

**FLIGHT DATA FILE**

# Flight Plan

## STS-35

### (Cycle 3R Trajectory)

Mission Operations Directorate  
Operations Division

Final, Rev B  
November 16, 1990

<u>EVENT</u>	<u>CST</u>		
Launch	00:26	Fri	Nov 30
EDW Landing	23:34	Sat	Dec 8



National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas



MISSION OPERATIONS DIRECTORATE

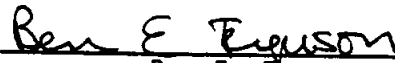
STS-35 FLIGHT PLAN

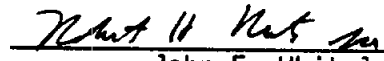
FINAL, REVISION B  
November 16, 1990

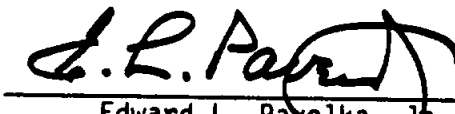
PREPARED BY:

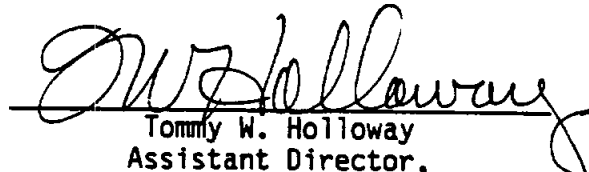
  
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STS-35 FLIGHT PLAN

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 REV B 11/16/90

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(\*) - Omit from flight book

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A5.....	* 7-7	FLT PLN/35/0/BAS
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A6.....	* 7-8	FLT PLN/35/0/BAS
DAP A7.....	* 7-8	FLT PLN/35/0/BAS
A7.....	* 7-8	FLT PLN/35/0/BAS
DAP A8.....	* 7-9	FLT PLN/35/0/BAS
A8.....	* 7-9	FLT PLN/35/0/BAS
DAP A9.....	* 7-9	FLT PLN/35/0/BAS
A9.....	* 7-9	FLT PLN/35/0/BAS
DAP A10.....	* 7-10	FLT PLN/35/0/BAS
A10.....	* 7-10	FLT PLN/35/0/BAS
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A11.....	* 7-10	FLT PLN/35/0/BAS
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A12.....	* 7-11	FLT PLN/35/0/FIN
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DAP B TOC.....	* 7-11	FLT PLN/35/0/FIN
DAP B1.....	* 7-12	FLT PLN/35/0/BAS
B1.....	* 7-12	FLT PLN/35/0/BAS
DAP B2.....	* 7-12	FLT PLN/35/0/BAS
B2.....	* 7-12	FLT PLN/35/0/BAS
DAP B3.....	* 7-13	FLT PLN/35/0/BAS
B3.....	* 7-13	FLT PLN/35/0/BAS
DAP B4.....	* 7-13	FLT PLN/35/0/BAS
B4.....	* 7-13	FLT PLN/35/0/BAS
DAP B5.....	* 7-14	FLT PLN/35/0/BAS
B5.....	* 7-14	FLT PLN/35/0/BAS
DAP B6.....	* 7-14	FLT PLN/35/0/BAS
B6.....	* 7-14	FLT PLN/35/0/BAS
DAP B7.....	* 7-15	FLT PLN/35/0/BAS
B7.....	* 7-15	FLT PLN/35/0/BAS
DAP B8.....	* 7-15	FLT PLN/35/0/BAS
B8.....	* 7-15	FLT PLN/35/0/BAS
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## INTRODUCTION

The STS-35 Flight Plan is the flight data file article that contains the on-orbit timeline. It does not contain the detailed timelines that are covered in the Ascent, Post Insertion, Deorbit Prep, and Entry Checklists. For continuity, the entire flight is shown in the summary level timeline.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive and the requirements of the STS-35 Flight Requirements Document. The Flight Plan, as part of the Flight Data File, meets the specifications of the Cycle 3 Basic version of the STS-35 Flight Initialization Data Pack except for the launch date/time which was rotated.

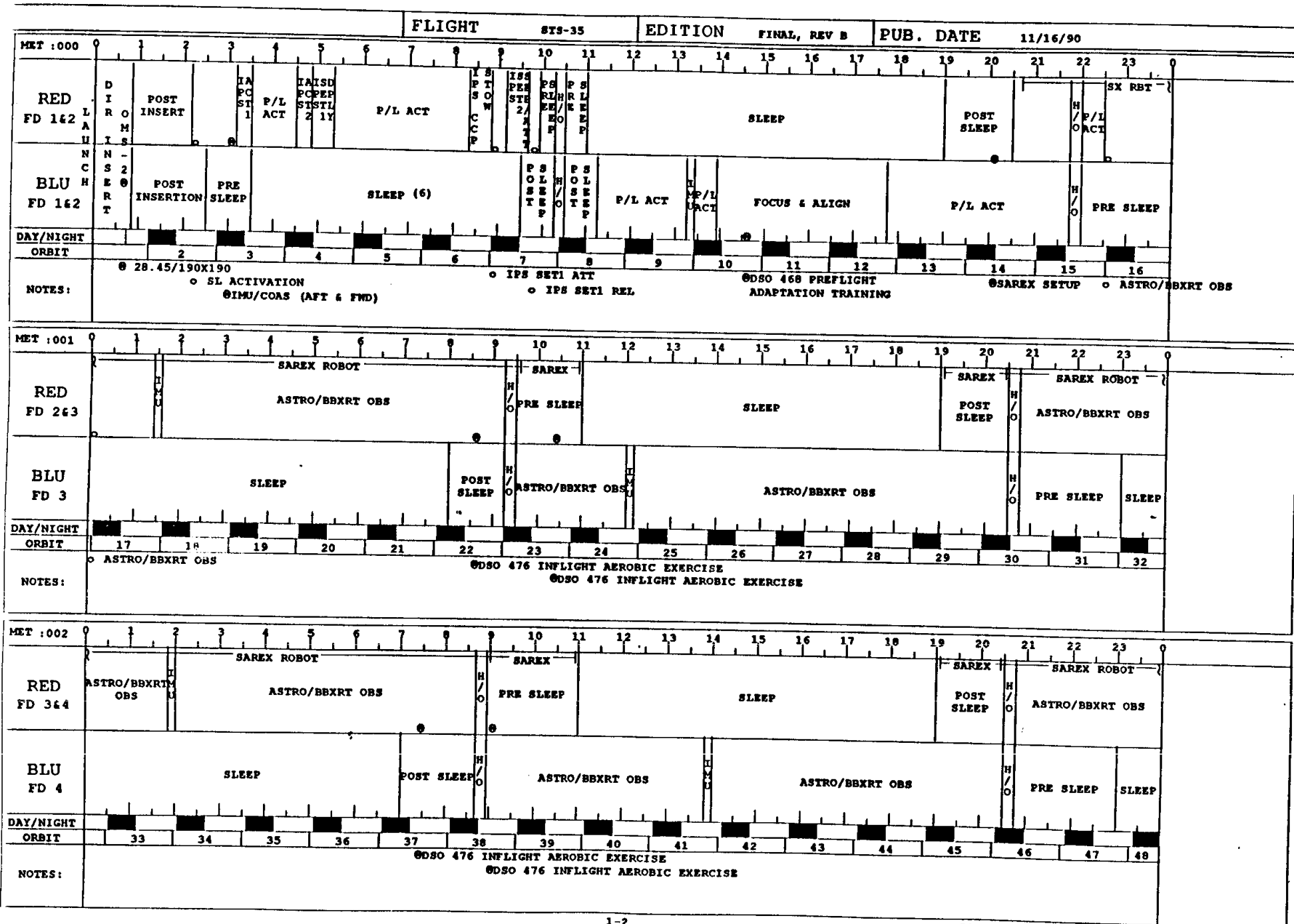
The payload activation timeframe (launch through MET 0/22:00) uses a November 30, 1990, 06:26 GMT flight profile (Cycle 3R - Launch on TAL/MRN lighting). The flight profile for the Flight Plan's science timeline (MET 0/22:00 through end of mission) is for a launch date of January 1, 1991, at 06:40 GMT. AMOS passive observation opportunities will be evaluated real-time for the actual flight profile and were not identified for the January 1 ephemeris. Orbital inertial attitudes are expressed relative to a Mean of 1950 (M50) reference frame.

JSC-22359, Crew Scheduling Constraints (Appendix K, CPMP), Basic, Rev A, January 1990, has been used to build the timelines contained in this Flight Plan. Note: The CDR is not assigned to a team and is free to adjust his hours real-time as necessary. Exercise for the Mission Specialists is not scheduled in the Flight Plan and will be performed at their discretion. If performed, the Mission Specialists will attempt to exercise during orbiter maneuvers to have minimum impact on ASTRO-1 science.

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

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STS-35 OVERVIEW



FLIGHT

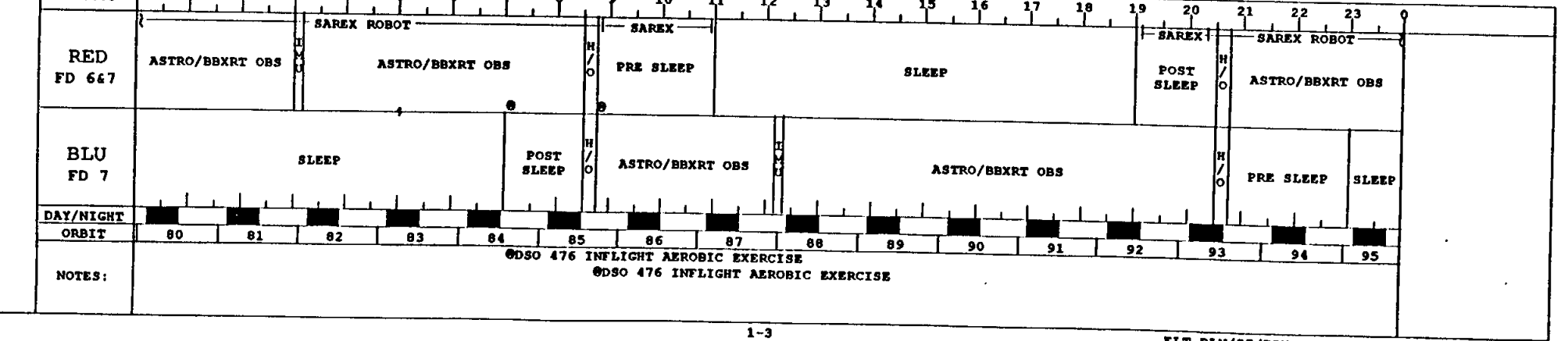
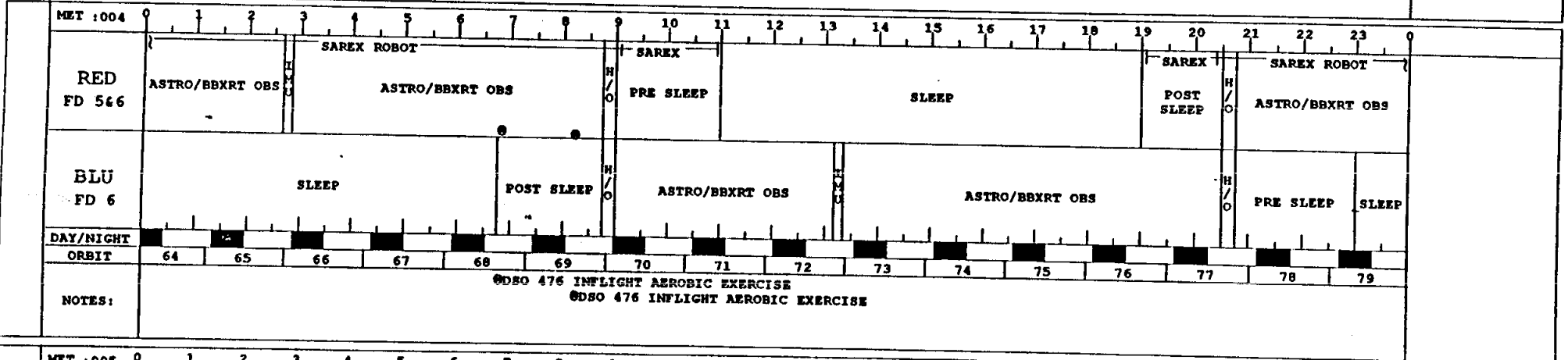
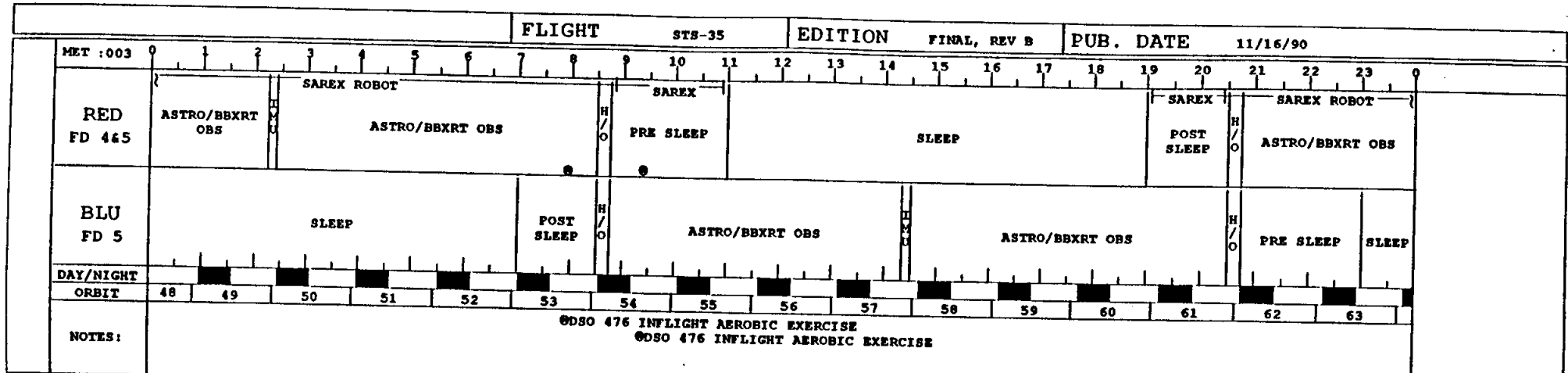
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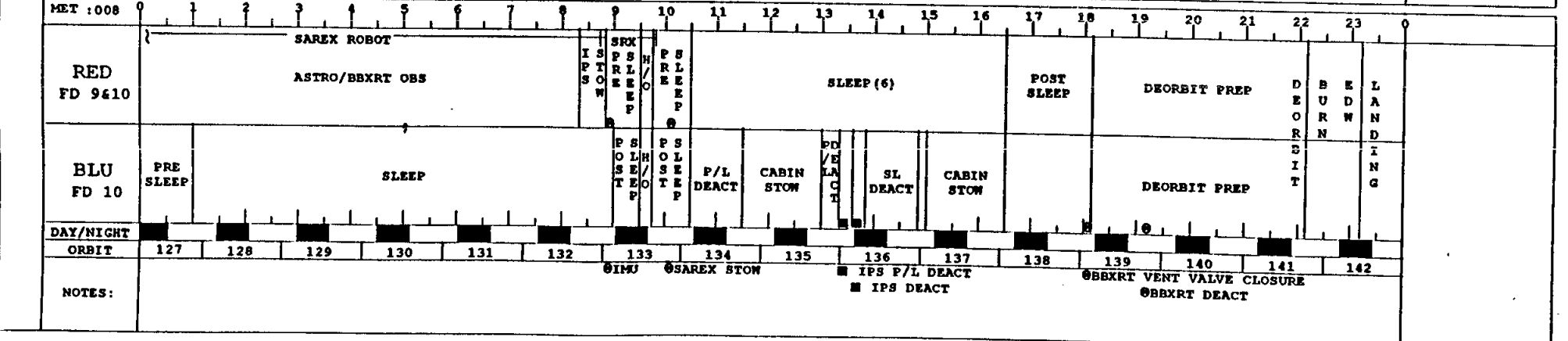
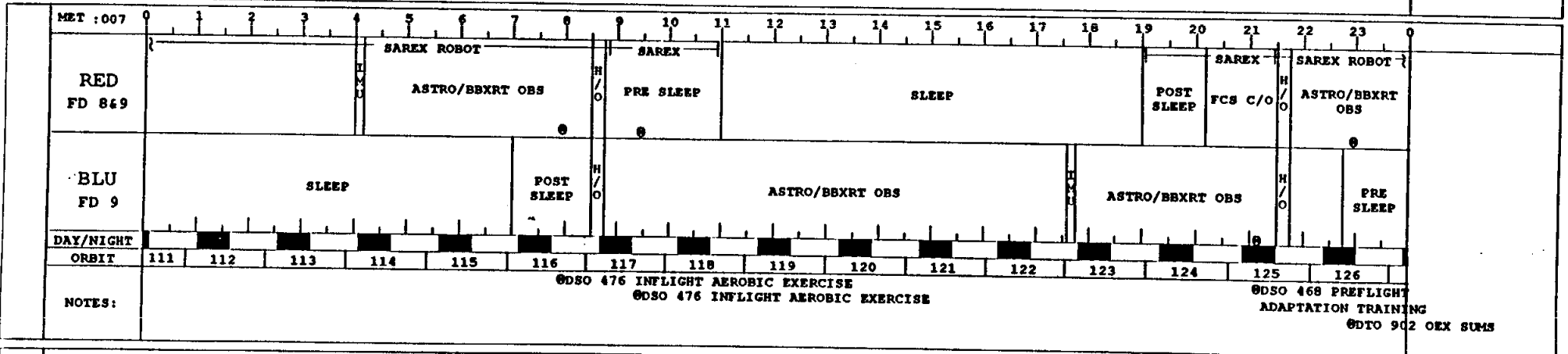
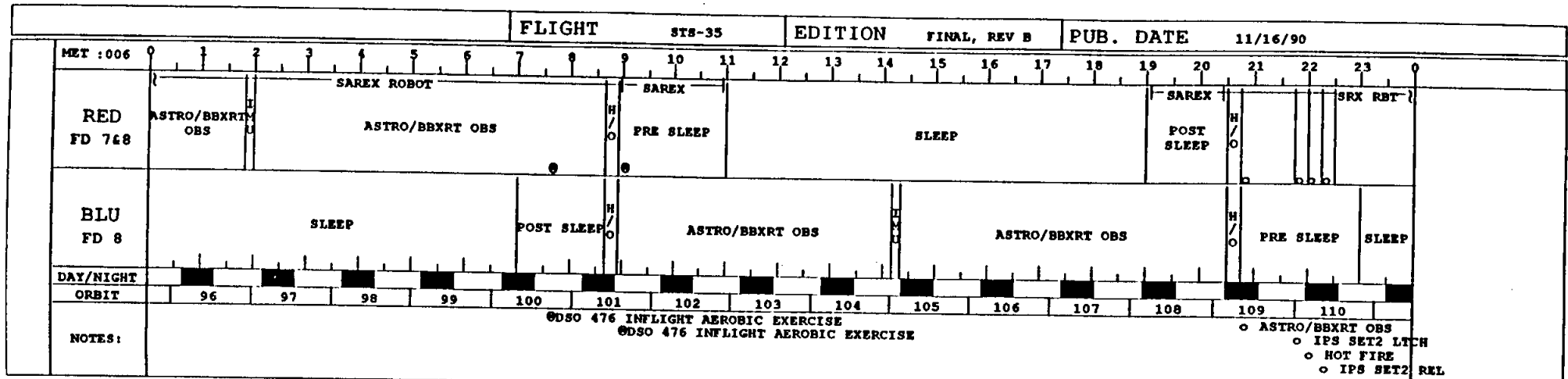
EDITION

FINAL, REV B

PUB. DATE

11/16/90

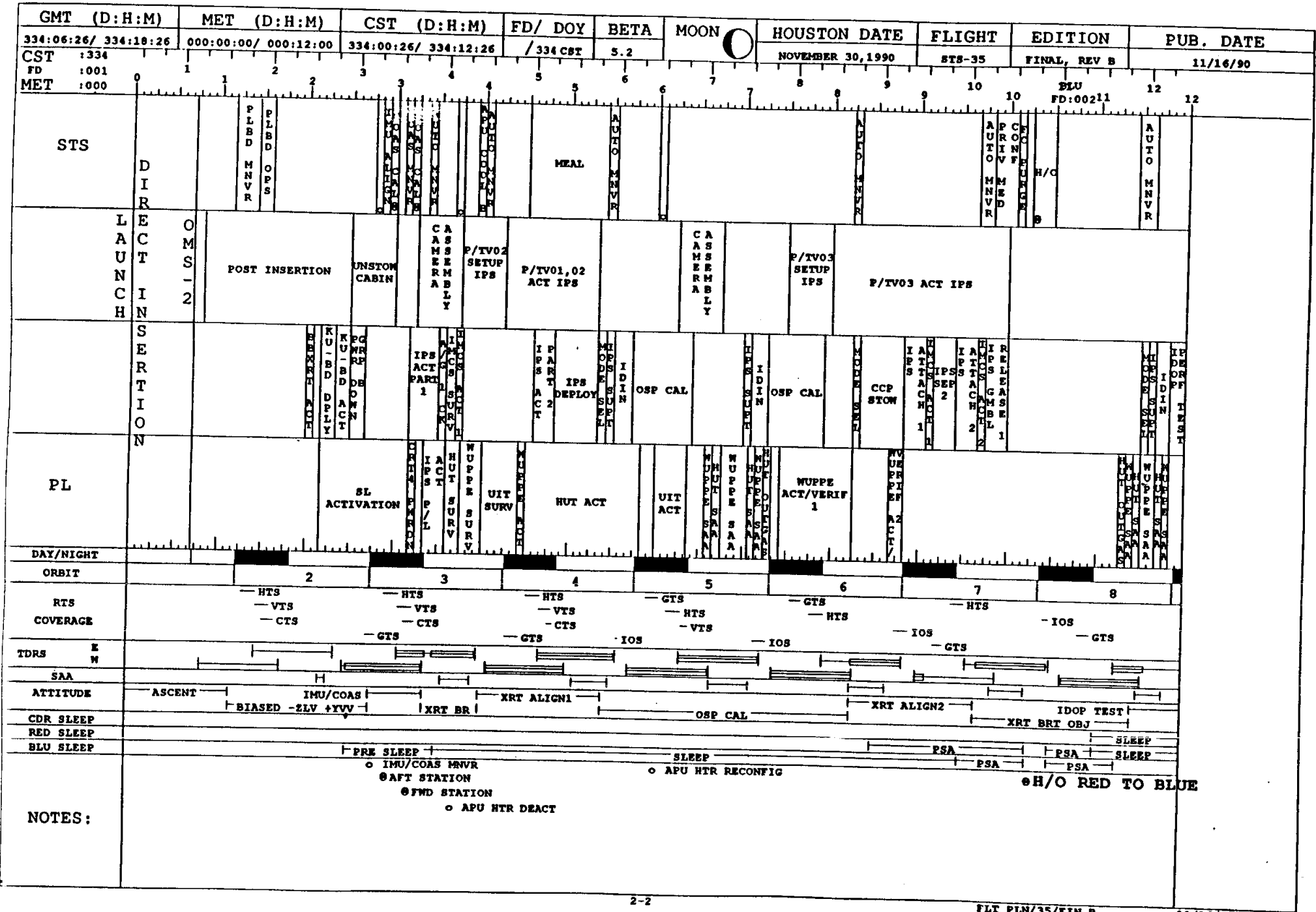




SUMMARY TIMELINE



**SUMMARY  
TIMELINE**



GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																	
334:18:26/ 335:06:26	000:12:00/ 001:00:00	334:12:26/ 335:00:26	/ 334 CST	5.6		NOVEMBER 30, 1990	STS-35	FINAL, REV B	11/16/90																	
CST :334																										
BLU FD :002																										
MET :000																										
12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21	21	22	22	22	0	0			
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	P/TVO8 SETUP FT DK	P/TVO8 ACT FT DK									P/TVO8 ACT FT DK													P/TVO8 SETUP FT DK		
	HUT ACT																									
PL																										
DAY/NIGHT																										
ORBIT	9	10	11	12	13	14	15	16																		
RTS COVERAGE	GTS	GTS	GTS																							
TDRS																										
SAA																										
ATTITUDE																										
CDR SLEEP																										
RED SLEEP																										
BLU SLEEP																										
NOTES:	DSO 468 PREFLIGHT ADAPTATION TRAINING										ACTIVATION					PRE SLEEP										
																H/O BLUE TO RED										
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>The timeline utilizes the November 30, 1990 (06:26 GMT) trajectory until 0:22:00. The remainder of the timeline uses a January 1, 1990 (06:40 GMT) trajectory.</p> </div>																									

GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
002:06:40 / 002:18:40		001:00:00 / 001:12:00		002:00:40 / 002:12:40		/002 CST	4.9		JANUARY 2, 1991	STS-35	FINAL, REV B	11/16/90		
CST :002 RED FD :002 MET :001														
0 1 2 3 4 5 6 7 8 9 10 11 12 10 BLU FD:003 10														
STS		2222 OHCF	2222 OHCF	2222 OHCF	2222 OHCF	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	2222 OHCF	H/C	2222 OHCF	AUTO MNVVR	AUTO MNVVR
	P/TV08 ACT FT DK				MEAL					EXERCISE			EXERCISE	P/TV08 SETUP FT DK
								IPS VRCS RSP TEST						
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	CELEST OBS
DAY/NIGHT	DAY		NIGHT		DAY		NIGHT		DAY		NIGHT		DAY	
ORBIT	17		18		19		20		21		22		23	
RTS COVERAGE	- HTS	- VTS	- VTS	- CTS	- VTS	- CTS	- HTS	- VTS	- IOS	- GTS	- HTS	- HTS	- GTS	- GTS
	- CTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS	- HTS
TDRS	E		W		E		W		E		W		E	
SAA														
ATTITUDE	CELESTIAL													
CDR SLEEP														
RED SLEEP														
BLU SLEEP	SLEEP						POST SLEEP							
NOTES:	©DSO 476 INFLIGHT AEROBIC EXERCISE ©H/O RED TO BLUE ©DEACTIVATION ©DSO 476 INFLIGHT AEROBIC EXERCISE													



GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
003:06:40/ 003:18:40	002:00:00/ 002:12:00	003:00:40/ 003:12:40	/003 CST	5.5	☉	JANUARY 3, 1991	STS-35	FINAL, REV B	11/16/90	
CST :003										
RED FD :003										
MET :002										
STS	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
PL	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
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ORBIT	<div style="display: flex; justify-content: space-between;"> <span>32</span><span>33</span><span>34</span><span>35</span><span>36</span><span>37</span><span>38</span><span>39</span><span>40</span> </div>									
RTS COVERAGE	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
TDRS	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
SAA	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
ATTITUDE	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
CDR SLEEP	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
RED SLEEP	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
BLU SLEEP	<div style="display: flex; justify-content: space-between;"> <span>0</span><span>1</span><span>2</span><span>3</span><span>4</span><span>5</span><span>6</span><span>7</span><span>8</span><span>9</span><span>10</span><span>11</span><span>12</span> </div>									
NOTES:	<p>           @DSO 476 INFLIGHT AEROBIC EXERCISE            @-ZLV, +XVW            @H/O RED TO BLUE            @DSO 476 INFLIGHT AEROBIC EXERCISE            @DEACTIVATION         </p>									

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																	
003:18:40/ 004:06:40	002:12:00/ 003:00:00	003:12:40/ 004:00:40	/ 003 CST	5.6	☉	JANUARY 3, 1991	STS-35	FINAL, REV B	11/16/90																	
CST :003	BLU FD :004	MET :002	12	13	14	14	15	16	17	17	18	18	19	19	20	20	21 RED	22	22	23	23	0	CST:004	MET:003		
STS	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	H/O	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R		
	PACT V O B S T D R			MEAL		P/TV04 SETUP STAR	P/TV04 ACT STAR																		P/TV08 SETUP FT DK	P/TV08 ACT FT DK
PL	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S	C E L E S T O B S		
DAY/NIGHT																										
ORBIT	40	41	42	43	44	45	46	47	48																	
RTS COVERAGE		-GTS				-IOS																				
TDRS E W																										
SAA																										
ATTITUDE																										
CDR SLEEP																										
RED SLEEP																										
BLU SLEEP																										
NOTES:																										

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
004:06:40/ 004:18:40	003:00:00/ 003:12:00	004:00:40/ 004:12:40	/ 004 CST	5.7		JANUARY 4, 1991	STS-35	FINAL, REV B	11/16/90	
CST :004 RED FD :004 MET :003							9 BLU FD:005			
STS	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	AUTO MNVVR	
			MEAL	P/TV05 SETUP HOT	P/TV05 ACT HUT		EXERCISE	EXERCISE	P/TV05P/TV05 SETUP ACT FT DK FT DK	
PL	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	
DAY/NIGHT	DAY		NIGHT		DAY		NIGHT		DAY	
ORBIT	48	49	50	51	52	53	54	55	56	
RTS COVERAGE	-GTS -HTS -VTS -CTS		-GTS -HTS -VTS -CTS		-GTS -HTS -VTS -CTS		-GTS -HTS -VTS -CTS		-GTS	
TDRS	E W		E W		E W		E W		E W	
SAA	H		H		H		H		H	
ATTITUDE	CELESTIAL									
CDR SLEEP										
RED SLEEP										
BLU SLEEP	SLEEP									
NOTES:	Δ IPS OPT HOLD		Δ IPS OPT HOLD		SLEEP		POST SLEEP		PRE SLEEP	
	●DSO 476 INFLIGHT AEROBIC EXERCISE Δ IPS OPT HOLD ●DSO 476 INFLIGHT AEROBIC EXERCISE ●H/O RED TO BLUE ●DEACTIVATION									


GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
004:18:40 / 005:06:40		003:12:00 / 004:00:00		004:12:40 / 005:00:40		/ 004 CST	5.5		JANUARY 4, 1991	STS-35	FINAL, REV B	11/16/90	
CST :004												CST:005	
BLU FD :005	12	13	14	15	16	17	18	19	20	21 RED	22	23	0
MET :003										FD:005 21			0
STS	XXXX OHCR		AUGTO MNVVR		AUGTO MNVVR		AUGTO MNVVR		AUGTO MNVVR		AUGTO MNVVR		AUGTO MNVVR
			MEAL								P/TV08P/TV08 SETUP ACT FT DK FT DK		
	HHMMSS		HHMMSS		HHMMSS		HHMMSS		HHMMSS		HHMMSS		HHMMSS
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]		[Shaded]		[Shaded]		[Shaded]		[Shaded]		[Shaded]		[Shaded]
ORBIT	56	57	58	59	60	61	62	63	64				
RTS COVERAGE	-GTS		-GTS				-IOS		-IOS		-VTS -CTS		-VTS -CTS
TDRS E W	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]		[Bar]		[Bar]
SAA	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]		[Bar]		[Bar]
ATTITUDE	CELESTIAL												
CDR SLEEP	SLEEP												
RED SLEEP	SLEEP												
BLU SLEEP	SLEEP												
NOTES:	H/O BLUE TO RED @ACTIVATION												




GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
005:06:40/ 005:18:40	004:00:00/ 004:12:00	005:00:40/ 005:12:40	/ 005 CST	5.2		JANUARY 5, 1991	STS-35	FINAL, REV B	11/16/90						
CST :005															
RED FD :005															
MET :004															
							9 BLU								
							FD:006								
STS	AUTO MNV R	WSPK OHP	AUTO MNV R	WSPK OHP	WSPK OHP	WSPK OHP	AUTO MNV R	F C F C F C F C F	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	OHCA MNV R
			MEAL	P/TV06 SETUP WUPPE	P/TV06 ACT WUPPE		EXERCISE		EXERCISE	H/C		P/TV06/TV08 SETUP FT DK	ACT FT DK		
	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP	WSPK OHP
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	CELEST OBS	CELEST OBS
DAY/NIGHT															
ORBIT	64	65	66	67	68	69	70	71							
RTS COVERAGE	-CTS	-GTS	-GTS	-GTS	-IOS	-GTS	-GTS	-GTS	-HTS	-HTS	-GTS	-GTS	-GTS	-GTS	-GTS
TDRS E W															
SAA															
ATTITUDE															
CDR SLEEP															
RED SLEEP														SLEEP	
BLU SLEEP			SLEEP				POST SLEEP							PRE SLEEP	SLEEP
NOTES:															






GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
006:18:40/ 007:06:40	005:12:00/ 006:00:00	006:12:40/ 007:00:40	/006 CST	3.6		JANUARY 6, 1991	STS-35	FINAL, REV B	11/16/90
CST :006									
BLU FD :007									
MET :005									
STS									
PL									
DAY/NIGHT									
ORBIT									
RTS COVERAGE									
TDRS E W									
SAA									
ATTITUDE									
CDR SLEEP									
RED SLEEP									
BLU SLEEP									
NOTES:									

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
007:06:40/ 007:16:40	006:00:00/ 006:12:00	007:00:40/ 007:12:40	/ 007 CST	2.8		JANUARY 7, 1991	STS-35	FINAL, REV B	11/16/90
CST :007									
RED FD :007									
MET :006									
STS	AUTO M N V R	AUTO M N V R	XXX C X H	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R	AUTO M N V R
			MEAL					EXERCISE	P/TV08B / TV08B SETUP ACT FT DK FT DK
PL	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS
DAY/NIGHT									
ORBIT	95	96	97	98	99	100	101	102	103
RTS COVERAGE	-GTS	-HTS	-VTS	-CTS	-HTS	-HTS	-GTS	-HTS	-GTS
TDRS									
SAA									
ATTITUDE	CELESTIAL								
CDR SLEEP									
RED SLEEP									
BLU SLEEP									
NOTES:	<p>A IPS SUPT</p> <p>•D50 476 INFLIGHT AEROBIC EXERCISE        •H/O RED TO BLUE        •DEACTIVATION        •D50 476 INFLIGHT AEROBIC EXERCISE</p>								

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
007:18:40/ 008:06:40	006:12:00/ 007:00:00	007:12:40/ 008:00:40	/ 007 CST	2.1		JANUARY 7, 1991	STS-35	FINAL, REV B	11/16/90						
CST :007															
BLU FD :008															
MET :006															
	12	13	14	15	16	17	18	19	20	21	22	23	0	CST:008	MET:007
STS	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR	RNNM OTCR
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	CELEST OBS	CELEST OBS
DAY/NIGHT															
ORBIT	103	104	105	106	107	108	109	110	111						
RTS COVERAGE															
TDRS															
SAA															
ATTITUDE															
CDR SLEEP															
RED SLEEP															
BLU SLEEP															
NOTES:															

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
008:06:40 / 008:18:40	007:00:00 / 007:12:00	008:00:40 / 008:12:40	/ 008 CST	0.9		JANUARY 8, 1991	STS-35	FINAL, REV B	11/16/90						
CST :008	RED FD :008	MET :007	0 1 2 3 4 5 6 7 8 9 10 11 12							BLU FD:009	0 1 2 3 4 5 6 7 8 9 10 11 12				
STS	AUTO M N V R		AUTO M N V R		AUTO M N V R		AUTO M N V R		AUTO M N V R		AUTO M N V R		AUTO M N V R		
P/TV08P/TV08 SETUP ACT FT DR FT DR		MEAL				PSM /ED TT VUD OPK 9		P /C T V O D 9 D K		E X E R C I S E		H/O		E X E R C I S E	
H A D D S L E P I N G		H A D D S L E P I N G		H A D D S L E P I N G		H A D D S L E P I N G		H A D D S L E P I N G		H A D D S L E P I N G		H A D D S L E P I N G		H A D D S L E P I N G	
PL	CELEST OBS		CELEST OBS		CELEST OBS		CELEST OBS		CELEST OBS		CELEST OBS		CELEST OBS		
DAY/NIGHT	111		112		113		114		115		116		117		
ORBIT	111		112		113		114		115		116		117		
RTS COVERAGE	-GTS -HTS -VTS -CTS		-IOS -VTS -HTS		-IOS -GTS -HTS		-IOS -GTS -HTS		-GTS -HTS -IOS		-GTS		-GTS		
TDRS E W	-----		-----		-----		-----		-----		-----		-----		
SAA	-----		-----		-----		-----		-----		-----		-----		
ATTITUDE	CELESTIAL														
CDR SLEEP	-----														
RED SLEEP	-----														
BLU SLEEP	SLEEP  -----  POST SLEEP  -----  PRE SLEEP  -----  SLEEP														
NOTES:	A IPS OPT HOLD    A IPS OPT HOLD    @DSO 476 INFLIGHT AEROBIC EXERCISE <b>●H/O RED TO BLUE</b> ●DEACTIVATION ●DSO 476 INFLIGHT AEROBIC EXERCISE														

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
008:18:40/ 009:06:40	007:12:00/ 008:00:00	008:12:40/ 009:00:40	/ 008 CST	-0.2		JANUARY 8, 1991	STS-35	FINAL, REV B	11/16/90	
CST :008	BLU FD :009	MET :007	12 13 14 15 16 17 18 19 20 21 22 23 0		RED					CST:009
			12 13 14 15 16 17 18 19 20 21 22 23 0		FD:00922					MET:008
STS	AUTO MNVV R		AUTO MNVV R		AUTO MNVV R		FCS C/O		TRK MNVV R	
			MEAL				H/O		OEX SUMS	
PL	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	P A T	CELEST OBS
DAY/NIGHT	[Shaded]		[Shaded]		[Shaded]		[Shaded]		[Shaded]	
ORBIT	119	120	121	122	123	124	125	126		
RTS COVERAGE	- IOS		- IOS		- IOS		- VTS - CTS		- VTS - CTS	
TDRS E W	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]	
SAA	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]	
ATTITUDE	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]	
CDR SLEEP	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]	
RED SLEEP	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]	
BLU SLEEP	[Bar]		[Bar]		[Bar]		[Bar]		[Bar]	
NOTES:	<ul style="list-style-type: none"> <li>• APU HTR ACT</li> <li>• DSO 468 PREFLIGHT ADAPTATION TRAINING ACTIVATION</li> <li>• H/O BLUE TO RED</li> <li>• APU HTR RECONFIG</li> <li>• PRE SLEEP</li> </ul>									



GMT (D:H:M)		MET (D:H:M)		CST (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
009:06:40/ 009:18:40		008:00:00/ 008:12:00		009:00:40/ 009:12:40		/009 CST	-1.4		JANUARY 9, 1991	STS-35	FINAL, REV B	11/16/90						
CST :009	0	1	2	3	4	5	6	7	8	9	10	11	12					
RED FD :009																		
MET :008																		
STS			ZLV MNV R		AUTO MNV R					AUTO MNV R		I M U C						
			W D U S M T P E		W D U S M T P E	MEAL			P/TV03 SETUP IPS	P/TV03 ACT IPS			CABIN STOW					
PL		CELEST OBS		CELEST OBS		C E L E S T O B S			CELEST OBS				SAREX STOW	H U I T D E A C C H				
														W U R P D E A C H				
DAY/NIGHT																		
ORBIT		127		128		129		130		131		132		133		134		
RTS COVERAGE		VTS -CTS		HTS -VTS		HTS		IOS		IOS		GTS -HTS		GTS		GTS		
TDRS																		
SAA																		
ATTITUDE																		
CDR SLEEP																		
RED SLEEP																		
BLU SLEEP		PRE SLEEP																
NOTES:			⊙ -ZLV, +YVV		△ IPS OPT HOLD								⊙ DEACTIVATION		⊙ -ZLV, +YVV		⊙ H/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				
009:18:40/ 010:06:40	008:12:00/ 009:00:00	009:12:40/ 010:00:40	/009 CST	-2.7		JANUARY 9, 1991	STS-35	FINAL, REV B	11/16/90				
CST :009													
BLU FD :010													
MET :008													
12	13	14	15	16	17	18	19	20	21	22	23	0	0
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">STS</div> <div style="width: 15%; text-align: center;">           X S I M N V R         </div> <div style="width: 15%; text-align: center;">           J S 21 C G         </div> <div style="width: 15%; text-align: center;">           P/IV08P/IV08 SETUP ACT FT DK FT DK         </div> <div style="width: 15%; text-align: center;">           P G W R R F U B P         </div> <div style="width: 15%; text-align: center;">           I M C M N V R         </div> <div style="width: 15%; text-align: center;">           I P M L U B D A L L O P S         </div> <div style="width: 15%; text-align: center;">           B U R N *         </div> <div style="width: 15%; text-align: center;">           D E O R B I T B U R N *         </div> <div style="width: 15%; text-align: center;">           E D W L A N D I N G *         </div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">CABIN STOW</div> <div style="width: 15%; text-align: center;">CABIN STOW</div> <div style="width: 15%; text-align: center;">MEAL</div> <div style="width: 15%; text-align: center;">DEORBIT PREP</div> <div style="width: 15%; text-align: center;">D E O R B I T B U R N *</div> <div style="width: 15%; text-align: center;">E D W L A N D I N G *</div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">PL</div> <div style="width: 15%; text-align: center;">S L D E A C T</div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">DAY/NIGHT</div> <div style="width: 15%; text-align: center;">ORBIT</div> <div style="width: 15%; text-align: center;">RTS COVERAGE</div> <div style="width: 15%; text-align: center;">TDRS</div> <div style="width: 15%; text-align: center;">SAA</div> <div style="width: 15%; text-align: center;">ATTITUDE</div> <div style="width: 15%; text-align: center;">CDR SLEEP</div> <div style="width: 15%; text-align: center;">RED SLEEP</div> <div style="width: 15%; text-align: center;">BLU SLEEP</div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;"></div> <div style="width: 15%; text-align: center;">135</div> <div style="width: 15%; text-align: center;">136</div> <div style="width: 15%; text-align: center;">137</div> <div style="width: 15%; text-align: center;">138</div> <div style="width: 15%; text-align: center;">139</div> <div style="width: 15%; text-align: center;">140</div> <div style="width: 15%; text-align: center;">141</div> <div style="width: 15%; text-align: center;">142</div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;"></div> <div style="width: 15%; text-align: center;">- IOS</div> <div style="width: 15%; text-align: center;">- IOS</div> <div style="width: 15%; text-align: center;">- VTS - CTS</div> <div style="width: 15%; text-align: center;">- HTS - VTS - CTS</div> <div style="width: 15%; text-align: center;">- HTS - VTS - CTS</div> <div style="width: 15%; text-align: center;">- HTS - VTS - CTS</div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;"></div> <div style="width: 15%; text-align: center;">-ZLV +YVV</div> <div style="width: 15%; text-align: center;">-XSI</div> <div style="width: 15%; text-align: center;">IMU VERIF</div> <div style="width: 15%; text-align: center;">D/O</div> <div style="width: 15%; text-align: center;">ENTRY</div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;"></div> <div style="width: 15%; text-align: center;">SLEEP</div> <div style="width: 15%; text-align: center;">SLEEP</div> <div style="width: 15%; text-align: center;">POST SLEEP</div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">NOTES:</div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> </div>													
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> <div style="width: 15%;"></div> </div>													

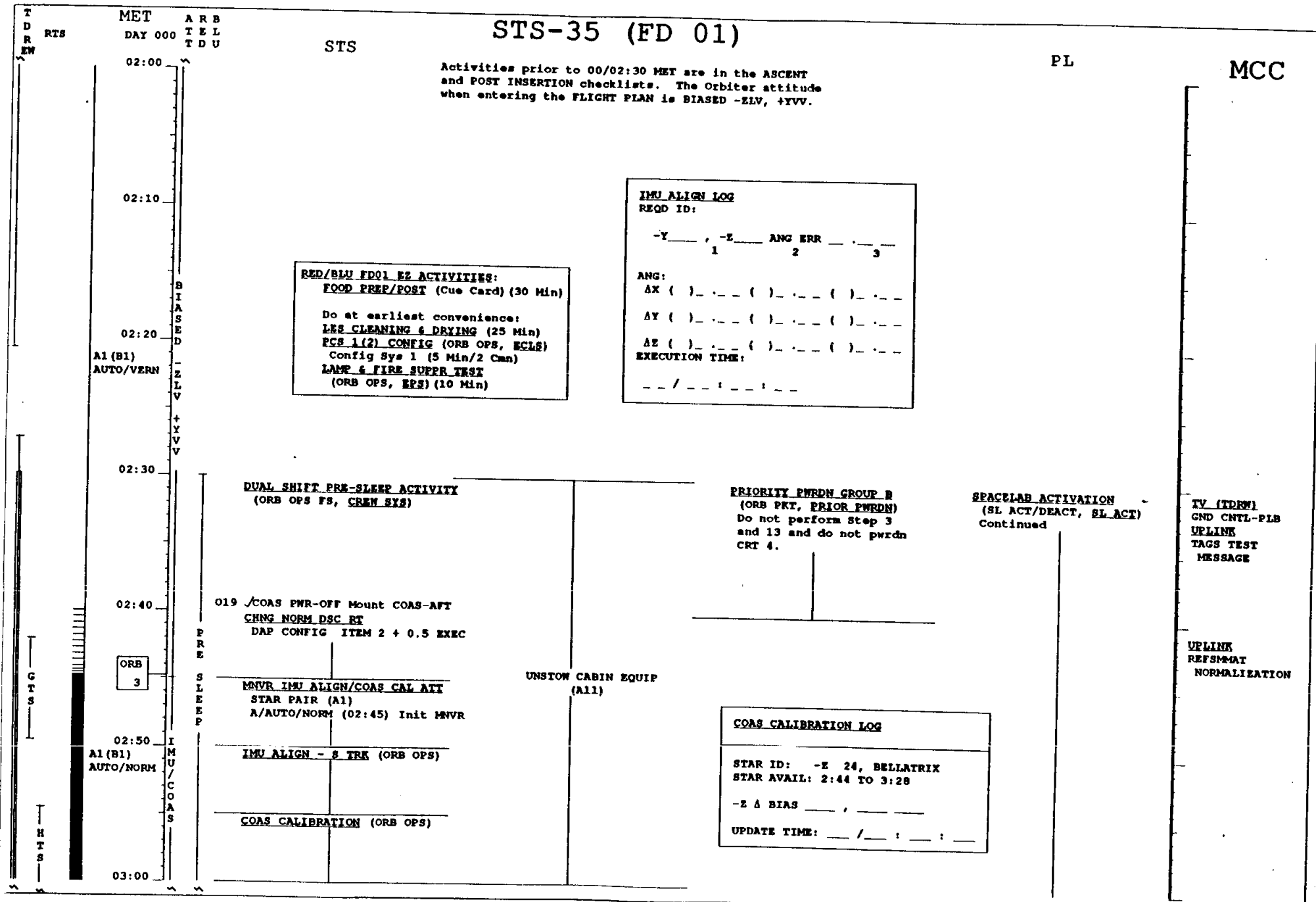
\* DEORBIT BURN 8/22:03 \* EDW LANDING 8/23:08

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DETAILED TIMELINE

DETAILED  
TIMELINE

DETAILED  
TIMELINE



# STS-35 (FD 01)

MET  
DAY 000  
ARB  
TEL  
T DU

STS

PL

MCC

## COAS CALIBRATION LOG

STAR ID: +X 11, SIRIUS  
STAR AVAIL: 02:45 TO 03:35

+X Δ BIAS \_\_\_\_\_

UPDATE TIME: \_\_\_ / \_\_\_ : \_\_\_ : \_\_\_

019 ✓COAS PWR - OFF  
01 ✓COAS - OFF Mount COAS - FWD

◀ MNVR COAS CAL ATT  
R=141 P=122 Y=70  
A/AUTO/NORM (03:05) Init MNVR

COAS CALIBRATION (ORB OPS)

01 ✓COAS-OFF Stow COAS

P/TV CAMERA ASSEMBLY  
(PHOTO/TV, P/TV REF DATA)  
Assemble equipment required  
for P/TV01 and P/TV02.

MNVR BBXRT BR EARTH ATT

Change DAP A,B to A11,B2  
014,015,016:E All DDU cbs (six) - op  
:F PRI RJD DRIVER,  
LOGIC (sixteen) - OFF

APU STEAM VENT HTR DEACT  
R2 BLR PWR (three) - OFF

P/TV02 SETUP (IPS ACT/DPLY/OPS)  
(PHOTO/TV, P/TV SCENES)

APU COOL OFF (On MCC Cue)  
R2 APU FUEL PUMP/VLV COOL B-OFF

IPS ACTIVATION-PART 1  
(SL IPS, IPS ACT)

CRT POWERDOWN  
R12L CRT4 PWR - OFF

IPS PAYLOAD ACTIVATION

COMM CHECK WITH POCC

TV (TDRW/E)  
GND CNTL - PLB  
(TAPS ACT  
CAMR B,C)

HUT SURVIVAL ACTIVATION

IMCS SURVIVAL ACTIVATION

POCC  
CIC PERFORM  
COMM CHECK  
WITH P/L CREW

IMCS ACTIVATION - PART 1

WUPPE SURVIVAL ACTIVATION

INFORM CREW  
GO FOR APU  
COOL OFF

TDR EN  
RIS  
HTS  
VTS  
CTS  
A1 (B5)  
MAN/VERN  
A1 (B5)  
AUTO/NORM  
A11 (B2)  
AUTO/VERN  
XRT  
BRT  
SLEEP  
SLEEP  
SLEEP

03:00  
03:10  
03:20  
03:30  
03:40  
03:50  
04:00

T  
D  
R  
E  
W

RTS

MET

DAY 000

ARB  
TEL  
TDU

STS

# STS-35 (RED FD 01)

PL

MCC

04:00  
All (B2)  
AUTO/VERN

04:10

04:20

04:30

04:40

04:50

05:00

ORB  
4

X  
R  
T  
A  
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M  
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S  
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U  
L

MNR BXRRT ALIGN 1 ATT

R/TVO2 SETUP (IPS ACT/DPLY/OPS)  
(PHOTO/TV, R/TV SCENES)

R/TVO1.02 ACT (PLB & IPS ACT)  
(PHOTO/TV, R/TV SCENES)

UIT SURVIVAL ACTIVATION

WUPPE ACTIVATION

IPS ACTIVATION - PART 2  
(SL IPS, IPS ACT)

TV (IDRW/E)  
GND CNTRL-CAB  
CREW CNTRL-PLB

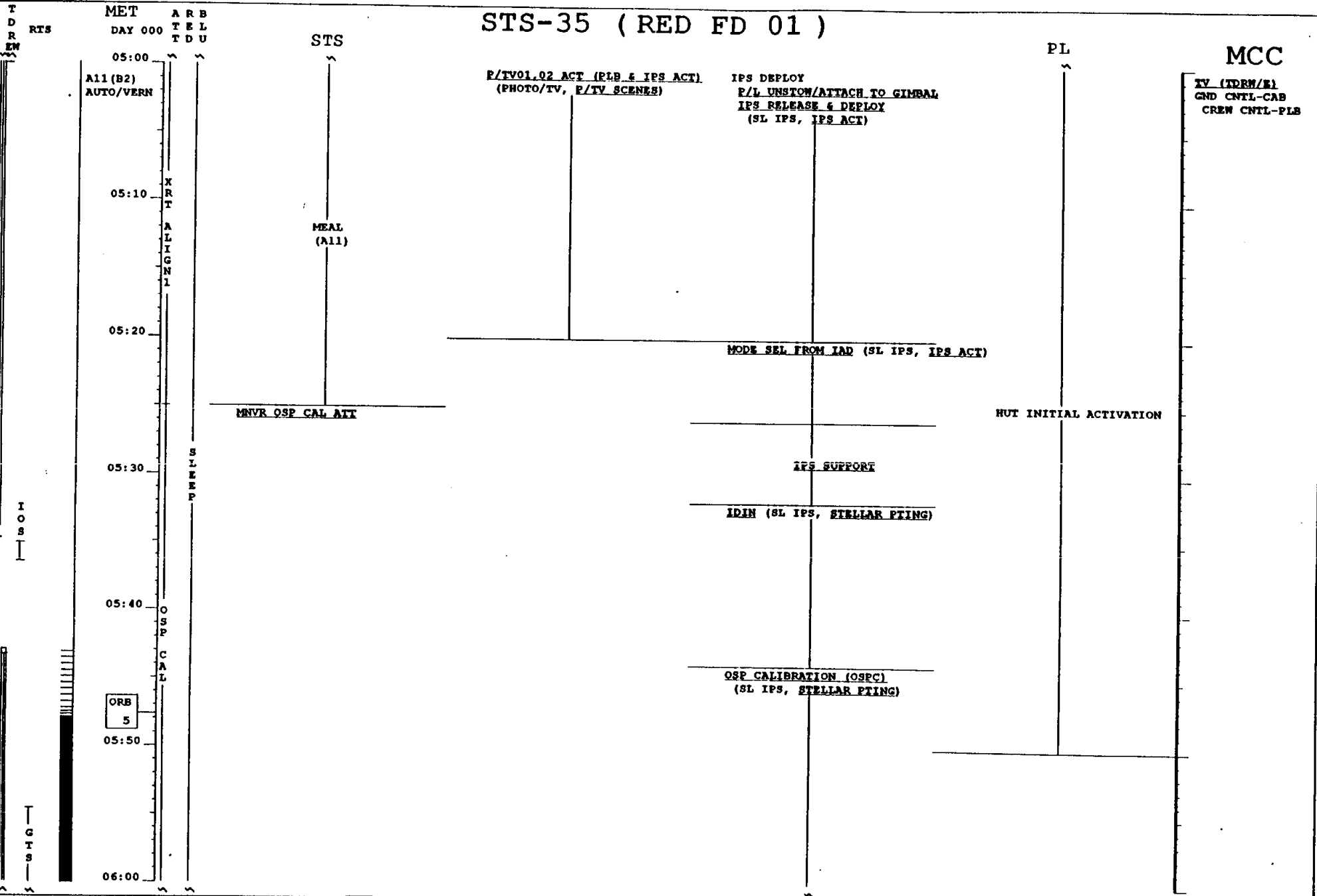
MEAL  
(All)

HUT INITIAL ACTIVATION

IPS DEPLOY  
R/L UNSTOW/ATTACH TO GIMBAL  
IPS RELEASE & DEPLOY  
(SL IPS, IPS ACT)

URLINK  
16" Ø ONLY

# STS-35 ( RED FD 01 )





# STS-35 (RED FD 01)

TDRS  
 MET ARB  
 DAY 000 TEL  
 EDU TDU

STS

PL

MCC

06:00

A11 (B2)  
 AUTO/VERN

A12 APU HTR GAS GEN/FUEL  
 PUMP (three) - A AUTO

OSP CALIBRATION (OSPC)  
 (SL IPS, STELLAR PTING)

06:10

UIT ACTIVATION & CHECKOUT

R/TV CAMERA ASSEMBLY  
 (PHOTO/TV, R/TV REF DATA)

06:20

06:30

OSP  
 CAL  
 SLEEP

WUPPE SAA MONITORING

06:40

HUT SAA MONITOR

06:50

WUPPE SAA MONITORING

07:00

TDR EN  
 MET ARB  
 DAY 000 TEL  
 TDU

# STS-35 (RED FD 01)

STS

PL

MCC

07:00

A11 (B2)  
 AUTO/VERN

07:10

ORB  
 6

07:20

07:30

SLEEP  
 OSC  
 CAL

07:40

07:50

08:00

IOS

CTS

HTS

IPS SUPPORT

IDIN (SL IPS, STELLAR PTING)

OSP CALIBRATION (OSPC)  
 (SL IPS, STELLAR PTING)

WUPPE SAA MONITORING

HUT SAA MONITOR

WUPPE SAA MONITORING

HUT OUTGASSING

R/TVO3 SETUP (IPS DEACT & STOW)  
 (PHOTO/TV, P/TV SCENES)

WUPPE ACT/VERIF - PART 1

# STS-35 (RED FD 01)

STS

PL

MCC

MET  
DAY 000

ARB  
TEL  
TDU

RTS

08:00  
A11 (B2)  
AUTO/VERN

O  
S  
P

08:10  
C  
A  
L

MNVR BXRT ALIGN 2 ATT

R/TVO3 ACT (IPS DEACT & STOW)  
(PHOTO/TV, R/TV SCENES)

WUPPE ACT/VERIF - PART 1

08:20

MODE SEL FROM 1ST (SL IPS, STEL)

IPS CCP STOWAGE  
(SL IPS, CONT OPS)  
Steps 1-15  
Note: Do not lock PRLA's

TV (TDRE/W/E)  
GND CNTL-CAB  
CREW CNTL-PLB

08:30

S  
L  
E  
E  
P

DUAL SHIFT PRE-SLEEP ACTIVITY  
(ORB OPS FS, CREW SYS)  
/HUM SEP FOR WATER  
ACCUMULATION

08:40

X  
R  
T  
A  
L  
I  
G  
N  
2

WUPPE ACT/VERIF - PART 2

UPLINK  
21° β + MASK

08:50

P  
S  
A

ORB  
7

PL UNSTOW/ATTACH TO GIMBALE  
(SL IPS, IPE ACT)  
Steps 13 - 15

09:00

T D R E W  
 RTS  
 MET DAY 000  
 A R B  
 T E L  
 T D U

STS

STS-35 (RED FD 01)

PL

MCC

TV (IDRE/W/E)  
 GND CNTL-CAB  
 CREW CNTL-PLB

09:00  
 All (B2)  
 AUTO/VERN

09:10

09:20

09:30

09:40

09:50

10:00

SLEEP  
 X R T  
 A L I G N 2  
 P S A  
 X R T  
 P S A  
 X R T  
 B R T  
 O B J

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

MNVR BEXRT BOS ATT

PRIVATE MEDICAL CONFERENCE

P/TV03 ACT (IPS DEACT & STOW)  
 (PHOTO/TV, P/TV SCENES)

PL UNSTOW/ATTACH TO GIMBALS  
 (SL IPS, IPS ACT)  
 Steps 13 - 15

IMCS ACTIVATION - PART 1

PGSM SEP (SET 2)  
 (SL IPS, IPS CHECKOUT)

PGSM ATTACH (SET 2)  
 (SL IPS, IPS CHECKOUT)

IMCS ACTIVATION - PART 2

IPS RELEASE & DEPLOY  
 (SL IPS, IPS ACT)

UPLINK  
 16 β ONLY

# STS-35 (RED FD 01)

PL

MCC

STS

## BLU FD 02

MET ARB  
DAY 000 TEL  
T D U

10:00

All (B2)  
AUTO/VERN

ORB  
8

PRIVATE MEDICAL CONFERENCE  
FC PURGE - AUTO (Cue Card)

HANDOVER: RED TO BLUE

11:00

• • • IF IMU MNVR REQUIRED • • • •  
• (PER MCC CALL) •  
• MNVR IMU ALIGN ATT •  
• STAR PAIR (C1) •  
• A/AUTO/VERN (13:00) Init MNVR •  
• MNVR POLE STAR ATT •  
• • • • •

MNVR IDOP TEST ATT

HUT OUTGASSING  
WUPPE SAA MONITORING  
HUT SAA MONITOR  
WUPPE SAA MONITORING  
  
HUT SAA MONITOR  
WUPPE SAA MONITORING

ORB  
9

12:00

MNVR POLE STAR ATT

R/TV08 SETUP (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

MODE SEL FROM IAD (SL IPS)  
IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IDOP PERFORMANCE TEST  
(SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

R/TV08 ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

IMCS SYSTEM CALIBRATION

HUT INITIAL ACTIVATION

13:00

IMU ALIGN - S TRK (ORB OPS)

IPS CREW PUSH OFF TEST  
(SL IPS, STELLAR PTING)

IMCS SYSTEM CALIBRATION  
IPS ADP PERFORMANCE TEST  
(SL IPS, STELLAR PTING)

TV (TRW)  
GND CNTRL-CAB

ORB  
10

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

IMCS GYRO CALIBRATION

PREFLT ADAPT TRNG (DSO 468)  
(MED FS, MED DSO2)

EXPERIMENT FOCUS & ALIGN

ORB  
11

15:00

# STS-35 (BLU FD 02)

STS

PL

MCC

**BLU FD02 EZ ACTIVITIES:**  
**FOOD PREP/POST (Cue Card) (30 Min)**  
**HEAVY ISOTOPE ENRICHMENT**  
**OF GALLEY H2O (DSO 480)**  
**(MED FS, Cue Card) (5 Min/MS2)**  
**TRASH COMPACTION AND RETENTION**  
**SYSTEM DEMONSTRATION (DTO 634)**

MEAL  
(All)

EXPERIMENT FOCUS & ALIGN

P/TVOB ACT (FLIGHT DECK)  
 (PHOTO/TV, P/TV SCENES)

MNVR 2801-11 HUT SP1 ATT

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

TV (TDRM)  
 GND CNTL-CAB

HUT SPEC FOCUS - PART 1

MNVR BXBRT ALIGN 3/CTA ATT

DUAL SHIFT POST-SLEEP ACTIVITY  
 (ORB OPS FS, CREW SYS)  
AEROBICS (DSO 476) Pulse Rt  
 (MED FS, MED DSOs)  
 (CDR, PLT)

IPS CONT TARGET ACQUISITION

CELESTIAL OBSERVATION

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)  
 SAREX-C SETUP  
 (PL OPS, SAREX)

WUPPE FOCUS & ALIGN - PT1

MNVR WUPPE FSA ATT

**TDRM**  
**RTS**  
**ARB**  
**TEL**  
**TDU**

**MET**  
**DAY 000**

15:00  
 All (B2)  
 AUTO/VERN

16:00  
 POLLE  
 STARR  
 FGA

17:00  
 SLEEP

18:00  
 HUT  
 SPEC 1

19:00  
 XRT  
 POST  
 SLEEP  
 WUPPE

20:00

ORB 12  
 ORB 13  
 ORB 14

ISTC  
 IOSH

# STS-35 (BLU FD 02)

MCC

MET ARB  
DAY 000 TEL  
T D U

STS

PL

20:00

A11 (B2)  
AUTO/VERN

FC PURGE - AUTO (Cue Card)

SAREX-C SETUP  
(PL OPS, SAREX)

WUPPE FOCUS & ALIGN - PT1

MNVR BEXRT ALIGN 4 ATT

SAREX-C ROBOT ACT (PL OPS)

21:00

ORB  
15

MNVR 2801-12 HUT SP2 ATT

IPS CONT TARGET ACQUISITION

CELESTIAL OBSERVATION

The timeline utilizes the November 30, 1990  
(06:26 GMT) trajectory until 0/22:00. The  
remainder of the timeline uses a January 1,  
1990 (06:40 GMT) trajectory.

MNVR WUPPE F&A ATT

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

HUT SPEC FOCUS - PART 2

22:00

ORB  
16

MNVR 3227-23 HUT CAM ATT

HANDOVER: BLUE TO RED

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

WUPPE FOCUS & ALIGN - PT2

## RED FD 02

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

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

HUT CAMERA SENSITIVITY

23:00

001  
00:00

MNVR 4518-11W

PRE  
MO32M /LEH 02 5 vlv -CL  
Insert O2 Bleed Orifice  
into LEH 02 5 OD  
LEH 02 5 vlv - OP  
/SPLY 1,2 vlv -OP

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 0301-11U

P/TV08 SETUP (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 4421-10B

P/TV08 ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

TV (IDRM)  
GND CNTRL-CAB

01:00

# STS-35 (RED FD 02)

PL

MCC

MET ARB  
DAY 001 TEL  
T DU

STS

01:00  
A11 (B2)  
AUTO/VERN

MNVR 3804-10B

- • • IF IMU MNVR REQUIRED: • • • • •
- (PER MCC CALL)
- MNVR IMU ALIGN AIT
- STAR PAIR (C1)
- A/AUTO/VERN (01:10) Init MNVR
- • • • •

IMU ALIGN - S TRK (ORB OPS)  
MNVR 0608-10W

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

ORB  
18

02:00

RED FD02 EZ ACTIVITIES:  
FOOD PREP/POST (Cue Card) (30 Min)  
HEAVY ISOTOPE ENRICHMENT  
OF GALLEY H2O (DSO 480)  
(MED FS, Cue Card) (5 Min/PLT)  
TRASH COMPACTION AND RETENTION  
SYSTEM DEMONSTRATION (DTO 634)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 2306-12B

03:00

MNVR 0001-10H

MEAL  
(All)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

ORB  
19

04:00

MNVR 2801-10H

IPS OPTICAL HOLD

CELESTIAL OBSERVATION

ORB  
20

05:00

MNVR 0658-10W

IMU ALIGN LOG  
REQD ID:

-Y \_\_\_\_\_, -Z \_\_\_\_\_ ANG ERR \_\_\_\_\_  
1 2 3

ANG:

AX ( ) . . . . . ( ) . . . . . ( ) . . . . .

AY ( ) . . . . . ( ) . . . . . ( ) . . . . .

AZ ( ) . . . . . ( ) . . . . . ( ) . . . . .

EXECUTION TIME:

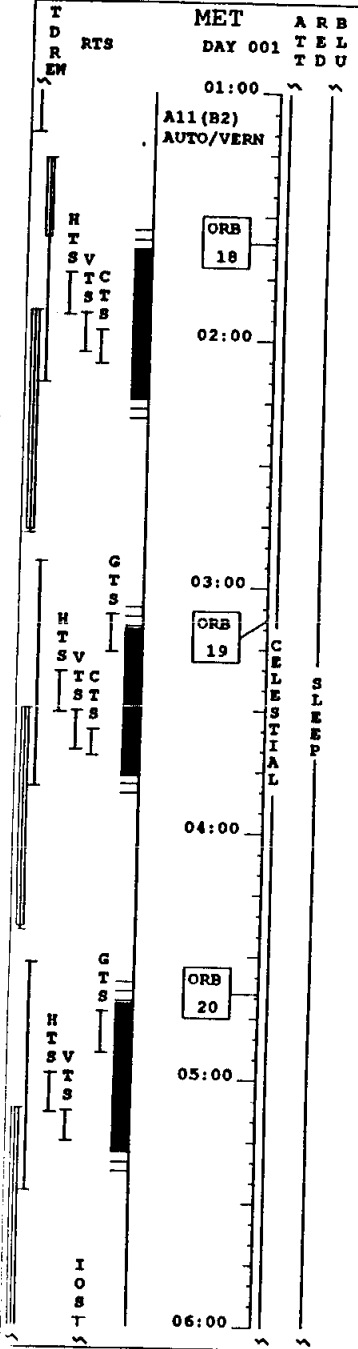
\_\_\_\_ / \_\_\_\_ : \_\_\_\_ - \_\_\_\_

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS VRCS RESPONSE TEST  
(SL IPS, STELLAR PTING)

IPS SUPPORT





**STS-35 (RED FD 02)**

ADDRESS  
RTS  
I O S  
G T S  
H T S  
I O S  
G T S  
H T S  
I O S  
G T S  
H T S

MET  
DAY 001  
06:00  
**ORB 21**  
All (B2)  
AUTO/VERN  
07:00  
**ORB 22**  
08:00  
**ORB 23**  
09:00  
**ORB 23**  
10:00  
**ORB 24**  
11:00

ARB  
TEL  
TDU  
STS  
SLEEP  
POST  
SLEEP  
PRE  
SLEEP

**IMU ALIGN LOG**  
REQD ID:  
-Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
          1          2          3  
ANG:  
AX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
AY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
AZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
EXECUTION TIME:  
\_ \_ / \_ \_ : \_ \_ : \_ \_

**MNVR 4410-10H**

**DUAL SHIFT POST-SLEEP ACTIVITY**  
(ORB OPS FS, CREW SYS)  
✓HUM SEP FOR WATER ACCUMULATION  
PRIVATE MEDICAL CONFERENCE

**MNVR 2302-10W**  
FC PURGE - AUTO (Cue Card)

**HANDOVER: RED TO BLUE**

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

**MNVR 4588-10W**

**MNVR 8116-40B**

CELESTIAL OBSERVATION

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CELESTIAL OBSERVATION

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CELESTIAL OBSERVATION

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CELESTIAL OBSERVATION

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CELESTIAL OBSERVATION

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CELESTIAL OBSERVATION

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CELESTIAL OBSERVATION

PL

MCC

**BLU FD 03**

IPDO (SL IPS, STELLAR PTING)

IPS SLEN TEST  
(SL IPS, STELLAR PTING)

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IPDO (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

SAREX-C ROBOT DEACT (PL OPS)  
SAREX-C CREW-TENDED OPS  
(PL OPS, SAREX)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

IPS OPTICAL HOLD

SAREX-C PWRDN (PL OPS)  
IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

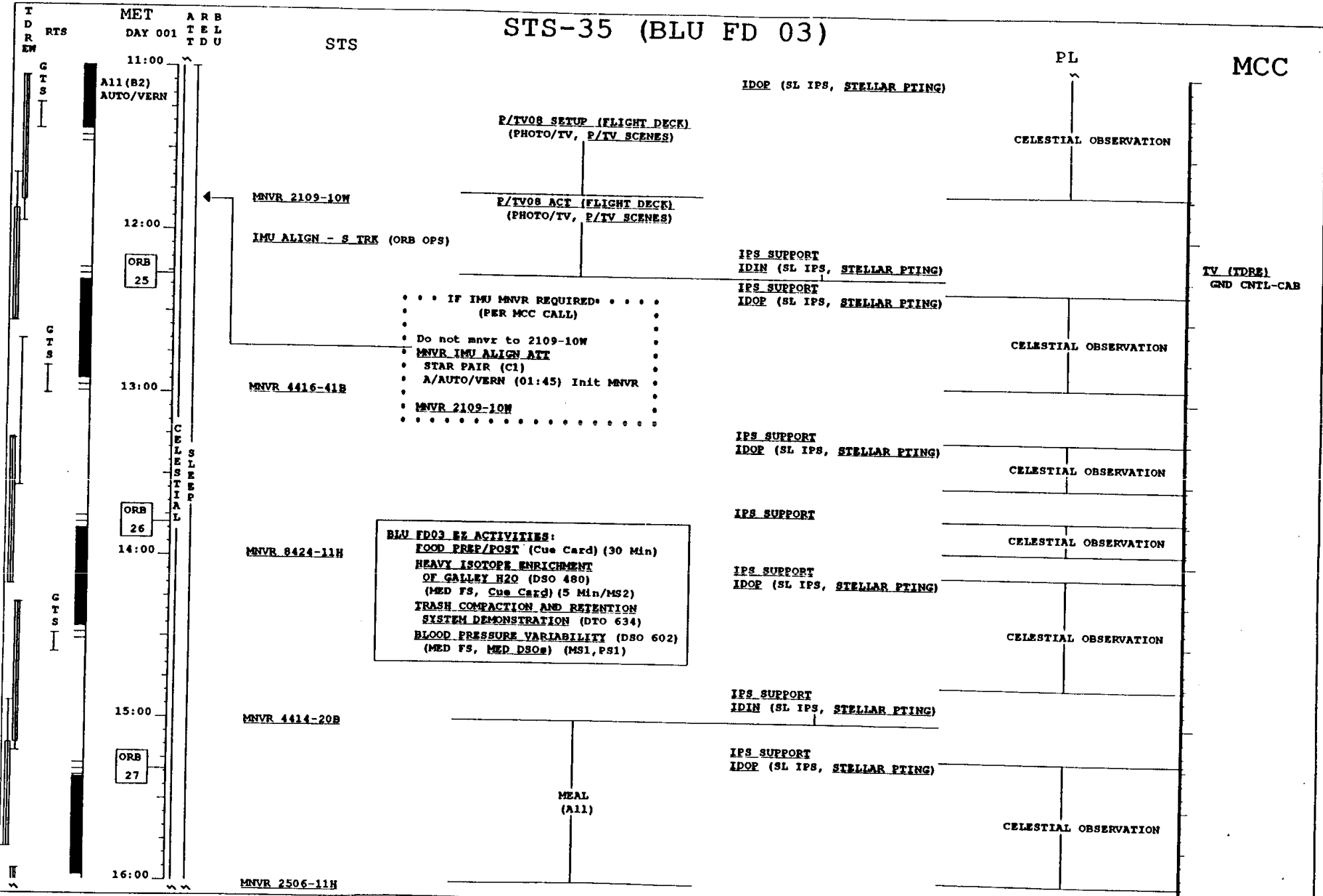
# STS-35 (BLU FD 03)

MET ARB  
DAY 001 TEL  
T DU

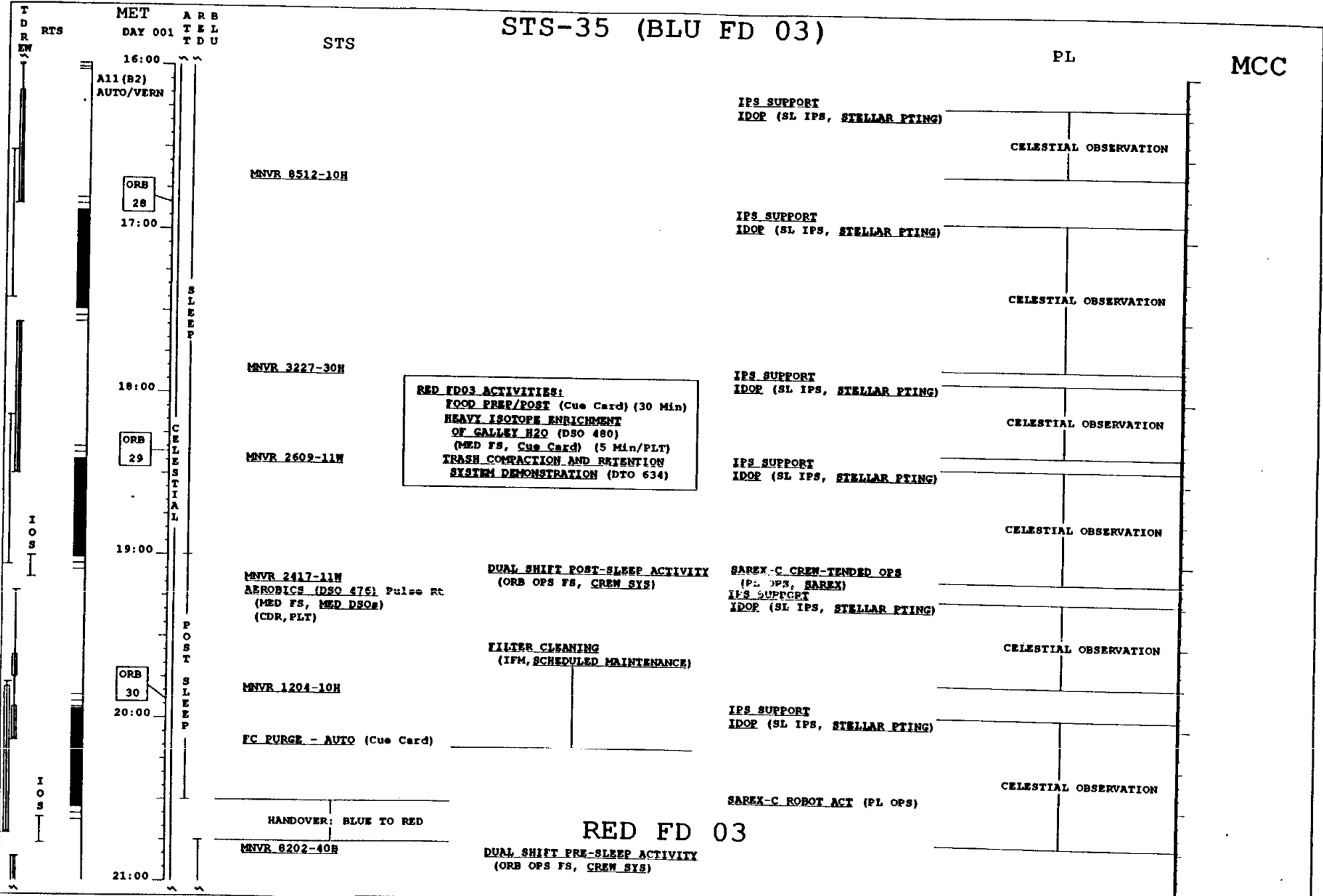
STS

PL

MCC



# STS-35 (BLU FD 03)



**RED FD03 ACTIVITIES:**  
 FOOD PREP/POST (Cue Card) (30 Min)  
 HEAVY ISOTOPE ENRICHMENT OF GALLEY H2O (DSO 480) (MED FS, Cue Card) (5 Min/PLT)  
 TRASH COMPACTION AND RETENTION SYSTEM DEMONSTRATION (DTO 634)

**DUAL SHIFT POST-SLEEP ACTIVITY**  
 (ORB OPS FS, CREW SYS)

**FILTER CLEANING**  
 (IFM, SCHEDULED MAINTENANCE)

## RED FD 03

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

HANDOVER: BLUE TO RED

# STS-35 (RED FD 03)

STS

PL

MCC

MET ARB  
DAY 001 TEL  
T DU

TDR EW  
 RTS  
 CTS I  
 IOS I  
 HTSV CTS I  
 HTSV CTS I  
 GTS I

21:00  
 A11 (B2)  
 AUTO/VERN  
 ORB 31  
 22:00  
 ORB 32  
 23:00  
 ORB 33  
 00:00  
 ORB 34  
 01:00  
 02:00

PRE SLEEP  
 CELESTIAL  
 SLEEP

MNVR 5116-10U  
 MNVR 2417-12M  
 MNVR 8415-11H  
 MNVR 4416-20B  
 MNVR 2111-20B  
 MNVR 5102-10U  
 IMU ALIGN - S TRK (ORB OPS)  
 MNVR 4503-10M

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

P/TVOB SETUP (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

P/TVOB ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

. . . . IF IMU MNVR REQUIRED . . . .  
 . . . . (PER MCC CALL) . . . .  
 . . . .  
 . . . . MNVR IMU ALIGN ATT . . . .  
 . . . . STAR PAIR (C1) . . . .  
 . . . . A/AUTO/VERN (01:35) Init MNVR . . . .  
 . . . .

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION  
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 CELESTIAL OBSERVATION  
 CELESTIAL OBSERVATION

TV (TDRE)  
 GND CNTRL-CAB

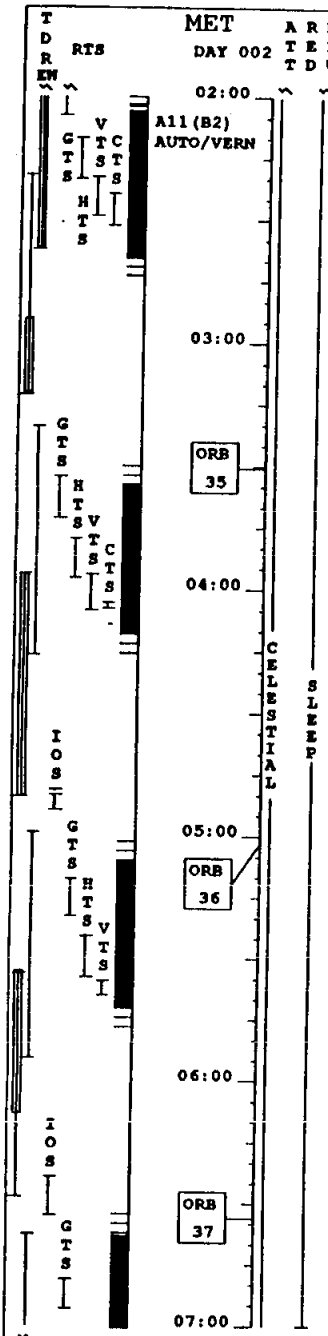
# STS-35 (RED FD 03)

MET ARB  
DAY 002 TEL  
T DU

STS

PL

MCC



02:00  
A11 (B2)  
AUTO/VERN

MNVR 3749-11B

03:00

MEAL  
(All)

ORB  
35

MNVR 9106-10B

04:00

MNVR 4212-10H

05:00  
ORB  
36

MNVR 2209-10W

06:00

ORB  
37

07:00

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS GIMBAL ANGLE TEST  
(SL IPS, STELLAR PTING)  
Perform twice

INFORM CREW  
GIMBLE ANGLES

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS GIMBAL ANGLE TEST  
(SL IPS, STELLAR PTING)  
Perform four times

INFORM CREW  
GIMBLE ANGLES

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

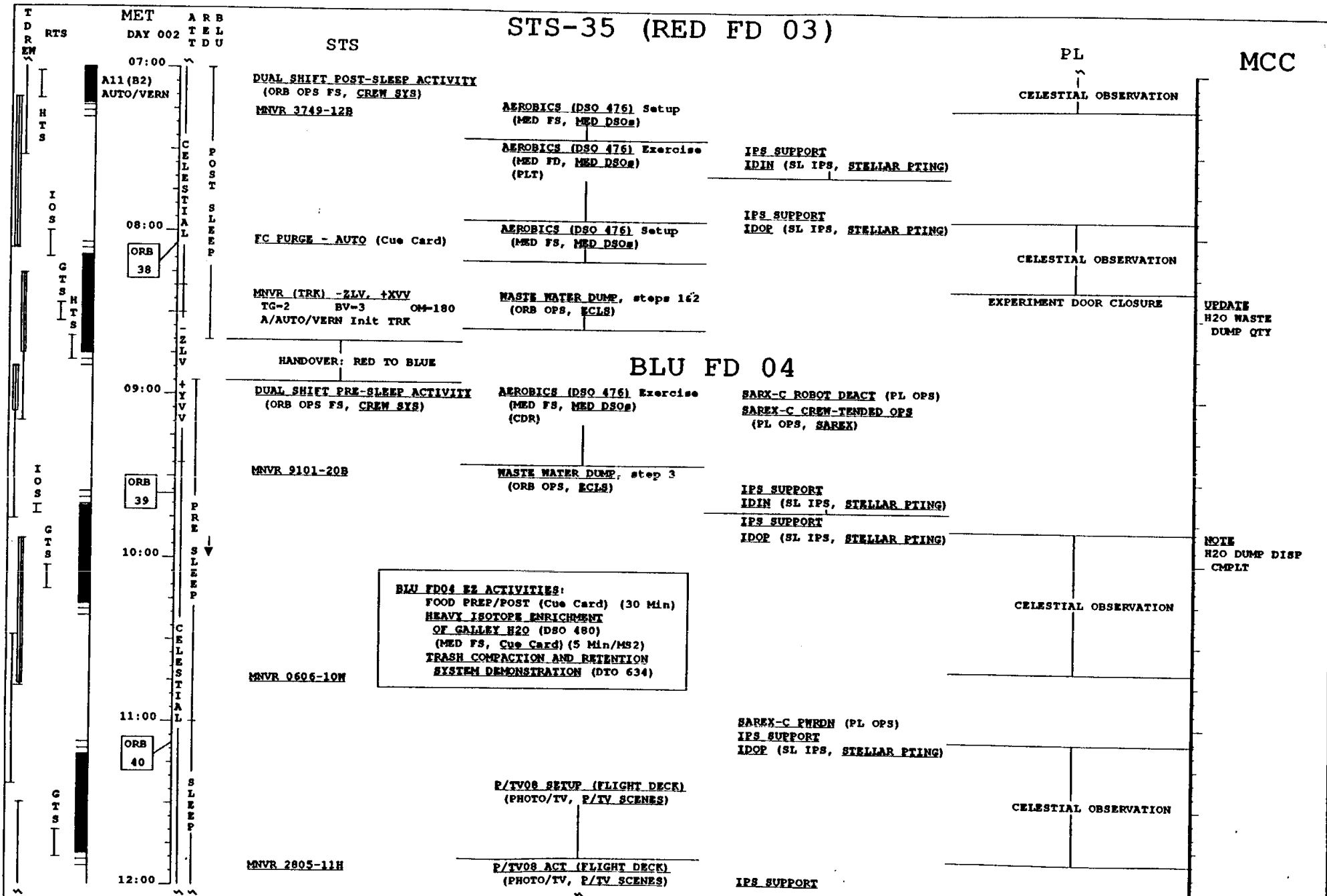
# STS-35 (RED FD 03)

MET ARB  
DAY 002 TEL  
TDU

STS

PL

MCC



07:00

All (B2)  
AUTO/VERN

**DUAL SHIFT POST-SLEEP ACTIVITY**  
(ORB OPS FS, CREW SYS)

MNVR 3749-12B

**AEROBICS (DSO 476) Setup**  
(MED FS, MED DSOs)

**AEROBICS (DSO 476) Exercise**  
(MED FD, MED DSOs)  
(PLT)

**IPS SUPPORT**  
IDIN (SL IPS, STELLAR PTING)

08:00

ORB 38

**FC PURGE - AUTO** (Cue Card)

**AEROBICS (DSO 476) Setup**  
(MED FS, MED DSOs)

**IPS SUPPORT**  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

09:00

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

MNVR 9101-20B

**AEROBICS (DSO 476) Exercise**  
(MED FS, MED DSOs)  
(CDR)

**SAREX-C ROBOT DEACT** (PL OPS)  
**SAREX-C CREW-TENDED OPS**  
(PL OPS, SAREX)

10:00

ORB 39

**WASTE WATER DUMP, step 3**  
(ORB OPS, ECLS)

**IPS SUPPORT**  
IDIN (SL IPS, STELLAR PTING)

**IPS SUPPORT**  
IDOP (SL IPS, STELLAR PTING)

NOTE  
H2O DUMP DISPLT

**BLU FD04 EE ACTIVITIES:**  
FOOD PREP/POST (Cue Card) (30 Min)  
HEAVY ISOTOPE ENRICHMENT  
OF GALLEY H2O (DSO 480)  
(MED FS, Cue Card) (5 Min/MS2)  
TRASH COMPACTION AND RETENTION  
SYSTEM DEMONSTRATION (DTO 634)

MNVR 0606-10W

CELESTIAL OBSERVATION

11:00

ORB 40

**P/TV08 SETUP (FLIGHT DECK)**  
(PHOTO/TV, P/TV SCENES)

**SAREX-C FWRDN** (PL OPS)  
**IPS SUPPORT**  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

12:00

MNVR 2805-11H

**P/TV08 ACT (FLIGHT DECK)**  
(PHOTO/TV, P/TV SCENES)

**IPS SUPPORT**

# STS-35 (BLU FD 04)

MET ARB  
DAY 002 TEL  
T D U

STS

PL

MCC

TDRW

RTS

A11 (B2)  
AUTO/VERN

ORB 41

13:00

GTS

ORB 42

CELESTIAL TELETYPE

ORB 43

16:00

17:00

12:00

13:00

14:00

15:00

16:00

17:00

MNVR 2107-20W

P/TVO8 ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

TV (IDRW)  
GND CNTL-CAB

MNVR 5108-10U

..... IF IMU MNVR REQUIRED .....  
(PER MCC CALL)  
.....  
MNVR IMU ALIGN ATT  
STAR PAIR (C1)  
A/AUTO/VERN (13:35) Init MNVR  
.....

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IMU ALIGN - 8 TRK (ORB OPS)  
MNVR 2115-10W

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 4527-11W

MEAL  
(ALL)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 9305-11U

P/TVO4 SETUP (STAR)  
(PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 4412-10H

P/TVO4 ACT (STAR)  
(PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

TV (IDRW)  
GND CNTL-CAB  
CREW CNTL-PLB

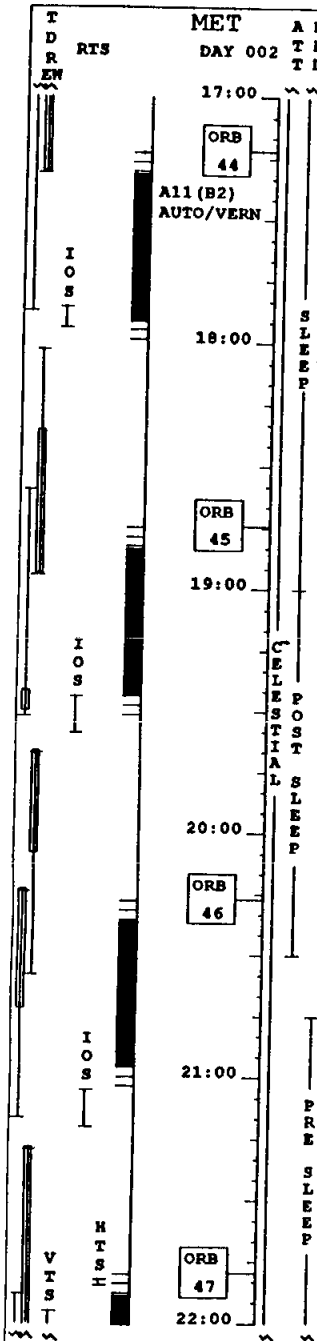
# STS-35 (BLU FD 04)

MET ARB  
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MCC



A11 (B2)  
AUTO/VERN

MNVR 6310-11H

**IMU ALIGN LOG**

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MNVR 9305-12U

**DUAL SHIFT POST-SLEEP ACTIVITY**

(ORB OPS FS, CREW SYS)  
AEROBICS (DSO 476) Pulse Rt  
(MED FS, MED DSOg)  
(CDR, PLT)  
MNVR 3808-20B

FC PURGE - AUTO (Cue Card)

MNVR 2509-10H

HANDOVER: BLUE TO RED

RED FD 04

**DUAL SHIFT PRE-SLEEP ACTIVITY**

(ORB OPS FS, CREW SYS)  
MNVR 4405-20B

**RED FD04 EZ ACTIVITIES:**

FOOD PREP/POST (Cue Card) (30 Min)  
HEAVY ISOTOPE ENRICHMENT  
OF GALLEY H2O (DSO 480)  
(MED FS, Cue Card) (5 Min/PLT)  
TRASH COMPACTION AND RETENTION  
SYSTEM DEMONSTRATION (DTO 634)

MNVR 4207-21W

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

SAREX-C CREW-TENDED OPS

(PL OPS, SAREX)

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

SAREX-C ROBOT ACT (PL OPS)

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION



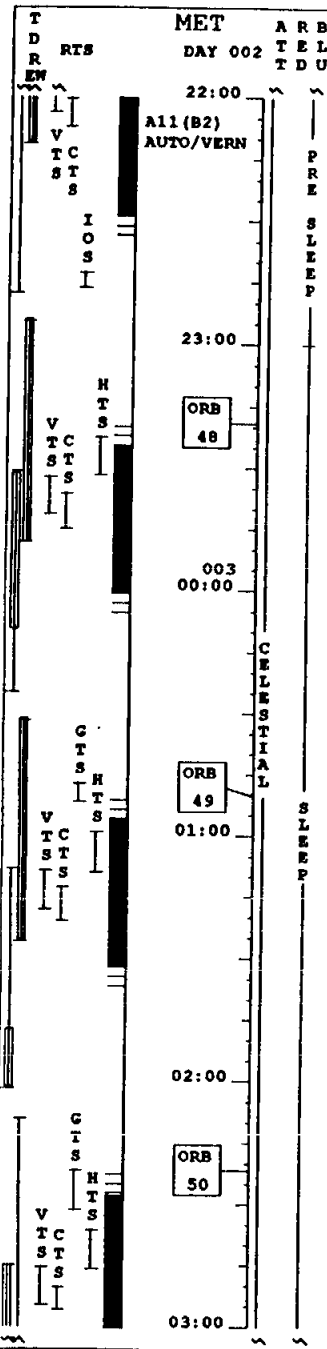
# STS-35 (RED FD 04)

MET ARB  
DAY 002 TEL  
T DU

STS

PL

MCC



MNVR 6106-10U

MNVR 8113-10U

MNVR 8405-11B

MNVR 3811-10B

MNVR 4557-10W

IMU ALIGN - S TRK (ORB OPS)

MNVR 6216-10U

R/TVOB SETUP (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

R/TVOB ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

• • • IF IMU MNVR REQUIRED: • • • • •  
• (PER MCC CALL) •  
• MNVR IMU ALIGN ATT •  
• STAR PAIR (C1) •  
• A/AUTO/VERN (02:00) Init MNVR •  
• • • • •

MEAL  
(All)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

TV (TDRW)  
GND CNTRL-CAB

IPS OPTICAL HOLD  
IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS OPTICAL HOLD

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

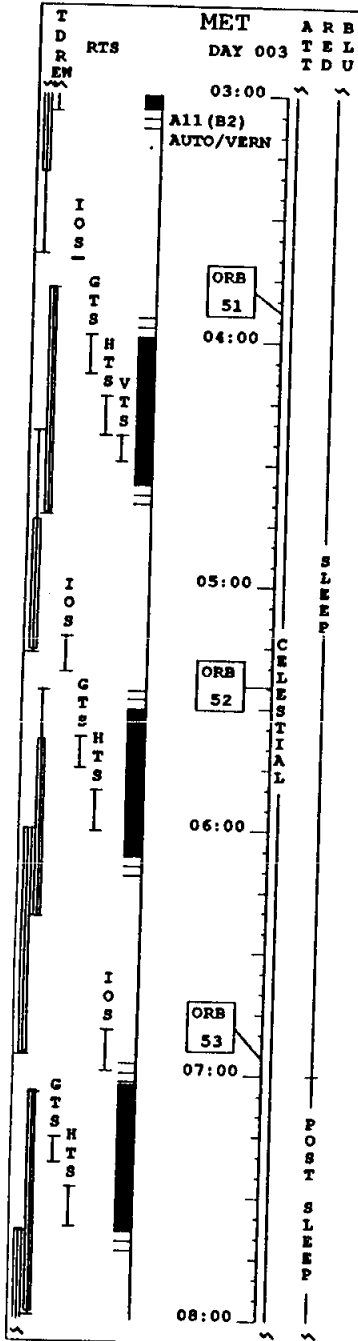
# STS-35 (RED FD 04)

MET ARB  
DAY 003 TEL  
T DU

STS

PL

MCC



MNVR 2302-20W

MEAL  
(All)

R/TV05 SETUP (HUT)  
(PHOTO/TV, R/TV SCENES)

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 3503-21B

R/TV05 ACT (HUT)  
(PHOTO/TV, R/TV SCENES)

CELESTIAL OBSERVATION

IPS GIMBAL ANGLE TEST  
(SL IPS, STELLAR PTING)  
Perform twice

INFORM CREW  
GIMBLE ANGLES

MNVR 8307-11U

IMU ALIGN LOG  
READ ID:

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CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 2102-10W

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

DUAL SHIFT POST-SLEEP ACTIVITY  
(ORB OPS FS, CREW SYS)  
MNVR 8507-10B

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

FC PURGE - AUTO (Cue Card)

AEROBICS (DSO 476) Setup  
(MED FS, MED DSOs)

IPS OPTICAL HOLD

AEROBICS (DSO 476) Exercise  
(MED FD, MED DSOs)  
(PLI)

TDR		MET		ARB		STS-35 (RED FD 04)		PL		MCC	
RTS	DAY 003	TEL	TDU	STS							
I O S H T S P R E S L E E P C E L E S T I A L S L E E P T S	08:00	All (B2) AUTO/VERN		MNVR 5104-11U	AEROBICS (DSO 476) Exercise (MED FD, MED DSOs) (PLT)	IPS OPTICAL HOLD					
		ORB 54		HANDOVER: RED TO BLUE			IPS SUPPORT IDOP (SL IPS, STELLAR PTING)				
				DUAL SHIFT PRE-SLEEP ACTIVITY (ORB OPS FS, CREW SYS)		BLU FD 05				CELESTIAL OBSERVATION	
		09:00			MNVR 2217-11W	AEROBICS (DSO 476) Setup (MED FS, MED DSOs)	SAREX-C CREW-TENDED OPS (PL OPS, SAREX)				
					MNVR 4122-10U	AEROBICS (DSO 476) Exercise (MED FS, MED DSOs) (CDR)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)			CELESTIAL OBSERVATION	
		10:00	ORB 55	PRE SLEEP				IPS SUPPORT IDOP (SL IPS, STELLAR PTING)		CELESTIAL OBSERVATION	
					MNVR 3808-10B						
						P/TV08 SETUP (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)	SAREX-C PWRDN (PL OPS)			CELESTIAL OBSERVATION	
		11:00			MNVR 5201-10U	P/TV08 ACT (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)			CELESTIAL OBSERVATION	
			ORB 56		MNVR 3705-20B		IPS SUPPORT IDOP (SL IPS, STELLAR PTING)			CELESTIAL OBSERVATION	TV (TDRE) GND CNTRL-CAB
	12:00		SLEEP	MNVR 4416-50B					CELESTIAL OBSERVATION		
				MNVR 4201-10W		IPS SUPPORT IDOP (SL IPS, STELLAR PTING)			CELESTIAL OBSERVATION		
	13:00										

TDRS MET ARB  
 EW DAY 003 TEL  
 IDU

# STS-35 (BLU FD 05)

STS

PL

MCC

13:00

ORB 57

A11 (B2)  
 AUTO/VERN

MNVR 5109-10U

... IF IMU MNVR REQUIRED\* ...  
 (PER MCC CALL)

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

14:00

MNVR IMU ALIGN ATT  
 STAR PAIR (C1)  
 A/AUTO/VERN (14:05) Init MNVR

CELESTIAL OBSERVATION

ORB 58

IMU ALIGN - S TRK (ORB OPS)  
 MNVR 8415-12H

MNVR 8415-12H

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

15:00

MEAL  
 (All)

CELESTIAL OBSERVATION

16:00

ORB 59

MNVR 2133-10H

IMU ALIGN LOG  
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IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 8506-10H

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

17:00

ORB 60

MNVR 4104-10H

BLU FD05 R2 ACTIVITIES:  
 FOOD PREP/POST (Cue Card) (30 Min)  
 HEAVY ISOTOPE ENRICHMENT  
 OF GALLEY H2O (DSO 480)  
 (MED FS, Cue Card) (5 min/MS2)  
 TRASH COMPACTION AND RETENTION  
 SYSTEM DEMONSTRATION (DTO 634)

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

18:00

# STS-35 (BLU FD 05)

MCC

MET ARB  
DAY 003 TEL  
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STS

PL

18:00

All (B2)  
AUTO/VERN

MNVR 4530-10W

**RED FD05 EE ACTIVITIES:**  
**FOOD PREP/POST** (Cue Card) (30 Min)  
**HEAVY ISOTOPE ENRICHMENT**  
**OF GALLEY H2O** (DSO 480)  
 (MED FS, Cue Card) (5 Min/PLT)  
**TRASH COMPACTION AND RETENTION**  
**SYSTEM DEMONSTRATION** (DTO 634)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

19:00

ORB  
61

MNVR 2122-10W  
**DUAL SHIFT POST-SLEEP ACTIVITY**  
 (ORB OPS FS, CREW SYS)  
**AEROBICS** (DSO 476) Pulse Rt  
 (MED FS, MED DSOs)  
 (CDR, PLT)

SAREX-C CREW-TENDED OPS  
 (PL OPS, SAREX)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

20:00

FC PURGE - AUTO (Cue Card)

MNVR 7310-10W

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

21:00

ORB  
62

MNVR 6205-10W

HANDOVER: BLUE TO RED

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

RED FD 05

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)  
SAREX-C ROBOT ACT (PL OPS)

CELESTIAL OBSERVATION

22:00

22:00

ORB  
63

MNVR 3814-10H

P/TV08 SETUP (FLIGHT DECK)  
 (PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

23:00

MNVR 8512-20H

P/TV08 ACT (FLIGHT DECK)  
 (PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 4413-10H

CELESTIAL OBSERVATION TV (IDRW)  
GND CNTL-CAB

# STS-35 (RED FD 05)

MET ARB  
DAY 003 TEL  
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23:00

All (B2)  
AUTO/VERN

ORB  
64

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ORB  
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MNVR 7407-10U

MNVR 3805-11B

MNVR 4448-10U

MNVR 4564-12W

IMU ALIGN - S TRK (ORB OPS)  
MNVR 7205-10U

MNVR 4211-10W

IMU ALIGN LOG  
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• • • IF IMU MNVR REQUIRED • • •  
• (PER MCC CALL) •  
•  
• MNVR IMU ALIGN ATT •  
• STAR PAIR (C1) •  
• A/AUTO/VERN (02:25) Init MNVR •  
• • • • •

MEAL  
(All)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT

# STS-35 (RED FD 05)

MET ARB  
DAY 004 TEL  
T DU

STS

PL

MCC

Time	Activity / Mission	Support / Observation
04:00	<p>ORB 67</p> <p>All (B2) AUTO/VERN</p>	
05:00	<p>MNVR 3235-12B</p> <p>P/TVO6 SETUP (MUPPE) (PHOTO/TV, P/TV SCENES)</p>	<p>IPS SUPPORT IDOP (SL IPS, STELLAR PTING)</p> <p>CELESTIAL OBSERVATION</p>
06:00	<p>MNVR 6235-10U</p> <p>P/TVO6 ACT (MUPPE) (PHOTO/TV, P/TV SCENES)</p>	<p>IPS SUPPORT IDOP (SL IPS, STELLAR PTING)</p> <p>CELESTIAL OBSERVATION</p>
07:00	<p>MNVR 3115-10W</p> <p>DUAL SHIFT POST-SLEEP ACTIVITY (ORB OPS FS, CREW SY2)</p> <p>AEROBICS (DSO 476) Setup (MED FS, MED DSOs)</p>	<p>IPS SUPPORT IDOP (SL IPS, STELLAR PTING)</p> <p>CELESTIAL OBSERVATION</p>
08:00	<p>MNVR 3811-20B</p> <p>FC PURGE - MANUAL (Cue Card)</p> <p>AEROBICS (DSO 476) Exercise (MED FS, MED DSOs)</p>	<p>IPS SUPPORT IDOP (SL IPS, STELLAR PTING)</p> <p>CELESTIAL OBSERVATION</p>
09:00	<p>MNVR 5117-10U</p> <p>AEROBICS (DSO 476) Exercise (MED FS, MED DSOs) (CDR)</p>	<p>IPS SUPPORT IDOP (SL IPS, STELLAR PTING)</p> <p>CELESTIAL OBSERVATION</p>
	<p>MNVR 6308-11B</p> <p>HANDOVER: RED TO BLUE</p>	<p>IPS SUPPORT IDOP (SL IPS, STELLAR PTING) SAREX-C ROBOT DEACT (PL OPS) SAREX-C CREW-TENDED OPS (PL OPS, SAREX)</p> <p>CELESTIAL OBSERVATION</p>

# STS-35 (BLU FD 06)

MET ARB  
DAY 004 TEL  
T DU

STS

PL

MCC

09:00  
A11 (B2)  
AUTO/VERN

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

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

10:00

MNVR 8406-12B

**P/TV08 SETUP (FLIGHT DECK)**  
(PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

ORB  
71

MNVR 8424-20B

**P/TV08 ACT (FLIGHT DECK)**  
(PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

11:00

MNVR 2302-30W

**BLU FD06 EZ ACTIVITIES:**  
**FOOD PREP/POST** (Cue Card) (30 Min)  
**HEAVY ISOTOPE ENRICHMENT**  
**OF GALLEY H2C** (DSO 480)  
**(MED FS, Cue Card)** (5 Min/MS2)  
**TRASH COMPACTION AND RETENTION**  
**SYSTEM DEMONSTRATION** (DTC 634)  
 Document use of the Trash Compactor  
 with video during P/TV09 MD DK  
**ACTIVITIES.**  
**BLOOD PRESSURE VARIABILITY** (DSO 602)  
**(MED FS, MED DSOs)** (MS1, PS1)  
 Document DSO 602 with photos  
 during P/TV09 MD DK **ACTIVITIES.**

SAREX-C PWRDN (PL OPS)

TV (TDRW)  
GND CNTRL-CAB

ORB  
72

12:00

MNVR 0010-11H

• • • IF IMU MNVR REQUIRED • • • • •  
(PER MCC CALL)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

13:00

IMU ALIGN - S TRK (ORB OPS)  
MNVR 8117-22B

• • • MNVR IMU ALIGN ATT • • • • •  
 • STAR PAIR (C1) • • • • •  
 • A/AUTO/VERN (12:55) Init MNVR • • • • •

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

ORB  
73

14:00

IMU ALIGN PAD  
ON PG 3-30

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION



# STS-35 (BLU FD 06)

STS

PL

MCC

MET ARB  
DAY 004 TEL  
T DU

14:00

All (B2)  
AUTO/VERN

MNVR 6602-11U

ORB  
74

15:00

MEAL  
(All)

MNVR 0009-10H

16:00

ORB  
75

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MNVR 1204-20H

IMU ALIGN LOG  
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17:00

MNVR 2607-11H

ORB  
76

18:00

MNVR 6602-12U

19:00

MNVR 2533-10H

R/TVO9 SETUP (MIDDECK)  
(PHOTO/TV, R/TV SCENES)

R/TVO9 ACT (MIDDECK)  
(PHOTO/TV, R/TV SCENES)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

TDR EN		MET	ARB	STS-35 (BLU FD 06)		PL	MCC
RTS		DAY 004	TEL				
DU			T DU				
HSTC	19:00	All (B2) AUTO/VERN	POST SLEEP	MNVR 2609-12W DUAL SHIFT POST-SLEEP ACTIVITY (ORB OPS FS, CREW SYS) AEROBICS (DSO 476) Pulse Rt (MED FS, MED DSOs) (CDR, PLT)	P/TV09 ACT (MIDDECK) (PHOTO/TV, P/TV SCENES)	SAREX-C CREW-TENDED OPS (PL OPS, SAREX)	CELESTIAL OBSERVATION
							TV (TDRM) GND CNTL-CAB
IOS	20:00	ORB 77	POST SLEEP	FC PURGE - AUTO (Cue Card)		IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION
HSTV	21:00	ORB 78	CELESTIAL PRE SLEEP	MNVR 6232-10U	HANDOVER: BLUE TO RED	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION
							TV (TDRM) GND CNTL-CAB
IOS	22:00	ORB 79	CELESTIAL PRE SLEEP	MNVR 9306-11B	DUAL SHIFT PRE-SLEEP ACTIVITY (ORB OPS FS, CREW SYS)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION
HSTV	23:00	ORB 78	CELESTIAL PRE SLEEP	MNVR 3223-20H	RED FD06 EZ ACTIVITIES: FOOD PREP/POST (Cue Card) (30 Min) HEAVY ISOTOPE ENRICHMENT OF GALLEY H2O (DSO 480) (MED FS, Cue Card) (5 Min/PLT) TRASH COMPACTION AND RETENTION SYSTEM DEMONSTRATION (DTO 634)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION
							TV (TDRM) GND CNTL-CAB
IOS	00:00	ORB 79	CELESTIAL PRE SLEEP	MNVR 3212-11H	P/TV08 SETUP (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)	IPS OPTICAL HOLD	CELESTIAL OBSERVATION
HSTV	00:05	ORB 79	CELESTIAL PRE SLEEP	MNVR 4563-10M	P/TV08 ACT (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION
							TV (TDRM) GND CNTL-CAB
IOS	00:00	ORB 79	CELESTIAL PRE SLEEP			IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION

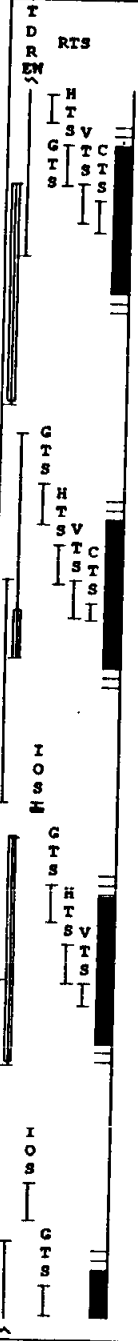
# STS-35 (RED FD 06)

MET ARB  
DAY 005 TEL  
T DU

STS

PL

MCC



00:00  
ORB 80  
A11 (B2)  
AUTO/VERN  
01:00  
ORB 81  
02:00  
CELESTIAL  
03:00  
ORB 82  
04:00  
ORB 83  
05:00

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

MNVR 4447-10B

**P/TV07 SETUP (UIT)**  
(PHOTO/TV, P/TV SCENES)

**PCS 1(2) CONFIG (ORB OPS) (2 Cmn)**  
**HEATER RECONFIG-B (ORB OPS, ERS)**  
**ECLSS REDUND COMPONENT C/O**  
(ORB OPS, ECLS)

**P/TV07 ACT (UIT)**  
(PHOTO/TV, P/TV SCENES)

**IPS SUPPORT**  
IDOP (SL IPS, STELLAR PTING)

**CABIN TEMP CNTL RECONFIG**  
MD44F Pin CAB TEMP CNTL actuator  
linkage to secondary actuator  
L1 CABIN TEMP CNTLR - 2

CELESTIAL OBSERVATION

MNVR 2109-20W

• • • IF IMU MNVR REQUIRED • • • • •  
(PER MCC CALL)  
•  
• Do not mnvr to 2109-20W  
• MNVR IMU ALIGN ATT  
• STAR PAIR (C1)  
• A/AUTO/VERN (02:45) Init MNVR  
•  
• MNVR 2109-20W  
• • • • •

**IMU ALIGN - S TRK (ORB OPS)**

MEAL  
(All)

**IPS SUPPORT**  
IDIN (SL IPS, STELLAR PTING)

**IPS SUPPORT**  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 6209-10U

**IMU ALIGN LOG**

REQD ID:

-Y \_\_\_\_\_, -Z \_\_\_\_\_ ANG ERR \_\_\_\_\_  
1 2 3

ANG:

ΔX ( ) . . . . . ( ) . . . . . ( ) . . . . .

ΔY ( ) . . . . . ( ) . . . . . ( ) . . . . .

ΔZ ( ) . . . . . ( ) . . . . . ( ) . . . . .

EXECUTION TIME:

\_\_\_\_ / \_\_\_\_ : \_\_\_\_ : \_\_\_\_

**IPS SUPPORT**  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

# STS-35 (RED FD 06)

TIME	STS	PL	MCC
05:00	MNVR (TRK) -2LV, +YVV TC-2 BV-3 OM-270 A/AUTO/VERN Init TRK	CELESTIAL OBSERVATION	UPDATE H2O WASTE DUMP QTY
06:00	<b>EXERCISE SCHEDULE</b> 5/06:45 AEROBICS SETUP (PLT) 5/07:15 AEROBICS EXER (PLT) 5/08:15 AEROBICS SETUP (CDR) 5/08:30 AEROBICS EXER (CDR)	IPS OPTICAL HOLD	
07:00	MNVR 7314-10U WASTE WATER DUMP, step 3 (ORB OPS, ECLS) P/TV99 SETUP (LESSONS) (PHOTO/TV, P/TV SCENES)	IPS SUPPORT IDIN (SL IPS, STELLAR PTING) IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	NOTE H2O DUMP DISP CMLPT
08:00	DUAL SHIFT POST-SLEEP ACTIVITY (ORB OPS FS, CREW SYS) MNVR 3235-13B P/TV99 VIDEO/VOICE CHECK	CELESTIAL OBSERVATION	MCC (TDRE) PERFORM VIDEO/ VOICE CK
09:00	√HUM SEPs for H2O accum, then HUMIDITY SEP RECONFIG L1 HUMIDITY SEP B - OFF A - ON MNVR 8117-21B P/TV99 ACT (LESSONS) (PHOTO/TV, P/TV SCENES)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING) IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	TV (TDRE) CREW CNTL-CAB, PLB
10:00	HANDOVER: RED TO BLUE MNVR 4211-20W DUAL SHIFT PRE-SLEEP ACTIVITY (ORB OPS FS, CREW SYS) P/TV99 ACT (LESSONS) (PHOTO/TV, P/TV SCENES) <b>EE ACTIVITIES ON PG 3-34</b> MNVR 3308-10W	IPS SUPPORT IDOP (SL IPS, STELLAR PTING) IPS SUPPORT IDOP (SL IPS, STELLAR PTING) IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	TV (TDRE) CREW CNTL-CAB, PLB

## BLU FD 07

# STS-35 (BLU FD 07)

MET ARB  
DAY 005 TEL  
T DU

STS

PL

MCC

10:00  
All (B2)  
AUTO/VERN

PRE  
SLEEP

MNVR 8210-10U

ORB  
87

**BLU FD07 EE ACTIVITIES:**  
**FOOD PREP/POST (Cue Card) (30 Min)**  
**HEAVY ISOTOPE ENRICHMENT**  
**OF GALLEY H2O (DSO 480)**  
**(MED FS, Cue Card) (5 Min/MS2)**  
**TRASH COMPACTION AND RETENTION**  
**SYSTEM DEMONSTRATION (DTO 634)**

SAREX-C PWRDN (PL OPS)  
 IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

11:00

MNVR 2107-10W

• • • IF IMU MNVR REQUIRED • • • •  
 • (PER MCC CALL)  
 •  
 • Do not mnvr to 2107-10W  
 • MNVR IMU ALIGN ATT  
 • STAR PAIR (C1)  
 • A/AUTO/VERN (11:55) Init MNVR  
 • MNVR 2107-10W  
 • • • • •

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

12:00

ORB  
88

IMU ALIGN - S TRK (ORB OPS)

CELESTIAL

CELESTIAL OBSERVATION

13:00

ORB  
89

MNVR 7505-10U

**IMU ALIGN LOG**  
 REQD ID:  
 -Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
           1          2          3  
 ANG:  
 AX ( ) \_\_\_\_ ( ) \_\_\_\_ ( ) \_\_\_\_  
 AY ( ) \_\_\_\_ ( ) \_\_\_\_ ( ) \_\_\_\_  
 AZ ( ) \_\_\_\_ ( ) \_\_\_\_ ( ) \_\_\_\_  
 EXECUTION TIME:  
 \_\_\_\_ / \_\_\_\_ : \_\_\_\_ : \_\_\_\_

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 6105-11U

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

14:00

MNVR 3315-10W

IPS SUPPORT  
 IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

15:00

MEAL  
(All)

TDR RTS EM	MET DAY 005	ARB TEL TDU	STS-35 (BLU FD 07)		PL	MCC
			STS	PL		
I O S I	15:00		MNVR 5103-11U	MEAL (All)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	
		ORB 90				CELESTIAL OBSERVATION
I O S I	16:00	A11 (B2) AUTO/VERN	MNVR 3807-10B	P/TV04 SETUP (STAR) (PHOTO/TV, P/TV SCENES)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	
						CELESTIAL OBSERVATION
I O S I	17:00		MNVR 6105-12U	P/TV04 ACT (STAR) (PHOTO/TV, P/TV SCENES)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	
		ORB 91				CELESTIAL OBSERVATION
I O S I	18:00		MNVR 6207-20W		IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	
						CELESTIAL OBSERVATION
I O S I	19:00		MNVR 9314-10B	P/TV08 SETUP (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	
		ORB 92				CELESTIAL OBSERVATION
I O S I	19:00		MNVR 1112-10H	P/TV08 ACT (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)	SAREX-C CREW-TENDED OPS (PL OPS, SAREX)	
					IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	TV (IDRM) GND CNTL-CAB CREW CNTL-PLB
I O S I	20:00		MNVR 5103-12U	DUAL SHIFT POST-SLEEP ACTIVITY (ORB OPS FS, CREW SYS) AEROBICS (DSO 476) Pulse Rt (MED FS, MED DSO) (CDR, PLT)	IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	
		ORB 93		√HUM SEPS for H2O accumulation, then HUMIDITY SEP RECONFIG L1 HUMIDITY SEP A-OFF B-ON		CELESTIAL OBSERVATION

TDREW  
RTS  
MET DAY 005  
ARB TEL TDU

STS

# STS-35 (BLU FD 07)

PL

MCC

20:00  
A11 (B2)  
AUTO/VERN  
V T C S T S  
I O S I  
21:00  
ORB 94  
H T S  
V T C S T S  
P R E  
S L E E P  
C E L E S T I A L  
22:00  
ORB 95  
H T S  
V T C S T S  
C T S  
23:00  
ORB 96  
H T S  
V T C S T S  
C T S  
00:00  
S L E E P  
01:00

FC PURGE - AUTO (Cue Card)

MNVR 4416-30B

HANDOVER: BLUE TO RED

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

## RED FD 07

**RED FD07 EE ACTIVITIES:**  
FOOD PREP/POST (Cue Card) (30 Min)  
HEAVY ISOTOPE ENRICHMENT  
OF GALLEY H2O (DSO 480)  
(MED FS, Cue Card) (5 Min/PLT)  
TRASH COMPACTION AND RETENTION  
SYSTEM DEMONSTRATION (DTO 634)  
IMPROVED WASTE COLLECTION SYSTEM  
EVALUATION (DTO 329) (Cue Card)  
Perform PROPS SETUP

MNVR 6310-21H

MNVR 4414-30B

P/TVOS SETUP (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

MNVR 5106-10U

P/TVOS ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

MNVR 4205-10W

SAREX-C ROBOT ACT (PL OPS)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

TV (IDRE)  
GND CNTL-CAB

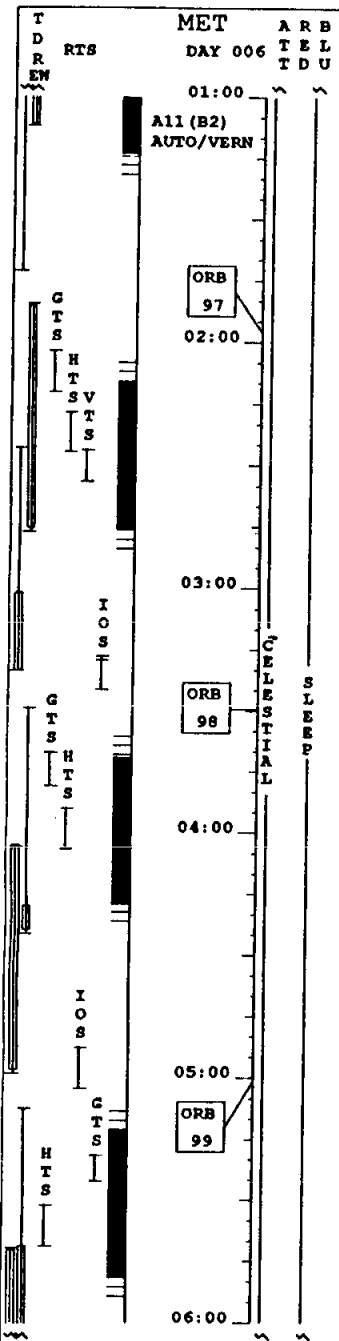
# STS-35 (RED FD 07)

MET ARB  
DAY 006 TEL  
IDU

STS

PL

MCC



MNVR 2402-10W

..... IF IMU MNVR REQUIRED.....  
(PER MCC CALL)  
.....  
..... MNVR IMU ALIGN ATT .....  
..... STAR PAIR (C1) .....  
..... A/AUTO/VERN (01:35) Init MNVR .....  
..... MNVR 8310-12U .....  
.....

IMU ALIGN - S TRK (ORB OPS)

MNVR 8310-12U

MNVR 3512-10B

MNVR 9405-10U

MNVR 6140-10U

MNVR 5107-10U

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS OPTICAL HOLD

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

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



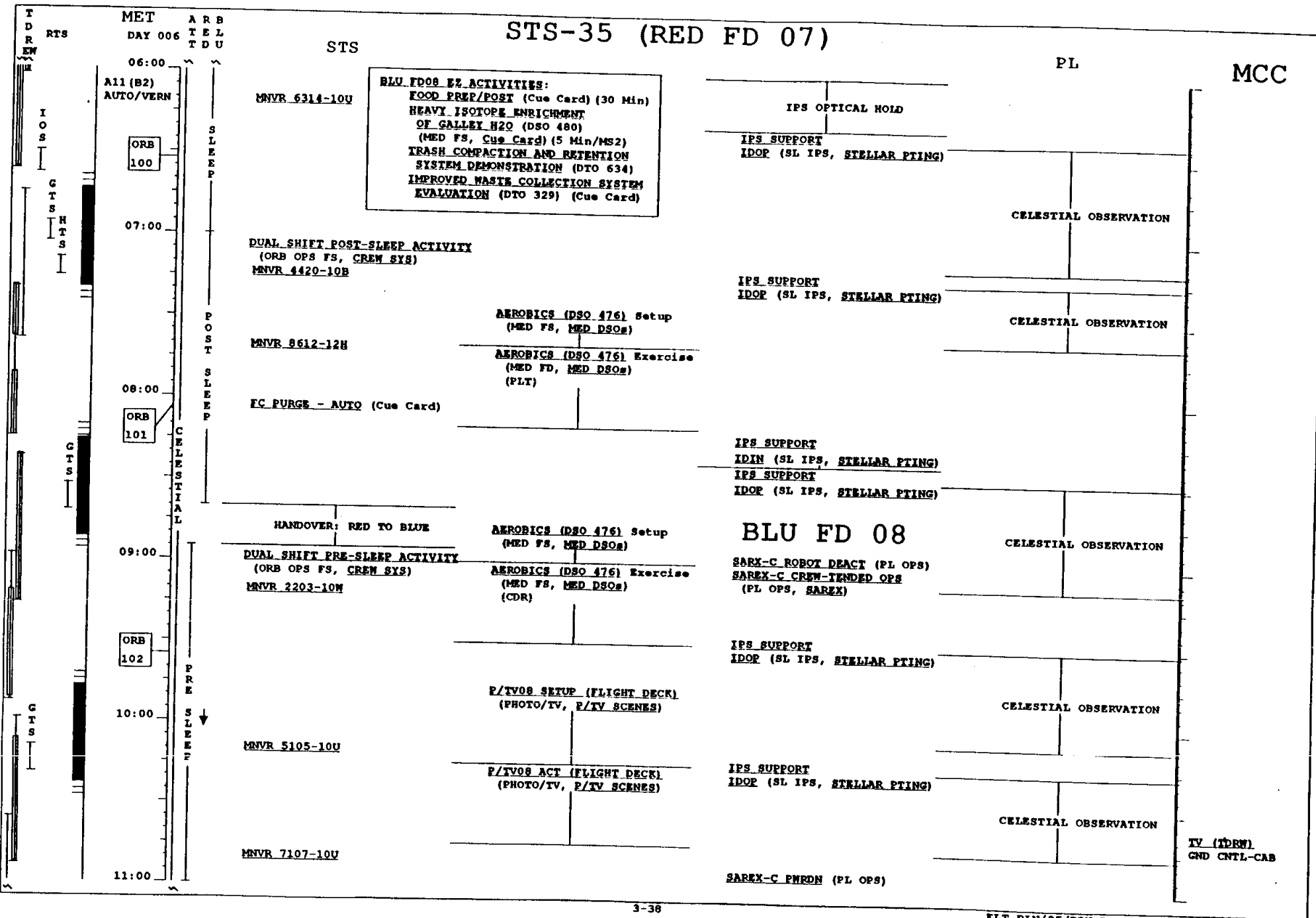
# STS-35 (RED FD 07)

MET ARB  
DAY 006 TEL  
T DU

STS

PL

MCC



# STS-35 (BLU FD 08)

TDR EW  
 RTS  
 MET DAY 006  
 ARB TEL TDU

STS

PL

MCC

11:00

ORB 103

A11 (B2) AUTO/VERN

12:00

13:00

14:00

ORB 104

15:00

ORB 105

16:00

ORB 106

CELESTIAL DATA

MNVR 2133-22W

MNVR 3218-10H

MNVR 5114-10U

IMU ALIGN - S TRK (ORB OPS)  
MNVR 3218-20H

MNVR 4564-10W

MNVR 9101-30B

**IMU ALIGN LOG**

REQD ID:

-Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_

          1          2          3

ANG:

ΔX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

ΔZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:

\_ \_ / \_ \_ : \_ \_ : \_ \_

. . . IF IMU MNVR REQUIRED . . . . .  
 . (PER MCC CALL) . . . . .  
 . MNVR IMU ALIGN ATT . . . . .  
 . STAR PAIR (C1) . . . . .  
 . A/AUTO/VERN (13:55) Init MNVR . . . . .  
 . . . . .

MEAL  
(All)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

# STS-35 (BLU FD 08)

MET ARB  
DAY 006 TEL  
T DU

STS

PL

MCC

16:00  
17:00  
18:00  
19:00  
20:00  
21:00

All (B2)  
AUTO/VERN

ORB  
107

ORB  
108

ORB  
109

SLEEP  
CELESTIAL  
POST SLEEP

MNVR 3223-31H

MNVR 8415-21H

MNVR 2306-12W

MNVR 3208-10H

DUAL SHIFT POST-SLEEP ACTIVITY  
(ORB OPS FS, CREW SYS)  
AEROBICS (DSO 476) Pulse Rt  
(MED FS, MED DSOs)  
(CDR, PLT)

MNVR 2607-12H

FC PURGE - AUTO (Cue Card)

MNVR 8116-12H

HANDOVER: BLUE TO RED

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

**RED FD08 EZ ACTIVITIES:**  
FOOD PREP/POST (Cue Card) (30 Min)  
HEAVY ISOTOPE ENRICHMENT  
OF GALLEY H2O (DSO 480)  
(MED FS, Cue Card) (5 Min/PLT)  
TRASH COMPACTION AND RETENTION  
SYSTEM DEMONSTRATION (DTO 634)  
IMPROVED WASTE COLLECTION SYSTEM  
EVALUATION (DTO 329) (Cue Card)

RED FD 08

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)  
SAREX-C CREW-TENDED OPS  
(PL OPS, SAREX)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

SAREX-C ROBOT ACT (PL OPS)  
IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

# STS-35 (RED FD 08)

STS

PL

MCC

**TDRS**  
MET ARB  
DAY 006 TEL  
T DU

21:00  
A11 (B2)  
AUTO/VERN

ORB 110

22:00  
A1 (B2)  
MAN/NORM

A11 (B2)  
AUTO/VERN

23:00

ORB 111

007  
00:00

ORB 112

01:00

02:00

PRE SLEEP  
CELESTIAL  
SLEEP

MNVR 3223-32H

**HOT FIRE CONFIG 1**

O6 MDM FF2,4 (two) -ON  
FA4 -ON

GNC, I/O RESET

O14:E, cb DDU L (two) -cl  
O15:E

O14:F, PRI RJD LOGIC (eight) -ON  
O15:F, DRIVER (eight) -ON  
O16:F

MNVR 8415-22H

**HOT FIRE CONFIG 1**  
RCS HOT FIRE TEST  
(ORB OPS, RCS) (2 Cmn)

Change DAP A to A11  
Config DAP: A/AUTO/VERN

**POST HOT FIRE CONFIG 2**  
MNVR 8202-32H

**POST HOT FIRE CONFIG 2**

O14:F, PRI RJD DRIVER (eight) -OFF  
O15:F, LOGIC (eight) -OFF  
O16:F

O14:E, cb DDU L (two) -op  
O15:E

O6 MDM FF2,4 (two) -OFF  
FA4 -OFF

MNVR 8405-12B

R/TVOR SETUP (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

R/TVOR ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

IPS SUPPORT  
IDOR (SL IPS, STELLAR PTING)

MODE SEL FROM IST (SL IPS, STEL)  
GLM LATCH (SET 2)  
(SL IPS, IPS CHECKOUT)

GLM OPEN (SET 2)  
(SL IPS, IPS CHECKOUT)

MODE SEL FROM IAD (SL IPS, IPS ACT)  
IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOR (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOR (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

CELESTIAL OBSERVATION

TV (TERM)  
GND CNTL-CAB

TDR  
RTS  
MET  
DAY 007  
ARB  
TEL  
T DU

STS

# STS-35 (RED FD 08)

PL

MCC

02:00

A11 (B2)  
AUTO/VERN

ORB  
113

MNVR 0658-20W

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

03:00

MEAL  
(All)

MNVR 0002-10H

ORB  
114

IMU ALIGN - S TRK (ORB OPS)  
MNVR 6210-10U

..... IF IMU MNVR REQUIRED.....  
..... (PER MCC CALL) .....  
..... MNVR IMU ALIGN ATT .....  
..... STAR PAIR (C1) .....  
..... A/AUTO/VERN (03:40) Init MNVR .....  
.....

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

04:00

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

05:00

MNVR 2235-10W

IPS OPTICAL HOLD

ORB  
115

MNVR 9302-12U

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

06:00

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

ORB  
116

MNVR 3503-22B

IPS OPTICAL HOLD

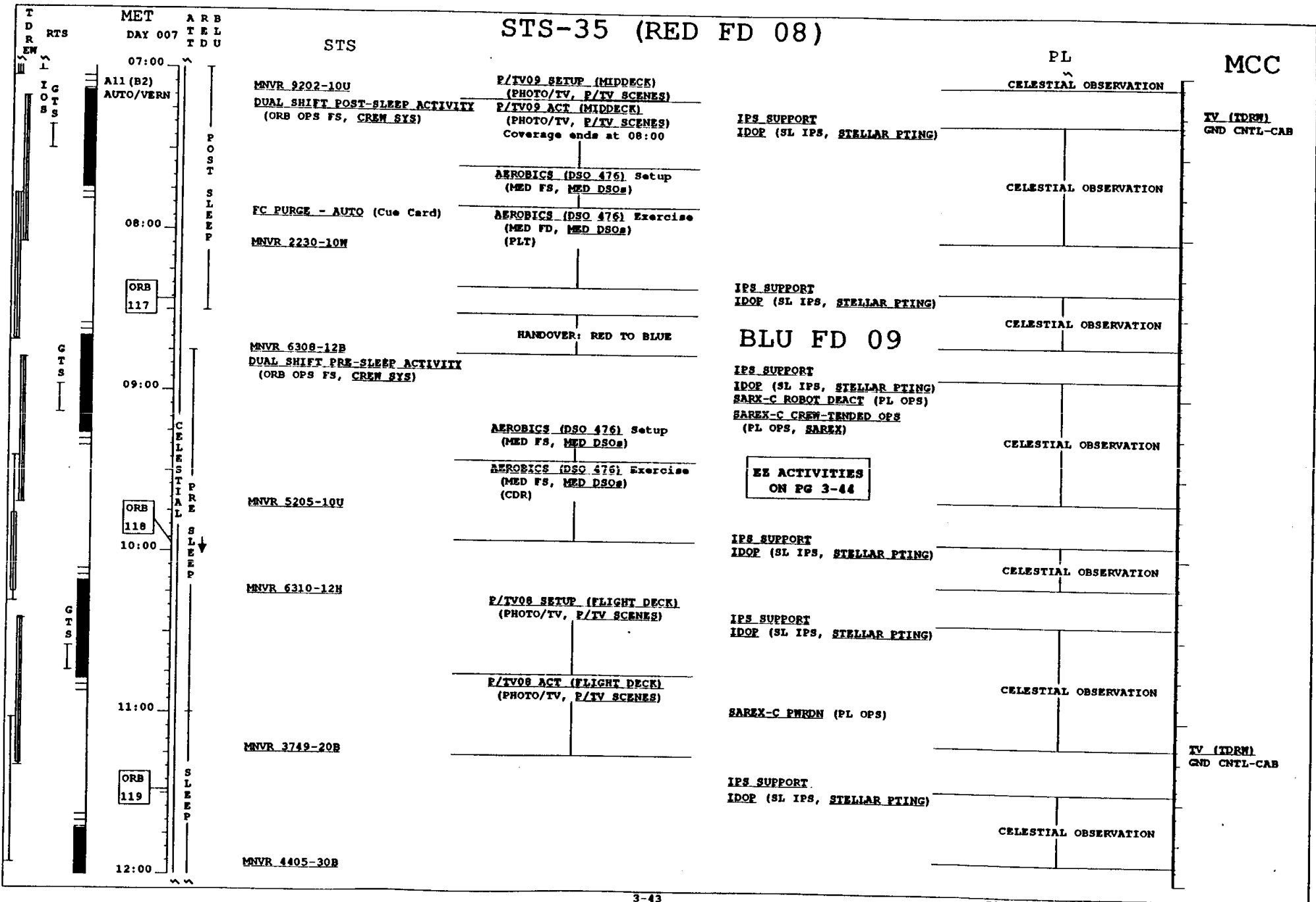
IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

07:00

P/TV09 SETUP (MIDDECK)  
(PHOTO/TV, P/TV SCENES)

IMU ALIGN LOG  
REQD ID:  
  
-Y\_\_\_\_, -Z\_\_\_\_ ANG ERR \_\_\_\_  
          1          2          3  
  
ANG:  
AX ( ) \_\_\_\_ ( ) \_\_\_\_ ( ) \_\_\_\_  
AY ( ) \_\_\_\_ ( ) \_\_\_\_ ( ) \_\_\_\_  
AZ ( ) \_\_\_\_ ( ) \_\_\_\_ ( ) \_\_\_\_  
EXECUTION TIME:  
\_\_\_\_/\_\_\_\_:\_\_\_\_:\_\_\_\_



# STS-35 (BLU FD 09)

**TDR EW**  
**RTS**  
**MET**    **ARB**  
**DAY 007**    **TEL**  
**TDU**

**12:00**  
**A11 (B2)**  
**AUTO/VERN**

**ORB 120**  
**13:00**

**14:00**  
**ORB 121**

**15:00**  
**ORB 122**  
**16:00**  
**17:00**

**C E L S T A R**  
**E L E S T I A L**  
**P**

**I O S**  
**I O S**

STS

PL

MCC

**BLU FD09 #2 ACTIVITIES:**  
**FOOD PREP/POST (Cue Card) (30 Min)**  
**HEAVY ISOTOPE ENRICHMENT OF GALLEY H2O (DSO 480) (MED FS, Cue Card) (5 Min/MS2)**  
**TRASH COMPACTION AND RETENTION SYSTEM DEMONSTRATION (DTO 634)**  
**IMPROVED WASTE COLLECTION SYSTEM EVALUATION (DTO 329) (Cue Card)**  
**BLOOD PRESSURE VARIABILITY (DSO 602) (MED FS, MED DSO#) (MS1, PS1)**

**IMU ALIGN LOG**  
**REQD ID:**

-Y \_\_\_\_ , -Z \_\_\_\_ ANG ERR \_\_\_\_  
           1          2          3

**ANG:**  
**AX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_**  
**AY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_**  
**AZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_**  
**EXECUTION TIME:**  
 \_ \_ / \_ \_ : \_ \_ : \_ \_

MNVR 0608-20W

MNVR 2133-21W

MNVR 4421-20B

MNVR 4101-12H

MNVR 1204-30H

MEAL  
(All)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

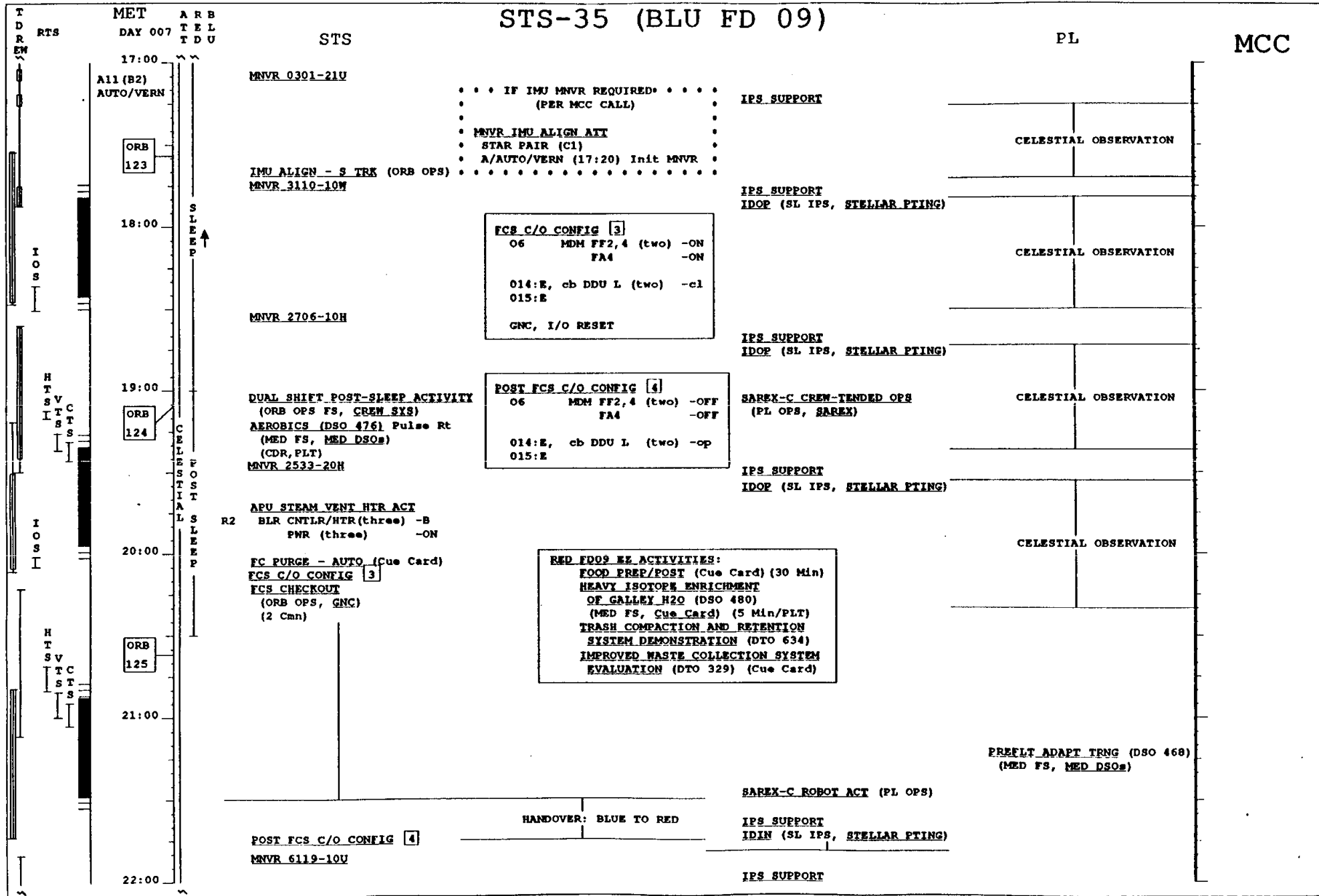
IPS SUPPORT  
IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

# STS-35 (BLU FD 09)

PL

MCC





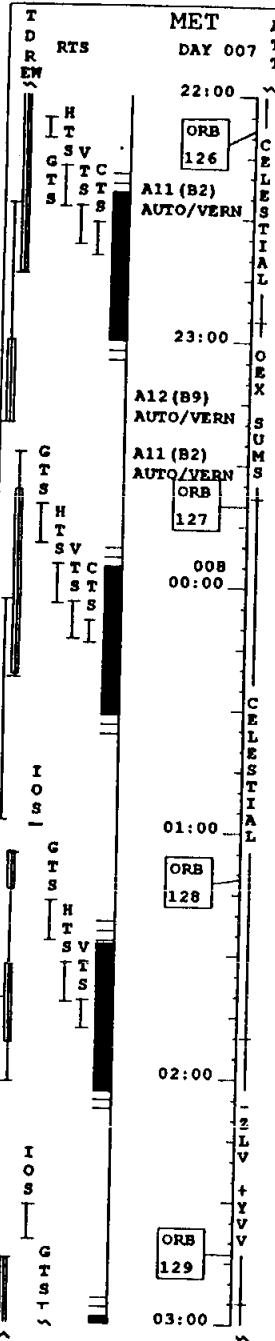
# STS-35 (RED FD 09)

MET ARB  
DAY 007 TEL  
T DU

STS

PL

MCC



R2 APU COOL OFF (On MCC Cue)  
APU FUEL PUMP/VLV COOL A-OFF  
APU HTR RECONFIG (ORB OPS)

DUAL SHIFT PRE-SLEEP ACTIVITY  
(ORB OPS FS, CREW SYS)  
MNVN (TRK) 902 START ATT  
TG-2 BV-5  
P-340 Y-0 OM-180  
A/AUTO/VERN (22:55) Init TRK

OEX SUMS (DTO 902)  
(ORB OPS FS, OEX SUMS)

MNVN 8406-11B

MNVN 9102-10U

MNVN (TRK) -ZLV, +YVV  
TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

WASTE WATER DUMP, steps 1&2  
(ORB OPS, ECLS)

MNVN 4656-10H

WASTE WATER DUMP, step 3  
(ORB OPS, ECLS)

IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION	INFORM CREW GO FOR APU COOL OFF
P/TV08 SETUP (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)		
P/TV08 ACT (FLIGHT DECK) (PHOTO/TV, P/TV SCENES)	CELESTIAL OBSERVATION	TV (IDRE) GND CNTL-CAB
IPS SUPPORT IDIN (SL IPS, STELLAR PTING)		
IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION	UPDATE H2O WASTE DUMP QTY
IPS SUPPORT IDOP (SL IPS, STELLAR PTING)		
IPS SUPPORT IDOP (SL IPS, STELLAR PTING)	CELESTIAL OBSERVATION	UPDATE H2O WASTE DUMP QTY
IPS SUPPORT		

# STS-35 (RED FD 09)

**TDR** **RTS** **MET** **ARB**  
**EW** **DAY 008** **TEL** **TDL**  
**ALL (B2)** **TDU**  
**AUTO/VERN**

03:00  
 04:00  
 05:00  
 06:00  
 07:00  
 08:00

CEL  
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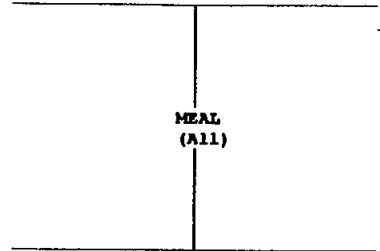
ORB 130  
 ORB 131  
 ORB 132

HTS  
 IOS  
 GTS

STS

PL

MCC



MNVR 3705-10B

IDIN (SL IPS, STELLAR PTING)

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

NOTE  
H2O DUMP DISP  
CMPLT

IPS OPTICAL HOLD

MNVR 8406-13B

- • • IF IMU MNVR REQUIRED • • • •
- (PER MCC CALL) •
- Do not mnvr to 8406-13B •
- MNVR IMU ALIGN ATT •
- STAR PAIR (C1) •
- A/AUTO/VERN (05:25) Init MNVR •
- MNVR 8406-13B •
- • • • •

IMU ALIGN - S TRK (ORB OPS)

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 4519-12W

**IMU ALIGN LOG**  
 READ ID:  
 -Y \_\_\_\_ , -Z \_\_\_\_ ANG ERR \_\_\_\_  
           1          2          3

ANG:  
 AX ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
 AY ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_  
 AZ ( ) \_ \_ \_ ( ) \_ \_ \_ ( ) \_ \_ \_

EXECUTION TIME:  
 \_ \_ / \_ \_ : \_ \_ : \_ \_

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 8102-13H

IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

MNVR 6310-22H

P/TV03 SETUP (IPS DEACT & STOW)  
(PHOTO/TV, P/TV SCENES)

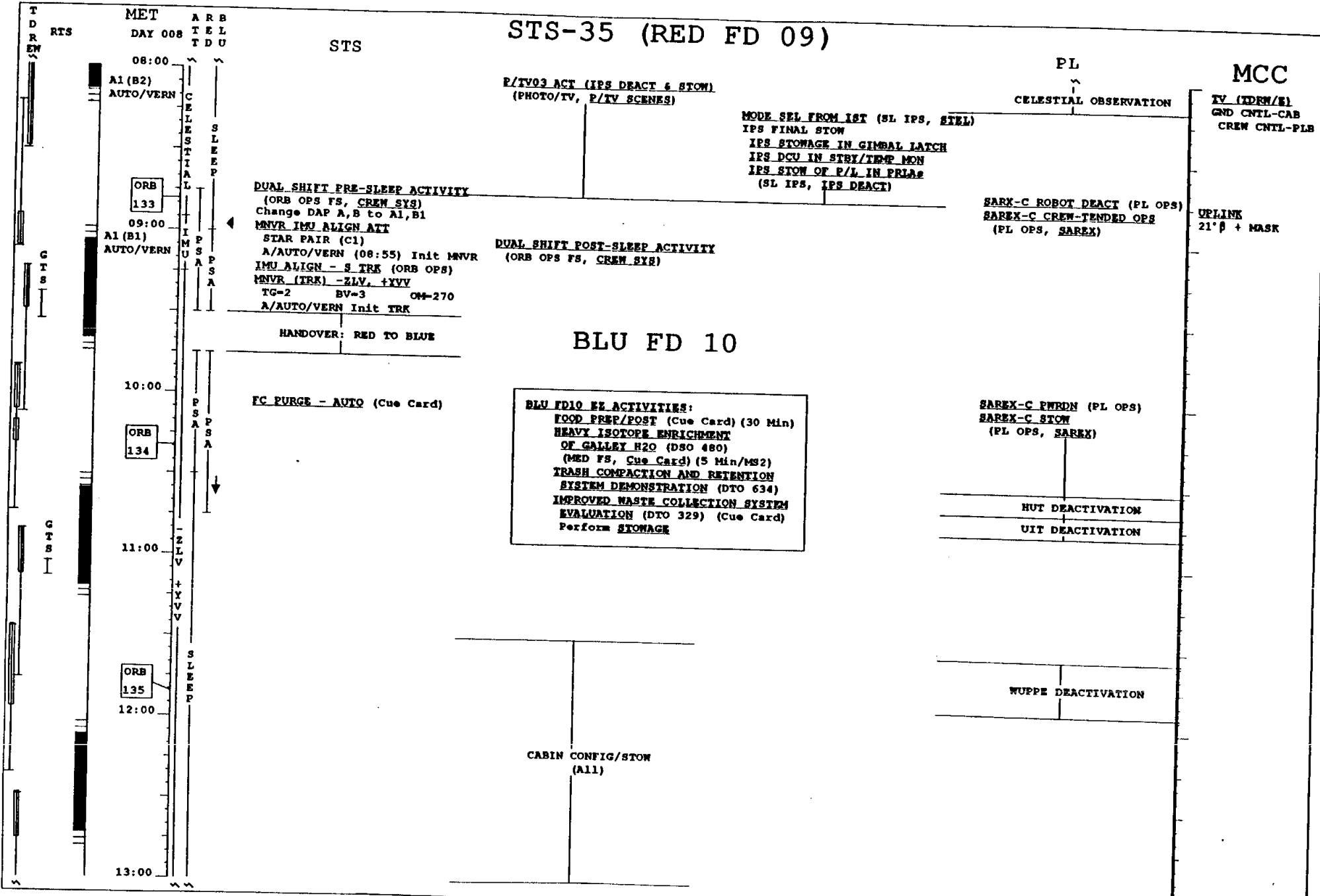
IPS SUPPORT

IDOP (SL IPS, STELLAR PTING)

CELESTIAL OBSERVATION

P/TV03 ACT (IPS DEACT & STOW)  
(PHOTO/TV, P/TV SCENES)

# STS-35 (RED FD 09)



MET  
DAY 008

08:00  
A1 (B2)  
AUTO/VERN  
ORB 133  
09:00  
A1 (B1)  
AUTO/VERN  
ORB 134  
10:00  
ORB 134  
11:00  
ORB 135  
12:00  
13:00

STS

R/TV93 ACT (IPS DEACT & STOW)  
(PHOTO/TV, P/TV SCENES)

MODE SEL FROM 1ST (SL IPS, STEL)  
IPS FINAL STOW  
IPS STOWAGE IN GIMBAL LATCH  
IPS DCU IN STRY/TEMP MON  
IPS STOW OF P/L IN PRLAs  
(SL IPS, IPS DEACT)

PL  
CELESTIAL OBSERVATION

MCC  
TV (IDRM/E1)  
GND CNTRL-CAB  
CREW CNTRL-PLB

**DUAL SHIFT PRE-SLEEP ACTIVITY**  
(ORB OPS FS, CREW SYS)  
Change DAP A, B to A1, B1  
MNRV IMU ALIGN ATT

**DUAL SHIFT POST-SLEEP ACTIVITY**  
(ORB OPS FS, CREW SYS)

STAR PAIR (C1)  
A/AUTO/VERN (08:55) Init MNRV  
IMU ALIGN - S TRK (ORB OPS)  
MNRV (TRK) -ZLV, +YVV  
TG-2 BV-3 OM-270  
A/AUTO/VERN Init TRK

HANDOVER: RED TO BLUE

BLU FD 10

FC PURGE - AUTO (Cue Card)

**BLU FD10 EE ACTIVITIES:**  
FOOD PREP/POST (Cue Card) (30 Min)  
HEAVY ISOTOPE ENRICHMENT  
OF GALLEY H2O (DSO 480)  
(MED FS, Cue Card) (5 Min/MS2)  
TRASH COMPACTION AND RETENTION  
SYSTEM DEMONSTRATION (DTO 634)  
IMPROVED WASTE COLLECTION SYSTEM  
EVALUATION (DTO 329) (Cue Card)  
Perform STOWAGE

SAREX-C ROBOT DEACT (PL OPS)  
SAREX-C CREW-TENDED OPS  
(PL OPS, SAREX)

UPLINK  
21'β + MASK

SAREX-C PWRDN (PL OPS)  
SAREX-C STOW  
(PL OPS, SAREX)

HUT DEACTIVATION  
UIT DEACTIVATION

WUPPE DEACTIVATION

CABIN CONFIG/STOW  
(All)

# STS-35 (BLU FD 10)

STS

PL

MCC

TDRS  
RTS  
MET  
DAY 008  
ARB  
TEL  
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13:00  
A1 (B1)  
AUTO/VERN  
ORB 136  
14:00  
ORB 137  
15:00  
ORB 138  
16:00  
ORB 139  
17:00  
18:00

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WUPPE REENTRY PREPARATION  
RUT REENTRY PREPARATION  
UIT REENTRY PREPARATION

IPS P/L DEACTIVATION

IPS DEACT  
IPS SS DEACT TO FEU TEMP MON  
IPS POWER DEACT  
(SL IPS, IPS DEACT)

CRT POWERUP  
R12L CRT4 PWR - ON  
SPACELAB DEACTIVATION  
(SL ACT/DEACT, SL DEACT)

CABIN CONFIG/STOW  
(All)

P/TV08 SETUP (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

**DUAL SHIFT POST-SLEEP ACTIVITY**

(ORB OPS FS, CREW SYS)  
MNRV (TRK) BIASED -XSI  
TC=4 BV=5  
P=184 Y=0 OM=270  
A/AUTO/VERN (16:30) Init TRK  
L1 CAB TEMP -full COOL  
wait 20 min then,  
CAB TEMP CNIL -OFF  
AEROBICS (DSO 476) Pulse Rt  
(MED FS, MED DSOg)  
(CDR, PLT)

MO32M LEH O2 5 vlv -CL  
Remove and stow O2 Bleed  
Orifice  
LEH O2 5 vlv -R

P/TV08 ACT (FLIGHT DECK)  
(PHOTO/TV, P/TV SCENES)

IMC DEACTIVATION

MEAL  
(All)

FD 10

FC PURGE - AUTO (Cue Card)

PRIORITY PWRUP GROUP B  
(ORB PRT, PRIOR PWRDN)

TV (TDRW)  
GND CNIL-CAB

BBXRT CRYO VENT VLV CLOSURE  
(PL OPS, BBXRT)

# STS-35 (FD 10)

MET DAY 008  
 ARB TEL TDU

STS

PL

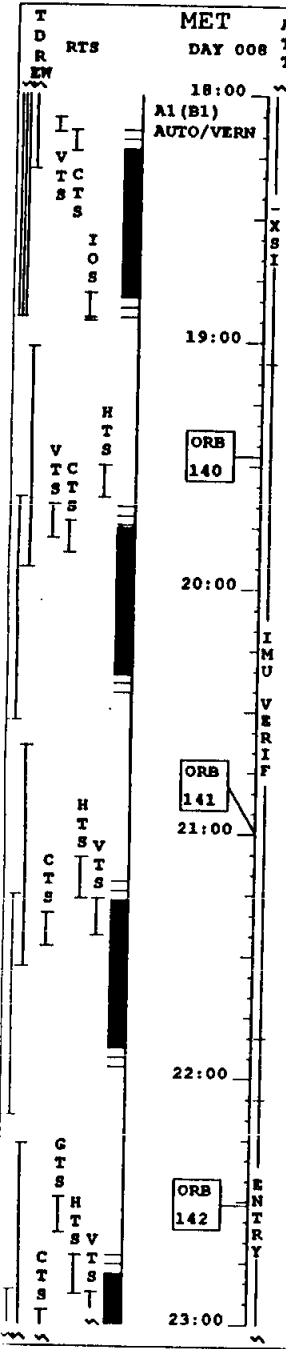
MCC

Update: CRT TIMER SETUP PAD  
 in NOMINAL DEORBIT PREP

UPDATE  
 CRT TIMER  
 SETUP PAD

**EE ACTIVITIES BEFORE LEAVING FLT PLN:**  
**AIR SAMPLE**  
 Rod MET on bottle  
**FLUID LOADING PREP**  
 Fill 6 drink containers with  
 8 oz H2O each (per person)  
**PREFLIGHT ADAPTATION TRAINING**  
 (DSO 468) (5 Min/MS1)  
 Unstow tape recorder and  
 PAT Entry Cue Card.

Go to DEORBIT PREP at 8/18:03 MET



ALTERNATE TIMELINES

ALTERNATE  
TIMELINES

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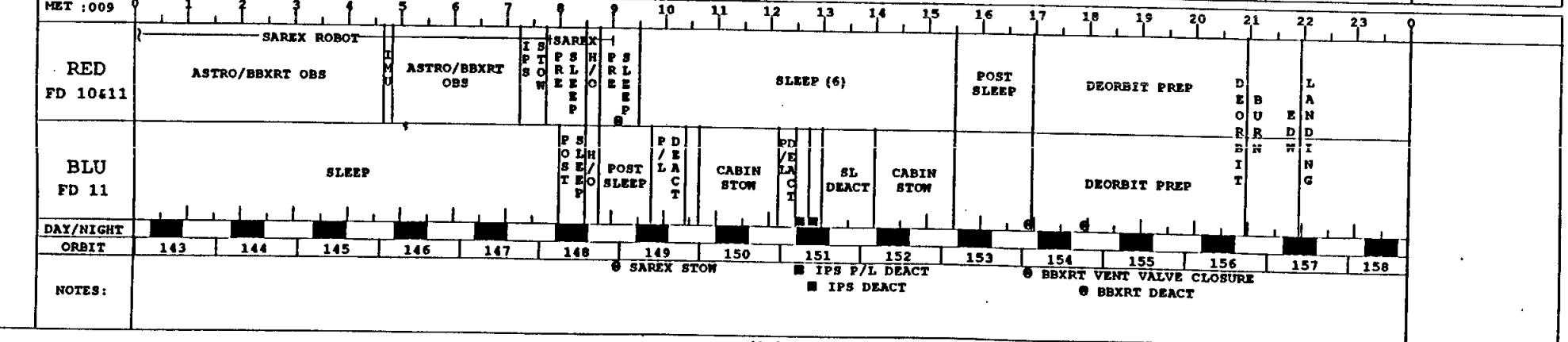
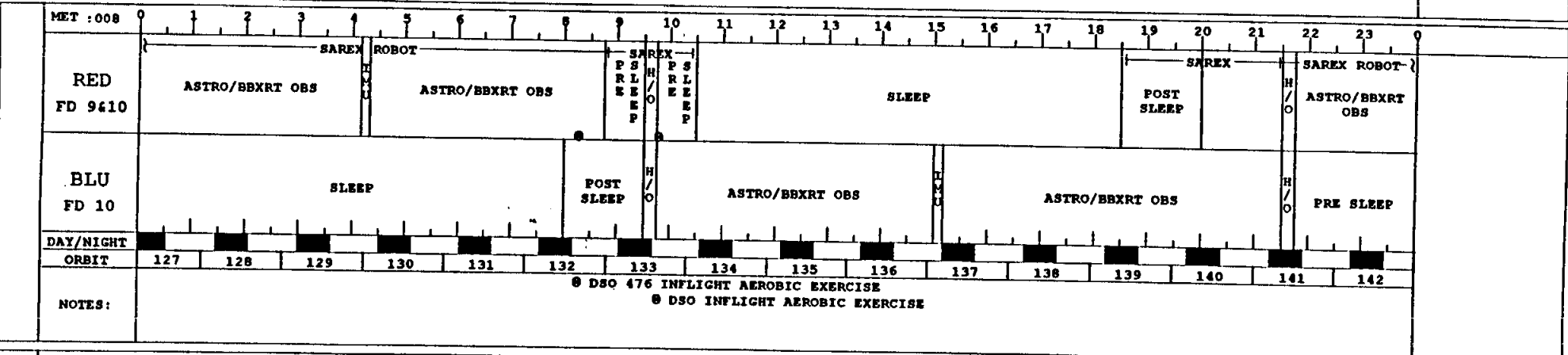
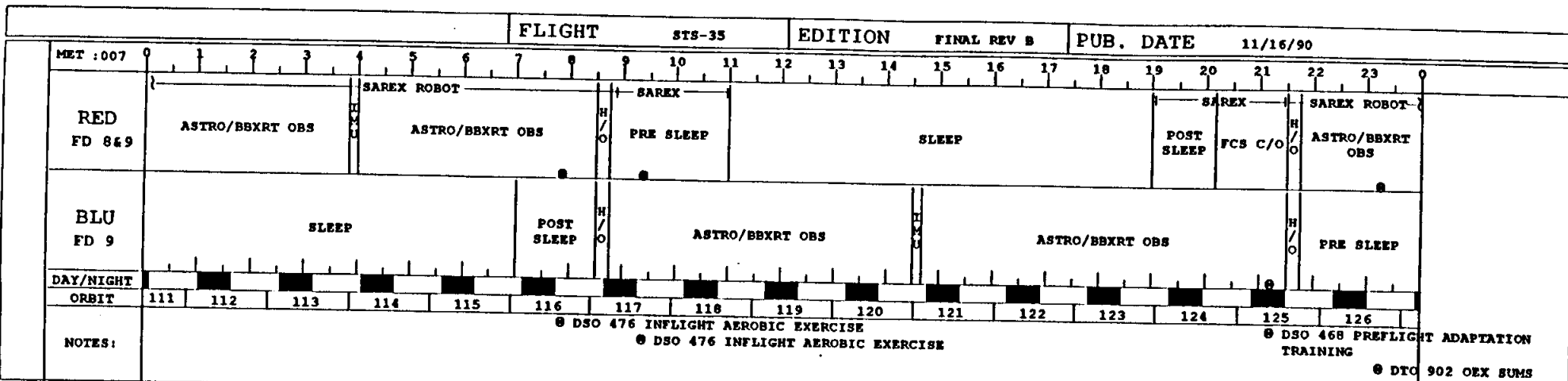
ALTERNATE  
TIMELINES

## 10th DAY

The 10th Day Timeline is designed to accommodate a real-time, one-day extension of the mission. The timeline assumes that the nominal crew sleep schedule will be used until 7/22:00. The January 1, 1991, 06:40 GMT ephemeris is utilized for the 10th Day Timeline.


10th DAY





GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
008:18:40 / 009:06:40	007:12:00 / 008:00:00	008:12:40 / 009:00:40	/ 008 CST	-0.2		JANUARY 8, 1991	STS-35	FINAL REV B	11/16/90				
CST :008													
BLU FD :009													
MET :007													
STS	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	AUTO MNV R	FCS C/O	AUTO MNV R	H/O	TRK MNV R	RSSZ CHUC
PL	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	CELEST OBS	P A T	CELEST OBS			
DAY/NIGHT													
ORBIT	119	120	121	122	123	124	125	126					
RTS COVERAGE			-IOS		--MIL		-IOS	-MIL	-CTS		-VTS		HTS
TDRS					-MIL		-VTS	-CTS		-HTS	-MIL		-GTS
SAA													
ATTITUDE						CELESTIAL							
RED SLEEP			SLEEP										
BLU SLEEP							POST SLEEP						
NOTES:									PRE SLEEP				
									ACTIVATION				
									H/O BLUE TO RED				
									D50 468 PREFLIGHT ADAPTATION TRAINING				
									DTO 902 OEX SUMS				

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
009:06:40/ 009:18:40	008:00:00/ 008:12:00	009:00:40/ 009:12:40	/009 CST	-1.4		JANUARY 9, 1991	STS-35	FINAL REV B	11/16/90
CST :009									
RED FD :009									
MET :008									
STS									
PL									
DAY/NIGHT									
ORBIT	127	128	129	130	131	132	133	134	
RTS COVERAGE	-VTS -CTS -MIL	-GTS -HTS -VTS	-GTS -HTS	-HTS	-IOS -GTS -HTS	-GTS	-GTS	-GTS	-GTS
TDRS									
SAA									
ATTITUDE	CELESTIAL					CELESTIAL			
RED SLEEP									
BLU SLEEP									
NOTES:									

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																			
009:18:40/ 010:06:40	008:12:00/ 009:00:00	009:12:40/ 010:00:40	/ 009 CST	-2.7		JANUARY 9, 1991	STS-35	FINAL REV B	11/16/90																			
CST :009	BLU FD :010	MET :008																										
	12	13	13	14	15	16	17	18	19	20	21	22 RED	23	0				CST:010										
																				MET:009								
STS	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	AUT M RVN	
						MEAL																						
	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	H W V	
PL	CELEST OBS	T S S W I N G O B S	CELEST OBS	CELEST OBS	CELEST OBS	T S S W I N G O B S	CELEST OBS	T S S W I N G O B S	CELEST OBS	T S S W I N G O B S	CELEST OBS	T S S W I N G O B S	CELEST OBS	T S S W I N G O B S	CELEST OBS	T S S W I N G O B S	CELEST OBS											
DAY/NIGHT	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ORBIT	135	136	137	138	139	140	141	142																				
RTS COVERAGE			-MIL	-IOS				-MIL	-IOS																			
TDRS E W																												
SAA																												
ATTITUDE																												
RED SLEEP																												
BLU SLEEP																												
NOTES:																												

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
010:06:40 / 010:18:40	009:00:00 / 009:12:00	010:00:40 / 010:12:40	/ 010 CST	-4.1		JANUARY 10, 1991	STS-35	FINAL REV B	11/16/90
CST :010	RED FD :010	MET :009							
STS									
PL									
DAY/NIGHT									
ORBIT	143	144	145	146	147	148	149	150	
RTS COVERAGE	GTS	GTS	HTS	IOS	GTS	GTS	GTS	GTS	
TDRS									
SAA									
ATTITUDE									
RED SLEEP									
BLU SLEEP									
NOTES:									

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
010:18:40 / 011:06:40	009:12:00 / 010:00:00	010:12:40 / 011:00:40	/ 010 CST	-5.5		JANUARY 10, 1991	STS-35	FINAL REV B	11/16/90	
CST :010	FD :011	MET :009	12 13 14 15 16 17 18 19 20 21 22 23 0	CST:011						MET:010
STS	CABIN STOW	CABIN STOW	MEAL	DEORBIT PREP	DEORBIT BURN	DEORBIT BURN	EDW LANDING			
PL	SL DEACT									
DAY/NIGHT	[Day/Night Cycle Bar]									
ORBIT	151	152	153	154	155	156	157	158		
RTS COVERAGE	-MIL -IOS -MIL -IOS -CTS -MIL -VTS -HTS -GTS -MIL -HTS -VTS -MIL -HTS -GTS -MIL -HTS -VTS -GTS -MIL -CTS									
TDRS E W	[TDRS Coverage Bars]									
SAA	[SAA Coverage Bars]									
ATTITUDE	-ZLV -YVV			-XSI		IMU VERIF		ENTRY		D/O
RED SLEEP	SLEEP		POST SLEEP							
BLU SLEEP										
NOTES:							* DEORBIT BURN 9/20:57	* EDW LANDING 9/21:57		

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CONTINGENCY TIMELINES



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## IPS DEPLOY/STOW (EVA)

The IPS Deploy/Stow EVA Timeline assumes that an EVA is required to manually deploy the IPS on BLU FD04 (approx MET 2/10:00). Subsequently a second EVA is required to manually stow the IPS prior to the last BLU team presleep (MET 7/22:45). The second EVA is performed with 14.7 PSI EVA protocol in order to continue using the Spacelab DDSs for IPS operations until just prior to the EVA. This will maximize science observations since the DDSs can not operate with a 10.2 PSI EVA protocol. Crew sleep cycles must be drastically altered for this scenario. The January 1, 1991, 06:40 GMT ephemeris is utilized for the IPS Deploy/Stow EVA Timeline.

IPS DEPLOY/  
STOW (EVA)

# IPS DEPLOY/ STOW (EVA)

RED BLU	FLIGHT	STS-35	EDITION	FINAL, REV B	PUB. DATE	11/16/90																				
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	
RED FD 1&2	LAU	DIR	POST INSERT					PRE SLEEP	PS H/O L S E E P				SLEEP							POST SLEEP			H/O	BBXRT OBS		
BLU FD 1&2	NC	INS	POST INSERTION	PRE SLEEP			SLEEP (6)	PS OL S E T E P	H/O	PS OL S E T E P		BBXRT OBS											H/O	PRE SLEEP		
DAY/NIGHT																										
ORBIT		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16										
NOTES:	@ 28.45/190X190 o SL ACTIVATION @ IMU/COAS (AFT & FWD)																									
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	
RED FD 2&3			BBXRT OBS								H/O	PRE SLEEP										POST SLEEP	H/O	BBXRT OBS		
BLU FD 3				SLEEP						POST SLEEP	H/O	BBXRT OBS		BBXRT OBS							BBXRT OBS	EP OR UE IP	1 D E P R E S S	EMU C/O	H/O	SLEEP
DAY/NIGHT																										
ORBIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32										
NOTES:	■ FILTER CLEANING ■ ASPIRIN ■ 10.2 PREP @ COAS (FWD) ■ P/B INIT ■ PRE SLEEP ■ P/B TERM ■ PRE SLEEP																									
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	
RED FD 3&4			BBXRT OBS	IMU	BBXRT OBS							PRE SLEEP											PS OL S E T E P	H/O	PS OL S E T E P	
BLU FD 4				SLEEP			PS OL S E T E P	EVA PREP		EVA			PS OL S E T E P	IMU	PRE SLEEP								PRE SLEEP	H/O	PS OL S E T E P	SLEEP
DAY/NIGHT																										
ORBIT	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48										
NOTES:	■ A/L DEPR ■ A/L REPR ■ IMU/COAS (FWD) o ASTRO/BBXRT OBS																									

		FLIGHT		ST8-35		EDITION		FINAL, REV B		PUB. DATE		11/16/90													
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
RED FD 4&5	ASTRO/BBXRT OBS		ASTRO/BBXRT OBS						H/O	PRE SLEEP			SLEEP						POST SLEEP	H/O	ASTRO/BBXRT OBS				
BLU FD 5	SLEEP						POST SLEEP	EMU MAINT RCHG	H/O	ASTRO/BBXRT OBS						EMU MAINT RCHG	H/O	ASTRO/BBXRT OBS		H/O	PRE SLEEP	SLEEP			
DAY/NIGHT	[Day/Night Cycle]																								
ORBIT	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63									
NOTES:																									
MET :004	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0
RED FD 5&6	ASTRO/BBXRT OBS		ASTRO/BBXRT OBS						H/O	PRE SLEEP			SLEEP						POST SLEEP	H/O	ASTRO/BBXRT OBS				
BLU FD 6	SLEEP						POST SLEEP	H/O	ASTRO/BBXRT OBS						H/O	ASTRO/BBXRT OBS		H/O	PRE SLEEP	SLEEP					
DAY/NIGHT	[Day/Night Cycle]																								
ORBIT	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79									
NOTES:																									
MET :005	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0
RED FD 6&7	ASTRO/BBXRT OBS		ASTRO/BBXRT OBS						H/O	PRE SLEEP			SLEEP						POST SLEEP	H/O	ASTRO/BBXRT OBS				
BLU FD 7	SLEEP						POST SLEEP	H/O	ASTRO/BBXRT OBS						H/O	ASTRO/BBXRT OBS		H/O	PRE SLEEP	SLEEP					
DAY/NIGHT	[Day/Night Cycle]																								
ORBIT	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95									
NOTES:	<p style="text-align: center;">■ FILTER CLEANING</p>																								

FLIGHT

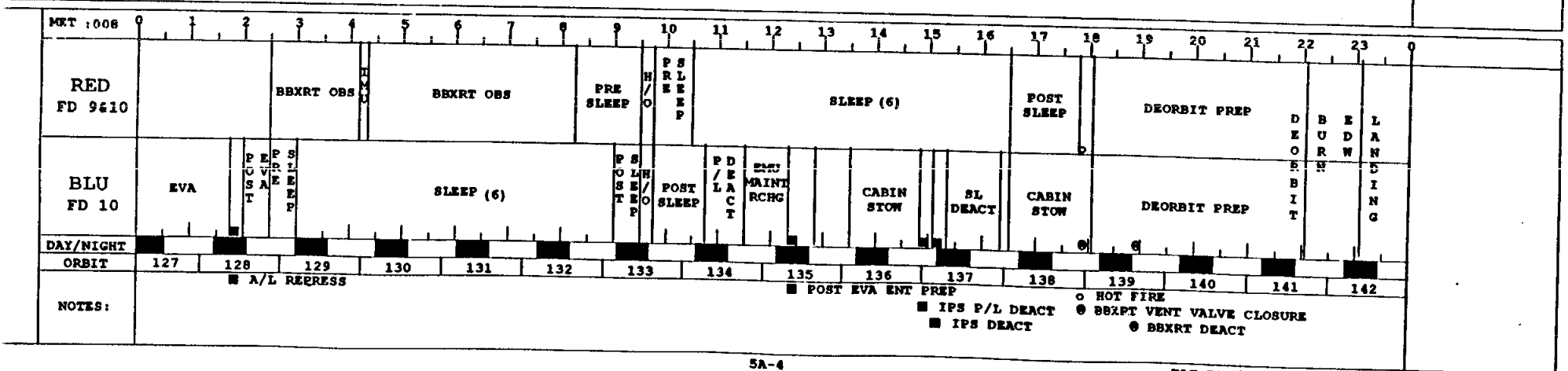
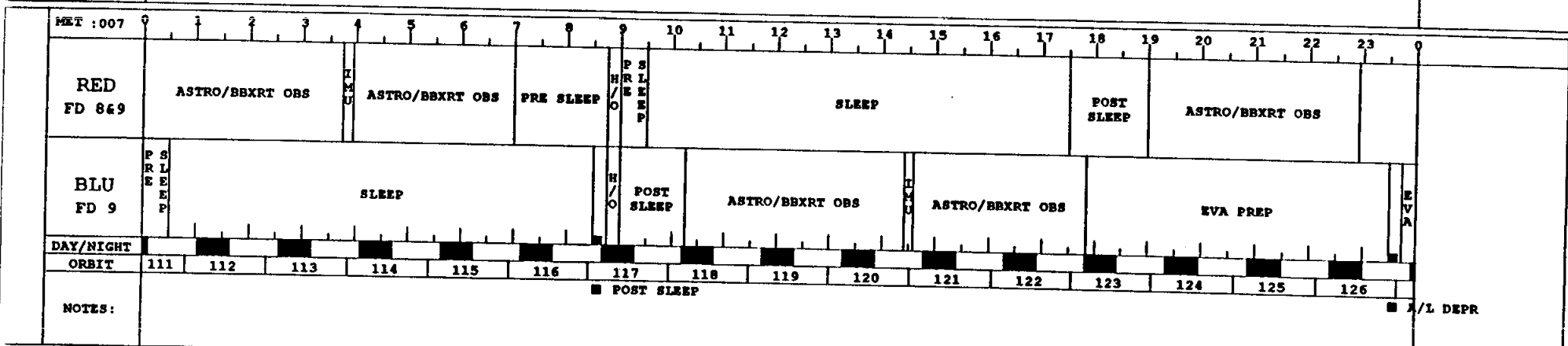
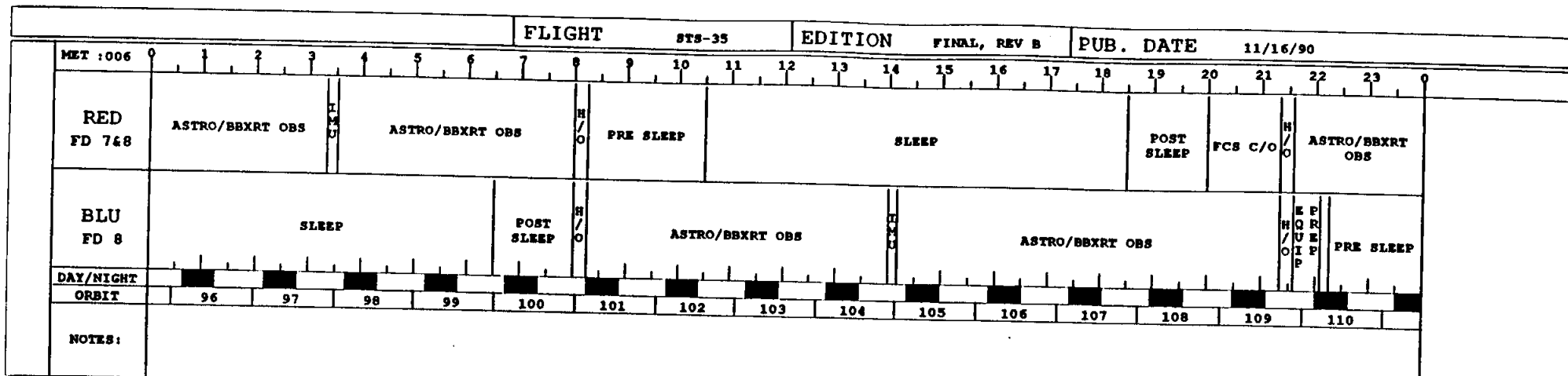
STS-35

EDITION

FINAL, REV B

PUB. DATE

11/16/90



GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
333:22:22/ 334:10:22	001:16:00/ 002:04:00	333:17:22/ 334:05:22	/ 333 CDT	6.7		NOVEMBER 29, 1990	STS-35	FINAL, REV B	11/08/90
CDT :333			RED 22			CDT:334			
BLU FD :003			FD:003						
MET :001						MET:002			
STS		Z L V M N V R				C O A S M N V R			
			10.2 DEPRESS						
PL									
DAY/NIGHT									
ORBIT									
RTS COVERAGE									
TDRS									
SAA									
ATTITUDE									
RED SLEEP									
BLU SLEEP									
NOTES:									

**Timeline Assumptions:**

- EVA is required for a PRLA failure.
- Two EVAs are required - One for PRLA open and one for PRLA close.
- 12 hour 10.2 and 14.7 PSI Protocol.
- Both crews must be awake.
- EVA will take at least 2 hours.
- At least one non-EVA crewmember is required for 10.2 depress/repress and post-EVA activities (CDR, PLT, MS).
- Nominal mission duration.
- Spacelab DDSs are deactivated during 10.2 PSI operations.
- Post-EVA payload reconfigurations will be determined in real-time.

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
334:10:22/ 334:22:22	002:04:00/ 002:16:00	334:05:22/ 334:17:22	/ 334 CDT	6.8	☾	NOVEMBER 30, 1990	STS-35	FINAL, REV B	11/16/90
CDT :334		BLU 8							
RED FD :003		FD:004							
MET :002									
STS	MEAL	ZLV MNV R	ZLV MNV R						IMU COAS
		WASTE DUMP INIT	WASTE DUMP INIT						
				EVA PREP		EVA	POST EVA	14.7 PRESS	
PL	BBXRT OBS			EVA PREP SUPT	PLS PREP	EVA SUPPORT	SUP PORT EVA		ASTRO/BBXRT OBS
DAY/NIGHT									
ORBIT	35	36	37	38	39	40	41	42	
RTS COVERAGE	VTS -CTS	-HTS -VTS	-HTS	-IOS -GTS	-IOS -GTS	-GTS	-GTS	-GTS	
TDRS									
SAA									
ATTITUDE	CELESTIAL								CELESTIAL
RED SLEEP									
BLU SLEEP									
NOTES:	<p>           ◎ -ZLV, +YVV      ◎ -ZLV, -YVV      ◎ EVA PREP (EVA, EVA PREP)      ◎ EVA PREP FOR IPS/ASTRO Steps 2-4 (C EVA, IPS/ASTRO PROCEDURES)      ◎ PRE EVA PRLA CONFIG (C EVA, RMS/PRLA SUM T/L)      ◎ DEPRESS/REPRESS (Cue Card)      ◎ PRLA OPEN/CLOSE (C EVA, RMS/PRLA)      ◎ FWD STATION      ◎ DEPRESS/REPRESS (Cue Card)      ◎ POST EVA (EVA, POST EVA)      ◎ POST EVA SUPPORT (EVA, POST EVA)      ◎ CABIN REPRESS TO 14.7 PSI (EVA, 10.2 PSI CABIN)         </p>								

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
339:19:22/ 340:07:22	007:13:00/ 008:01:00	339:14:22/ 340:02:22	/ 339 CDT	-0.6	☉	DECEMBER 5, 1990	STS-35	FINAL, REV B	11/16/90
CDT :339									
MET :007									
STS	MEAL		EVA PREP		EVA SUPPORT		EVA		
PL	ASTRO/BBXRT OBS								
DAY/NIGHT									
ORBIT	120	121	122	123	124	125	126	127	
RTS COVERAGE		- IOS	-- MIL	- IOS	- MIL	- CTS	- VTS	- HTS	IOS
TDRS									
SAA									
ATTITUDE	CELESTIAL								
RED SLEEP	SLEEP		POST SLEEP						
BLU SLEEP									PRE SLEEP
NOTES:	◎EVA PREP (EVA, EVA PREP)				◎-ELV, -YVV ◎EVA PREP FOR IPS/ASTRO Steps 2-4 (C EVA, IPS/ASTRO PROCEDURES) ◎PRE EVA PRLA CONFIG (C EVA, RMS/PRLA SURF 1/L) ◎DEPRESS/REPRESS (Cue Card) ◎PRLA OPEN/CLOSE (C EVA, RMS/PRLA)				



GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
340:07:22/ 340:19:22	008:01:00/ 008:13:00	340:02:22/ 340:14:22	/ 340 CDT	-1.9	☉	DECEMBER 6, 1990	STS-35	FINAL, REV B	11/16/90	
CDT :340										
MET :008										
STS										
EVA	AR L R E S S	POST EVA							EMU MAINT RCHG	POST EVA ENT PREP
EVA SUPPORT	P S O U P T P O E R T A								P/L DEACT	
PL										
DAY/NIGHT										
ORBIT	128	129	130	131	132	133	134	135		
RTS COVERAGE	-GTS -HTS -VTS	-GTS -HTS	-HTS	-IOS	-GTS -HTS	-GTS	-GTS			
TDRS E W										
SAA										
ATTITUDE	-ZLV -YVV									
RED SLEEP										
BLU SLEEP										
NOTES:	<p>           *PRLA OPEN/CLOSE (C EVA, RMS/PRLA)            *DEPRESS/REPRESS (Cue Card)            *POST EVA (EVA, POST EVA)            *POST EVA SUPPORT (EVA, POST EVA)         </p> <p>           *H/O BLUE TO RED            *EMU MAINT/RECHARGE (EVA, EMU MAINT/RECHARGE)            *POST EVA ENTRY PREP (EVA, POST EVA ENTRY PREP)         </p>									

ATTITUDE TIMELINE

ATTITUDE  
TIMELINE

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 0/01:12:00 21:56	TRK TGT=2 BV=3( 90.00, 0.00) OM=255.00	A1 AUTO NORM	DSC 0.200 DB AT 5.00 DB RT 0.20	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 75	BIASED -ZLV NOSE SOUTH
2 0/02:40:00	CHANGE DAP A DSC RT NORM ITEM 2 + 0.5 EXEC	A1 AUTO NORM	DSC 0.500 DB AT 5.00 DB RT 0.20			
3 0/02:45:00 50:13	MNVR R+ 86.00 P+192.00 Y+ 11.00	A1 AUTO NORM	DSC 0.500 DB AT 5.00 DB RT 0.20	SUN T 83 P 158	STAR PR A1 -Y ST: 45 -Z ST: 24	IMU ALIGN -Z COAS CAL
4 0/03:05:00 07:26 * ASAP	MNVR R+141.00 P+122.00 Y+ 70.00	A1 AUTO NORM	DSC 0.500 DB AT 5.00 DB RT 0.20	SUN T 129 P 138	+X COAS: 11	+X COAS CAL
5 0/03:22:00 25:48 * NET	TRK TGT=2 BV=3( 90.00, 0.00) OM= 60.00	A1 AUTO NORM	DSC 0.500 DB AT 5.00 DB RT 0.20	EARTH T 90 P 0	LVLH R+ 0 P+180 Y+300	XRT BR-EARTH BIASED -ZLV NOSE NORTH
6 0/03:35:00	CHANGE DAP A TO A11 B TO B2	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02			
7 0/04:00:00 04:16	MNVR R+ 73.00 P+199.00 Y+ 4.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 80 P 168		XRT ALIGN #1
8 0/05:25:00 32:41	MNVR R+ 15.00 P+232.00 Y+310.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 52 P 214		OSPCAL
9 0/08:14:00 19:16	MNVR R+ 82.00 P+278.00 Y+344.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 100 P 169		XRT ALIGN #2
10 0/09:40:00 53:05	MNVR R+244.00 P+108.00 Y+351.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 54 P 43		XRT BR-OBJECT SENSOR
11 0/11:26:00 38:07	MNVR R+ 97.00 P+211.00 Y+ 29.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 108 P 141		IPS-IDPT
12 0/12:15:00 21:54	MNVR R+157.00 P+169.00 Y+340.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 46 P 89		J-F&A POLE STAR

ATTITUDE  
TIMELINE

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 0/17:44:00 57:27	MNVR R+124.00 P+ 0.00 Y+351.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 103 P 168		2801-11 HUT SP1
2 0/18:45:00 54:35	MNVR R+112.00 P+ 99.00 Y+300.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 18 P 237		XRT ALIGN #3 IPS-CTA
3 0/19:27:00 33:40	MNVR R+ 91.00 P+ 30.00 Y+357.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 95 P 209		WUPPE F&A
4 0/20:17:00 23:40	MNVR R+112.00 P+ 99.00 Y+300.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 18 P 237		XRT ALIGN #4
5 0/20:54:00 21:02:01	MNVR R+ 94.00 P+ 96.00 Y+ 35.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 99 P 195		2801-12 HUT SP2
6 0/21:23:00 29:06	MNVR R+100.00 P+ 30.00 Y+358.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 96 P 200		WUPPE F&A
7 0/21:50:00 58:48	MNVR R+205.00 P+ 39.00 Y+ 4.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 96 P 96		3227-23 HUT CAM
8 0/22:00:00	ATL CONTINUES ON PAGE 6-4	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02			

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 0/22:00:00	THE SCIENCE PORTION OF THIS ATL ASSUMES A JAN01 TRAJECTORY	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	T P		
2 0/22:35:00 44:27	MNVR R+ 93.00 P+ 57.00 Y+355.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 59 P 180		4518-11W HD 37903
3 0/23:11:00 20:10	TRK TGT=2 BV=3( 90.00, 0.00) OM=270.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 90	0301-11U BR-EARTH -ZLV NOSE SOUTH
4 0/23:57:00 1/00:05:00	MNVR R+ 58.00 P+ 84.00 Y+309.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 180		4421-10B Vela X
5 1/01:01:00 04:00	MNVR R+ 61.00 P+ 56.00 Y+290.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 7 P 1		3804-10B LMC X-2
6 1/01:29:00 42:09	MNVR R+ 84.00 P+236.00 Y+279.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 35 P 181		0608-10W Beta UMa Merak
7 1/02:28:00 36:33	MNVR R+169.00 P+ 59.00 Y+296.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 2 P 188		9306-12B CL 0016
8 1/03:11:00 21:41	MNVR R+309.00 P+ 72.00 Y+291.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 6 P 181		0001-10H HZ43
9 1/04:10:00 18:49	MNVR R+120.00 P+324.00 Y+322.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 60 P 180		2801-10H Alpha Aur Capella
10 1/05:17:00 18:29	MNVR R+130.00 P+338.00 Y+307.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 42 P 181		0658-10W HD 25443
11 1/07:34:00 48:04	MNVR R+ 55.00 P+ 83.00 Y+307.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 15 P 179		4410-10H Vela SNR A
12 1/08:38:00 40:59	MNVR R+ 76.00 P+ 85.00 Y+337.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 44 P 180		2302-10W EZ Cma

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 1/09:54:00 59:37	MNVR R+350.00 P+ 16.00 Y+292.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 0		4588-10W Delta Cir
2 1/10:35:00 43:42	MNVR R+352.00 P+122.00 Y+281.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 181		8116-40B NGC 4151
3 1/11:45:00 58:58	MNVR R+ 95.00 P+ 52.00 Y+ 2.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 66 P 180		2109-10W Alpha Ori Betelgeuse
4 1/12:55:00 13:01:27	MNVR R+ 69.00 P+ 58.00 Y+290.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 6 P 5		4416-41B SN 1987A
5 1/13:56:00 14:04:40	MNVR R+343.00 P+ 77.00 Y+293.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 7 P 177		8424-11H 3C 273
6 1/14:58:00 15:12:52	MNVR R+113.00 P+ 6.00 Y+355.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 71 P 180		4414-20B M1 Crab Nebula
7 1/15:58:00 16:11:58	MNVR R+316.00 P+ 23.00 Y+306.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 22 P 2		2506-11H SW-MID
8 1/16:37:00 46:04	MNVR R+246.00 P+ 66.00 Y+298.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 338		8512-10H Q 1821
9 1/17:48:00 50:52	MNVR R+227.00 P+ 82.00 Y+305.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 2		3227-30H SS Cyg
10 1/18:21:00 23:37	MNVR R+194.00 P+ 29.00 Y+289.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 14 P 180		2609-11W G70D8247
11 1/19:07:00 10:22	MNVR R+239.00 P+ 91.00 Y+315.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 25 P 360		2417-11W 21 Vul
12 1/19:45:00 56:54	MNVR R+ 53.00 P+136.00 Y+315.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 44 P 179		1204-10H JUPITER

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 1/20:44:00 55:48	MNVR R+107.00 P+ 36.00 Y+316.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 24 P 190		8202-40B M77
2 1/21:54:00 22:03:23	MNVR R+345.00 P+ 23.00 Y+296.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 359		5116-10U NGC 5139 Omega Centauri
3 1/22:33:00 46:42	MNVR R+239.00 P+ 90.00 Y+315.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 25 P 0		2417-12W 21 Vul
4 1/22:59:00 23:02:34	MNVR R+250.00 P+ 61.00 Y+296.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 0 P 186		8415-11H 1700+64
5 1/23:56:00 2/00:10:34	MNVR R+ 62.00 P+ 58.00 Y+293.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 6		4416-20B SN 1987A
6 2/00:49:00 51:57	MNVR R+ 64.00 P+ 86.00 Y+317.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 25 P 180		2111-20B Zeta Pup
7 2/01:21:00 24:54	MNVR R+ 60.00 P+ 48.00 Y+285.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 2		5102-10U NGC 362
8 2/01:57:00 02:00:37	MNVR R+ 66.00 P+ 83.00 Y+317.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 24 P 180		4503-10W HD 62542
9 2/02:47:00 03:01:16	MNVR R+240.00 P+ 87.00 Y+314.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 360		3749-11B Cygnus X-3
10 2/03:45:00 48:48	MNVR R+211.00 P+ 28.00 Y+284.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 16 P 180		9106-10B A 2256
11 2/04:20:00 22:57	MNVR R+163.00 P+ 13.00 Y+294.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 20 P 182		4212-10H IC 63
12 2/05:43:00 48:46	MNVR R+113.00 P+ 11.00 Y+345.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 59 P 180		2209-10W Zeta Tau

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 2/07:13:00 21:38	MNVR R+240.00 P+ 87.00 Y+314.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 359		3749-12B Cygnus X-3
2 2/08:21:00 27:47	TRK TGT=2 BV=3( 90.00, 0.00) OM=270.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 90	-ZLV NOSE SOUTH WASTE H2O DUMP
3 2/09:26:00 35:09	MNVR R+317.00 P+ 78.00 Y+289.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 10 P 184		9101-20B Coma Cluster
4 2/10:41:00 50:18	MNVR R+ 67.00 P+120.00 Y+ 9.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 85 P 180		0606-10W Gamma Gem Alhena
5 2/11:50:00 58:54	MNVR R+341.00 P+ 9.00 Y+294.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 21 P 2		2805-11H Alpha Cen A Rigel Kentaurus
6 2/12:21:00 35:04	MNVR R+131.00 P+323.00 Y+300.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 42 P 181		2107-20W Alpha Cam
7 2/13:19:00 24:38	MNVR R+259.00 P+ 69.00 Y+315.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 359		5108-10U M92
8 2/13:56:00 14:09:39	MNVR R+ 73.00 P+ 87.00 Y+334.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 41 P 179		2115-10W Delta Cma Wezen
9 2/14:56:00 15:01:41	MNVR R+339.00 P+ 9.00 Y+295.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 22 P 2		4537-11W HD 129557
10 2/15:17:00 30:25	MNVR R+128.00 P+355.00 Y+316.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 41 P 180		9305-11U A 426
11 2/16:18:00 23:40	MNVR R+234.00 P+ 92.00 Y+312.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 359		4412-10H Cyg Loop A Veil Nebula
12 2/17:21:00 29:46	MNVR R+316.00 P+ 67.00 Y+293.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 5 P 177		6310-11H M60

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



**Attitude Timeline**

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 2/18:18:00 28:51	MNVR R+128.00 P+356.00 Y+316.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 40 P 181		9305-12U A 426
2 2/19:21:00 34:09	MNVR R+356.00 P+ 26.00 Y+294.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 14 P 359		3808-20B Cen X-3
3 2/19:59:00 20:12:22	MNVR R+122.00 P+304.00 Y+304.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 51 P 180		2509-10H G191B2B
4 2/20:55:00 21:08:57	MNVR R+ 60.00 P+ 55.00 Y+293.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 2		4405-20B N132 D
5 2/21:51:00 53:47	MNVR R+ 23.00 P+ 51.00 Y+295.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 359		4207-21W Eta Car
6 2/22:54:00 57:24	MNVR R+ 54.00 P+ 42.00 Y+285.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 0		6106-10U SMC A
7 2/23:21:00 27:43	MNVR R+ 50.00 P+114.00 Y+315.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 35 P 181		8113-10U NGC 2992
8 3/00:17:00 26:34	MNVR R+112.00 P+ 54.00 Y+303.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 7 P 178		8405-11B 0237-230
9 3/01:12:00 19:58	MNVR R+342.00 P+ 13.00 Y+296.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 20 P 359		3811-10B GX 304-1
10 3/01:43:00 57:17	MNVR R+197.00 P+ 42.00 Y+294.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 8 P 177		4557-10W HD 197770
11 3/02:22:00 26:11	MNVR R+124.00 P+287.00 Y+283.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 37 P 180		6216-10U M81
12 3/03:11:00 24:43	MNVR R+ 75.00 P+ 82.00 Y+337.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 43 P 180		2302-20W EZ CMA

6-8

FLT PLN/35/FIN B

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 3/04:40:00 45:52	MNVR R+109.00 P+ 34.00 Y+329.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 36 P 180		3503-21B HR 1099
2 3/05:31:00 45:16	MNVR R+340.00 P+ 84.00 Y+291.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 182		8307-11U M87
3 3/06:20:00 29:08	MNVR R+174.00 P+ 22.00 Y+294.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 16 P 180		2102-10W Kappa Cas
4 3/07:13:00 20:24	MNVR R+292.00 P+ 56.00 Y+301.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 353		8507-10B 1407+265
5 3/08:04:00 16:37	MNVR R+ 87.00 P+ 63.00 Y+334.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 37 P 180		5104-11U M79
6 3/09:09:00 13:54	MNVR R+ 35.00 P+ 53.00 Y+295.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 3		2217-11W p Car
7 3/09:34:00 41:36	MNVR R+190.00 P+123.00 Y+287.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 25 P 0		4122-10U NGC 7293 Helix Nebula
8 3/10:13:00 21:27	MNVR R+ 13.00 P+ 41.00 Y+294.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 8 P 1		3808-10B Cen X-3
9 3/11:11:00 14:20	MNVR R+ 53.00 P+ 42.00 Y+285.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 4		5201-10U NGC 104 47 Tucanae
10 3/11:41:00 47:08	MNVR R+ 89.00 P+ 61.00 Y+355.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 58 P 179		3705-20B 0614+09
11 3/12:15:00 20:28	MNVR R+ 60.00 P+ 55.00 Y+294.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 5		4416-50B SN 1987A
12 3/12:48:00 55:39	MNVR R+116.00 P+ 20.00 Y+330.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 41 P 179		4201-10W M45 Pleiades

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

6-9

FLT PLN/35/FIN B

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 3/13:39:00 47:39	MNVR R+320.00 P+308.00 Y+283.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 34 P 1		5109-10U NGC 6752
2 3/14:28:00 43:00	MNVR R+248.00 P+ 59.00 Y+297.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 1 P 280		8415-12H 1700+64
3 3/15:32:00 35:17	MNVR R+238.00 P+ 86.00 Y+314.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 359		2133-10W P Cyg
4 3/16:15:00 23:52	MNVR R+351.00 P+ 96.00 Y+289.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 179		8506-10H 1211+143
5 3/17:09:00 22:27	MNVR R+104.00 P+ 41.00 Y+331.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 36 P 179		4104-10H NGC 1535
6 3/18:13:00 19:38	MNVR R+ 33.00 P+ 40.00 Y+291.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 9 P 359		4530-10W HD 99264
7 3/18:56:00 19:01:28	MNVR R+ 81.00 P+ 74.00 Y+349.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 53 P 180		2122-10W HD 7
8 3/19:52:00 20:02:03	MNVR R+345.00 P+ 92.00 Y+289.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 16 P 181		7310-10U M100
9 3/20:12:00 24:39	MNVR R+152.00 P+ 47.00 Y+299.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 5 P 184		6205-10U NGC 720
10 3/21:08:00 16:48	MNVR R+267.00 P+ 58.00 Y+302.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 5 P 359		3814-10H Her X-1
11 3/21:59:00 22:01:19	MNVR R+241.00 P+ 60.00 Y+300.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 5		8512-20H Q 1821
12 3/22:52:00 55:23	MNVR R+232.00 P+ 91.00 Y+313.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 25 P 0		4413-10H Cyg Loop B Veil Nebula

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

6-10

FLT PLN/35/FIN B

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 3/23:49:00 57:10	MNVR R+323.00 P+ 87.00 Y+284.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 180		7407-10U NGC 4631
2 4/00:35:00 45:59	MNVR R+ 63.00 P+ 54.00 Y+295.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 355		3805-11B LMC X-4
3 4/01:21:00 23:55	MNVR R+ 56.00 P+ 79.00 Y+311.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 18 P 181		4448-10U Vela SNR E
4 4/02:15:00 29:13	MNVR R+181.00 P+ 27.00 Y+294.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 180		4564-12W HD 216898
5 4/02:46:00 50:04	MNVR R+130.00 P+293.00 Y+284.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 37 P 179		7205-10U M82
6 4/03:34:00 37:35	MNVR R+193.00 P+ 32.00 Y+292.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 183		4211-10W NGC 7023
7 4/04:54:00 57:07	MNVR R+127.00 P+316.00 Y+307.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 49 P 180		3235-12B H 0538
8 4/05:55:00 59:25	MNVR R+250.00 P+ 44.00 Y+279.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 182		6235-10U M101 A
9 4/06:46:00 49:32	MNVR R+192.00 P+ 26.00 Y+291.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 14 P 181		3115-10W HD 200775
10 4/07:36:00 49:17	MNVR R+333.00 P+ 6.00 Y+299.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 1		3811-20B GX 304-1
11 4/08:23:00 33:00	MNVR R+139.00 P+ 59.00 Y+297.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 1 P 19		5117-10U NGC 288
12 4/08:56:00 09:10:50	MNVR R+341.00 P+ 81.00 Y+292.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 182		6308-11B M49

6-11

FLT PLN/35/FIN B

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 4/09:58:00 10:07:45	MNVR R+ 82.00 P+ 66.00 Y+328.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 31 P 179		8406-12B PKS 0537-28
2 4/10:33:00 42:19	MNVR R+343.00 P+ 77.00 Y+293.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 10 P 180		8424-20B 3C 273
3 4/11:30:00 37:53	MNVR R+ 73.00 P+ 83.00 Y+338.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 44 P 180		2302-30W EZ Cma
4 4/12:41:00 53:37	MNVR R+227.00 P+ 89.00 Y+309.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 21 P 358		0010-11H BD 284211
5 4/13:18:00 25:12	MNVR R+295.00 P+ 74.00 Y+280.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 18 P 182		8117-22B NGC 4051
6 4/14:26:00 34:45	MNVR R+131.00 P+ 5.00 Y+314.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 33 P 181		6602-11U NGC 891
7 4/15:32:00 42:13	MNVR R+283.00 P+ 48.00 Y+314.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 360		0009-10H GD 190
8 4/16:14:00 21:18	MNVR R+ 60.00 P+162.00 Y+322.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 64 P 180		1204-20H JUPITER
9 4/17:11:00 18:37	MNVR R+264.00 P+ 58.00 Y+302.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 352		2607-11H 1707+427
10 4/17:40:00 47:37	MNVR R+144.00 P+ 22.00 Y+305.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 179		6602-12U NGC 891
11 4/18:35:00 45:03	MNVR R+299.00 P+ 62.00 Y+292.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 6 P 179		2533-10H HZ43
12 4/19:06:00 12:31	MNVR R+192.00 P+ 30.00 Y+293.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 179		2609-12W G70D8247

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

6-12

FLT PLN/35/FIN B

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 4/20:14:00 19:19	MNVR R+285.00 P+ 62.00 Y+285.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 179		6232-10U M63 Sunflower Gx
2 4/20:29:00 38:23	MNVR R+170.00 P+ 59.00 Y+297.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 2 P 347		9306-11B CL 0016
3 4/21:28:00 34:15	MNVR R+250.00 P+ 67.00 Y+313.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 1		3223-20H AM Her
4 4/22:42:00 55:41	MNVR R+ 55.00 P+ 68.00 Y+306.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 11 P 181		3212-11H C48D1557
5 4/23:35:00 48:44	MNVR R+198.00 P+ 43.00 Y+296.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 6 P 175		4563-10W HD 216658
6 5/00:40:00 40:51	MNVR R+218.00 P+ 61.00 Y+300.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 2		4447-10B Cas A
7 5/02:00:00 09:55	MNVR R+ 96.00 P+ 45.00 Y+349.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 52 P 180		2109-20W Alpha Ori Betelgeuse
8 5/03:51:00 53:41	MNVR R+ 98.00 P+ 50.00 Y+317.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 179		6209-10U NGC 1300
9 5/05:12:00 23:46	TRK TGT=2 BV=3( 90.00, 0.00) OM=270.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 90	-ZLV NOSE SOUTH WASTE H2O DUMP
10 5/06:17:00 24:51	MNVR R+328.00 P+ 50.00 Y+299.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 2 P 5		7314-10U M83
11 5/07:12:00 22:34	MNVR R+139.00 P+337.00 Y+302.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 37 P 181		3235-13B H 0538
12 5/07:50:00 56:02	MNVR R+359.00 P+134.00 Y+275.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 27 P 180		8117-21B NGC 4051

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 5/08:44:00 49:21	MNVR R+192.00 P+ 26.00 Y+292.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 181		4211-20W NGC 7023
2 5/09:49:00 53:57	MNVR R+272.00 P+ 55.00 Y+311.00	A11 AUTO VERN	DSC' 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 357		3308-10W 68 Her
3 5/10:26:00 31:57	MNVR R+ 50.00 P+157.00 Y+301.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 45 P 180		8210-10U NGC 3227
4 5/11:44:00 52:30	MNVR R+135.00 P+328.00 Y+303.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 41 P 181		2107-10W Alpha Cam
5 5/13:01:00 08:39	MNVR R+ 32.00 P+146.00 Y+288.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 33 P 179		7505-10U NGC 4278
6 5/13:20:00 29:40	MNVR R+175.00 P+ 37.00 Y+297.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 8 P 185		6105-11U M31 Andromeda Gx
7 5/14:19:00 26:22	MNVR R+278.00 P+ 54.00 Y+300.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 2 P 354		3315-10W 44-i Boo
8 5/15:00:00 13:05	MNVR R+ 81.00 P+ 62.00 Y+319.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 21 P 179		5103-11U NGC 1851
9 5/16:04:00 07:52	MNVR R+ 53.00 P+ 84.00 Y+313.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 179		3807-10B Vela X-1
10 5/16:24:00 36:44	MNVR R+164.00 P+ 35.00 Y+299.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 9 P 183		6105-12U M31 Andromeda Gx
11 5/17:22:00 34:53	MNVR R+ 21.00 P+ 48.00 Y+297.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 1		4207-20W Eta Car
12 5/18:04:00 10:40	MNVR R+ 95.00 P+ 48.00 Y+330.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 32 P 180		9314-10B A 496

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 5/19:04:00 13:42	MNVR R+331.00 P+ 34.00 Y+302.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 11 P 360		1112-10H. COMET LEVY
2 5/19:38:00 46:44	MNVR R+ 88.00 P+ 55.00 Y+328.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 30 P 181		5103-12U NGC 1851
3 5/20:38:00 41:37	MNVR R+ 54.00 P+ 49.00 Y+296.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 351		4416-30B SN 1987A
4 5/21:37:00 45:57	MNVR R+331.00 P+ 75.00 Y+291.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 11 P 180		6310-21H M60
5 5/22:34:00 48:54	MNVR R+109.00 P+ 19.00 Y+346.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 54 P 180		4414-30B M1 Crab Nebula
6 5/23:37:00 50:56	MNVR R+289.00 P+ 44.00 Y+312.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 15 P 359		5106-10U M5
7 6/00:19:00 30:44	MNVR R+ 74.00 P+ 88.00 Y+ 16.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 82 P 180		4205-10W NGC 2261 Hubble's Variable Nb
8 6/01:15:00 23:33	MNVR R+111.00 P+ 62.00 Y+287.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 360		2402-10W Eta Hor
9 6/02:26:00 34:01	MNVR R+336.00 P+ 18.00 Y+301.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 0		8310-12U Centaurus A
10 6/02:58:00 03:11:54	MNVR R+217.00 P+ 73.00 Y+304.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 360		3512-10B AR Lac
11 6/03:42:00 49:38	MNVR R+313.00 P+ 80.00 Y+282.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 180		9405-10U SA 57
12 6/04:25:00 34:33	MNVR R+170.00 P+ 49.00 Y+299.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 2 P 173		6140-10U M32/N206

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



Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 6/05:34:00 41:34	MNVR R+265.00 P+ 54.00 Y+303.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 5 P 359		5107-10U M13 Hercules Cl
2 6/06:08:00 22:26	MNVR R+ 91.00 P+ 53.00 Y+311.00	A11 AUTO VERN	DSC ,0.200 DB AT 2.00 DB RT 0.02	SUN T 12 P 179		6314-10U NGC 1399
3 6/07:11:00 15:44	MNVR R+ 57.00 P+ 80.00 Y+315.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 179		4420-10B Pup AC
4 6/07:38:00 46:59	MNVR R+ 54.00 P+182.00 Y+284.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 39 P 180		8612-12H Markarian 421
5 6/09:08:00 16:58	MNVR R+154.00 P+ 21.00 Y+302.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 16 P 180		2203-10W Phi Per
6 6/10:07:00 17:03	MNVR R+315.00 P+ 67.00 Y+291.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 10 P 180		5105-10U M3
7 6/10:47:00 49:26	MNVR R+277.00 P+ 57.00 Y+285.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 14 P 182		7107-10U M51 Whirlpool Gx
8 6/12:13:00 19:15	MNVR R+227.00 P+ 80.00 Y+309.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 18 P 358		2133-22W P Cyg
9 6/12:47:00 53:44	MNVR R+ 96.00 P+240.00 Y+275.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 34 P 181		3218-10H UX UMa
10 6/13:43:00 50:39	MNVR R+226.00 P+ 91.00 Y+311.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 25 P 358		5114-10U M15
11 6/14:16:00 22:58	MNVR R+266.00 P+ 51.00 Y+280.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 182		3218-20H UX UMa
12 6/15:14:00 19:11	MNVR R+198.00 P+ 43.00 Y+296.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 5 P 191		4564-11W HD 216898

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

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FLT PLN/35/FIN B

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 6/15:55:00 16:02:19	MNVR R+312.00 P+ 72.00 Y+287.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 14 P 181		9101-30B Coma Cluster
2 6/16:52:00 57:14	MNVR R+249.00 P+ 66.00 Y+313.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 16 P 357		3223-31H AM Her
3 6/17:18:00 19:27	MNVR R+243.00 P+ 53.00 Y+298.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 1 P 236		8415-21H 1700+64
4 6/17:59:00 18:02:15	MNVR R+235.00 P+ 81.00 Y+316.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 24 P 0		2306-12W HD 191765
5 6/18:42:00 53:29	MNVR R+ 67.00 P+177.00 Y+333.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 81 P 179		3208-10H U Gem
6 6/19:37:00 45:30	MNVR R+266.00 P+ 53.00 Y+308.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 9 P 1		2607-12H 1707+427
7 6/20:14:00 17:20	MNVR R+346.00 P+116.00 Y+277.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 26 P 181		8116-12H NGC 4151
8 6/21:19:00 24:09	MNVR R+248.00 P+ 64.00 Y+314.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 1		3223-32H AM Her
9 6/21:50:00 51:26	MNVR R+241.00 P+ 51.00 Y+299.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 0 P 103		8415-22H 1700+64
10 6/22:46:00 55:26	MNVR R+115.00 P+ 34.00 Y+315.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 182		8202-32H M77
11 6/23:55:00 56:49	MNVR R+112.00 P+ 49.00 Y+302.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 181		8405-12B 0237-230
12 7/02:15:00 24:05	MNVR R+135.00 P+320.00 Y+302.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 43 P 181		0658-20W HD 25443

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 7/03:09:00 16:14	MNVR R+119.00 P+ 33.00 Y+315.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 19 P 179		0002-10H FEIGE 24
2 7/04:03:00 17:39	MNVR R+ 26.00 P+133.00 Y+290.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 32 P 180		6210-10U MALIN 1
3 7/04:55:00 05:07:41	MNVR R+203.00 P+ 99.00 Y+300.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 23 P 0		2235-10W Pi Aqr
4 7/05:38:00 48:55	MNVR R+293.00 P+ 54.00 Y+296.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 181		9302-12U AB 1795
5 7/06:32:00 45:59	MNVR R+108.00 P+ 31.00 Y+328.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 32 P 181		3503-22B HR 1099
6 7/07:04:00 18:21	MNVR R+306.00 P+ 63.00 Y+291.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 10 P 181		9202-10U AB 1367
7 7/08:02:00 08:59	MNVR R+208.00 P+ 47.00 Y+298.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 2 P 181		2230-10W HD 208682
8 7/08:41:00 49:38	MNVR R+341.00 P+ 80.00 Y+291.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 15 P 179		6308-12B M49
9 7/09:39:00 48:22	MNVR R+236.00 P+ 86.00 Y+319.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 29 P 359		5205-10U M71
10 7/10:11:00 19:59	MNVR R+331.00 P+ 74.00 Y+291.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 180		6310-12H M60
11 7/11:10:00 18:37	MNVR R+233.00 P+ 78.00 Y+314.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 22 P 360		3749-20B Cygnus X-3
12 7/11:53:00 12:05:54	MNVR R+ 53.00 P+ 47.00 Y+296.00	All AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 7		4405-30B N132 D

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

6-18

FLT PLN/35/FIN B

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 7/13:03:00 15:57	MNVR R+109.00 P+256.00 Y+280.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 39 P 181		0608-20W Beta UMa Merak
2 7/13:58:00 14:05:21	MNVR R+223.00 P+ 84.00 Y+311.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 22 P 1		2133-21W P Cyg
3 7/14:35:00 48:05	MNVR R+ 58.00 P+ 73.00 Y+314.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 20 P 178		4421-20B Vela X
4 7/15:41:00 48:33	MNVR R+147.00 P+ 74.00 Y+290.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 13 P 1		4101-12H NGC 246
5 7/16:05:00 16:56	MNVR R+ 53.00 P+128.00 Y+322.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 52 P 179		1204-30H JUPITER
6 7/17:02:00 12:28	TRK TGT=2 BV=3( 90.00, 0.00) OM=270.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 90	0301-12U BR-EARTH -ZLV NOSE SOUTH
7 7/17:40:00 46:58	MNVR R+ 79.00 P+ 67.00 Y+345.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 47 P 180		3110-10W HD 53367
8 7/18:30:00 41:54	MNVR R+229.00 P+ 84.00 Y+314.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 24 P 360		2706-10H NGC 6905
9 7/19:22:00 30:25	MNVR R+316.00 P+ 71.00 Y+288.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 14 P 180		2533-20H HZ43
10 7/21:49:00 22:00:29	MNVR R+152.00 P+ 42.00 Y+301.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 4 P 184		6119-10U M33 Triangulum Gx
11 7/22:55:00 23:00:41	TRK TGT=2 BV=5(340.00, 0.00) OM=180.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	EARTH T 20 P 180	LVLH R+180 P+250 Y+ 0	DTO 902 START ATT BIASED +XLV +ZVV
12 7/22:55:00	REFERENCE ORB OPS PROCEDURE FOR OEX SUMS MNVRS	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02			

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

Attitude Timeline						
MET	MNVR OPTION	DAP	E/S	REMARKS	EVENT	
1 7/23:15:00	ROT BV=5( 0.00,270.00)	A12 AUTO VERN	DSC 0.200 DB AT 0.50 DB RT 0.02		ROT R+149 START P+291 ATT Y+ 60	ROTR INIT NEG PITCH
2 7/23:27:34	LVLH	B9 LVLH VERN	DSC 0.200 DB AT 10.00 DB RT 0.50	EARTH T 180 P 187	LVLH R+180 P+ 90 Y+ 0	ROTR STOP -XLV -ZVV
3 7/23:38:00 45:04	MNVR R+ 79.00 P+ 59.00 Y+324.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 25 P 180		8406-11B PKS 0537-28
4 8/00:29:00 33:38	MNVR R+115.00 P+ 35.00 Y+314.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 17 P 181		9102-10U A 370
5 8/01:51:00 02:01:33	TRK TGT=2 BV=3( 90.00, 0.00) OM=270.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 90	-ZLV NOSE SOUTH WASTE H2O DUMP
6 8/02:56:00 03:04:26	MNVR R+ 64.00 P+ 80.00 Y+327.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 34 P 179		4656-10H HD 55857
7 8/03:46:00 49:13	MNVR R+ 79.00 P+ 70.00 Y+ 0.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 62 P 180		3705-10B 0614+09
8 8/05:07:00 10:13	MNVR R+ 79.00 P+ 59.00 Y+323.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 24 P 180		8406-13B PKS 0537-28
9 8/06:04:00 06:42	MNVR R+ 51.00 P+ 46.00 Y+297.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 6		4519-12W SK 69-270
10 8/06:54:00 56:32	MNVR R+ 84.00 P+ 49.00 Y+297.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 3 P 1		8102-13H FAIRALL 9
11 8/07:41:00 52:26	MNVR R+330.00 P+ 74.00 Y+291.00	A11 AUTO VERN	DSC 0.200 DB AT 2.00 DB RT 0.02	SUN T 14 P 182		6310-22H M60
12 8/08:45:00	POST IPS STOW: CHANGE DAP A TO A1 B TO B1	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02			

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

6-20

FLT PLN/35/FIN B

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 8/08:55:00 09:03:04	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 T 18 P 343	STAR PR C1 -Y ST: 54 -Z ST: 27	IMU ALIGN
2 8/09:15:00 22:20	TRK TGT=2 BV=3( 90.00, 0.00) OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH T 90 P 0	LVLH R+180 P+ 0 Y+ 90	-ZLV NOSE SOUTH
3 8/16:30:00	ATL CONTINUES ON PAGE 6-22	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02			

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

Attitude Timeline

MET	MNVR OPTION		DAP	E/S	REMARKS	EVENT
1 8/16:30:00	THE REMAINDER OF THIS ATL REFLECTS THE PLANNED LAUNCH DATE	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	T P		
2 8/16:30:00 41:41	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 T 176 P 177	INRTL R+ 40 P+294 Y+ 61	TAIL SUN COLD SOAK
3 8/19:05:11 11:59 TIG-2:58:00	MNVR R+344.00 P+321.00 Y+352.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN T 107 P 295	-Y ST: 43 -Z ST: 28	D/O IMU ALIGN
4 8/19:16:59 19:08	MNVR R+ 15.00 P+283.00 Y+ 44.00	B1 AUTO NORM	DSC 0.500 DB AT 3.00 DB RT 0.20	SUN T 158 P 233	-Y ST: 27 -Z ST: 54	IMU VERIF
5 8/21:48:11 50:57 TIG -15:00	MNVR R+117.00 P+128.00 Y+ 64.00	* AUTO *	DSC 0.500 DB AT 3.50 DB RT 0.30	SUN T 127 P 149	D/O TIG: 8/22:03:11	D/O BURN ATT

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

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



STS-35 DAP BOOK

## DAP A CONFIGURATIONS

	A1*	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
<b>TRANSLATION</b>												
PULSE ft/sec	0.10	0.10	0.10	0.10	0.10	0.10		0.10	0.10	0.05	0.01	0.01
<b>ROTATION</b>												
DSC RT NORM °/sec VERN °/sec	0.200 0.200	0.400 0.400	0.200 0.200	0.200 0.008	0.200 0.200	0.200 0.200		0.500 0.200	0.200 0.200	0.200 0.200	0.200 0.200	0.200 0.200
PULSE NORM °/sec VERN °/sec	0.10 0.010	0.10 0.010	0.30 0.010	0.10 0.010	0.10 0.050	0.10 0.010		0.10 0.010	0.10 0.010	0.10 0.010	0.04 0.010	0.04 0.010
COMP NORM °/sec VERN °/sec	.00 .000	.00 .000	.00 .000	.00 .000	.00 .000	.00 .000		.00 .000	.00 .000	.00 .000	.00 .000	.00 .000
<b>DEADBAND</b>												
ATT NORM (deg) VERN (deg)	5.00 1.000	1.00 1.000	5.00 1.000	1.00 0.070	5.00 1.000	5.00 1.000		3.00 1.000	2.00 1.000	2.00 1.000	4.00 2.00	0.50 .500
RATE NORM °/sec VERN °/sec	0.20 .020	0.20 .020	0.20 .020	0.20 .010	0.20 .020	0.20 .020		0.20 .020	0.20 .020	0.20 .020	0.20 .020	0.20 0.020
<b>JET OPT</b>												
P	1	1	3	1	1	3		1	1	1	3	3
Y	1	1	3	3	1	3		1	1	1	3	3
<b>CNTL ACCEL</b>												
	0	0	0	0	0	0		0	0	0	0	0

\*I-LOADED OPS-2 DAP Configuration

DAP B CONFIGURATIONS

	B1*	B2	B3	B4	B5	B6	B7	B8	B9
<u>TRANSLATION</u>									
PULSE ft/sec	0.02	0.02	0.02	0.02	0.02	0.05	0.01		0.02
<u>ROTATION</u>									
DSC RT NORM °/sec	0.500	0.200	0.200	0.200	0.200	0.500	0.200		0.200
VERN °/sec	0.200	0.200	0.200	0.008	0.016	0.200	0.200		0.200
PULSE NORM °/sec	0.04	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		0.002
COMP NORM °/sec	.00	.00	.00	.00	.00	.00	.00		.00
VERN °/sec	.000	.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		10.00
VERN (deg)	1.000	1.000	1.000	0.100	0.033	1.000	1.000		10.000
RATE NORM °/sec	0.20	0.20	0.20	0.20	0.20	0.20	0.20		0.50
VERN °/sec	.020	.020	.020	.010	.020	.020	.020		.500
<u>JET OPT</u>									
P	1	3	1	3	3	1	1		3
Y	1	3	1	3	3	1	1		3
<u>CNTL ACCEL</u>									
	0	0	0	0	0	0	0		0

\*I-LOADED OPS-2 DAP Configuration

# DAP BOOK

HOOK  
VELCRO

FLT PLN/35/0/BAS

UNIV PTC	
TGT ID = 1	Orbiting Vehicle
= 2	Earth ctr
= 3	Earth tgt
	Input LAT ( $\pm 90$ )
	LOW ( $\pm 180$ , + = East)
	ALT (-3444.0 to 20000.0 nm)
= 4	Sun ctr
= 5	Celestial tgt
	Input RA (0-359.99)
	DEC ( $\pm 90$ )
= 11-110	Nav Stars
BODY VECT = 1	+X*
= 2	-X*
= 3	-Z*
= 4	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

FLT PLN/35/0/BAS

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-1 OPS
- A12 - DTO 902 OEX SUMS

FLT PLN/35/0/FIN



A1



TOP



DAP 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

4

PULSE NORM

0.0 1 0

5

VERN

.0 0 0

6

COMP NORM

.0 0 0

7

VERN

DEADBAND

5.0 0

8

ATT NORM

1.0 0 0

9

VERN

0.2 0

10

RATE NORM

.0 2 0

11

VERN

1

12

JET OPT P

1

13

Y

0

14

CNTL ACCEL

FLT PLN/35/0/BAS



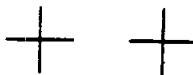
FLT PLN/35/0/BAS



A2



TOP



A1

TOP

DAP A2

A2

PURPOSE:

PTC

0.1 0

1 TRANSLATION PULSE

0.4 0 0

2 ROTATION

0.4 0 0

DSC RT NORM

0.1 0 0

3 VERN

0.0 1 0

4 PULSE NORM

.0 0 0

5 VERN

.0 0 0

6 COMP NORM

.0 0 0

7 VERN

DEADBAND

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

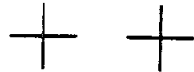
13 Y

0

14 CNTL ACCEL

FLT PLN/35/0/BAS

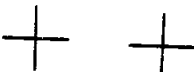
FLT PLN/35/0/BAS



A3

TOP

TOP



A2

DAP A3

A3

PURPOSE:

RCS HOT FIRE

0.1 0

1 TRANSLATION PULSE

0.2 0 0

2 ROTATION

0.2 0 0

DSC RT NORM

0.3 0 0

3 VERN

0.0 1 0

4 PULSE NORM

.0 0 0

5 VERN

.0 0 0

6 COMP NORM

.0 0 0

7 VERN

DEADBAND

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

2

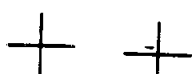
13 Y

0

14 CNTL ACCEL

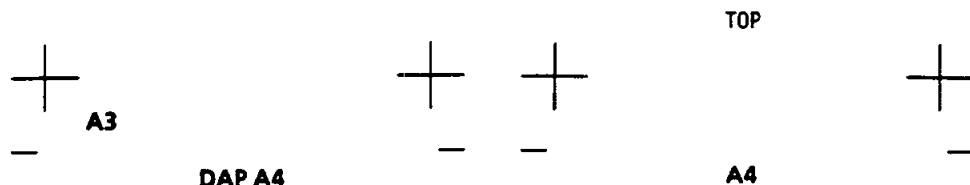
FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



A4

TOP



**DAP A4**

PURPOSE:  
GG

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

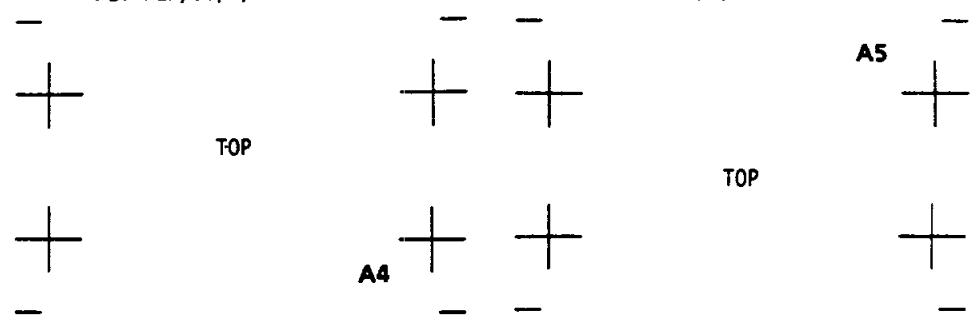
0.2 0 10 RATE NORM  
0.1 0 11 VERN

1 12 JET OPT P  
3 13 Y

0 14 CNTL ACCEL

FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



TOP

TOP

**DAP 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 ATT NORM  
1.0 0 0 9 VERN

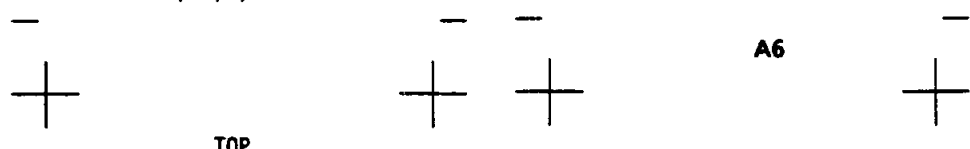
0.2 0 10 RATE NORM  
0.2 0 11 VERN

1 12 JET OPT P  
1 13 Y

0 14 CNTL ACCEL

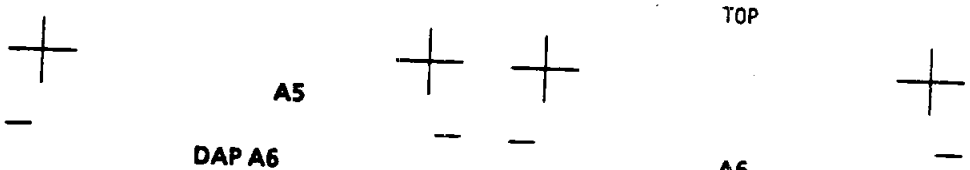
FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



TOP

A6

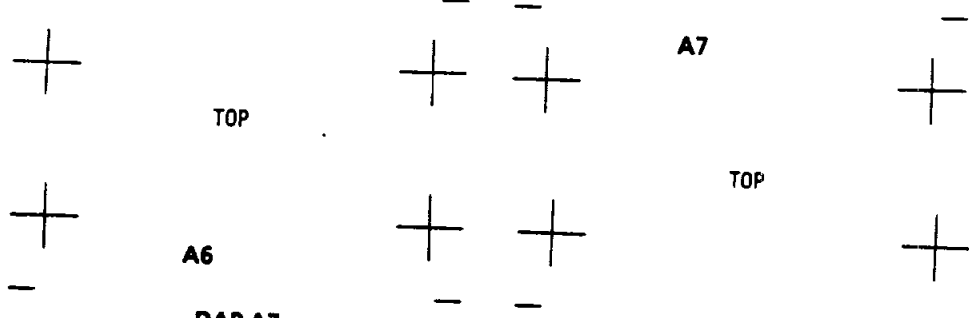


**A5**  
**DAP A6**

PURPOSE:  
LOSS OF VERN  
(TAIL ONLY)

- 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
- 3 12 JET OPT P
- 3 13 Y
- 0 14 CNTL ACCEL

FLT PLN/35/0/BAS



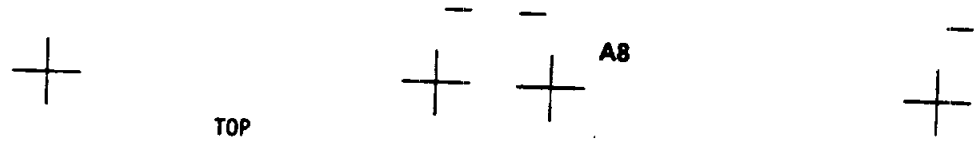
TOP  
**A6**

**A7**  
TOP  
**A7**

**DAP A7**  
PURPOSE: (Blank)

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

FLT PLN/35/0/BAS

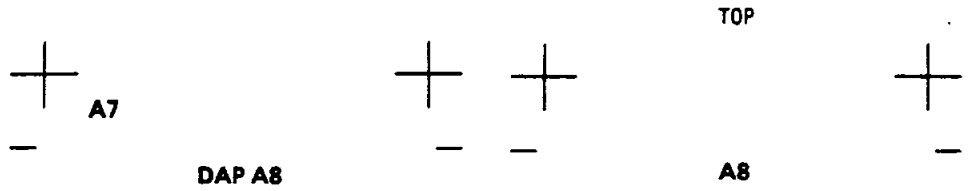


TOP

**A8**

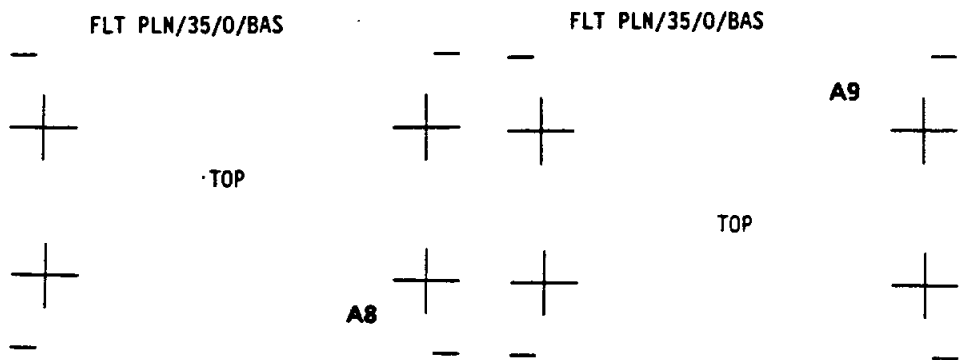
(reduced copy)





**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 0 4 PULSE NORM  
 0.0 1 0 5 VERN  
 0.0 0 0 6 COMP NORM  
 0.0 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

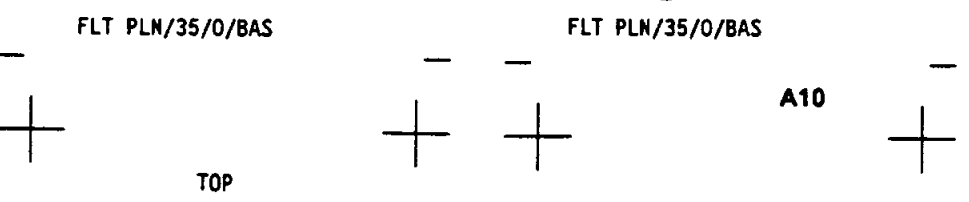


FLT PLN/35/0/BAS

FLT PLN/35/0/BAS

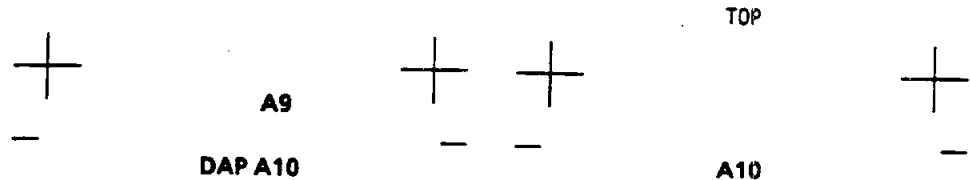
**DAP A9**  
 PURPOSE:  
 RENDEZVOUS

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



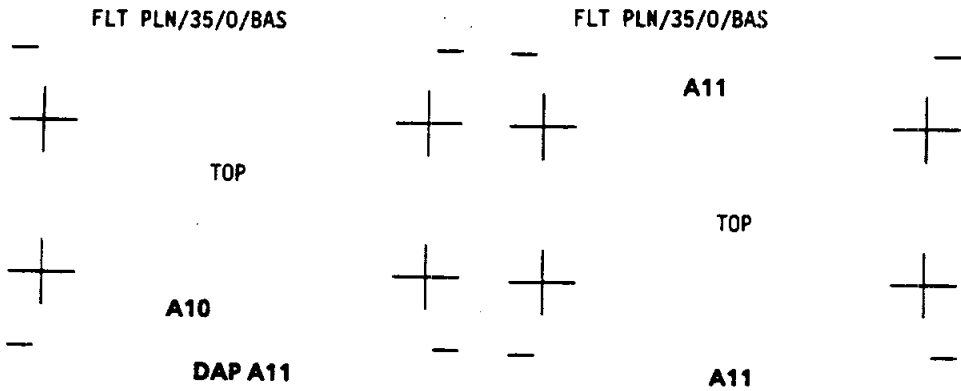
FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



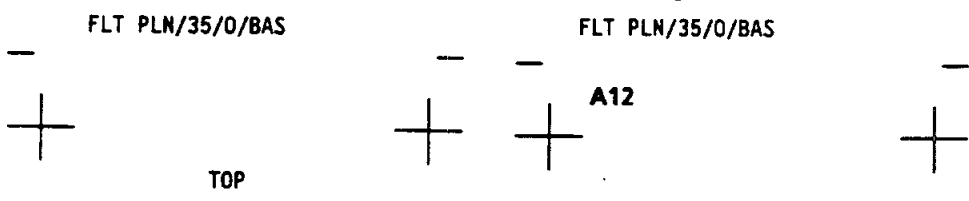
PURPOSE:  
PROX OPS

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

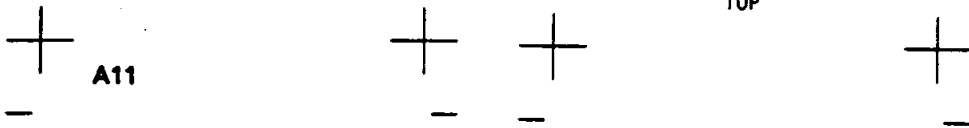


PURPOSE:  
ASTRO-1 OPS

- |         |    |             |      |
|---------|----|-------------|------|
| 0.0 1   | 1  | TRANSLATION |      |
|         |    | PULSE       |      |
|         |    | ROTATION    |      |
| 0.2 0 0 | 2  | DSC RT      | NORM |
| 0.2 0 0 | 3  |             | VERN |
| 0.0 0 0 | 4  | PULSE       | NORM |
| 0.0 1 0 | 5  |             | VERN |
| .0 0 0  | 6  | COMP        | NORM |
| .0 0 0  | 7  |             | VERN |
|         |    | DEADBAND    |      |
| 4.0 0 0 | 8  | ATT         | NORM |
| 2.0 0 0 | 9  |             | VERN |
|         |    | RATE        |      |
| 0.2 0 0 | 10 |             | NORM |
| .0 2 0  | 11 |             | VERN |
|         |    | JET OPT     | P    |
| 3       | 12 |             |      |
| 3       | 13 |             | Y    |
|         |    | CNTL ACCEL  |      |
| 0       | 14 |             |      |



(reduced copy)



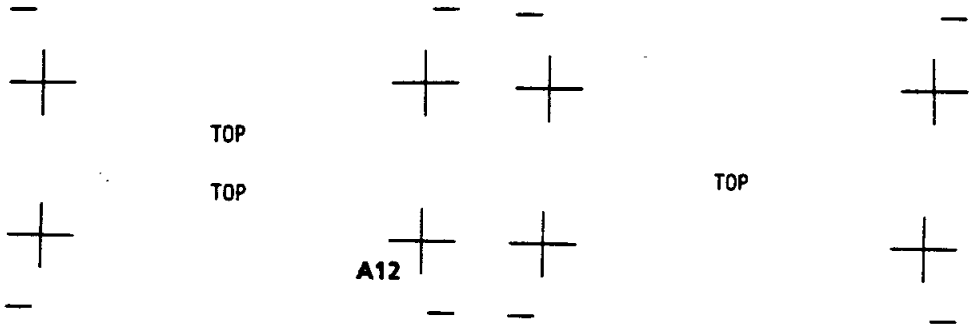
PURPOSE:  
 DTO 902 OEX SUMS

**A12**  
 TRANSLATION PULSE

0.01	1		
0.200	2	ROTATION	
0.200	3	DSC RT	NORM
0.04	4	PULSE	NORM
0.010	5		VERN
.00	6	COMP	NORM
.000	7		VERN
0.050	8	DEADBAND	
0.500	9	ATT	NORM
			VERN
0.20	10	RATE	NORM
.020	11		VERN
3	12	JET OPT	P
3	13		Y
0	14	CNTL ACCEL	

FLT PLN/35/0/FIN

FLT PLN/35/FIN A

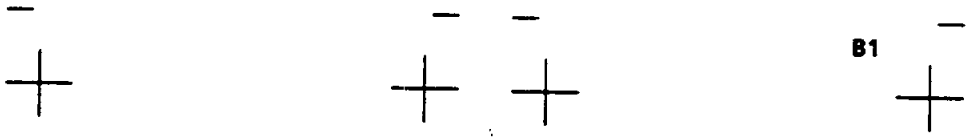


DAP                      PURPOSE

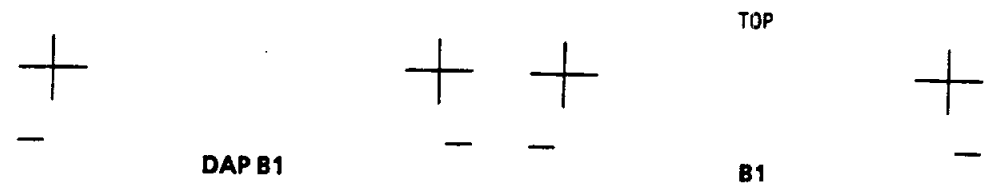
- B1 - NOMINAL  
 PRCS IMU ALIGN  
 OMS & RCS BURNS
- B2 - LOSS OF VERN  
 (TAIL ONLY)
- B3 - LOSS OF VERN  
 (NOSE & TAIL)  
 GG MNVR
- B4 - SSUS DEPLOY
- B5 - COAS CAL
- B6 - RENDEZVOUS
- B7 - PROX OPS
- B8 - (Blank)
- B9 - DTO 902 OEX SUMS

FLT PLN/35/0/FIN

FLT PLN/35/0/FIN



(reduced copy)



DAP B1

TOP

PURPOSE:

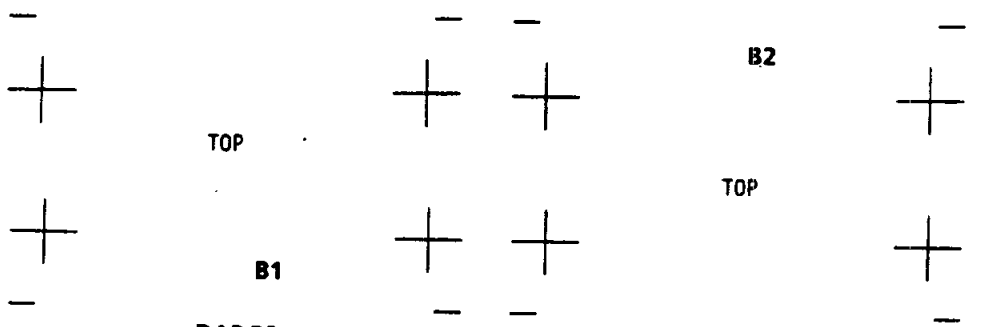
NOMINAL  
PRCS IMU ALIGN  
OMS & RCS BURNS

B1

TRANSLATION				
PULSE	15	0.0	2	
ROTATION				
DSC RT	NORM 16	0.5	0 0	
	VERN 17	0.2	0 0 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 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	

FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



TOP

B2

TOP

B1

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 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 0	
	VERN 23	1.0	0 0	
RATE				
	NORM 24	0.2	0	
	VERN 25	.0	2 0	
JET OPT	P 26		3	
	Y 27		3	
CNTL ACCEL	28		0	

FLT PLN/35/0/BAS

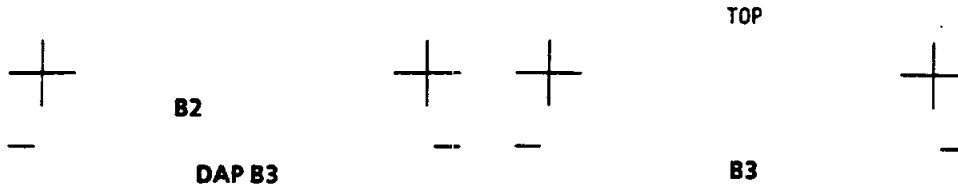
FLT PLN/35/0/BAS



TOP

B3

(reduced copy)



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

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

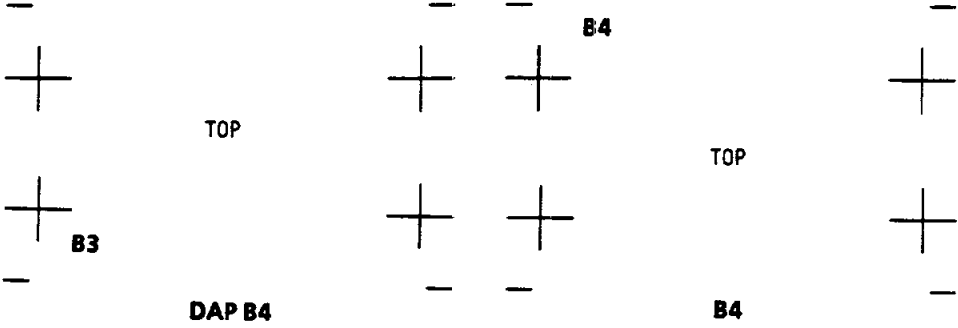
RATE NORM 24 0.2 0  
VERN 25 0.2 0

JET OPT P 26 1  
Y 27 1

CNTL ACCEL 28 0

FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



PURPOSE:  
SSUS DEPLOY

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

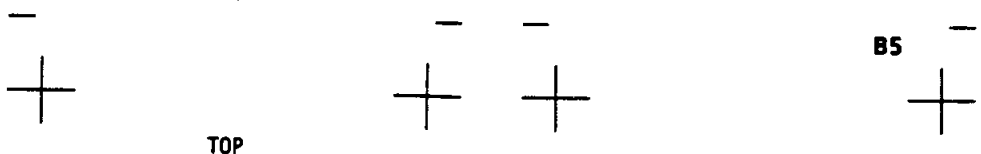
RATE NORM 24 0.2 0  
VERN 25 0.1 0

JET OPT P 26 3  
Y 27 3

CNTL ACCEL 28 0

FLT PLN/35/0/BAS

FLT PLN/35/0/BAS





B4



TOP



DAP B5

B5

PURPOSE:  
COAS CAL

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	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
RATE				
	NORM 24	0.2	0	
	VERN 25	0.2	0	
JET OPT				
	P 26		3	
	Y 27		3	
CNTL ACCEL 28 0				

FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



B6



TOP

TOP



B5

DAP B6

B6

PURPOSE:  
RENDEZVOUS

TRANSLATION				
PULSE	15	0.0	5	
ROTATION				
DSC RT	NORM 16	0.5	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	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

FLT PLN/35/0/BAS

FLT PLN/35/0/BAS



B7

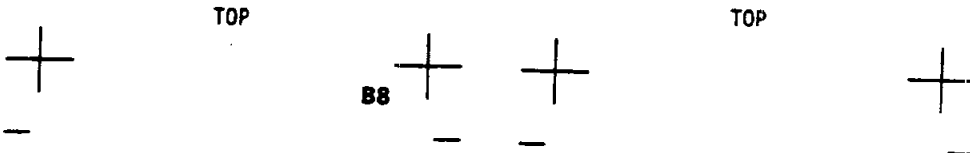


TOP

+	+	+
-	-	-
<b>B6</b>		<b>B7</b>
<b>DAP B7</b>		
PURPOSE:		TRANSLATION
PROX OPS		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 0
		VERN 23 1.0 0 0
		RATE NORM 24 0.2 0 0
		VERN 25 0.2 0 0
		JET OPT P 26 1
		Y 27 1
		CNTL ACCEL 28 0
FLT PLN/35/0/BAS		FLT PLN/35/0/BAS

+	+	+
-	-	-
<b>B7</b>		<b>B8</b>
<b>DAP B8</b>		
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 -
FLT PLN/35/0/BAS		FLT PLN/35/0/BAS

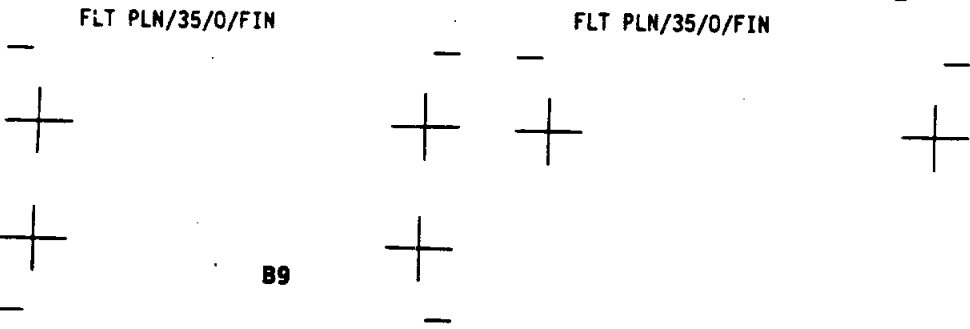
+	+	+
-	-	-
<b>B7</b>		<b>B9</b>
<b>DAP B8</b>		
PURPOSE: (Blank)		TRANSLATION
		PULSE 15 . . . .
		ROTATION
		DSC RT NORM 16 . . . .
		VERN 17 . . . .
		PULSE NORM 18 . . . .
		VERN 19 . . . .
		COMP NORM 20 . . . .
		VERN 21 . . . .
		DEADBAND
		ATT NORM 22 . . . .
		VERN 23 . . . .
		RATE NORM 24 . . . .
		VERN 25 . . . .
		JET OPT P 26 -
		Y 27 -
		CNTL ACCEL 28 -
FLT PLN/35/0/BAS		FLT PLN/35/0/BAS



DAP B9

PURPOSE:  
 DTO 902 OEX SUMS

TRANSLATION				
PULSE		15	0.0	2
ROTATION				
DSC RT	NORM	16	0.2	0 0
	VERN	17	0.2	0 0 0
PULSE	NORM	18	0.0	4
	VERN	19	0.0	0 0 2
COMP	NORM	20	0.0	0 0
	VERN	21	0.0	0 0
DEADBAND				
ATT	NORM	22	1	0.0 0
	VERN	23	1	0.0 0 0
RATE	NORM	24	0.5	0
	VERN	25	0.5	0 0
JET OPT	P	26		3
	Y	27		3
CNTL ACCEL		28		0



FLT PLN/35/0/FIN



TOP



TOP  
BACK COVER 'DAP BOOK'



FLT PLN/35/0/BAS



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FLIGHT PLAN NOTES

FLIGHT PLAN NOTES  
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION

The STS-35 (OV-102) launch from KSC on November 30, 1990 (Cycle 3R) will be into a 190 nm orbit at an inclination of 28.45 degrees. The nominal mission duration will be 9 days. Nominal landing occurs at EDW on December 8, 1990. Consumable margins may permit a real-time mission extension of one day (10 day mission).

Landing opportunities are:

		<u>Landing Orbit No.</u>	<u>Site</u>	<u>Local Time</u>
Nominal	Primary	142	EDW	21:34 PST
	Backup	143	EDW	23:11 PST
	Weather Alt.	142	KSC	00:43 EST
	Weather Alt.	142	NOR	22:37 MST
1 Day Late	Primary	157	EDW	20:23 PST
	Backup	158	EDW	21:59 PST
	Weather Alt.	157	KSC	23:32 EST
	Weather Alt.	157	NOR	21:26 MST
	Weather Alt.	158	NOR	23:02 MST
2 Days Late	Primary	172	EDW	19:12 PST
	Backup	173	EDW	20:48 PST
	Weather Alt.	172	KSC	22:20 EST
	Weather Alt.	173	KSC	23:57 EST
	Weather Alt.	172	NOR	20:14 MST

MAJOR EVENTS

<u>LAUNCH (KSC)</u>	November 30, 1990
MET (DD/HH:MM:SS)	00/00:00:00
Day of year	332
CST/GMT	00:26/06:26

<u>OMS-2</u>	
MET (DD/HH:MM:SS)	00/00:43:00
DV (fps)	277.4
ORBIT ha/hp (nm)	190/190

<u>DEORBIT BURN</u>	
MET (DD/HH:MM)	08/22:03

<u>LANDING (EDW)</u>	
MET (DD/HH:MM)	08/23:08
Day of year	340
CST/GMT	23:34/05:34

FLT PLN NOTES

## B. CREW

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

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

The CDR is not assigned to a team and is free to adjust his hours real-time as necessary. Each team works approximately 12 hours followed by 12 hours off duty. This allows continuous 24 hour/day payload operations.

2. The crewmembers assigned to the mission are:

CDR - Vance D. Brand  
PLT - Guy S. Gardner  
MS1 - Jeffrey A. Hoffman  
MS2 - John M. Lounge  
MS3 - Robert A. Parker  
PS1 - Samuel T. Durrance  
PS2 - Ronald A. Parise

3. The crewmembers responsible for performing an EVA, should one become necessary, are: MS1 as EV1, MS2 as EV2, and PLT as IV.

## C. ORBITER SYSTEMS

1. Communications and Instrumentation

- a. The Operational Instrumentation (OI) system will nominally be managed from the ground through uplink real-time commands (RTCs) coordinated with the crew.
- b. TDRS coverage is assumed to be supported by TDRS-E (41 degrees W) and TDRS-W (171 degrees W) and is the prime mode of communication coverage.
- c. GSTDN sites are available on a 4 hour call-up basis: MIL (MLX), BDA, DKR, GDS (GDX), VAN, DFR, RID, CAN.
- d. TDRS Ku-Band is the prime mode of real-time TV; however, there are also 3 GSTDN sites available as backup (90 minute lead time required): GDS (GDX), MIL (MLX), and VAN.
- e. RTS sites are available on a 2 hour call-up basis: HTS, GTS, VTS, IOS, CTS, OTS.
- f. TDRS-E and TDRS-W are assumed available to support Ku-Band uplink (e.g., TAGS).
- g. HDR uplink (e.g., Teleprinter) is available through TDRS-E and TDRS-W.

2. Guidance and Navigation

- a. The orbiter state vector must be uplinked whenever downtrack error in the on-board vector becomes greater than 20 nm, but is usually uplinked when errors are greater than 5 nm. These are real-time calls
- b. IMU alignments occur approximately every 12 hours and prior to major events requiring low navigation uncertainty. IMU alignments will use stars of opportunity when possible during ASTRO observations.

3. Environmental Control and Life Support Subsystem (ECLSS)

- a. Two CO2 absorbers are installed prior to launch. On-orbit, the canisters are alternately replaced as required per the cue card.
- b. There are four supply water tanks and one waste water tank which are loaded for launch with volumes sufficient to meet a launch day deorbit opportunity with payload bay doors (PLEDs) failed closed. Management of supply water will be accomplished through the use of the topping flash evaporator system (FES). Waste tank dumps are scheduled.

4. DC Utility Power Usage

The following tables are the DC and AC Utility Power Outlet Schedules. The times of outlet reconfiguration during the mission are shown.

DC UTILITY POWER OUTLET SCHEDULE

OUTLET \ MET		PRELAUNCH	POST INSERTION	ON-ORBIT		DEORBIT PREP
			0/1:46	0/19:45	8/10:00	
MNA	O19	PLT*	--	--	--	PLT*
	M052J	MS3,PS1,PS2*	--	SAREX-C	--	MS1,PS1,PS2*
MNB	F1	--	--	--	--	--
	M013Q	--	--	--	--	--
MNC	A11	MS1*,MS2*	--	--	--	MS2*,MS3*
	A15 M030F	CDR*	TPR	TPR	TPR	CDR*
		--	--	--	--	--
MNA OR MNB	L15	--	--	--	--	--

NOTES: \* Crewmember suit fan

### AC UTILITY POWER OUTLET SCHEDULE

OUTLET \ MET		PRELAUNCH	POST INSERTION	ON-ORBIT		DEORBIT PREP
			0/1:46	5/17:45	8/15:00	
AC1	M052J	--	--	--	--	--
	F1	--	SPOC	SPOC	SPOC	--
AC3	M013Q	--	--	DTO 329-IWCS	--	--
	A15	--	--	--	--	--

NOTE: Intermittent AC outlets are needed for the vacuum cleaner and the photo floodlight.

#### D. TEXT UPLINK SYSTEM

1. The Text and Graphics System (TAGS) is a high-resolution facsimile system that scans text or graphics material and converts the analog SCAN data into serial digital data. This data is transmitted via a telemetry link to the cathode-ray tube hardcopier. Transmission time for an 8-1/2 by 11-inch page can vary from just over 1 minute to just over 16 minutes depending on the hardcopy resolution desired. The TAGS can only uplink images using Ku-Band. This Flight Plan assumes Ku-Band forward link is available for both TDRS-E and TDRS-W, and TAGS is the primary mode of text uplink. Instrumentation has the capability to uplink onboard hardcopier control commands via S-Band or Ku-Band for power on, advance, ready, standby, and off.
2. The teleprinter (TPR) will provide a backup on-orbit capability to receive and reproduce text-only data from MCC. The TPR uses S-Band and is not dependent on TDRS Ku-Band. TPR requires 1 to 2.5 minutes per message, depending on the number of lines (up to 66).

#### E. TELEVISION/PHOTOGRAPHY

1. The CCTV systems provide two color, wide-angle cameras for in-cabin coverage. There will also be four PLB TV cameras. There are three different lens assemblies for the PLB cameras (color lens assembly, monochrome lens assembly, and wide-angle lens assembly). The type of lens assembly for each PLB camera is documented in the Flight Requirements Document.
2. There is a video tape recorder available with 30-minute cassettes.
3. Three camera systems are available: 35mm, 16mm, and 70mm.

## F. PAYLOADS

### 1. ASTRO-1

ASTRO-1 consists of the ASTRO package and the Broad Band X-ray Telescope (BBXRT) package. The payload will make ultraviolet observations of stars, galaxies, planets' magnetospheres, and quasars. X-ray observations will be made of stars, galaxies, and supernova remnants.

ASTRO contains three experiments mounted to the Spacelab Instrument Pointing System (IPS) which is in turn mounted on two IGLOO pallets. In addition to standard Spacelab hardware, ASTRO will utilize an Image Motion Compensation System (IMCS) to improve Pointing accuracy. The BBXRT package consists of a telescope which is mounted to the Two-Axis Pointing System (TAPS). This assembly is mounted in the PLB by the TAPS Support Structure (TSS). BBXRT instrument pointing is aided by the use of an aspect camera and star tracker.

#### a. Hopkins Ultraviolet Telescope (HUT)

This ASTRO experiment is comprised of a telescope module containing optics and detector system within a shuttered environmental canister and an electronics module containing two experiment processors. The objective of the HUT is to obtain images of faint objects in the ultraviolet bands of 900 to 1200 Å. These images will be used to investigate interstellar medium. Also, Saturn will be observed in order to study, the interaction of the planet's magnetosphere with the solar wind.

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

This ASTRO experiment is composed of a telescope and a spectropolarimeter. The objective of the WUPPE is to obtain spectropolarimetric and spectrophotometric observations of astronomical objects such as hot stars, galactic nuclei, and quasars in the range of 1400 to 3200 Å.

#### 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 this ASTRO 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 nonthermal sources in galaxies.

#### d. Broad Band X-ray Telescope (BBXRT)

BBXRT is comprised of two coaligned, grazing incidence, imaging telescopes. The instrument acquires the X-ray spectra of a large variety of celestial objects including galaxies, clusters of galaxies, supernova remnants, and stars. The acquired spectra will be used to identify composition, temperature, and ionization structure.



2. SAREX (Shuttle Amateur Radio Experiment)

SAREX is a suite of amateur radio equipment consisting of a handheld transceiver, window antenna, headset assembly, and Payload General Support Computer (PGSC). PS2, a licensed amateur radio operator, will use SAREX to communicate with various ground radio operators.

3. AMOS (Air Force Maui Optical Site)

The primary objective of the AMOS project is to use the orbiter during cooperative overflights of Maui. This allows the collection of imagery data to support calibration of the AMOS ground-based sensors and the observation of plume phenomenology. No unique onboard hardware is associated with the test. No standard AMOS tests will be planned. Instead, maneuvers associated with ASTRO-1 will be observed.

G. ON-ORBIT DTOs

1. Improved Waste Collection System Evaluation (DTO 329)

The DTO will evaluate the on-orbit operational capabilities of the Whitmore Improved Waste Collection System (IWCS). The system uses the existing Waste Collection System (WCS) vacuum outlet.

2. Trash Compaction and Retention System Demonstration (DTO 634)

The DTO will assess the feasibility of trash compaction of inflight, crew-related debris. The apparatus occupies one middeck locker and consists of a geared mechanism which allows manual compaction of wet and dry trash.

3. OEX Shuttle Upper-Atmosphere Mass Spectrometer (SUMS) (DTO 902)

The OEX SUMS DTO will measure air density and identify atmospheric constituents in the upper atmosphere. This data will be used to calculate aerodynamic force coefficients and derivatives over the entry trajectory and to evaluate design predictions.

H. ON-ORBIT DSOs

1. Preflight Adaption Training (DSO 468)

This DSO involves the collection of crewmember reactions to stimulus rearrangement of space flight produced by a prototype trainer used preflight and postflight. The assigned crewmember will document (via cassette tape recorder) perceived self motion/surround motion accompanying slow head motions on-orbit and during entry.

2. Inflight Aerobic Exercise (DSO 476)

This DSO will determine the effects of regular aerobic exercise on the maintenance of aerobic power and economy. Daily aerobic exercise will inhibit the decrease in cardiac dimensions observed during space flight and thus improve postflight orthostatic tolerance. Such activity will also minimize the loss of aerobic capacity postflight.

3. Heavy Isotope Enrichment of Shuttle Galley Water (DSO 480)

As water is produced by the fuel cells during a mission, galley water samples exhibit slowly increasing enrichment in deuterium and 18-oxygen. Since studies using water labeled with these heavy isotopes are planned for future Spacelab missions, the DSO requires periodic on-orbit collection of galley water.

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

The orthostatic function of crewmembers during the stresses of entry, landing, and egress on longer shuttle missions will be studied with this DSO. The collected data will aid in the study of inflight countermeasures which can reduce orthostatic stress affects on heart rate, blood pressure, cardiac output, cerebral blood flow, and peripheral resistance from deorbit burn until egress.

5. Blood Pressure Variability During Space Flight (DSO 602)

The total variation in blood pressure and heart rate over a 24 hour period is less in the microgravity environment than on Earth. The reduction in variability is most apparent mid-flight and is pronounced on longer flights. In order to develop appropriate countermeasures for orthostatic intolerance, this DSO will acquire on-orbit heart rate and blood pressure parameters of a participating crewmember.

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