

*Shuttle*

# Flight Data File Crew Activity Plan STS 61-E (Cycle 1 Trajectory)

Mission Operations Directorate  
Operations Division

Basic  
November 22, 1985

<u>EVENT:</u>	<u>CST</u>		
Launch (Night)	04:45	Thur	Mar 6
Vega II Flyby	21:00	Sat	Mar 8
Crew Conference	03:05	Wed	Mar 12
Giotto Flyby	18:00	Thur	Mar 13
KSC Landing (Night)	02:47	Sat	Mar 15

**NASA**

National Aeronautics and  
Space Administration

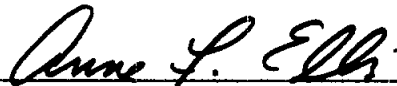
Lyndon B. Johnson Space Center  
Houston, Texas

MISSION OPERATIONS DIRECTORATE

STS 61-E CREW ACTIVITY PLAN

BASIC  
November 22, 1985

PREPARED BY:

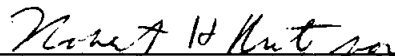


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This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted on standard JSC Form 482 to DH4/FDF Manager, Bldg 4, Rm 352, 713-483-2868.

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ACKNOWLEDGMENTS

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STS 61-E CREW ACTIVITY PLAN

**LIST OF EFFECTIVE PAGES**

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3-6.....	CAP/61-E/BAS	5-9.....	CAP/61-E/BAS
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3-11.....	CAP/61-E/BAS	5-14.....	CAP/61-E/BAS
3-12.....	CAP/61-E/BAS	5-15.....	CAP/61-E/BAS
3-13.....	CAP/61-E/BAS	5-16.....	CAP/61-E/BAS
3-14.....	CAP/61-E/BAS	5-17.....	CAP/61-E/BAS
3-15.....	CAP/61-E/BAS	5-18.....	CAP/61-E/BAS
3-16.....	CAP/61-E/BAS	5-19.....	CAP/61-E/BAS
3-17.....	CAP/61-E/BAS	5-20.....	CAP/61-E/BAS
3-18.....	CAP/61-E/BAS	5-21.....	CAP/61-E/BAS
3-19.....	CAP/61-E/BAS	5-22.....	CAP/61-E/BAS

6-1..... CAP/61-E/BAS  
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 6-3..... CAP/61-E/BAS  
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 7-2..... CAP/61-E/BAS  
 7-3..... CAP/61-E/BAS  
 7-4..... CAP/61-E/BAS

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A4.....	6-7	CAP/61-E/O/BAS
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A7.....	6-8	CAP/61-E/O/BAS
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A8.....	6-9	CAP/61-E/O/BAS
DAP A9.....	6-9	CAP/61-E/O/BAS
A9.....	6-9	CAP/61-E/O/BAS
DAP A10.....	6-10	CAP/61-E/O/BAS
A10.....	6-10	CAP/61-E/O/BAS
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A11.....	6-10	CAP/61-E/O/BAS
(Blank).....	6-11	CAP/61-E/O/BAS
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DAP B4.....	6-13	CAP/61-E/O/BAS
B4.....	6-13	CAP/61-E/O/BAS
DAP B5.....	6-13	CAP/61-E/O/BAS
B5.....	6-13	CAP/61-E/O/BAS
DAP B6.....	6-14	CAP/61-E/O/BAS
B6.....	6-14	CAP/61-E/O/BAS
DAP B7.....	6-14	CAP/61-E/O/BAS
B7.....	6-14	CAP/61-E/O/BAS
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## INTRODUCTION

The STS 61-E Crew Activity 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 61-E Flight Requirements Document.

The flight profile (Cycle 1 trajectory data) used for this Crew Activity Plan is for a launch date of March 6, 1986, at 4:45 CST. The CAP reflects the current manifest (no WESTAR and the addition of several middeck payloads, student experiments and TBD GAS payloads). This will be a night launch and a night landing to KSC. Note: The CDR is not assigned to a team and is free to adjust his hours real-time as necessary.



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STS 61-E OVERVIEW

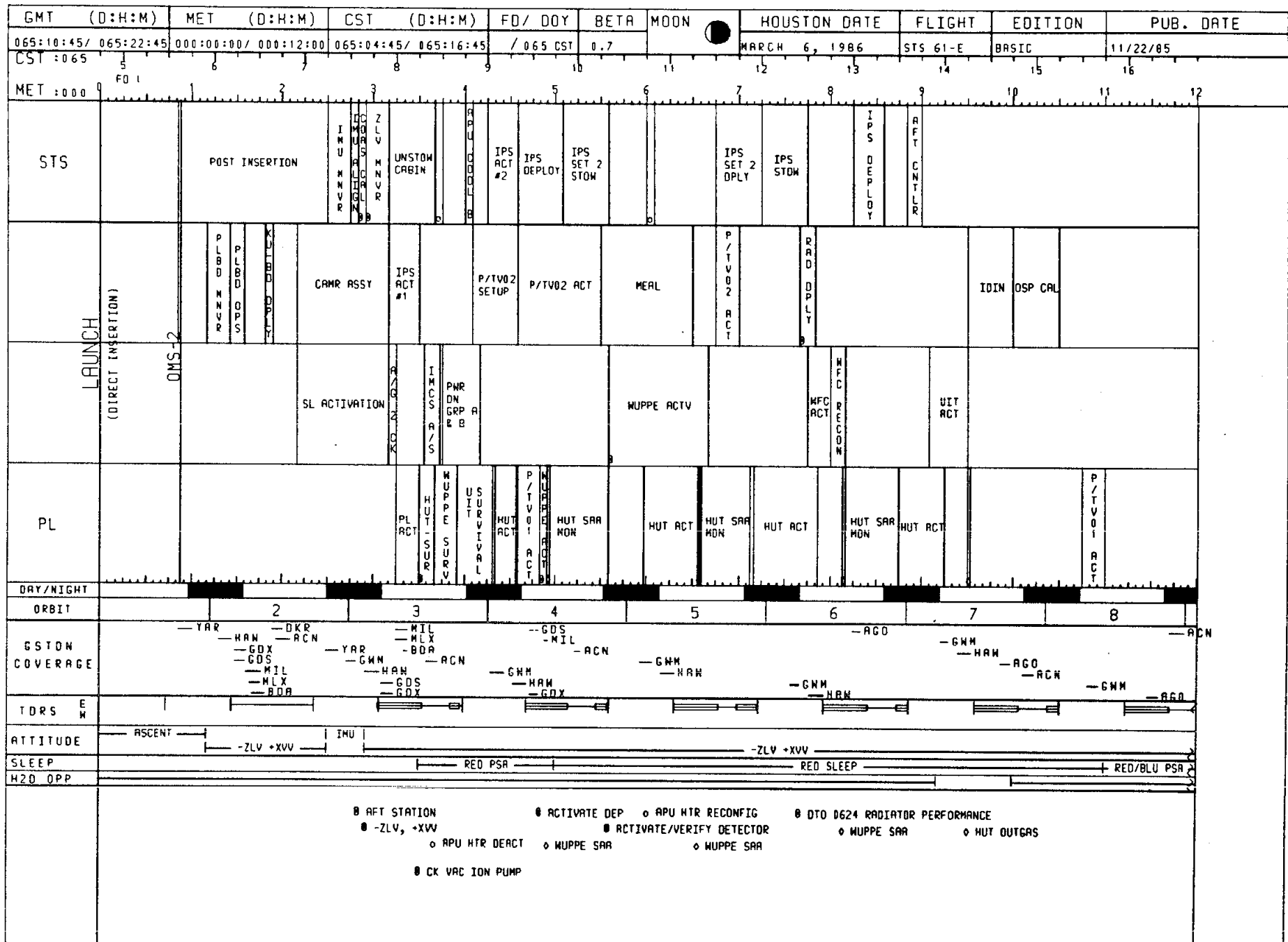
		FLIGHT STS 61-E										EDITION BASIC				PUB. DATE 11/22/85								
NET:000		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
RED FD 1&2	ASCENT	POST INSERTION	IMU	PRE SLEEP	SLEEP (6)								POST SLEEP	IMU	IPS GYRO CAL	FOCUS & ALIGN						H/D		
BLU FD 1	ASCENT	POST INSERTION	SL ACT	IPS & P/L ACT	IPS DPLY/STOW	P/L ACT	IPS DPLY/STOW	P/L ACT	IPS DPLY/STOW	P/L ACT	IPS DPLY/STOW	P/L ACT	IPS DPLY/STOW	PRE SLEEP	SLEEP						POST SLEEP	H/D		
DAY/NIGHT	[Day/Night Cycle]																							
ORBIT	[Orbit Cycle]																							
CDR SLEEP	[CDR Sleep Cycle]																							
NOTES:	● PWR DN GPP A & B																							
NET:001		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
RED FD 3	PRE SLEEP			SLEEP								POST SLEEP		H/O	ASTRO OBSERVATIONS						H/O	PRE SLEEP		
BLU FD 2	IL PAST CH		IID WPP USL T		ASTRO OBSERVATIONS								H/O	PRE SLEEP	SLEEP (7)						POST SLEEP	H/O		
DAY/NIGHT	[Day/Night Cycle]																							
ORBIT	[Orbit Cycle]																							
CDR SLEEP	[CDR Sleep Cycle]																							
NOTES:																								
NET:002		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
RED FD 4	PRE SLEEP	SLEEP								POST SLEEP		H/O	* VEGA II FLYBY ASTRO OBSERVATIONS						H/O	PRE SLEEP				
BLU FD 3	ASTRO OBSERVATIONS								PRE SLEEP		SLEEP						POST SLEEP		H/O					
DAY/NIGHT	[Day/Night Cycle]																							
ORBIT	[Orbit Cycle]																							
CDR SLEEP	[CDR Sleep Cycle]																							
NOTES:																								
NET:003		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
RED FD 5	PRE SLEEP	SLEEP								POST SLEEP		H/O	ASTRO OBSERVATIONS						H/O	PRE SLEEP				
BLU FD 4	ASTRO OBSERVATIONS								PRE SLEEP		SLEEP						POST SLEEP		H/O					
DAY/NIGHT	[Day/Night Cycle]																							
ORBIT	[Orbit Cycle]																							
CDR SLEEP	[CDR Sleep Cycle]																							
NOTES:																								

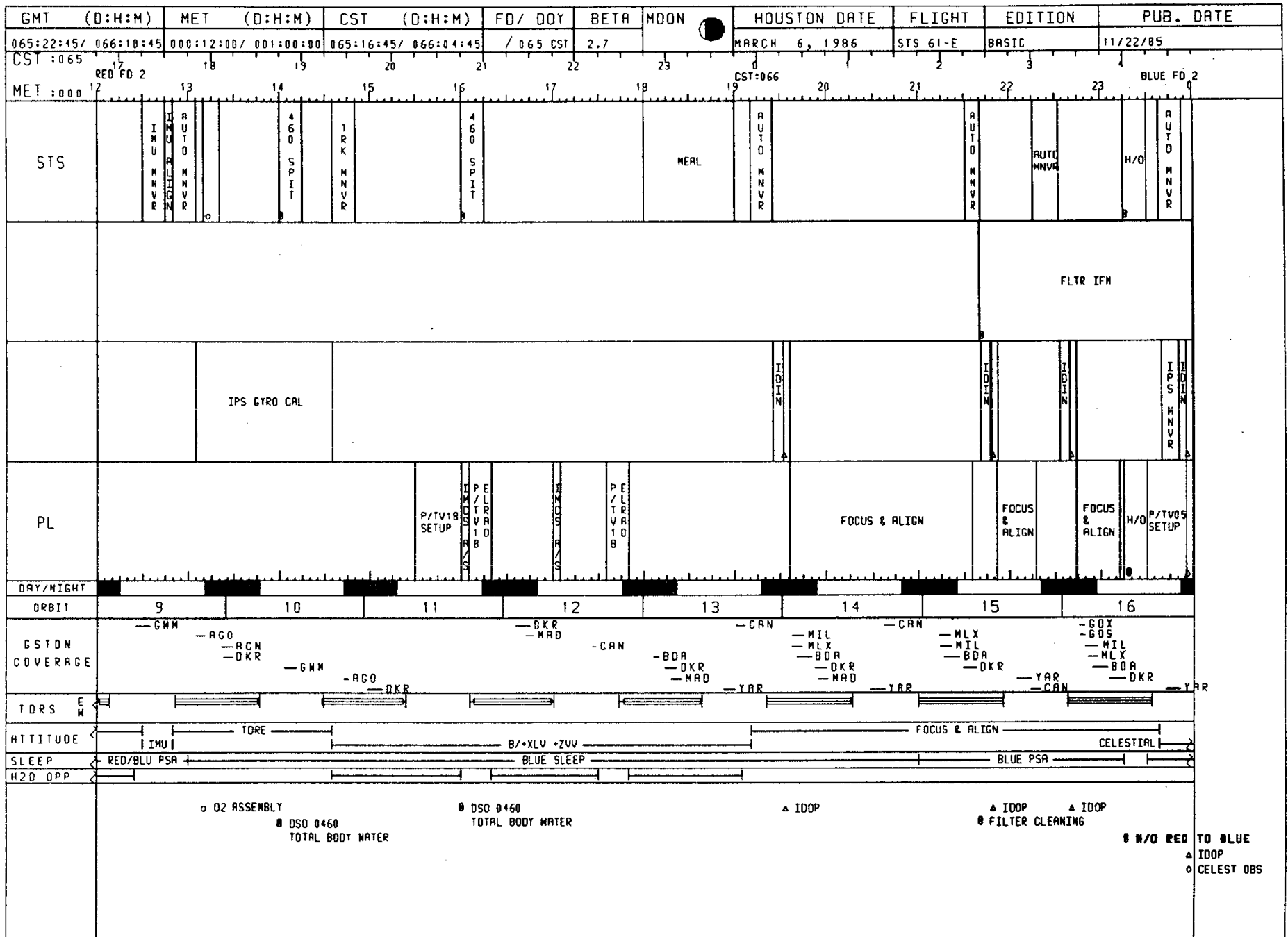
		FLIGHT STS 61-E										EDITION BASIC				PUB. DATE 11/22/85									
MET:004		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
RED FD 6	PRE SLEEP	SLEEP							POST SLEEP				ASTRO OBSERVATIONS										PRE SLEEP		
BLU FD 5		ASTRO OBSERVATIONS								PRE SLEEP	SLEEP							POST SLEEP							
DAY/NIGHT	ORBIT	[Day/Night/Orbit bar]																							
CDR SLEEP		CDR PSR							CDR SLEEP							CDR PSR									
NOTES:																									
MET:005		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
RED FD 7	PRE SLEEP	SLEEP							POST SLEEP				ASTRO OBSERVATIONS										PRE SLEEP		
BLU FD 6		ASTRO OBSERVATIONS								PRE SLEEP	SLEEP							POST SLEEP							
DAY/NIGHT	ORBIT	[Day/Night/Orbit bar]																							
CDR SLEEP		CDR PSR							CDR SLEEP							CDR PSR									
NOTES:																									
MET:006		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
RED FD 8	PRE SLEEP	SLEEP							POST SLEEP				ASTRO OBSERVATIONS										PRE SLEEP		
BLU FD 7		ASTRO OBSERVATIONS								PRE SLEEP	SLEEP							POST SLEEP							
DAY/NIGHT	ORBIT	[Day/Night/Orbit bar]																							
CDR SLEEP		CDR PSR							CDR SLEEP							CDR PSR									
NOTES:																									
MET:007		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
RED FD 9	PRE SLEEP	SLEEP (7)							POST SLEEP				* GIOTTO FLYBY ASTRO OBSERVATIONS										FCS C/O PRE SLEEP		
BLU FD 8		ASTRO OBSERVATIONS								PRE SLEEP	SLEEP							POST SLEEP	FCS C/O						
DAY/NIGHT	ORBIT	[Day/Night/Orbit bar]																							
CDR SLEEP		CDR PSR							CDR SLEEP							CDR PSR									
NOTES:																									

RED BLU				FLIGHT STS 61-E				EDITION BASIC				PUB. DATE 11/22/85				
MET:008																
RED FD 10	PRE SLEEP	SLEEP					POST SLEEP	I M U	CABIN STOW	I D E P E R A C T	S L D E A C T	H F O I R E	DEORBIT PREP			
BLU FD 9810		ASTRO OBSERVATIONS					I S P T S O M	PRE SLEEP	SLEEP (6)			POST SLEEP	DEORBIT PREP		KSC LANDING 8/22/02	
DAY/NIGHT	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142
CDR SLEEP		COR PSR					COR SLEEP			COR PSR						
NOTES:	o PWR UP GRP B															

SUMMARY TIMELINE

# SUMMARY TIMELINE







GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
066:10:45 / 066:22:45	001:00:00 / 001:12:00	066:04:45 / 066:16:45	/ 066 CST	4.7	☉	MARCH 7, 1986	STS 61-E	BASIC	11/22/85				
CST : 066	5	6	7	8	9	10	11	12	13	14	15	16	
MET : 001	1	2	3	4	5	6	7	8	9	10	11	12	
STS	AUTO MNVR	AUTO MNVR	460 SPIT	IMU ALIGN	AUTO MNVR	RUTO MNVR	RUTO MNVR	MEAL	RUTO MNVR	RUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR
	460 SPIT	EXERCISE											
	IPS MNVR	IDOP	IDOP	IDOP	ILTSCH CNBL	IPSPLORE	IPSPLORE	IPSPLORE	IPSPLORE	IPSPLORE	IPSPLORE	IPSPLORE	IPSPLORE
PL	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS
DAY/NIGHT	[Shaded area indicating day/night cycle]												
ORBIT	17	18	19	20	21	22	23	24					
GSTON COVERAGE	-HAW -ACN -GDX -GDS -MIL -BDA -MLX -DKR	-YRR -GMM -HAW -GDS -MLX -MTI	-MLX -BDA -ACN -YRR -GMM -HAW -GDS -MLX	-GDX -MIL -MLX -ACN	-GDX	-GMM -HAW -AGO	-ACN	-GMM -HAW -AGO	-ACN	-GMM -HAW -AGO	-ACN	-GMM -HAW -AGO	-ACN
TDRS E M	[Timeline of TDRS events]												
ATTITUDE	CELESTIAL												
SLEEP	RED PSA												
H2O OPP	[Timeline of H2O opposition]												
	IDOP      ▲ IPS MNVR      ◊ DOORS      ◊ DOORS      ◊ DOORS      ◊ DOORS      ◊ DOORS ▲ IPS MNVR DSD 0460      ◊ DOORS      DSD 0460      ▲ IPS MNVR TOTAL BODY WATER      TOTAL BODY WATER												

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
066:22:45/ 067:10:45	001:12:00/ 002:00:00	066:16:45/ 067:04:45	/ 066 CST	6.7		MARCH 7, 1986	STS 61-E	BASIC	11/22/85
CST: 066	17	18	19	20	21	22	23	24	25
MET: 001	12	13	14	15	16	17	18	19	20
	RED FD 3						CST:067		
									BLUE FD 3
STS	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV
PL	H/O								
DRY/NIGHT									
ORBIT	25	26	27	28	29	30	31	32	
GSTON COVERAGE	-AGO -ACN -DKR	-GWM -AGD -DKR -ACN	-DKR -MAD	-DKR -MAD	-MLX -MIL -BDA -DKR -MAD	-MIL -MLX -BDA -DKR -MAD	-MLX -MIL -BDA -DKR	-MLX -MIL -BDA -DKR	-BDA -MLX -DKR -YAR -CAN
TDRS									
ATTITUDE	HALLEY	CELESTIAL	CELESTIAL	CELESTIAL	HALLEY	CELESTIAL	CELESTIAL	CELESTIAL	
SLEEP	BLUE PSA	BLUE SLEEP	BLUE SLEEP	BLUE SLEEP	BLUE PSA	BLUE PSA	RED PSA	RED PSA	
H2O OPP									
	H/O BLUE TO RED				◊ CELEST OBS				◊ H/O RED TO BLUE 4 IOOP
	IDIN								





GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
068:10:45 / 068:22:45	003:00:00 / 003:12:00	068:04:45 / 068:16:45	/ 068 CST	12.3		MARCH 9, 1986	STS 61-E	BASIC	11/22/85	
CST : 068										
MET : 003										
BLUE FD 4										
RED FD 5										
STS	460 SPLIT	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	MEAL	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR
PL	HALLEY OBS	CELEST OBS	CELEST OBS	P/TVO3 ACT	HALLEY OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS
DAY/NIGHT	ORBIT									
ORBIT										
GSTON COVERAGE										
TDRS E W										
ATTITUDE										
SLEEP										
H2O OPP										
<p style="text-align: center;">◇ DOORS   ◇ DOORS   ◇ DOORS   ◇ DOORS   ◇ DOORS   ◇ DOORS   ◇ DOORS</p> <p style="text-align: center;">▲ IPS MNVR</p> <p>■ DSO 0460 TOTAL BODY WATER   ■ DSO 0460 TOTAL BODY WATER</p> <p style="text-align: right;">● N/O BLUE TO RED</p> <p style="text-align: right;">○ AUTO MNVR</p>										

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
068:22:45 / 069:10:45	003:12:00 / 004:00:00	068:16:45 / 069:04:45	/ 068 CST	14.0		MARCH 9, 1986	STS 61-E	BASIC	11/22/85				
CST:068	RED FD 5	18	19	20	21	22	23	CST:069	2	3	BLUE FD 5		
MET:003	12	13	14	15	16	17	18	19	20	21	22	23	0
STS	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV	AUTO MNRV
					MEAL			P/TV19 SETUP		SSIP METALS		FLTR IFM	EXERCISES
	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV	IPSS MNRV
PL	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS
DAY/NIGHT													
ORBIT	56	57	58	59	60	61	62	63					
GSTDN COVERAGE	-GNN -AGD -DKR		-DKR -MAD	-MAD -YAR -CAN	-MAD -YAR -CAN	-MAD -YAR -CAN	-MAD -YAR -CAN	-BDA -DKR -YAR -MLX -ACN		-GDX -GDS -MIL -MLX -BDA -DKR	-YAR -HAM -GDS -GDX -MIL -NTI		-YAR -HAM -MLX -ACN
TDRS E M													
ATTITUDE	CELESTIAL HALLEY		CELESTIAL		CELESTIAL		CELESTIAL		CELESTIAL		CELESTIAL		CELESTIAL
SLEEP	BLUE PSA		BLUE SLEEP		BLUE SLEEP		BLUE SLEEP		BLUE PSA		BLUE PSA		RED PSA
H2O OPP													
	CELEST OBS												● FILTER CLEANING
													● N/O RED TO BLUE

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
069:10:45 / 069:22:45	004:00:00 / 004:12:00	069:04:45 / 069:16:45	/ 069 CST	15.7	●	MARCH 10, 1986	STS 61-E	BASIC	11/22/85				
CST :069	5	6	7	8	9	10	11	12	13	14	15	16	
MET :004	0	1	2	3	4	5	6	7	8	9	10	11	12
STS	AUTO M NVR	AUTO M NVR	AUTO M NVR	M E A L	AUTO M NVR	AUTO M NVR	AUTO M NVR	AUTO M NVR	AUTO M NVR	AUTO M NVR	AUTO M NVR	AUTO M NVR	
EXERCISE													
PL	CELEST OBS	CELEST OBS	HALLEY OBS	HALLEY OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	
DRY/NIGHT													
DRBIT	64	65	66	67	68	69	70	71					
GSTON COVERAGE	-HAM -GDS -GDX -MIL -MLX -BDA	-YAR -GMM -HAM -GDS -MLX	-ACN -GMM -HAM -GDX -GDS	-GMM -HAM -GDX -GDS	-AGO -AGO	-GMM -HAM -AGO -ACN	-HAM -AGO -ACN	-GMM -AGO -ACN	-GMM -AGO -ACN	-GMM -AGO -ACN	-GMM -AGO -ACN	-GMM -AGO -ACN	
TDRS	[Timeline of TDRS events]												
ATTITUDE	[Timeline of ATTITUDE: CELESTIAL, HALLEY]												
SLEEP	[Timeline of SLEEP: RED PSA, RED SLEEP, RED PSA, BLUE PSA]												
H2O OPP	[Timeline of H2O OPP: DOORS, CELEST OBS, H/WO BLUE TO RED]												







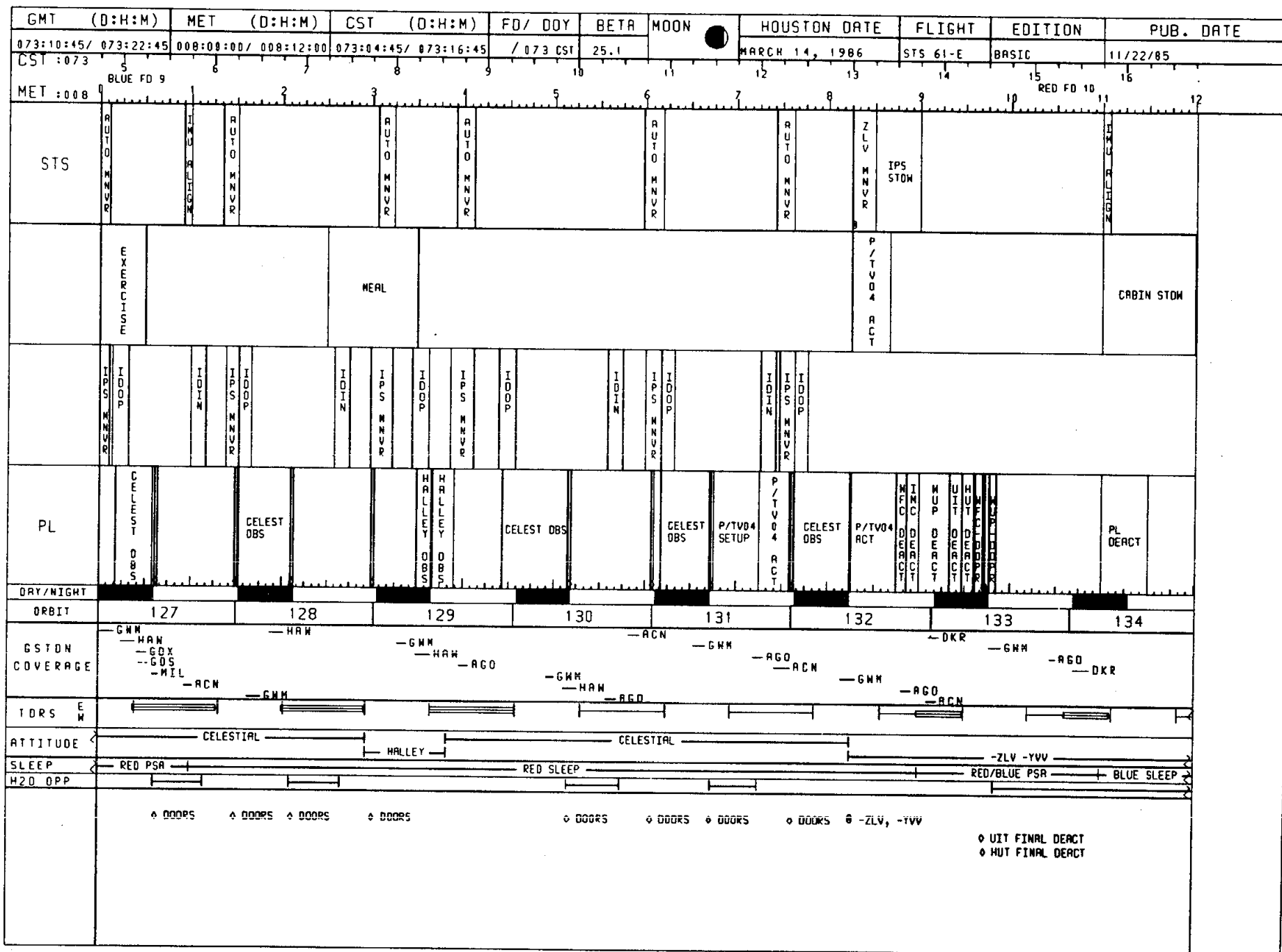


GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
071:10:45 / 071:22:45	006:00:00 / 006:12:00	071:04:45 / 071:16:45	/ 071 CST	21.4		MARCH 12, 1986	STS 61-E	BASIC	11/22/85	
CST : 071 5 6 7 8 9 10 11 12 13 14 15 16 MET : 006 0 BLUE FD 7 1 2 3 4 5 6 7 8 9 10 11 12 RED FD 8										
STS	AUTO MNRV		AUTO MNRV		MEAL		AUTO MNRV		AUTO MNRV	
EXERCISE			P/TV03 ACT							
PL	CELEST OBS		CELEST OBS		CELEST OBS		CELEST OBS		CELEST OBS	
DAY/NIGHT	95		96		97		98		99	
ORBIT	95		96		97		98		99	
GSTON COVERAGE	-ACN -YAR -MLX -ACN		-GMM -HAN		-GMM -HAN -AGO -ACN		-ACN -GMM -AGO -ACN -DKR -ACN		-GMM -AGO -ACN -DKR -GMM -AGO	
TDRS	E		E		E		E		E	
ATTITUDE	CELESTIAL		HALLEY		CELESTIAL		HALLEY		CELESTIAL	
SLEEP	RED PSA		RED SLEEP		RED PSA		RED PSA		BLUE PSA	
H2O OPP	♦ DOORS ♦ DOORS ♦ DOORS		♦ DOORS ♦ DOORS ♦ DOORS		♦ DOORS ♦ DOORS ♦ DOORS		♦ DOORS ♦ DOORS ♦ DOORS		♦ N/O BLUE TO RED	





GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
072:22:45 / 073:10:45	007:12:00 / 008:00:00	072:16:45 / 073:04:45	/ 072 CST	24.4		MARCH 13, 1986	STS 61-E	BASIC	11/22/85				
CST:072	RED FD 9					CST:073		BLUE FD 9					
MET:007	12	13	14	15	16	17	18	19	20	21	22	23	24
STS	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR	AUTO MNVR
				MEAL							FCS C/O		EXERCISE
	IPPS MNVR	IPPS MNVR	IPPS MNVR	IPPS MNVR	IPPS MNVR	IPPS MNVR	IPPS MNVR	IPPS MNVR	IPPS MNVR	IPPS MNVR	P/TV12 SETUP	P/TV12 ACT	IPPS MNVR
PL	HALLEY OBS	CELEST OBS	HALLEY OBS	HALLEY OBS	CELEST OBS	HALLEY OBS	CELEST OBS	HALLEY OBS	CELEST OBS	HALLEY OBS	HALLEY OBS	HALLEY OBS	CELEST OBS
DAY/NIGHT													
ORBIT	119	120	121	122	123	124	125	126					
GSTDN COVERAGE	DKR MAD	-DKR -MAD	-BDR -DKR -MAD	-BDR -DKR -MAD	-BDR -DKR -MAD	-YAR -CAN	-MIL -DLX -DKR -ACN	-GDX -GDS -MIL -DLX -BDR -DKR -ACN	-YAR -GWM -BDR -ACN	-HAM -GDS -GDX -MIL -DLX			
TDRS													
ATTITUDE	CELESTIAL	HALLEY	CELESTIAL	HALLEY	CELESTIAL	HALLEY	CELESTIAL	HALLEY	CELESTIAL	HALLEY	CELESTIAL	HALLEY	CELESTIAL
SLEEP			BLUE SLEEP				BLUE PSA						RED PSA
H2O OPP	AUTO MNVR	▲ IPS MNVR											● APU HTR ACT
	▲ IPS MNVR												● W/O RED TO BLUE



GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
073:22:45 / 074:10:45	008:12:00 / 009:00:00	073:16:45 / 074:04:45	/ 073 CST	25.7		MARCH 14, 1986	STS 61-E	BASIC	11/22/85	
CST : 073 17 18 19 20 21 22 23 0 1 2 3 4 MET : 008 12 13 14 15 16 17 18 19 20 21 22 23 0										
STS		MEAL	KU-BD STOM	RFCSRE HOT	XSI MNVVR		DEORBIT PREP			
	CABIN STOW		IPS DEACT	SL DEACTIVATION		PLBD OPS	DEORBIT BURN	KSC LANDING	8/22:03	
PL										
DAY/NIGHT										
ORBIT	135	136	137	138	139	140	141	142		
GSTON COVERAGE	-DKR -MAD	-CAN	-CAN -MIL -MLX -BDA -DKR -MAD	-CAN -MLX -MIL -BDA -DKR	-CAN -MLX -MIL -BDA -DKR	-GDX -GDS -MIL -MLX -BDA -DKR	-HAN -ACN -GDS -GDX -MIL -BDA -MLX -DKR	-YAR -GMM -HAN -GDS -GDX -ATI	-NLX -BDA -ACN -YAR -GMM -HAN -GDS -GDX	-GDX -MIL -MLX -ACN
TDRS										
ATTITUDE										
SLEEP										
H2O OPP										
	o PMR UP GRP B									

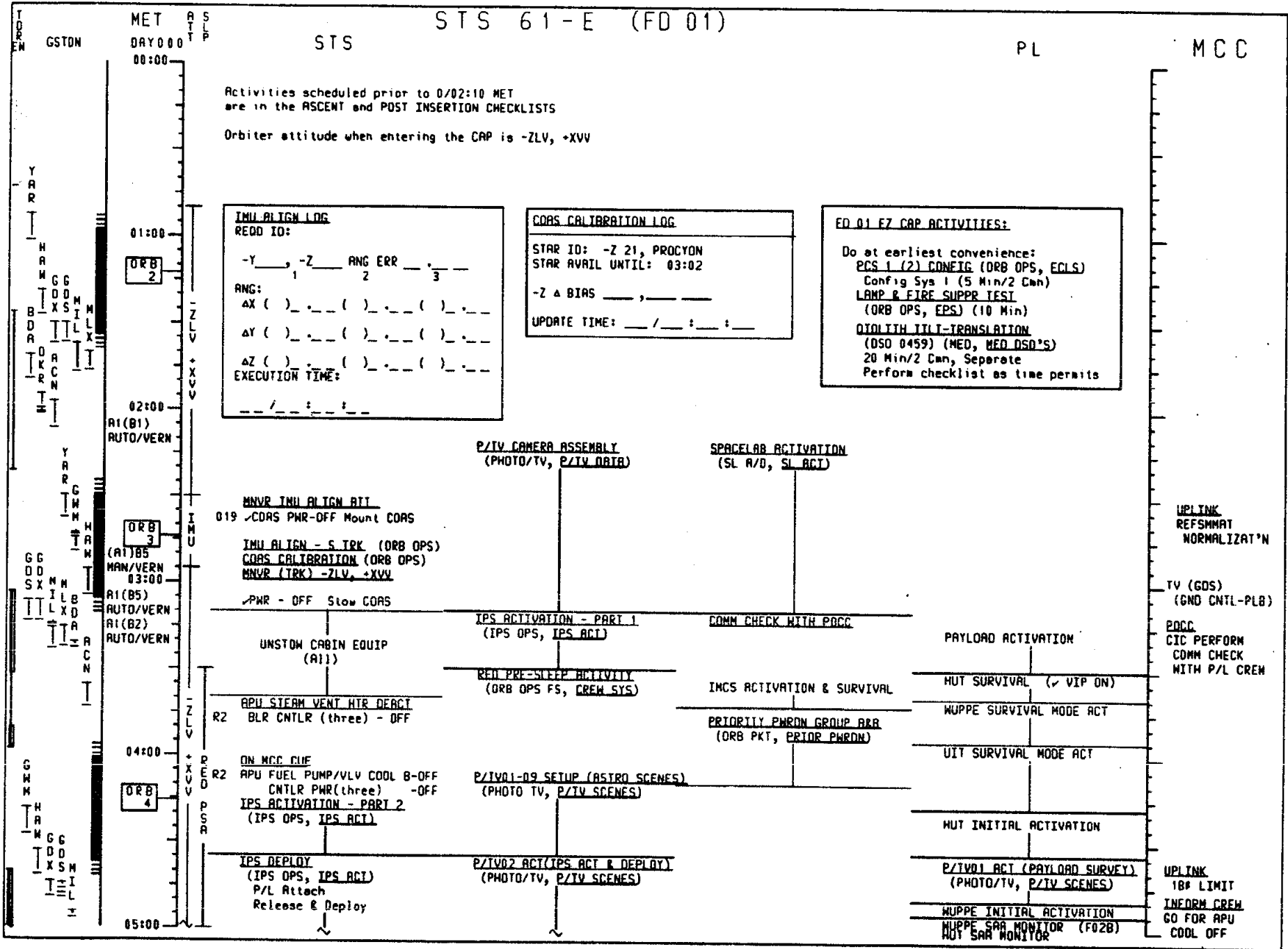


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DETAILED TIMELINE

DETAILED  
TIMELINE

# DETAILED TIMELINE



YARR

HARR

GGDS

BDR

OKR

NT

YARR

GGDS

IL

LBDR

IL

ACN

IL

GGDS

HARR

GGDS

IL

IL

01:00

ORB 2

02:00

ORB 3

03:00

ORB 4

04:00

05:00

ZLV

+XVV

IMU

ZLV

+XVV

REDD

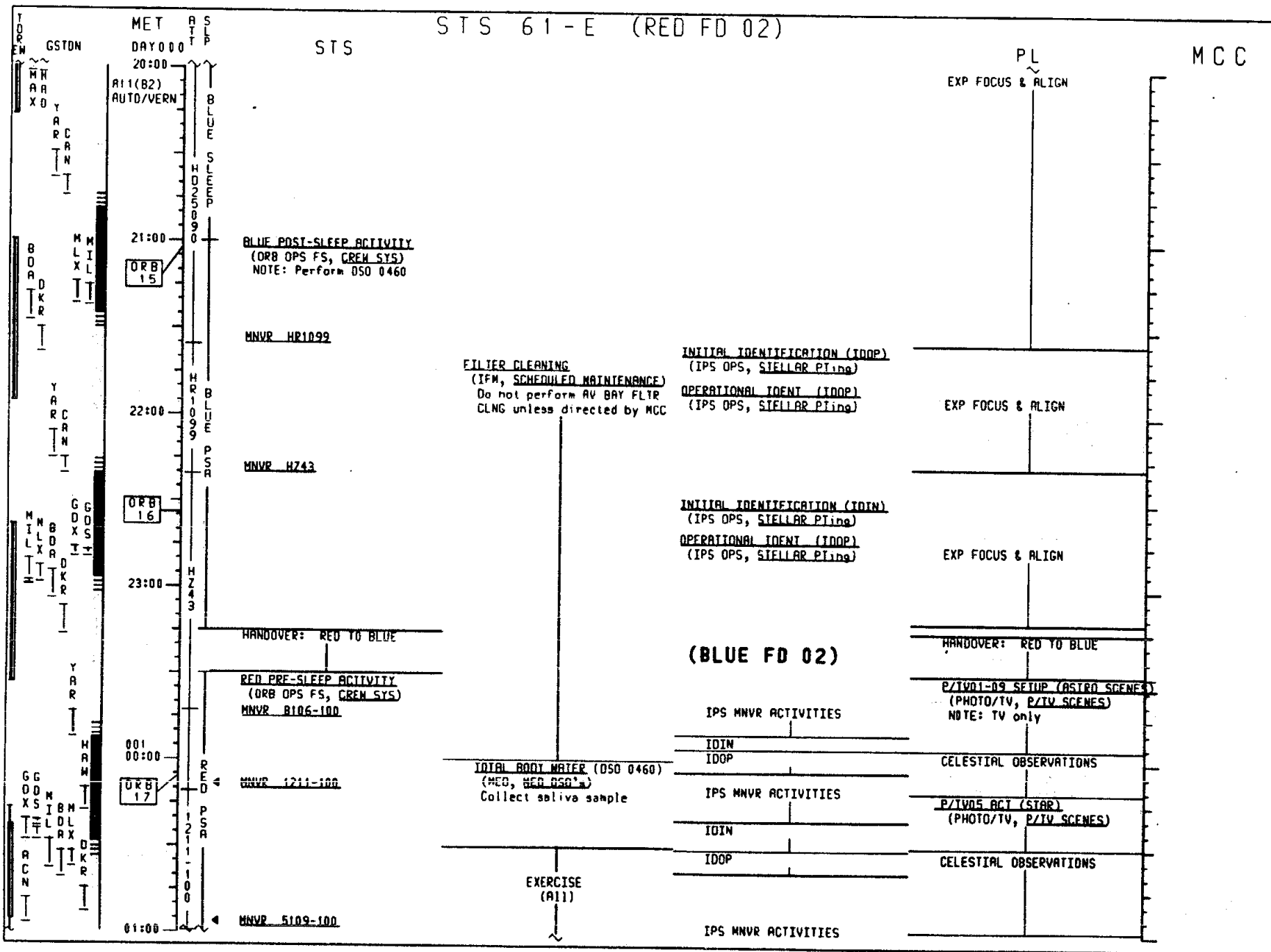
P/S





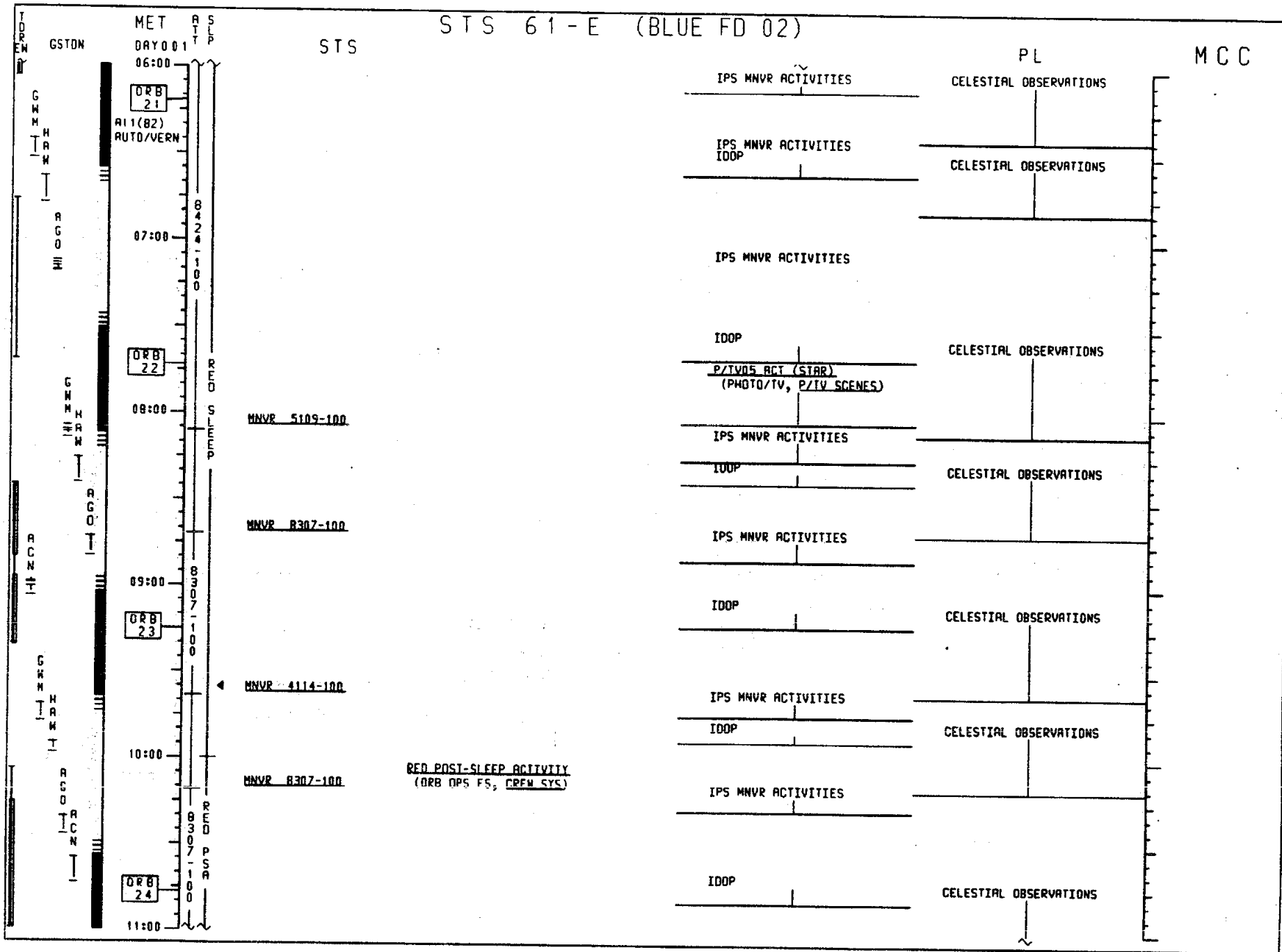


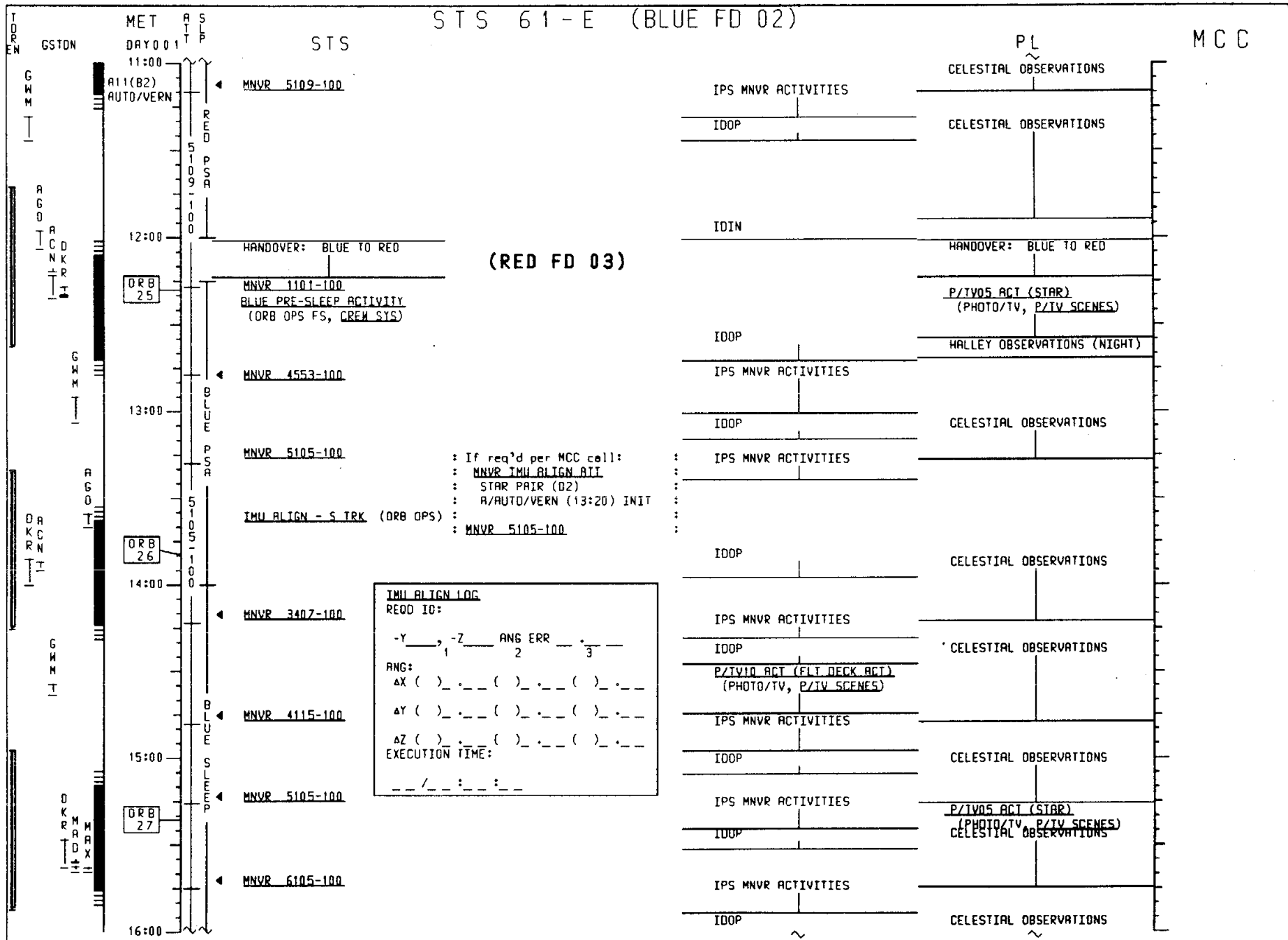
STS 61-E (RED FD 02)





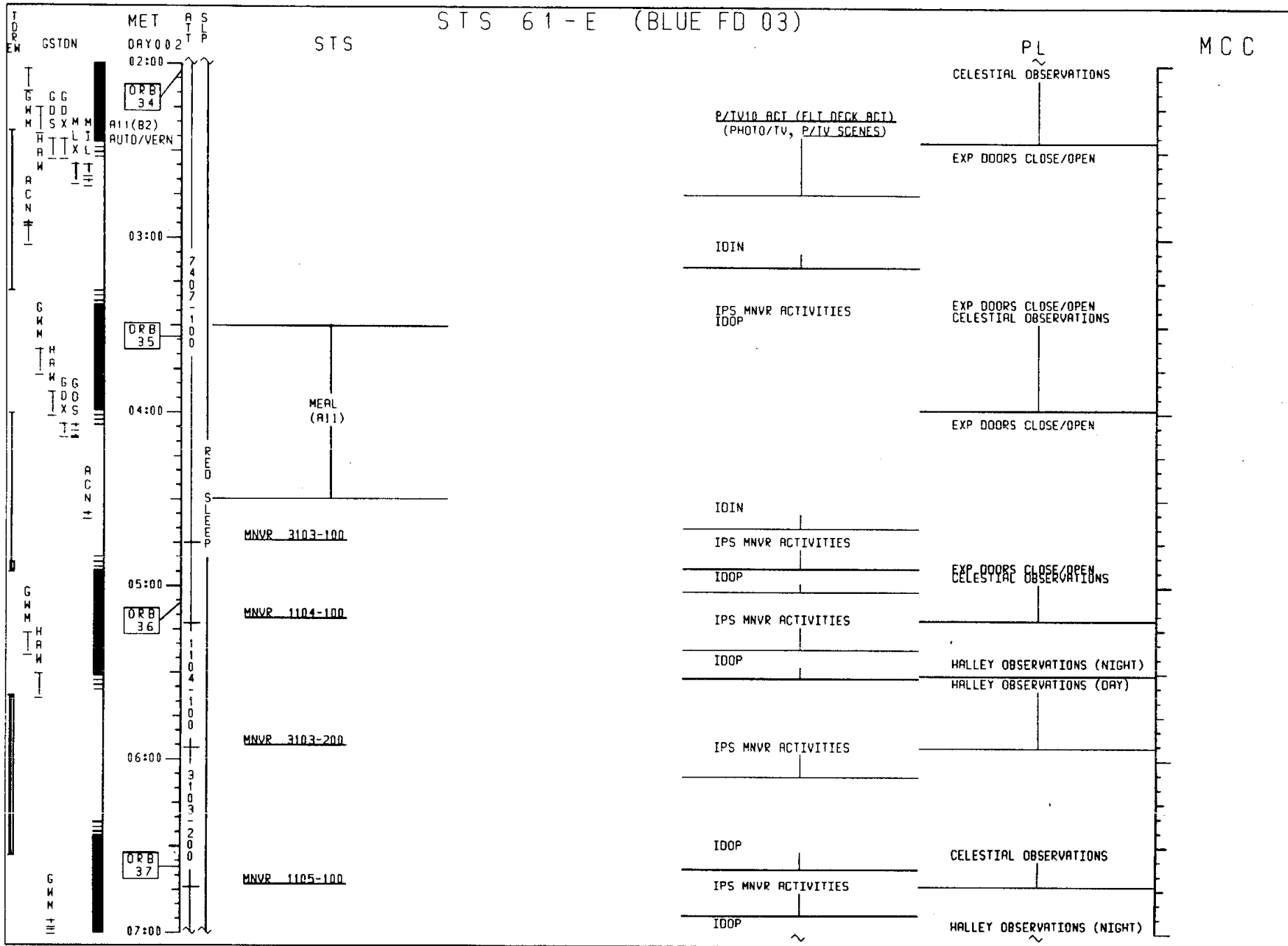


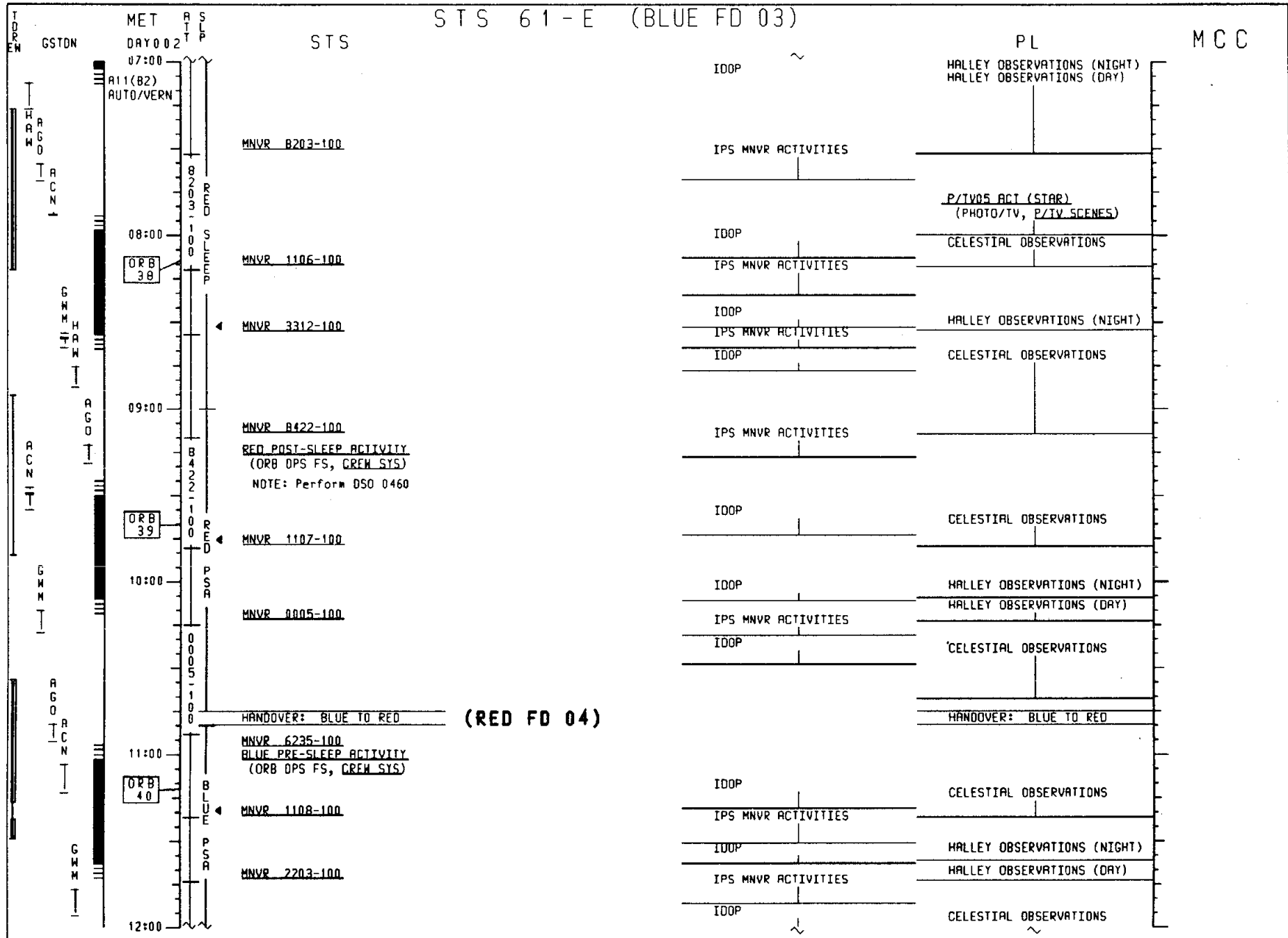












STS 61-E (RED FD 04)

PL

MCC

MET DAY 002  
 12:00  
 13:00  
 14:00  
 15:00  
 16:00  
 17:00

TOTAL BODY WATER (DSD 0460)  
 (MED, MED\_DSD's)  
 Collect saline sample

MNVR 6235-100

: If req'd per MCC call:  
 : MNVR IMU ALIGN ATJ  
 : STAR PAIR (01)  
 : A/AUTO/VERN (12:25) INIT  
 : MNVR 1109-100

IMU ALIGN - S TRK (DRB OPS)

MNVR 1109-100

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

MNVR 0002-100

MNVR 9102-100

TOTAL BODY WATER (DSD 0460)  
 (MED, MED\_DSD's)  
 Collect saline sample

MNVR 1110-100

MNVR 0001-100

MNVR 8422-100

MNVR 1111-100

MNVR 8102-100

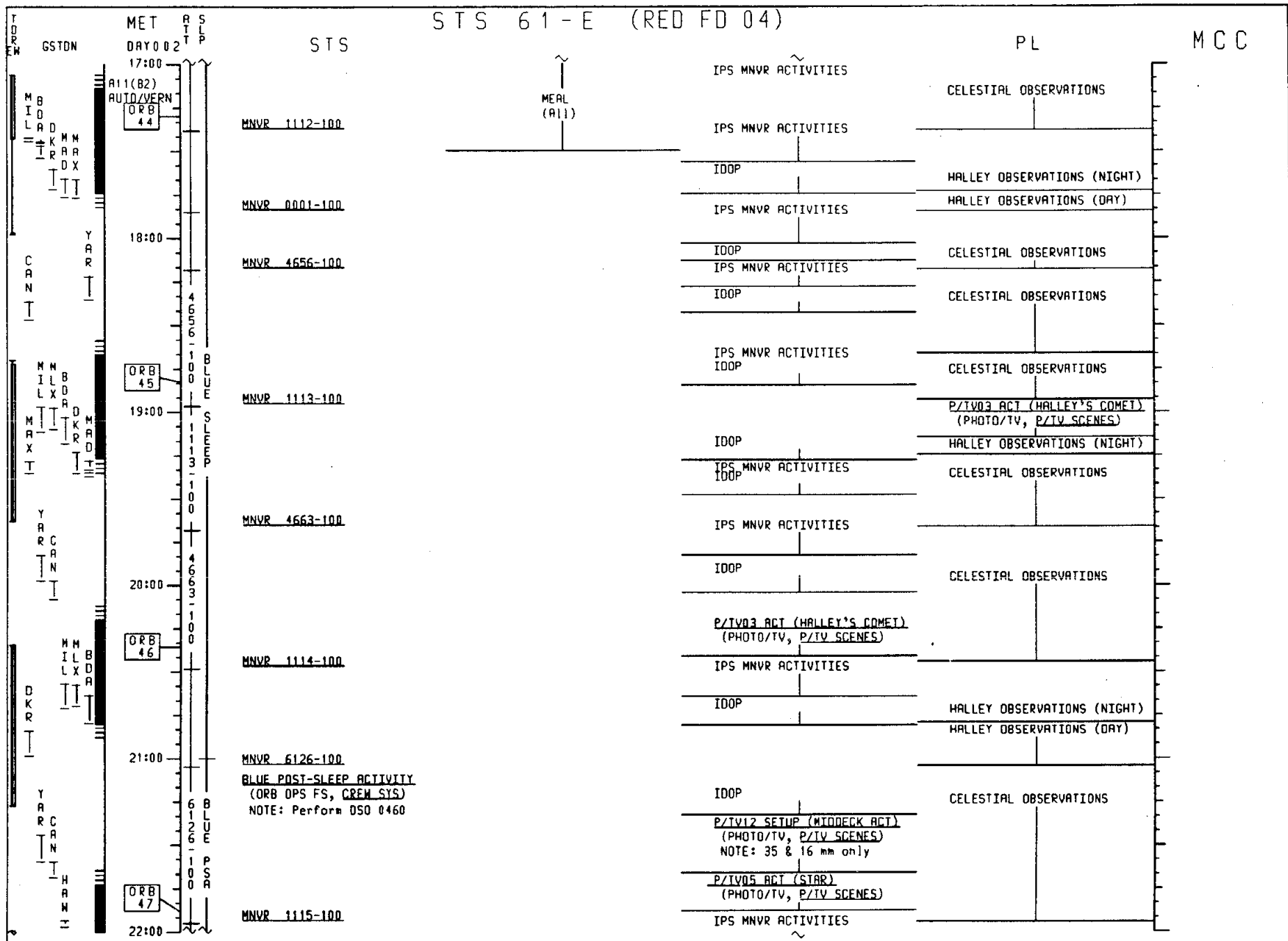
MNVR 4301-100

MEAL (All)

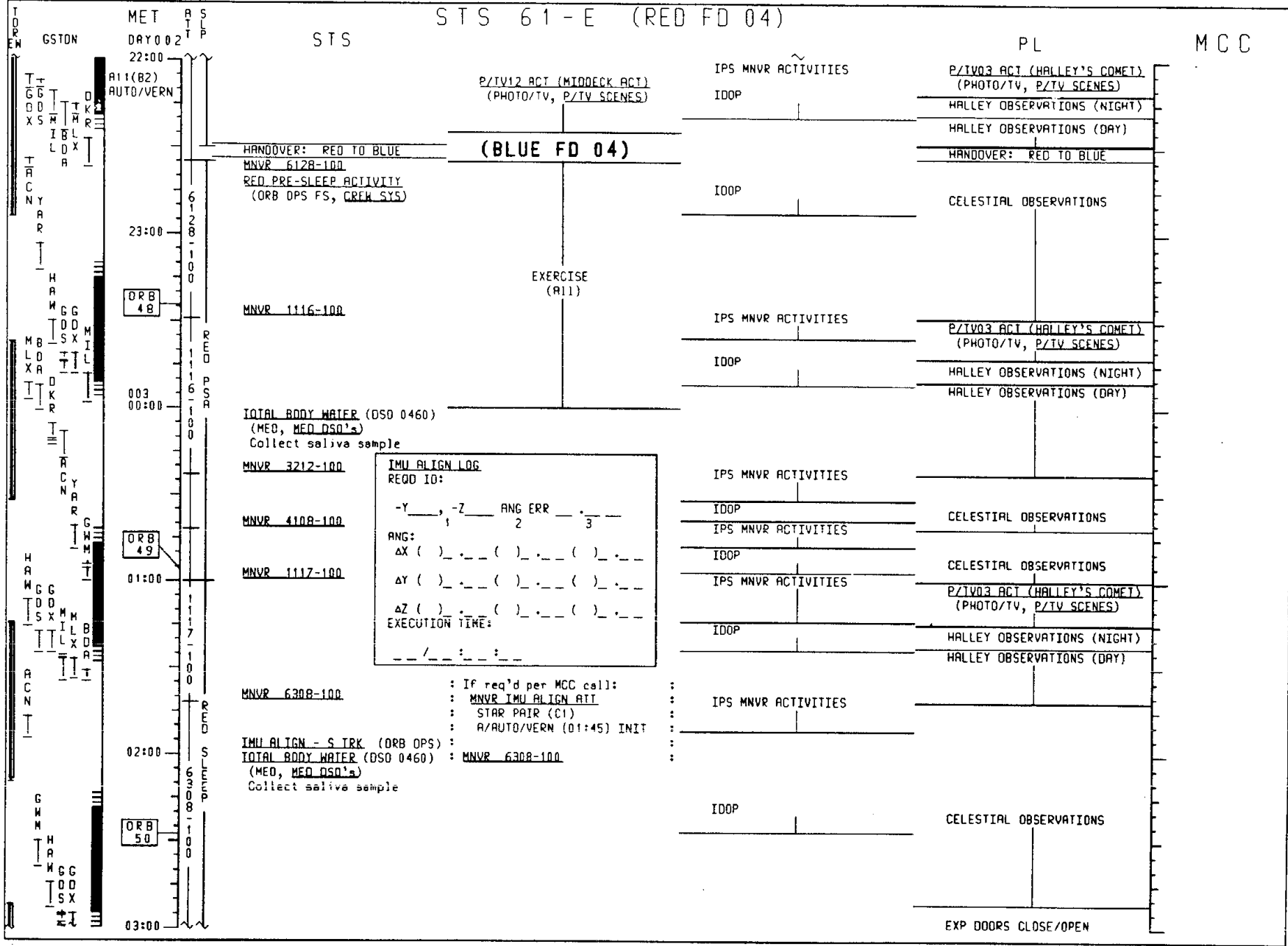
IDOP  
 IPS MNVR ACTIVITIES  
 IPS MNVR ACTIVITIES  
 P/TVA5 ACT (STAR)  
 (PHOTO/TV, P/TV SCENES)  
 IDOP  
 IPS MNVR ACTIVITIES  
 IDOP  
 IPS MNVR ACTIVITIES  
 IDOP  
 IPS MNVR ACTIVITIES  
 IDOP  
 IPS MNVR ACTIVITIES  
 IDOP  
 HALLEY OBSERVATIONS (NIGHT)  
 HALLEY OBSERVATIONS (DAY)  
 IPS MNVR ACTIVITIES  
 IDOP  
 IPS MNVR ACTIVITIES  
 IDOP  
 IPS MNVR ACTIVITIES  
 IDOP  
 HALLEY OBSERVATIONS (NIGHT)  
 HALLEY OBSERVATIONS (DAY)  
 IPS MNVR ACTIVITIES  
 IDOP  
 IPS MNVR ACTIVITIES  
 IDOP  
 HALLEY OBSERVATIONS (NIGHT)  
 HALLEY OBSERVATIONS (DAY)  
 IDOP  
 IPS MNVR ACTIVITIES

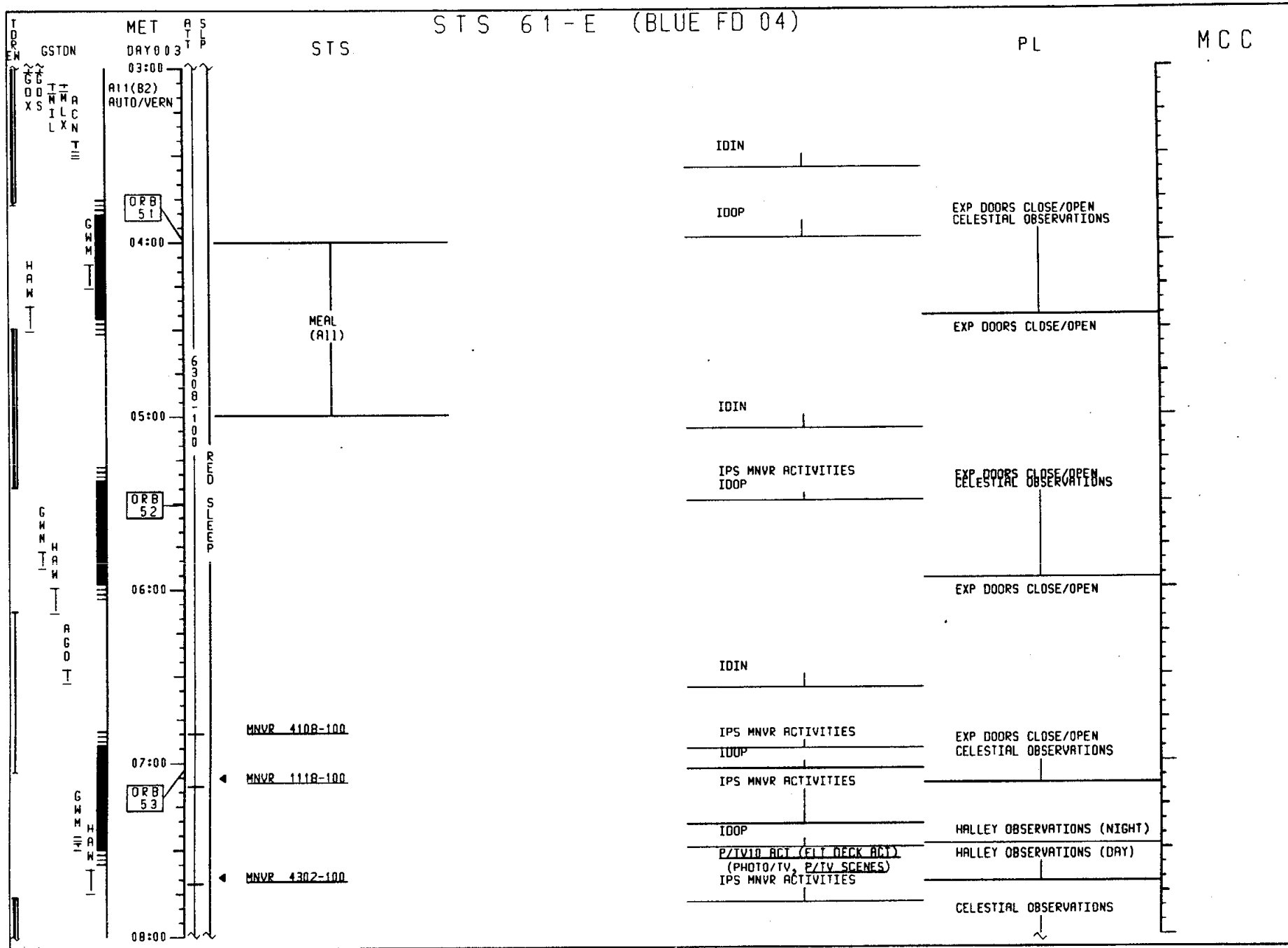
CELESTIAL OBSERVATIONS  
 CELESTIAL OBSERVATIONS  
 CELESTIAL OBSERVATIONS  
 CELESTIAL OBSERVATIONS  
 HALLEY OBSERVATIONS (NIGHT)  
 HALLEY OBSERVATIONS (DAY)  
 CELESTIAL OBSERVATIONS  
 CELESTIAL OBSERVATIONS  
 HALLEY OBSERVATIONS (NIGHT)  
 HALLEY OBSERVATIONS (DAY)  
 CELESTIAL OBSERVATIONS  
 CELESTIAL OBSERVATIONS  
 HALLEY OBSERVATIONS (NIGHT)  
 HALLEY OBSERVATIONS (DAY)  
 CELESTIAL OBSERVATIONS  
 CELESTIAL OBSERVATIONS  
 HALLEY OBSERVATIONS (NIGHT)  
 HALLEY OBSERVATIONS (DAY)  
 CELESTIAL OBSERVATIONS

AGG  
 TRACK  
 GMM  
 AGG  
 MAD  
 D  
 K  
 R  
 A  
 A  
 O  
 X  
 Y  
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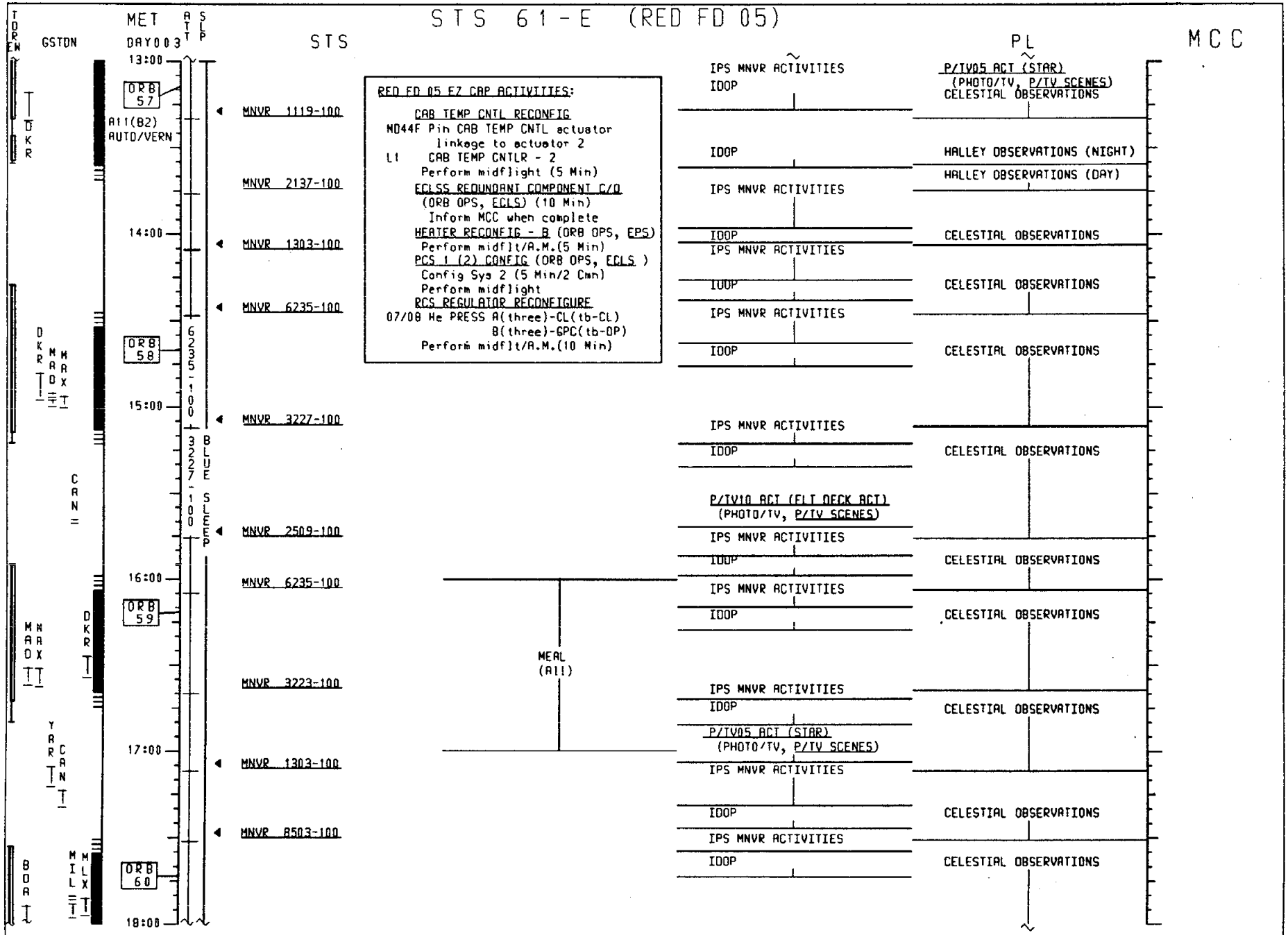


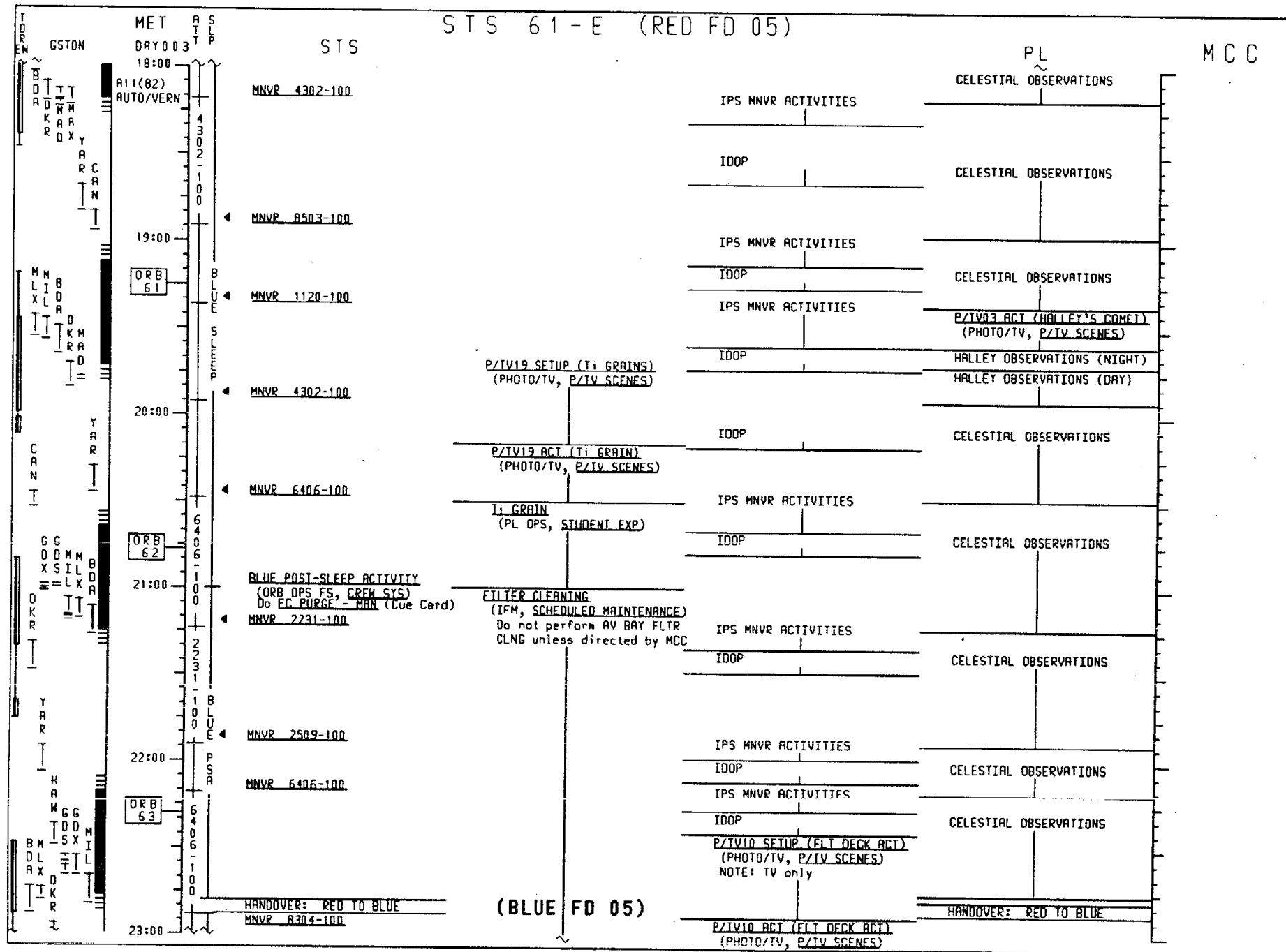


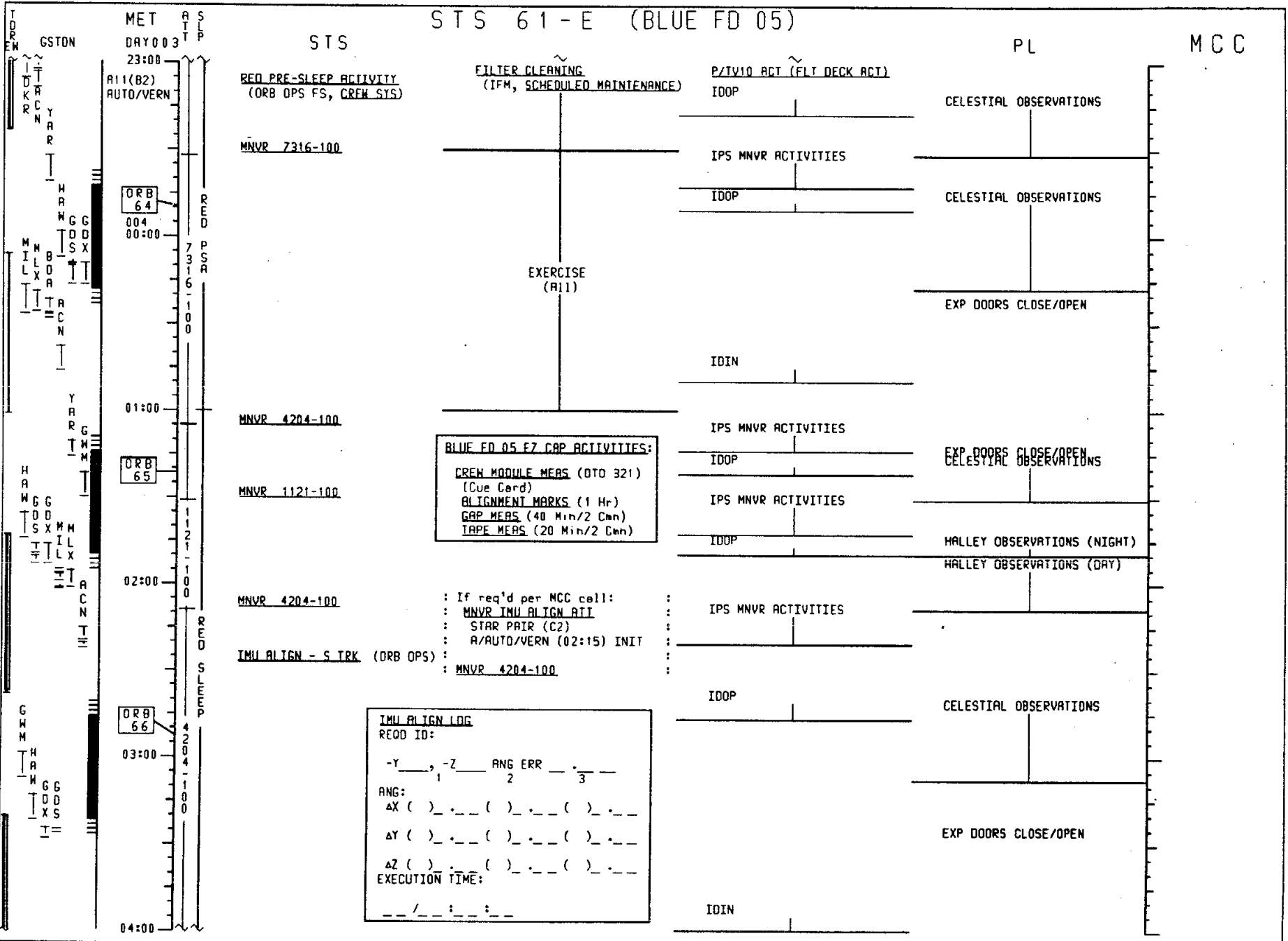












RED PRE-SLEEP ACTIVITY  
(ORB OPS FS, CREW SYS)

FILTER CLEANING  
(IFM, SCHEDULED MAINTENANCE)

P/TV10 ACT (FLY DECK ACT)  
IDOP

CELESTIAL OBSERVATIONS

MNVR 7316-100

IPS MNVR ACTIVITIES

CELESTIAL OBSERVATIONS

EXERCISE  
(A11)

IDOP

EXP DOORS CLOSE/OPEN

IDIN

MNVR 4204-100

IPS MNVR ACTIVITIES

EXP DOORS CLOSE/OPEN  
CELESTIAL OBSERVATIONS

BLUE FD 05 EZ CAP ACTIVITIES:  
CREW MODULE MEAS (OTO 321)  
(Cue Card)  
ALIGNMENT MARKS (1 Hr)  
GAP MEAS (40 Min/2 Cmn)  
TAPE MEAS (20 Min/2 Cmn)

IDOP

IPS MNVR ACTIVITIES

MNVR 1121-100

IDOP

HALLEY OBSERVATIONS (NIGHT)  
HALLEY OBSERVATIONS (DAY)

MNVR 4204-100

: If req'd per MCC cell:  
: MNVR IMU ALIGN ATT  
: STAR PAIR (C2)  
: A/AUTO/VERN (02:15) INIT  
: MNVR 4204-100

IPS MNVR ACTIVITIES

IMU ALIGN - S TRK (ORB OPS)

IDOP

CELESTIAL OBSERVATIONS

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

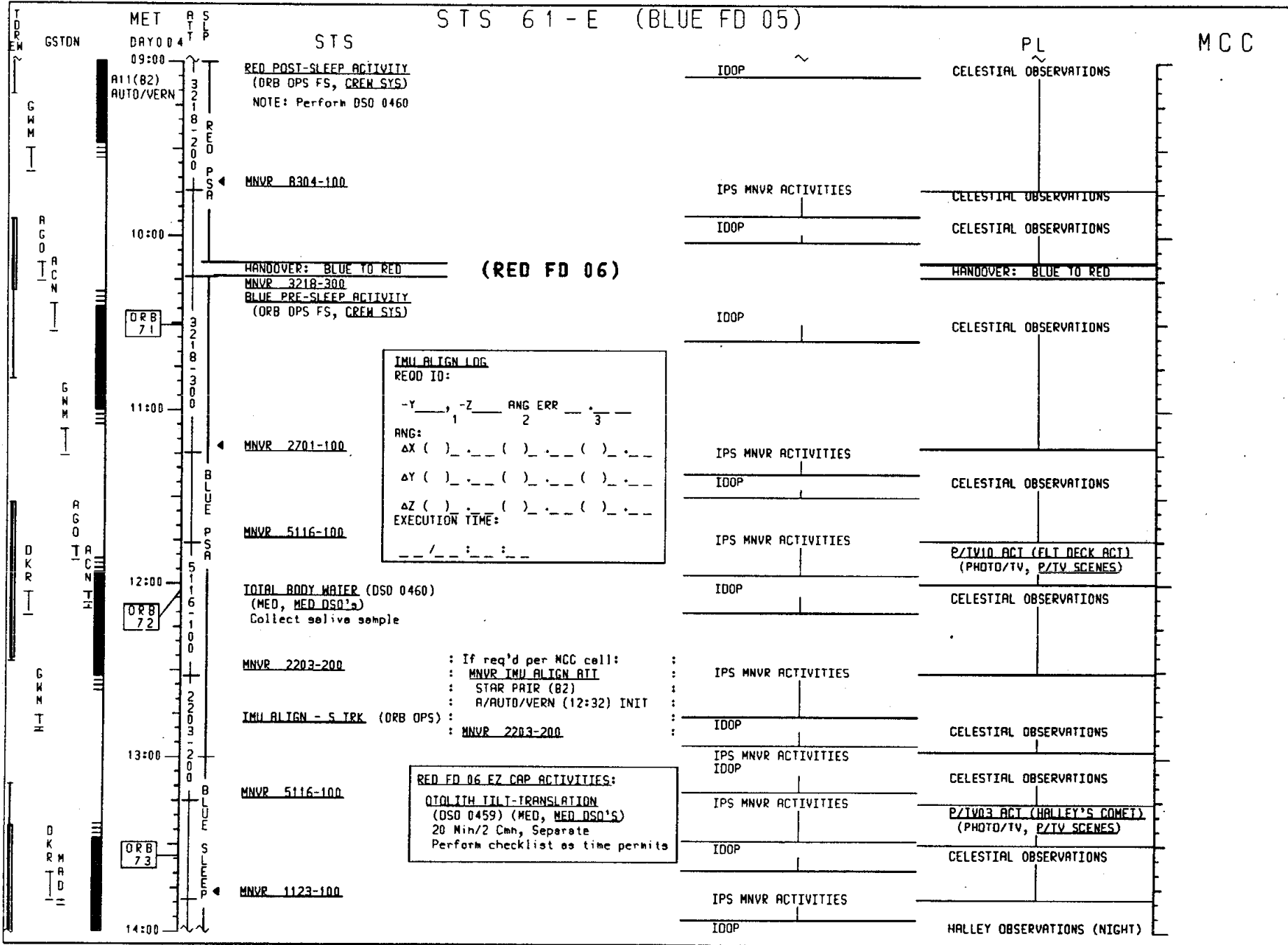
EXP DOORS CLOSE/OPEN

IDIN

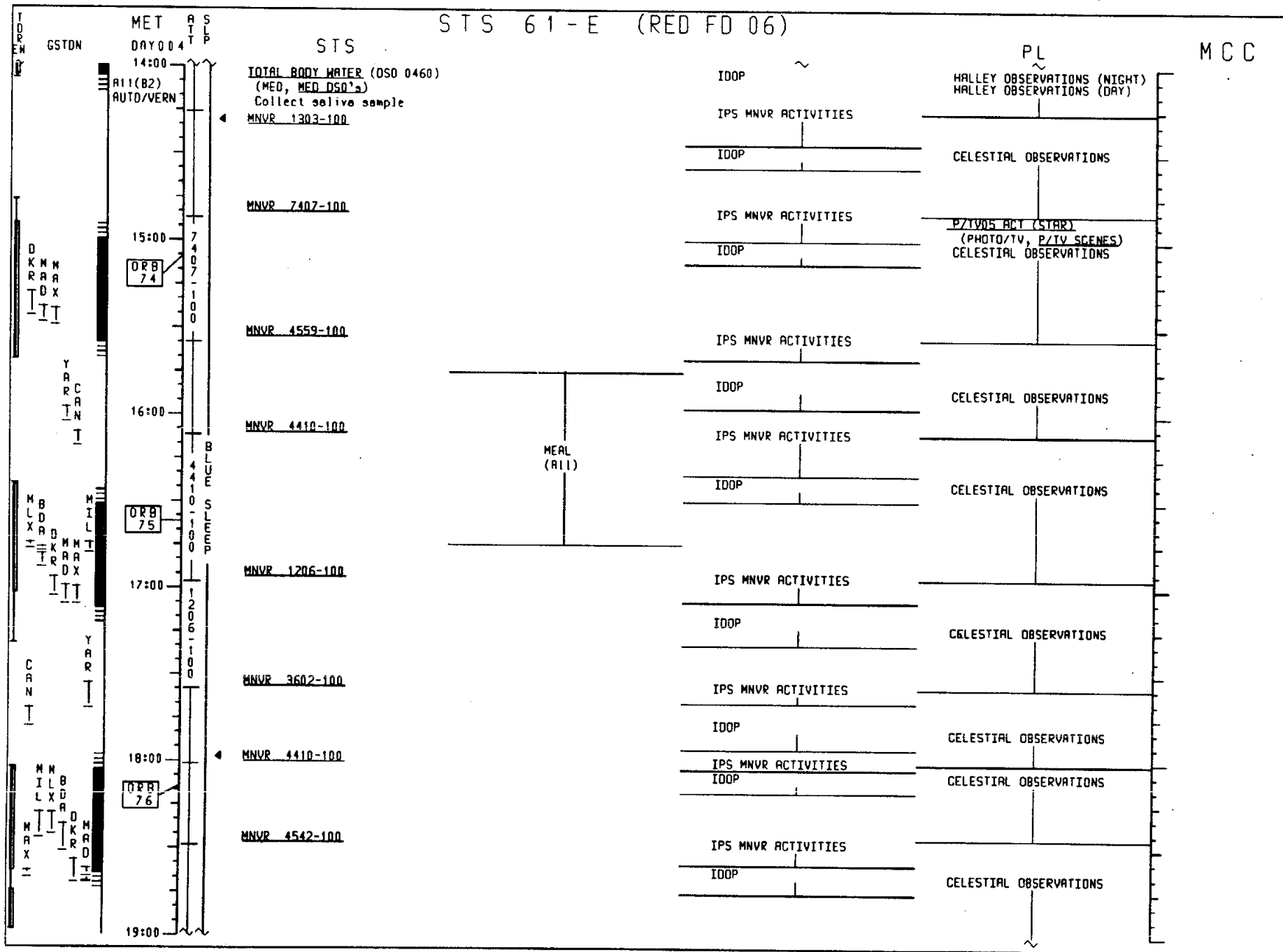


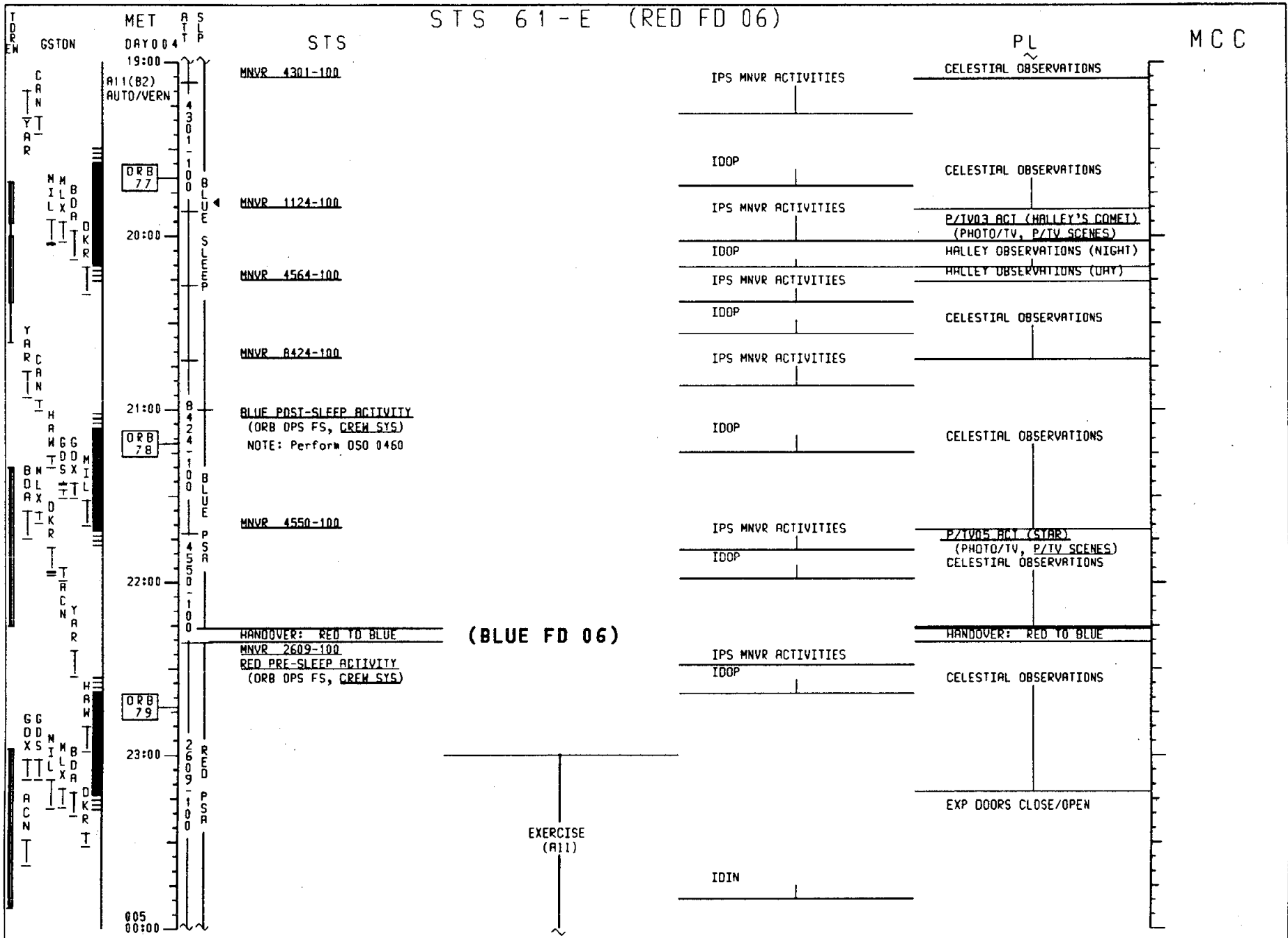
# STS 61-E (BLUE FD 05)

MCC

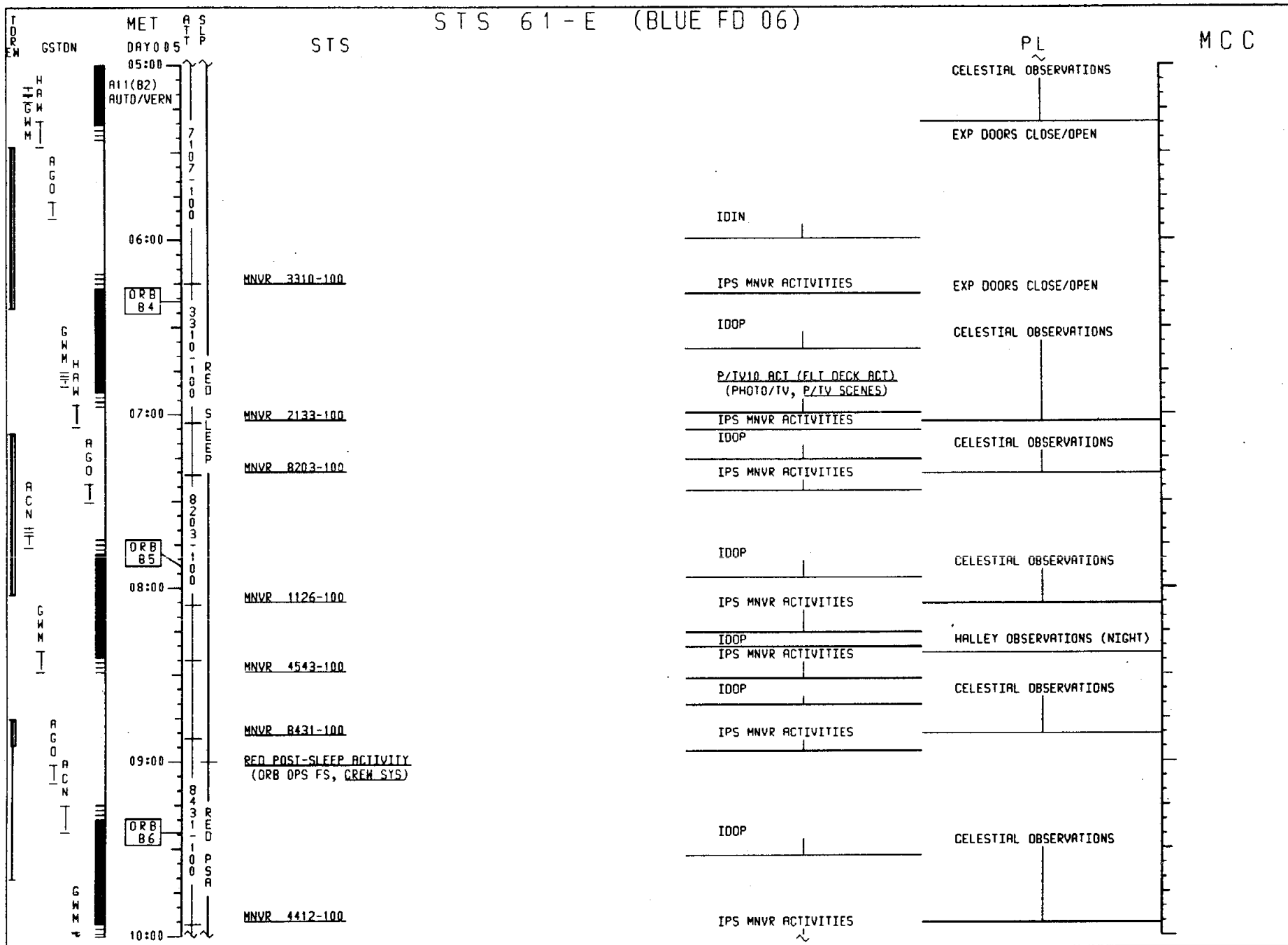




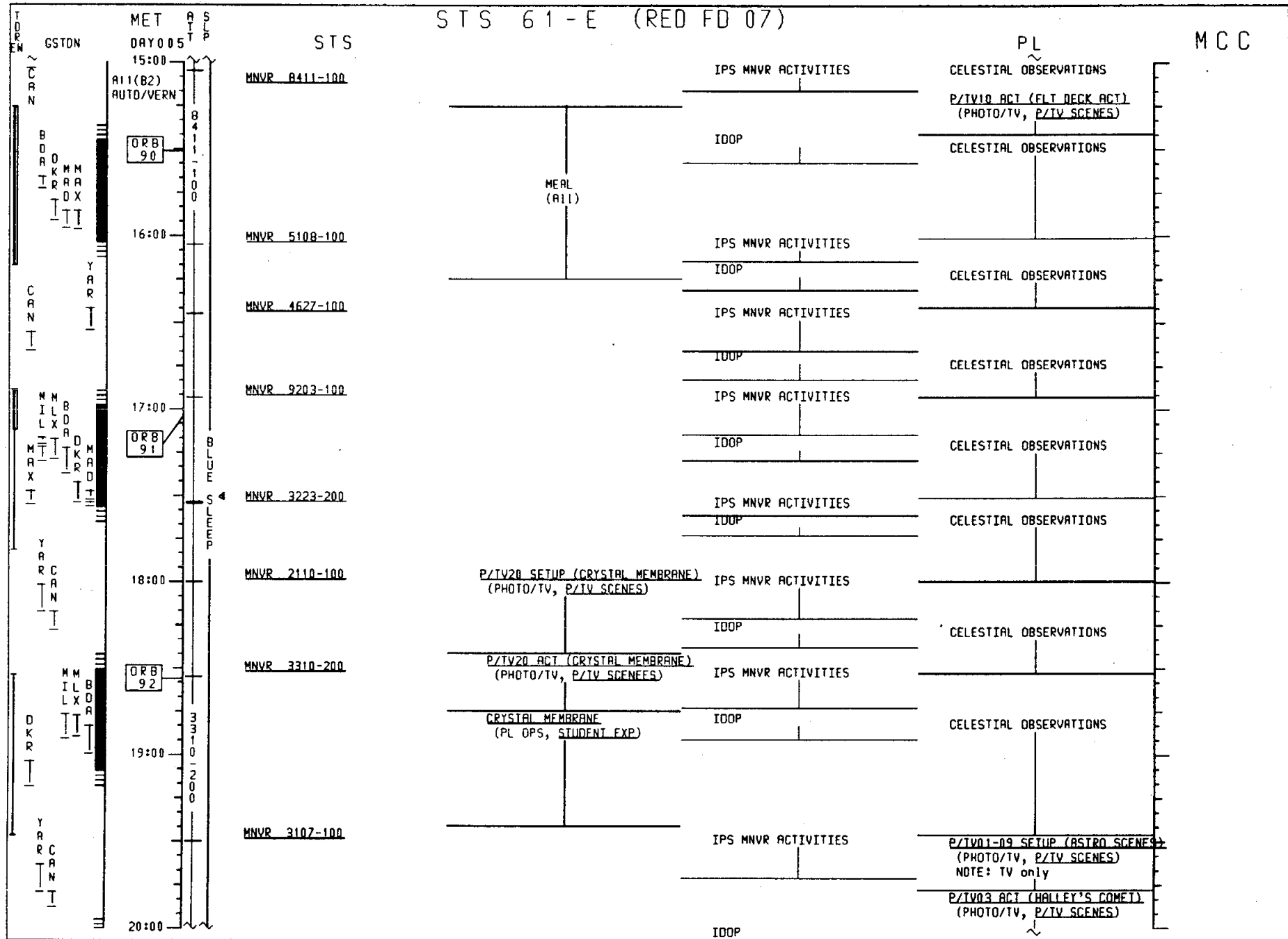


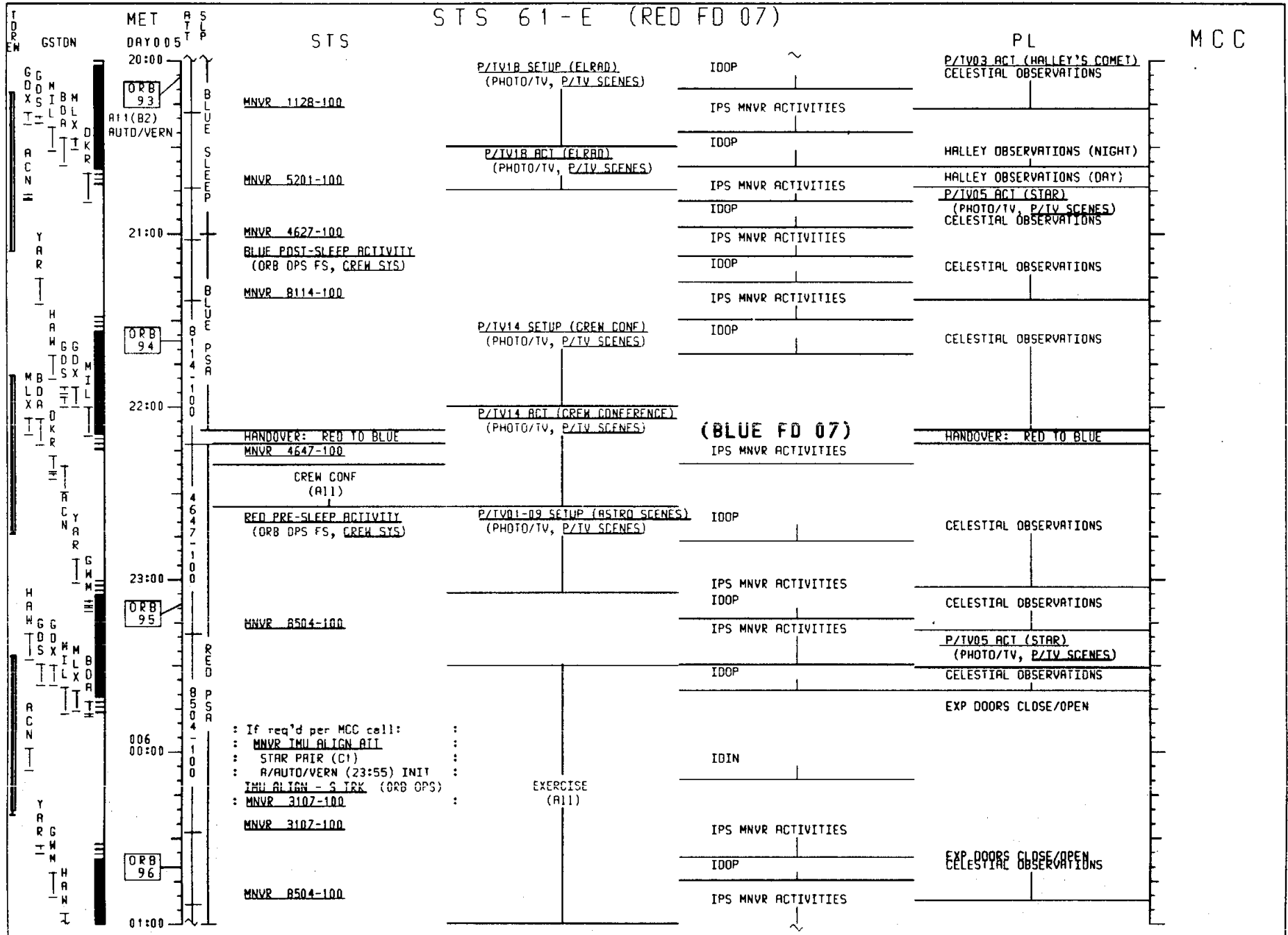




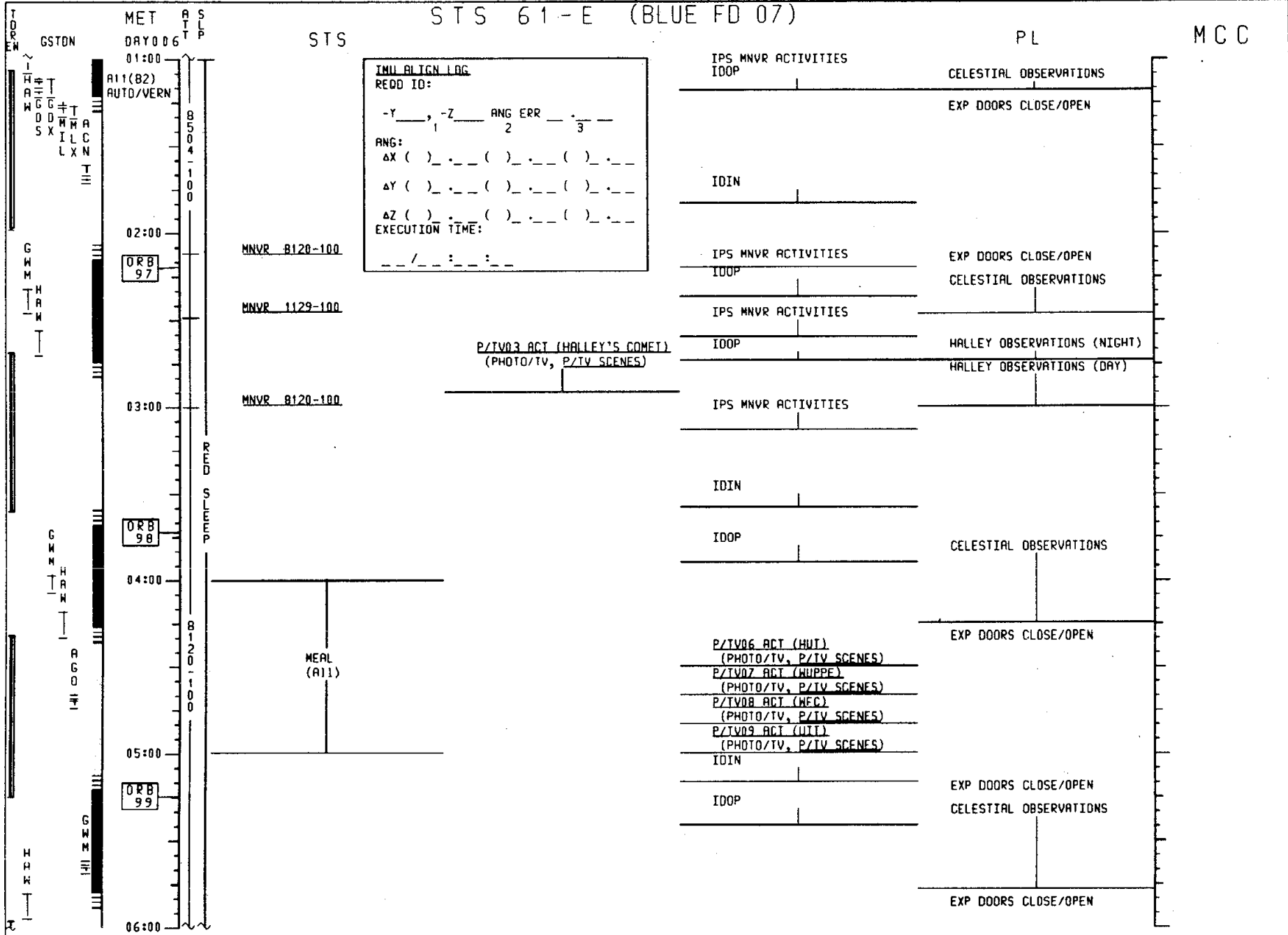








# STS 61-E (BLUE FD 07)



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

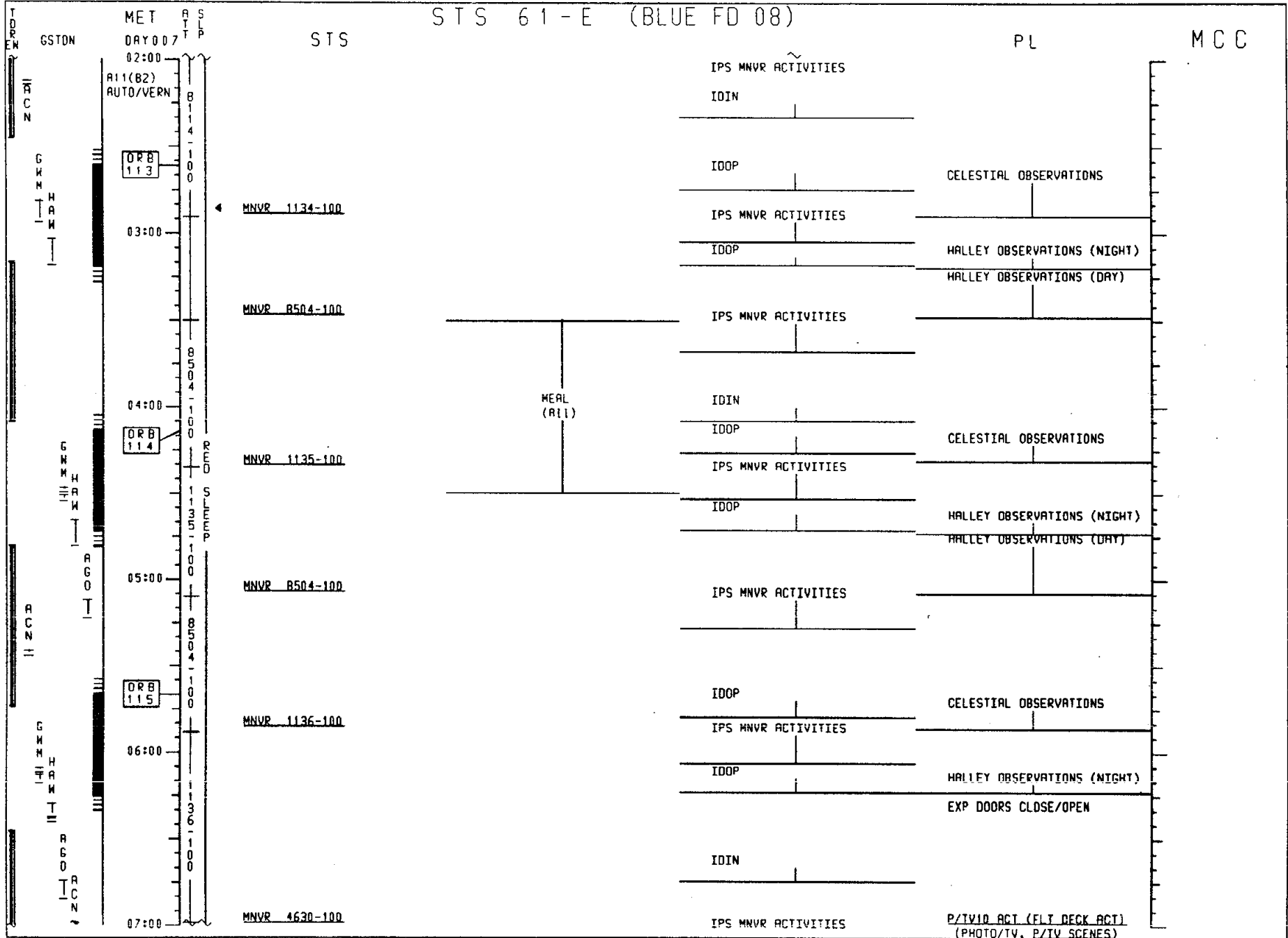




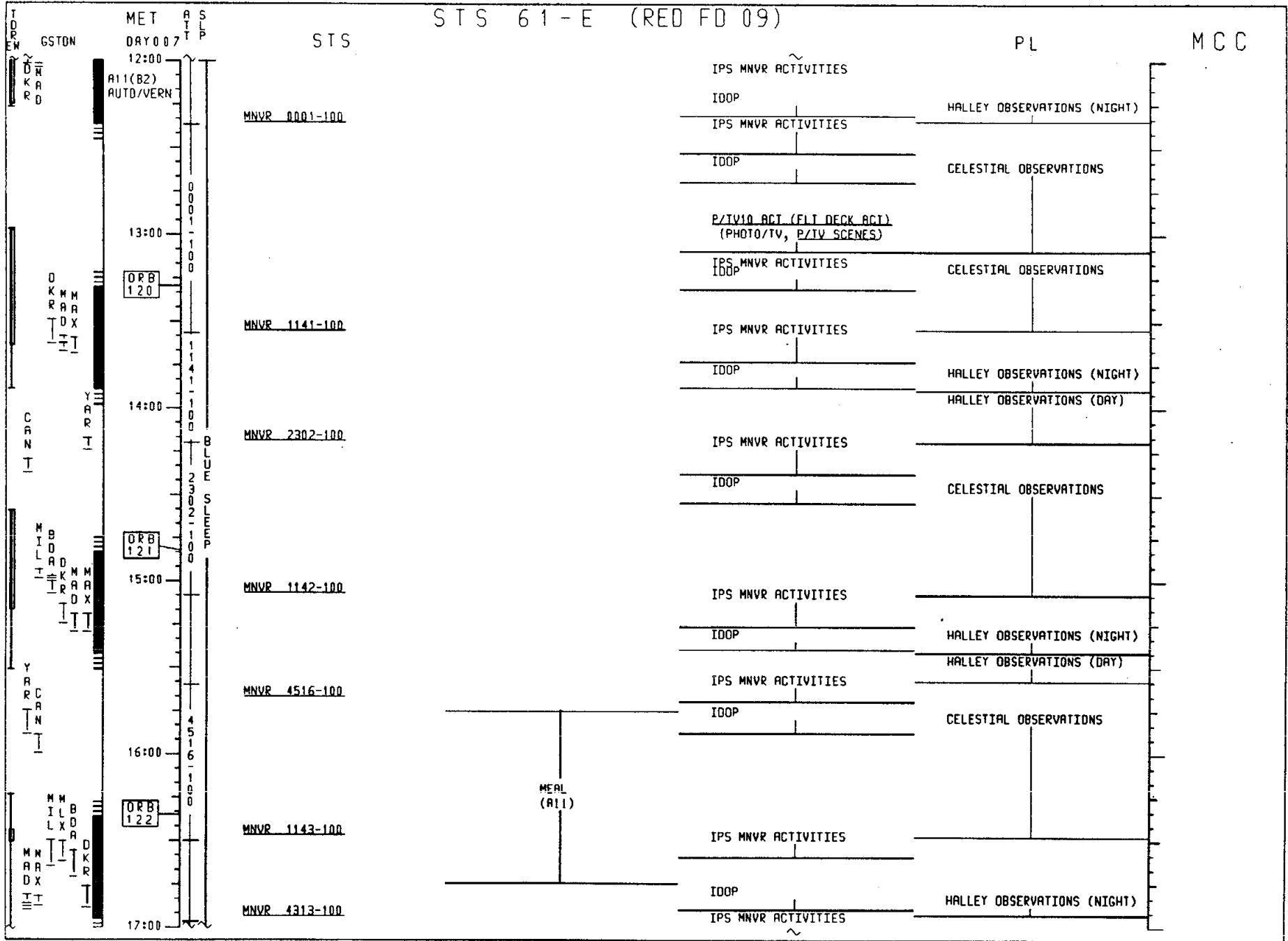










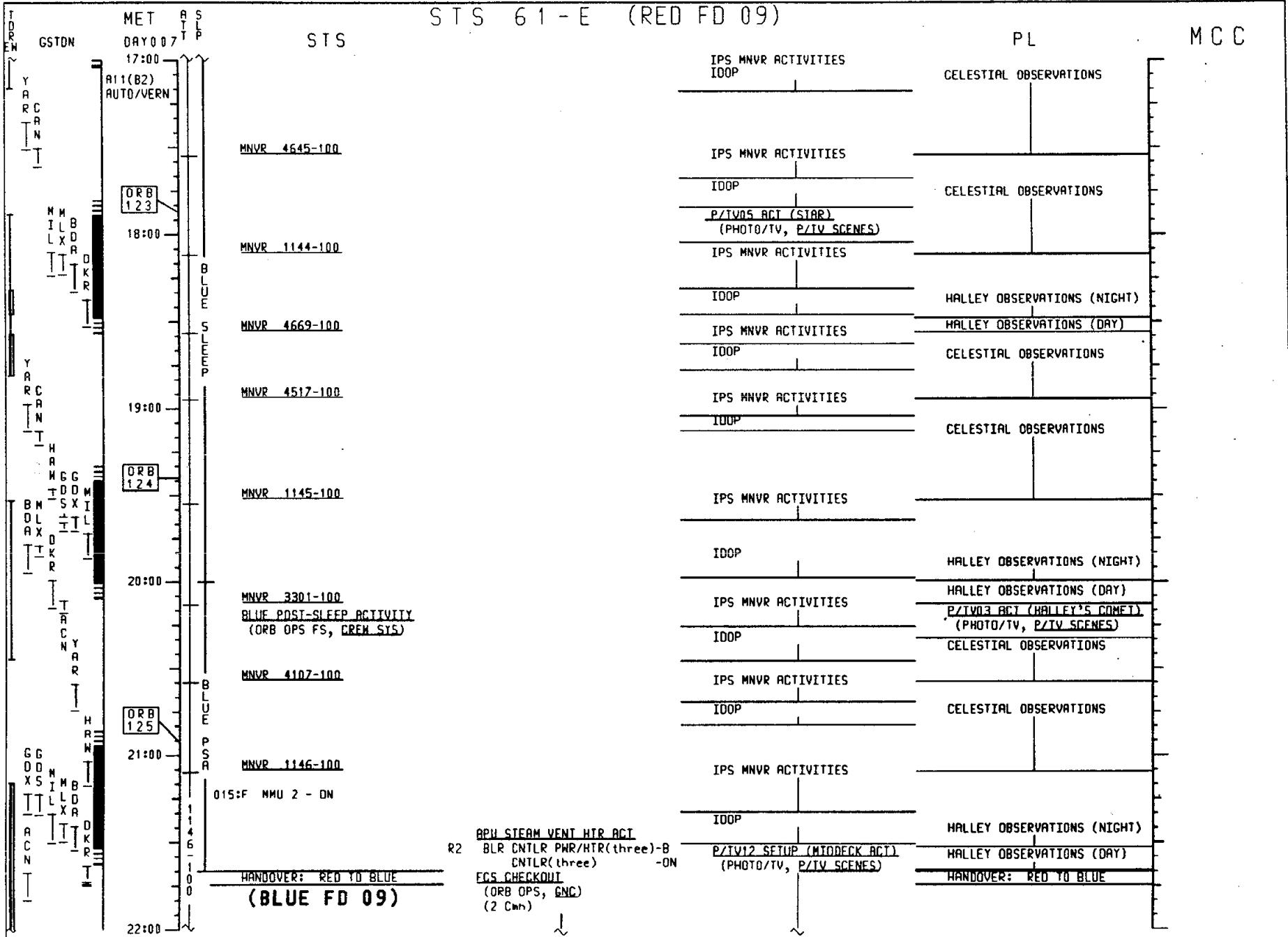


STS 61-E (RED FD 09)

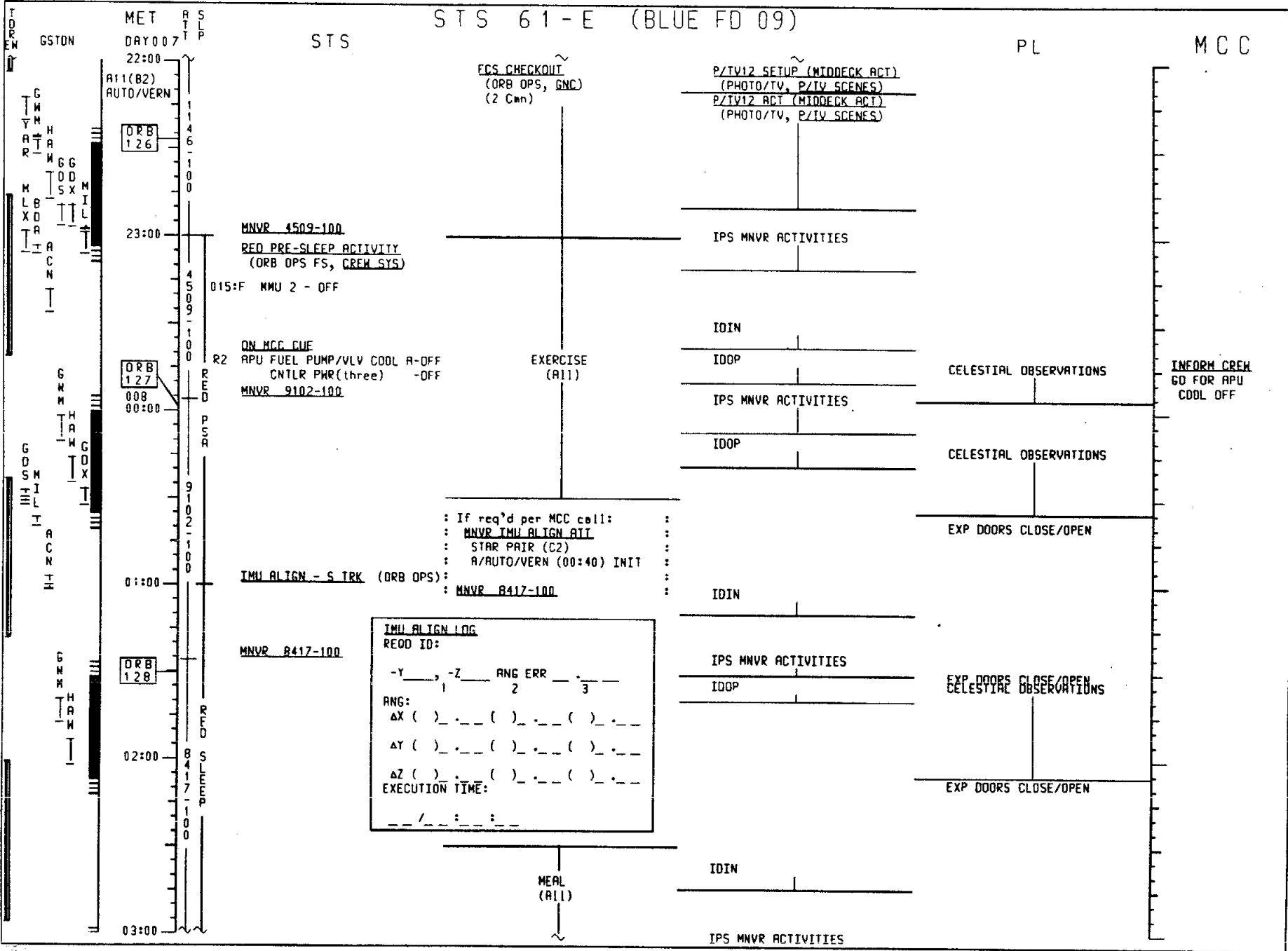
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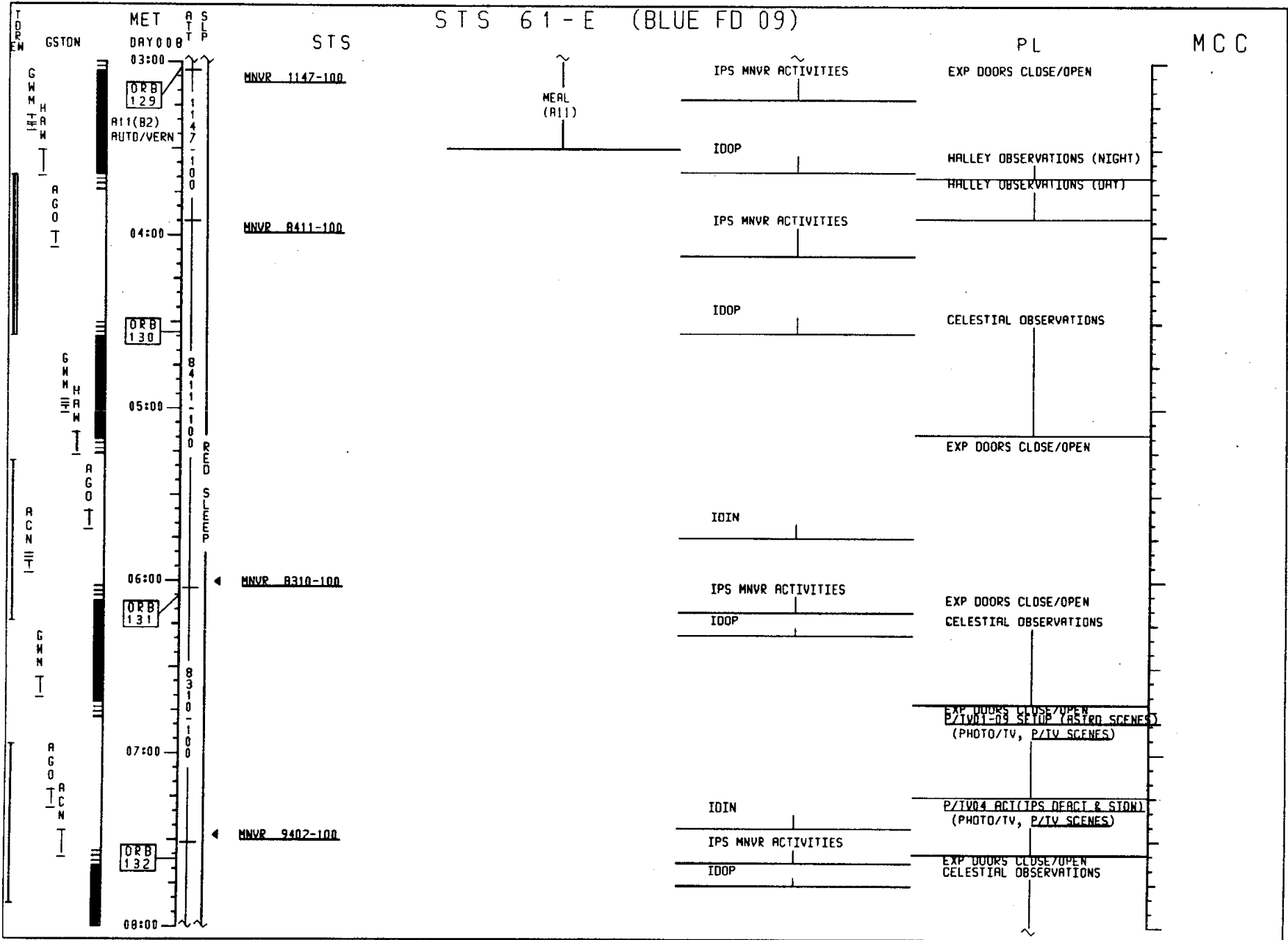
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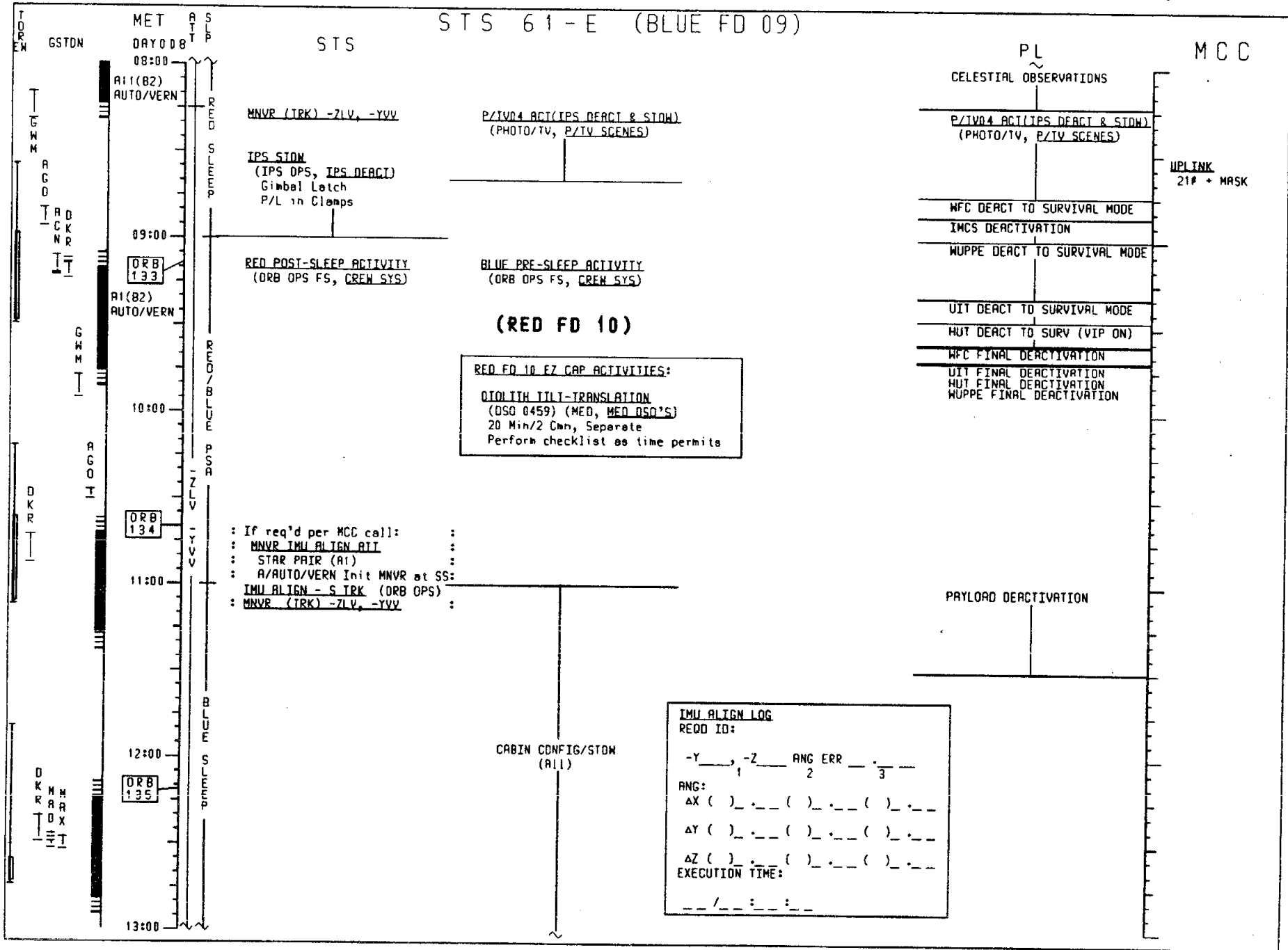
MCC











STS 61-E (BLUE FD 09)

PL MCC

MET DAY 008  
 08:00  
 A11(B2) AUTO/VERN  
 09:00  
 DRB 133  
 A11(B2) AUTO/VERN  
 10:00  
 DRB 134  
 11:00  
 DRB 135  
 12:00  
 DRB 135  
 13:00

MNVR (TRK) -ZLV, -YVV  
 IPS STOW  
 (IPS OPS, IPS DEACT)  
 Gimbal Latch  
 P/L in Clamps

P/TV04 ACT (IPS DEACT & STOW)  
 (PHOTO/TV, P/TV SCENES)

RED POST-SLEEP ACTIVITY  
 (ORB OPS FS, CREW SYS)

BLUE PRE-SLEEP ACTIVITY  
 (ORB OPS FS, CREW SYS)

(RED FD 10)

RED FD 10 EZ CAP ACTIVITIES:  
 OTolith TILT-TRANSLATION  
 (DSO 0459) (MED, MED DSO'S)  
 20 Min/2 Chn, Separate  
 Perform checklist as time permits

: If req'd per MCC call: :  
 : MNVR IMU ALIGN ATT :  
 : STAR PAIR (A1) :  
 : A/AUTO/VERN Init MNVR at SS: :  
 IMU ALIGN - S TRK (ORB OPS)  
 : MNVR (TRK) -ZLV, -YVV :

CABIN CONFIG/STOW  
 (A11)

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

CELESTIAL OBSERVATIONS  
 P/TV04 ACT (IPS DEACT & STOW)  
 (PHOTO/TV, P/TV SCENES)  
 WFC DEACT TO SURVIVAL MODE  
 IMCS DEACTIVATION  
 WUPPE DEACT TO SURVIVAL MODE  
 UIT DEACT TO SURVIVAL MODE  
 HUT DEACT TO SURV (VIP ON)  
 WFC FINAL DEACTIVATION  
 UIT FINAL DEACTIVATION  
 HUT FINAL DEACTIVATION  
 WUPPE FINAL DEACTIVATION  
 PAYLOAD DEACTIVATION

UPLINK  
 21P + MASK



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CONSUMABLES CURVES  
(TBS)

CONSUMABLES  
CURVES

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ATTITUDE TIMELINE

ATTITUDE  
TIMELINE



Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REMARKS	EVENT	
1 0/00:50:00	TRK TGT=2 BV=3( 90.00, .00) OM=100.00	A1 AUTO NORM	DSC .200 DB AT 5.00 DB RT .20	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 0	-ZLV +XVV PLBD OPENING ATT
2 0/02:30:00 42:26	MNVR R+ 60.00 P+ 92.00 Y+ 7.00	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	SUN T 88 P 125	-Z:21 -Y:19	IMU/COAS STAR PAIR A1
3 0/02:55:00 03:05:52	TRK TGT=2 BV=3( 90.00, .00) OM=100.00 CHANGE DAP B TO B2	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 0	-ZLV +XVV
4 0/12:30:00 42:18	MNVR R+229.00 P+ 96.00 Y+ 61.00	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	SUN T 101 P 317	-Z:28 -Y:52	IMU ALIGN STAR PAIR C1
5 0/12:50:00 56:26	MNVR R+ 60.00 P+225.00 Y+ 50.00	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	SUN T 131 P 335		TDRE
6 0/14:25:00 36:37	TRK TGT=2 BV=5( 16.00, 359.00) OM=184.00	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	EARTH T 16 P 356	LVLH R+184 P+286 Y+ 0	ELRAD ATT BIAS +XLV +ZVV
7 0/19:15:43	CHANGE DAP A To A11	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02			
8 0/19:15:43 23:00	MNVR R+ 38.00 P+226.00 Y+310.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 108 P 274		HD25090
9 0/21:35:49 41:02	MNVR R+ 54.00 P+270.00 Y+ .00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 95 P 294		HR1099
10 0/22:20:36 32:58	MNVR R+197.00 P+295.00 Y+ 19.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 76 P 144		HZ43
11 0/23:43:00 52:39	MNVR R+ 84.00 P+328.00 Y+350.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 37 P 269		8106-100 AKN120
12 1/00:10:57 23:59	MNVR R+295.00 P+ 15.00 Y+358.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 14 P 293	TIME CRITICAL MNVR	1211-100 URANUS

ATTITUDE  
TIMELINE

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 1/00:59:18 01:02:40	MNVR R+330.00 P+ .00 Y+ 16.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 29 P 311	TIME CRITICAL MNVR	5109-100 NGC6752
2 1/02:51:55 54:34	MNVR R+344.00 P+ 24.00 Y+ 5.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 25 P 239	TIME CRITICAL MNVR	2803-100 ALF-CENC
3 1/03:19:03 25:04	MNVR R+292.00 P+354.00 Y+ 32.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 45 P 354	TIME CRITICAL MNVR	1100-100 COMET HALLEY
4 1/04:16:00 25:43	MNVR R+342.00 P+ 76.00 Y+292.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 72 P 184		8424-100 3C273
5 1/08:06:00 15:54	MNVR R+318.00 P+ 23.00 Y+ 44.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 58 P 292		5109-100 NGC6752
6 1/08:42:00 50:46	MNVR R+353.00 P+103.00 Y+ 3.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 98 P 199		8307-100 M87
7 1/09:38:14 45:32	MNVR R+289.00 P+143.00 Y+330.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 122 P 290	TIME CRITICAL MNVR	4114-100 NGC6720 RING
8 1/10:11:00 18:18	MNVR R+353.00 P+103.00 Y+ 3.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 98 P 199		8307-100 M87
9 1/11:09:55 18:41	MNVR R+318.00 P+ 23.00 Y+ 44.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 58 P 291	TIME CRITICAL MNVR	5109-100 NGC6752
10 1/12:17:00 20:37	MNVR R+273.00 P+ 26.00 Y+ 38.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 53 P 331		1101-100 COMET HALLEY
11 1/12:47:12 13:01:31	MNVR R+296.00 P+209.00 Y+350.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 148 P 22	TIME CRITICAL MNVR	4553-100 HT-SGE
12 1/13:18:00 24:33	MNVR R+315.00 P+161.00 Y+ 58.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 130 P 167		5105-100 M3

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 1/14:13:18 19:37	MNVR R+314.00 P+217.00 Y+ 4.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 148 P 30	TIME CRITICAL MNVR	3407-100 CI-CYG
2 1/14:48:14 57:42	MNVR R+ 67.00 P+197.00 Y+ .00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 163 P 248	TIME CRITICAL MNVR	4115-100 NGC1952B CRAB
3 1/15:15:31 24:13	MNVR R+331.00 P+101.00 Y+319.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 87 P 222	TIME CRITICAL MNVR	5105-100 M3
4 1/15:44:59 54:04	MNVR R+ 17.00 P+244.00 Y+296.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 92 P 310	TIME CRITICAL MNVR	6105-100 M32
5 1/16:34:02 39:19	MNVR R+ 89.00 P+284.00 Y+337.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 77 P 264	TIME CRITICAL MNVR	4415-100 NGC1952B CRAB
6 1/17:14:00 20:16	MNVR R+324.00 P+174.00 Y+283.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 91 P 295		4569-100 HD217490
7 1/17:41:45 56:08	MNVR R+ 87.00 P+105.00 Y+ 54.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 105 P 92	TIME CRITICAL MNVR	2509-100 G19182B
8 1/18:13:11 20:29	MNVR R+301.00 P+178.00 Y+ 64.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 127 P 158	TIME CRITICAL MNVR	5105-100 M3
9 1/18:33:04 41:56	MNVR R+259.00 P+193.00 Y+323.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 131 P 21	TIME CRITICAL MNVR	1102-100 COMET HALLEY
10 1/18:49:08 51:32	MNVR R+244.00 P+201.00 Y+344.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 148 P 57	TIME CRITICAL MNVR	5203-100 NGC6624
11 1/19:25:26 31:43	MNVR R+176.00 P+223.00 Y+356.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 139 P 161	TIME CRITICAL MNVR	3602-100 HD101065
12 1/19:43:00 49:41	MNVR R+202.00 P+297.00 Y+ 10.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 71 P 142		5105-100 M3

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 1/20:20:03 27:00	MNVR R+277.00 P+311.00 Y+ 32.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 68 P 52	TIME CRITICAL MNVR	2132-100 9SGE
2 1/20:57:00 21:03:57	MNVR R+202.00 P+297.00 Y+ 10.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 71 P 142		5105-100 M3
3 1/21:52:00 57:30	MNVR R+254.00 P+318.00 Y+ 32.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 63 P 70	TIME CRITICAL MNVR	4114-100 NGC6720 RING
4 1/22:46:00 53:00	MNVR R+185.00 P+292.00 Y+ 11.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 76 P 160		8422-100 TON1530A
5 1/23:24:00 29:28	MNVR R+248.00 P+300.00 Y+ 17.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 70 P 93		2416-100 DEL-HER
6 1/23:51:00 59:38	MNVR R+220.00 P+223.00 Y+290.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 95 P 87		2307-100 THT-MUS
7 2/00:16:00 24:16	MNVR R+ 99.00 P+124.00 Y+359.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 118 P 94		4301-100 NGC1976 ORION
8 2/00:38:00 49:05	MNVR R+232.00 P+123.00 Y+ .00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 117 P 321		1103-100 COMET HALLEY
9 2/01:41:00 51:00	MNVR R+352.00 P+123.00 Y+359.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 117 P 201		7407-100 NGC4631/4656
10 2/04:45:00 53:49	MNVR R+ 77.00 P+166.00 Y+ 29.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 155 P 62		3103-100 T-TAU
11 2/05:13:00 23:24	MNVR R+281.00 P+ 15.00 Y+ 37.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 49 P 336		1104-100 COMET HALLEY
12 2/05:56:00 06:06:24	MNVR R+ 77.00 P+166.00 Y+ 29.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 155 P 62		3103-200 T-TAU

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 2/06:44:00 54:24	MNVR R+281.00 P+ 15.00 Y+ 37.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 49 P 336		1105-100 COMET HALLEY
2 2/07:32:00 41:31	MNVR R+101.00 P+113.00 Y+ 55.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 109 P 70		8203-100 NGC1275
3 2/08:12:00 21:31	MNVR R+281.00 P+ 15.00 Y+ 37.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 49 P 336		1106-100 COMET HALLEY
4 2/08:34:20 39:11	MNVR R+226.00 P+ 11.00 Y+ 26.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 38 P 34	TIME CRITICAL MNVR	3312-100 V444CYG
5 2/09:10:00 17:58	MNVR R+186.00 P+295.00 Y+341.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 68 P 170		8422-100
6 2/09:48:29 58:38	MNVR R+308.00 P+303.00 Y+ .00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 62 P 40	TIME CRITICAL MNVR	1107-100 COMET HALLEY
7 2/10:15:00 20:27	MNVR R+281.00 P+279.00 Y+ 50.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 96 P 69		0005-100 DEL-CYG
8 2/10:53:00 57:23	MNVR R+223.00 P+288.00 Y+ 65.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 94 P 120		6235-100 M101
9 2/11:21:31 30:30	MNVR R+305.00 P+279.00 Y+343.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 83 P 46	TIME CRITICAL MNVR	1108-100 COMET HALLEY
10 2/11:44:00 52:17	MNVR R+ 16.00 P+214.00 Y+ 9.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 151 P 338		2203-100 FHI-PER
11 2/12:25:00 31:11	MNVR R+343.00 P+152.00 Y+ 10.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 148 P 202		6235-100 M101
12 2/12:53:12 13:02:10	MNVR R+245.00 P+169.00 Y+330.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 136 P 2	TIME CRITICAL MNVR	1109-100 COMET HALLEY

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 2/13:30:00 41:40	MNVR R+116.00 P+346.00 Y+344.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 19 P 257		0002-100 BET-TAU
2 2/13:58:00 14:08:44	MNVR R+239.00 P+327.00 Y+345.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 37 P 123		9102-100 HER CLUSTER
3 2/14:28:00 34:00	MNVR R+304.00 P+326.00 Y+ 18.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 48 P 22		1110-100 COMET HALLEY
4 2/14:42:00 53:13	MNVR R+ 83.00 P+178.00 Y+282.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 91 P 180		0001-100 BRIGHT EARTH
5 2/15:34:00 36:03	MNVR R+297.00 P+ 50.00 Y+276.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 75 P 199		8422-100 TON1530A
6 2/15:55:19 16:05:28	MNVR R+282.00 P+ 13.00 Y+ 36.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 47 P 337	TIME CRITICAL MNVR	1111-100 COMET HALLEY
7 2/16:22:00 27:37	MNVR R+ 22.00 P+312.00 Y+ 61.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 83 P 300		8102-100 FAIRALL 9
8 2/16:58:00 17:03:58	MNVR R+ 84.00 P+266.00 Y+ 6.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 100 P 266		4301-100 NGC1976 ORION
9 2/17:23:00 34:09	MNVR R+301.00 P+335.00 Y+ 23.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 45 P 13		1112-100 COMET HALLEY
10 2/17:51:00 18:02:06	MNVR R+ 44.00 P+137.00 Y+286.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 90 P 179		0001-100 BRIGHT EARTH
11 2/18:11:00 16:34	MNVR R+108.00 P+156.00 Y+333.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 133 P 122		4656-100 HD55857
12 2/18:58:00 19:08:53	MNVR R+243.00 P+166.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 137 P 359		1113-100 COMET HALLEY

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 2/19:41:00 47:36	MNVR R+188.00 P+206.00 Y+ 1.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 157 P 147		4663-100 HD114737
2 2/20:29:00 35:36	MNVR R+243.00 P+166.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 137 P 359		1114-100 COMET HALLEY
3 2/21:03:00 10:10	MNVR R+157.00 P+166.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 137 P 85		6126-100 LMC-A
4 2/21:57:00 22:04:10	MNVR R+243.00 P+166.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 137 P 359		1115-100 COMET HALLEY
5 2/22:35:00 42:20	MNVR R+154.00 P+164.00 Y+331.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 136 P 86		6128-100 LMC-A
6 2/23:29:00 36:20	MNVR R+243.00 P+166.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 138 P 359		1116-100 COMET HALLEY
7 3/00:23:00 32:15	MNVR R+144.00 P+190.00 Y+337.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 146 P 136		3212-100 -48D1577
8 3/00:42:00 47:39	MNVR R+ 86.00 P+201.00 Y+316.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 124 P 203		4108-100 ABELL 30
9 3/01:00:00 14:25	MNVR R+306.00 P+321.00 Y+ 14.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 50 P 27		1117-100 COMET HALLEY
10 3/01:42:00 51:51	MNVR R+197.00 P+294.00 Y+293.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 73 P 177		6308-100 M49
11 3/06:50:00 54:34	MNVR R+105.00 P+228.00 Y+318.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 114 P 213		4108-100 ABELL 30
12 3/07:07:59 22:20	MNVR R+308.00 P+305.00 Y+ 1.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 60 P 40	TIME CRITICAL MNVR	1118-100 COMET HALLEY

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 3/07:41:43 49:00	MNVR R+ 22.00 P+ 5.00 Y+344.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 6 P 73	TIME CRITICAL MNVR	4302-100 NGC2070 30DOR
2 3/08:03:00 15:15	MNVR R+346.00 P+146.00 Y+ 5.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 142 P 204		3218-100 UX-UMA
3 3/09:01:24 06:55	MNVR R+326.00 P+201.00 Y+338.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 144 P 333	TIME CRITICAL MNVR	3509-100 HD199178
4 3/09:37:00 46:51	MNVR R+ 57.00 P+154.00 Y+329.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 130 P 173		4108-100 ABELL 30
5 3/10:31:52 40:12	MNVR R+ 8.00 P+225.00 Y+ 23.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 139 P 4	TIME CRITICAL MNVR	6105-100 M31
6 3/11:22:00 30:20	MNVR R+ 57.00 P+154.00 Y+329.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 130 P 173		4108-100 ABELL 30
7 3/12:04:00 11:21	MNVR R+ 4.00 P+207.00 Y+ 2.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 156 P 335		2102-100 KAP-CAS
8 3/12:31:00 39:02	MNVR R+100.00 P+211.00 Y+ 6.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 153 P 250	TIME CRITICAL MNVR	1303-100 PALLAS
9 3/12:53:00 13:02:46	MNVR R+315.00 P+106.00 Y+295.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 86 P 240		6235-100 M101
10 3/13:20:06 29:05	MNVR R+236.00 P+ 98.00 Y+ 19.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 97 P 312	TIME CRITICAL MNVR	1119-100 COMET HALLEY
11 3/13:46:00 58:35	MNVR R+346.00 P+207.00 Y+354.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 152 P 339		2137-100 LAM-CEP
12 3/14:05:30 15:02	MNVR R+ 99.00 P+221.00 Y+ 8.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 144 P 255	TIME CRITICAL MNVR	1303-100 PALLAS



Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 3/14:28:20 38:09	MNVR R+292.00 P+ 82.00 Y+289.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 77 P 240	TIME CRITICAL MNVR	6235-100 M101
2 3/15:07:23 12:57	MNVR R+231.00 P+ 87.00 Y+303.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 78 P 308	TIME CRITICAL MNVR	3227-100 SS-CYG
3 3/15:45:31 51:07	MNVR R+121.00 P+320.00 Y+313.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 53 P 269	TIME CRITICAL MNVR	2509-100 G191B2B
4 3/16:05:00 10:32	MNVR R+209.00 P+352.00 Y+307.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 44 P 223		6235-100 M101
5 3/16:40:00 43:11	MNVR R+227.00 P+ 31.00 Y+331.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 31 P 281		3223-100 AM-HER
6 3/17:07:05 18:52	MNVR R+ 80.00 P+328.00 Y+ 6.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 39 P 257	TIME CRITICAL MNVR	1303-100 PALLAS
7 3/17:31:26 35:55	MNVR R+132.00 P+323.00 Y+ 24.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 53 P 193	TIME CRITICAL MNVR	8503-100 OJ287
8 3/18:11:00 19:04	MNVR R+ 37.00 P+326.00 Y+ 54.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 71 P 273		4302-100 NGC2070 30DOR
9 3/18:54:44 19:07:36	MNVR R+ 44.00 P+114.00 Y+ 5.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 110 P 145	TIME CRITICAL MNVR	8503-100 OJ287
10 3/19:21:34 35:47	MNVR R+239.00 P+ 92.00 Y+ 22.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 92 P 311	TIME CRITICAL MNVR	1120-100 COMET HALLEY
11 3/19:55:15 20:02:33	MNVR R+144.00 P+208.00 Y+ 52.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 133 P 273	TIME CRITICAL MNVR	4302-100 NGC2070 30DOR
12 3/20:28:49 40:02	MNVR R+185.00 P+313.00 Y+ 18.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 58 P 150	TIME CRITICAL MNVR	6406-100 NGC4409

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 3/21:14:09 21:17	MNVR R+193.00 P+ 34.00 Y+ 32.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 50 P 38	TIME CRITICAL MNVR	2231-100 EW-LAC
2 3/21:54:25 58:57	MNVR R+137.00 P+ 37.00 Y+ 31.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 51 P 90	TIME CRITICAL MNVR	2509-100 G191B2B
3 3/22:11:00 16:32	MNVR R+188.00 P+308.00 Y+ 57.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 81 P 139		6406-100 NGC4409
4 3/22:53:00 23:01:51	MNVR R+108.00 P+ 38.00 Y+345.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 33 P 67		8304-100 3C120
5 3/23:32:00 43:02	MNVR R+339.00 P+ 58.00 Y+ 5.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 56 P 216		7316-100 NGC5253
6 4/01:05:00 13:25	MNVR R+ 79.00 P+ 43.00 Y+356.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 39 P 111		4204-100 HD44179 RED RT
7 4/01:31:00 42:32	MNVR R+286.00 P+241.00 Y+325.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 110 P 46		1121-100 COMET HALLEY
8 4/02:09:00 20:32	MNVR R+ 79.00 P+ 43.00 Y+356.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 39 P 111		4204-100 HD44179 RED RT
9 4/05:41:00 48:42	MNVR R+350.00 P+ 83.00 Y+ 25.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 84 P 203		6608-100 M104
10 4/06:13:53 17:19	MNVR R+343.00 P+125.00 Y+ 15.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 122 P 199	TIME CRITICAL MNVR	0003-200 HZ43
11 4/06:39:00 42:26	MNVR R+350.00 P+ 83.00 Y+ 25.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 84 P 203		6608-100 M104
12 4/07:40:16 49:11	MNVR R+244.00 P+ 81.00 Y+ 28.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 83 P 310	TIME CRITICAL MNVR	1122-100 COMET HALLEY

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REMARKS	EVENT	
1 4/08:30:00 39:16	MNVR R+291.00 P+ 77.00 Y+285.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 77 P 235		3218-200 UX-UMA
2 4/09:44:29 53:45	MNVR R+ 67.00 P+259.00 Y+359.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 105 P 283	TIME CRITICAL MNVR	8304-100 3C120
3 4/10:14:00 23:16	MNVR R+291.00 P+ 77.00 Y+285.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 77 P 235		3218-300 UX-UMA
4 4/11:14:44 22:03	MNVR R+ 63.00 P+267.00 Y+323.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 90 P 286	TIME CRITICAL MNVR	2701-100 IC2003
5 4/11:46:00 58:22	MNVR R+201.00 P+205.00 Y+ 48.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 137 P 218		5116-100 OMEGA CEN
6 4/12:32:00 46:40	MNVR R+164.00 P+ 39.00 Y+ 6.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 38 P 39		2203-200 PHI-PER
7 4/13:15:00 29:40	MNVR R+201.00 P+205.00 Y+ 48.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 137 P 218		5116-100 OMEGA CEN
8 4/13:49:01 55:55	MNVR R+234.00 P+138.00 Y+350.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 130 P 327	TIME CRITICAL MNVR	1123-100 COMET HALLEY
9 4/14:15:37 26:53	MNVR R+ 98.00 P+133.00 Y+351.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 126 P 100	TIME CRITICAL MNVR	1303-100 PALLAS
10 4/14:52:00 15:00:43	MNVR R+351.00 P+120.00 Y+339.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 110 P 208		7407-100 NGC4631/4656
11 4/15:35:00 41:43	MNVR R+334.00 P+188.00 Y+318.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 129 P 301		4559-100 HD204827
12 4/16:07:00 20:53	MNVR R+147.00 P+200.00 Y+337.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 144 P 151		4410-100 VELA SNR

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 4/16:58:00 17:05:38	MNVR R+243.00 P+246.00 Y+349.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 115 P 102		1206-100 SATURN
2 4/17:35:00 40:28	MNVR R+175.00 P+222.00 Y+336.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 130 P 148		3602-100 HD101065
3 4/18:00:56 03:11	MNVR R+148.00 P+203.00 Y+341.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 146 P 150	TIME CRITICAL MNVR	4410-100 VELA SNR
4 4/18:29:00 36:13	MNVR R+238.00 P+239.00 Y+349.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 122 P 104		4542-100 HD147889
5 4/19:07:00 19:08	MNVR R+ 96.00 P+175.00 Y+ 6.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 171 P 102		4301-100 NGC1976 ORION
6 4/19:51:28 20:02:39	MNVR R+243.00 P+ 83.00 Y+ 27.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 84 P 310	TIME CRITICAL MNVR	1124-100 COMET HALLEY
7 4/20:17:00 24:23	MNVR R+188.00 P+ 29.00 Y+345.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 25 P 341		4564-100 HD216898
8 4/20:43:00 52:27	MNVR R+188.00 P+277.00 Y+323.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 82 P 167		8424-100 3C273
9 4/21:43:00 49:56	MNVR R+276.00 P+289.00 Y+336.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 73 P 82		4550-100 630PH
10 4/22:21:00 29:00	MNVR R+239.00 P+309.00 Y+ 68.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 86 P 85		2609-100 +70 8247
11 5/00:06:00 09:08	MNVR R+141.00 P+ 20.00 Y+ 73.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 82 P 113		6216-100 M81
12 5/01:40:00 42:46	MNVR R+227.00 P+275.00 Y+ 70.00		A11 DSC .200 AUTO DB AT 2.00 VERN DB RT .02	SUN T 98 P 129		7107-100 M51

Attitude Timeline

MET	MNVR OPTION	DAP	E/S	REMARKS	EVENT	
1 5/02:00:01 09:19	MNVR R+296.00 P+261.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 97 P 50	TIME CRITICAL MNVR	1125-100 COMET HALLEY
2 5/02:34:00 43:18	MNVR R+227.00 P+275.00 Y+ 70.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 98 P 129		7107-100 M51
3 5/06:15:00 18:23	MNVR R+268.00 P+253.00 Y+ 38.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 111 P 98		3310-100 HER-X-1
4 5/07:03:00 06:13	MNVR R+306.00 P+254.00 Y+ 36.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 111 P 59		2133-100 P-CYG
5 5/07:21:00 27:18	MNVR R+ 47.00 P+182.00 Y+ 39.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 149 P 46		8203-100 NGC1275
6 5/08:06:00 15:42	MNVR R+305.00 P+327.00 Y+ 16.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 44 P 24		1126-100 COMET HALLEY
7 5/08:25:00 33:30	MNVR R+301.00 P+ 70.00 Y+ 16.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 70 P 254		4543-100 HD147888
8 5/08:52:00 58:05	MNVR R+331.00 P+120.00 Y+323.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 105 P 232		8431-100 1441 + 442
9 5/09:56:00 10:02:22	MNVR R+264.00 P+131.00 Y+308.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 105 P 312		4412-100 CYGLOOP A
10 5/10:42:00 48:22	MNVR R+338.00 P+128.00 Y+312.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 106 P 234		3218-400 UX-UMA
11 5/11:42:00 48:59	MNVR R+ 40.00 P+238.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 116 P 294		8203-100 NGC1275
12 5/12:41:00 44:59	MNVR R+ 23.00 P+189.00 Y+308.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 120 P 253	TIME CRITICAL MNVR	3213-100 Z-CAM

Attitude Timeline

NET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 5/12:59:00 13:02:09	MNVR R+ 5.00 P+211.00 Y+311.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 118 P 296		2102-200 KAP-CAS
2 5/13:31:00 35:51	MNVR R+ 64.00 P+262.00 Y+342.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 98 P 285		3103-100 T-TAU
3 5/14:12:10 22:47	MNVR R+304.00 P+284.00 Y+344.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 78 P 51	TIME CRITICAL MNVR	1127-100 COMET HALLEY
4 5/14:31:00 38:01	MNVR R+342.00 P+219.00 Y+ 39.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 136 P 53		2137-200 LAM-LEP
5 5/15:03:00 12:36	MNVR R+ 39.00 P+169.00 Y+308.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 119 P 215		8411-100 8953+41
6 5/16:03:00 09:13	MNVR R+291.00 P+110.00 Y+320.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 97 P 266		5108-100 M92
7 5/16:27:00 39:32	MNVR R+ 81.00 P+264.00 Y+ 15.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 101 P 274		4627-100 LAM-LEP
8 5/16:56:00 17:09:27	MNVR R+236.00 P+311.00 Y+355.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 52 P 118		9203-100 HER CLUSTER
9 5/17:32:30 35:58	MNVR R+227.00 P+337.00 Y+ 28.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 44 P 82	TIME CRITICAL MNVR	3223-200 AM-HER
10 5/18:00:00 09:09	MNVR R+106.00 P+ 38.00 Y+ 13.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 40 P 104		2110-100 CHI20RI
11 5/18:33:00 43:11	MNVR R+242.00 P+299.00 Y+ 27.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 71 P 98		3310-200 HER-X-1
12 5/19:30:00 43:31	MNVR R+133.00 P+148.00 Y+329.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 128 P 90		3107-100 BET PIC

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CAP/61-E/BAS

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

Attitude Timeline

MET	MNVR OPTION		DAF	E/S	REMARKS	EVENT
1 5/20:18:00 26:25	MNVR R+244.00 P+171.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 142 P 6		1128-100 COMET HALLEY
2 5/20:44:00 49:08	MNVR R+178.00 P+161.00 Y+327.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 134 P 60		5201-100 47 TUC
3 5/21:02:00 08:03	MNVR R+106.00 P+125.00 Y+355.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 120 P 86		4627-100 LAM-LEP
4 5/21:23:00 30:10	MNVR R+ 63.00 P+116.00 Y+275.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 84 P 140		8114-100 NGC3783
5 5/22:13:00 18:48	MNVR R+109.00 P+122.00 Y+333.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 111 P 92		4647-100 MU-COL
6 5/23:19:00 30:57	MNVR R+163.00 P+297.00 Y+312.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 69 P 210		8504-100 MKN421
7 6/00:28:00 37:26	MNVR R+134.00 P+205.00 Y+ 30.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 150 P 269		3107-100 BET PIC
8 6/00:53:00 01:02:26	MNVR R+163.00 P+297.00 Y+312.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 69 P 210		8504-100 MKN421
9 6/02:07:00 10:34	MNVR R+223.00 P+332.00 Y+318.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 44 P 179		8120-100 NGC5548
10 6/02:29:00 37:02	MNVR R+300.00 P+341.00 Y+ 23.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 38 P 8		1129-100 COMET HALLEY
11 6/03:00:00 08:02	MNVR R+223.00 P+332.00 Y+318.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 44 P 179		8120-100 NGC5548
12 6/06:39:00 43:48	MNVR R+166.00 P+333.00 Y+318.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 44 P 238		7205-100 M82

Attitude Timeline

MET	MNVR OPTION		DRP	E/S	REMARKS	EVENT
1 6/06:56:00 07:06:32	MNVR R+318.00 P+168.00 Y+342.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 150 P 280		3223-300 AM-HER
2 6/07:45:00 49:28	MNVR R+ 11.00 P+166.00 Y+343.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 150 P 223		7205-100 M82
3 6/08:32:04 42:49	MNVR R+248.00 P+179.00 Y+329.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 141 P .15	TIME CRITICAL MNVR	1130-100 COMET HALLEY
4 6/08:58:00 09:05:01	MNVR R+339.00 P+194.00 Y+303.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 115 P 303		2315-100 CQ-CEP
5 6/09:25:00 29:26	MNVR R+ 19.00 P+179.00 Y+304.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 117 P 246		7205-100 M82
6 6/10:28:00 33:11	MNVR R+294.00 P+109.00 Y+329.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 100 P 261		3310-300 HER-X-1
7 6/10:48:00 51:23	MNVR R+333.00 P+106.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 98 P 220		9302-100 A1792
8 6/11:44:51 49:59	MNVR R+297.00 P+ 68.00 Y+ 12.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 67 P 256	TIME CRITICAL MNVR	1206-100 SATURN
9 6/12:23:00 28:08	MNVR R+333.00 P+106.00 Y+332.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 98 P 220		9302-100 A1792
10 6/13:26:00 29:44	MNVR R+331.00 P+146.00 Y+314.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 117 P 257		3403-100 AG-DRA
11 6/13:44:00 48:05	MNVR R+355.00 P+117.00 Y+321.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 103 P 206		7505-100 NGC4278
12 6/14:39:15 49:29	MNVR R+246.00 P+ 80.00 Y+ 29.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 82 P 307	TIME CRITICAL MNVR	1131-100 COMET HALLEY



Attitude Timeline

NET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 6/15:04:00 10:01	MNVR R+223.00 P+ 41.00 Y+331.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 42 P 293		3405-100 CH-CYG
2 6/15:26:00 32:26	MNVR R+191.00 P+310.00 Y+291.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 71 P 202		7505-100 NGC4278
3 6/16:43:00 49:57	MNVR R+ 78.00 P+272.00 Y+311.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 85 P 277		2702-100 LSV46-21
4 6/17:22:00 25:47	MNVR R+115.00 P+269.00 Y+335.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 91 P 237		3208-100 U-GEM
5 6/17:57:00 18:08:53	MNVR R+214.00 P+151.00 Y+ 29.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 143 P 296		8121-100 E141G55
6 6/18:46:00 55:42	MNVR R+327.00 P+150.00 Y+ 67.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 116 P 160		9101-100 COMA CLUSTER
7 6/19:38:00 42:30	MNVR R+305.00 P+204.00 Y+ 29.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 150 P 99		5108-100 M92
8 6/19:57:00 58:52	MNVR R+320.00 P+213.00 Y+ 20.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 148 P 60		3405-100 CH-CYG
9 6/20:15:00 19:43	MNVR R+ 16.00 P+162.00 Y+ 31.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 149 P 118		3213-100 Z-CAM
10 6/20:45:30 56:10	MNVR R+291.00 P+254.00 Y+329.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 102 P 53	TIME CRITICAL MNVR	1132-100 COMET HALLEY
11 6/21:23:00 34:59	MNVR R+ 84.00 P+273.00 Y+331.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 87 P 270		0002-200 BET-TAU
12 6/21:54:00 22:00:09	MNVR R+185.00 P+328.00 Y+290.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 67 P 227		2514-100 1210+533

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 7/01:02:00 04:33	MNVR R+141.00 P+313.00 Y+292.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 70 P 255		3213-100 Z-CAM
2 7/01:16:30 31:16	MNVR R+307.00 P+298.00 Y+353.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 64 P 49	TIME CRITICAL MNVR	1133-100 COMET HALLEY
3 7/01:54:00 02:02:35	MNVR R+ 16.00 P+ 68.00 Y+287.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 76 P 142		8114-100 NGC3783
4 7/02:54:21 03:02:56	MNVR R+307.00 P+298.00 Y+353.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 64 P 49	TIME CRITICAL MNVR	1134-100 COMET HALLEY
5 7/03:30:00 41:36	MNVR R+168.00 P+313.00 Y+ 15.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 54 P 172		8504-100 MKN421
6 7/04:21:00 32:36	MNVR R+307.00 P+298.00 Y+353.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 64 P 49		1135-100 COMET HALLEY
7 7/05:06:00 17:36	MNVR R+168.00 P+313.00 Y+ 15.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 54 P 172		8504-100 MKN421
8 7/05:53:00 06:04:36	MNVR R+307.00 P+298.00 Y+353.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 64 P 49		1136-100 COMET HALLEY
9 7/06:59:00 07:10:03	MNVR R+ 80.00 P+323.00 Y+359.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 40 P 271		4630-100 NU-ORI
10 7/07:26:00 37:03	MNVR R+307.00 P+298.00 Y+353.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 64 P 49		1137-100 COMET HALLEY
11 7/07:57:00 08:01:55	MNVR R+298.00 P+268.00 Y+ 42.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 98 P 60		2133-200 P-CYG
12 7/08:18:00 26:11	MNVR R+ 74.00 P+157.00 Y+ 29.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 147 P 68		4509-100 HD29647

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 7/08:51:00 09:05:43	MNVR R+251.00 P+186.00 Y+327.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 140 P 24		1138-100 COMET HALLEY
2 7/09:19:00 24:36	MNVR R+316.00 P+183.00 Y+337.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 151 P 314		0005-200 DEL-CYG
3 7/09:54:00 10:05:02	MNVR R+ 84.00 P+256.00 Y+ 9.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 108 P 272		4630-100 NU-ORI
4 7/10:30:00 40:58	MNVR R+294.00 P+357.00 Y+ 30.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 37 P 346		1139-100 COMET HALLEY
5 7/11:00:00 03:54	MNVR R+334.00 P+ 8.00 Y+ 19.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 26 P 284		2522-100 LSE234
6 7/11:30:00 33:56	MNVR R+ 24.00 P+349.00 Y+ 19.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 29 P 275		2210-100 R122
7 7/11:55:00 12:02:13	MNVR R+301.00 P+340.00 Y+ 22.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 36 P 10		1140-100 COMET HALLEY
8 7/12:22:00 32:28	MNVR R+ 20.00 P+112.00 Y+289.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 90 P 180		0001-100 BRIGHT EARTH
9 7/13:34:00 44:28	MNVR R+301.00 P+340.00 Y+ 22.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 36 P 10		1141-100 COMET HALLEY
10 7/14:12:00 22:55	MNVR R+ 73.00 P+337.00 Y+ 21.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 37 P 243		2302-100 HD50896EZCMA
11 7/15:05:00 15:55	MNVR R+301.00 P+340.00 Y+ 22.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 36 P 10		1142-100 COMET HALLEY
12 7/15:36:00 43:07	MNVR R+ 22.00 P+351.00 Y+ 18.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 27 P 275		4516-100 SK69-239

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 7/16:30:00 37:07	MNVR R+301.00 P+340.00 Y+ 22.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 36 P 10		1143-100 COMET HALLEY
2 7/16:58:00 17:02:34	MNVR R+258.00 P+334.00 Y+ 51.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 62 P 45		4413-100 CYGLOOP B
3 7/17:33:00 41:20	MNVR R+ 90.00 P+ 96.00 Y+ 35.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 96 P 93		4645-100 HD38131
4 7/18:07:00 19:15	MNVR R+266.00 P+ 45.00 Y+ 37.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 58 P 312		1144-100 COMET HALLEY
5 7/18:34:00 37:42	MNVR R+307.00 P+ 49.00 Y+ 27.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 56 P 262		4669-100 HD152219
6 7/18:57:00 19:02:40	MNVR R+ 27.00 P+339.00 Y+ 41.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 52 P 273		4517-100 SK69-254
7 7/19:33:00 40:01	MNVR R+289.00 P+ 6.00 Y+ 33.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 39 P 336		1145-100 COMET HALLEY
8 7/20:08:00 15:39	MNVR R+174.00 P+ 44.00 Y+ 65.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 77 P 54		3301-100 AO-CAS
9 7/20:35:00 42:01	MNVR R+ 74.00 P+ 80.00 Y+ 25.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 81 P 117		4107-100 NGC2392
10 7/21:06:00 20:18	MNVR R+233.00 P+129.00 Y+ .00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 126 P 314		1146-100 COMET HALLEY
11 7/23:00:00 11:11	MNVR R+122.00 P+ 43.00 Y+ 5.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 42 P 73		4509-100 HD29647
12 7/23:56:00 8/00:07:16	MNVR R+237.00 P+295.00 Y+ 6.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 68 P 114		9102-100 HER CLUSTER

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 8/01:26:00 31:04	MNVR R+178.00 P+326.00 Y+ 22.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 45 P 148		8417-100 1148+549
2 8/03:03:00 13:38	MNVR R+307.00 P+317.00 Y+ 6.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 47 P 39		1147-100 COMET HALLEY
3 8/03:55:00 04:07:27	MNVR R+157.00 P+321.00 Y+ 10.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 44 P 184		8411-100 0953+41
4 8/06:02:35 10:40	MNVR R+196.00 P+220.00 Y+ 19.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 141 P 179	TIME CRITICAL MNVR	8310-100 NGC5128 CEN-A
5 8/07:30:55 38:07	MNVR R+136.00 P+293.00 Y+358.00	A11 AUTO VERN	DSC .200 DB AT 2.00 DB RT .02	SUN T 69 P 219	TIME CRITICAL MNVR	9402-100 CM-1
6 8/08:15:00	CHANGE DAP A TO A1	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02			
7 8/08:15:00 20:59	TRK TGT=2 BV=3< 90.00, .00> OM= 90.00	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	EARTH T 90 P 0	LVLH R+ 0 P+180 Y+270	-ZLV -YVV
8 8/16:45:00 59:48	TRK TGT=4 BV=5<184.00, .00> OM= .00	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	SUN T 176 P 186	INRTL R+ 94 P+183 Y+ 1	TAIL SUN
9 8/18:00:00 13:10	MNVR R+101.00 P+341.00 Y+359.00	A1 AUTO VERN	DSC .200 DB AT 1.00 DB RT .02	SUN T 22 P 247		IMU ALIGN
10 8/18:18:00 21:56	MNVR R+152.00 P+224.00 Y+ 16.00	B1 AUTO NORM	DSC .500 DB AT 3.00 DB RT .20	SUN T 138 P 218		IMU VERIF
11 8/18:40:00 44:17	MNVR R+270.00 P+ 29.00 Y+290.00	B1 AUTO NORM	DSC .500 DB AT 3.00 DB RT .20	SUN T 67 P 209		DEORBIT BURN ATT
12 8/21:00:00	OMS IGNITION	* AUTO *	DSC 0.500 DB AT 3.50 DB RT 0.30			DEORBIT BURN

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

STS-61-E DAP BOOK

DAP A CONFIGURATIONS..... 6-2  
DAP B CONFIGURATIONS..... 6-3  
STS 61-E DAP BOOK..... 6-4

DAP BOOK

DAP A CONFIGURATIONS

	A1*	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
<u>TRANSLATION</u>											
PULSE ft/sec	0.10	0.10	0.10	0.10	0.10	0.10		0.10	0.10	0.05	0.01
<u>ROTATION</u>											
DSC RT											
NORM */sec	0.200	0.400	0.200	0.200	0.200	0.200		0.500	0.200	0.200	0.500
VERN */sec	0.200	0.400	0.200	0.008	0.200	0.200		0.200	0.200	0.200	0.200
PULSE											
NORM */sec	0.10	0.10	0.30	0.10	0.10	0.10		0.10	0.10	0.10	0.04
VERN */sec	0.010	0.010	0.010	0.010	0.050	0.010		0.010	0.010	0.010	0.010
COMP											
NORM */sec	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00
VERN */sec	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
<u>DEADBAND</u>											
ATT											
NORM (deg)	5.00	1.00	5.00	1.00	5.00	5.00		3.00	2.00	2.00	4.00
VERN (deg)	1.000	1.000	1.000	0.070	1.000	1.000		1.000	1.000	1.000	2.00
RATE											
NORM */sec	0.20	0.20	0.20	0.20	0.20	0.20		0.20	0.20	0.20	0.20
VERN */sec	.020	.020	.020	.010	.020	.020		.020	.020	.020	.020
<u>JET OPT</u>											
P	1	1	3	1	1	3		1	1	1	3
Y	1	1	3	3	1	3		1	1	1	3
<u>CNTL ACCEL</u>											
	0	0	0	0	0	0		0	0	0	0

\*1-Loaded OPS-2 DAP Configuration



DAP B CONFIGURATIONS

	B1*	B2	B3	B4	B5	B6	B7	B8
<u>TRANSLATION</u>								
PULSE ft/sec	0.02	0.02	0.02	0.02	0.02	0.05	0.01	
<u>ROTATION</u>								
DSC RT								
NORM */sec	0.500	0.200	0.200	0.200	0.200	0.500	0.200	
VERN */sec	0.200	0.200	0.200	0.008	0.016	0.200	0.200	
PULSE								
NORM */sec	0.04	0.04	0.04	0.04	0.04	0.04	0.04	
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	2.00	2.00	
VERN (deg)	1.000	1.000	1.000	0.100	0.033	1.000	1.000	
RATE								
NORM */sec	0.20	0.20	0.20	0.20	0.20	0.20	0.20	
VERN */sec	.020	.020	.020	.010	.020	.020	.020	
<u>JET OPT</u>								
P	1	3	1	3	3	1	1	
Y	1	3	1	3	3	1	1	
<u>CNTL ACCEL</u>								
	0	0	0	0	0	0	0	

\*1-LOADED OPS-2 DAP Configuration

# DAP BOOK

HOOK  
VELCRO

CAP/61-E/O/BAS

CAP/61-E/O/BAS

UNIV PTG	
TGT ID = 1	Orbiting Vehicle
= 2	Earth ctr
= 3	Earth tgt
	Input LAT ( $\pm 90$ )
	LON ( $\pm 180$ , + = East)
	ALT (-3444 to 20,000 nm)
= 4	Sun ctr
= 5	Celestial tgt
	Input RA (0-359.99)
	DEC ( $\pm 90$ )
= 11-110	Nav Stars
BODY VECT = 1	+X*
= 2	-X*
= 3	-Z*
= 4	PTC (~2 below +X)*
= 5	Optional
	Input P (0-359.99)
	Y (270-359.99, 0-90)
* Input OM →	OM (0-359.99)
MON AXIS = 1	+X
2	-X

G20 DAP CONFIG	
CNTL ACCEL = 0	Orbiter alone
= 1 thru 5	Not used
JET OPT = 1	Normal
= 2	Nose only
= 3	Tail only

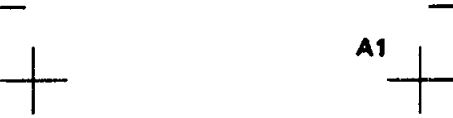
TOP



DAP                    PURPOSE

- A1 - NOMINAL  
IMU ALIGN  
LOSS OF VERN  
(NOSE & TAIL)
- A2 - PTC
- A3 - RCS HOT FIRE
- A4 - GG
- A5 - IMU ROTATION
- A6 - LOSS OF VERN  
(TAIL ONLY)
- A7 - (Blank)
- A8 - PRE/POST DEPLOY
- A9 - RENDEZVOUS
- A10 - PROX OPS
- A11 - ASTRO OPS

CAP/61-E/O/BAS



A1

TOP



**DAP A1**

**A1**

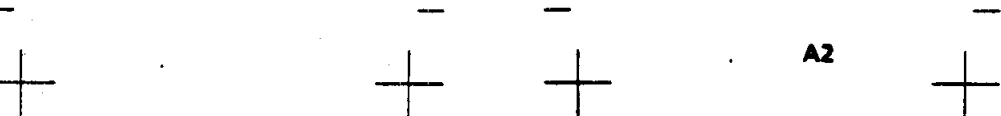
PURPOSE:

NOMINAL  
IMU ALIGN  
LOSS OF VERN  
(NOSE & TAIL)

0.1 0	1	TRANSLATION PULSE
0.2 0 0	2	ROTATION 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
5.0 0	8	DEADBAND 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

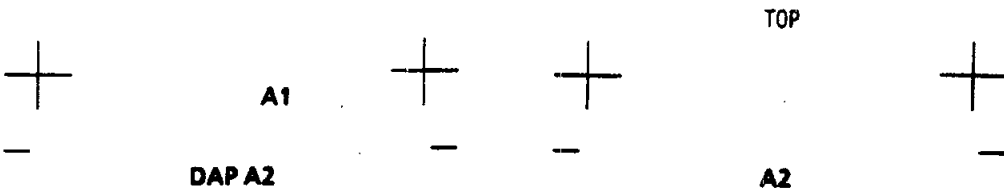
CAP/61-E/O/BAS

CAP/61-E/O/BAS



A2

TOP



PURPOSE:  
PTC

DAP A2

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

1.0 0 8 DEADBAND ATT NORM  
1.0 0 9 VERN

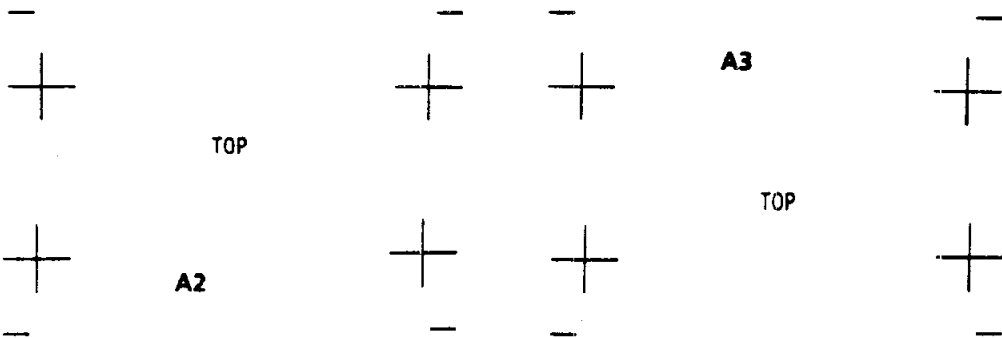
0.2 0 10 RATE NORM  
0.2 0 11 VERN

1 12 JET OPT P  
1 13 Y

0 14 CNTL ACCEL

CAP/61-E/O/BAS

CAP/61-E/O/BAS



PURPOSE:  
RCS HOT FIRE

DAP A3

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

5.0 0 8 DEADBAND ATT NORM  
1.0 0 9 VERN

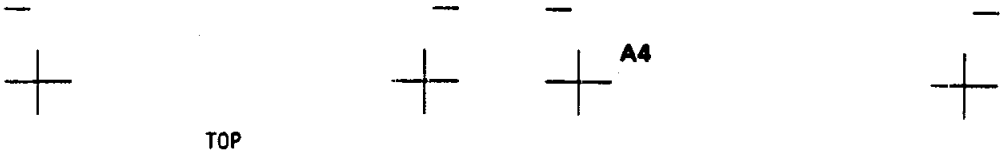
0.2 0 10 RATE NORM  
0.2 0 11 VERN

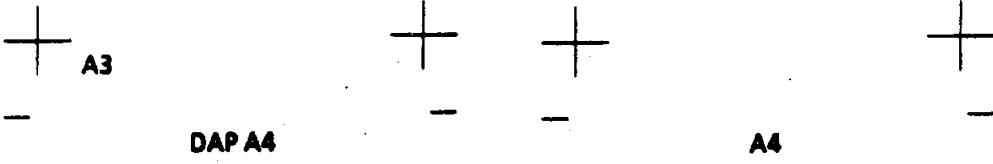
3 12 JET OPT P  
1 13 Y

0 14 CNTL ACCEL

CAP/61-E/O/BAS

CAP/61-E/O/BAS





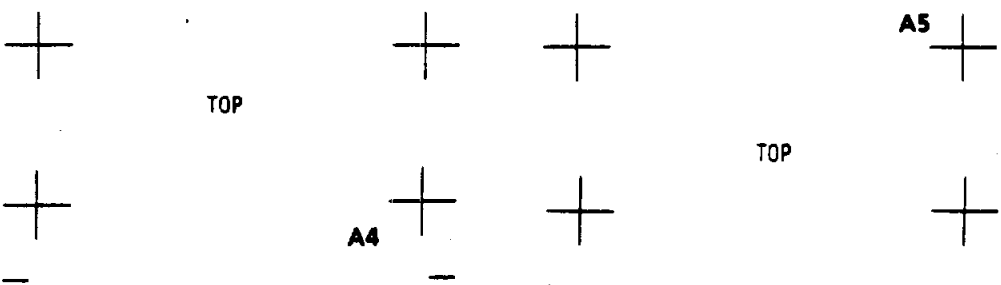
PURPOSE:  
GG

**DAP A4**

- 0.1 0 1 TRANSLATION PULSE
- 0.2 0 0 2 ROTATION DSC RT NORM
- 0.0 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
- 1.0 0 8 DEADBAND 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/61-E/O/BAS

CAP/61-E/O/BAS



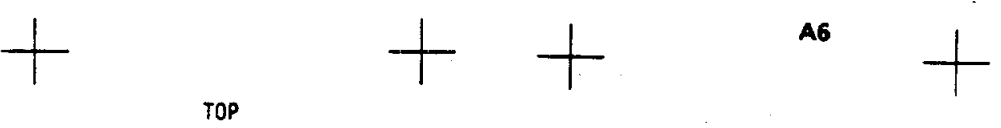
PURPOSE:  
IMU ROTATION

**DAP A5**

- 0.1 0 1 TRANSLATION PULSE
- 0.2 0 0 2 ROTATION 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
- 5.0 0 8 DEADBAND 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

CAP/61-E/O/BAS

CAP/61-E/O/BAS



TOP

TOP

A5

DAP A6

PURPOSE:

LOSS OF VERN  
(TAIL ONLY)

A6

0.1 0 1

TRANSLATION  
PULSE

0.2 0 0 2

ROTATION  
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

3 12

JET OPT P

3 13

Y

0 14 CNTL ACCEL

CAP/61-E/O/BAS

CAP/61-E/O/BAS

A7

TOP

TOP

A6

DAP A7

PURPOSE: (Blank)

A7

TRANSLATION  
PULSE

-. - - 1

ROTATION

DSC RT NORM

-. - - 2

VERN

-. - - 3

PULSE NORM

-. - - 4

VERN

-. - - 5

COMP NORM

-. - - 6

VERN

DEADBAND

-. - - 8

ATT NORM

-. - - 9

VERN

-. - - 10

RATE NORM

-. - - 11

VERN

- 12

JET OPT P

- 13

Y

- 14 CNTL ACCEL

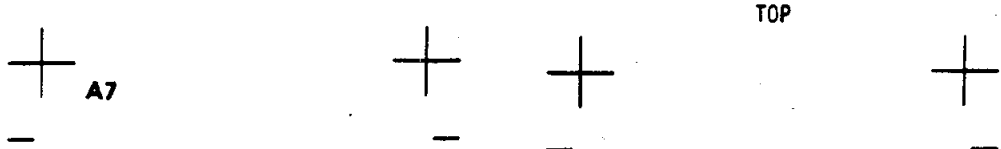
CAP/61-E/O/BAS

CAP/61-E/O/BAS

A8

TOP

(reduced copy)



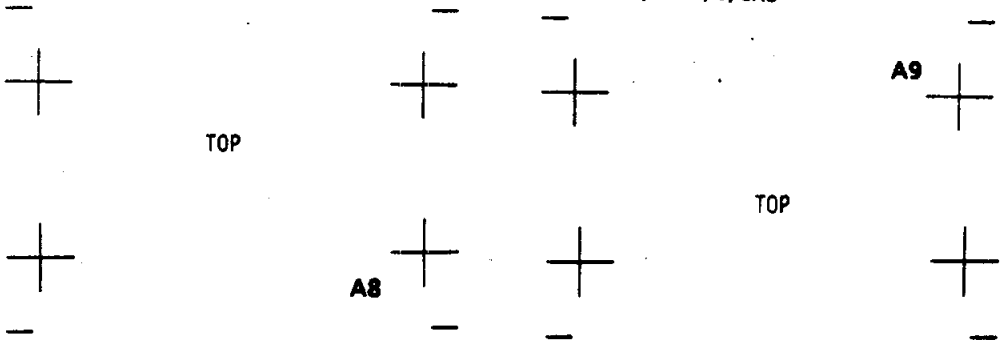
**DAP A8**

PURPOSE:  
PRE/POST DEPLOY

- 0.1 0 1 TRANSLATION PULSE
- 0.5 0 0 2 ROTATION DSC RT NORM
- 0.2 0 0 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
- 3.0 0 8 DEADBAND 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

CAP/61-E/O/BAS

CAP/61-E/O/BAS



TOP

TOP

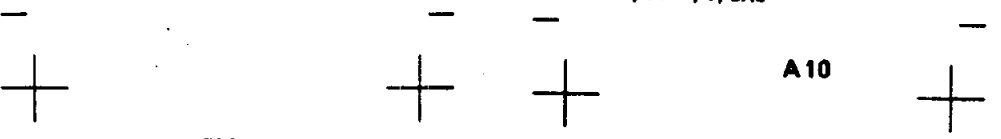
**DAP A9**

PURPOSE:  
RENDEZVOUS

- 0.1 0 1 TRANSLATION PULSE
- 0.2 0 0 2 ROTATION DSC RT NORM
- 0.2 0 0 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
- 2.0 0 8 DEADBAND 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

CAP/61-E/O/BAS

CAP/61-E/O/BAS



TOP

TOP

A9

DAP A10

PURPOSE:

PROX OPS

A10

0.0 5 1

TRANSLATION  
PULSE

0.2 0 0 2

ROTATION  
DSC RT NORM

0.2 0 0 3

VERN

0.0 1 0 4

PULSE NORM

0.0 1 0 5

VERN

.0 0 0 6

COMP NORM

.0 0 0 7

VERN

DEADBAND

2.0 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

CAP/61-E/O/BAS

CAP/61-E/O/BAS

A11

TOP

TOP

A10

DAP A11

PURPOSE:

ASTRO OPS

0.0 1 1

TRANSLATION  
PULSE

0.5 0 0 2

ROTATION  
DSC RT NORM

0.2 0 0 3

VERN

0.0 1 4 4

PULSE NORM

0.0 1 0 5

VERN

.0 0 0 6

COMP NORM

.0 0 0 7

VERN

DEADBAND

4.0 0 8

ATT NORM

2.0 0 0 9

VERN

0.2 0 10

RATE NORM

.0 2 0 11

VERN

3 12

JET OPT P

3 13

Y

0 14

CNTL ACCEL

CAP/61-E/O/BAS

CAP/61-E/O/BAS

TOP



TOP

A11

DAP                      PURPOSE

- B1 - NOMINAL  
      PRCS IMU ALIGN  
      OMS & RCS BURNS
- B2 - LOSS OF VERN  
      (TAIL ONLY)
- B3 - LOSS OF VERN  
      (NOSE & TAIL)  
      GG MNVR
- B4 - SSUS DEPLOY
- B5 - COAS CAL
- B6 - RENDEZVOUS
- B7 - PROX OPS
- B8 - (Blank)

CAP/61-E/O/BAS

CAP/61-E/O/BAS

TOP

TOP

B1

DAP B1

B1

PURPOSE:

NOMINAL  
PRCS IMU ALIGN  
OMS & RCS BURNS

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 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

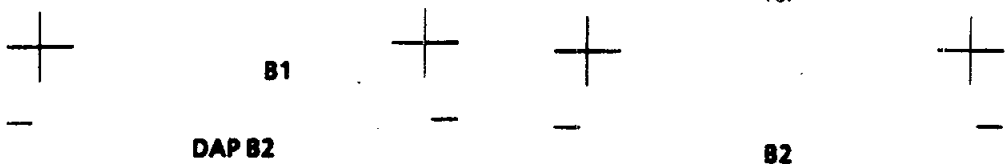
CAP/61-E/O/BAS

CAP/61-E/O/BAS

B2

TOP

(reduced copy)



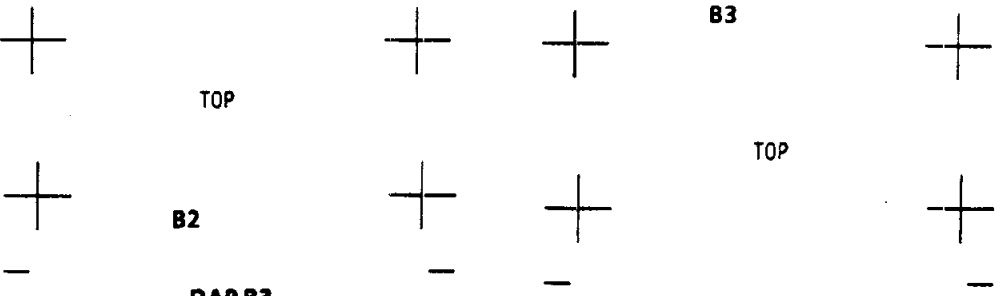
**DAP B2**  
 PURPOSE:  
 LOSS OF VERN  
 (TAIL ONLY)

**B2**

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

CAP/61-E/O/BAS

CAP/61-E/O/BAS



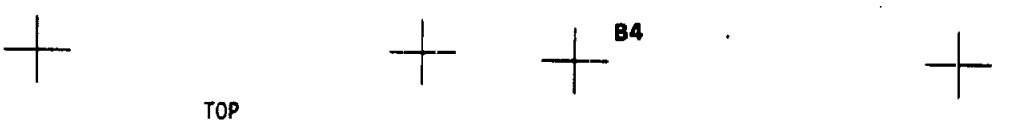
**DAP B3**  
 PURPOSE:  
 LOSS OF VERN  
 (NOSE & TAIL)  
 GG MNVR

**B3**

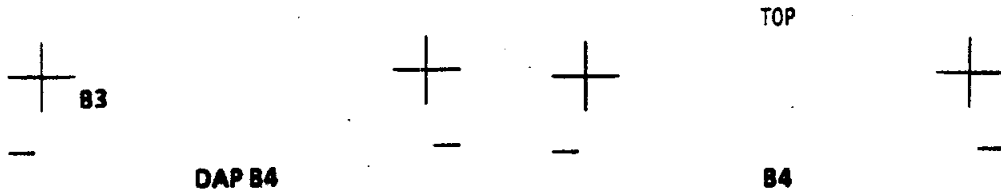
TRANSLATION			
PULSE	15	0.0	2
ROTATION			
DSC RT NORM	16	0.2	0 0
VERN	17	0.2	0 0 0 0
PULSE NORM	18	0.0	0 0 4 4
VERN	19	0.0	0 0 2 2
COMP NORM	20	0.0	0 0 0 0
VERN	21	.0	0 0 0 0
DEADBAND			
ATT NORM	22	3.0	0 0
VERN	23	1.0	0 0 0 0
RATE			
NORM	24	0.2	0
VERN	25	0.2	0 0
JET OPT			
P	26		1
Y	27		1
CNTL ACCEL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

CAP/61-E/O/BAS

CAP/61-E/O/BAS



(reduced copy)



**DAP B4**

PURPOSE:  
SSUS DEPLOY

TOP  
**B4**

TRANSLATION  
PULSE 15 0.0 2

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

DEADBAND  
ATT NORM 22 0.3 0  
VERN 23 0.1 0 0

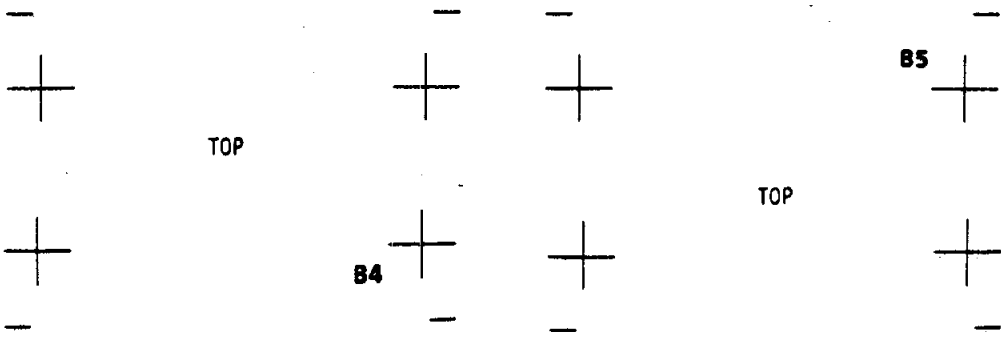
RATE NORM 24 0.2 0  
VERN 25 0.1 0

JET OPT P 26 3  
Y 27 3

CNTL ACCEL 28 0

CAP/61-E/O/BAS

CAP/61-E/O/BAS



TOP

TOP

**DAP B5**

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 0  
VERN 21 0.0 0 0

DEADBAND  
ATT NORM 22 3.0 0  
VERN 23 0.0 3 3

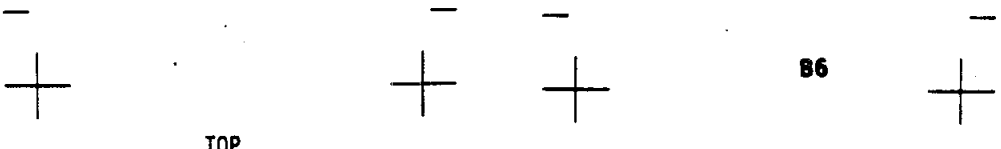
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VERN 25 0.2 0

JET OPT P 26 3  
Y 27 3

CNTL ACCEL 28 0

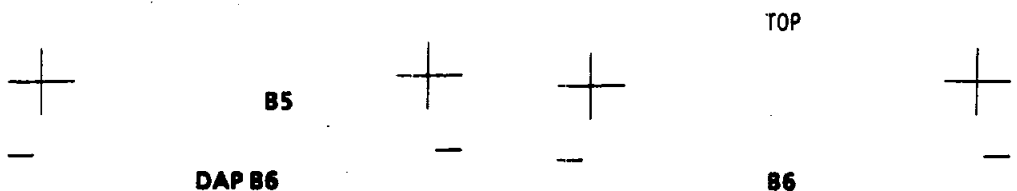
CAP/61-E/O/BAS

CAP/61-E/O/BAS



TOP

**B6**

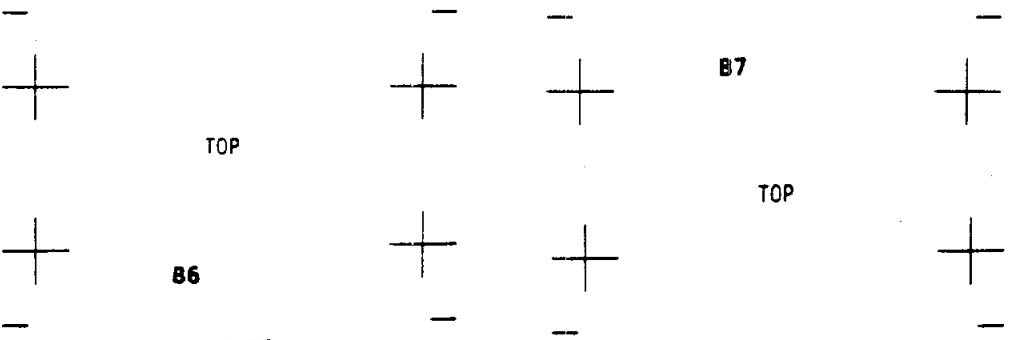


**B5**  
**DAP B6**  
 PURPOSE:  
 RENDEZVOUS

**B6**  
 TRANSLATION  
 PULSE 15 0.0 1  
 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 0  
 VERN 21 0.0 0 0  
 DEADBAND  
 ATT NORM 22 2.0 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/61-E/O/BAS

CAP/61-E/O/BAS

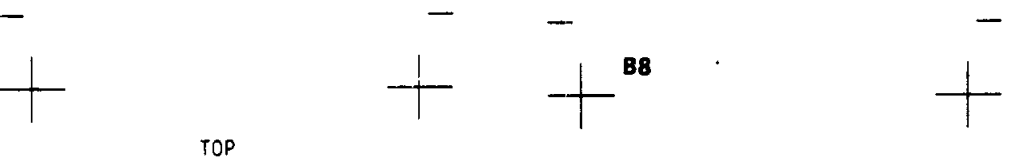


**B6**  
**DAP B7**  
 PURPOSE:  
 PROX OPS

**B7**  
 TRANSLATION  
 PULSE 15 0.0 1  
 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 0  
 VERN 21 0.0 0 0  
 DEADBAND  
 ATT NORM 22 2.0 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/61-E/O/BAS

CAP/61-E/O/BAS



TOP

TOP

+

87

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+

+

DAP 88

88

PURPOSE: (Blank)

TRANSLATION PULSE 15

ROTATION

DSC RT NORM 16

VERN 17

PULSE NORM 18

VERN 19

COMP NORM 20

VERN 21

DEADBAND

ATT NORM 22

VERN 23

RATE NORM 24

VERN 25

JET OPT P 26

Y 27

CNTL ACCEL 28

CAP/61-E/O/BAS

CAP/61-E/O/BAS

+

+

+

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TOP

+

+

88

CAP/61-E/O/BAS

+

+

TOP

TOP  
BACK COVER 'DAP BOOK'



CAP/61-E/O/BAS



CREW ACTIVITY PLAN NOTES

GENERAL..... 7-2  
CREW..... 7-2  
PAYLOADS..... 7-2

CAP NOTES

A. GENERAL

1. Due to limited space for the text on the Detailed Timeline and the repetitive nature of certain activities, the full procedural callout for the following activities will be shown only on the first few occurrences: IPS MNVR ACTIVITIES, IDOP, IDIN

B. CREW

1. There are 7 crewmembers onboard divided into teams as follows:

RED team - MS2, MS3, PS2  
BLUE team - PLT, MS1, PS1

The CDR is not assigned to a team and is free to adjust his hours real-time as necessary.

Each team works for approximately 12 hours followed by 12 hours off duty. This allows continuous 24 hrs/day payload operations.

2. The crewmembers responsible for performing an EVA, should one become necessary, are MS2 (Leestma) and MS3 (Hoffman). CDR (McBride) would perform intravehicular activities.

C. PAYLOADS

1. Astro-1

Astro-1 is a package of 4 experiments mounted to the Spacelab Instrument Pointing System (IPS) which in turn is mounted on a double pallet plus igloo train. The Astro-1 package will make observations of Halley's Comet, planets, asteroids, stars, nebulae and galaxies. In addition to standard spacelab hardware the Astro package will utilize an Image Motion Compensation System (IMCS) to improve pointing accuracy.

- a. Hopkins Ultraviolet Telescope (HUT)

This experiment package is comprised of 1) a telescope module containing optics and detector system within a shuttered environmental canister and 2) an electronics module containing two experiment processors. The objective of the HUT is to supplement and complement the capabilities of the International UV Explorer (IUE) and the Space Telescope (ST) by extending spectrophotometric observations to objects somewhat fainter and to shorter wavelengths than those reachable with IUE or ST.

- b. Wisconsin Ultraviolet Photo-Polarimeter Experiment (WUPPE)

This experiment is composed of a telescope and a spectropolarimeter. The objective of the WUPPE is to obtain spectropolarimetric and spectrophotometric observations of astronomical objects brighter than magnitude 17 and ranging from 1400 to 3200 Å.

CAP NOTES



c. Ultraviolet Imaging Telescope (UIT)

The UIT is a 38cm f/9 Ritchey-Cretien telescope which is contained in a thermally controlled, vacuum sealed container. The objective of the telescope is to obtain images of faint objects in broad ultraviolet bands in the wavelength range of 1250 to 2800 Å. These images will be used to investigate the present stellar content and history of star formation in galaxies, the nature of spiral structure, and non-thermal sources in galaxies.

d. Wide Field Camera (WFC)

The WFC is a package of two cameras with intensifiers to shorten exposure time and with two different lens-filter combinations to view two wavelength ranges. It is enclosed in a pressurized canister with temperature and humidity control to optimize film stability. The objective of the Wide Field Camera is to perform a self-sufficient science investigation of the wide-field properties of the Halley's Comet using a complete and uniform set of imagery.

2. Comet Halley Active Monitoring Program (CHAMP)

The CHAMP experiment is designed to provide an extended space-based cometary observational data set with an already developed and Shuttle qualified package of cameras and spectroscopic gratings which are mounted in and operated from the Orbiter.

3. Earth-Limb Radiance (ELRAD) Experiment

The ELRAD experiment objective is to measure the radiance of the twilight sky for various positions of the sun from sunset (or sunrise) to 9 degrees below the Earth's horizon.

4. Isoelectric Focusing (IEF) Experiment

The objective of the IEF experiment is to evaluate the effect of electro-osmosis on isoelectric focusing in the absence of gravity.

5. Get Away Special (GAS) Payloads (TBD)

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J. Newsome  
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L. Larimore (6)

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Seabrook, MD 20706  
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Las Cruces, NM 88004

CRO/CSC  
Code 553-1  
Goddard Space Flight Center  
Greenbelt, MD 20771  
Attn: W. Mitchell (2)

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DF6/Sys. Analysis Sect.  
DF63/Head  
DG4/Crew Sys. (2)  
DG6/Rockwell  
DH4/DFD MGR  
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DH6/Branch Off.  
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EH5/Chief  
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EX/DFD CPCB Rep.  
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Boulder, CO 80301  
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61-E  
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EF4/Chief  
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JL15/Support (6)  
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JM5/Branch Copy  
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