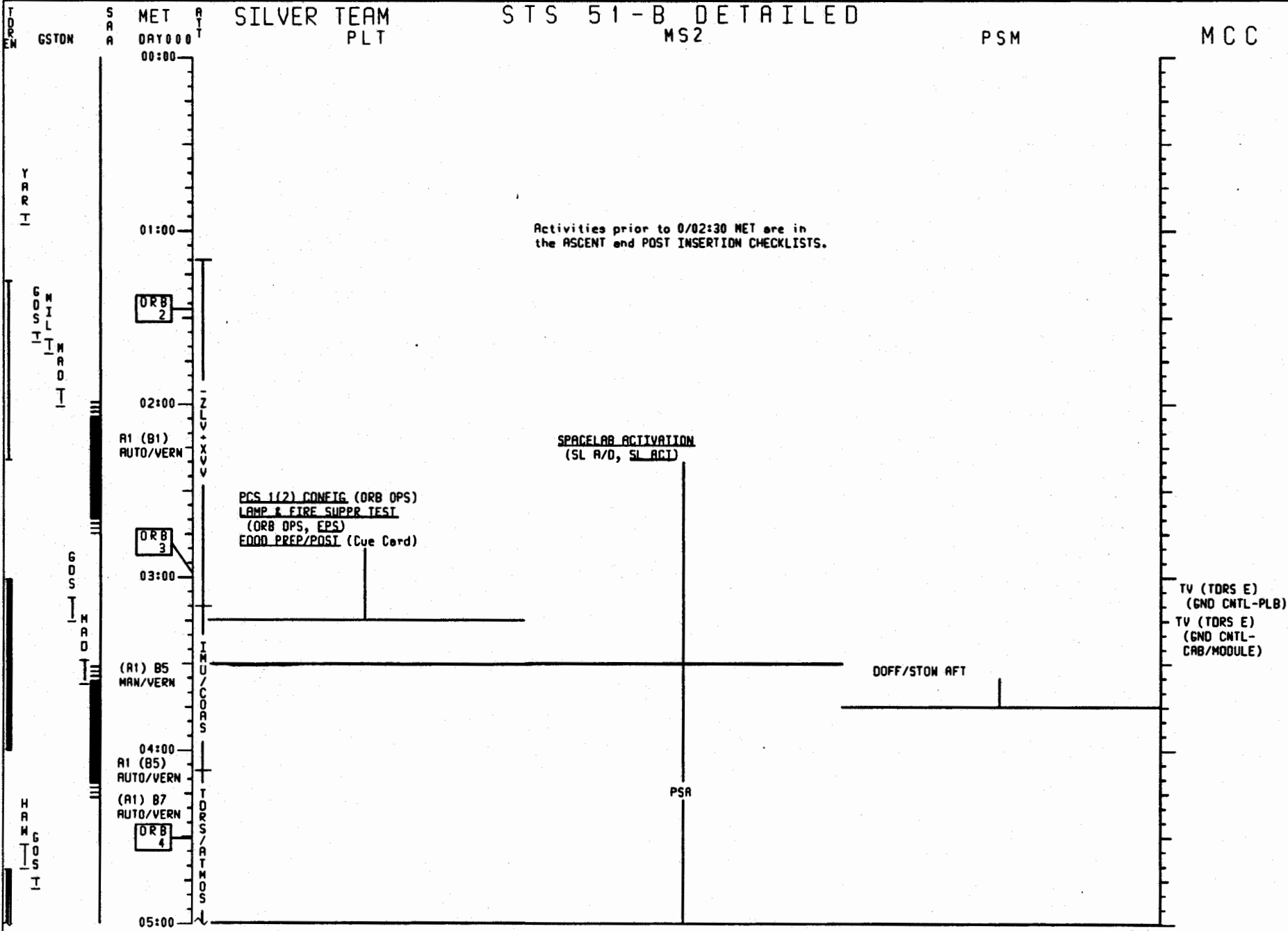


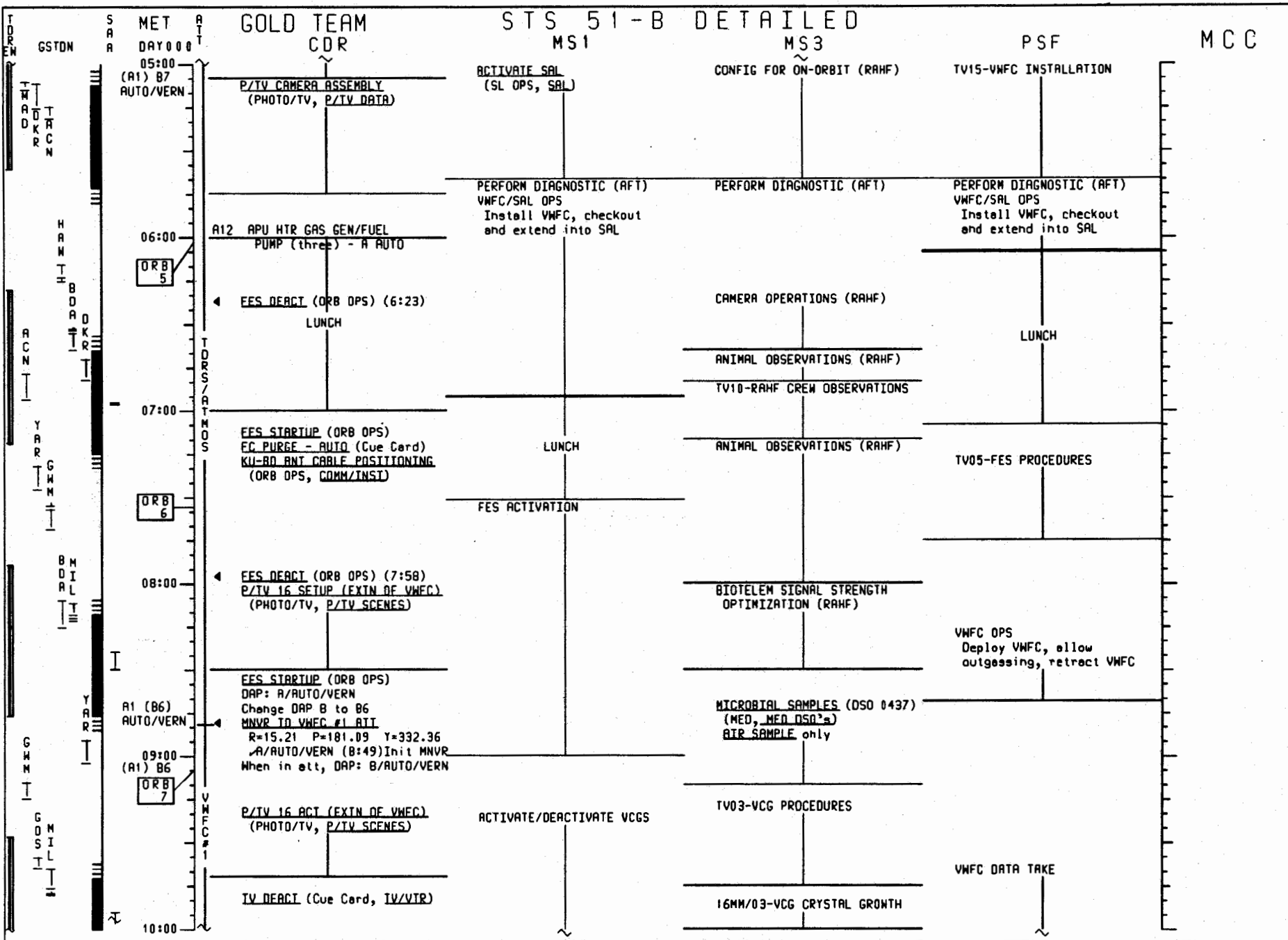
o SL FIRE/SMOKE TEST

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DETAILED TIMELINE

**DETAILED
TIMELINE**





TDR EN
 GSDN
 SRA
 MET DAY 000
 05:00
 (A1) B7
 AUTO/VERN
 06:00
 ORB 5
 07:00
 ORB 6
 08:00
 A1 (B6)
 AUTO/VERN
 09:00
 (A1) B6
 ORB 7
 A1 (B6)
 AUTO/VERN
 (A1) B6
 AUTO/VERN
 10:00

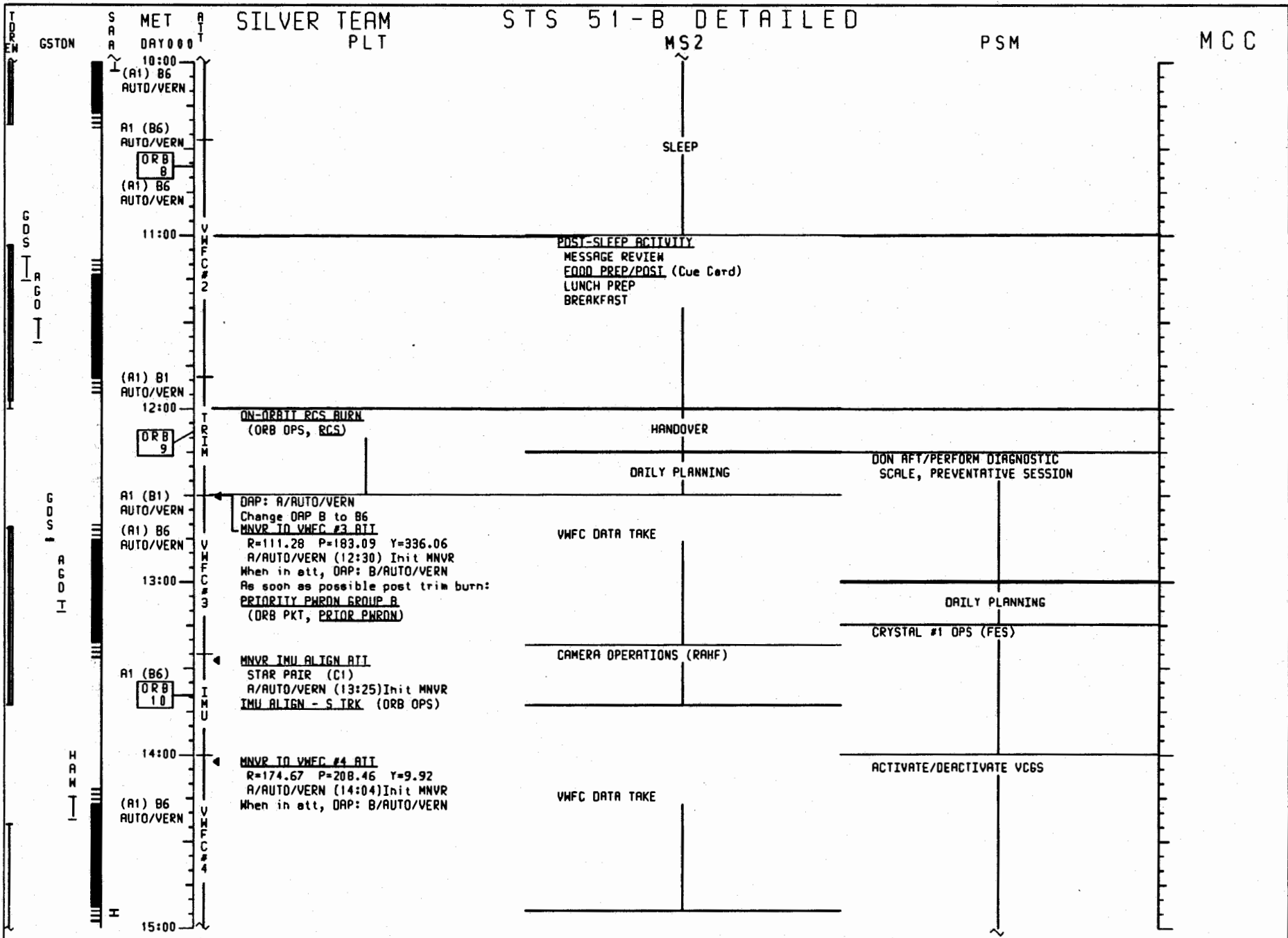
SILVER TEAM
PLT

STS 51-B DETAILED
MS2

PSM

MCC

SLEEP



TOR EN
 GSTDN
 H A N T
 A C C N T
 P E R G
 A C C K R A D D
 C M M
 G G D
 K K R A D D
 S A R A
 MET DAY 000
 15:00
 ORB 11
 (R1) B6
 AUTO/VERN
 A1 (B6)
 AUTO/VERN
 (R1) B6
 AUTO/VERN
 16:00
 A1 (B6)
 AUTO/VERN
 (R1) B6
 ORB 12
 17:00
 A1 (B6)
 AUTO/VERN
 18:00
 (R1) B7
 ORB 13
 19:00
 ORB 14
 20:00

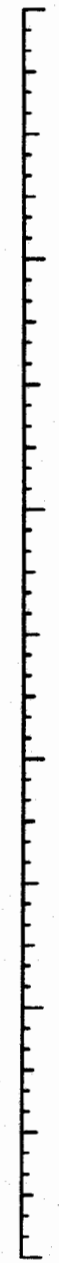
GOLD TEAM
COR

STS 51-B DETAILED
MS1 MS3

PSF

MCC

MS1
SLEEP

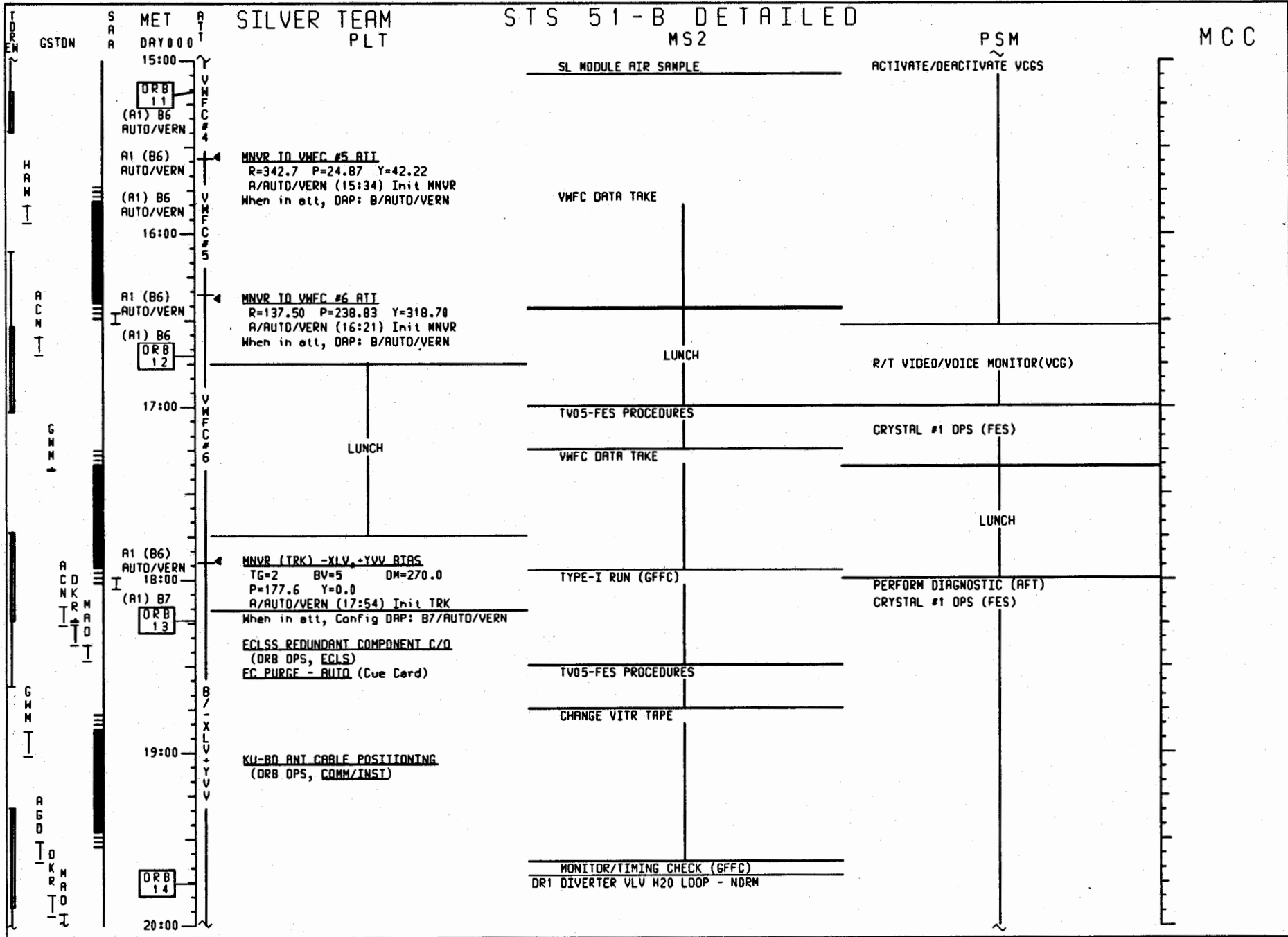


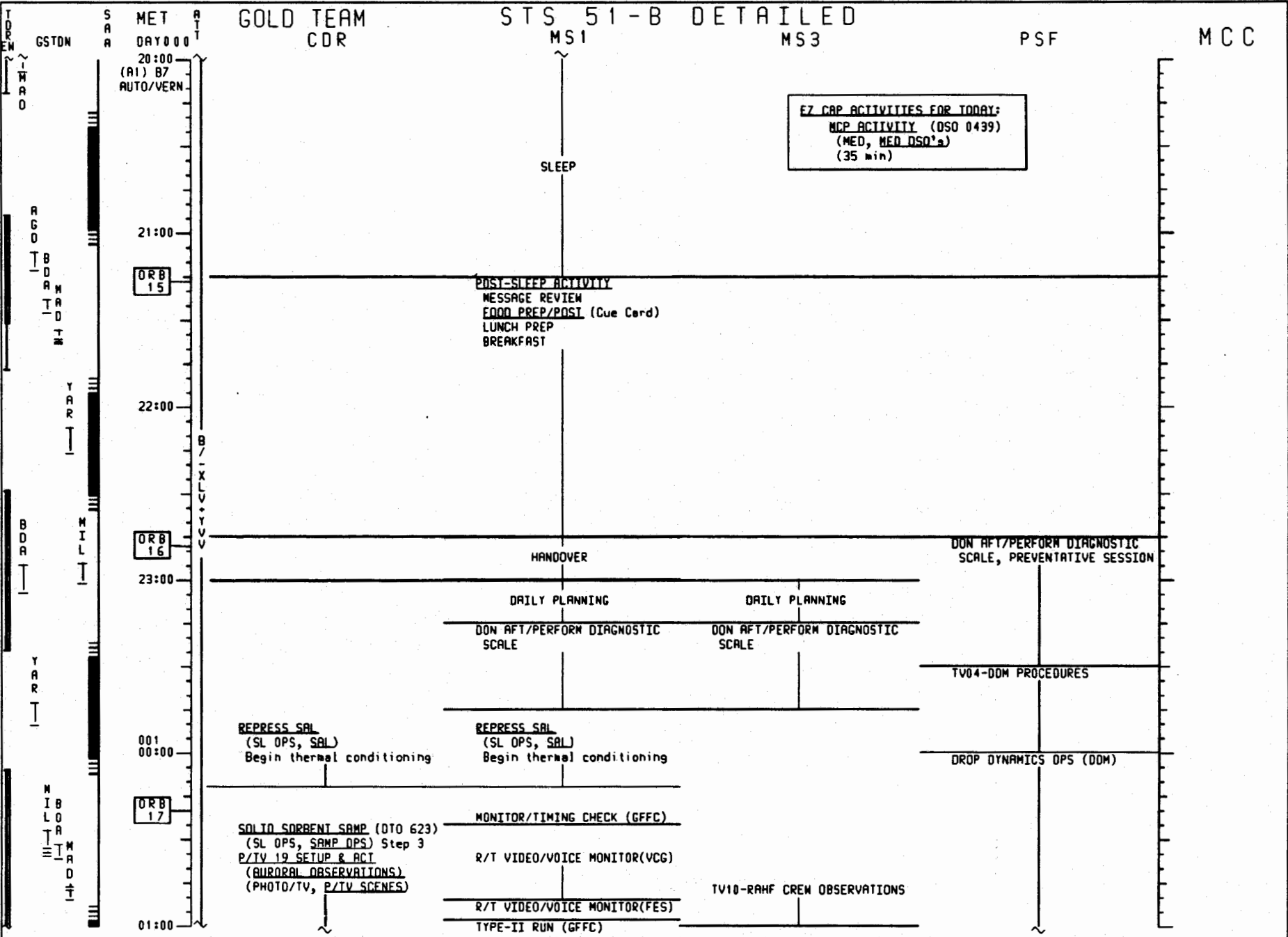
STS 51-B DETAILED MS2

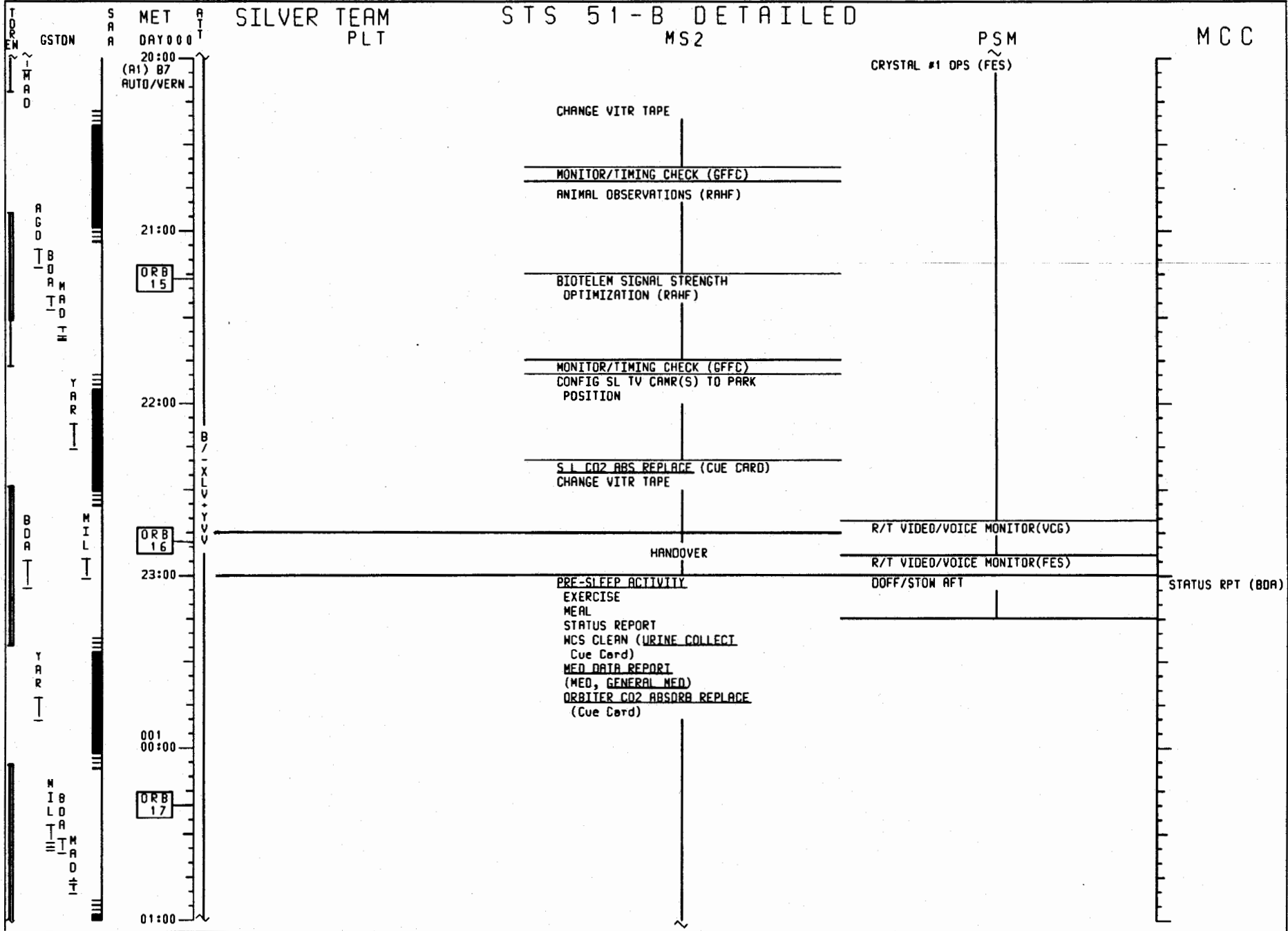
SILVER TEAM
PLT

PSM

MCC







T O O R M
 G S T D N
 G S T H A D D
 H A R D S
 H A R D R K
 H A R D E C C
 S A R A
 MET DAY 001
 (A1) B7
 AUTO/VERN
 01:00
 02:00
 03:00
 04:00
 05:00
 06:00
 B / X / Y / Z

SILVER TEAM
PLT

STS 51-B DETAILED
MS2

PSM

MCC

PRE-SLEEP ACTIVITY

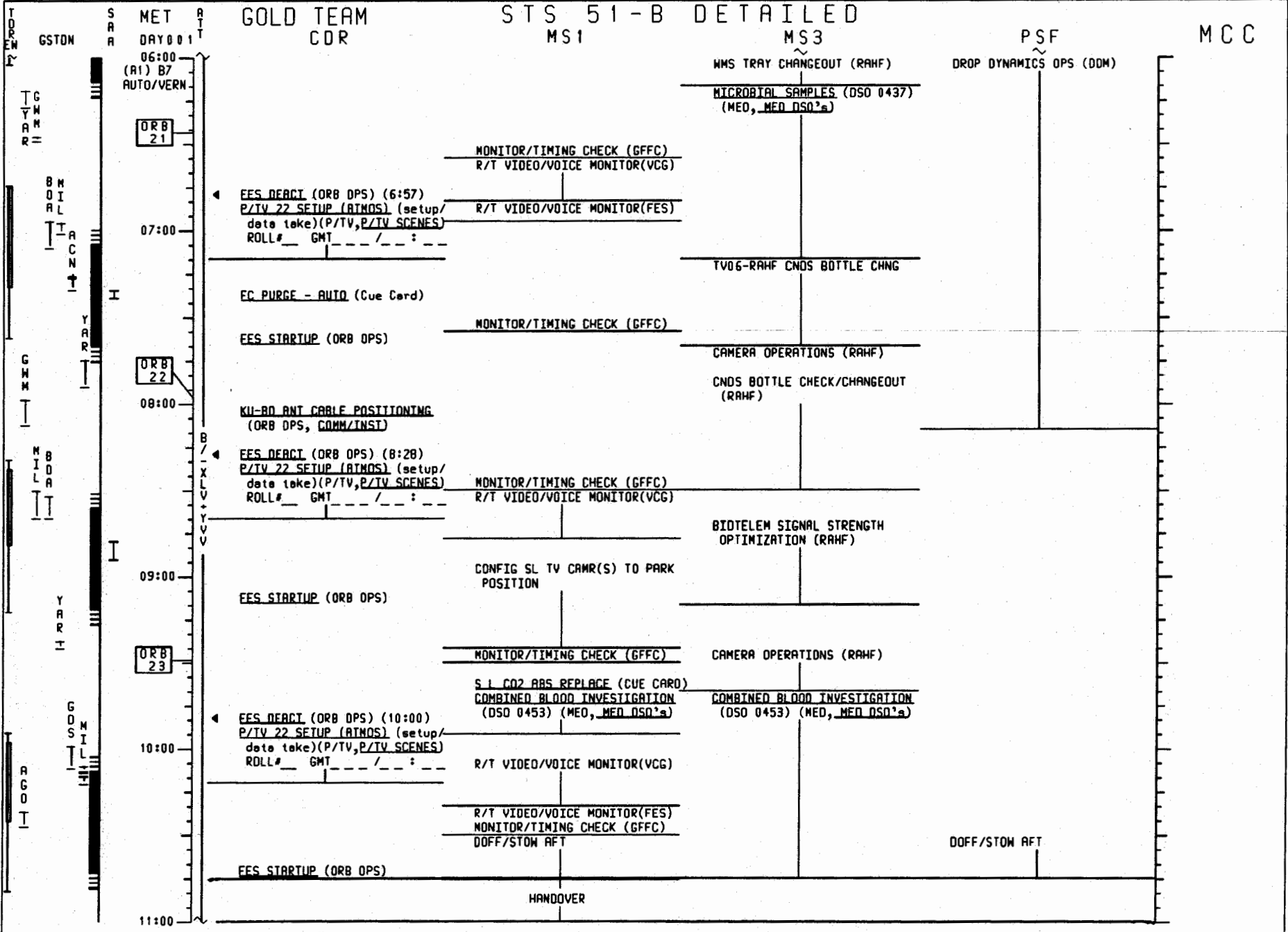
SLEEP

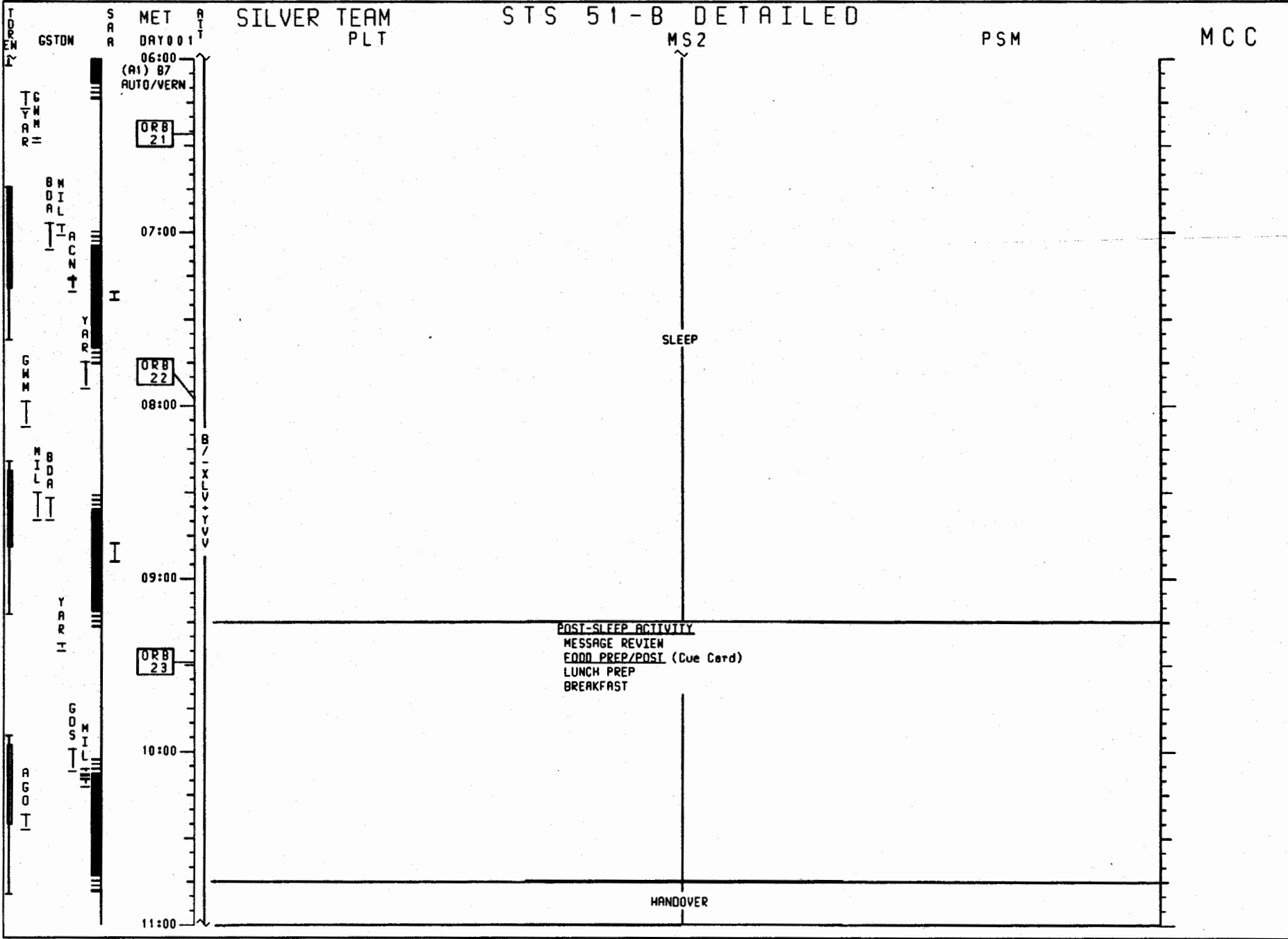
TMU ALIGN LOG
 REOD ID:
 -Y _____ -Z _____ ANG ERR _____
 1 2 3
 ANG:
 ΔX () . () . () .
 ΔY () . () . () .
 ΔZ () . () . () .
 EXECUTION TIME:
 - / - : - : -

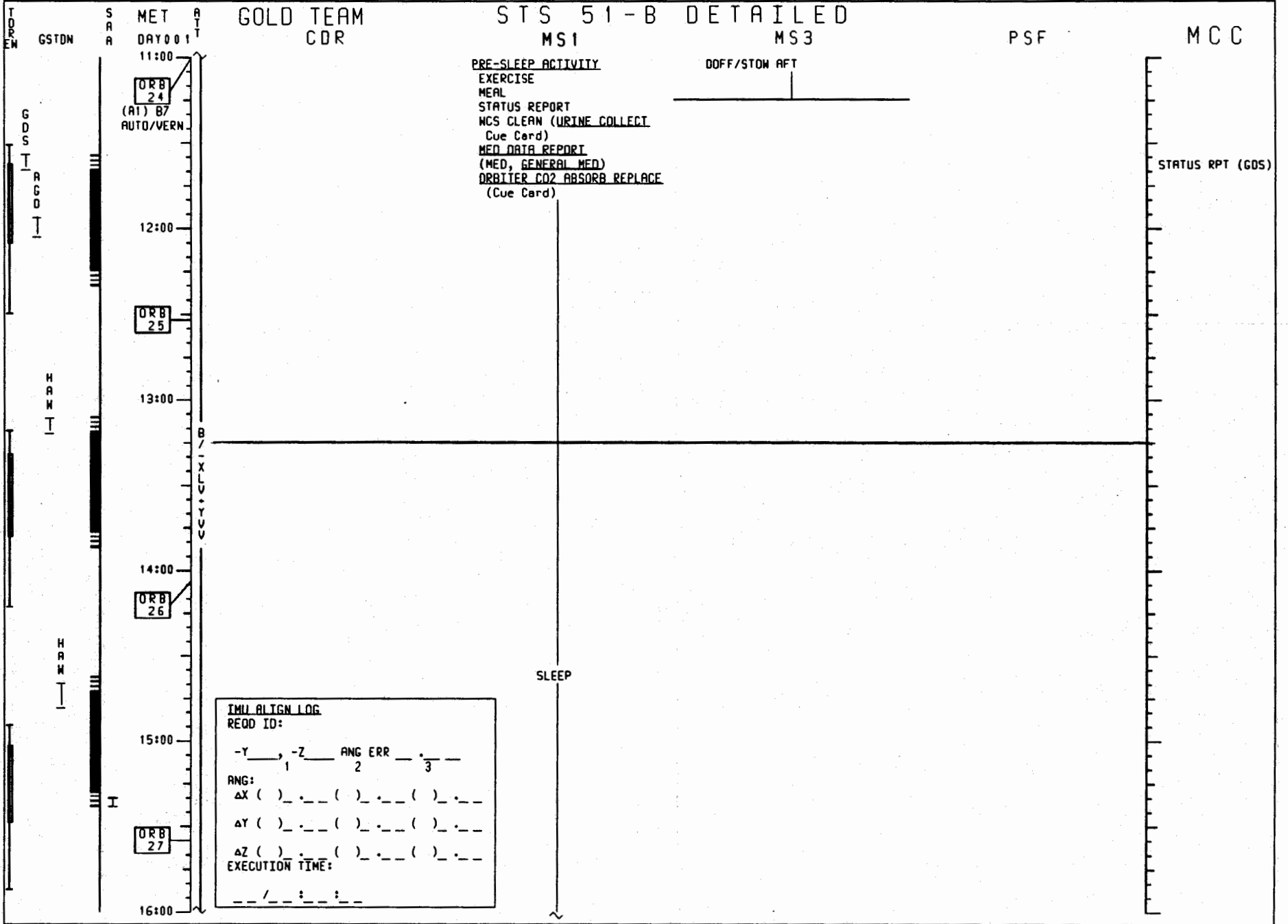
ORB 18

ORB 19

ORB 20







GOLD TEAM
CDR

STS 51-B DETAILED
MS1 MS3

PSF

MCC

S A R A
MET DAY 001
AIT
B
11:00
12:00
13:00
14:00
15:00
16:00

PRE-SLEEP ACTIVITY
EXERCISE
MEAL
STATUS REPORT
MCS CLEAN (URINE COLLECT
Cue Card)
MED DATA REPORT
(MED, GENERAL MED)
DRAFTER CO2 ABSORB REPLACE
(Cue Card)

DOFF/STOW AFT

STATUS RPT (GDS)

ORB 24
(A1) B7
AUTO/VERN

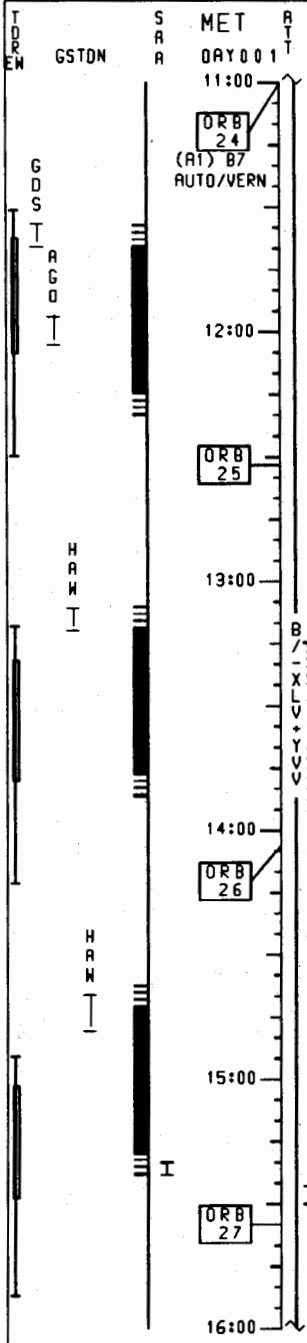
ORB 25

ORB 26

ORB 27

SLEEP

IMU ALIGN LOG
REOD ID:
-Y _____ -Z _____ ANG ERR _____
 1 2 3
ANG:
ΔX () . () . () .
ΔY () . () . () .
ΔZ () . () . () .
EXECUTION TIME:
_ / _ : _ : _



SILVER TEAM
PLT

STS 51-B DETAILED
MS2

PSM

MCC

FILTER CLEANING
(IFM, SCHEDULED MAINTENANCE)

DAILY PLANNING

DON APT/PERFORM DIAGNOSTIC
SCALE, PREVENTATIVE SESSION

CHANGE VITR TAPE

R/T VIDEO/VOICE MONITOR(VCG)

TYPE-I RUN (GFFC)

R/T VIDEO/VOICE MONITOR(FES)

CHANGE VITR TAPE

DAILY PLANNING

If reqd per MCC call:
MNVR IMU ALIGN ATT
 STAR PAIR (A1)
 A/AUTO/VERN (13:10)Init
IMU ALIGN - 5 TRK (ORB OPS)
MNVR (TRK) -XLV,+YVV,BIAS
 TG=2 BV=5 OM=270.0
 P=177.6 Y=0.0
 A/AUTO/VERN Init TRK
 When in att, DAP:B/AUTO/VERN:
BSCS 2(1) RECONFIG
 (SL OPS, ECLSS)

MONITOR/TIMING CHECK (GFFC)

R/T VIDEO/VOICE MONITOR(VCG)

MONITOR/TIMING CHECK (GFFC)

R/T VIDEO/VOICE MONITOR(FES)

P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
 ROLL# GMT / : - -

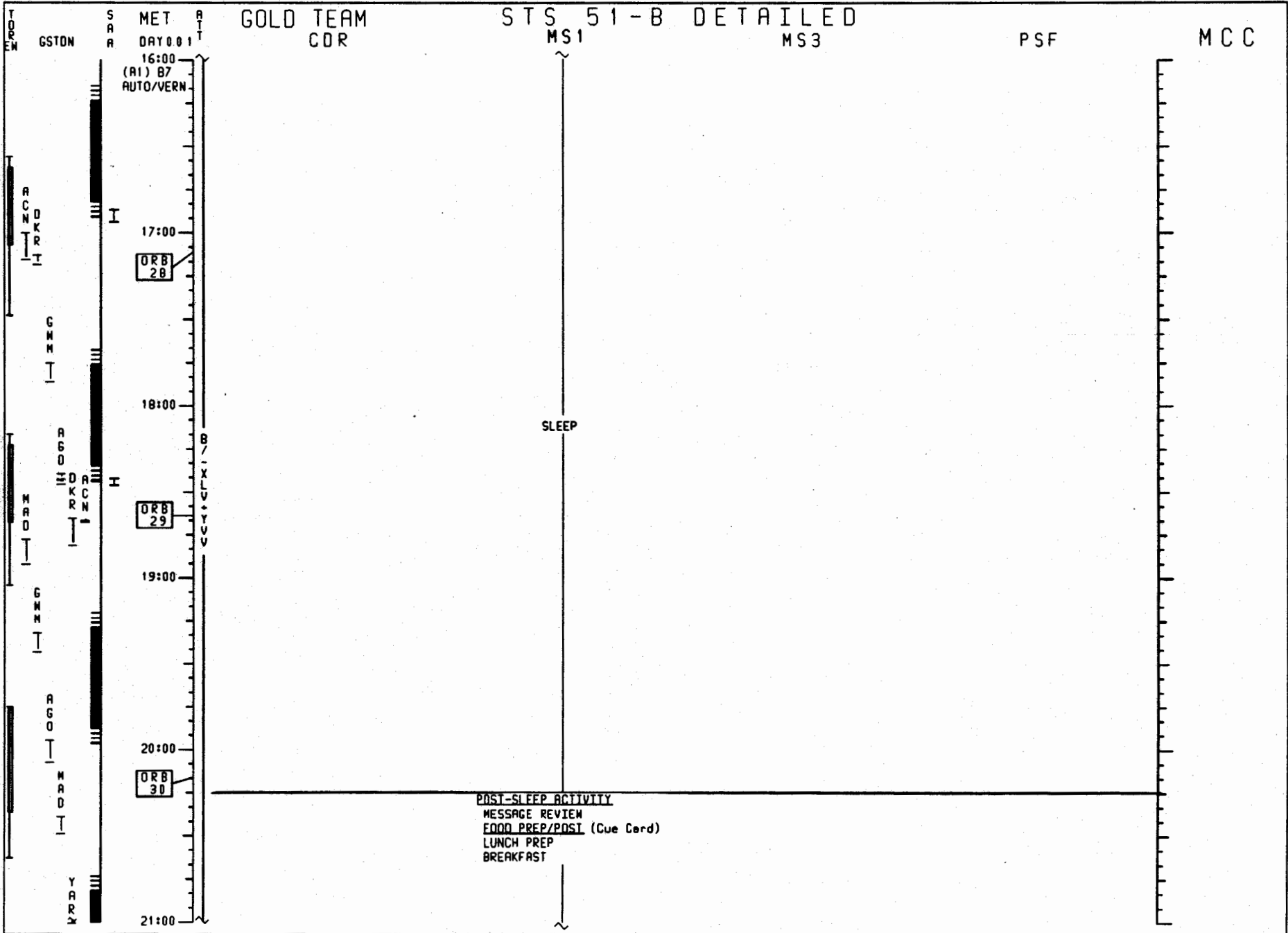
MONITOR/TIMING CHECK (GFFC)
 UMS CALIBRATION (UMS)

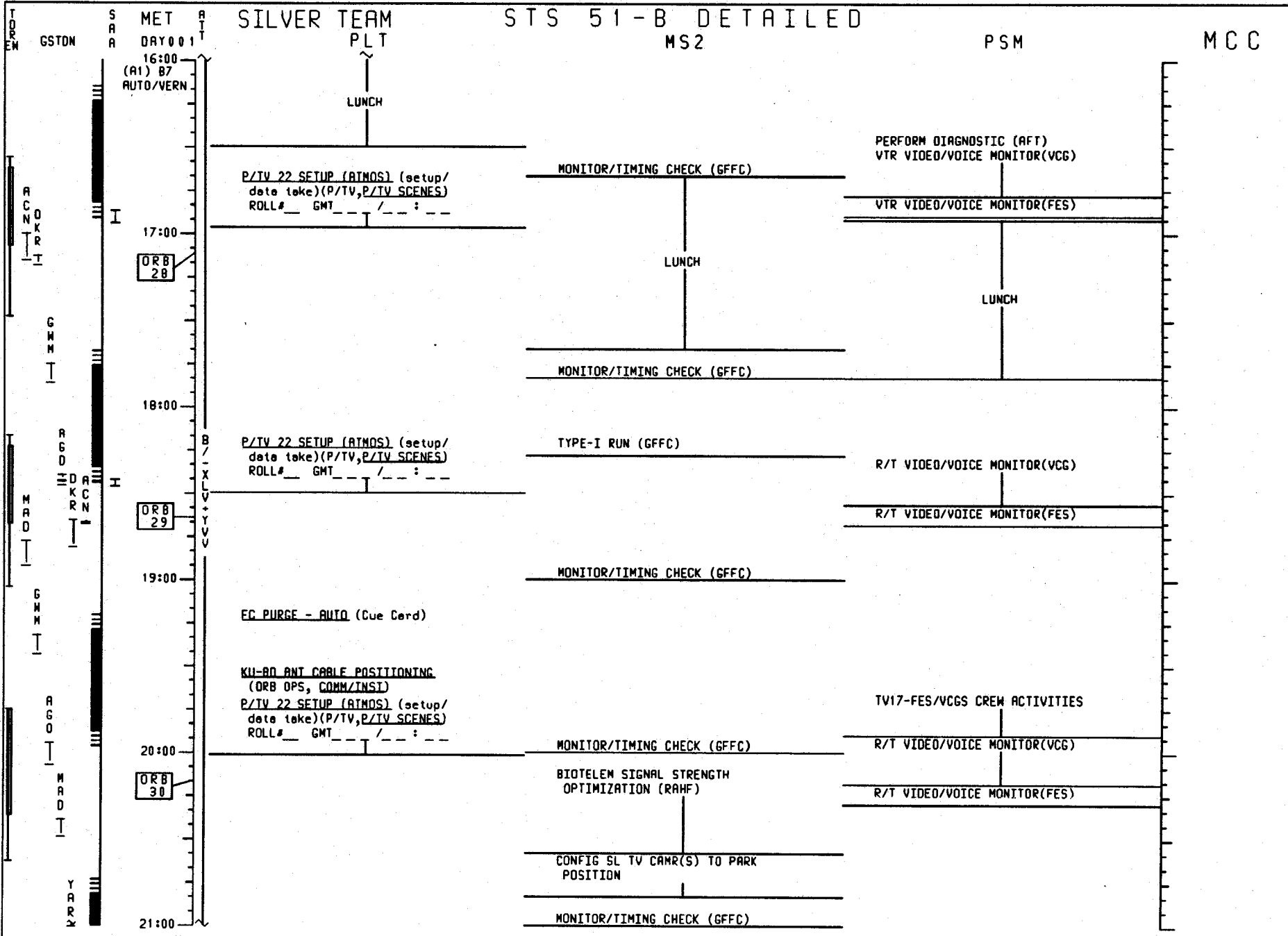
R/T VIDEO/VOICE MONITOR(VCG)

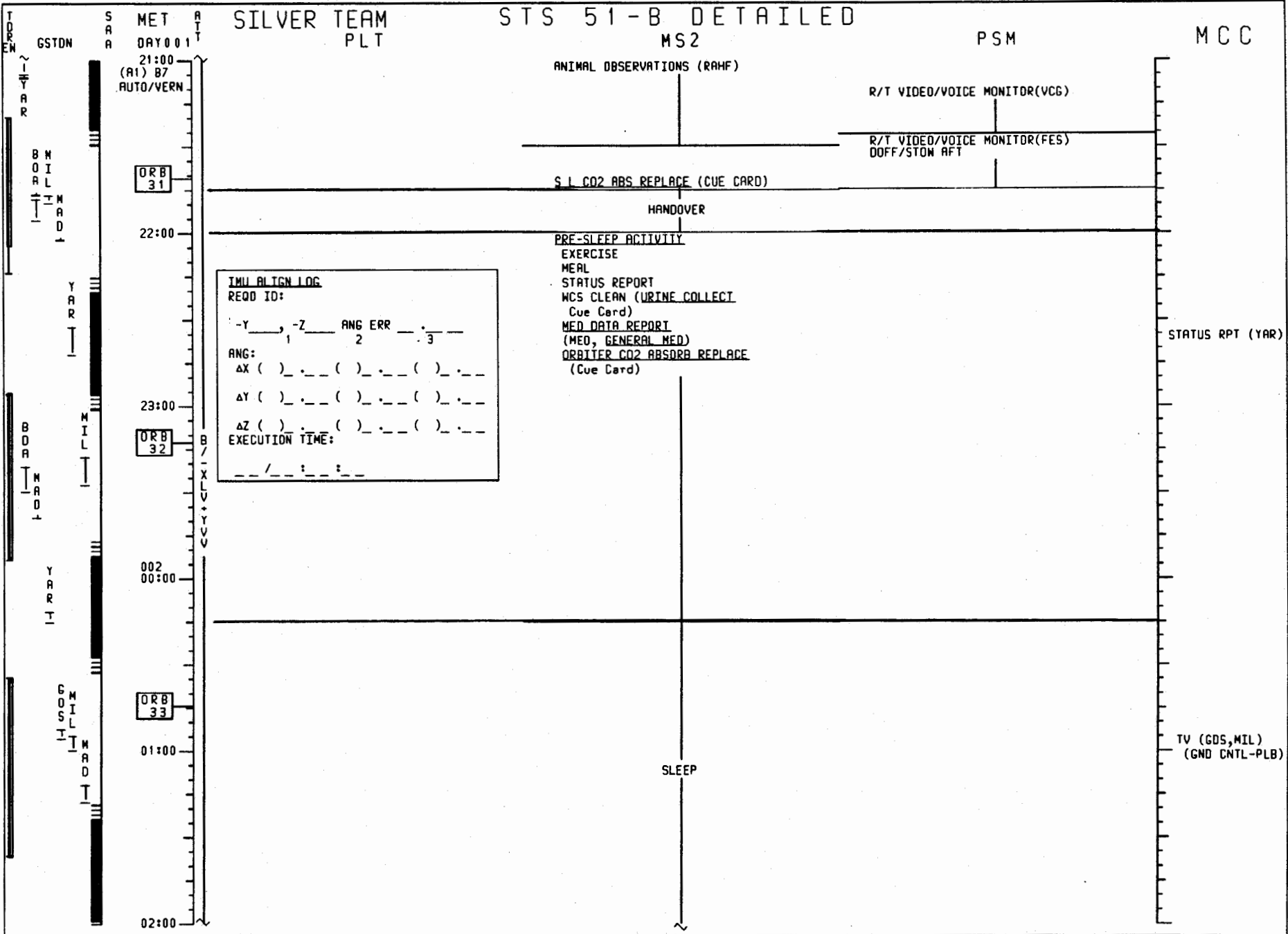
R/T VIDEO/VOICE MONITOR(FES)

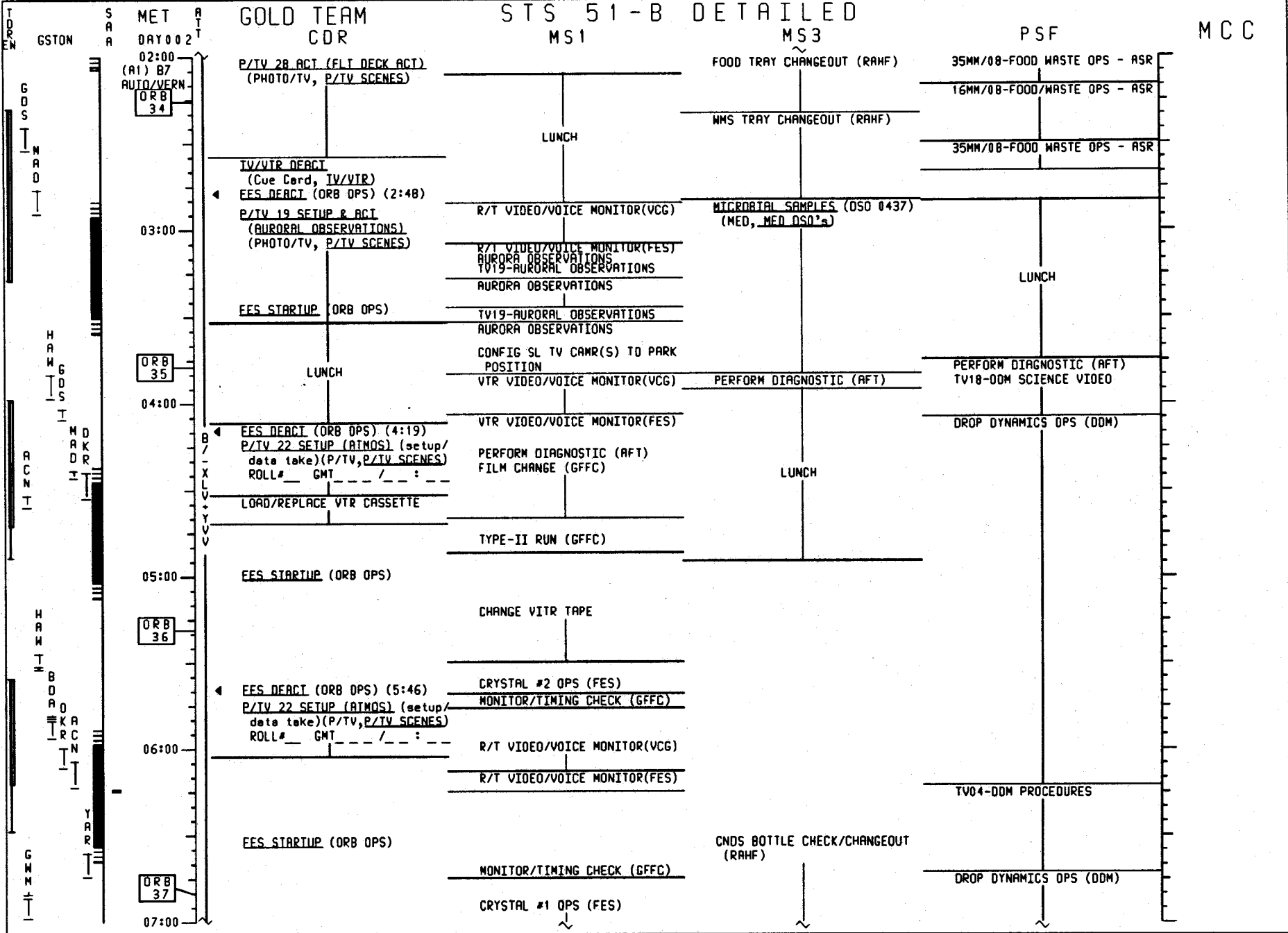
LUNCH

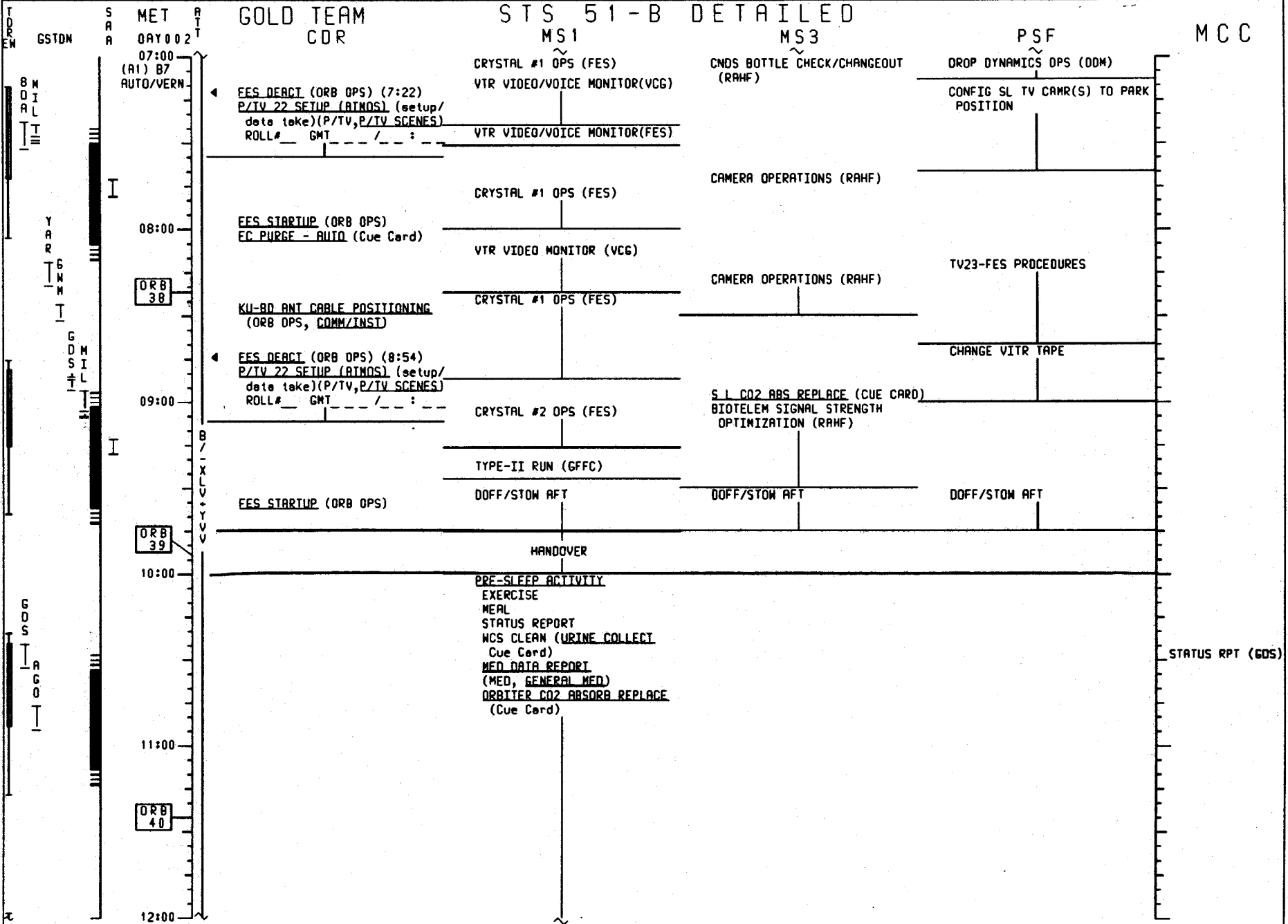
MONITOR/TIMING CHECK (GFFC)

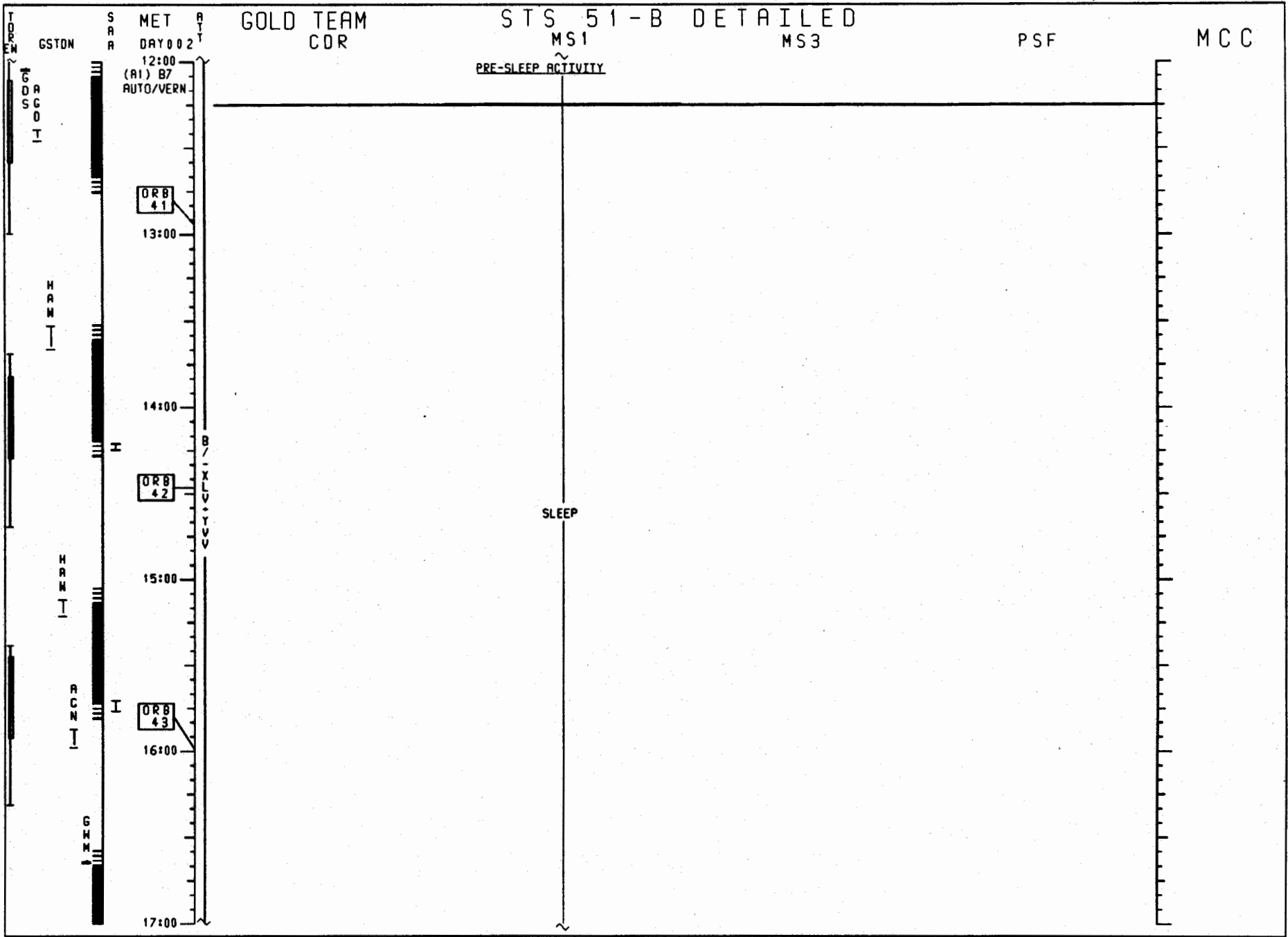


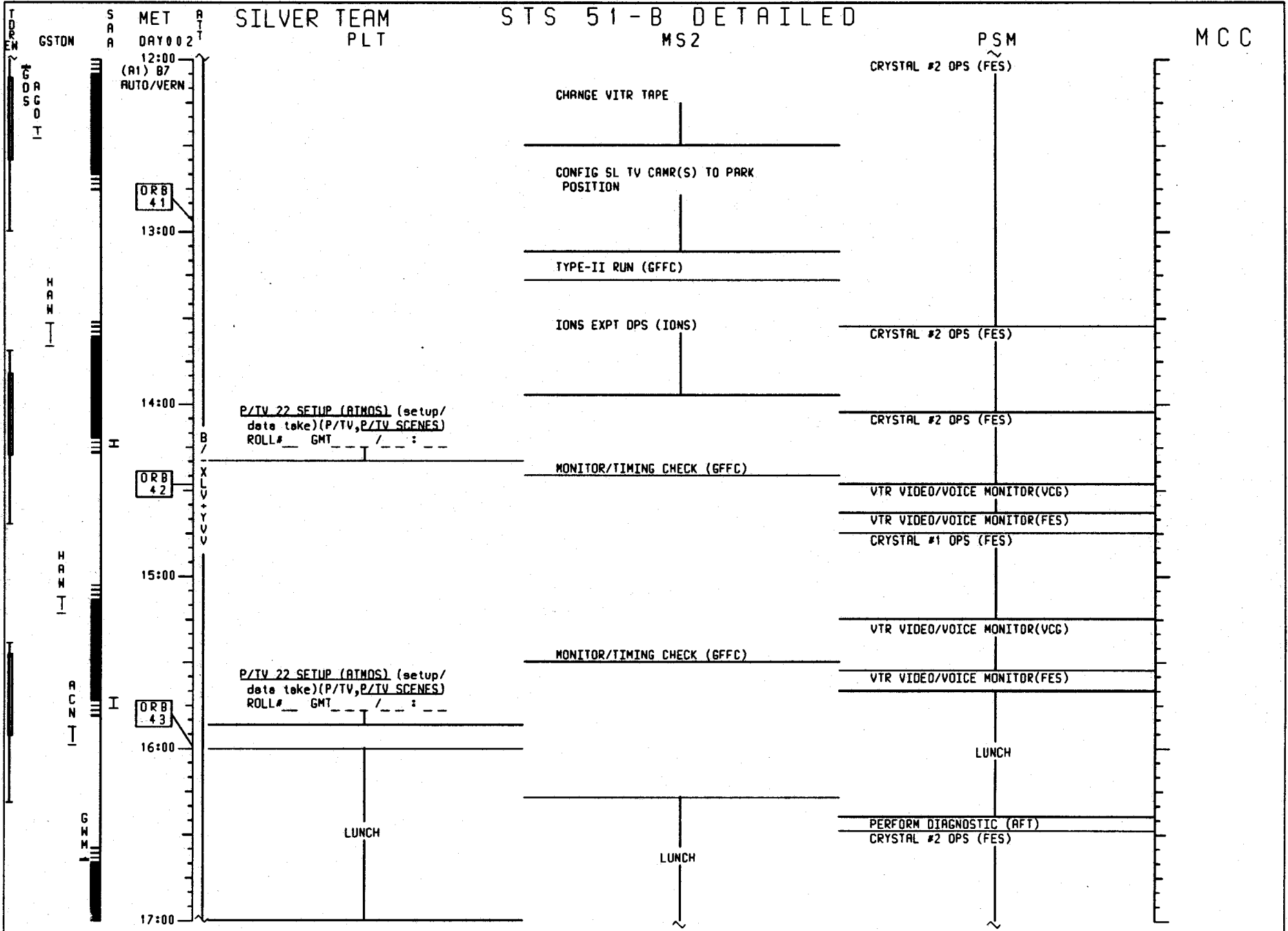


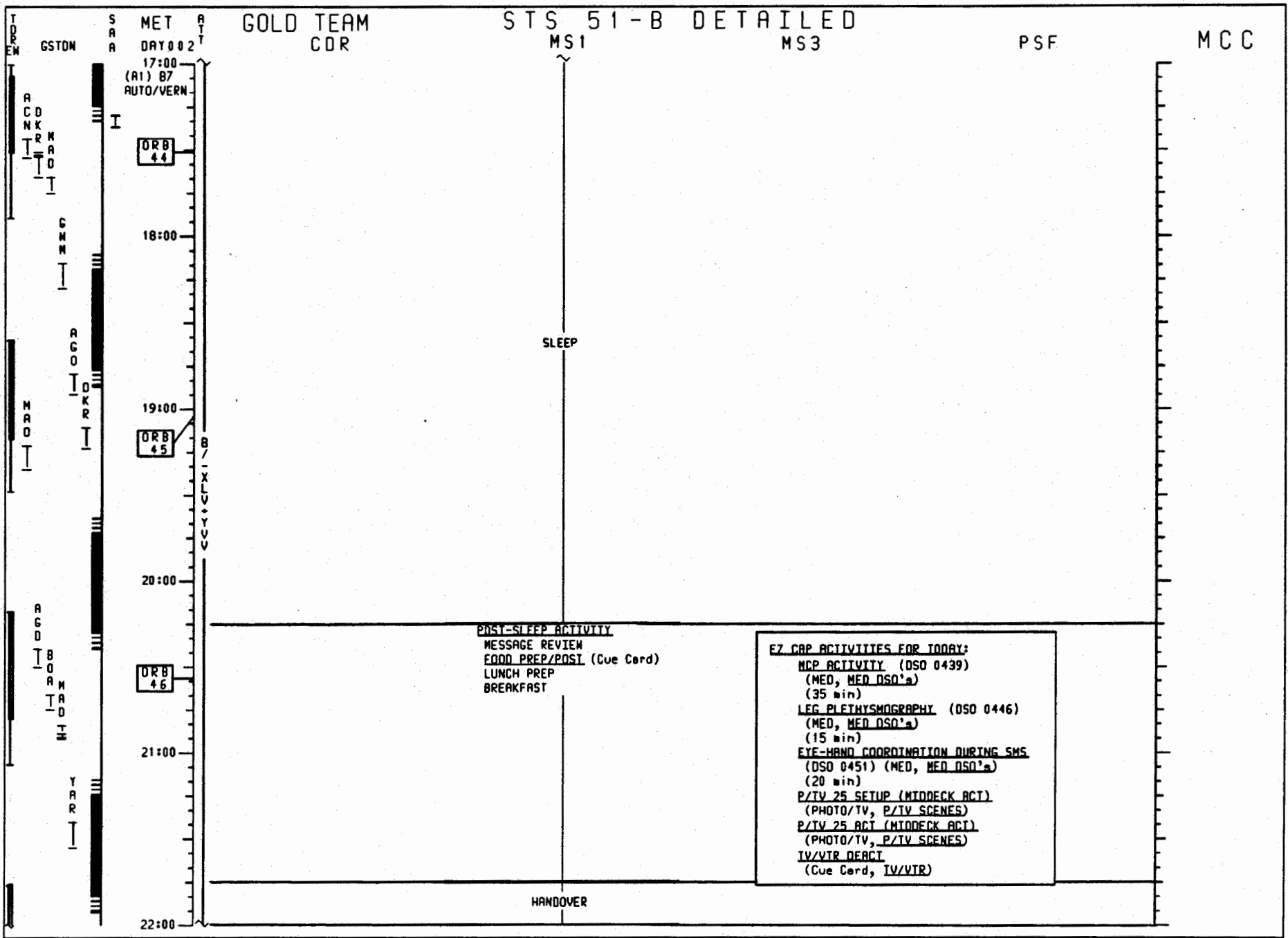












T D E N
 G S T O N
 A C D K R R M A D D
 G M M
 A G O D K R R
 M A D D
 A C O B D A T D H
 Y A R R
 S A R
 MET
 DAY 002
 17:00
 (A1) B7
 AUTO/VERN
 ORB 44
 18:00
 ORB 45
 19:00
 ORB 46
 20:00
 21:00
 22:00

SILVER TEAM
PLT

STS 51-B DETAILED

MS2

PSM

MCC

P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
ROLL# GMT / :

TYPE-II RUN (GFFC)

CRYSTAL #2 OPS (FES)

VTR VIDEO/VOICE MONITOR(VCG)

VTR VIDEO/VOICE MONITOR(FES)

MONITOR/TIMING CHECK (GFFC)

P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
ROLL# GMT / :

R/T VIDEO/VOICE MONITOR(VCG)

R/T VIDEO/VOICE MONITOR(FES)

MONITOR/TIMING CHECK (GFFC)
UMS CALIBRATION (UMS)

EC PURGE - AUTO (Cue Card)

KU-AD ANT CABLE POSITIONING
(ORB OPS, COMM/INST)

TV17-FES/VCGS CREW ACTIVITIES

P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
ROLL# GMT / :

R/T VIDEO/VOICE MONITOR(VCG)

BIDTELEM SIGNAL STRENGTH
OPTIMIZATION (RAHF)

R/T VIDEO/VOICE MONITOR(FES)

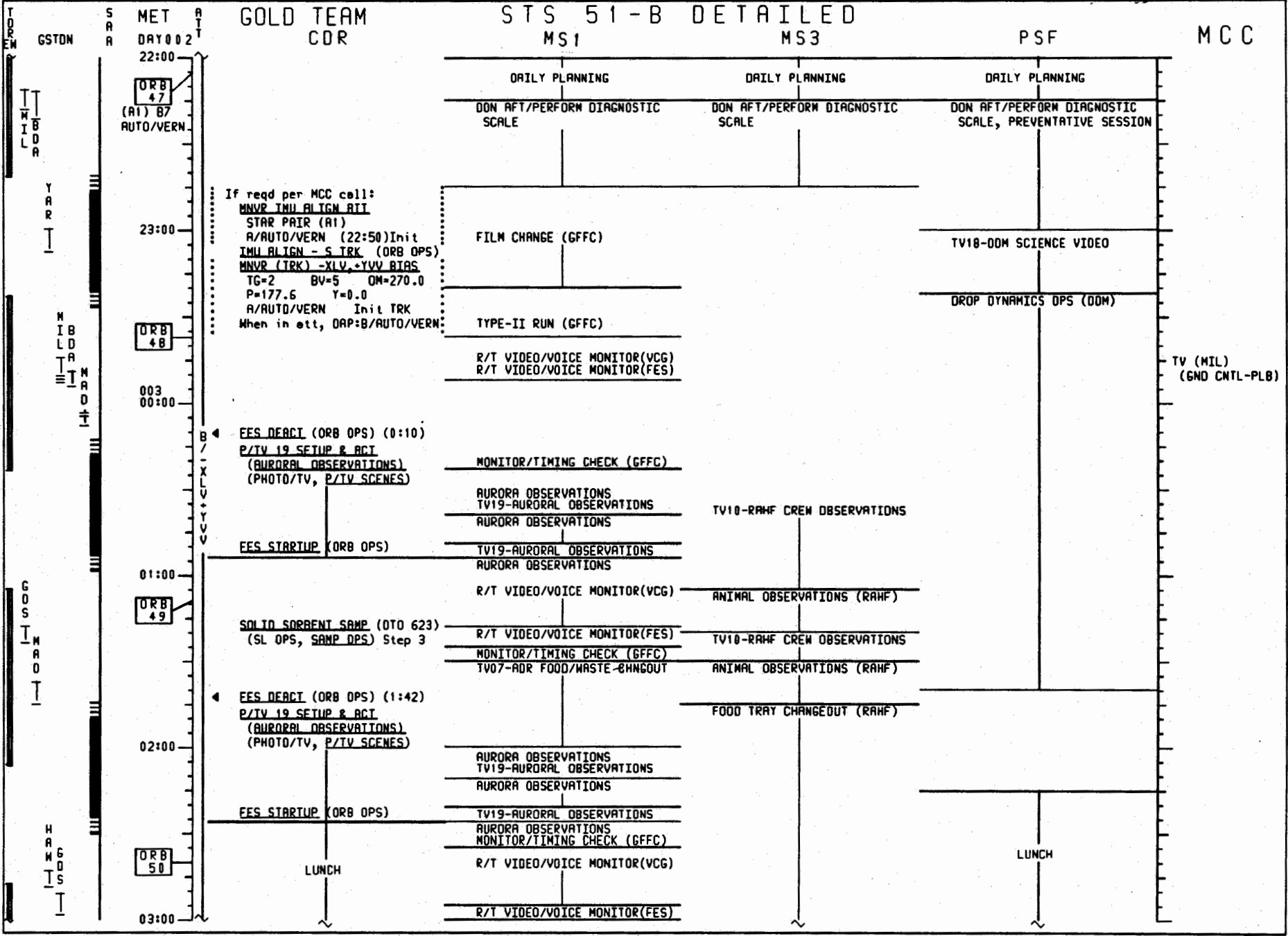
CONFIG SL TV CAMR(S) TO PARK
POSITION

ANIMAL OBSERVATIONS (RAHF)

DOFF/STOW AFT

S L CO2 ABS REPLACE (CUE CARD)

HANDOVER



SILVER TEAM STS 51-B DETAILED
 PLT MS2

PSM

MCC

SAR MET DAY 002
 22:00
 ORB 47
 (A1) B7
 AUTO/VERN
 23:00
 ORB 48
 003
 00:00
 B/X
 01:00
 ORB 49
 02:00
 ORB 50
 03:00

IMU ALIGN LOG
 REQD ID:
 -Y____, -Z____ ANG ERR ____
 1 2 3
 ANG:
 ΔX () . . . () . . . () . . .
 ΔY () . . . () . . . () . . .
 ΔZ () . . . () . . . () . . .
 EXECUTION TIME:
 ____ / ____ : ____ : ____

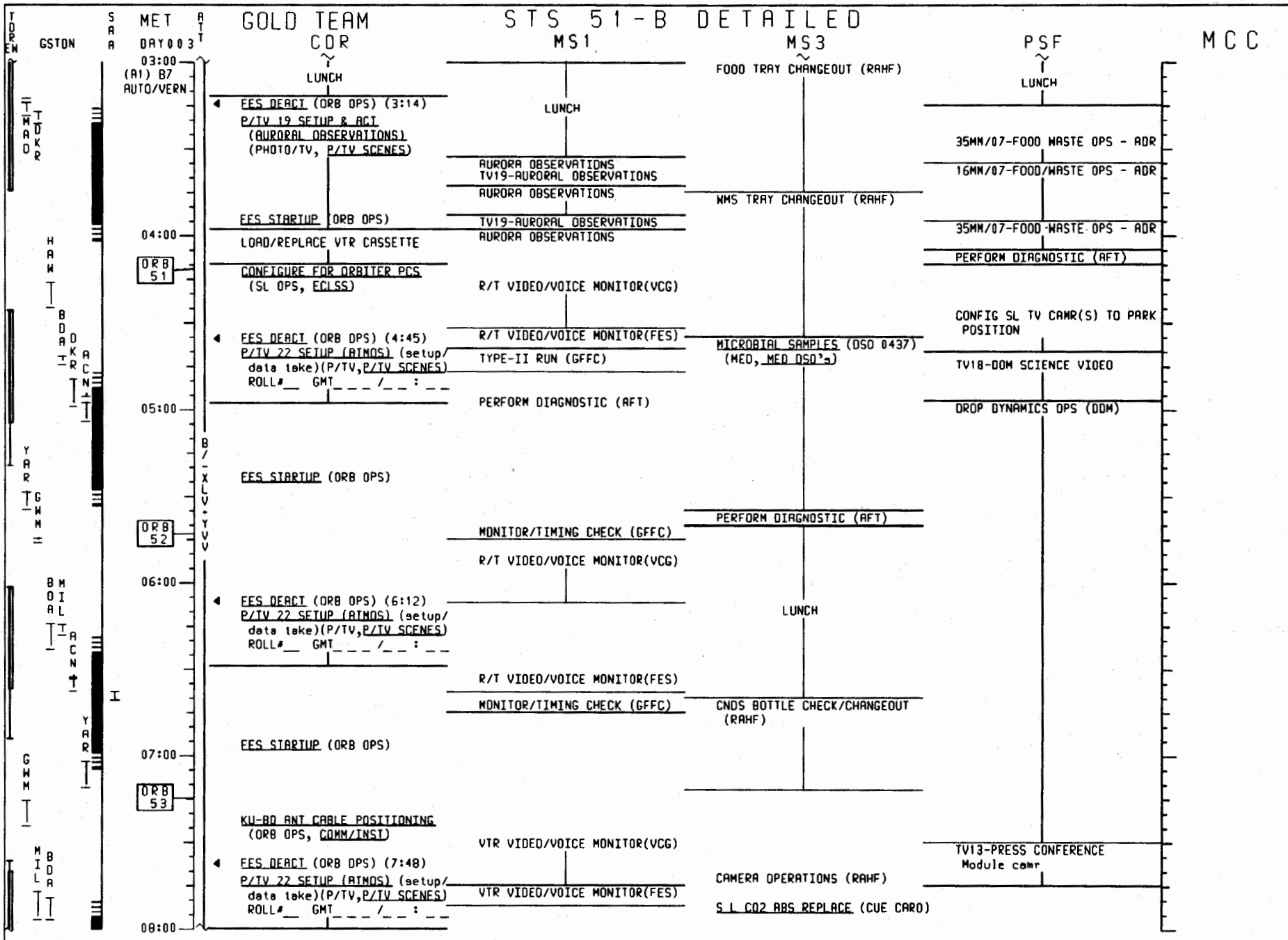
PRE-SLEEP ACTIVITY
 EXERCISE
 MEAL
 STATUS REPORT
 MCS CLEAN (URINE COLLECT
 Cue Card)
 MED DATA REPORT
 (MED, GENERAL MED)
 ORBITER CO2 ABSORB REPLACE
 (Cue Card)

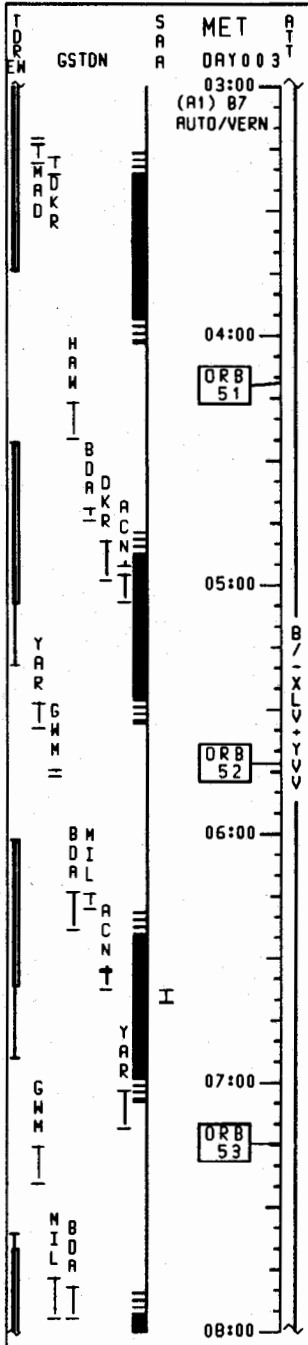
SLEEP

STATUS RPT (MIL)

TV (MIL)
 (GND CNTL-PLB)

TDREN
 GSTDN
 MIBLOR
 YARR
 MIBLOR
 MIBLOR
 MIBLOR
 GSTDN
 HANGS





SILVER TEAM
PLT

STS 51-B DETAILED

PSM

MCC

SLEEP

GOLD TEAM
CDR

STS 51-B DETAILED
MS1 MS3

PSF

MCC

GSTON MET DAY 003

08:00
(A1) B7
AUTO/VERN

TYPE-II RUN (GFFC)

BIOTELEM SIGNAL STRENGTH
OPTIMIZATION (RAHF)

EES STARTUP (ORB OPS)

DOFF/STOW AFT

CAMERA OPERATIONS (RAHF)

EC PURGE - AUTO (Cue Card)

COMBINED BLOOD INVESTIGATION
(DSO 0453) (MED, MED DSO's)

COMBINED BLOOD INVESTIGATION
(DSO 0453) (MED, MED DSO's)

ORB 54

09:00

CHNG CRYSTAL CARTRIDGE (MTCG)

MONITOR/TIMING CHECK (GFFC)

EES DEACT (ORB OPS) (9:20)
P/TV 22 SETUP (ATMOS) (setup/
date take)(P/TV,P/TV SCENES)
RDLL# GMT / : -

DOFF/STOW AFT

HANDOVER

EES STARTUP (ORB OPS)

PRE-SLEEP ACTIVITY

DOFF/STOW AFT

ORB 55

EXERCISE
MEAL
STATUS REPORT
WCS CLEAN (URINE COLLECT
Cue Card)
MED DATA REPORT
(MED, GENERAL MED)
DRAFTER CO2 ABSORB REPLACE
(Cue Card)

11:00

P/TV 13 (PRESS CONFERENCE)
LIVE TV over TORS E

STATUS RPT (GDS)
TV (TORS E)
(GND CNTL -
CAB/MODULE)

PRE-SLEEP ACTIVITY

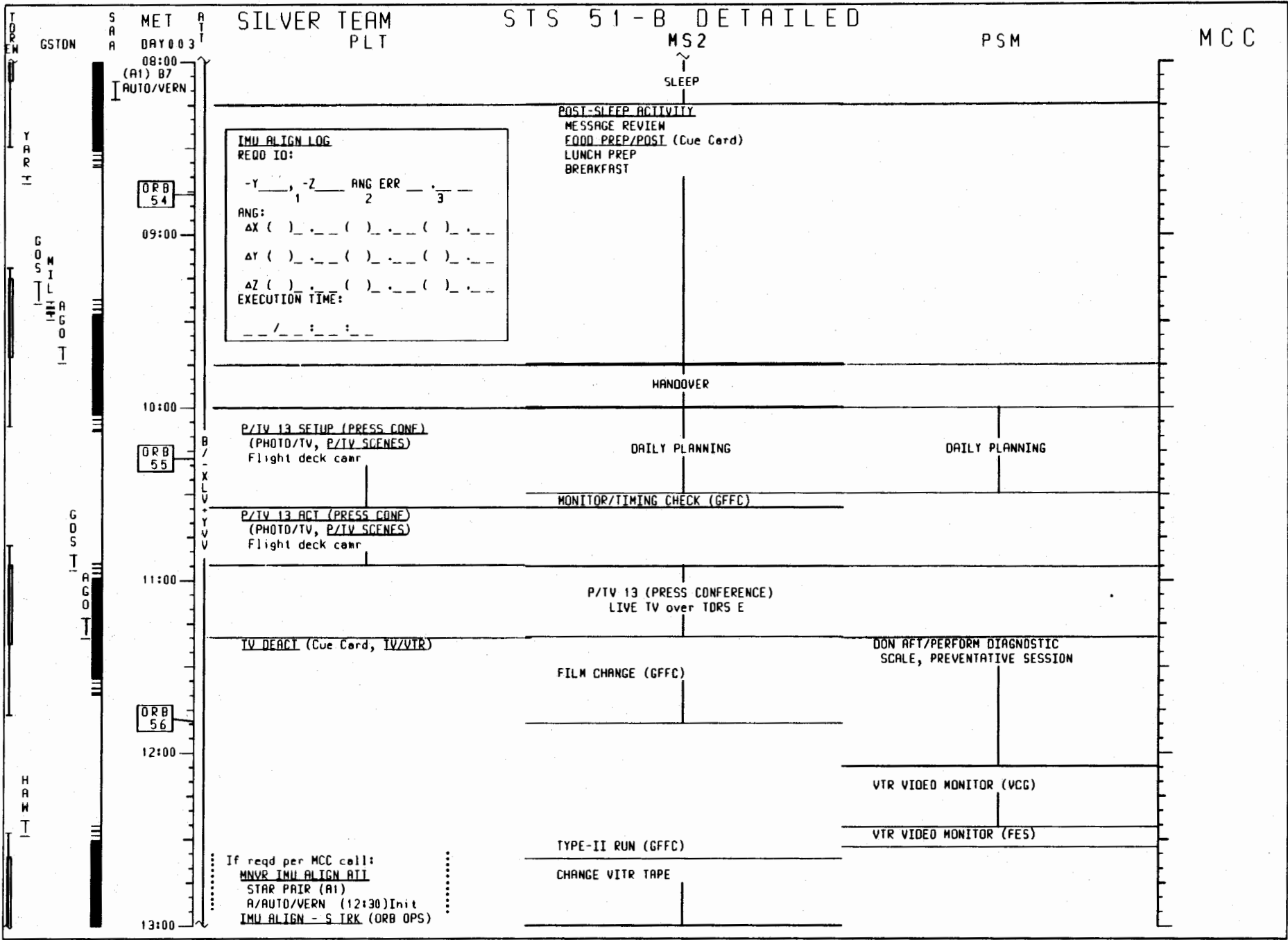
ORB 56

12:00

SLEEP

13:00

TORON
YARRH
GOSL
HAWT
GOSL
GOSL
HAWT



TDRM
 GSDN
 HAWH
 RCDKRR
 HNGC
 HRCR
 HOGG
 HRKD
 MET DAY 003
 (A1) B7
 AUTO/VERN
 13:00
 14:00
 15:00
 16:00
 17:00
 18:00

GOLD TEAM
CDR

STS 51-B DETAILED
MS1 MS3

PSF

MCC

ORB
57

ORB
58

ORB
59

ORB
60

SLEEP

GOLD TEAM
COR

STS 51-B DETAILED
MS1

PSF

MCC

MET
DAY 003

18:00
(A1) B7
AUTO/VERN
19:00
20:00
21:00
22:00
23:00

EZ CAP ACTIVITIES FOR TODAY:
CAB TEMP CNTL RECONFIG
MD44F Pin CAB TEMP CNTL actuator
linkage to actuator 2
L1 CAB TEMP CNTLR - 2
Perform midflight (5 Min)

SLEEP

POST-SLEEP ACTIVITY
MESSAGE REVIEW
FOOD PREP/POST (Cue Card)
LUNCH PREP
BREAKFAST

DON AFT/PERFORM DIAGNOSTIC
SCALE, PREVENTATIVE SESSION

HANDOVER

TV18-00M SCIENCE VIDEO

R/T VIDEO/VOICE MONITOR(VCG)

DAILY PLANNING

DROP DYNAMICS OPS (DDM)

R/T VIDEO/VOICE MONITOR(FES)

DON AFT/PERFORM DIAGNOSTIC
SCALE

MONITOR/TIMING CHECK (GFFC)

DAILY PLANNING

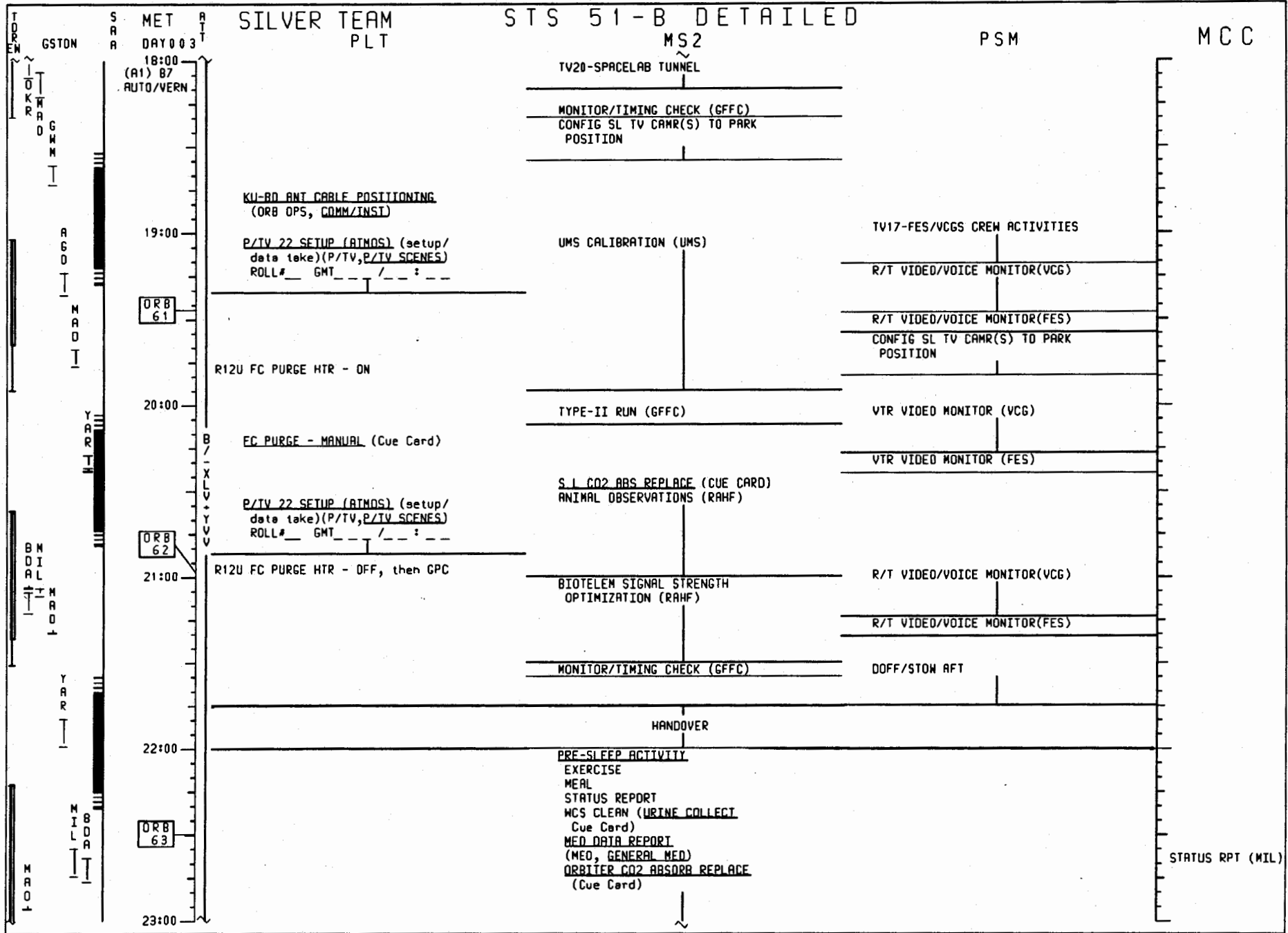
DON AFT/PERFORM DIAGNOSTIC
SCALE

ORB
61

ORB
62

ORB
63

TOR EN
GSTON
D K W
R A D
G M M T
A G G O
M A D
M H R R Y
B M D I A L
M A D
Y A R R
M I L L B O A R
M A D



MET SAR DAY 003
 18:00 (A1) B7 AUTO/VERN
 19:00 P/TV 22 SETUP (ATMOS) (setup/data take)(P/TV,P/TV SCENES)
 ROLL# GMT / :
 20:00 EC PURGE - MANUAL (Cue Card)
 21:00 P/TV 22 SETUP (ATMOS) (setup/data take)(P/TV,P/TV SCENES)
 ROLL# GMT / :
 22:00
 23:00

SILVER TEAM PLT

STS 51-B DETAILED MS2

PSM

MCC

TV20-SPACELAB TUNNEL
 MONITOR/TIMING CHECK (GFFC)
 CONFIG SL TV CAMR(S) TO PARK POSITION

KU-BD ANT CABLE POSITIONING (ORB OPS, COMM/INST)

UMS CALIBRATION (UMS)

TV17-FES/VCGS CREW ACTIVITIES

R/T VIDE0/VOICE MONITOR(VCG)

R/T VIDE0/VOICE MONITOR(FES)

CONFIG SL TV CAMR(S) TO PARK POSITION

R12U FC PURGE HTR - ON

TYPE-II RUN (GFFC)

VTR VIDE0 MONITOR (VCG)

VTR VIDE0 MONITOR (FES)

EC PURGE - MANUAL (Cue Card)

S.L CO2 ABS REPLACE (CUE CARD)
 ANIMAL OBSERVATIONS (RAHF)

R/T VIDE0/VOICE MONITOR(VCG)

R/T VIDE0/VOICE MONITOR(FES)

R12U FC PURGE HTR - OFF, then GPC

BIOTELEM SIGNAL STRENGTH OPTIMIZATION (RAHF)

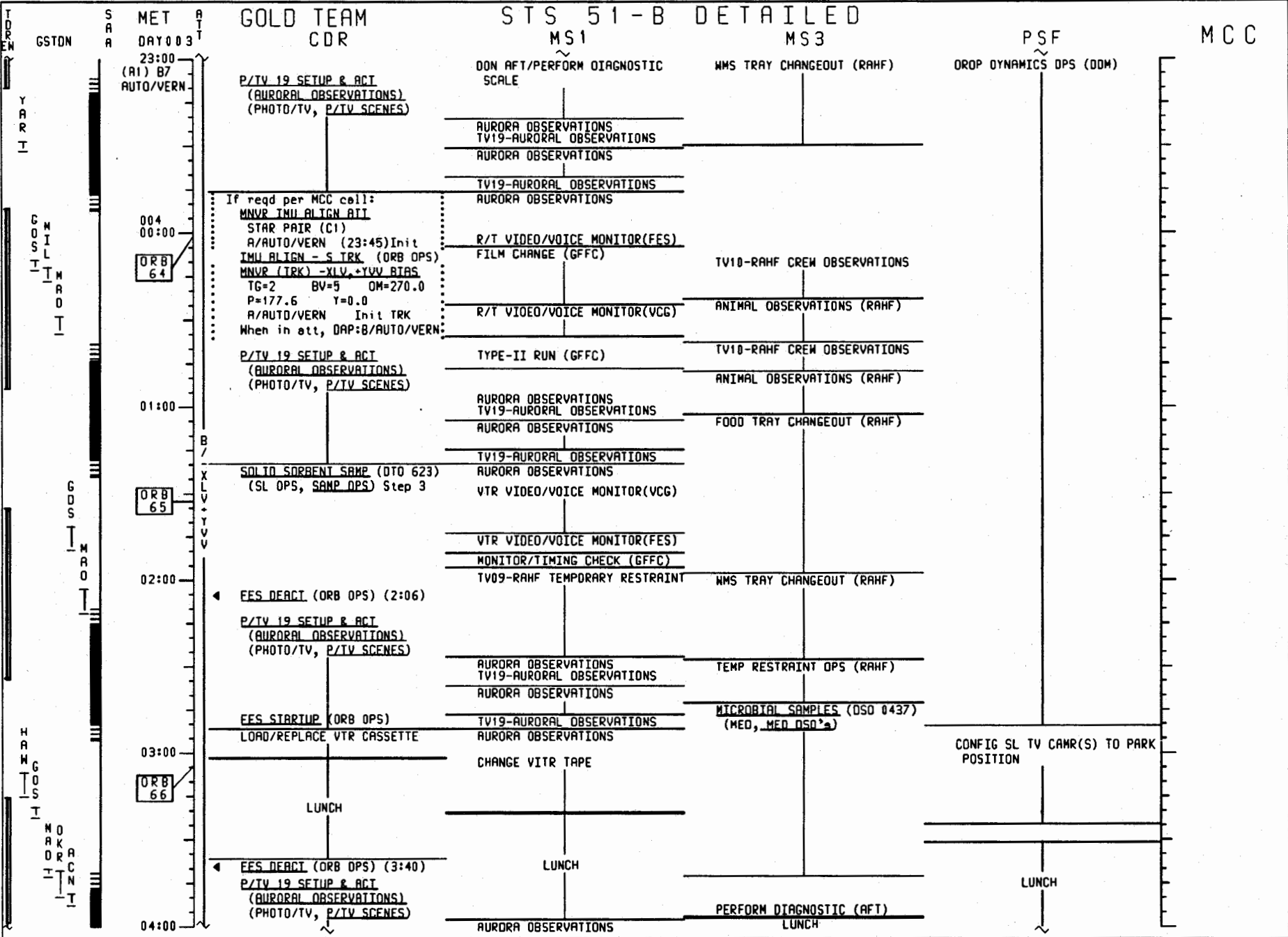
MONITOR/TIMING CHECK (GFFC)

DOFF/STON AFT

HANDOVER

PRE-SLEEP ACTIVITY
 EXERCISE
 MEAL
 STATUS REPORT
 WCS CLEAN (URINE COLLECT Cue Card)
 MED DATA REPORT (MED, GENERAL MED)
 ORBITER CO2 ABSORB REPLACE (Cue Card)

STATUS RPT (MIL)



TDR EN

GSTON

SAR

MET

DAY 003

SILVER TEAM
PLT

STS 51-B DETAILED

MS2

PSM

MCC

23:00
(R1) B7
AUTO/VERN

PRE-SLEEP ACTIVITY

004
00:00

ORB
64

01:00

ORB
65

02:00

03:00

ORB
66

04:00

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

SLEEP

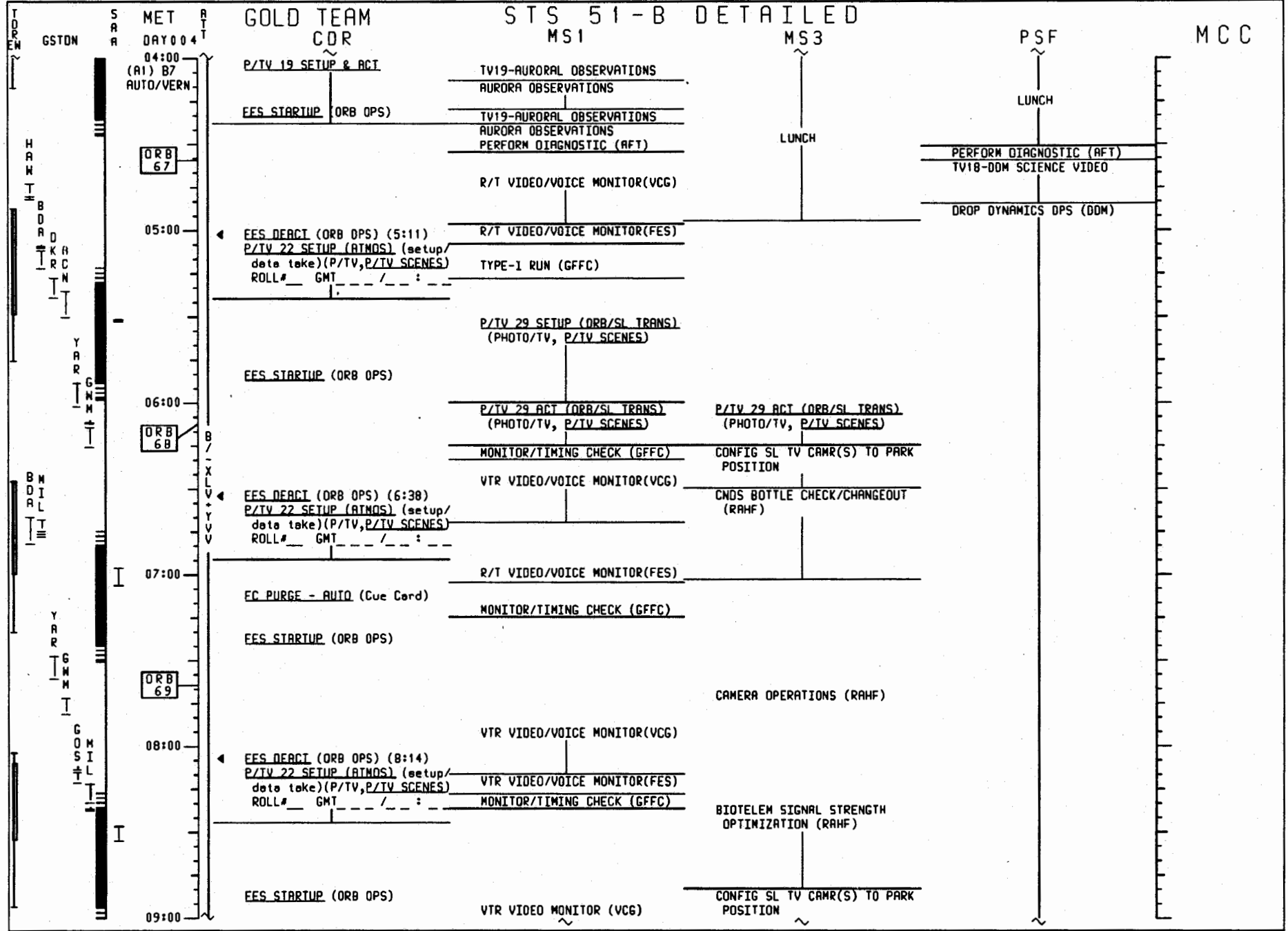
YARRI

GDSL
MADT

GOS
MADT

HAWGDS

MDARR
MADT



GOLD TEAM
CDR

STS 51-B DETAILED
MS1

MS3

PSF

MCC

MET DAY 004
04:00
(A1) B7
AUTO/VERN

05:00

06:00

07:00

08:00

09:00

P/TV 19 SETUP & ACT

TV19-AURORA OBSERVATIONS
AURORA OBSERVATIONS

EES STARTUP (ORB OPS)

TV19-AURORA OBSERVATIONS
AURORA OBSERVATIONS
PERFORM DIAGNOSTIC (AFT)

ORB 67

R/T VIDEO/VOICE MONITOR(VCG)

LUNCH

LUNCH

PERFORM DIAGNOSTIC (AFT)
TV18-DOO SCIENCE VIDEO

DROP DYNAMICS DPS (DDM)

EES DEACT (ORB OPS) (5:11)
P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
ROLL# GMT / : :

R/T VIDEO/VOICE MONITOR(FES)

TYPE-1 RUN (GFFC)

P/TV 29 SETUP (ORB/SL TRANS)
(PHOTO/TV, P/TV SCENES)

EES STARTUP (ORB OPS)

P/TV 29 ACT (ORB/SL TRANS)
(PHOTO/TV, P/TV SCENES)

P/TV 29 ACT (ORB/SL TRANS)
(PHOTO/TV, P/TV SCENES)

ORB 68

MONITOR/TIMING CHECK (GFFC)

CONFIG SL TV CAMR(S) TO PARK
POSITION

VTR VIDEO/VOICE MONITOR(VCG)

CMOS BOTTLE CHECK/CHANGEOUT
(RAHF)

EES DEACT (ORB OPS) (6:38)
P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
ROLL# GMT / : :

R/T VIDEO/VOICE MONITOR(FES)

EC PURGE - AUTO (Cue Card)

MONITOR/TIMING CHECK (GFFC)

EES STARTUP (ORB OPS)

CAMERA OPERATIONS (RAHF)

VTR VIDEO/VOICE MONITOR(VCG)

EES DEACT (ORB OPS) (8:14)
P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
ROLL# GMT / : :

VTR VIDEO/VOICE MONITOR(FES)

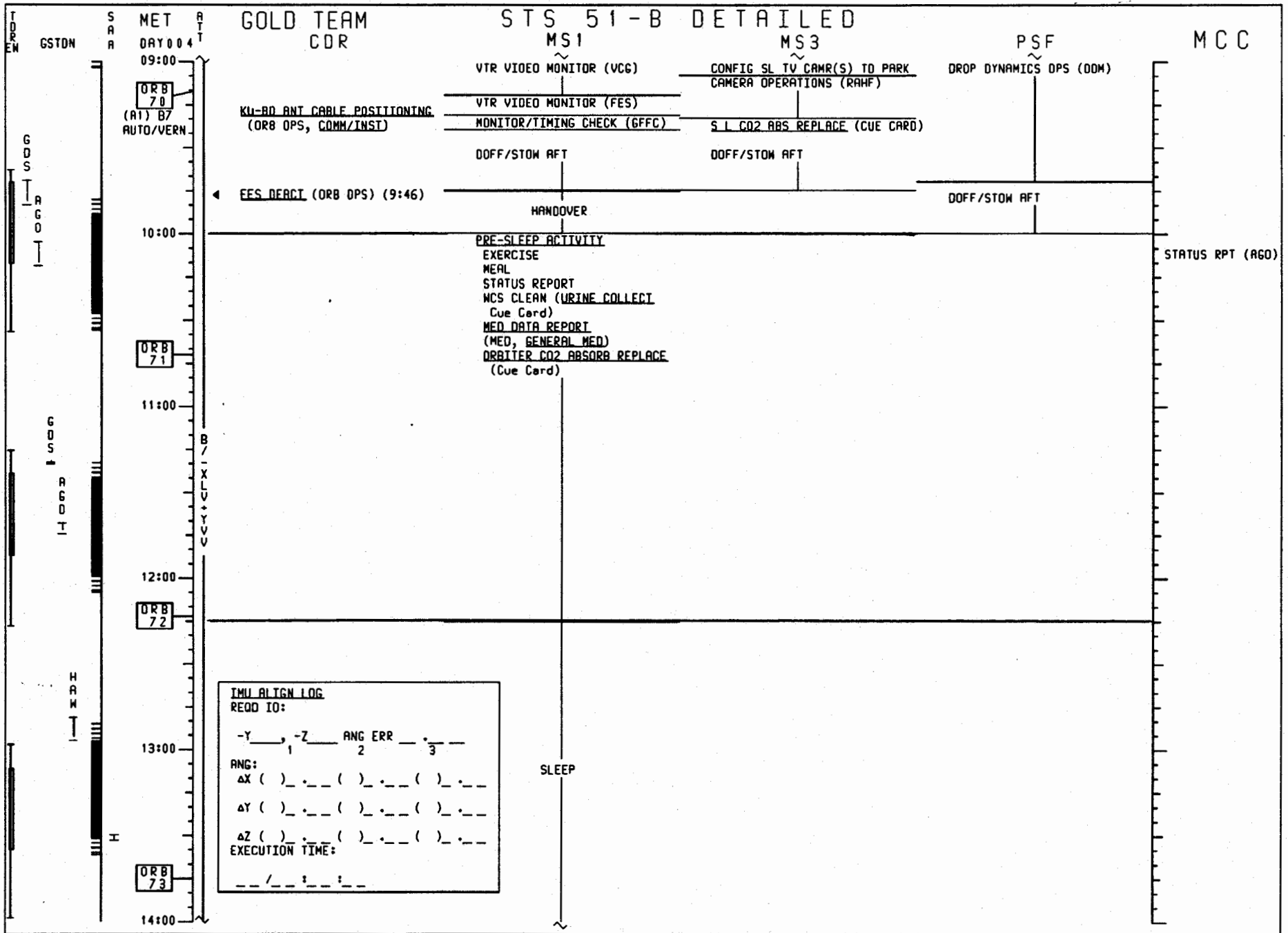
MONITOR/TIMING CHECK (GFFC)

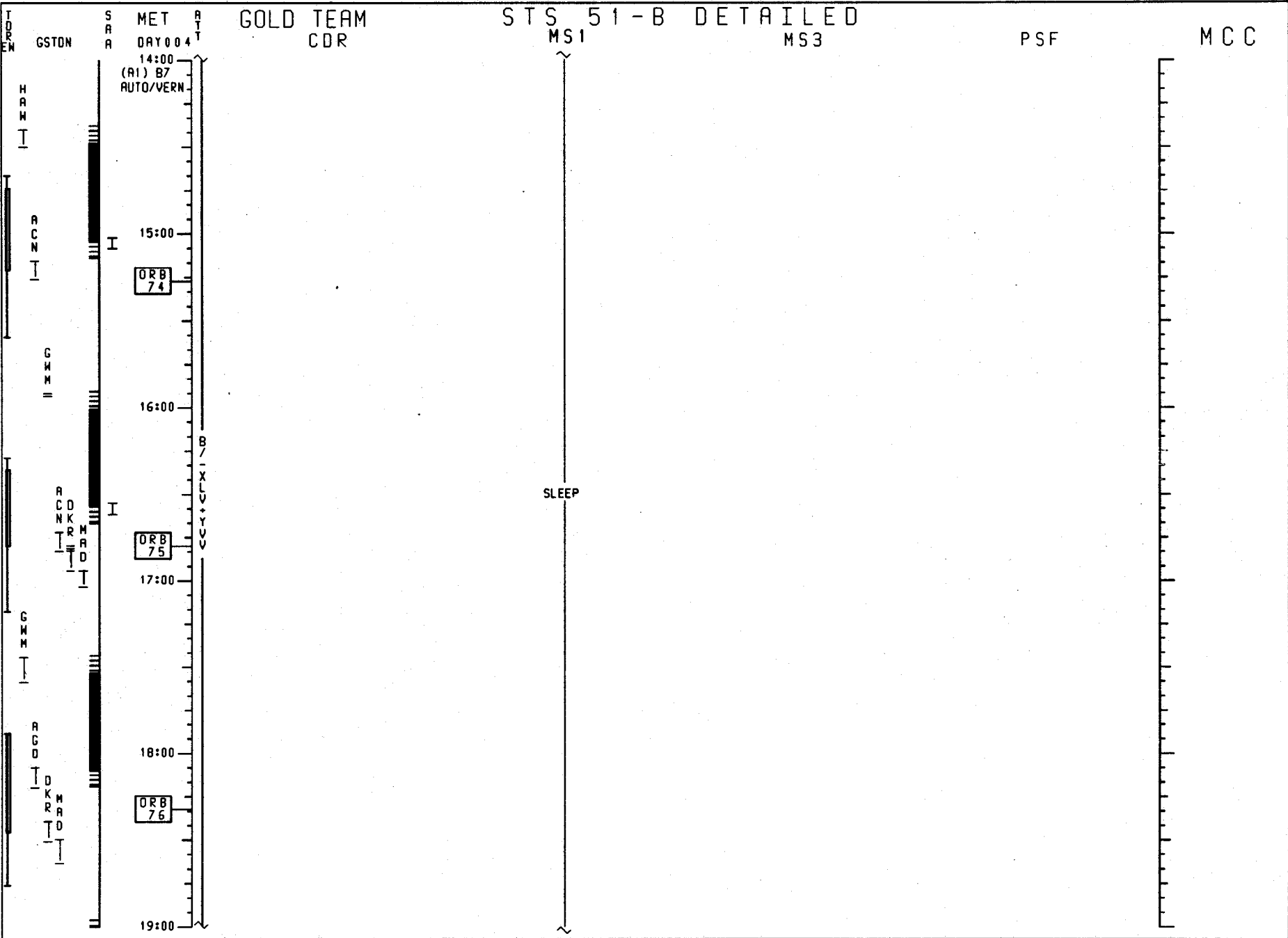
BIOTELEM SIGNAL STRENGTH
OPTIMIZATION (RAHF)

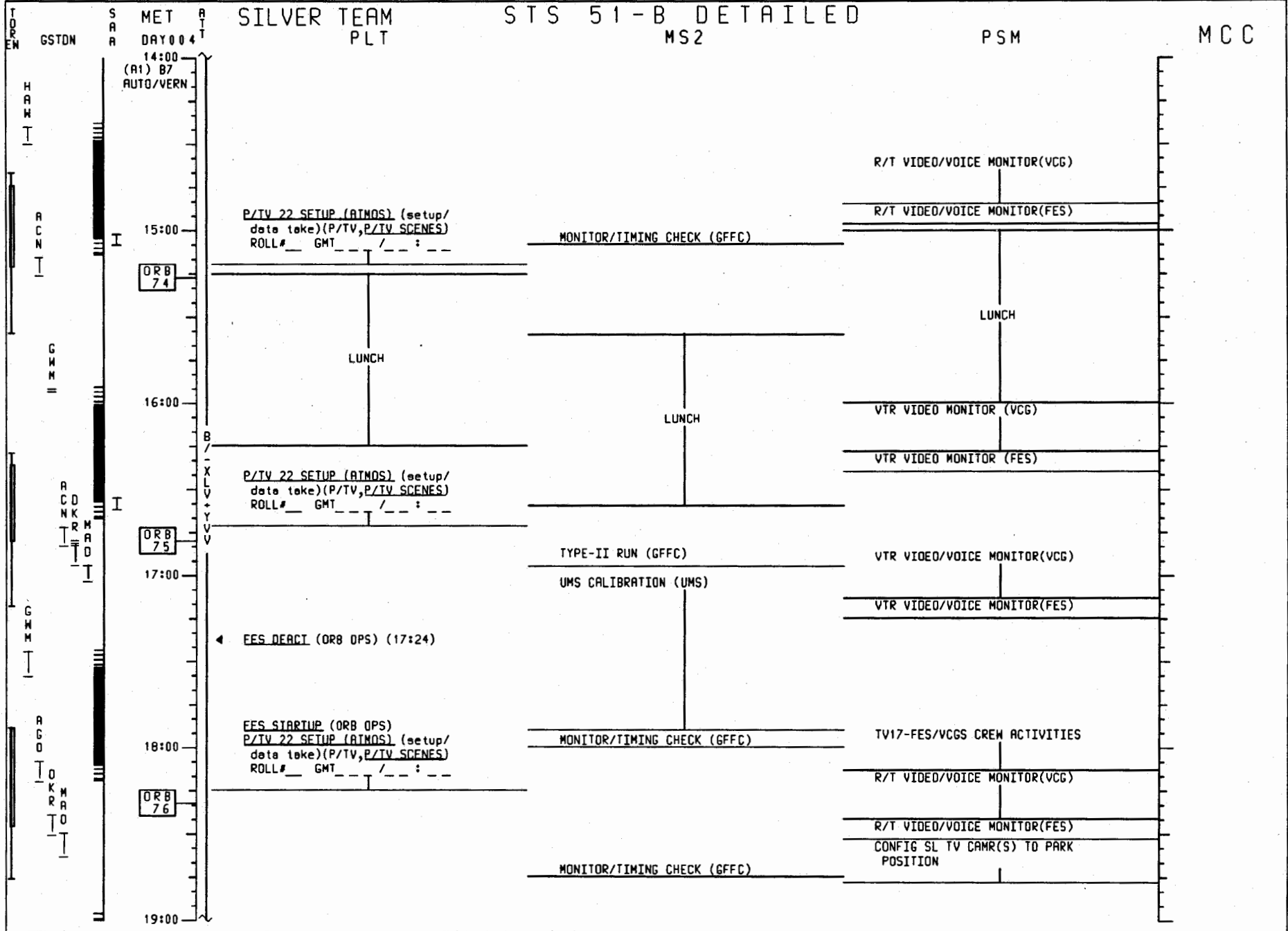
EES STARTUP (ORB OPS)

VTR VIDEO MONITOR (VCG)

CONFIG SL TV CAMR(S) TO PARK
POSITION







TDR EN

GSTON

SAR

MET DAY 004

RT

GOLD TEAM CDR

STS 51-B DETAILED MS1 MS3

PSF

MCC

19:00
(A1) B7
AUTO/VERN

MS1
↑
SLEEP

POST-SLEEP ACTIVITY
MESSAGE REVIEW
FOOD PREP/POST (Cue Card)
LUNCH PREP
BREAKFAST

ORB 77

20:00

HANDOVER

TV18-ODM SCIENCE VIDEO

21:00

TYPE-III RUN (GFFC)

DROP DYNAMICS OPS (ODM)

R/T VIDEO/VOICE MONITOR(VCG)

DAILY PLANNING

ORB 78

R/T VIDEO/VOICE MONITOR(FES)
MONITOR/TIMING CHECK (GFFC)

ANIMAL OBSERVATIONS (RAHF)

DAILY PLANNING

22:00

R/T VIDEO/VOICE MONITOR(VCG)

R/T VIDEO/VOICE MONITOR(FES)
MONITOR/TIMING CHECK (GFFC)

BIOTELEM SIGNAL STRENGTH
OPTIMIZATION (RAHF)

ORB 79

23:00

VTR VIDEO/VOICE MONITOR(VCG)

← EES DEACT (ORB OPS) (23:31)
P/TV 19 SETUP & ACT
(AURORA OBSERVATIONS)
(PHOTO/TV, P/TV SCENES)

VTR VIDEO/VOICE MONITOR(FES)
TYPE-III RUN (GFFC)

AURORA OBSERVATIONS
TV19-AURORA OBSERVATIONS
AURORA OBSERVATIONS

005
00:00

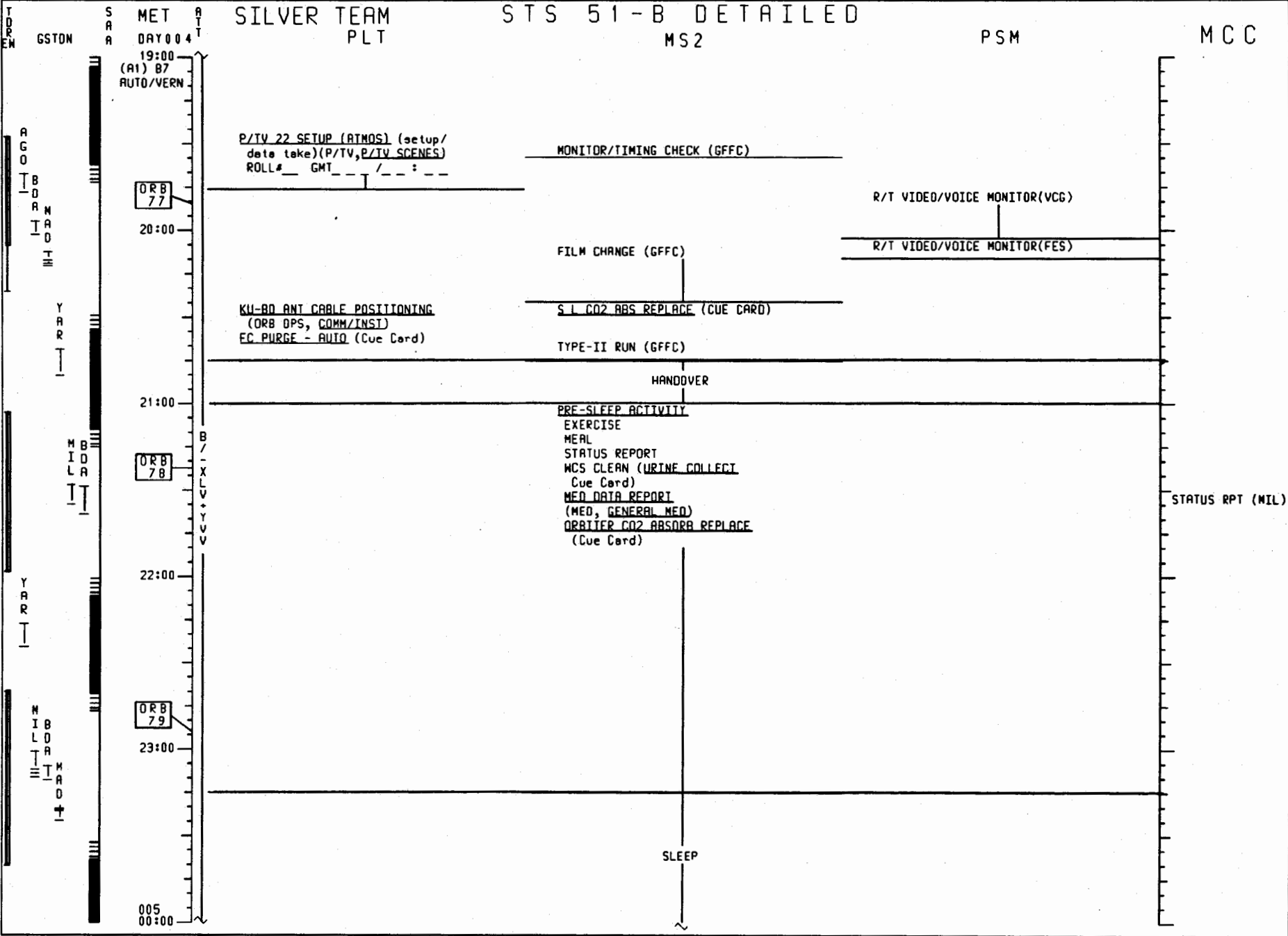
AGG BOARD

YARR

MIDA

YARR

MIDA BOARD



DOWN

GSTON

SAR

MET DAY 005

GOLD TEAM CDR

STS 51-B DETAILED

MS1

MS3

PSF

MCC

00:00
(A1) B7
AUTO/VERN

ORB 80

01:00

ORB 81

02:00

03:00

ORB 82

04:00

ORB 83

05:00

P/TV 19 SETUP & ACT
EES STARTUP (ORB OPS)

If reqd per MCC cell:
MNVR IMU ALGN ATT
STAR PAIR (C1)
A/AUTO/VERN (00:10) Init
IMU ALGN - S TRK (ORB OPS)
MNVR (TRK) -XLV, -YVV BIAS
TG-2 BV-5 OM-270.0
P-177.6 Y-0.0
A/AUTO/VERN Init TRK

When in att, OAP:8/AUTO/VERN
EES DEACT (ORB OPS) (1:02)
P/TV 19 SETUP & ACT
(AURORA OBSERVATIONS)
(PHOTO/TV, P/TV SCENES)

EES STARTUP (ORB OPS)

SOLID SORBENT SAMP. (DTO 623)
(SL OPS, SAMP OPS) Step. 3

EES DEACT (ORB OPS) (2:34)
P/TV 19 SETUP & ACT
(AURORA OBSERVATIONS)
(PHOTO/TV, P/TV SCENES)

EES STARTUP (ORB OPS)

LUNCH

PCS 1(2) CONFIG (ORB OPS)
EES DEACT (ORB OPS) (4:06)
P/TV 19 SETUP & ACT
(AURORA OBSERVATIONS)
(PHOTO/TV, P/TV SCENES)

EES STARTUP (ORB OPS)

AURORA OBSERVATIONS

TV19-AURORAL OBSERVATIONS

AURORA OBSERVATIONS

R/T VIDEO/VOICE MONITOR(VCG)

R/T VIDEO/VOICE MONITOR(FES)

TYPE-III RUN (GFFC)

CHANGE VTR TAPE

AURORA OBSERVATIONS

TV19-AURORAL OBSERVATIONS

AURORA OBSERVATIONS

TV19-AURORAL OBSERVATIONS

LOAD/REPLACE VTR CASSETTE

AURORA OBSERVATIONS

MONITOR/TIMING CHECK (GFFC)

LUNCH

AURORA OBSERVATIONS

TV19-AURORAL OBSERVATIONS

AURORA OBSERVATIONS

TV19-AURORAL OBSERVATIONS

AURORA OBSERVATIONS

TYPE-III RUN (GFFC)

CRYSTAL #3 OPS (FES)

AURORA OBSERVATIONS

TV19-AURORAL OBSERVATIONS

AURORA OBSERVATIONS

TV19-AURORAL OBSERVATIONS

AURORA OBSERVATIONS

TV10-RAHF CREW OBSERVATIONS

ANIMAL OBSERVATIONS (RAHF)

TV10-RAHF CREW OBSERVATIONS

ANIMAL OBSERVATIONS (RAHF)

FOOD TRAY CHANGEDOUT (RAHF)

DROP DYNAMICS OPS (DDM)

CONFIG SL TV CAMR(S) TO PARK POSITION

LUNCH

MMS TRAY CHANGEDOUT (RAHF)

DROP DYNAMICS OPS (DDM)

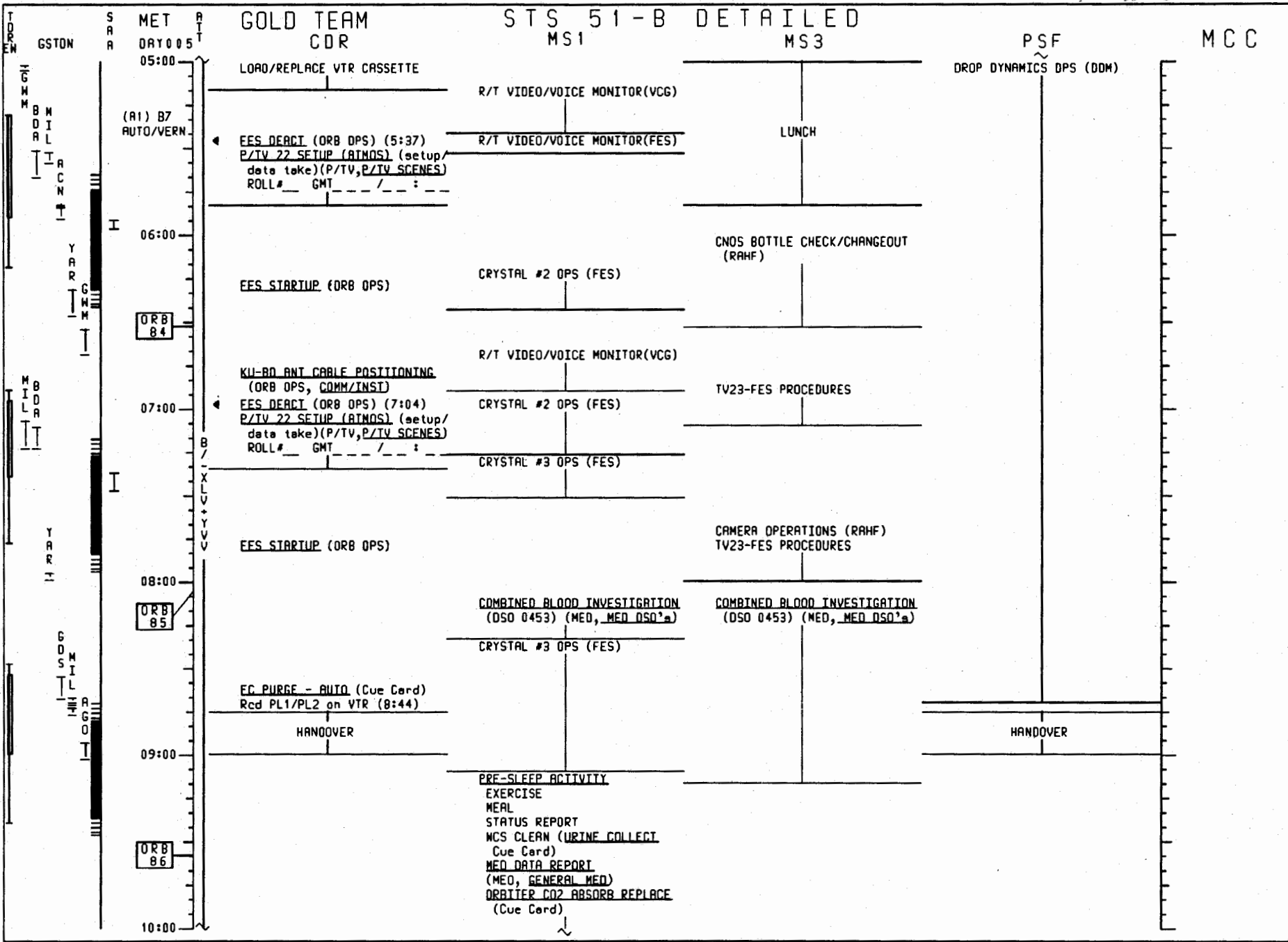
MICROBIAL SAMPLES (DSO 0437)
(MED, MED DSO's)

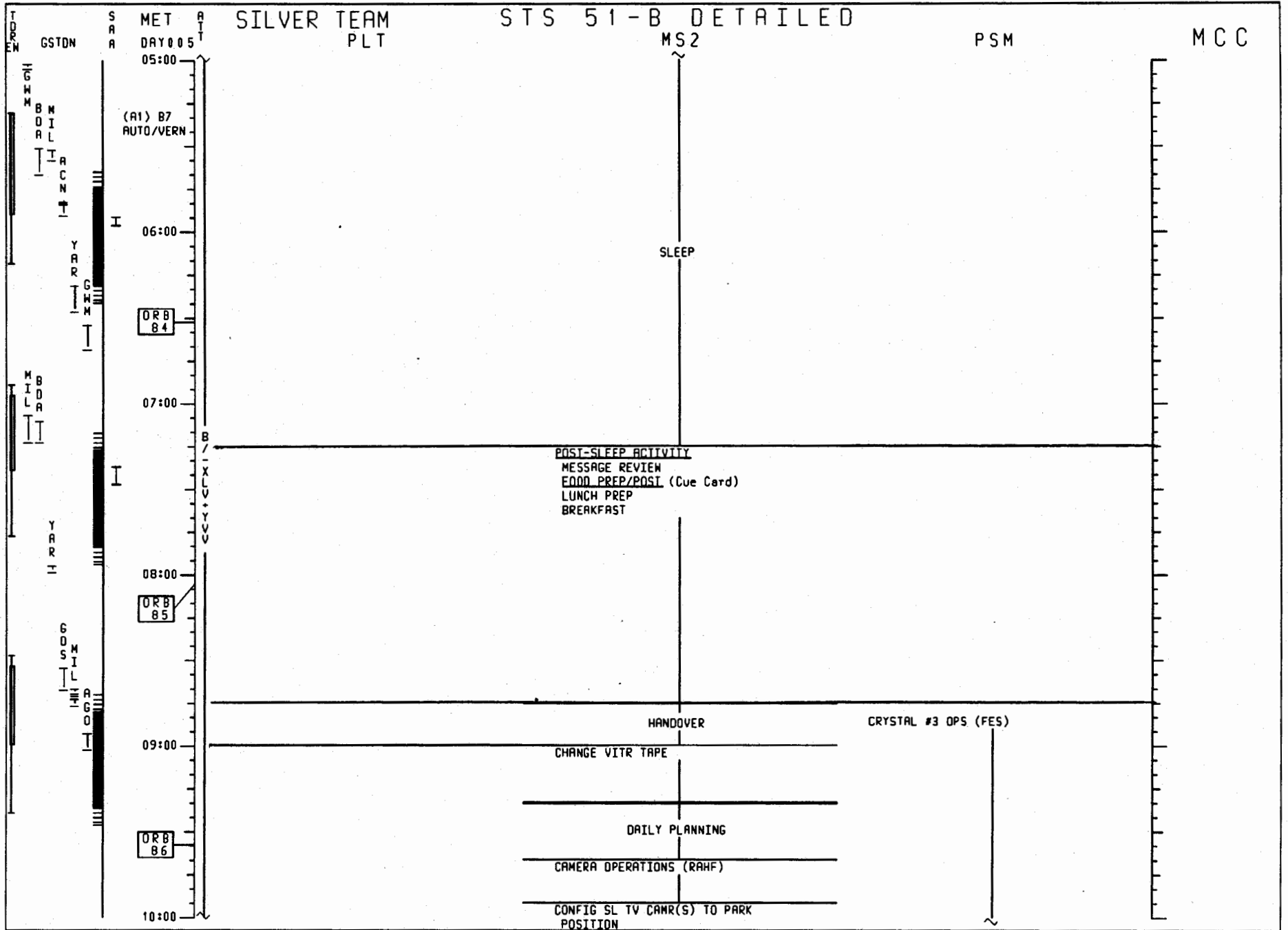
GOLD TEAM

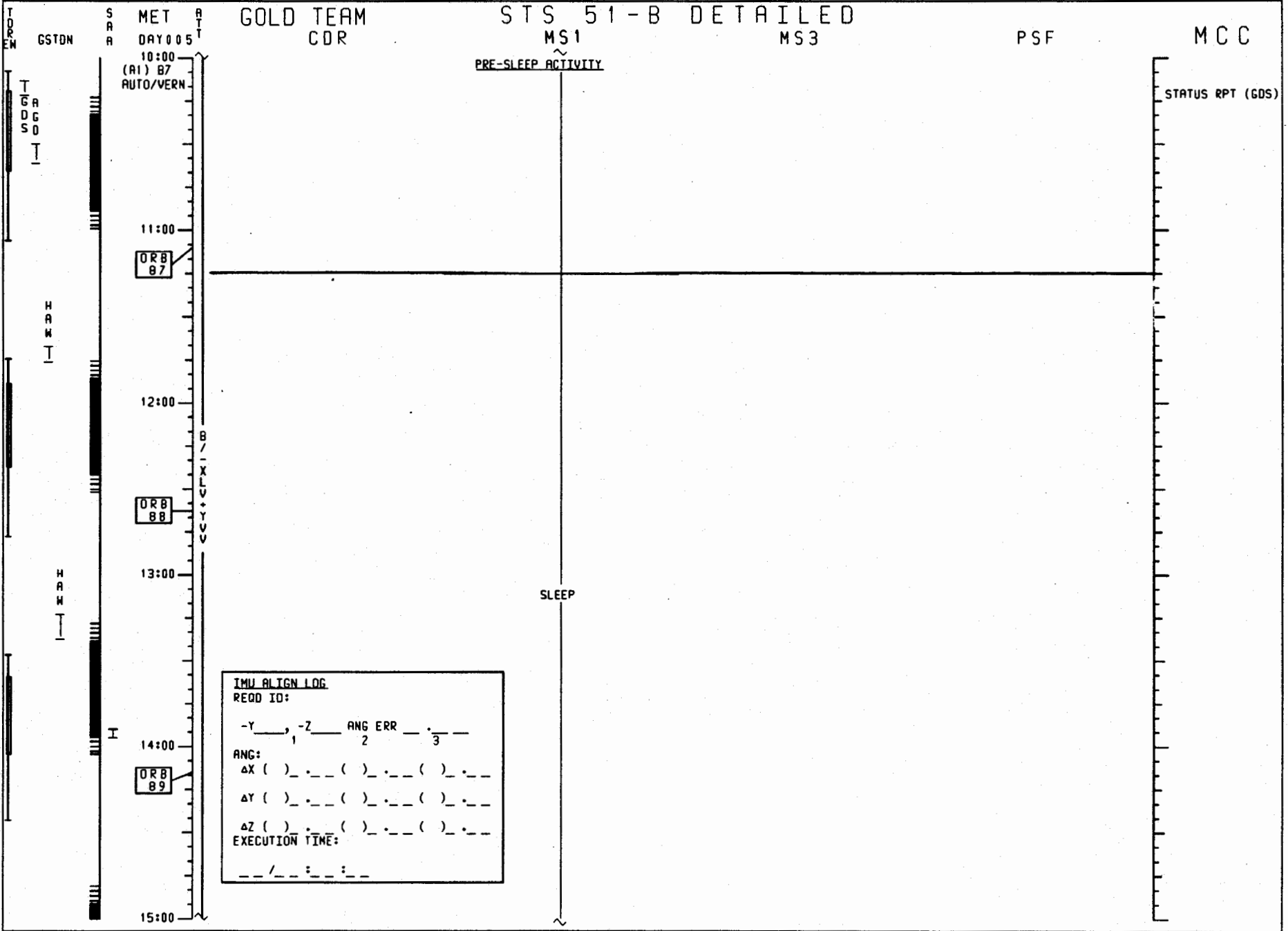
HANDS OFF

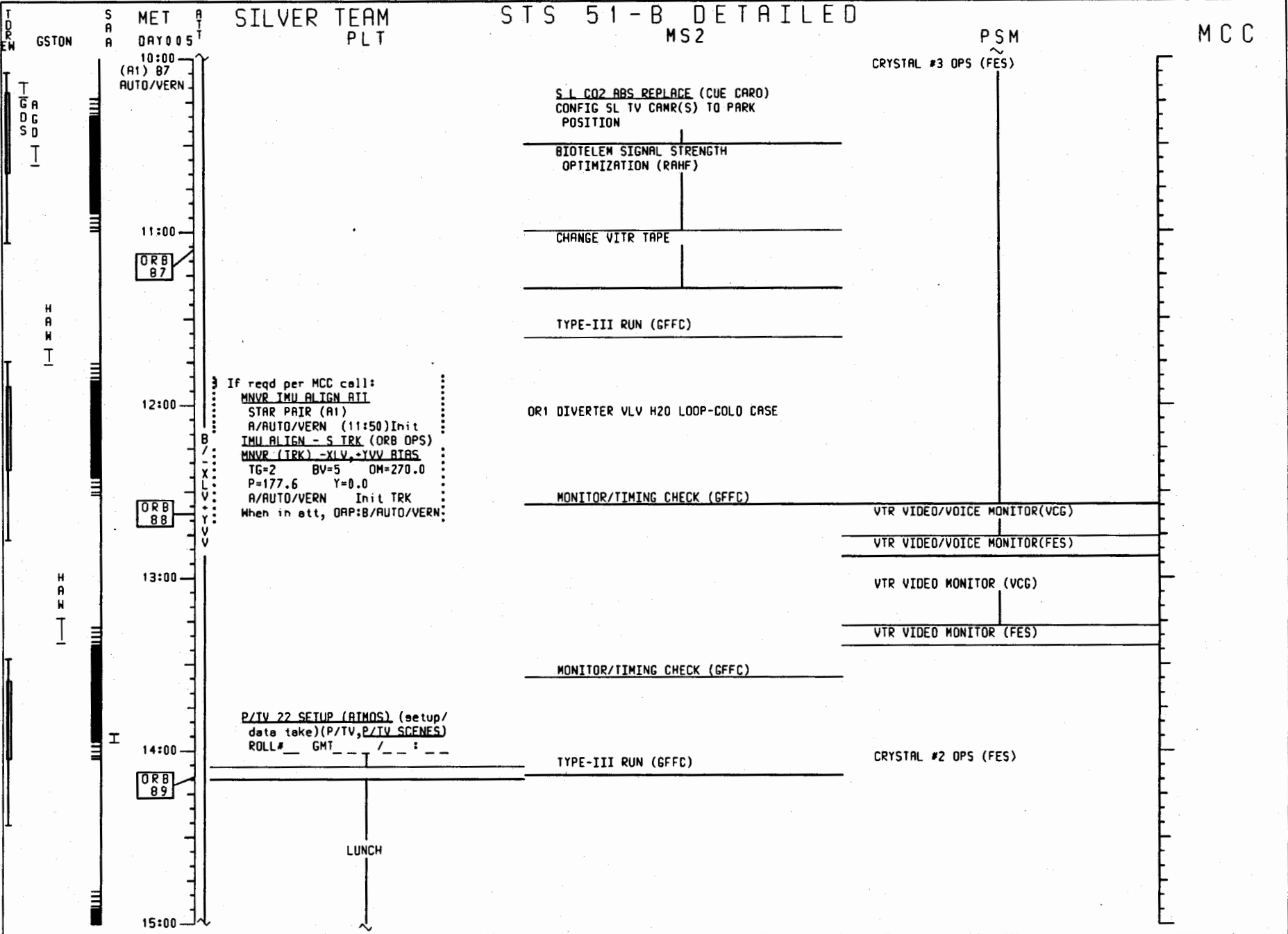
HANDS OFF

YART









SILVER TEAM
PLT

STS 51-B DETAILED
MS2

MCC

MET A
DAY 005
10:00
(A1) 87
AUTO/VERN

PSM
CRYSTAL #3 OPS (FES)

S L CO2 ABS REPLACE (CUE CARD)
CONFIG SL TV CAMR(S) TO PARK
POSITION

BIOTELEM SIGNAL STRENGTH
OPTIMIZATION (RAHF)

CHANGE VTR TAPE

TYPE-III RUN (GFFC)

ORB
87

12:00

If reqd per MCC call:
MNVR IMU ALIGN RTI
STAR PAIR (A1)
A/AUTO/VERN (11:50)Init
IMU ALIGN - S TRK (ORB OPS)
MNVR (TRK) -XLV, -YVV BIAS
TG=2 BV=5 OM=270.0
P=177.6 Y=0.0
A/AUTO/VERN Init TRK
When in att, ORP:B/AUTO/VERN:

ORI DIVERTER VLV H2O LOOP-COLO CASE

MONITOR/TIMING CHECK (GFFC)

VTR VIDEO/VOICE MONITOR(VCG)

VTR VIDEO/VOICE MONITOR(FES)

13:00

VTR VIDEO MONITOR (VCG)

VTR VIDEO MONITOR (FES)

MONITOR/TIMING CHECK (GFFC)

14:00

P/TV 22 SETUP (ATMOS) (setup/
data take)(P/TV,P/TV SCENES)
ROLL# GMT / : -

TYPE-III RUN (GFFC)

CRYSTAL #2 OPS (FES)

ORB
89

LUNCH

15:00

TDR EN
 GSTDN
 S A MET
 A A DAY 005
 (A1) B7
 AUTO/VERN
 ZCD
 RKO
 CMM
 RCO
 DRN
 RCO
 DRN
 CMM
 RCO
 DRN
 CMM
 RCO
 DRN
 YARRT

GOLD TEAM
CDR

STS 51-B DETAILED
MS1 MS3

PSF

MCC

15:00
 16:00
 17:00
 18:00
 19:00
 20:00

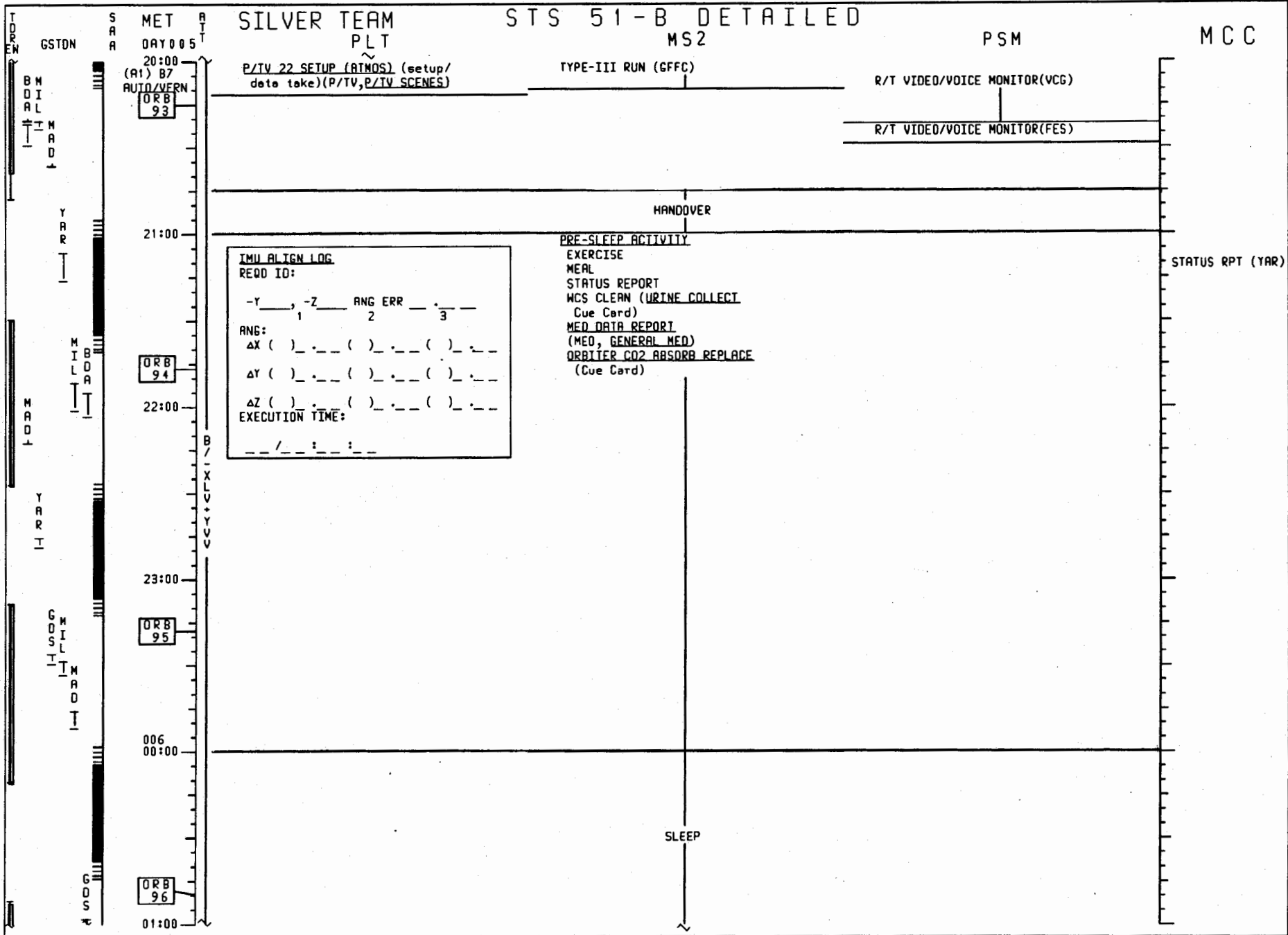
ORB 90

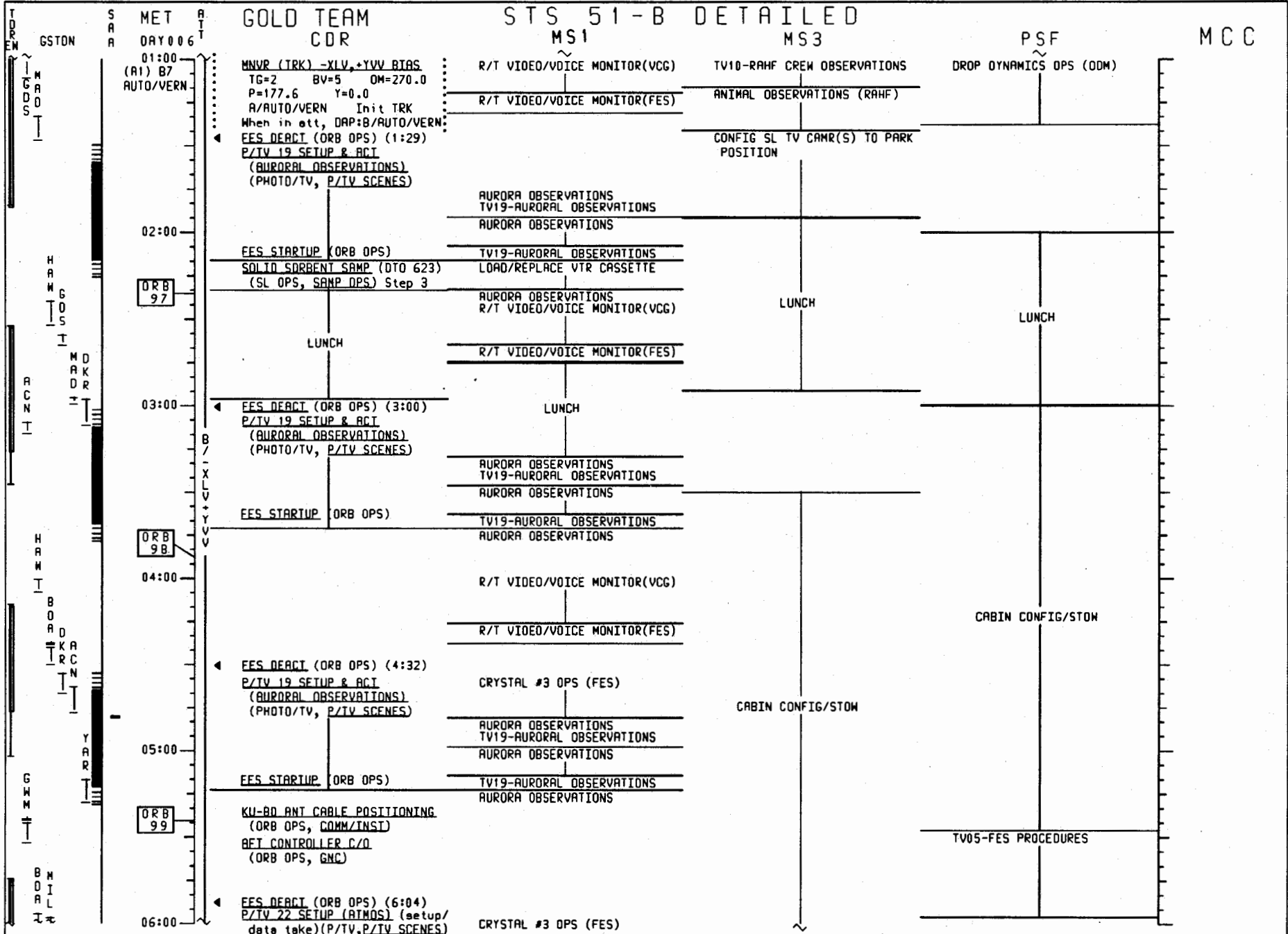
ORB 91

ORB 92

SLEEP

POST-SLEEP ACTIVITY
 MESSAGE REVIEW
 FOOD PREP/POST (Cue Card)
 LUNCH PREP
 BREAKFAST





GOLD TEAM
CDR

STS 51-B DETAILED
MS1 MS3

PSF

MCC

MET DAY 006

01:00
(A1) B7
AUTO/VERN

MNVR (TRK) -XLV,+YVV BIAS
TG=2 BV=5 OM=270.0
P=177.6 Y=0.0
A/AUTO/VERN Init TRK
When in att, DAP:B/AUTO/VERN
EES DEACT (ORB OPS) (1:29)
P/TV 19 SETUP & ACT
(AURORA OBSERVATIONS)
(PHOTO/TV, P/TV SCENES)

R/T VIDEO/VOICE MONITOR(VCG)
R/T VIDEO/VOICE MONITOR(FES)

TV10-RAHF CREW OBSERVATIONS
ANIMAL OBSERVATIONS (RAHF)
CONFIG SL TV CAMR(S) TO PARK POSITION

DROP DYNAMICS OPS (ODM)

02:00

FES STARTUP (ORB OPS)
SOLID SORBENT SAMP (DIO 623)
(SL OPS, SAMP OPS) Step 3

AURORA OBSERVATIONS
TV19-AURORAL OBSERVATIONS
AURORA OBSERVATIONS

LUNCH

LUNCH

ORB 97

LUNCH

AURORA OBSERVATIONS
R/T VIDEO/VOICE MONITOR(VCG)
R/T VIDEO/VOICE MONITOR(FES)

03:00

EES DEACT (ORB OPS) (3:00)
P/TV 19 SETUP & ACT
(AURORA OBSERVATIONS)
(PHOTO/TV, P/TV SCENES)

LUNCH

AURORA OBSERVATIONS
TV19-AURORAL OBSERVATIONS
AURORA OBSERVATIONS

FES STARTUP (ORB OPS)

TV19-AURORAL OBSERVATIONS
AURORA OBSERVATIONS

ORB 98

04:00

R/T VIDEO/VOICE MONITOR(VCG)
R/T VIDEO/VOICE MONITOR(FES)

CABIN CONFIG/STOW

EES DEACT (ORB OPS) (4:32)
P/TV 19 SETUP & ACT
(AURORA OBSERVATIONS)
(PHOTO/TV, P/TV SCENES)

CRYSTAL #3 OPS (FES)

CABIN CONFIG/STOW

AURORA OBSERVATIONS
TV19-AURORAL OBSERVATIONS
AURORA OBSERVATIONS

05:00

FES STARTUP (ORB OPS)

TV19-AURORAL OBSERVATIONS
AURORA OBSERVATIONS

ORB 99

KU-AD ANT CABLE POSITIONING
(ORB OPS, COMM/INST)
RET CONTROLLER C/O
(ORB OPS, GNC)

TV05-FES PROCEDURES

06:00

EES DEACT (ORB OPS) (6:04)
P/TV 22 SETUP (ATMOS) (setup/
date take)(P/TV,P/TV SCENES)

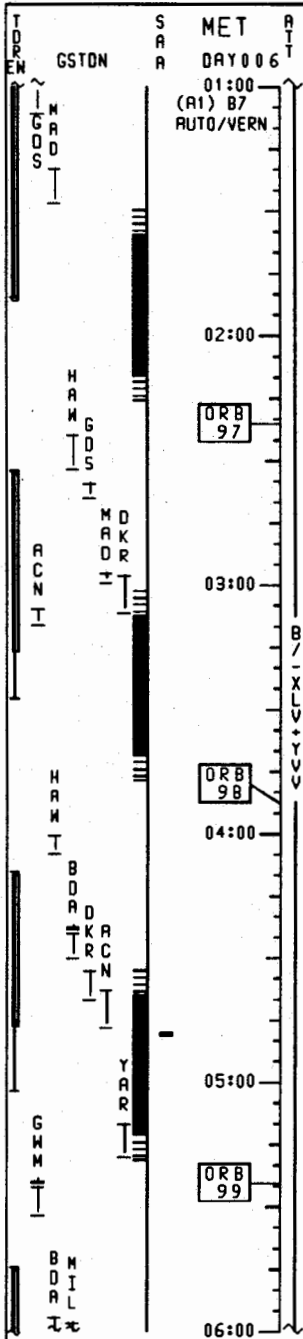
CRYSTAL #3 OPS (FES)

SILVER TEAM
PLT

STS 51-B DETAILED

PSM

MCC



SLEEP

SILVER TEAM
PLT

STS 51-B DETAILED

PSM

MCC

MET DAY 006
06:00 (A1) B7 AUTO/VERN
07:00
08:00
09:00 A1 (B7) AUTO/VERN
10:00
11:00

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

MS2

SLEEP

E7 CAP ACTIVITIES BEFORE LEAVING CAP:
AIR SAMPLE
Rcd MET on bottle
ELUTO LOADING PREP
Fill 4 drink containers with
8 oz H2O each (per person)
SOLID SORBENT SAMP (DIO 623)
(SL OPS, SAMP OPS) Step 2

POST-SLEEP ACTIVITY

POST-SLEEP ACTIVITY

MESSAGE REVIEW
FOOD PREP/POST (Cue Card)
LUNCH PREP
BREAKFAST

RCS HOT FIRE TEST
(ORB OPS, RCS)

ECS CHECKOUT, PART 1
(ORB OPS, GNC)

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

DEPLOY OPS (ORB OPS, NUSAT)

DEPLOY OPS (ORB OPS, NUSAT)

DEPLOY (9:35)

HANDOVER

DEPLOY OPS (ORB OPS, GLOMR)

DEPLOY OPS (ORB OPS, GLOMR)

DEPLOY (9:55)

DAILY PLANNING

MNVR (TRK) -7LV, +XVV
TG-2 BV-3 ON-180.0
A/AUTO/VERN (10:20) Init TRK
ON MCC CLUE

SL MODULE AIR SAMPLE
PAYLOAD STOW

PAYLOAD STOW

R2 APU FUEL PUMP/VLV COOL A-OFF
CNTLR PWR(three) -OFF
PRIORITY PHRON GROUP B
(ORB PKT, PRIOR PHRON)

CHANGE VITR TAPE

CABIN CONFIG/STON

PAYLOAD STOW

INFORM CREW
GO FOR APU
COOL OFF

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

GSTON

SAR

MET DAY 006

GOLD TEAM
COR

STS 51-B DETAILED
MS1 MS3

PSF

MCC

R1 (B7)
AUTO/VERN

ORB
103

12:00

13:00

ORB
104

14:00

ORB
105

15:00

16:00

SLEEP

SILVER TEAM
PLT

STS 51-B DETAILED
MS2

PSM

MCC

SAR
MET
DAY 006
16:00
ORB 106
R1 (B7)
AUTO/VERN
17:00
ORB 107
18:00
19:00
ORB 108
20:00
21:00
ORB 109

GO TO DEORBIT PREP

CO2 ABS REPLACE (Cue Card)

PERFORM DIAGNOSTIC (AFT)

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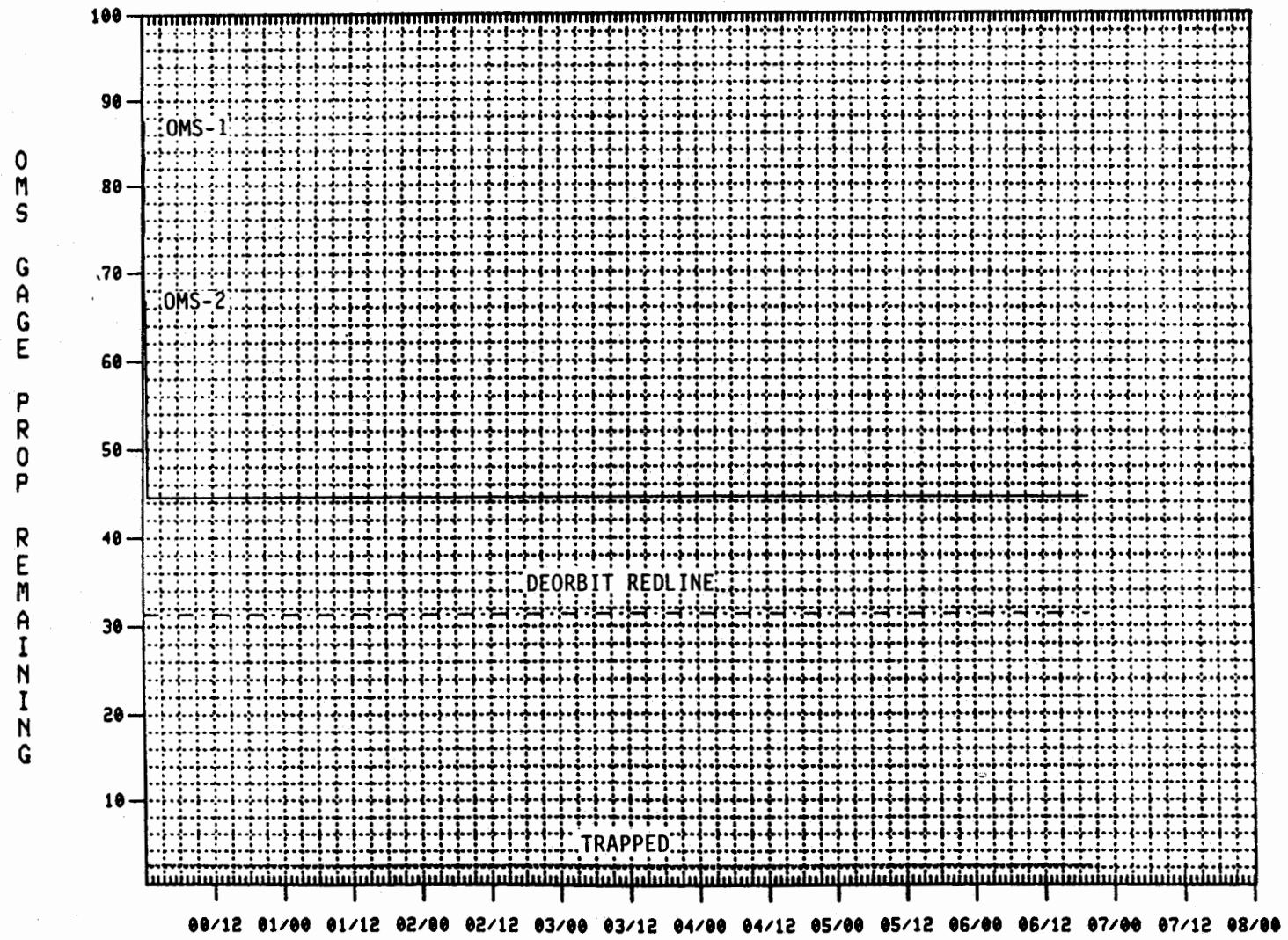
CONSUMABLES CURVES

**CONSUMABLES
CURVES**

CONSUMABLES
CURVES

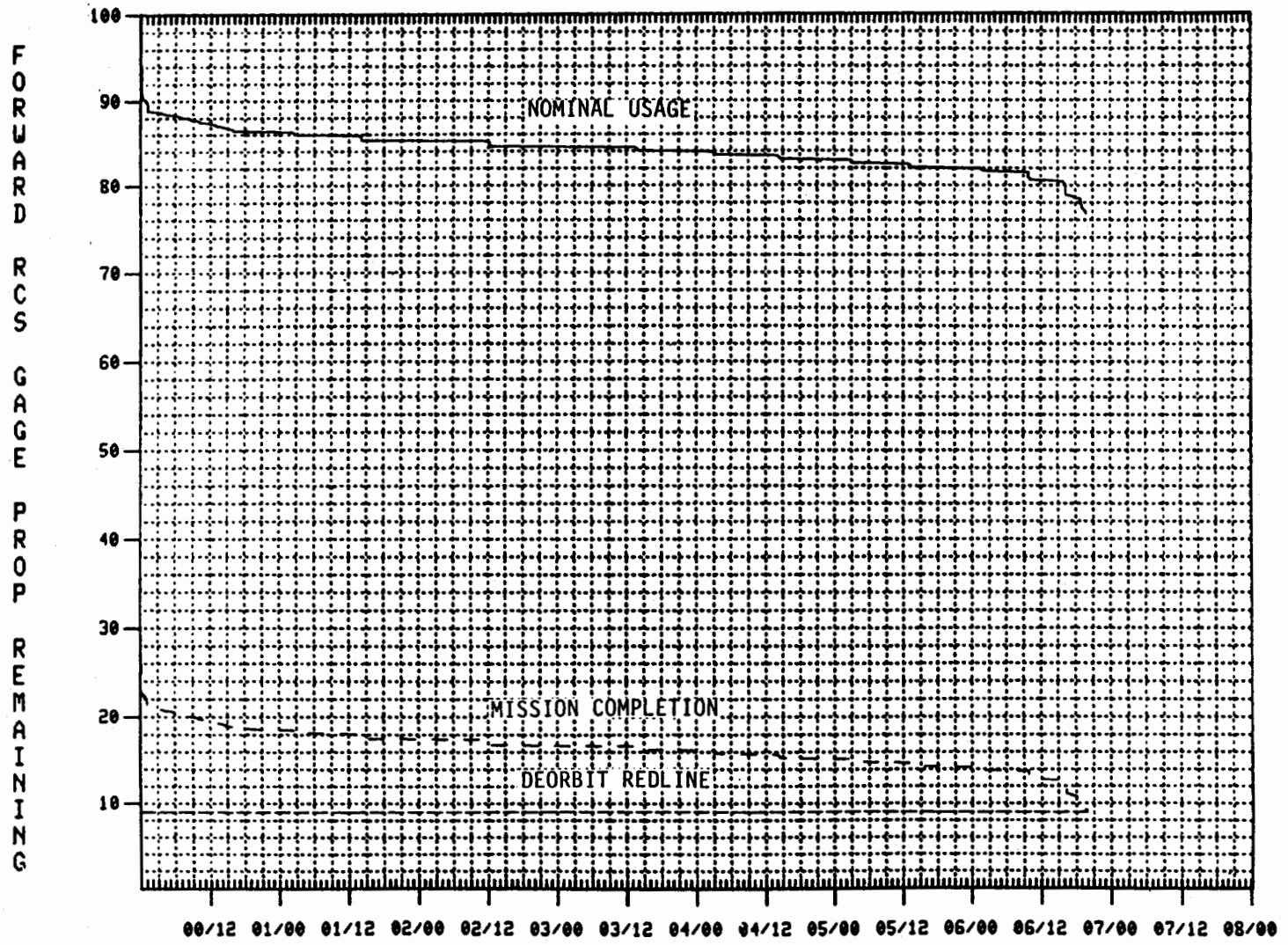
P.M. KULESA/MDTSCO
DATA SUB: J-753 Add 5
JSC-19466 CAP 1/23/85
CHECKED BY *Sam O. Bird*

51-B OMS PROP REMAINING(% GAGE)



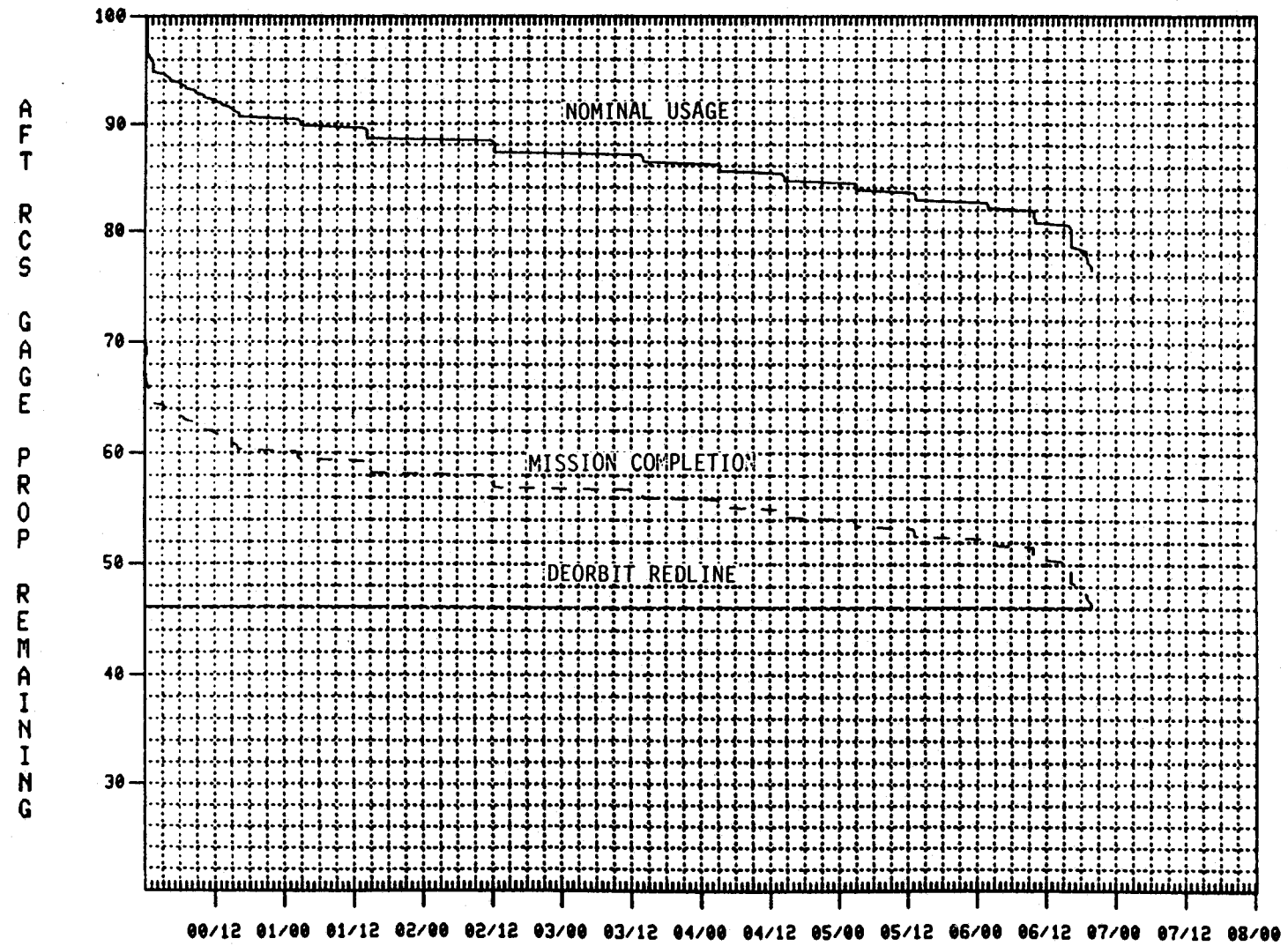
P.M. KULESA/I JCO
DATA SUB: J-753 Add 5
JSC-19466 CAP 1/23/85
CHECKED BY *[Signature]*

51-B FORWARD RCS PROP REMAINING(% GAGE)



MISSION ELAPSED TIME IN DAYS/HOURS

51-B AFT RCS PROP REMAINING(% GAGE)

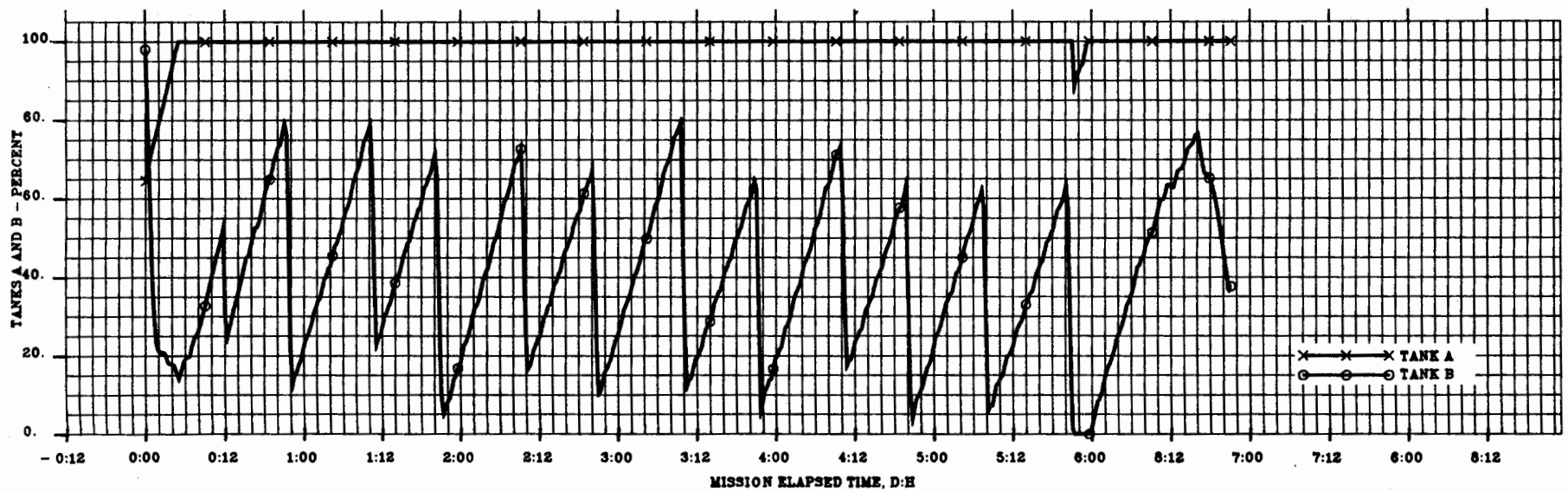
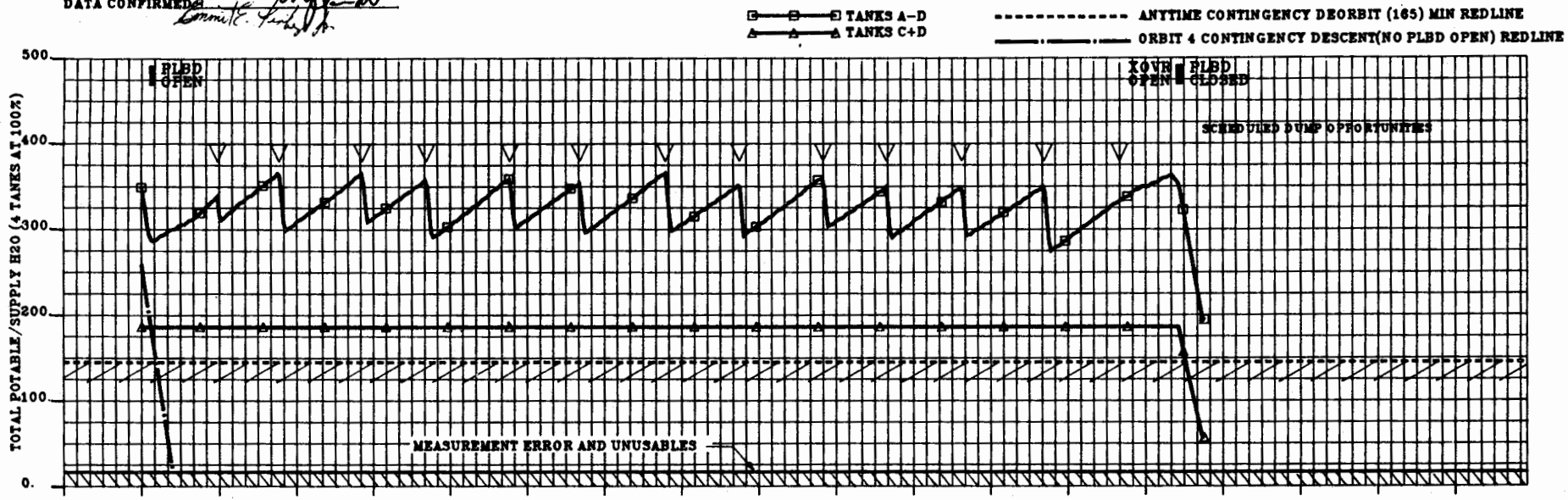


MISSION ELAPSED TIME IN DAYS/HOURS

MISSION OPERATIONS DIRECTORATE - SYSTEMS DIVISION

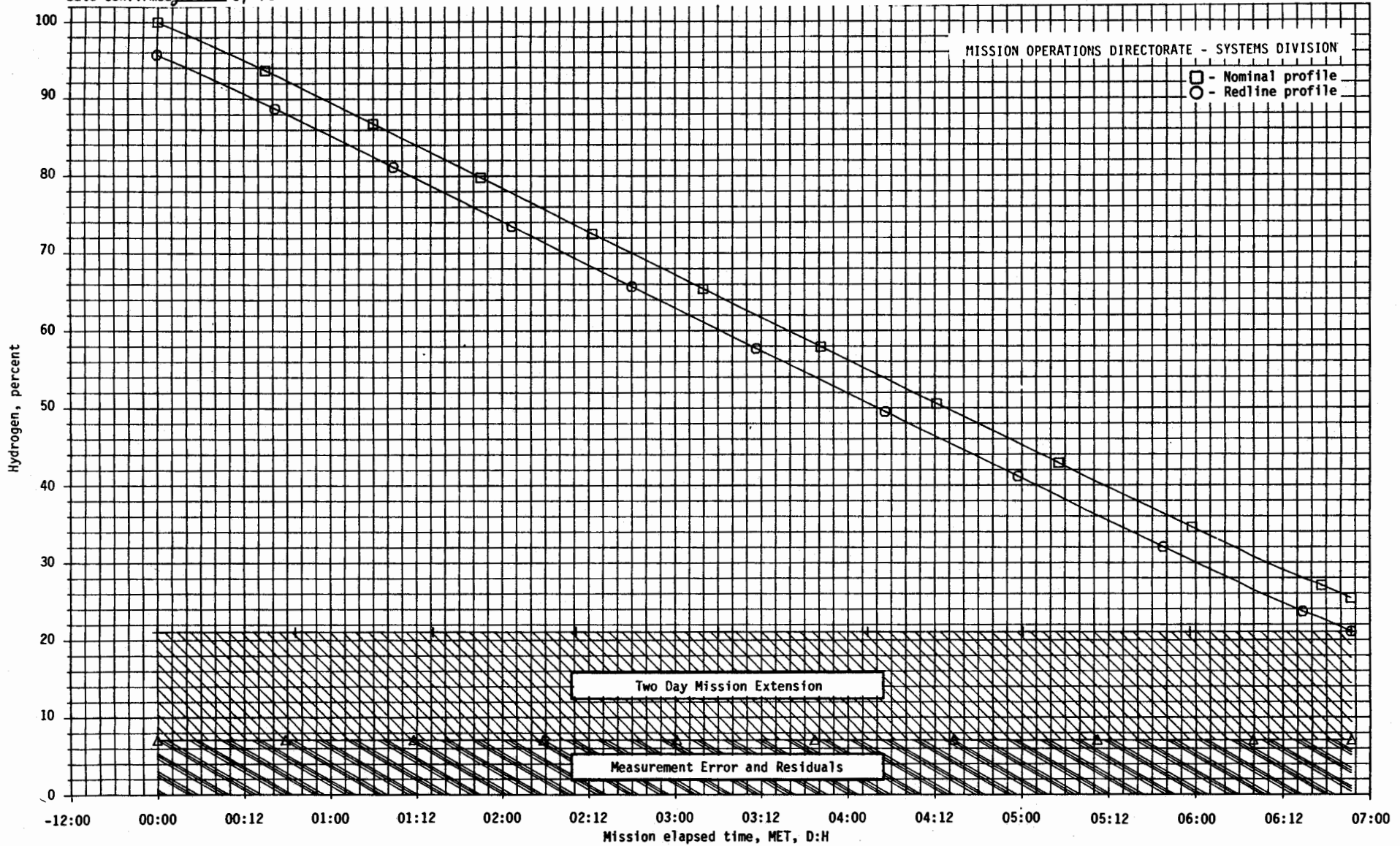
M.J. SAIDI
 JSC-19466 (CAP) 12/21/84 *WMS: WJ*
 DATA CONFIRMED *Comm. E. Taylor*

TRAJECTORY OFF CYCLE 3
 CAP: BASIC REV A
 ANALYSIS DATE: 03/26/85



S. Baig/DF6
Data Source JSC-19466
Date confirmed *g. Chik 3/21/85*

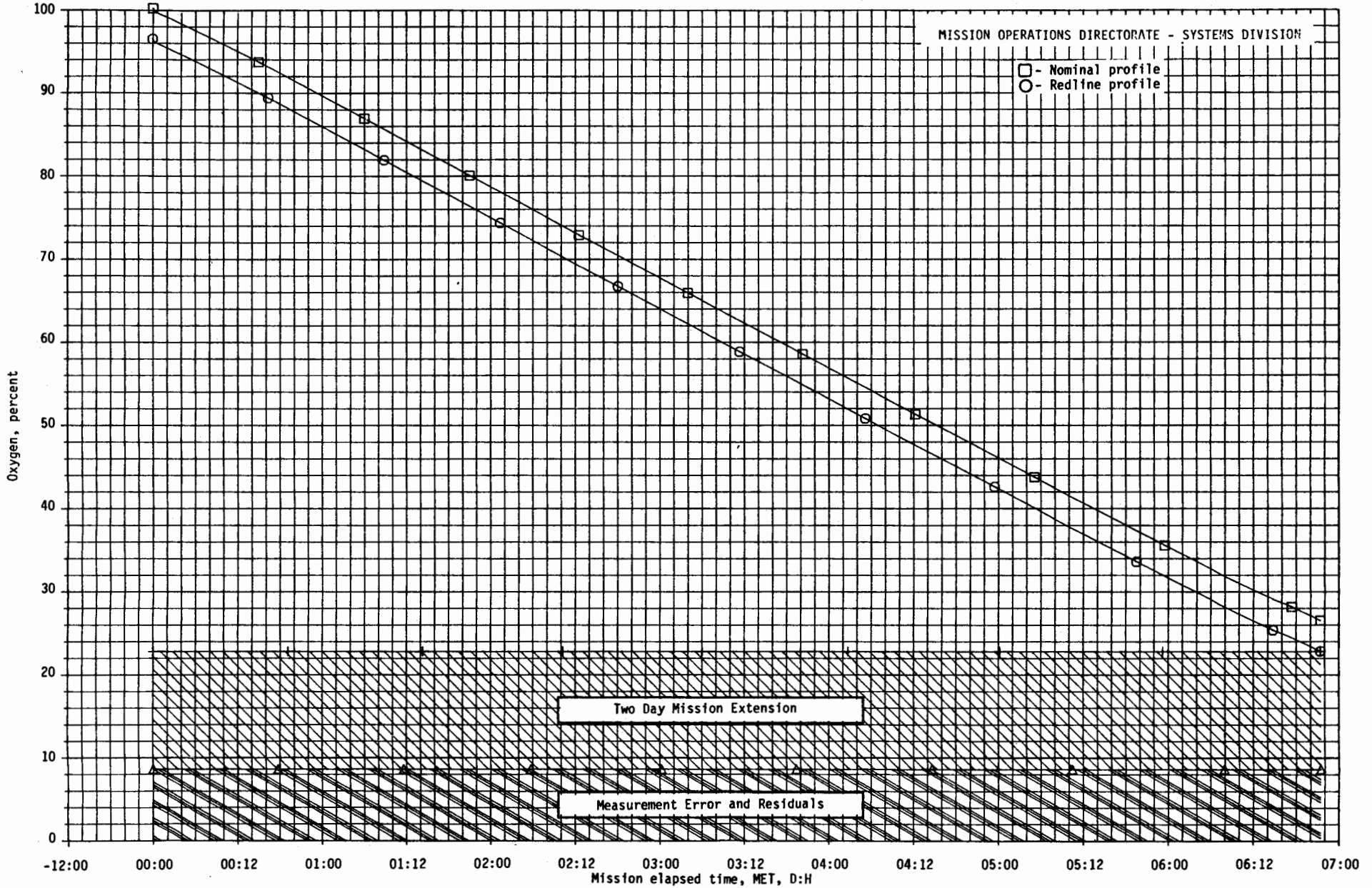
Trajectory OFF Cycle 3
CAP: Basic, Rev. A 12/21/84
Analysis: 3/26/85



Flight 51-B cryogenic hydrogen profile.

S. Baig/urb
Data Source JSC-19466
Date confirmed *Julian: 3/29/85*

Trajectory OFP Cycle 3
CAP: Basic, Rev. A 12/21/84
Analysis: 3/26/86



Flight 51-B cryogenic oxygen profile.

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

DAP A CONFIGURATIONS..... 5-2
DAP B CONFIGURATIONS..... 5-3
51-B DAP BOOK..... 5-4

DAP A CONFIGURATIONS

	A1*	A2	A3	A4	A5	A6
<u>TRANSLATION</u>						
PULSE ft/sec	0.10	0.10	0.10	0.10	0.10	0.10
<u>ROTATION</u>						
DSC RT						
NORM °/sec	0.200	0.400	0.200	0.200	0.200	0.200
VERN °/sec	0.200	0.400	0.200	0.008	0.200	0.200
PULSE						
NORM °/sec	0.10	0.10	0.30	0.10	0.10	0.10
VERN °/sec	0.010	0.010	0.010	0.010	0.050	0.010
COMP						
NORM °/sec	.00	.00	.00	.00	.00	.00
VERN °/sec	.000	.000	.000	.000	.000	.000
<u>DEADBAND</u>						
ATT						
NORM (deg)	5.000	1.00	5.00	1.00	5.00	5.00
VERN (deg)	1.000	1.000	1.000	0.070	1.000	1.000
RATE						
NORM °/sec	0.20	0.20	0.20	0.20	0.20	0.20
VERN °/sec	.020	.020	.020	.010	.020	.020
<u>JET OPT</u>						
P	1	1	3	1	1	3
Y	1	1	3	3	1	3
<u>CNTL ACCEL</u>						
	0	0	0	0	0	0

*I-loaded OPS-2 DAP Configuration

DAP B CONFIGURATIONS

	B1*	B2	B3	B4	B5	B6	B7
<u>TRANSLATION</u>							
PULSE ft/sec	0.02	0.02	0.02	0.02	0.02	0.10	0.10
<u>ROTATION</u>							
DSC RT							
NORM %/sec	0.500	0.200	0.200	0.200	0.200	0.200	0.200
VERN %/sec	0.200	0.200	0.200	0.008	0.016	0.008	0.008
PULSE							
NORM %/sec	0.04	0.04	0.04	0.04	0.04	0.10	0.10
VERN %/sec	0.002	0.002	0.002	0.002	0.002	0.002	0.002
COMP							
NORM %/sec	.00	.00	.00	.00	.00	.00	.00
VERN %/sec	.000	.000	.000	.000	.000	.000	.000
<u>DEADBAND</u>							
ATT							
NORM (deg)	3.00	3.00	3.00	0.30	3.00	5.00	5.00
VERN (deg)	1.000	1.000	1.000	0.100	0.033	0.060	0.200
RATE							
NORM %/sec	0.20	0.20	0.20	0.20	0.20	0.20	0.20
VERN %/sec	.020	.020	.020	.010	.020	.010	.010
<u>JET OPT</u>							
P	1	3	1	1	3	3	3
Y	1	3	1	3	3	3	3
CNTL ACCEL	0	0	0	0	0	0	0

*I-loaded OPS-2 DAP Configuration

DAP BOOK

HOOK
VELCRO

CAP/51-B/O/BAS

UNIV PTG	
TGT ID = 1	Orbiting Vehicle
= 2	Earth ctr
= 3	Earth tgt
	Input LAT (± 90)
	LON (± 180 , + = East)
	ALT (± 99.99 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	PTC ($\sim 2^\circ$ below +X)*
= 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

CAP/51-B/O/BAS

G20 DAP CONFIG	
CNTL ACCEL = 0	Orbiter alone
JET OPT = 1	Normal
= 2	Nose only
= 3	Tail only

TOP



DAP PURPOSE

- A1 - NOMINAL
IMU ALIGN
LOSS OF VERN
- A2 - PTC
- A3 - RCS HOT FIRE
- A4 - GG
- A5 - IMU ROTATION
- A6 - LOSS OF VERN
(TAIL ONLY)

CAP/51-B/O/FIN



A1



TOP



DAP A1

A1

PURPOSE:

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

0.1 0

1 TRANSLATION
PULSE

0.2 0 0

2 ROTATION

0.2 0 0

3 DSC RT NORM

0.1 0 0

4 PULSE NORM

0.0 1 0

5 VERN

.0 0 0

6 COMP NORM

.0 0 0

7 VERN

DEADBAND

5.0 0 0

8 ATT NORM

1.0 0 0

9 VERN

0.2 0 0

10 RATE NORM

.0 2 0

11 VERN

1

12 JET OPT P

1

13 Y

0

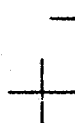
14 CNTL ACCEL

CAP/51-B/O/FIN

CAP/51-B/O/BAS

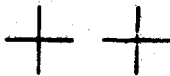


A2



TOP

TOP



A1

DAP A2

A2

PURPOSE:

PTC

0.1 0

1

TRANSLATION PULSE

0.4 0 0

2

ROTATION DSC RT NORM

0.4 0 0

3

VERN

0.1 0 0

4

PULSE NORM

0.0 1 0

5

VERN

.0 0 0

6

COMP NORM

.0 0 0

7

VERN

DEADBAND

1.0 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

CAP/51-B/O/BAS

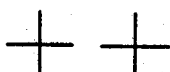
CAP/51-B/O/BAS



A3

TOP

TOP



A2

A3

DAP A3

PURPOSE:

RCS HOT FIRE

0.1 0

1

TRANSLATION PULSE

0.2 0 0

2

ROTATION DSC RT NORM

0.2 0 0

3

VERN

0.3 0 0

4

PULSE NORM

0.0 1 0

5

VERN

.0 0 0

6

COMP NORM

.0 0 0

7

VERN

DEADBAND

5.0 0 0

8

ATT NORM

1.0 0 0

9

VERN

0.2 0 0

10

RATE NORM

.0 2 0

11

VERN

3

12

JET OPT P

3

13

Y

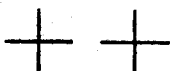
0

14

CNTL ACCEL

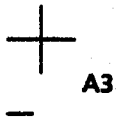
CAP/51-B/O/BAS

CAP/51-B/O/BAS



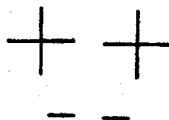
A4

TOP



DAP A4

PURPOSE:
GG



TOP



A4

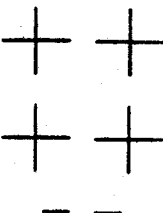
0.1 0	1	TRANSLATION	
		PULSE	
		ROTATION	
0.2 0 0	2	DSC RT	NORM
0.0 0 8	3		VERN
0.1 0	4	PULSE	NORM
0.0 1 0	5		VERN
.0 0 0	6	COMP	NORM
.0 0 0	7		VERN
		DEADBAND	
1.0 0	8	ATT	NORM
0.0 7 0	9		VERN
0.2 0	10	RATE	NORM
.0 1 0	11		VERN
1	12	JET OPT	P
3	13		Y
0	14	CNTL ACCEL	

CAP/51-B/O/BAS

CAP/51-B/O/BAS



TOP



A4

TOP

A5



DAP A5

A5

PURPOSE:
IMU ROTATION

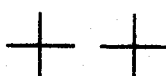
0.1 0	1	TRANSLATION	
		PULSE	
		ROTATION	
0.2 0 0	2	DSC RT	NORM
0.2 0 0	3		VERN
0.1 0	4	PULSE	NORM
0.0 5 0	5		VERN
.0 0 0	6	COMP	NORM
.0 0 0	7		VERN
		DEADBAND	
5.0 0	8	AFT	NORM
1.0 0 0	9		VERN
0.2 0	10	RATE	NORM
.0 2 0	11		VERN
1	12	JET OPT	P
1	13		Y
0	14	CNTL ACCEL	

CAP/51-B/O/BAS

CAP/51-B/O/BAS

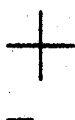


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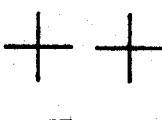


A6





A5



TOP



DAP A6

PURPOSE:

LOSS OF VERN
(TAIL ONLY)

0.1 0

A6

TRANSLATION
PULSE

0.2 0 0

ROTATION

0.2 0 0

DSC RT NORM

0.1 0

VERN

0.0 1 0

PULSE NORM

.0 0

VERN

.0 0 0

COMP NORM

VERN

DEADBAND

5.0 0

ATT NORM

1.0 0 0

VERN

0.2 0

RATE NORM

.0 2 0

VERN

3

JET OPT P

3

Y

Q

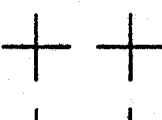
CNTL ACCEL

CAP/51-B/O/BAS

CAP/51-B/O/BAS



TOP

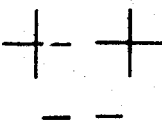


A7

TOP



A6



DAP

PURPOSE

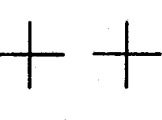
- B1 - NOMINAL
PRCS IMU ALIGN
OMS & RCS BURNS
- B2 - LOSS OF VERN
(TAIL ONLY)
- B3 - LOSS OF VERN;
GG MNVR
- B4 - PAM DEPLOY;
FRISBEE DEPLOY
- B5 - COAS CAL
- B6 - VWFC OPS
- B7 - ATMOS OPS

CAP/51-B/O/BAS

CAP/51-B/O/FIN

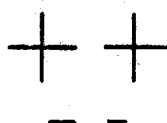


TOP



B1





DAP B1

TOP

PURPOSE:

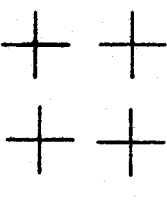
NOMINAL
PRCS IMU ALIGN
OMS & RCS BURNS

B1

TRANSLATION				
PULSE		15	0.0	2
ROTATION				
DSC RT	NORM	16	0.5	0 0
	VERN	17	0.2	0 0
PULSE	NORM	18	0.0	0 4
	VERN	19	0.0	0 2
COMP	NORM	20	.0	0 0
	VERN	21	.0	0 0
DEADBAND				
ATT	NORM	22	3.0	0 0
	VERN	23	1.0	0 0
RATE				
	NORM	24	0.2	0 0
	VERN	25	.0	2 0
JET OPT	P	26		1
	Y	27		1
CNTL ACCEL		28		0

CAP/51-B/O/FIN

CAP/51-B/O/BAS



TOP

B1

B2

TOP

DAP B2

B2

PURPOSE:

LOSS OF VERN
(TAIL ONLY)

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

CAP/51-B/O/BAS

CAP/51-B/O/BAS



TOP

B3

TOP

B2

DAP B3

PURPOSE:

LOSS OF VERN
(NOSE & TAIL)
GG MNVR

B3

TRANSLATION
PULSE 15 0.0 2

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

DEADBAND
ATT NORM 22 3.0 0
VERN 23 1.0 0 0

RATE NORM 24 0.2 0
VERN 25 .0 2 0

JET OPT P 26 1
Y 27 1

CNTL ACCEL 28 0

CAP/51-B/O/BAS

CAP/51-B/O/BAS

B4

TOP

TOP

B3

DAP B4

PURPOSE:

PAM DEPLOY
FRISBEE DEPLOY

B4

TRANSLATION
PULSE 15 0.0 2

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

DEADBAND
ATT NORM 22 0.3 0
VERN 23 0.1 0 0

RATE NORM 24 0.2 0
VERN 25 .0 1 0

JET OPT P 26 1
Y 27 3

CNTL ACCEL 28 0

CAP/51-B/O/BAS

CAP/51-B/O/BAS

B5

TOP

(reduced copy)

TOP

B4

DAP 85

PURPOSE:

COAS CAL

B5

TRANSLATION			
PULSE	15	0.0	2

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

DEADBAND			
ATT	NORM	22	3.0 0
	VERN	23	0.0 3 3

RATE	NORM	24	0.2 0
	VERN	25	.0 2 0

JET OPT	P	26	3
	Y	27	3

CNTL ACCEL	28	0
------------	----	---

CAP/51-B/O/BAS

CAP/51-B/O/BAS A

B6

TOP

B5

DAP 86

PURPOSE:

VWFC
OPS

TOP

B6

TRANSLATION			
PULSE	15	0.1	0

ROTATION			
DSC RT	NORM	16	0.2 0 0
	VERN	17	0.0 0 8
PULSE	NORM	18	0.1 0
	VERN	19	0.0 0 2
COMP	NORM	20	.0 0 0
	VERN	21	.0 0 0

DEADBAND			
ATT	NORM	22	5.0 0
	VERN	23	0.0 6 0

RATE	NORM	24	0.2 0
	VERN	25	.0 1 0

JET OPT	P	26	3
	Y	27	3

CNTL ACCEL	28	0
------------	----	---

CAP/51-B/O/BAS A

CAP/51-B/O/BAS A

B7

TOP

TOP

B6

DAP B7

PURPOSE:

ATMOS
OPS

B7

TRANSLATION

PULSE 15 0.1 0

ROTATION

DSC RT NORM 16 0.2 0 0

VERN 17 0.0 0 8

PULSE NORM 18 0.1 0

VERN 19 0.0 0 2

COMP NORM 20 .0 0 0

VERN 21 .0 0 0

DEADBAND

ATT NORM 22 5.0 0

VERN 23 0.2 0 0

RATE NORM 24 0.2 0

VERN 25 .0 1 0

JET OPT P 26 3

Y 27 3

CNTL ACCEL 28 0

CAP/51-B/O/BAS A

CAP/51-B/O/BAS A

TOP

B7

CAP/51-B/O/BAS A

TOP

TOP
BACK COVER 'DAP BOOK'



HOOK
VELCRO

CAP/51-B/O/BAS



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STS 51-B ATTITUDE TIMELINE

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 0/01:10:00	TRK TGT=2 BV=3(90.00, 0.00) OM=180.00	A1 AUTO NORM	DSC 0.200 DB AT 5.00 DB RT 0.20	EARTH 0 90 0 0	LVLH R+180 P+ 0 Y+ 0	-ZLV +XVV
2 0/02:56:00 03:09:38	MNVR R+ 75.00 P+149.00 Y+344.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 157 0 41	-ZST:21 -YST:29	IMU/COAS (D1)
3 0/04:07:00 14:30 DAP B7	MNVR R+120.00 P+180.00 Y+ 51.90	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 90 0 315		TDRS/ATMOS
4 0/08:49:00 59:19 DAP B6	MNVR R+ 15.21 P+181.09 Y+332.36	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 161 0 18		VWFC#1
5 0/10:27:00 39:20 DAP B6	MNVR R+236.97 P+217.82 Y+ 9.92	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 109 0 168		VWFC#2
6 0/11:49:00 59:47	MNVR R+326.00 P+359.00 Y+311.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 87 0 138		TRIM BURN
7 0/12:30:00 39:22 DAP B6	MNVR R+111.28 P+183.09 Y+336.06	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 157 0 288		VWFC#3
8 0/13:25:00 38:24	MNVR R+238.00 P+ 78.00 Y+309.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 122 0 281	-ZST:27 -YST:54	IMU ALIGN (C1)
9 0/14:04:00 17:39 DAP B6	MNVR R+174.67 P+208.46 Y+ 9.92	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 115 0 235		VWFC#4
10 0/15:34:00 44:43 DAP B6	MNVR R+342.70 P+ 24.87 Y+ 42.22	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 34 0 191		VWFC#5
11 0/16:21:00 35:28 DAP B6	MNVR R+137.50 P+238.83 Y+318.70	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN 0 122 0 246		VWFC#6
12 0/17:54:00 18:05:03 DAP B7	TRK TGT=2 BV=5(177.60, 0.00) OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH 0 178 0 360	LVLH R+ 90 P+ 90 Y+ 2	-XLV +YVV BIASED

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 6/09:10:00 17:30	TRK TGT=2 BV=2(180.00, 0.00) OM= 0.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH θ 180 φ 0	LVLH R+ 0 P+ 90 Y+ 0	NUSAT/GLOMR DEPLOY
2 6/10:20:00 35:00	TRK TGT=2 BV=3(90.00, 0.00) OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH θ 90 φ 0	LVLH R+180 P+ 0 Y+ 0	-ZLV +XVV
3 6/15:20:00 28:54	TRK TGT=4 BV=5(184.00, 0.00) OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN θ 176 φ 179	INRTL R+152 P+162 Y+316	-XSI
4 6/16:54:00 17:06:55	MNVR R+289.00 P+184.00 Y+ 55.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN θ 80 φ 141	-ZST:20 -YST:17	IMU ALIGN
5 6/17:14:00 16:40	MNVR R+287.00 P+132.00 Y+353.00	B1 AUTO NORM	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN θ 139 φ 191	-ZST:43 -YST:28	IMU VERIF
6 6/17:39:00 44:09	MNVR R+280.00 P+346.00 Y+ 58.00	B1 AUTO NORM	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN θ 17 φ 327		DEORBIT BURN ATTITUDE
7 6/19:54:07	OMS IGNITION	* AUTO *	DSC 0.500 DB AT 3.50 DB RT 0.30			DEORBIT BURN

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CREW ACTIVITY PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

CREW..... 6-2
PAYLOADS..... 6-2

CAP NOTES

A. CREW

1. There are 7 crewmen onboard divided into 2 teams: the SILVER team consisting of the PLT, MS2, and PSM (materials processing expert) and the GOLD team consisting of the CDR, MS1, MS3, and PSF (fluids expert). Each team works 12 hours, then is off duty for 12 hours.
2. Launch and Entry Seating - The CDR and PLT will occupy their normal flight deck seats. The MS2 (Thagard) will assume the role of Flight Engineer and sit on the flight deck behind and between the CDR and PLT. The MS1 (Lind) will sit on the flight deck to the right of the MS2. The MS3 and PSs will sit on the middeck.
3. The crewmen responsible for performing an EVA, should one become necessary, are: PLT and MS2.
4. The crewmen are assigned to the following tasks:
 - CDR (Overmyer) - ATMOS PHOTOS, AURORAL PHOTOS
 - PLT (Gregory) - ATMOS PHOTOS, GAS SATELLITE DEPLOYS (ORBITER CONTROL)
 - MS1 (Lind) - SL ACT/DEACT, FES/VCGS, VWFC, AURORAL OBS, MED DSOs
 - MS2 (Thagard) - SL ACT/DEACT, VWFC, GAS SATELLITE DEPLOYS (prime), MED DSOs
 - MS3 (Thornton) - RAHF, UMS ACT/DEACT, MED DSOs

All P/L crew - GFFC, MICG, ATMOS, IONS, UMS

For AFT, the PSs are the subjects and MS1 and MS3 are controls

B. PAYLOADS

The following paragraphs give a brief description of the payloads of Spacelab 3. Also, in each case this description is followed by a list of Marshall Space Flight Center model numbers involving crew action (as seen in the summary timeline) and their corresponding descriptions.

1. Fluid Experiment System (FES)

This system is used to grow triglycine sulfate (TGS) crystals by removing heat from a saturated solution through a seed crystal. The purposes of this investigation are: to develop a technique for crystal growth in microgravity, to study the growth environment and relate it to growth behavior, and to determine how microgravity influences the properties of the resultant crystal.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
FES-ACT	EQUIP ACTIVATION
FES-1	CRYSTAL #1 OPS
FES-2	CRYSTAL #2 OPS
FES-3	CRYSTAL #3 OPS
FES-MON1	CREW MON - EARLY PHASE
FES-MON2	CREW MON - LATE PHASE
FES-MON3	

2. Vapor Crystal Growth System (VCGS)

The purpose of this experiment is to grow more-perfect crystals of mercuric iodide. They will be grown by vaporization and recondensation at 120° C in a special furnace and the growth process will be reversed if polycrystalline growth begins. These crystals should have fewer defects because of the microgravity environment.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
VCG	ACTIVATE/DEACTIVATE VCGS
VCG-MON1	CREW MON - EARLY PHASE
VCG-MON2	CREW MON - LATE PHASE
VCG-MON3	

3. Mercuric Iodide Crystal Growth (MICG)

The purpose of this experiment is to grow near-perfect single crystals of mercury iodide. The process will be carried out in a two-zone furnace with sensors to collect temperature data. The investigators hope to find that the effects of convection are greatly reduced in the microgravity environment.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
MICG	INITIATE MICG/CHNG CRYSTAL CARTRIDGE

4. Dynamics of Rotating and Oscillating Free Drops (DROP)

The main objectives of this experiment are to study the equilibrium figures of a rotating drop and to study the large-amplitude oscillations of a liquid drop. Another objective is to establish the advantages of conducting future drop and bubble investigations in space using the Drop Dynamics Module (DDM).

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
DDM-1/2	FIRST TWO RUNS
DDM-0/E	SUBSEQUENT RUNS

5. Geophysical Fluid Flow Cell (GFFC)

The purpose of this experiment is to simulate global atmospheric flows of rotating planets and stars in hopes of answering questions about their mechanics. The investigator is trying to identify those external conditions of fluid viscosity, rotation, gravity, etc., which determine the mode of flow. Simulation will be accomplished with the use of a dielectric fluid between two concentric, rotating electrically conductive spherical shells.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
GFFC-1	LONG DURATION RUN OPS
GFFC-2	SHORT DURATION RUN OPS
GFFC-3	SHORT RUN WITH CREW INTERVENTION
GFFC-FLM	FILM CHANGE
GFFC-MON	TIMING CHECK

6. Atmospheric Trace Molecules Spectroscopy (ATMOS)

The ATMOS investigation is designed to collect data on the chemistry and physics of Earth's upper atmosphere. It should determine the compositional structure of the upper atmosphere, and it should provide information useful in the design of future atmospheric studies. The investigation will use infrared absorption spectroscopy and will read sunlight that passes through the upper atmosphere with an interferometer.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
70mm/22R	SUNRISE PHOTOGRAPHY
70mm/22S	SUNSET PHOTOGRAPHY

7. Research Animal Holding Facility - Verification Test (RAHF-VT)

The objective of this investigation is to verify the performance of the RAHF. The RAHF is designed to support animals from rodents to small primates. It will house four monkeys and twenty-four rats. The animals will be monitored during the mission, and the food and water used will be recorded.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
ARC-DORB	CONFIGURE FOR DEORBIT
ARC-F01F	DEMS SWITCH SAFING
ARC-F02A	ANIMAL OBSERVATIONS
ARC-F02C	CONDENSATION BOTTLE CHECK/CHANGE
ARC-F02D	CAMERA OPS
ARC-F02E	FOOD TRAY CHANGEOUT
ARC-F02F	WASTE TRAY CHANGEOUT
ARC-F02H	TEMP RESTRAINT OPS
ARC-F02K	BIOTELEMETRY SIGNAL OPTIMIZATION
ARC-PREP	CONFIGURE FOR ON ORBIT

8. Urine Monitoring Investigation (UMI)

The primary objectives of the UMI are: verify the operation of the Urine Monitoring System (UMS), perform inflight calibration of the UMS, develop a procedure for measuring crew water intake, and verify a system of urine sample collection. The investigation will involve recording water intake of crewmembers from the galley and water supply. It will also use the UMS to measure urine volume of each crewmember and collect samples on two crewmembers.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
-------------------	--------------------------

UMS-OPS	UMS ACT/DEACT
UMS-CAL	UMS CALIBRATION

9. Autogenic Feedback Training (AFT)

AFT is designed to help crewmembers overcome the effects of Zero-Gravity Motion Sickness. The crewmembers receive extensive preflight autogenic feedback training. Then they practice on orbit and during motion sickness attacks. Crewmembers will wear monitoring instruments and data recorders, and feedback displays will be used.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
-------------------	--------------------------

AFT	CHANGE CASSETTE/PERFORM DIAGNOSTIC SCALE
DON AFT	PUT ON AFT GARMENT AT START OF SHIFT
DOFF AFT	TAKE OFF AFT GARMENT AT END OF SHIFT

10. Ionization States of Solar and Galactic Cosmic Ray Heavy Nuclei (IONS)

This experiment is designed to study the low-energy cosmic ray ions of C, N, O, Ne, Ca, and Fe. The detector system consists of layers of plastics that show a trail of damage after being penetrated by cosmic rays. Study of these trails on the ground gives data as to the energies of the ions in the cosmic rays.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
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IONS	IONS EXPT OPS
------	---------------

11. Very Wide Field Camera (VWFC)

This is a reflight of the payload flown on Spacelab 1. It will make a very general UV survey of a large part of the celestial sphere. The camera operates in both the photometric and spectrometric modes.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
VWFC	SETUP AND OPS OF CAMERA IN SAL
VWFC INSTALL	PLACING OF VWFC INTO SAL
VWFC OUTGASS	ALLOWANCE TIME FOR OUTGASSING OF THE VWFC
VWFC STOW	REMOVAL OF VWFC FROM SAL

12. Aurora Observation

Observations of the high-latitude aurora will be made by eye, by TV, and by photography.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
AURORA	AURORA OBSERVATION TIME

13. Television and Photography

The following list describes the television and photography scenes that are payload related.

<u>MSFC MODEL</u>	<u>MODEL DESCRIPTION</u>
TV01	INITIAL SPACELAB INGRESS
TV02	RAHF TOUR
TV03	VCG OPS
TV04	DDM OPS
TV05	FES OPS
TV06	RAHF CONDENSATE BOTTLE CHANGE
TV07	RAT FOOD/WASTE MAINTENANCE
TV08	MONKEY FOOD/WASTE MAINTENANCE
TV09	RAHF TEMPORARY RESTRAINTS
TV10	ANIMAL OBSERVATION
TV13	TV13 - PRESS CONFERENCE
TV14	TV14 - SPACELAB DEACTIVATION AND EGRESS
TV15	SAL/VWFC OPS
TV16	VWFC EXTENSION
TV17	FES OR VCG OPS
TV18	DDM OPS
TV19	AURORA OBSERVATIONS
TV20	SPACELAB TUNNEL OPS
TV21	PAYLOAD BAY VIEWS
TV23	FES PROCEDURES
16mm/03	VCG OPS
16mm/07	RAT FOOD MAINTENANCE
16mm/08	MONKEY WASTE TRAY OPS
35mm/03	VCG OPS
35mm/07	RAT FOOD MAINTENANCE
35mm/08	MONKEY FOOD/WASTE MAINTENANCE
35mm/19	AURORA OBSERVATIONS

14. Other

These are other payload-related activities not directly associated with a particular payload.

AIR SAMPLE
SAL FORCE GAUGE TEST

NASA Headquarters
EM-8/M. J. Sander
LF-6/R. Shafer
LED-10/I. W. McCulla
MGF-9/E. Harkleroad
MP-5/W. Hamby
OS-5/J. C. Harrington
OT-6/C. Lee
SB-3/A. E. Nicogossian

McDonnell Douglas - Houston

A1/T. Bruchmiller

J. French
R. LaCarna
R. Theis
T. Rich

A2/L. T. Guderian

Y. Parks

A3/P. Dowty

C2/K. Eggers

C3/R. Corson

Y. W. Park

M. Rasmussen

C5/H. M. Ferrill (2)

D2/R. Theobald

M. D. Pipher (3)

Langley Research Center

258

Lockheed - Houston

C15/L. A. Martin (3)

Rockwell - Houston

ZC01/D. E. Hass

IBM - Houston

MC73/B. Kolkhorst

Kennedy Space Center

CS-MVD-2/C. B. Roberts (4)

CS-MVD-3/E. Nelson

CV-DEL-4/J. Zeman

MDTSCO/B. C. Adams (3)

T. Smith

J. Newsome

TO-NTS-KSC/J. Baltar (2)

VE-MSD-11/I. Velez

VT-A-1/R. W. Nygren (3)

VT-IOD/B. L. Steadman

ZK-25/Rockwell Tech Data (19)

Dryden Flight Research Facility

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1A204/R. C. Wilde

F. S. Greenwood

1A25/A. Decrisantis

Rockwell International/STS

12214 Lakewood Blvd.

Downey, CA 90241

041-BA63/S. Grzebyk (26)

Singer-Link - Houston

SMS Data Library

K. Nelson

Honeywell Inc. Avionics Division

13350 U.S. Hwy 19

Clearwater, FL 33516

818-5/J. R. Peterson

Ford Aerospace - Houston

SISD-1A/Tech Lib. (14)

SISD-308/G. Egan (2)

SISD-30C/F. Pitts (2)

M. Wadsworth (2)

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