

Flight Data File Crew Activity Plan

STS-16

Mission Operations Directorate
Operations Division

Preliminary
November 4, 1983



National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

FLIGHT DATA FILE

CONTROL

Ascent Checklist
Post Insertion Book
Crew Activity Plan
Deorbit Preparation Book
Entry Checklist

SUPPORT

Cue Cards
EVA Checklist
Flight Maps and Charts
Orbit Operations Checklist
Payload Deploy Checklist*
Payload Operations Checklist*
PDRS Operations Checklist*
Photo/TV Checklist
Rendezvous/Proximity Operations Book*

OFF-NOMINAL

Ascent Pocket Checklist
Orbit Pocket Checklist
Entry Pocket Checklist
Ascent/Entry Systems Procedures
Contingency Deorbit Preparation Book
Contingency EVA Operations Book
In-Flight Maintenance Checklist
Medical Checklist
Payload Systems Data and Malfunction Procedures*
Systems Malfunction Procedures

REFERENCE

Data Processing System Dictionary
Reference Data
Systems Data Book

*If required

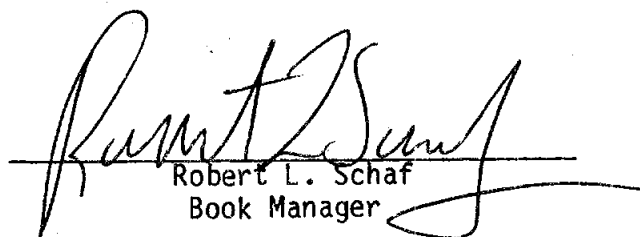
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MISSION OPERATIONS DIRECTORATE

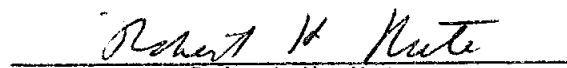
STS-16 CREW ACTIVITY PLAN


PRELIMINARY
November 4, 1983

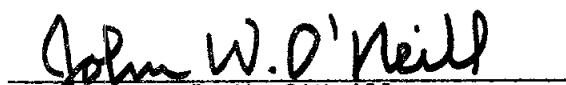
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ACKNOWLEDGMENTS

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<u>CONTENTS</u>	<u>PAGE</u>
INTRODUCTION.....	v
TIMELINE FORMAT SYMBOL NOMENCLATURE.....	1-1
STS-16 OVERVIEW.....	2-1
SUMMARY TIMELINE.....	3-1
DETAILED TIMELINE.....	4-1
FLT DAY 1.....	4-TBS
FLT DAY 2.....	4-TBS
FLT DAY 3.....	4-TBS
FLT DAY 4.....	4-TBS
FLT DAY 5.....	4-TBS
FLT DAY 6.....	4-TBS
FLT DAY 7.....	4-TBS
FLT DAY 8.....	4-TBS
CONTINGENCY TIMELINES (TBS).....	5-1
CONSUMABLES CURVES (TBS).....	6-1
CREW ACTIVITY PLAN NOTES (CONSTRAINTS AND GUIDELINES).....	7-1
DETAILED TEST OBJECTIVES (DTOs), DETAILED SUPPLEMENTARY OBJECTIVES (DSOs).....	8-1
TABLES.....	9-1
ABBREVIATIONS/ACRONYMS.....	10-1
REFERENCES.....	11-1

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INTRODUCTION

The STS-16 Crew Activity Plan is the flight data file article that contains the on-orbit timeline. It does not contain the detailed timelines that are covered in the Ascent, Post Insertion, Deorbit Prep, and Entry checklists. For continuity, the entire flight is shown in the summary level timeline.

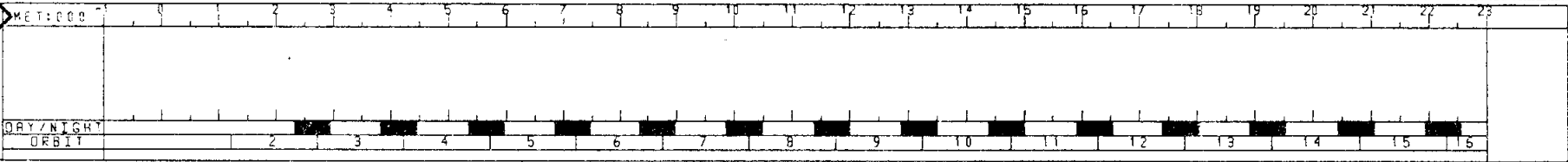
This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive (Ref. 1) and the requirements of the STS-16 Flight Requirements Document (Ref. 2) with exceptions as noted in Table 8-1.

The flight profile (CIT trajectory data, Ref. 3) used for this Crew Activity Plan is for a launch date of August 6, 1984, at 12:12 GMT.

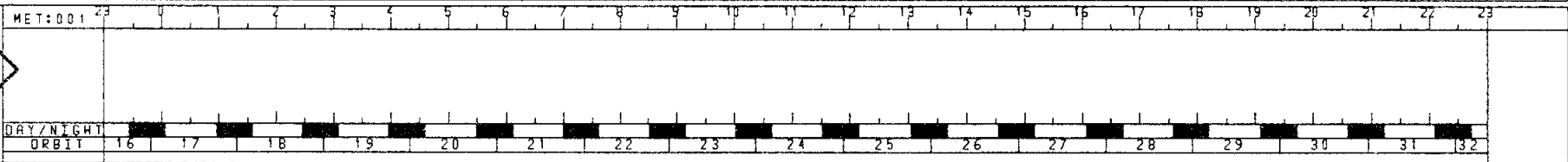
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TIMELINE FORMAT SYMBOL NOMENCLATURE

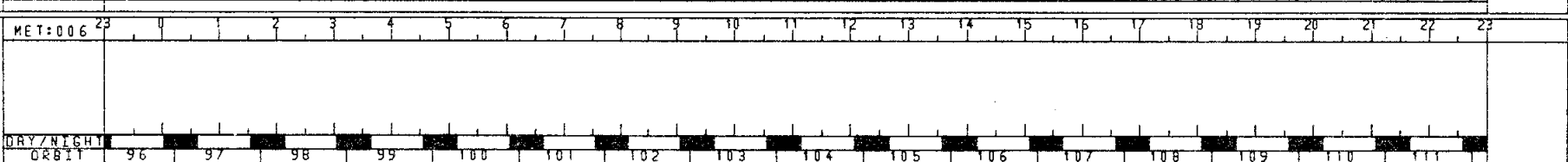
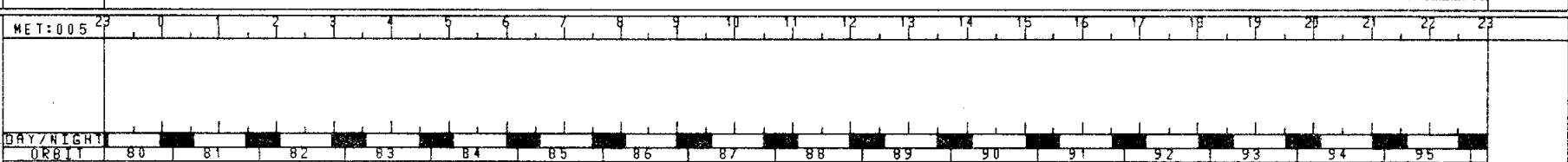
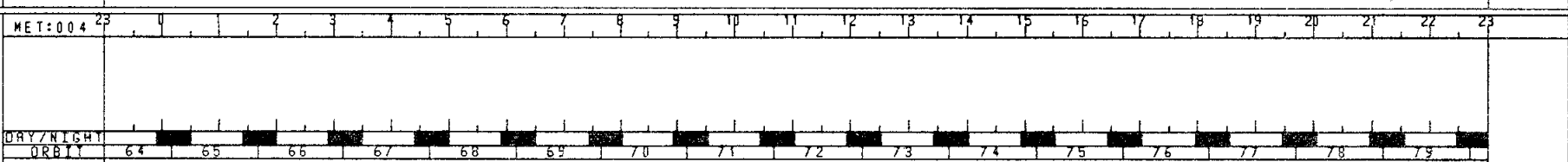
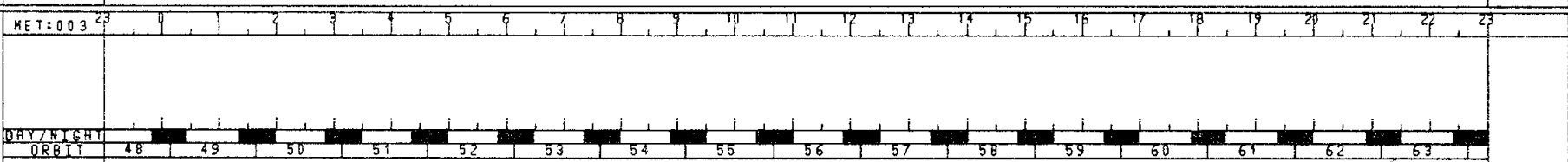
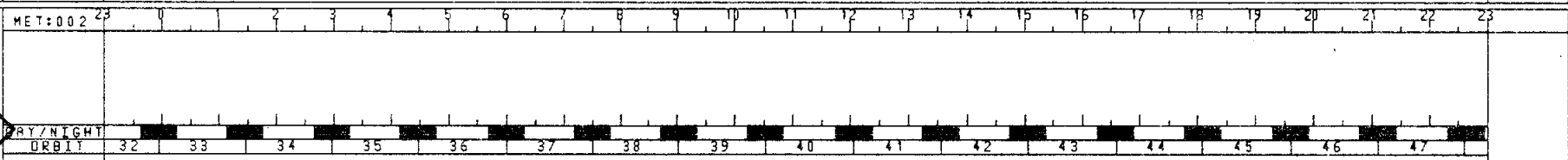
A



B



C



A. FORMAT SYMBOL NOMENCLATURE

1. Overview Timeline (7-Day Timespan)

The following letters (a-c) refer to those highlighted in Figure 1-1.

- a. **TIMESCALE** - The time reference used on this format is Mission Elapsed Time (MET) expressed in hours. MET is referenced to lift-off, which occurs at 0/00:00:00 (days, hours, minutes, seconds).
- b. **ACTIVITY COLUMN** - This column presents an overview of activities scheduled during the flight. For clarity of presentation, only major activities are presented and activity durations are sometimes lengthened. Abbreviated activity titles can be found in the Abbreviations/Acronyms section of this CAP.
- c. **ORBIT and DAY/NIGHT**
 - 1) **Orbit** - A numerical sequence indicates which orbit the spacecraft is in. The beginning of an orbit occurs when the orbiter crosses the Earth's equator going from the southern to the northern hemisphere (ascending node). Orbit 1 is for launch.
 - 2) **Day/Night** - The orbital day/night intervals are delineated with black bars indicating when the orbiter is in darkness.

2. Summary Level Timeline (12-Hr Timespan)

The following letters (a-f) refer to those highlighted in Figure 1-2.

- a. **TIMESCALES** - Two of three time references are presented in this section of the summary timeline format. The time references used are Time of Ignition (TIG), Greenwich Mean Time (GMT) and Mission Elapsed Time (MET). MET is referenced to lift-off, beginning at 0/00:00:00 (days, hours, minutes, seconds). TIG is referenced to the deorbit ignition time and counts down to 0/00:00:00 at ignition on the CRT timer. TIG is only used on the deorbit preparations on entry day.
- b. **CREWMEN (CDR, PLT, MS1, MS2, MS3)** - Titles of scheduled activities are shown for the commander (CDR), pilot (PLT), and each mission specialist (MS1, MS2, MS3) at the appropriate times in the flight.
- c. **DAY/NIGHT & ORBIT**
 - 1) **Day/Night** - The orbital day/night intervals are delineated with black bars indicating when the orbiter is in darkness.

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
219:11:12/ 219:23:12	000:01:00/ 000:11:00	219:06:12/ 219:18:12	01/ 219 GMT	8.3		AUGUST 6, 1984	STS-16	PRELIMINARY	11/04/83

C
 D
 C
 D
 S
 R

CDR	
PLT	
MS1	
MS2	
MS3	

DAY/NIGHT	[Bar chart showing day/night cycle]							
ORBIT	2	3	4	5	6	7	8	
HOUSTON COVERAGE	YAR HAW GDS MIL BDR DKR ACN	YAR GWM HAW GDS MIL RDR	ACN BOT GWM HAW GDS MIL	BOT GWM HAW	GWM HAW	BOT GWM HAW	ACN BOT	GWM
STOPS E W	[Timeline of stops]							
ALTITUDE	[Timeline of altitude]							
NOTES:								

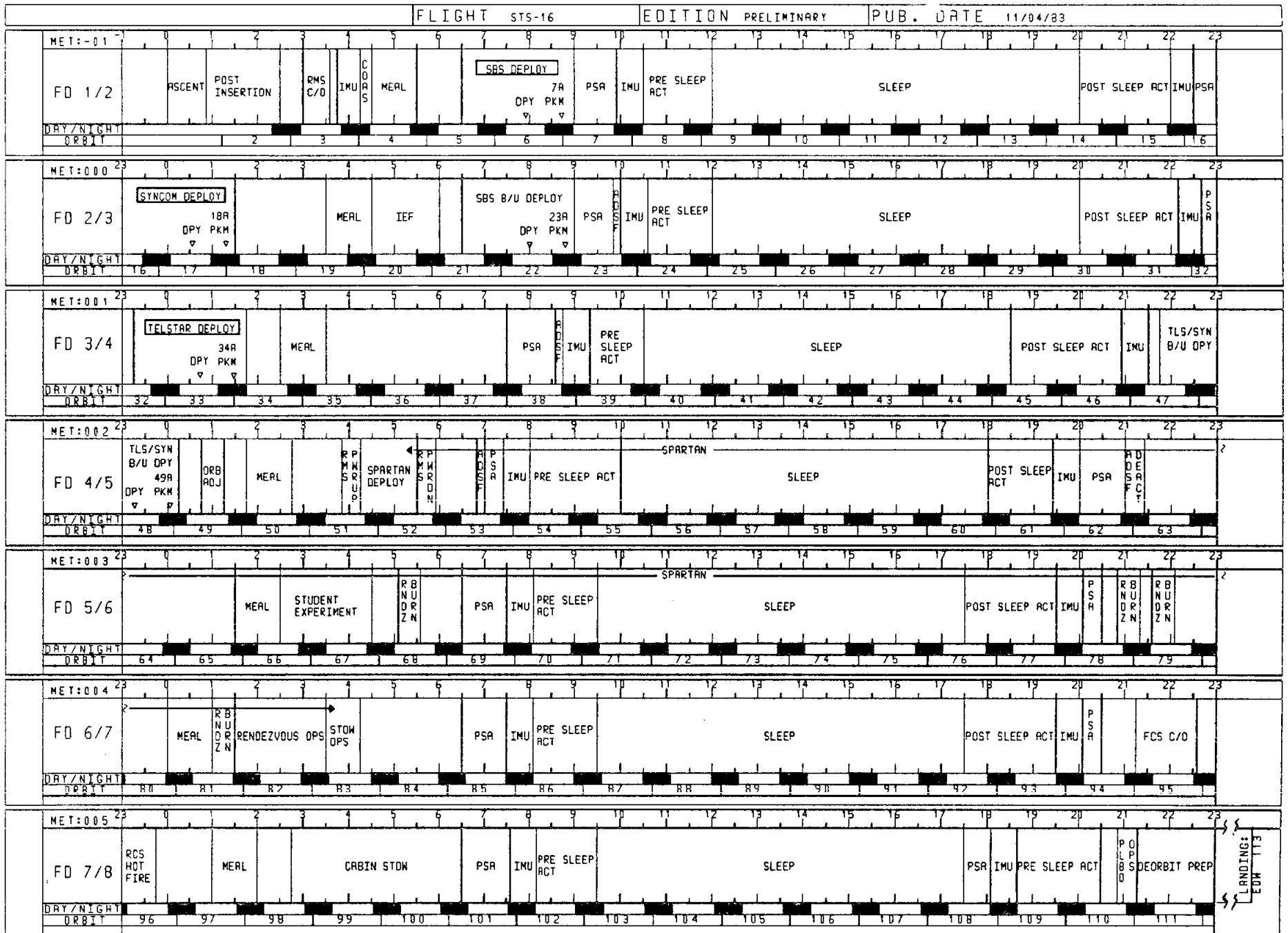
2) Orbit - A numerical sequence indicates which orbit the spacecraft is in. The beginning of an orbit occurs when the orbiter crosses the Earth's equator going from the southern to the northern hemisphere (ascending node). Orbit 1 is for launch.

- d. GSTDN COVERAGE - The GSTDN communication coverage periods are indicated in this area with a horizontal line indicating when communication is available; the GSTDN site is identified to the right of the line.
- e. TDRS - The TDRS communication coverage periods are identified in this area, with a horizontal line indicating when there is a line-of-sight between TDRS and the orbiter.
- f. ATTITUDE - The attitude of the vehicle (-ZLV, IMU, etc.) is shown in this column.

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STS-16 OVERVIEW

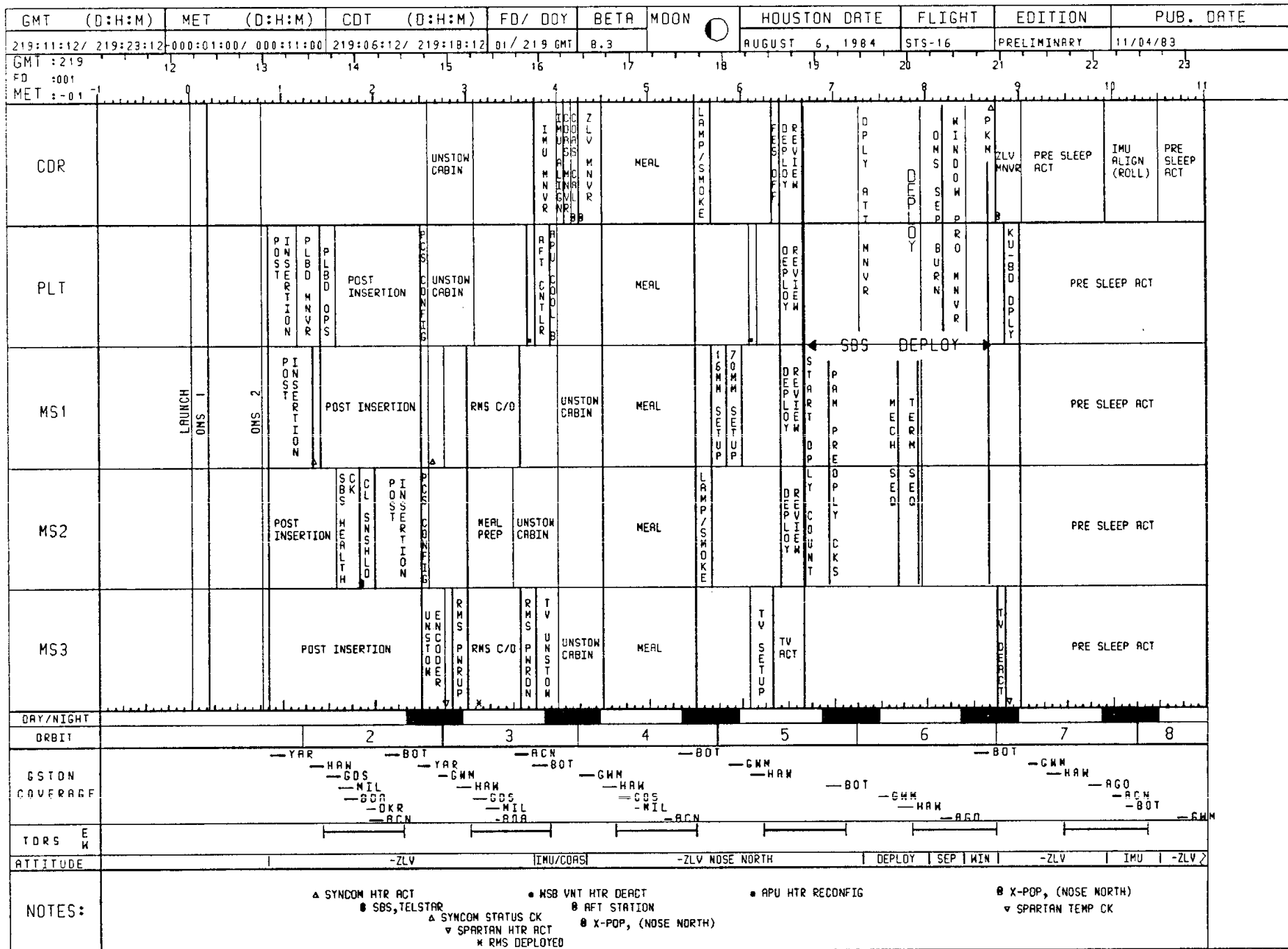
OVERVIEW



SUMMARY TIMELINE

SUMMARY
TIMELINE

SUMMARY TIMELINE



GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
219:23:12/ 220:11:12	000:11:00/ 000:23:00	219:18:12/ 220:06:12	01/ 219 GMT	9.9	☉	AUGUST 6, 1984	STS-16	PRELIMINARY	11/04/83				
GMT :219	0	2	3	4	5	6	7	8	9	10	11		
FD :001	GMT:220	12	13	14	15	16	17	18	19	20	21	22	23
MET :000	11	12	13	14	15	16	17	18	19	20	21	22	23
CDR	PRE SLEEP ACT	SLEEP						POST SLEEP ACT	IMU MNVR ZLV MNVR ZLV MNVR POST SLEEP ACT				
PLT	PRE SLEEP ACT	SLEEP						POST SLEEP ACT					
MS1	PRE SLEEP ACT	SLEEP						POST SLEEP ACT					
MS2	PRE SLEEP ACT	SLEEP						POST SLEEP ACT					
MS3	PRE SLEEP ACT	SLEEP						POST SLEEP ACT		TV ACT			
DAY/NIGHT	[Day/Night Cycle]												
ORBIT	8	9	10	11	12	13	14	15	16				
GSTON COVERAGE	-AGO -RCN	-GMM	-AGO -RCN	-DGR -RCN	-GMM	-DGR -MAD	-YAR -ORR	-MIL -BDA -DGR -MAD	-YAR -ORR	-MIL -BDA -DGR -MAD	-GOS -MIL -BDA -DGR		
TORS E W	[Torque/Attitude Indicators]												
ATTITUDE	-ZLV NOSE NORTH												
NOTES:	X-POP, (NOSE NORTH)												

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FO/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
220:11:12 / 220:23:12	000:23:00 / 001:11:00	220:06:12 / 220:18:12	02 / 220 GMT	11.7	☉	AUGUST 7, 1984	STS-16	PRELIMINARY	11/04/83					
GMT : 220 FO : 002 MET : 000	12 MET:001	13	14	15	16	17	18	19	20	21	22	23	24	
CDR	START DPLY ATT	OM S SEP	W I N D O W P R O	P K M	ZLV MNR	EXERCISE	MEAL				PRE SLEEP ACT	IMU ALIGN (ROLL)	PRE SLEEP ACT	
PLT	DPLY COUNT	MNR	BURN MNR		HRR MNR		MEAL		EXERCISE			PRE SLEEP ACT		
MS1	PRE DEPLOY	PIN RET	STAT US	DM N I S P A I N N T U P		MEAL PREP	MEAL		EXERCISE			PRE SLEEP ACT		
MS2	CHE CKS	RA CT I O N	CHE CK	DE P L O Y		EXERCISE	MEAL					PRE SLEEP ACT		
MS3	EXERCISE			VTR S E T U P	VTR P L Y B A C K		MEAL				PRE SLEEP ACT	POS F	PRE SLEEP ACT	
DAY/NIGHT	[Day/Night Cycle]													
ORBIT	16	17	18	19	20	21	22	23	24					
GSTDN COVERAGE	-BDT -YAR -ORR	-DKR -ACN -YAR	-ACN -BOT -YAR	-ACN -BOT -YAR	-GMM -HAW -GOS	-GMM -HAW -GOS	-BOT -GMM	-HAW -AGO -BOT	-GMM -HAW -AGO	-BOT -GMM	-HAW -AGO -BOT	-GMM -HAW -AGO	-ACN -GMM	
TDRS E W	[TDRS Coverage]													
ATTITUDE	-ZLV DPY SEP WIN			-ZLV NOSE NORTH						IMU -ZLV				
NOTES:	SPARTAN TEMP CK			X-PDP, (NOSE NORTH)						SPARTAN TEMP CK RUN 1 INITIATE PAUSE				

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
220:23:12/ 221:11:12	001:11:00/ 001:23:00	220:18:12/ 221:06:12	02/ 220 GMT	13.5	☉	AUGUST 7, 1984	STS-16	PRELIMINARY	11/04/83	
GMT : 220	FD : 002	GMT: 221	FD : 003							
MET : 001										
CDR	PRE SLEEP ACT	SLEEP					POST SLEEP ACT	IMU MNV	ZLV MNV	PA OC ST
PLT	PRE SLEEP ACT	SLEEP					POST SLEEP ACT			
MS1	PRE SLEEP ACT	SLEEP					POST SLEEP ACT			
MS2	PRE SLEEP ACT	SLEEP					POST SLEEP ACT			
MS3	PRE SLEEP ACT	SLEEP					POST SLEEP ACT			TV ACT
DAY/NIGHT										
ORBIT	24	25	26	27	28	29	30	31	32	
GSTDN COVERAGE	-AGO -ACN	-GWM	-AGO -ACN -DKR	-DKR -MAD	-MAD	-YAR -ORR	-YAR -ORR	-MIL -BOR -DKR	-YAR -ORR	-GDS -MIL -BOR
TDRS E M										
ATTITUDE	-ZLV NOSE NORTH								IMU -ZLV	X-POP, (NOSE NORTH)
NOTES:										

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
221:23:12/ 222:11:12	002:11:00/ 002:23:00	221:18:12/ 222:06:12	03/ 221 GMT	17.3	☉	AUGUST 8, 1984	STS-16	PRELIMINARY	11/04/83
GMT :221									
FD :003	GMT:222					FD :004			
MET :002									
CDR	SLEEP					POST SLEEP ACT		IMU ALIGN (ROLL)	EXERCISE
PLT	SLEEP					POST SLEEP ACT	POST SLEEP ACT	POST SLEEP ACT	POST SLEEP ACT
MS1	SLEEP					POST SLEEP ACT			
MS2	SLEEP					POST SLEEP ACT			
MS3	SLEEP					POST SLEEP ACT			
DAY/NIGHT	[Day/Night Cycle]								
ORBIT	40	41	42	43	44	45	46	47	48
GSTDN COVERAGE	-GWM	-AGO -ACN -DKR	-DKR -GWM	-DKR -MAD	-ORR	-MIL -BDA -DKR -MAD	-ORR	-GDS -MIL -BDA -DKR	-HAW -GDS -MIL
TORS E W	[Torsion Data]								
ATTITUDE	-ZLV NOSE FWD							IMU	-ZLV NOSE FWD
NOTES:	<ul style="list-style-type: none"> • FC PURGE HTR ON • FC PURGE HTR OFF • MANUAL • SPARTAN TEMP CK 								

GMT (O:H:M)	MET (O:H:M)	COT (O:H:M)	FO/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
222:11:12/ 222:23:12	002:23:00/ 003:11:00	222:06:12/ 222:18:12	04/ 222 GMT	19.1	☉	AUGUST 9, 1984	STS-16	PRELIMINARY	11/04/83							
GMT :222	12 MET:003	13	14	15	16	17	18	19	20	21	22	23				
FO :004																
MET :002																
CDR		DMS BURN	MEAL		SPARTAN DEPLOY			SEP		S TR K R A C D	ZLV MNR	IMU ALIGN (ROLL)	PRE SLEEP ACT	SLEEP		
PLT	EXERCISE	MEAL PREP	DMS BURN	MEAL		HRM ACT	D P L Y R A T T			HRM D E A C T			PRE SLEEP ACT	SLEEP		
MS1				MEAL		T V S E T U P	T V A C T						EXERCISE	PRE SLEEP ACT	SLEEP	
MS2				MEAL									EXERCISE	PRE SLEEP ACT	SLEEP	
MS3	EXERCISE			MEAL		R M S P R E H E A T	SPARTAN DEPLOY	REL		R M S P R D N	V T R S E T U P	V T R P L Y B A C K	V T R G U E D I T	A D S F	PRE SLEEP ACT	SLEEP
DAY/NIGHT																
ORBIT	48	49	50	51	52	53	54	55	56							
GSTDN COVERAGE	MIL BOA OKR ACN BOT YAR	GOS MIL BOA ACN YAR HAN	GOS MIL ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	ACN BOT YAR GWM HAN	
TORS																
ATTITUDE	-ZLV NOSE FWD		BURN		DEPLOY	SEP		-ZLV	IMU				-ZLV NOSE FWD			
NOTES:		* ORB ADJUST			▽ SPARTAN PURGE	▽ SPARTAN STATUS CK	▽ SPARTAN STBY			■ RUN 3 & 4	■ INITIATE AUTO	● Y-POP (NOSE FWD)				

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
222:23:12 / 223:11:12	003:11:00 / 003:23:00	222:18:12 / 223:06:12	04 / 222 GMT	21.0	☉	AUGUST 9, 1984	STS-16	PRELIMINARY	11/04/83				
GMT : 222	0	1	2	3	4	5	6	7	8	9	10	11	
FD : 004	GMT: 223						FD : 005						
MET : 003	11	12	13	14	15	16	17	18	19	20	21	22	23
CDR	SLEEP						POST SLEEP ACT	IMU ALIGN (ROLL)	POST SLEEP ACT	EXERCISE			
PLT	SLEEP						POST SLEEP ACT				EXERCISE		
MS1	SLEEP						POST SLEEP ACT						
MS2	SLEEP						POST SLEEP ACT						
MS3	SLEEP						POST SLEEP ACT			POST DIRECT			
DAY/NIGHT	[Day/Night Cycle Bar]												
ORBIT	56	57	58	59	60	61	62	63	64				
GSTDN COVERAGE	-GWM	-AGO -ACN -DKR		-DKR -MAD	-DKR	-ORR	-MIL -BDA -DKR -MAD	-MIL -BDA -DKR	-YAR -DKR	-BDA -DKR -BOT	-YAR	-GOS -MTI	-HAW -GOS
TDRS E H	[TDRS Coverage Bars]												
ATTITUDE	-ZLV NOSE FWD						IMU	-ZLV NOSE FWD					
NOTES:													

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
223:11:12/ 223:23:12	003:23:00/ 004:11:00	223:06:12/ 223:18:12	05/ 223 GMT	22.9	☉	AUGUST 10, 1984	STS-16	PRELIMINARY	11/04/83				
GMT : 223	12 MET:004	13	14	15	16	17	18	19	20	21	22	23	
FD : 005													
MET : 003	23	0	1	2	3	4	5	6	7	8	9	10	11
CDR		MEAL				RCS BURN NC1	ZLV MNRV		PRE SLEEP ACT	IMU ALIGN (ROLL)	PRE SLEEP ACT	SLEEP	
PLT		MEAL	HRM RCT			HRM DEACT	RCS BURN		PRE SLEEP ACT			SLEEP	
MS1		MEAL					EXERCISE		PRE SLEEP ACT			SLEEP	
MS2	EXERCISE	MEAL							PRE SLEEP ACT			SLEEP	
MS3	EXERCISE	MEAL PREP	TV ACT	MEAL	TV ACT	CONV CURRENTS EXP			PRE SLEEP ACT			SLEEP	
DAY/NIGHT	[Day/Night Cycle: 64 (Day), 65 (Night), 66 (Day), 67 (Night), 68 (Day), 69 (Night), 70 (Day), 71 (Night), 72 (Day)]												
ORBIT	64	65	66	67	68	69	70	71	72				
GSTDN COVERAGE	-GDS -MIL -BDA -DKR -ACN -BOT	-HAW -GDS -MIL -BDA -RCN -BOT -YAP	-GMM -HAW -GDS -MIL -RCN -BOT	-HAW -GOS -BOT -GMM	-HAW -GOS -BOT -GMM	-GMM -HAW -AGO -RCN -BOT -GMM -HAW	-GMM -HAW -AGO -RCN -BOT -GMM -HAW	-AGO -RCN -GMM -AGO -RCN	-GMM -AGO -RCN				
TDRS	[TDRS Coverage: E, M]												
ATTITUDE	-ZLV NOSE FWD BURN -ZLV NOSE FWD IMU -ZLV NOSE FWD												
NOTES:	* Y-POP (NOSE FWD)												

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
223:23:12/ 224:11:12	004:11:00/ 004:23:00	223:18:12/ 224:06:12	05/ 223 GMT	24.7	☉	AUGUST 10, 1984	STS-16	PRELIMINARY	11/04/83	
GMT : 223										
FD : 005	GMT: 224									
MET : 004	12	13	14	15	16	17	18	19	20	
CDR	SLEEP					POST SLEEP ACT	IMU ALIGN (ROLL)	POST SLEEP ACT	RENDEZVOUS OPS	
									NH v	NC2 v
PLT	SLEEP					POST SLEEP ACT			RENDEZVOUS OPS	
MS1	SLEEP					POST SLEEP ACT				MEAL PREP
MS2	SLEEP					POST SLEEP ACT		EXERCISE		
MS3	SLEEP					POST SLEEP ACT		EXERCISE		
DAY/NIGHT	[Day/Night Cycle Bar]									
ORBIT	72	73	74	75	76	77	78	79	80	
GSTON COVERAGE	-GMM -AGO -ACN -DKR		-ORR	-DKR -MAD	-YAR -ORR	-MIL -BDA -DKR	-MAD -YAR -ORR	-ORR -HAW -GDS -MIL -BDA -DKR	-BOT -YAR	HAW GDS
TORS E M	[Torque/Speed Bar]									
ATTITUDE	-ZLV NOSE FWD						IMU	-ZLV	RENDEZVOUS	
NOTES:										

GMT (D:H:M)	MET (D:H:M)	COT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
224:11:12/ 224:23:12	004:23:00/ 005:11:00	224:06:12/ 224:18:12	06/ 224 GMT	26.5	☉	AUGUST 11, 1984	STS-16	PRELIMINARY	11/04/83				
GMT :224	12	13	14	15	16	17	18	19	20	21	22	23	
FD :006	MET:005												
MET :004	23	0	1	2	3	4	5	6	7	8	9	10	11
CDR	RENDEZVOUS OPS NCC ▽	MEAL TI ▽	M M M M C C C C 1 2 3 4 ▽ ▽ ▽ ▽	RENDEZVOUS OPS 1000 FT 200 FT	ZLV MNR	EXERCISE	PRE SLEEP ACT	IMU ALIGN (RDLL)	PRE SLEEP ACT	SLEEP			
PLT	RENDEZVOUS OPS	MEAL		RENDEZVOUS OPS		EXERCISE			PRE SLEEP ACT	SLEEP			
MS1	MEAL PREP					EXERCISE				PRE SLEEP ACT	SLEEP		
MS2		MEAL								PRE SLEEP ACT	SLEEP		
MS3	TV SETUP	MEAL		TV ACT	RMS PWRUP	STOW OPS CAPTURE ▽	RMS PWRDN	VTR SETUP	VTR PLYBCK			PRE SLEEP ACT	SLEEP
DAY/NIGHT	[Day/Night Cycle]												
ORBIT	80	81	82	83	84	85	86	87					
GSTON COVERAGE	GDS -WIL -BDR -ACN -DKR -BOT -YAP	-GMM -HAW -GDS -WIL -ACN -BOT	-HAW -GDS -ACN -BOT	-GMM -HAW -BOT	-GMM -HAW -AGO -BOT	-ACN -BOT	-GMM -HAW -AGO	-ACN -BOT	-GMM -HAW -AGO	-ACN -BOT	-GMM -HAW -AGO	-ACN -DKR	
TORS E W	[TORS E W]												
ATTITUDE	RENDEZVOUS -ZLV NOSE FWD IMU -ZLV NOSE FWD												
NOTES:	8 Y-POP (NOSE FWD) ▽ SPARTAN SHUTDOWN												

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
224:23:12/ 225:11:12	005:11:00/ 005:23:00	224:18:12/ 225:06:12	06/ 224 GMT	28.3		AUGUST 11, 1984	STS-16	PRELIMINARY	11/04/83	
GMT :224										
FD :006	GMT:225									
MET :005					FD :007					
CDR	SLEEP				POST SLEEP ACT	IMU ALIGN (ROLL)	POST SLEEP ACT	FCS C/O		
PLT	SLEEP				POST SLEEP ACT			FCS C/O		
MS1	SLEEP				POST SLEEP ACT					
MS2	SLEEP				POST SLEEP ACT			EXERCISE		
MS3	SLEEP				POST SLEEP ACT			EXERCISE		
DAY/NIGHT										
ORBIT	88	89	90	91	92	93	94	95		
GSTDN COVERAGE	-GWM	-ACB -DKR	-DKR -MAD	-ORR	-DKR -MAD	-MIL -BDA -DKR -MAD	-YAR -ORR -MIL -BDA -DKR -YAR -ORR	-GDS -MIL -BDA -DKR -BOT -YAR -ORR	-HAW -GDS -MIL -BDA -DKR -ACN -BOT	-YAR HAW
TORS										
ATTITUDE	-ZLV NOSE FWD					IMU		-ZLV NOSE FWD		o APU MTR ACT
NOTES:										

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
225:23:12/ 226:11:12	006:11:00/ 006:23:00	225:18:12/ 226:06:12	07/ 225 GMT	31.6		AUGUST 12, 1984	STS-16	PRELIMINARY	11/04/83		
116 FD :007 DOY:226 MET :006 11 12 13 14 15 16 17 18 19 20 21 22 23 FO: 008											
CDR	SLEEP				POST SLEEP ACT	IMU MNVR	XSI MNVR	POST SLEEP ACT	OPER ORBIT	PLBO OPS	DEORBIT PREP
PLT	SLEEP				POST SLEEP ACT		POST SLEEP ACT	RAD BY P	OPER ORBIT	PLBO OPS	DEORBIT PREP
MS1	SLEEP				POST SLEEP ACT						DEORBIT PREP
MS2	SLEEP				POST SLEEP ACT				CLEAR NUP		DEORBIT PREP
MS3	SLEEP				POST SLEEP ACT				STOW ENCDR		DEORBIT PREP
DAY/NIGHT											
ORBIT	104	105	106	107	108	109	110	111			
GSTON COVERAGE	-GWM	-DKR	-DKR -MAD	-MAD -YAR -ORR	-YAR -ORR	-MIL -BDA -DKR	-GDS -MIL -BDA -DKR -BOT	-GDS -MIL -BDA -DKR -ACN -BOT	-GWM	-HAM	
TORS											
ATTITUDE	-ZLV NOSE FWD				IMU	XSI	IMU	DEORBIT BURN			
NOTES:	• HI LOAD HTR ON • FES CNTLR CHECK ▼ SPARTAN DEORB CONF ▲ SYNCOM HTR DEACT • SBS, TELSTAR										

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
226:11:12/ 226:23:12	006:23:00/ 007:11:00	226:06:12/ 226:18:12	08/ 226 GMT	33.1	☉	AUGUST 13, 1984	STS-16	PRELIMINARY	11/04/83
CDR	DEORBIT PREP								
PLT	DEORBIT PREP								
MS1	DEORBIT PREP	DEORBIT BURN							
			LANDING						
MS2	DEORBIT PREP								
MS3	DEORBIT PREP								
ORBIT	112	113	114	115	116	117	118	119	
GSTON COVERAGE	-HAW -GDS -MIL -ACN -BOT	-GDS -ACN -BOT	-GMM -HAW	-HAW -AGO -BOT	-HAW -AGO -BOT	-GMM -AGO -ACN	-GMM -AGO -ACN	-GMM -AGO -ACN	-AGO -ACN -DKR
TDRS E M									
ATTITUDE	DEORBIT BURN	ENTRY							
NOTES:									

DETAILED TIMELINE
(TBS)

DETAILED
TIMELINE

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DETAILED
TIMELINE

CONTINGENCY TIMELINES
(TBS)

CONTINGENCY
TIMELINES

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CONSUMABLES CURVES
(TBS)

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

CREW ACTIVITY PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

FLIGHT DESCRIPTION..... 7-2
CREW..... 7-3
ORBITER SYSTEMS..... 7-4
 COMMUNICATIONS AND INSTRUMENTATION..... 7-4
 GUIDANCE AND NAVIGATION..... 7-4
 ENVIRONMENTAL CONTROL AND LIFE SUPPORT SUBSYSTEM..... 7-5
TEXT UPLINK SYSTEM..... 7-5
TELEVISION/PHOTOGRAPHY..... 7-5
REMOTE MANIPULATOR SYSTEM..... 7-5
PAYLOADS..... 7-6

CAP NOTES

CREW ACTIVITY PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

CAP NOTES

A. FLIGHT DESCRIPTION

STS-16 (OV103) will launch from KSC on August 6, 1984 into a 160-nm orbit with an inclination of 28.5°. The mission duration will be 7 days (~168 hrs). Nominal landing occurs at KSC on August 13, 1984.

Landing opportunities are:

		<u>LANDING ORBIT NO.</u>	<u>SITE</u>	<u>LOCAL TIME</u>
Nominal	Primary	113	EDW	06:14 PDT
	Weather Alternate	112	KSC	07:47 EDT
1 Day late	Primary	129	EDW	06:04 PDT
	Weather Alternate	128	KSC	07:39 EDT
2 Days Late	Primary	144	EDW*	04:21 PDT
	Weather Alternate	144	KSC	07:29 EDT

*Night Landing

MAJOR EVENTS

<u>LAUNCH (KSC)</u>	August 6, 1984
<u>MET (DD/HH:MM:SS)</u>	0/00:00:00
Day of Year	219
<u>CDT/GMT</u>	07:12/12:12

<u>MECO</u>	TBS
<u>MET (DD/HH:MM:SS)</u>	
<u>ALT (nm)</u>	

<u>OMS-1</u>	
<u>MET (DD/HH:MM:SS)</u>	0/00:10:38
<u>ΔV (fps)</u>	238
<u>ΔT (MM:SS)</u>	2:30
<u>ORBIT ha/hp (nm)</u>	160/51

<u>OMS-2</u>	
<u>MET (DD/HH:MM:SS)</u>	0/00:44:48
<u>ΔV (fps)</u>	195
<u>ΔT (MM:SS)</u>	2:02
<u>ORBIT ha/hp (nm)</u>	160/160

<u>SBS SEPARATION (OMS)</u>	
<u>MET (DD/HH:MM:SS)</u>	0/08:13:01
<u>ΔV (fps)</u>	11
<u>ΔT (MM:SS)</u>	0:06
<u>ORBIT ha/hp (nm)</u>	166/160

<u>SYNCOM SEPARATION (OMS)</u>	
MET (DD/HH:MM:SS)	1/00:47:34
ΔV (fps)	15
ΔT (MM:SS)	0:08
ORBIT ha/hp (nm)	174/160
<u>TELSTAR SEPARATION (OMS)</u>	
MET (DD/HH:MM:SS)	2/00:56:37
ΔV (fps)	11
ΔT (MM:SS)	0:06
ORBIT ha/hp (nm)	179/160
<u>ORBIT ADJUST BURN (OMS)</u>	
MET (DD/HH:MM:SS)	3/01:12:53
ΔV (fps)	42
ΔT (MM:SS)	0:22
ORBIT ha/hp (nm)	160/155
<u>SPARTAN SEPARATION (RCS)</u>	
MET (DD/HH:MM:SS)	3/05:20:00
ΔV (fps)	2
<u>DEORBIT BURN (OMS)</u>	
MET (DD/HH:MM:SS)	7/00:06:06
ΔV (fps)	278
ΔT (MM:SS)	2:23
ORBIT ha/hp (nm)	160/3
<u>ENTRY INTERFACE</u>	
MET (DD/HH:MM:SS)	TBS
<u>LANDING (EDW)</u>	
MET (DD/HH:MM:SS)	7/01:03:05
Day of year	226
CDT/GMT	08:14/13:14

B. CREW

1. The crew will launch with an integrated harness restraint over Intravehicular Activity (IVA) clothing. Anti-G suits will be worn by all crewmembers for entry.
2. All crewmembers will launch wearing the Launch/Entry Helmets (LEH). After ascent, the Wireless Communication Control Units (WCCUs) are unstowed and distributed to the crew. Prior to seat ingress on entry day, the WCCUs are stowed and the LEHs are donned for entry until landing.

C. ORBITER SYSTEMS

1. Communications and Instrumentation

- a. The Operational Instrumentation (OI) system will nominally be managed from the ground through uplink commands coordinated with the crew.
- b. The Modular Auxiliary Data System (MADS) will nominally be managed through uplink commands and crew switch actions.
- c. There are 12 GSTDN sites available for on-orbit coverage: ORR, GDS, MIL, BDA, HAW, GWM, AGO, ACN, MAD, YAR, BOT, and DKR.
- d. There are 3 GSTDN sites available for real-time TV: GDS, MIL, and HAW.
- e. There are 2 GSTDN sites available for UHF voice only: YAR and BOT.
- f. The primary means of communication with the orbiter will be through the TDRS, located at 41° W. Coverage will be Ku-Band supplemented by S-Band when the Ku-Band system is not active or blocked.

2. Guidance and Navigation

- a. The orbiter state vector must be uplinked whenever down-track error in the onboard vector becomes greater than 20 nm, but is usually uplinked when errors are much greater than 5 nm. These are real-time calls.
- b. IMU alignments are scheduled approximately every 12 hours in morning and evening activities and prior to major events requiring low navigation uncertainty.
- c. The on-orbit avionics configuration is listed below. GPC 2 may be shut down during orbit to reduce electrical loads, and can be powered when redundancy is required.

GPC 1	- GNC OPS 2
GPC 2	- GNC OPS 2
GPC 3	- FD OPS 3 (OFF)
GPC 4	- SM OPS 2
GPC 5	- BFS (OFF)
IMUs (3)	- OPERATE
STAR TRACKERS (2)	- ON
MASS MEMORY UNITS (2)	- ON
FLIGHT CRITICAL MDMs (8)	- ON

3. Environmental Control and Life Support Subsystem (ECLSS)

- a. The orbiter is launched with CO2 absorber canisters installed.
- b. The four supply water tanks and one waste water tank are loaded for launch with volumes sufficient to meet an orbit 3 launch day deorbit opportunity with PLBDs failed closed. If waste water production exceeds storage capacity, a real-time call will be made to perform a waste tank dump. Normally two supply water dumps will occur per flight day. A real-time call will be made prior to each to inform the crew whether a dump is required, and to what level. Tanks A and B will be dumped to a level that will allow the tanks to be full prior to the next daily group of deorbit opportunities.

D. TEXT UPLINK SYSTEM

1. The teleprinter will not be carried on the flight.
2. The Text and Graphics System (TAGS) is basically a hard copy machine that operates via telemetry. The system provides the capability to transmit text material, maps, schematics, and photographs to the orbiter through a two-way Ku-Band link using the TDRS. Transmission time for an 8 x 11 in. page can vary from just over 1 minute to just over 16 minutes depending on the hard-copy resolution desired. The hard-copier is installed on a dual coldplate in Avionics Bay 3B of the orbiter.

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, and two RMS TV cameras configured as follows:

<u>Camera</u>	<u>Lens</u>
A (Port Fwd)	CLA (Color Lens Assembly)
B (Port Aft)	MLA (Monochrome Lens Assembly)
C (Stbd Aft)	MLA
D (Stbd Fwd)	CLA
EE (RMS End Effector)	MLA
Elbow (RMS)	WLA (Wide-Angle Lens Assembly)

2. The video tape recorder is available with 30-min cassettes.
3. 16mm, 35mm, and 70mm camera systems are available.

F. REMOTE MANIPULATOR SYSTEM

1. The RMS will be available for use in the SPARTAN operations.

G. PAYLOADS

1. TELSTAR

The TELSTAR/PAM-D payload is a deployable upper stage and spacecraft. The deployment opportunities are determined by constraints imposed on the right ascension of the ascending node of the orbit. Nominally, a deployment at the descending node of orbit 33 is planned, followed 45 minutes later by a PAM PKM burn on the ascending node of orbit 34. In case of a delay, deployment will be rescheduled to orbit 48D on FD 4 with an orbit 49A PKM burn. TELSTAR deployment events and times are presented in Table 9-1.

2. SYNCOM IV

The SYNCOM payload is a communications satellite with integral solid rocket perigee kick motor and liquid propellant apogee motors. The deployment opportunities are determined by constraints imposed on the right ascension of the ascending node of the orbit. Nominally, a deployment at the descending node of orbit 17 is planned, followed 45 minutes later by a PKM burn on the ascending node of orbit 18. If the deployment has to be delayed, a second attempt will be scheduled on FD 4 with an orbit 48D deployment and an orbit 49A PKM burn. SYNCOM deployment events and times are presented in Table 9-2.

3. SBS

The SBS/PAM-D payload is a deployable upper stage and spacecraft. The deployment opportunities are determined by constraints imposed on the right ascension of the ascending node of the orbit. Nominally, a deployment at the descending node of orbit 6 is planned, followed 45 minutes later by a PAM PKM burn on the ascending node of orbit 7. In case of a delay, deployment will be rescheduled to orbit 22D on FD 2 with an orbit 23A PKM burn. SBS deployment events and times are presented in Table 9-3.

4. Get Away Special (GAS)

The GAS payload (TBD) is a self-contained experiment package that requires minimal crew activity. Gas experiment activation and operation times are provided in Table 9-4.

5. Radiation Monitoring Equipment (RME)

The RME experiment is designed to measure radiation levels in the orbiter middeck at various times throughout the flight. Experiment equipment includes the Handheld Radiation Monitor (HRM-III), a gamma and electron dosimeter, and the Pocket REM Meter (PRM), a neutron and proton dosimeter. The HRM-III will operate four times during the mission for durations of 55 minutes, while the PRM will operate twice for durations of 8 hours. RME events and times are provided in Table 9-5.

6. Isoelectric Focusing (IEF)

Isoelectric focusing is obtained by applying a d.c. potential on an electrolyte system in which the pH steadily increases from the anode to the cathode. The objective of the Isoelectric Focusing Experiment is to evaluate the effect of electro-osmosis on isoelectric focusing in the absence of gravity for a period of 1 hour and 30 minutes. The IEF is a completely self-contained assembly which contains an array of eight columns of electrolyte solutions, a battery power supply, supporting hardware, electronics, camera, mirror, and strobe lights. The IEF will be installed in the orbiter middeck and will occupy the space of a single middeck locker. It will mount to a single adapter plate. There is no electrical power or data interface with the orbiter. A single switch is provided for crew activation of the experiment. After processing is complete, deactivation is automatic. An indicator is provided for operations status. See Table 9-6 for IEF activation time.

7. Shuttle Pointed Autonomous Research Tool for Astronomy (SPARTAN 1)

SPARTAN is a Goddard Space Flight Center carrier for payloads of opportunity designed to be flown by the STS. The carrier is mounted on a Mission Peculiar Equipment Support Structure (MPESS) by means of a Release Engage Mechanism (REM). The payload for SPARTAN 1 is an X-ray telescope sponsored by the Naval Research Lab (NRL). The combination SPARTAN/X-ray telescope is to be deployed by the RMS and allowed to operate autonomously for 40 hours at which time the shuttle will capture SPARTAN and restow it on the MPESS. The GSFC Special Payloads Division (SPD) has provided SPARTAN with programmed guidance for the cold gas flight control system. Other SPARTAN functions are programmed while it is deployed. The crew will command SPARTAN while it is stowed in the payload bay. SPARTAN events and times are in Table 9-7.

8. Automatic Directional Solidification Furnace (ADSF)

The ADSF payload is a furnace facility designed to conduct materials processing experiments. It is located on the orbiter middeck. The acceleration level should be minimized during ADSF operations. ADSF activation and auto deactivation times are provided in Table 9-8.

9. STUDENT EXPERIMENT (Convection in Zero Gravity)

The purpose of this experiment is to study the influence of depth and size of container and heat rate on surface tension induced flows in a micro G environment. The experiment consists of an apparatus stowed on the middeck which must be unstowed and set up in conjunction with TV camera before the experiment can begin. To conduct the experiment (approximately a 2-hour operation activated at 4/03:30 MET), the crew must successively fill each container with Krytox oil, heat it, and record the resulting fluid convection flow on the VTR. There are no special attitudes required by this experiment, but it is required that a LOW G attitude control mode (VRCS CNTL) be maintained for the duration of the experiment. Also, it is requested that minimum crew activity occur in the vicinity of the experiment when it is being run.

ON-ORBIT CREW ACTIVITY
DETAILED TEST OBJECTIVES (DTOs),
DETAILED SUPPLEMENTARY OBJECTIVES (DSOs)

INTRODUCTION..... 8-2
TABLE 8-1 - STS-16 DTOs/DSOs..... 8-3

DTOs/DSOs

INTRODUCTION

The following Table describes the scheduling data and rationale for on-orbit crew activity related DTOs/DSOs for STS-16. The current FRD (Ref. 2) was used for compiling this table.

There are currently no on-orbit DTOs assigned for STS-16.

DTOs/DSOs

TABLE 8-1
 STS-16 ON-ORBIT CREW ACTIVITY RELATED DTOs/DSOs

DTO/DSO NUMBER	TITLE	SCHEDULED (D/HH:MM)	SCHEDULING REMARKS
DTO 0225	Entry Aerodynamic Test No. 11	ENTRY	
DTO 0303	TPS Entry Heating Evaluation	ENTRY	
DSO S0401	Validation of Predictive Tests and Countermeasures for Space Motion Sickness	TBS	
DSO S0402	Cardiovascular Deconditioning Countermeasure Assessment	TBS	
DSO S0901	Documentary Television	TBS	
DSO S0902	Documentary Motion Picture Photography	TBS	
DSO S0903	Documentary Still Photography		Shopping list

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T T L

TABLES

TABLE 9-1 - TELSTAR DEPLOYMENT EVENTS AND TIMES..... 9-2

TABLE 9-2 - SYCOM DEPLOYMENT EVENTS AND TIMES..... 9-3

TABLE 9-3 - SBS DEPLOYMENT EVENTS AND TIMES..... 9-4

TABLE 9-4 - GAS EXPERIMENT ACTIVATION AND OPERATION TIMES (TBS)... 9-5

TABLE 9-5 - RME ACTIVATION AND OPERATION TIMES..... 9-6

TABLE 9-6 - IEF EXPERIMENT ACTIVATION AND OPERATION TIMES..... 9-6

TABLE 9-7 - SPARTAN 1 EVENTS AND TIMES..... 9-7

TABLE 9-8 - ADSF EXPERIMENT ACTIVATION AND OPERATION TIMES..... 9-8

TABLE 9-9 - STS-16 ATTITUDE TIMELINE (TBS)..... 9-9

TABLES

TABLE 9-1
 TELSTAR DEPLOYMENT EVENTS AND TIMES
 (ORBIT 34A PKM BURN)

EVENT	MET (D/HH:MM)	DEPLOY MINUS (HH:MM)
PREDEPLOY CHECKOUT	1/23:42	01:00
MNVR TO DEPLOY ATT	2/00:02	00:40
MECHANICAL SEQUENCE	2/00:27	00:15
TERMINAL SEQUENCE	2/00:39	00:03
DEPLOY	2/00:42	00:00
OMS SEP MNVR	2/00:57	(+)00:15
WINDOW PROTECT MNVR	2/01:11	(+)00:29
PKM IGNITION	2/01:27	(+)00:45

TABLES

TABLE 9-2
 SYNCOM DEPLOYMENT EVENTS AND TIMES
 (ORBIT 18A PKM BURN)

EVENT	MET (D/HH:MM)	DEPLOY MINUS (HH:MM:SS)
PREDEPLOY CHECKOUT	0/23:18	01:15
PIN RETRACTION	0/23:53	00:40
MNVR TO DEPLOY ATT	1/00:13	00:20
STATUS CHECK	1/00:18	00:15
DEPLOY	1/00:33	00:00
OMNI ANT DEPLOY	1/00:34	(+)00:01:20
SPINUP	1/00:40	(+)00:06:35
OMS SEP MNVR	1/00:48	(+)00:15
WINDOW PROTECT MNVR	1/01:02	(+)00:29
PKM IGNITION	1/01:18	(+)00:45

TABLE 9-3
SBS DEPLOYMENT EVENTS AND TIMES (ORBIT 7A PKM BURN)

EVENT	MET (D/HH:MM)	DEPLOY MINUS (HH:MM)
PREDEPLOY CHECKOUT	0/06:59	01:00
MNVR TO DEPLOY ATT	0/07:19	00:40
MECHANICAL SEQUENCE	0/07:44	00:15
TERMINAL SEQUENCE	0/07:56	00:03
DEPLOY	0/07:59	00:00
OMS SEP MNVR	0/08:14	(+)00:15
WINDOW PROTECT MNVR	0/08:28	(+)00:29
PKM IGNITION	0/08:44	(+)00:45

TABLE 9-4
GAS EXPERIMENT ACTIVATION AND OPERATION TIMES

(TBS)

TABLE 9-5
RME ACTIVATION AND OPERATION TIMES

EVENT		APPROX MET (D/HH:MM)	DURATION (HH:MM)
HRM	ACT	1/02:10	2:20
	DEACT	1/04:30	
	ACT	2/04:30	1:45
	DEACT	2/06:15	
ACT	3/04:00	2:45	
DEACT	3/06:45		
ACT	4/02:30	2:15	
DEACT	4/04:45		
PRM	ACT	2/06:10	16:15
	DEACT	2/22:25	
ACT	4/06:25	14:05	
DEACT	4/20:30		

TABLE 9-6
IEF EXPERIMENT ACTIVATION AND OPERATION TIMES

EVENT	APPROX MET (D/HH:MM)	DURATION (HH:MM)
IEF ACTIVATION	1/04:30	01:30
IEF AUTO DEACTIVATION	1/06:00	

TABLE 9-7
SPARTAN 1 EVENTS AND TIMES

EVENT	APPROX MET (D/HH:MM)
Unstow Aft Power Controller (APC)	0/02:30
SPARTAN Htrs On	0/02:45
Preheat	3/04:00
Purge	3/04:30
Status Check	3/04:40
Standby	3/04:45
Release	3/05:15
Sep Burn	3/05:20
NC1 Burn	4/05:23
NH Burn	4/21:11
NC2 Burn	4/21:56
TI Burn	5/00:56
Capture	5/03:46
Payload Shutdown	5/04:05
Deorb Config	6/19:05

TABLE 9-8
ADSF EXPERIMENT ACTIVATION AND OPERATION TIMES

EVENT	APPROX MET (D/HH:MM)	DURATION (HH:MM)
ADSF ACTIVATION (RUN 1) AUTO. DEACT	1/9:45 1/21:45	12:00
ADSF ACTIVATION (RUN 2) AUTO. DEACT	2/8:25 2/20:25	12:00
ADSF ACTIVATION (RUNS 3 & 4) AUTO. DEACT	3/07:00 3/16:35	9:35
ADSF DEACTIVATION	3/21:00	

TABLE 9-9
STS-16 ATTITUDE TIMELINE

(TBS)

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ABBREVIATIONS/ACRONYMS

More complete compilations of abbreviations and acronyms are available in the STS Glossary (Ref. 9).

ABBREVIATIONS/
ACRONYMS

ABBREVIATIONS/ACRONYMS

ACN	ASCENSION ISLAND (STDN SITE)
ACT	ACTIVATE/ACTIVATION
ADSF	AUTOMATED DIRECTIONAL SOLIDIFICATION FURNACE
AGO	SANTIAGO, CHILE (STDN SITE)
ALN	ALIGNMENT
ALT	ALTITUDE
ANT	ANTENNA
AOA	ABORT ONCE AROUND
AOS	ACQUISITION OF SIGNAL
APU	AUXILIARY POWER UNIT
ATCS	ACTIVE THERMAL CONTROL SYSTEM
ATO	ABORT TO ORBIT
ATT	ATTITUDE
BD	BAND
BDA	BERMUDA ISLAND, BWI (STDN SITE)
BHD	BULKHEAD
BOT	BOTSWANA (STDN SITE)
BYP	BYPASS
CAL	CALIBRATION
CCTV	CLOSED-CIRCUIT TV
CDR	COMMANDER
CDT	CENTRAL DAYLIGHT TIME
CEU	CRADLE ELECTRONICS UNIT (SYNCOM)
CHG	CHANGE
CK	CHECK
C/L	CHECKLIST
CLA	COLOR LENS ASSEMBLY
CNTRL	CONTROLLER

ABBREVIATIONS/
ACRONYMS

C/O	CHECKOUT
COAS	CREWMAN OPTICAL ALIGNMENT SIGHT
COM	COMMUNICATIONS
CONFIG/CNFG	CONFIGURATION
COOL	COOLANT LOOP
CRDLE	CRADLE
DAP	DIGITAL AUTO PILOT
DB	DEADBAND
DEACT	DEACTIVATION
DEU	DISPLAY ELECTRONICS UNIT
DKR	DAKAR, SENEGAL (STDN SITE)
DPLY/DPY	DEPLOY
DYN	DYNAMICS
ECLSS	ENVIRONMENTAL CONTROL LIFE SUPPORT SYSTEM
EDW	EDWARDS AFB, CALIFORNIA (DEORB OPT SITE)
ENA	ENABLE
EVAP	EVAPORATOR
FC	FUEL CELL
FCS	FLIGHT CONTROL SYSTEM
FD	FREEZE DRIED/FLIGHT DAY
FDF	FLIGHT DATA FILE
FES	FLASH EVAPORATOR SYSTEM
FRD	FLIGHT REQUIREMENTS DOCUMENT
FWD	FORWARD
GAS	GETAWAY SPECIAL
GDS	GOLDSTONE, CALIFORNIA (STDN SITE, 1ST ANTENNA)
GG	GRAVITY GRADIENT (ATTITUDE CONTROL MODE)

GMT	GREENWICH MEAN TIME
GNC	GUIDANCE NAVIGATION AND CONTROL
GPC	GENERAL PURPOSE COMPUTER
GSTDN	GROUND SPACE TRACKING & DATA NETWORK
GWM	GUAM ISLAND, U.S. (STDN SITE)
HAW	HAWAII (KAUAI, STDN SITE)
HL	HI LOAD FLASH EVAPORATOR
HTR	HEATER
HYD	HYDRAULIC
I'CONNECT	INTERCONNECT (OMS TO RCS)
IEF	ISOELECTRIC FOCUSING
IMU	INERTIAL MEASUREMENT UNIT
INH	INHIBIT
INRTL	INERTIAL
KSC	KENNEDY SPACE CENTER
LOS	LOSS-OF-SIGNAL; LINE-OF-SIGHT
LVLH	LOCAL VERTICAL LOCAL HORIZONTAL
MAD	MADRID, SPAIN (STDN SITE, 1ST ANTENNA)
MCC	MISSION CONTROL CENTER
MD	MIDDECK
MDM	MULTIPLEXER/DEMULTIPLEXER
MECH	MECHANISM/MECHANICAL
MECO	MAIN ENGINE CUTOFF
MET	MISSION ELAPSED TIME
MIL	MERRITT ISLAND, FLORIDA (STDN SITE)
MILA	MERPITT ISLAND LAUNCH AREA
MLA	MONOCHROME LENS ASSEMBLY

MNVR	MANEUVER
MPRESS	MISSION PECULIAR EQUIPMENT SUPPORT STRUCTURE
MS	MISSION SPECIALIST
MSG	MESSAGE
NOR	NORTHRUP STRIP
OI	OPERATIONAL INSTRUMENTATION
OMS	ORBITAL MANEUVERING SYSTEM
O/O	ON ORBIT
OPS	OPERATIONS/OPERATIONAL SEQUENCE
ORR	ORRORAL VALLEY, AUSTRALIA (STDN SITE)
PAM	PAYLOAD ASSIST MODULE
PAM-D	PAM, DELTA CLASS SPACECRAFT
PCM	PULSE-CODE MODULATION
PCS	PRESSURE CONTROL SYSTEM
PERF	PERFORMANCE
PKM	PERIGEE KICK MOTOR
PL/PLD	PAYLOAD
PLBD	PAYLOAD BAY DOORS
PLT	PILOT
PRCS	PRIMARY REACTION CONTROL SYSTEM
PREP	PREPARATION
PRO	PROCEED/PROTECTION
PSA	PRE/POST SLEEP ACTIVITY
PTC	PASSIVE THERMAL CONTROL
PWRDN	POWERDOWN
PWRUP	POWERUP

RAD	RADIATOR
RCS	REACTION CONTROL SYSTEM
REF	REFERENCE
REG	REGULATOR
RME	RADIATION MONITORING EQUIPMENT
RMS	REMOTE MANIPULATOR SYSTEM
ROT	ROTATION
RSET	RESET
RTC	REAL TIME COMMAND
S TRK	STAR TRACKER
S-BD	S-BAND
SBS	SATELLITE BUSINESS SYSTEMS
S/C	SPACECRAFT
SEL	SELECT
SEP	SEPARATION
SEQ	SEQUENCE
SPARTAN 1	SHUTTLE POINTED AUTONOMOUS RESEARCH TOOL FOR ASTRONOMY
SPLY	SUPPLY
STDN	SPACE TRACKING & DATA NETWORK
STS	SPACE TRANSPORTATION SYSTEM
SW	SWITCH
SYNCOM	SYNCHRONOUS COMMUNICATION SATELLITE
SYS	SYSTEM
tb	TALKBACK
TDRS	TRACKING AND DATA RELAY SATELLITE
TERM	TERMINATE/TERMINAL
TIG	TIME OF IGNITION

TLS	TELSTAR (AT&T PAYLOAD)
TPR	TELEPRINTER
UHF	ULTRA HIGH FREQUENCY
VER	VERIFICATION
VRCS	VERNIER REACTION CONTROL SYSTEM
VTR	VIDEO TAPE RECORDER
WB	WIDEBAND
WLA	WIDE ANGLE LENS ASSEMBLY
X-POP	X BODY AXIS PERPENDICULAR TO ORBIT PLANE
YAR	YARRAGADEE (STDN SITE)
Y-POP	Y BODY AXIS PERPENDICULAR TO ORBIT PLANE
-ZLV	-Z LOCAL VERTICAL (-Z BODY AXIS TOWARDS EARTH)

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