

Flight Plan

STS-58

(Flight Cycle Trajectory)

Mission Operations Directorate
Operations Division

Final
July 14, 1993

<u>EVENT</u>	<u>CDT</u>		
Launch	10:28	Fri	Sept 10
EDW Landing	10:52	Fri	Sept 24

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



MISSION OPERATIONS DIRECTORATE

STS-58 FLIGHT PLAN

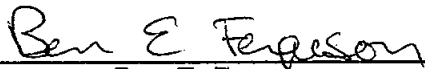
FINAL
July 14, 1993

PREPARED BY:

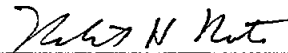


F. Fisher Reynolds, III
Book Manager

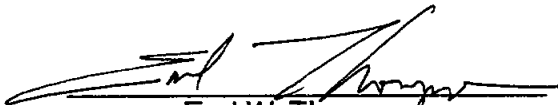
APPROVED BY:



Ben E. Ferguson
Head, Flight Planning and Operations
Section



Robert H. Nute
Chief, Space Shuttle Flight
Planning Branch



Earl W. Thompson
Chief, Operations Division



Brock R. Stone
Assistant Director for
Space Shuttle Program

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted on JSC Form 482 to DO4/FDF Manager.

Additional distribution of this book for official use must be requested in writing to DO4/FDF Manager. The request must include justification and requester's name, organization, position, and phone number. Contractor requests are made through the NASA or DOD organization supported. Deletions, reduction in quantity, or change of address may be submitted to DO4/FDF distribution manager, (713) 244-7893.

Incorporates the following:			
482#:	FLT PLN-1491A	FLT PLN-1511A	FLT PLN-1523B
	FLT PLN-1492	FLT PLN-1513	FLT PLN-1524
	FLT PLN-1493A	FLT PLN-1514	FLT PLN-1525A
	FLT PLN-1494	FLT PLN-1515	FLT PLN-1528
	FLT PLN-1497	FLT PLN-1516	MULTI-796
	FLT PLN-1505	FLT PLN-1517	MULTI-854
	FLT PLN-1507	FLT PLN-1518	MULTI-877A
	FLT PLN-1508A	FLT PLN-1519	
	FLT PLN-1509	FLT PLN-1520	Exemption #:45, 47A, 48, 49A, 50, 53
	FLT PLN-1510	FLT PLN-1521B	

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager/Lead FAO	DO4/F. Reynolds, III	244-7930
Nominal Timelines	DO4/R. Johnson	244-7929
Attitude & Pointing	DO4/J. Kirinich	244-7757

STS-58 FLIGHT PLAN

FINAL (July 14, 1993)

PCN-1 (Aug 23, 1993) Sheet 1 of 1

List of Implemented Change Requests (482s):

FLT PLN-1529	FLT PLN-1538
FLT PLN-1530	FLT PLN-1539
FLT PLN-1531	FLT PLN-1540
FLT PLN-1536	FLT PLN-1542
FLT PLN-1537	

Incorporate the following:

1. Replace iii & iv
2. Replace 2-3 thru 2-30
3. Replace 3-1 thru 3-4, 3-9 thru 3-14, 3-17 thru 3-24, 3-27 thru 3-34, 3-37 & 3-38, 3-41 thru 3-44, 3-47 thru 3-50, 3-57 thru 3-60, 3-65 thru 3-68, 3-71 & 3-72

Prepared by:


Book Manager

Approved by:


Head, Flight Planning and
Operations Section


Chief, Space Shuttle Flight
Planning Branch

Encl: 76 pages

**File this PCN immediately behind the front cover as a permanent record**

FLIGHT PLAN
STS-58

LIST OF EFFECTIVE PAGES

FINAL 07/14/93
PCN-1 08/23/93

Sign Off	* 58/FIN	3-9	58/FIN 1
ii	* 58/FIN	3-10	58/FIN
iii	* 58/FIN 1	3-11	58/FIN 1
iv	* 58/FIN 1	3-12	58/FIN
v	* 58/FIN	3-13	58/FIN 1
vi	* 58/FIN	3-14	58/FIN
vii	58/FIN	3-15	58/FIN
viii	58/FIN	3-16	58/FIN
ix	58/FIN	3-17	58/FIN 1
x	58/FIN	3-18	58/FIN 1
1-1	58/FIN	3-19	58/FIN 1
1-2	58/FIN	3-20	58/FIN
1-3	58/FIN	3-21	58/FIN
1-4	58/FIN	3-22	58/FIN 1
2-1	58/FIN	3-23	58/FIN 1
2-2	58/FIN	3-24	58/FIN 1
2-3	58/FIN 1	3-25	58/FIN
2-4	58/FIN 1	3-26	58/FIN
2-5	58/FIN 1	3-27	58/FIN 1
2-6	58/FIN 1	3-28	58/FIN 1
2-7	58/FIN 1	3-29	58/FIN 1
2-8	58/FIN 1	3-30	58/FIN
2-9	58/FIN 1	3-31	58/FIN
2-10	58/FIN	3-32	58/FIN 1
2-11	58/FIN 1	3-33	58/FIN 1
2-12	58/FIN 1	3-34	58/FIN 1
2-13	58/FIN 1	3-35	58/FIN
2-14	58/FIN 1	3-36	58/FIN
2-15	58/FIN 1	3-37	58/FIN
2-16	58/FIN 1	3-38	58/FIN 1
2-17	58/FIN 1	3-39	58/FIN
2-18	58/FIN 1	3-40	58/FIN
2-19	58/FIN 1	3-41	58/FIN
2-20	58/FIN 1	3-42	58/FIN 1
2-21	58/FIN 1	3-43	58/FIN
2-22	58/FIN	3-44	58/FIN 1
2-23	58/FIN 1	3-45	58/FIN
2-24	58/FIN 1	3-46	58/FIN
2-25	58/FIN 1	3-47	58/FIN 1
2-26	58/FIN	3-48	58/FIN 1
2-27	58/FIN 1	3-49	58/FIN 1
2-28	58/FIN 1	3-50	58/FIN
2-29	58/FIN 1	3-51	58/FIN
2-30	58/FIN 1	3-52	58/FIN
3-1	58/FIN	3-53	58/FIN
3-2	58/FIN 1	3-54	58/FIN
3-3	58/FIN 1	3-55	58/FIN
3-4	58/FIN 1	3-56	58/FIN
3-5	58/FIN	3-57	58/FIN
3-6	58/FIN	3-58	58/FIN 1
3-7	58/FIN	3-59	58/FIN 1
3-8	58/FIN	3-60	58/FIN

(*) - Omit from flight book

3-61	.....	58/FIN
3-62	.....	58/FIN
3-63	.....	58/FIN
3-64	.....	58/FIN
3-65	.....	58/FIN
3-66	.....	58/FIN 1
3-67	.....	58/FIN 1
3-68	.....	58/FIN
3-69	.....	58/FIN
3-70	.....	58/FIN
3-71	.....	58/FIN 1
3-72	.....	58/FIN
4-1	.....	* 58/FIN
4-2	.....	* 58/FIN
4-3	.....	* 58/FIN
4-4	.....	* 58/FIN
4-5	.....	* 58/FIN
4-6	.....	* 58/FIN
4-7	.....	* 58/FIN
4-8	.....	* 58/FIN
4-9	.....	* 58/FIN
4-10	.....	* 58/FIN
5-1	.....	* 58/FIN
5-2	.....	* 58/FIN
5-3	.....	* 58/FIN
5-4	.....	* 58/FIN
5-5	.....	* 58/FIN
5-6	.....	* 58/FIN
5-7	.....	* 58/FIN
5-8	.....	* 58/FIN
5-9	.....	* 58/FIN
5-10	.....	* 58/FIN
5-11	.....	* 58/FIN
5-12	.....	* 58/FIN
5-13	.....	* 58/FIN
5-14	.....	* 58/FIN
5-15	.....	* 58/FIN
5-16	.....	* 58/FIN
5-17	.....	* 58/FIN
5-18	.....	* 58/FIN
6-1	.....	* 58/FIN
6-2	.....	* 58/FIN
6-3	.....	* 58/FIN
6-4	.....	* 58/FIN
6-5	.....	* 58/FIN
6-6	.....	* 58/FIN
6-7	.....	* 58/FIN
6-8	.....	* 58/FIN

(*) – Omit from flight book

STS-58 FLT PLN CUE CARDS

<u>Title</u>	<u>Ref. Page</u>	<u>Card No.</u>
DAP A, DAP B TOC	5-5	FLT PLN-1a/58/O/B
(Blank)	5-5	FLT PLN-1b/58/O/A
DAP A	5-6	FLT PLN-2a/58/O/A
DAP A1	5-6	FLT PLN-2b/58/O/A
A1	5-6	FLT PLN-3a/58/O/A
DAP A2	5-7	FLT PLN-3b/58/O/A
A2	5-7	FLT PLN-4a/58/O/A
DAP A3	5-7	FLT PLN-4b/58/O/A
A3	5-7	FLT PLN-5a/58/O/A
DAP A4	5-8	FLT PLN-5b/58/O/A
A4	5-8	FLT PLN-6a/58/O/A
DAP A5	5-8	FLT PLN-6b/58/O/B
A5	5-8	FLT PLN-7a/58/O/A
DAP A6	5-9	FLT PLN-7b/58/O/A
A6	5-9	FLT PLN-8a/58/O/A
DAP A7	5-9	FLT PLN-8b/58/O/A
A7	5-9	FLT PLN-9a/58/O/A
DAP A8	5-10	FLT PLN-9b/58/O/A
A8	5-10	FLT PLN-10a/58/O/A
DAP A58	5-10	FLT PLN-10b/58/O/B
A58	5-10	FLT PLN-24a/58/O/A
(Blank)	5-11	FLT PLN-24b/58/O/A
DAP B	5-11	FLT PLN-11a/58/O/A
DAP B1	5-11	FLT PLN-11b/58/O/A
B1	5-11	FLT PLN-12a/58/O/B
DAP B2	5-12	FLT PLN-12b/58/O/A
B2	5-12	FLT PLN-13a/58/O/B
DAP B3	5-12	FLT PLN-13b/58/O/A
B3	5-12	FLT PLN-14a/58/O/B
DAP B4	5-13	FLT PLN-14b/58/O/A
B4	5-13	FLT PLN-15a/58/O/B
DAP B5	5-13	FLT PLN-15b/58/O/A
B5	5-13	FLT PLN-16a/58/O/B
DAP B6	5-14	FLT PLN-16b/58/O/B
B6	5-14	FLT PLN-17a/58/O/B
DAP B7	5-14	FLT PLN-17b/58/O/A
B7	5-14	FLT PLN-18a/58/O/A
DAP B8	5-15	FLT PLN-18b/58/O/A
B8	5-15	FLT PLN-19a/58/O/A
(Blank)	5-15	FLT PLN-19b/58/O/A
ALT DAP TOC	5-15	FLT PLN-20a/58/O/B
DAP ALT1	5-16	FLT PLN-20b/58/O/A
ALT1	5-16	FLT PLN-21a/58/O/A
DAP ALT2	5-16	FLT PLN-21b/58/O/A
ALT2	5-16	FLT PLN-22a/58/O/A
DAP ALT3	5-17	FLT PLN-22b/58/O/B
ALT3	5-17	FLT PLN-25a/58/O/A
(Blank)	5-17	FLT PLN-25b/58/O/A
UNIV PTG	5-18	FLT PLN-23a/58/O/A
(Blank)	5-18	FLT PLN-23b/58/O/A

This Page Intentionally Blank

CONTENTS

PAGE

INTRODUCTION	ix
STS-58 OVERVIEW	1-1
SUMMARY TIMELINE	2-1
DETAILED TIMELINE	3-1
ATTITUDE TIMELINE	4-1
STS-58 DAP BOOK	5-1
STS-58 FLIGHT PLAN NOTES	6-1

This Page Intentionally Blank

INTRODUCTION

The STS-58 Flight Plan is the Flight Data File article that contains the on-orbit timeline. The Ascent, Post Insertion, Deorbit Prep, and Entry Checklists contain the detailed timelines that the Flight Plan does not cover. For continuity, the summary level timeline includes the entire flight.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive and the requirements of the STS-58 Flight Requirements Document. The Flight Plan, as part of the Flight Data File, meets the specifications of the STS-58 Flight Initialization Data Pack.

The flight profile used for this Flight Plan is for a launch date of September 10, 1993 at 15:28 GMT. Orbiter inertial attitudes are expressed relative to a Mean of 1950 (M50) reference frame.

The STS-58 Flight Cycle was used for the timeline trajectory.

JSC-22359, Crew Scheduling Constraints (Appendix K, CPMP), Basic, Rev B, January 1992, has been used to build the timelines contained in this Flight Plan. The following Appendix K exemptions have been approved for STS-58:

- 45 - Reduce MS1 & MS3 entry day post sleep to 1 1/2 hrs
- 47A - Allows MS4 & PS to exercise during off duty period. They will be compensated with additional time off later in the day
- 48 - Allows up to 1 hr of post sleep time to be used for metabolic data collection. The data collection will begin 1/2 hr after wake up
- 49A - Extend R+O (landing day) baseline data collection to 7 hours for MS1, MS4, & PS
- 50 - Reduce MS4 & PS entry day post sleep to 1 3/4 hrs
- 53 - Allows DSO 612 operations to occur immediately after wake up

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

This Page Intentionally Blank

STS-58 OVERVIEW

FLIGHT: STS 58		EDITION: FINAL		PUB. DATE: 7/14/93																							
FD 01	MET: 000	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	ORB					CRAKE				LAUNCH	DOIMS	POST INSERTION		IMU		MEAL			SUPPLY DUMP	PRE SLEEP			SLEEP				
	PL					WE				INS		SL ACTIVATION		MEAL		SLS			PRE SLEEP			SLEEP					
	DAY/NIGHT																										
	ORBIT																										
	NOTES:	@ 39.0/153X153 ◦ PWR DOWN GRP B ▲ DTO 623 ◦ IMU																									
FD 02	MET: 000	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	ORB		SLEEP			PSA	SUPPLY DUMP	POST SLEEP				DSO 611		MEAL					HUD CAL	SUPPLY DUMP	PRE SLEEP		SLEEP				
	PL		SLEEP			MET OPS	POST SLEEP		SLS			MEAL		SLS					PRE SLEEP			SLEEP					
	DAY/NIGHT																										
	ORBIT	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26										
	NOTES:	◦ IMU ◦ 612 CNTL 1 ■ 612 CNTL 1 ◦ FILTER CLEANING ◦ 612 CNTL 2 ■ 612 CNTL 2 ◦ SAREX SETUP ◦ IMU																									
FD 03	MET: 001	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	ORB		SLEEP			SUPPLY DUMP	WASTE DUMP	OARE P/Y/R	OARE DRAG	LBNP SETUP	LBNP RAMP	OARE MAX	DRAG	LBNP RAMP		SUPPLY DUMP	PRE SLEEP		SLEEP								
	PL		SLEEP			MET OPS	POST SLEEP		SLS		MEAL		SLS			PRE SLEEP			SLEEP								
	DAY/NIGHT																										
	ORBIT	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42										
	NOTES:	◦ 612 TEST ■ 612 TEST ◦ IMU																									
FD 04	MET: 002	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	ORB		SLEEP			POST SLEEP	SUPPLY DUMP					MEAL							PRE SLEEP			SLEEP					
	PL		SLEEP			MET OPS	POST SLEEP		SLS		MEAL		SLS			PRE SLEEP			SLEEP								
	DAY/NIGHT																										
	ORBIT	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58										
	NOTES:	◦ 612 TEST ■ 612 TEST ◦ IMU ◦ POST SLEEP ◦ IMU																									
FD 05	MET: 003	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	ORB		SLEEP			POST SLEEP	SUPPLY DUMP		OFF DUTY		MEAL								SUPPLY DUMP	PRE SLEEP		SLEEP					
	PL		SLEEP			POST SLEEP		OFF DUTY		MEAL		SLS				PRE SLEEP			SLEEP								
	DAY/NIGHT																										
	ORBIT	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74										
	NOTES:	◦ 612 TEST ■ 612 TEST ◦ IMU ▲ DTO 623 ◦ IMU ◦ CONDS DUMP ◦ PRE SLEEP																									

FLIGHT: STS 58 EDITION: FINAL PUB. DATE: 7/14/93

FD 06	MET: 004	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP			SUPPLY DUMP	WASTE DUMP		LBNP RAMP	MEAL		LBNP RAMP				SUPPLY DUMP	PRE SLEEP	SLEEP												
	PL	SLEEP		MET OPS	POST SLEEP		SLS		MEAL		SLS			PRE SLEEP	SLEEP														
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90												
NOTES:	o 612 TEST ■ 612 TEST o POST SLEEP o FILTER CLEANING o RCS BURN o RCS BURN																												

FD 07	MET: 005	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		POST SLEEP	SUPPLY DUMP				MEAL					SUPPLY DUMP	PRE SLEEP	SLEEP													
	PL	SLEEP		POST SLEEP		SLS		MEAL		SLS			PRE SLEEP	SLEEP															
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106												
NOTES:	o IMU ▲ DTO 623 o IMU o OARE P/Y/R																												

FD 08	MET: 006	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		POST SLEEP	SUPPLY DUMP		DSO 611			MEAL				SUPPLY DUMP	PRE SLEEP	SLEEP													
	PL	SLEEP		MET OPS	POST SLEEP		SLS		MEAL		SLS			PRE SLEEP	SLEEP														
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122												
NOTES:	o IMU ■ POST SLEEP o IMU																												

FD 09	MET: 007	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		POST SLEEP	SUPPLY DUMP	WASTE DUMP		LBNP RAMP	MEAL		LBNP RAMP			SUPPLY DUMP	PRE SLEEP	SLEEP													
	PL	SLEEP		POST SLEEP		SLS		MEAL		SLS			PRE SLEEP	SLEEP															
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138												
NOTES:	o IMU ▲ DTO 623 o CONDS DUMP o IMU																												

FD 10	MET: 008	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		POST SLEEP	SUPPLY DUMP				MEAL					SUPPLY DUMP	PRE SLEEP	SLEEP													
	PL	SLEEP		POST SLEEP		SLS		MEAL		SLS			PRE SLEEP	SLEEP															
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154												
NOTES:	o IMU o CREW CONF ■ CREW CONF o FILTER CLEANING ▲ DTO 623 o IMU																												

FLIGHT: STS 58		EDITION: FINAL		PUB. DATE: 7/14/93																									
FD 11	MET: 009	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		POST SLEEP	SUPPLY DUMP	OFF DUTY					MEAL	SUPPLY DUMP					PRE SLEEP	SLEEP											
	PL	SLEEP		MET OPS	POST SLEEP	OFF DUTY					MEAL	SLS			PRE SLEEP			SLEEP											
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170												
NOTES:	○ IMU ■ POST SLEEP																												
FD 12	MET: 010	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		POST SLEEP	SUPPLY DUMP	LBNP RAMP					MEAL	LBNP RAMP			SUPPLY DUMP	PRE SLEEP	SLEEP												
	PL	SLEEP		MET OPS	POST SLEEP	SLS					MEAL	SLS			PRE SLEEP			SLEEP											
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186												
NOTES:	○ IMU ■ POST SLEEP																												
FD 13	MET: 011	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		SUPPLY DUMP	WASTE DUMP	OFF DUTY					MEAL	SUPPLY DUMP					PRE SLEEP	SLEEP											
	PL	SLEEP		POST SLEEP		SLS					MEAL	SLS			PRE SLEEP			SLEEP											
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202												
NOTES:	○ POST SLEEP ○ IMU ▲ DTO 623 ○ FILTER CLEANING ○ OARE P/Y/R ○ IMU ○ SAREX STOW LBNP SOAK (MS2) LBNP SOAK (CDR)																												
FD 14	MET: 012	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP		SUPPLY DUMP	FCS C/O	OFF DUTY					MEAL	DSO 611	CABIN STOW			SUPPLY DUMP	PRE SLEEP	SLEEP (7)											
	PL	SLEEP		MET OPS	POST SLEEP	SLS					MEAL	SLS	S/L STOW		PRTL S/L DEACT	PRE SLEEP			SLEEP										
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218												
NOTES:	○ POST SLEEP ○ IMU ○ RCS HOT FIRE ○ CONDS DUMP ■ PARTIAL SL DEACT																												
FD 15	MET: 013	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	ORB	SLEEP (7)		SUPPLY DUMP	D/O PREP	IMU	D/O PREP	DEORBIT PREP					D E B E N		SUPPLY DUMP			PRE SLEEP	SLEEP										
	PL	SLEEP		FINAL S/L DEACT	POST SLEEP	DEORBIT PREP					O U D D		PRTL S/L DEACT			PRE SLEEP			SLEEP										
	DAY/NIGHT	[Day/Night Cycle]																											
	ORBIT	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234												
NOTES:	▲ DTO 623 ○ ENT DSO PREP ○ POST SLEEP ○ PWR UP GRP B ◎ EDW 14/00:29																												

SUMMARY TIMELINE

This Page Intentionally Blank

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
253:15:28/ 254:03:28		000:00:00/ 000:12:00		253:10:28/ 253:22:28		01/253 CDT	-31.4		SEPTEMBER 10, 1993	STS 58	FINAL 1	8/17/93		
CDT	:253	11	12	13	14	15	16	17	18	19	20	21	22	12
FD	:01													
MET	:000	0	1	2	3	4	5	6	7	8	9	10	11	
ORBITER	CDR	POST INSERTION		ACT	IMU	SL ACTIVATION	MEAL	103-TV3	ERGO-METER SETUP	WINDING	D/P	PRE SLEEP	SLEEP	
	PLT	PLN	POST INSERTION	ACT	COAS	MODULE CAMR SETUP	MEAL	RDNT-CK	WINDING	CALLS	PRE SLEEP	LOAD	SLEEP	
	MS2	DIRECT	POST INSERTION	MDDK	FLT DK	SETUP	MEAL	MBH1	ERGO-METER SETUP	CA40	PRE SLEEP	PRE SLEEP	SLEEP	
	MS1	LAUNCH	OPS	SL ACTIVATION			MEAL	ECHO	DROP	DROP	D/P	PRE SLEEP	SLEEP	
	MS3	INSERTION	UMS/IST	SL ACTIVATION			MEAL	ARU	DROP	CA40	P	PRE SLEEP	SLEEP	
	MS4	INSERTION	OPS	MEAL			MEAL	ECHO	DROP	DROP	D/P	PRE SLEEP	SLEEP	
PAYLOAD	PS	PVP	MIDDECK CONFIG			MEAL	RDNT-CK	DROP-SUB		D/P	PRE SLEEP	SLEEP		
	DAY/NIGHT ORBIT	[Orbit diagram showing day/night cycles]												
TORS	[Torsion diagram]													
ATTITUDE	[Attitude diagram showing -ZLV +YV and BIAS -YLV +ZV]													
NOTES:	@LAMP TEST @APU HTR DEACT @APU HTR RECONFIG @D50 326 @SPLY DUMP TERM @LOAD FUTURE MNVR @SMOKE DETN CKT TEST @DT0 623 CABIN AIR MON @SPLY DUMP INIT @BIAS +XLV +ZV @AFT STATION @BIAS -YLV +ZV @-ZLV +YV													

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
255:15:28/ 256:03:28	002:00:00/ 002:12:00	255:10:28/ 255:22:28	03 /255 CDT	-34.7		SEPTEMBER 12, 1993	STS 58	FINAL 1	8/17/93

CDT :255	0	1	2	3	4	5	6	7	8	9	10	11	12
FD :03													
MET :002													

ORBITER	CDR	PA/TVO 4 S/TV 04 SPAVO EVENING		XLV MNV BR	MEAL	YLV MNV BR		LBNP PREP	LBNP RAMP	LBNP TEMP STOM	W/ING MOON	D/P	P S L E E P	P R I V E M E E D		PRE SLEEP	SLEEP
	PLT	PA/TVO 5 S/TV 05 N P	LBNP SETUP	LBNP OPERATOR	MEAL	S A R E X S A R E X S A R E X S		EXERCISE		S A R E X S A R E X S		B A T H C O L O N Y L V M N V R		PRE SLEEP	XLV MNV BR	SLEEP	
	MS2		LBNP SETUP	LBNP PREP	LBNP RAMP	MEAL	E M E R G E N C Y S U P P L Y	LBNP OPERATOR	UMS-CAL				P R E S L E E P	P S R E D I M P	P P A W D R M D N	PRE SLEEP	SLEEP
	MS1	M O D E L S O P E R A T O R S	DSO 325	EXERCISE	DSO 325	MEAL	H M C T - O P	H M C T - O P	H M C T - O P	D S O O P E R A T O R	1 1 4 - T V 2		P R I V E M E E D		PRE SLEEP		SLEEP
PAYLOAD	MS3	M O D E L S O P E R A T O R S	DSO 325		MEAL	H M C T - S U B		EXERCISE				D/P			PRE SLEEP		SLEEP
	MS4	M O D E L S O P E R A T O R S	1 0 5 - T V 3	A W A R E - O P	MEAL		EXERCISE	A R U	R D N T - C K	R D N T - C K	R D N T - Y I D	A D P	P R E S L E E P		PRE SLEEP		SLEEP
	PS	M O D E L S O P E R A T O R S	P A V E N T	A W A R E - O P	EXERCISE	MEAL	H M C T - O P	H M C T - O P	A R U	R D N T - C K		A D P			PRE SLEEP		SLEEP
	DAY/NIGHT		33	34	35	36	37	38	39	40							
ORBIT		33	34	35	36	37	38	39	40								
TDRS																	
ATTITUDE		BIAS -YLV +ZVV		+XLV +ZVV		BIAS -YLV +ZVV							-ZLV +YVV			BIAS +XLV +ZVV	

NOTES:	BIAS -YLV +ZVV	DSO 325 DRYER ACT	DSO 623 LBNP	SPLY DUMP INIT	BIAS +XLV +ZVV
	DSO 623 LBNP	+XLV, +ZVV	BIAS -YLV +ZVV	DSO 325 DRYER DEACT	-ZLV, +YVV
	DSO 325 DRIED BLOOD CARD FILL	DTO 623 CABIN AIR MON	SAREX Contact #3	SPLY DUMP TERM	
	DSO 325 DRIED BLOOD CARD FILL				

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																								
256:03:28/ 256:15:28		002:12:00/ 003:00:00		255:22:28/ 256:10:28		04 /255 CDT	-35.2		SEPTEMBER 12, 1993	STS 58	FINAL 1	8/17/93																								
CDT	:255	12	23	0	CDT:256	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:003						
FD	:03																																			
MET	:002																																			
ORBITER	CDR	SLEEP																		612 CNTL	POST SLEEP	POST SLEEP	POST SLEEP	D/P	M B H 4	M B H 4	W B B S									
	PLT	SLEEP																		ZLV M N V BR	612 TEST	POST SLEEP	POST SLEEP	YLV M N V BR	D T O	EXERCISE										
	MS2	SLEEP																		612 TEST	POST SLEEP	PS A E T M U P	PP A M D R M D N	POST SLEEP	612 H 20	S A R I E X E	EXERCISE									
	MS1	SLEEP																		612 TEST	POST SLEEP	M B 4 - O P	M B 4 - O P	POST SLEEP	D/P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P
PAYLOAD	MS3	SLEEP																		612 TEST	POST SLEEP	M B 4 - O P	M B 4 - O P	POST SLEEP	D/P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	
	MS4	SLEEP																		612 TEST	POST SLEEP	M B 4 - O P	M B 4 - O P	POST SLEEP	D/P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	
	PS	SLEEP																		612 TEST	POST SLEEP	M B 4 - O P	M B 4 - O P	POST SLEEP	S A R I E X E	POST SLEEP	D/P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P	M B 4 - O P
	DAY/NIGHT	[Day/Night Cycle]																																		
ORBIT	41 42 43 44 45 46 47 48																																			
TDRS	[TDRS Schedule]																																			
ATTITUDE	BIAS +XLV +ZVV																		-ZLV +YVV						BIAS -YLV +ZVV											
NOTES:																			o -ZLV, +YVV						o SPLY DUMP INIT						o SAREX Contact #5					
																									o SPLY DUMP TERM						o BIAS -YLV +ZVV					
																															o SAREX Contact #4					
																															FIT PLN/58/FIN 1					

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																				
257:03:28/ 257:15:28		003:12:00/ 004:00:00		256:22:28/ 257:10:28		05 /256 CDT	-35.4		SEPTEMBER 13, 1993	STS 58	FINAL	7/14/93																				
CDT	:256	23	0	CDT:257	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:004			
FD	:04	12																														
MET	:003																															
ORBITER	CDR	SLEEP																			6 1 2 C N T L	POST SLEEP				OFF DUTY						
	PLT	SLEEP																			-Z LV R	6 1 2 T E S T	POST SLEEP		I M U	POST SLEEP		D B A T T O T A L 6 3 0	OFF DUTY		-M X N L V R	M F I Z N L V R I M
	MS2	SLEEP																			6 1 2 T E S T	POST SLEEP		P S A E D T M U P	P P A W D R M D N	6 1 2 H 2 0	OFF DUTY					
	MS1	SLEEP																			6 1 2 T E S T	POST SLEEP				OFF DUTY						
PAYLOAD	MS3	SLEEP																			POST SLEEP				OFF DUTY							
	MS4	SLEEP																			POST SLEEP				OFF DUTY							
	PS	SLEEP																			POST SLEEP				OFF DUTY							
	DAY/NIGHT																															
ORBIT	57 58 59 60 61 62 63 64																															
TDRS																																
ATTITUDE	BIAS +XLV +ZVV -ZLV +YVV -XLV +YVV																															
NOTES:	<ul style="list-style-type: none"> ● -ZLV, +YVV ■ SPLY DUMP INIT ■ SPLY DUMP TERM ● DTO 663 ACOU DOS ● -XLV, +YVV ● -ZLV, +YVV 																															

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
257:15:28 / 258:03:28		004:00:00 / 004:12:00		257:10:28 / 257:22:28		05 / 257 CDT	-35.2		SEPTEMBER 14, 1993	STS 58	FINAL 1	8/17/93	
CDT	:257												
FD	:05												
MET	:004												
	0	1	2	3	4	5	6	7	8	9	10	11	12
ORBITER	CDR	OFF DUTY	MEAL	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
	PLT	OFF DUTY	MEAL	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
	MS2	OFF DUTY	EXERCISE	MEAL	OFF DUTY	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
PAYLOAD	MS1	OFF DUTY	MEAL	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
	MS3	OFF DUTY	MEAL	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
	MS4	OFF DUTY	MEAL	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
	PS	OFF DUTY	MEAL	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE
DAY/NIGHT	[Day/Night Cycle]												
ORBIT	65 66 67 68 69 70 71 72												
TDRS	[TDRS Cycle]												
ATTITUDE	-ZLV +YVV BIAS -YLV +ZVV BIAS -YLV -XVV -ZLV +YVV BIAS +XLV +ZVV												
NOTES:	@SAREX Contact #11 @BIAS -YLV +ZVV @SAREX Contact #13 @SPLY DUMP INIT @BIAS +XLV +ZVV @SAREX Contact #11 @SAREX Contact #12 @BIAS -YLV -XVV @-ZLV, +YVV @SPLY DUMP TERM @LOAD FUTURE MNVR @DTO 667 PILOT SIM @DTO 623 CABIN AIR MON @DTO 663 ACQU DOS												

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
258:15:28 / 259:03:28		005:00:00 / 005:12:00		258:10:28 / 258:22:28		06 / 258 CDT	-34.4		SEPTEMBER 15, 1993	STS 58	FINAL 1	8/17/93							
CDT	:258	0	11	12	2	13	3	14	15	16	17	18	19	20	21	22	12		
FD	:06																		
MET	:005																		
ORBITER	CDR		MEAL					LBNP PREP	LBNP RAMP	EGRESS	LBNP TEMP STOW	RCS BURN	WINDOW	RCS BURN	D/P		PRE SLEEP	SLEEP	
	PLT	LBNP OPERATOR		SAREX	VOICE	MEAL					FILTER CLEANING (INSPECT)	RCS BURN	RCS BURN				PRE SLEEP	SLEEP	
	MS2	LBNP RAMP	EGRESS	MEAL		P/T VOY	P/T VOY	ACT	LBNP OPERATOR		FILTER CLEANING (INSPECT)		REFSERV		DR	PRE SLEEP	PP ANDR MDN	PRE SLEEP	SLEEP
	MS1	EXERCISE		RDNT-I-1	MEAL			RDNT-I-1	CAGE-TRN	RDNT-MM	CAGE-TRN	RDNT-MM	CAGE-TRN	RDNT-MM	CAGE-TRN	D/P		PRE SLEEP	SLEEP
PAYLOAD	MS3	RDNT-I-1		MEAL		RDNT-I-1		RDNT-CK		RDNT-W-1		EXERCISE			D/P		PRE SLEEP	SLEEP	
	MS4	RDNT-I-1		MEAL		RDNT-I-1		RDNT-CK		RDNT-W-1		EXERCISE		D/P		PRE SLEEP	SLEEP		
	PS	SAREX	CAGE-TRN	RDNT-I-1	MEAL		RDNT-MM	CAGE-TRN	RDNT-MM	CAGE-TRN	RDNT-MM	CAGE-TRN	RDNT-MM	CAGE-TRN	PWR-DN		PRE SLEEP	SLEEP	
	DAY/NIGHT	ORBIT																	
TDRS	ORBIT																		
ATTITUDE	BIAS -YLV +ZVV																		
NOTES:	@SAREX Contact #15 @DSO 623 LBNP @SPLY DUMP INIT @SAREX Contact #14 @SAREX Contact #16 @SPLY DUMP TERM @BIAS +XLV +ZVV @SAREX Contact #17 @DTO 663 ACOU DOS @LOAD FUTURE MNVR @-ZLV, +YVV																		

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
259:15:28/ 260:03:28		006:00:00/ 006:12:00		259:10:28/ 259:22:28		07/259 CDT	-32.8	●	SEPTEMBER 16, 1993	STS 58	FINAL 1	8/17/93			
CDT	:259	0	11	12	13	14	15	16	17	18	19	20	21	22	12
FD	:07														
MET	:006														
ORBITER	CDR		MEAL		EXERCISE			DSO 802			PRE SLEEP	PRE SLEEP		SLEEP	
	PLT	DSO 802	MEAL		EXERCISE						PRE SLEEP			SLEEP	
	MS2		MEAL		IRU			RDNT-FED			PRE SLEEP		PRE SLEEP	SLEEP	
	MS1	IRU	MEAL		HMCT-OP			RDNT-CK			PRE SLEEP			SLEEP	
PAYLOAD	MS3		MEAL					EXERCISE			PRE SLEEP			SLEEP	
	MS4		MEAL		HMCT-OP		UMS-CAL	EXERCISE			PRE SLEEP			SLEEP	
	PS		MEAL		HMCT-OP			RDNT-FED			PRE SLEEP			SLEEP	
	DAY/NIGHT														
ORBIT	97	98	99	100	101	102	103	104							
TDRS															
ATTITUDE															
NOTES:	o HTR CONFIG o DTO 667 PILOT SIM o DSO 802 (SCENE 6,7,31,B2) o SPLY DUMP INIT o BIAS +XLV +ZVV o DSO 802(26-30) oRCRS RECONFIG o DSO 802 (SCENE 11,12,16) o -ZLV, +XVV o -ZLV, +YVV o SPLY DUMP TERM o SAREX Contact #19 o SAREX Contact #20 o DTO 663 ACQU DOS o LOAD_FUTURE MNVR FLT PLN/58/FIN 1														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
260:03:28/ 260:15:28	006:12:00/ 007:00:00	259:22:28/ 260:10:28	08/259 CDT	-31.7	●	SEPTEMBER 16, 1993	STS 58	FINAL 1	8/17/93

CDT :259	23	0	CDT:260	1	2	3	4	5	6	7	8	9	10	0	MET:007
FD :07	12	13	14	15	16	17	18	FD 08	19	20	21	22	23		
MET :006															

ORBITER	CDR	SLEEP	D/SO 612	POST SLEEP	POST SLEEP	D/P	REFSERV	MINDOW	EXERCISE
MS3	SLEEP	D/SO 612	POST SLEEP	POST SLEEP	D/P	REFSERV	MINDOW	EXERCISE	
MS4	SLEEP	D/SO 612	POST SLEEP	POST SLEEP	D/P	REFSERV	MINDOW	EXERCISE	
PS	SLEEP	D/SO 612	POST SLEEP	POST SLEEP	D/P	REFSERV	MINDOW	EXERCISE	

DAY/NIGHT	[Shaded bars indicating day/night cycle]													
ORBIT	105	106	107	108	109	110	111	112						
TORS	E	W	E	W	E	W	E	W	E	W	E	W	E	W
ATTITUDE	BIAS +XLV +ZVV				-ZLV +YVV				BIAS -YLV +ZVV					

NOTES:

- -ZLV, +YVV
- SPLY DUMP INIT
- SPLY DUMP TERM
- BIAS -YLV +ZVV
- DTIO 663 ACQU DOS
- DSO 326

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
260:15:28 / 261:03:28	007:00:00 / 007:12:00	260:10:28 / 260:22:28	08/260 CDT	-30.5	●	SEPTEMBER 17, 1993	STS 58	FINAL 1	8/17/93

CDT :260	0	11	12	13	14	15	16	17	18	19	20	21	22	12
FD :08														
MET :007														

ORBITER	CDR	EXERCISES	DSO 314		MEAL	P/TVO7	P/TVO7			REFRESH	WINDOW	D/P	CONF	PRE SLEEP	PRE SLEEP	SLEEP		
	PLT	DSO 314		30% EXER	60% EXER	100% EX	DIAG	MEAL	30% EXER	60% EXER	100% EX	DTO 665	DTO 665	DTO 665	PRE SLEEP	LOAD FUTURE	SLEEP	
	MS2	120-TV3		MEAL	MNVR	DOME-VID	P/TVO4	RDNT-CK	RDNT-W-1	RDNT-W-1	RDNT-W-1	RDNT-W-1	RDNT-W-1	RDNT-W-1	PRE SLEEP	PPADRMDN	PRE SLEEP	SLEEP
	MS1	MEAL	DOME	LENS-IN	DOME-OP	RDNT-CK	RDNT-W-1	RDNT-W-1	RDNT-W-1	RDNT-W-1	EXERCISE	DOME	PWR-DN	PRE SLEEP		SLEEP		
	MS3	REST-CO	30% EXER	60% EXER	100% EX	MEAL	DOME	LENS-IN	DOME-OP	RDNT-W-1	RDNT-W-1	RDNT-W-1	RDNT-W-1	PRE SLEEP	VOICE	PRE SLEEP	SLEEP	
	MS4	MEAL	DOME	DOME-OP	DOME-OP	DOME-OP	DOME-OP	DOME-OP	DOME-OP	DOME-OP	DOME-OP	DOME-OP	DOME-OP	PRE SLEEP		PRE SLEEP	SLEEP	
	PS	MEAL	SUB-PRP	REST-CO	30% EXER	60% EXER	100% EX	SUB-PRP	LENS-IN	MNVR	DOME	D/P	PRE SLEEP		PRE SLEEP	SLEEP		

DAY/NIGHT	113	114	115	116	117	118	119	120
-----------	-----	-----	-----	-----	-----	-----	-----	-----

TDRS	E	M						
------	---	---	--	--	--	--	--	--

ATTITUDE	BIAS -YLV +ZVV				-ZLV +YVV				BIAS +XLV +ZVV			
----------	----------------	--	--	--	-----------	--	--	--	----------------	--	--	--

NOTES:	@DSO 802 (Scene B3)		@DTO 665 SOUND LEVEL METER		@DTO 665 SOUND LEVEL METER		@DTO 665 SOUND LEVEL METER		@SAREX Contact #21		@SPLY DUMP TERM		@BIAS +XLV +ZVV		@LOAD FUTURE MNVR	
--------	---------------------	--	----------------------------	--	----------------------------	--	----------------------------	--	--------------------	--	-----------------	--	-----------------	--	-------------------	--

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
261:03:28/ 261:15:28	007:12:00/ 008:00:00	260:22:28/ 261:10:28	09 /260 CDT	-29.2	●	SEPTEMBER 17, 1993	STS 58	FINAL 1	8/17/93

CDT :260	23	0	CDT:261	1	2	3	4	5	FD 09	19	6	7	8	9	10	0	MET:008
FD :08	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
MET :007																	

ORBITER	CDR	SLEEP	POST SLEEP	POST SLEEP	WDAUNSMI EPT	D/P	WINDOW	P/T VOP 4	SEVENT	RETRV		
	PLT	SLEEP	POST SLEEP	POST SLEEP	ZLV MNV DR		YLV MNV DR	SAREX	DSO 802			
	MS2	SLEEP	POST SLEEP	POST SLEEP	PS AE DT ML P	PP AW DR NO N	6 1 2 H 2 O	P/T VOP 7	P D I R E C T O R			
	MS1	SLEEP	POST SLEEP				D/P	B M D	R D N T - I - 2	C A G E - T R N	R D N T - I - 2	C A G E - T R N
PAYLOAD	MS3	SLEEP	POST SLEEP				D/P	B M D	P A V E N T	EXERCISE		
	MS4	SLEEP	POST SLEEP				D/P	B M D		EXERCISE		1 O S T V 3
	PS	SLEEP	POST SLEEP				D/P	B M D		RDNT-I-2		

DAY/NIGHT	[Day/Night Cycle Diagram]																
ORBIT	121	122	123	124	125	126	127	128									
TDRS	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	
ATTITUDE	BIAS +XLV +ZVV				-ZLV +YVV				BIAS -YLV +ZVV								

NOTES: ● -ZLV, +YVV ○ SPLY DUMP INIT ○ WASTE DUMP TERM ○ SAREX Contact 22
 ○ SPLY DUMP TERM ○ DSO 802 (SCENE 21A, 21B, 22, 23, 25)
 ○ DTO 623 CABIN AIR MON
 ○ BIAS -YLV +ZVV
 FLT PLN/58/FIN 1

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
262:03:28/ 262:15:28		008:12:00/ 009:00:00		261:22:28/ 262:10:28		10/261 CDT	-26.2		SEPTEMBER 18, 1993	STS 58	FINAL 1	8/17/93							
CDT	:261	23	0	CDT:262	1	2	3	4	FD 10	5	6	7	8	9	10	0	MET:009		
FD	:09	12	13	14	15	16	17	18	19	20	21	22	23						
MET	:008																		
ORBITER	CDR	SLEEP							POST SLEEP		POST SLEEP		CREW CONF	D/P	WIND DOWN	P/TV05	S/TV05	EXERCISE	
	PLT	SLEEP							POST SLEEP		POST SLEEP		CREW CONF	YLV	EXERCISE		RELSERV		
	MS2	SLEEP							POST SLEEP		POST SLEEP		CREW CONF	121-TV3	612-H20	104-TV2	CHAIR	CHAIR-OP	CHAIR-OP
	MS1	SLEEP							POST SLEEP		POST SLEEP		CREW CONF	D/P	104-TV3	BMM D	EXERCISE		CHAIR-SB
	MS3	SLEEP							POST SLEEP		POST SLEEP		CREW CONF	D/P	BMM D	RDNT-MB2	CAGE-TRN	RDNT-MB2	CAGE-TRN
	MS4	SLEEP							POST SLEEP		POST SLEEP		CREW CONF	D/P	BMM D	RDNT-MB2			
PAYLOAD	PS	SLEEP							POST SLEEP		POST SLEEP		CREW CONF	D/P	BMM D	CHAIR	CHAIR-SB		
	DAY/NIGHT	[Day/Night Cycle Diagram]																	
ORBIT		137		138		139		140		141		142		143		144			
TDRS		[TDRS Diagram]																	
ATTITUDE		BIAS +XLV +ZVV							-ZLV +YVV							BIAS -YLV +ZVV			
NOTES:		<ul style="list-style-type: none"> o -ZLV, +YVV o SPLY DUMP INIT o SPLY DUMP TERM o BIAS -YLV +ZVV o DSO 326 																	

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
262:15:28/ 263:03:28		009:00:00/ 009:12:00		262:10:28/ 262:22:28		10/262 CDT	-24.5		SEPTEMBER 19, 1993	STS 58	FINAL 1	8/17/93						
CDT	:262	0	11	12	13	14	15	16	17	18	19	20	21	22	12			
FD	:10																	
MET	:009																	
ORBITER	CDR	EXERCISE		MEAL						D/P	PRE SLEEP		SLEEP					
	PLT	PAVLOS	SAREX	FILTER CLEANING (INSPECT)		MEAL		SAREX			WINDOW	PRE SLEEP		SLEEP				
	MS2	CHAIR-OP	FILTER CLEANING (INSPECT)		EXERCISE		MEAL		CHAIR-OP	CHAIR	RDNT-CK	RDNT-W-1	PRE SLEEP	PSAETMUR	PPANDMON	PRE SLEEP	SLEEP	
	MS1	CHAIR-SB	MEAL		RDNT-MB2	RDNT-MB2	CAGE-TRN	RDNT-MB2	CAGE-TRN	DIS-PREP	D/P		PRE SLEEP		SLEEP			
	MS3	RDNT-MB2	CAGE-TRN	RDNT-MB2	CAGE-TRN	MEAL		CHAIR-SB	CHAIR	EXERCISE		D/P		PRE SLEEP		SLEEP		
	MS4	RDNT-MB2		MEAL		RDNT-MB2	RDNT-CK	RDNT-W-1	EXERCISE		D/P	PRE SLEEP	SAREX		PRE SLEEP		SLEEP	
	PS	EXERCISE		MEAL		RDNT-MB2		DIS-PREP		PWRDN		PRE SLEEP		SLEEP				
DAY/NIGHT																		
ORBIT	145 146 147 148 149 150 151 152																	
TDRS																		
ATTITUDE	BIAS -YLV +ZVV -ZLV +YVV BIAS +XLV +ZVV																	
NOTES:	<ul style="list-style-type: none"> o SPLY DUMP INIT o SPLY DUMP TERM o SAREX Contact #25 o BIAS +XLV +ZVV o LOAD FUTURE MNVR 																	

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE																		
263:03:28/ 263:15:28		009:12:00/ 010:00:00		262:22:28/ 263:10:28		11/262 CDT	-22.7	●	SEPTEMBER 19, 1993	STS 58	FINAL	7/14/93																		
CDT	:262	12	23	0	CDT:263	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:010
FD	:10																													
MET	:009																													
ORBITER	CDR	SLEEP																		POST SLEEP		POST SLEEP		OFF DUTY						
	PLT	SLEEP																		ZLV MNV OR	POST SLEEP		POST SLEEP		OFF DUTY					
	MS2	SLEEP																			POST SLEEP		PS AE DT MU P	PP AW DR MO N	POST SLEEP		6 1 2 H 2 0	OFF DUTY		
	MS1	SLEEP																		POST SLEEP		OFF DUTY								
PAYLOAD	MS3	SLEEP																		POST SLEEP		OFF DUTY								
	MS4	SLEEP																		POST SLEEP		OFF DUTY								
	PS	SLEEP																		POST SLEEP		OFF DUTY								
	DAY/NIGHT																													
ORBIT	153 154 155 156 157 158 159 160																													
TDRS																														
ATTITUDE	BIAS +XLV +ZVV																				-ZLV +YVV									
NOTES:																			● -ZLV, +YVV		○ SPLY DUMP INIT		◎ DTO 623 CABIN AIR MON							
																					○ SPLY DUMP TERM									

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE												
263:15:28/ 264:03:28		010:00:00/ 010:12:00		263:10:28/ 263:22:28		11/263 CDT	-20.8		SEPTEMBER 20, 1993	STS 58	FINAL 1	8/17/93												
CDT	:263	0	11	12	13	14	15	16	17	18	19	20	21	22	12									
FD	:11																							
MET	:010																							
ORBITER	CDR	OFF DUTY	MEAL	Y L V M N V BR	EXERCISE		UMS-CAL	RDNT-CK	W I N D O W D / P	P R R - U P S P L Y D E M		PRE SLEEP	SLEEP											
	PLT	OFF DUTY	MEAL	R F F E S S R I V	W I N D O W D / P	EXERCISE				I L V M N V BR		PRE SLEEP	X L V M N V BR	SLEEP										
	MS2	OFF DUTY	EXERCISE		MEAL	1 0 7 - T V 3	DOME	DOME - P O P	DOME - P O P	DOME - P O P	D T O 6 6 3	PS A E T M L P	PP A W D R M D N	PRE SLEEP		SLEEP								
	MS1	OFF DUTY	MEAL	D R O P	D R O P - P O P	EXERCISE		L E N S - I N	DOME - S U B	RDNT-CK		D / P	PRE SLEEP		SLEEP									
PAYLOAD	MS3	OFF DUTY	MEAL	U X T O R M	P S E T U P P / T V 0 4	P A E N T	D R O P - S U B	D R O P	DOME - I D	L E N S - I N	DOME - S U B	EXERCISE	P M R - D N	PRE SLEEP		SLEEP								
	MS4	OFF DUTY	MEAL	D R O P	D R O P - S U B		D R O P - P O P	DOME	DOME - P O P	EXERCISE			D / P	PRE SLEEP		SLEEP								
	PS	OFF DUTY	MEAL	1 0 3 - T V 3	P A E N T	D R O P - P O P	D R O P - S U B	D R O P	EXERCISE		L E N S - I N	DOME - S U B	DOMED/P	PRE SLEEP		SLEEP								
DAY/NIGHT																								
ORBIT	161			162			163			164			165			166			167			168		
TDRS																								
ATTITUDE	-ZLV +YVV			BIAS -YLV +ZVV									-ZLV +YVV			BIAS +XLV +ZVV								
NOTES:	⊙BIAS -YLV +ZVV						⊙DSO 326			⊙DSO 326			⊙DSO 326			⊙DSO 326			⊙DSO 326			⊙DSO 326		
													⊙SPLY DUMP INIT			⊙BIAS +XLV +ZVV								
													⊙DTO 663 ACOU DOS			⊙SPLY DUMP TERM								
													⊙-ZLV, +YVV											
																⊙LOAD FUTURE MNVR								
																FLT PLN/58/FIN 1								

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
264:03:28/ 264:15:28	010:12:00/ 011:00:00	263:22:28/ 264:10:28	12 /263 CDT	-18.9		SEPTEMBER 20, 1993	STS 58	FINAL 1	8/17/93

CDT :263	23	0	CDT:264	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	MET:011
FD :11																												
MET :010																												

ORBITER	CDR	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	D/P	WINDDOWN	DTO 667	111-TV3	DTO 667	REFSERV	ENTRY TRNG
	PLT	SLEEP	ZLV MNR	POST SLEEP	POST SLEEP	YLV MNR	DTO 667	EXERCISE			LBNP OPERATOR	
	MS2	SLEEP	POST SLEEP	PS ADT M P	PP AM DR MD N	POST SLEEP	DTO 667	612 H2O	DTO 667	P/TVO5	LBNP PREP	LBNP RAMP
PAYLOAD	MS1	SLEEP	POST SLEEP	M B I N I O A	M B I N I O A	POST SLEEP	D/P	HCT READ	PVP	M B I N I O A	CALL-066	M B I N I O A
	MS3	SLEEP	POST SLEEP	M B I N I O A	M B I N I O A	POST SLEEP	D/P	GM LOW	M B I N I O A	M B I N I O A	SVOP-SUB	M B I N I O A
	MS4	SLEEP	POST SLEEP	M B I N I O A	M B I N I O A	POST SLEEP	D/P	M B I N I O A	M B I N I O A	M B I N I O A	M B I N I O A	M B I N I O A
	PS	SLEEP	POST SLEEP	M B I N I O A	M B I N I O A	POST SLEEP	D/P	M B I N I O A	M B I N I O A	M B I N I O A	M B I N I O A	SVOP-OP	M B I N I O A

DAY/NIGHT												
ORBIT	169	170	171	172	173	174	175	176				
TDRS E M												
ATTITUDE	BIAS +XLV +ZVV			-ZLV +YVV			BIAS -YLV +ZVV					

NOTES: @-ZLV, +YVV o SPLY DUMP INIT @DSO 326 @DTO 663 ACOU DOS SALIVA
o SPLY DUMP TERM @DTO 667 PILOT SIM @DSO 623 LBNP
@BIAS -YLV +ZVV @DTO 667 PILOT SIM
@DTO 663 ACOU DOS

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
264:15:28/ 265:03:28		011:00:00/ 011:12:00		264:10:28/ 264:22:28		12/264 CDT	-16.9		SEPTEMBER 21, 1993	STS 58	FINAL 1	8/17/93			
CDT	:264	0	11	12	13	14	15	16	17	18	19	20	21	22	12
FD	:12														
MET	:011														
ORBITER	CDR	ENTRY TRNG	MEAL	VOICE	PAVENT	RDNT-CK	LBNP PREP	LBNP RAMP	LBNP TEMP STOW	WAKEUP	D/P	PRE SLEEP	SLEEP		
	PLT	LBNP OPERATOR	MEAL	MEAL	300% EXER	600% EXER	1000% EXER	LBNP OPERATOR	300% EXER	600% EXER	US 10-02	PRE SLEEP	SLEEP		
	MS2	MEAL	MEAL	MBH12	PAVENT	RDNT-CK	RDNT-CK	RDNT-CK	RDNT-CK	RDNT-CK	RDNT-CK	PRE SLEEP	SLEEP		
	MS1	MEAL	MEAL	VOICING	SVOP-OP	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	PRE SLEEP	SLEEP		
	MS3	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	PRE SLEEP	SLEEP		
PAYLOAD	MS4	SVOP-SUB	MEAL	REST-CO	REST-CO	REST-CO	REST-CO	REST-CO	REST-CO	REST-CO	REST-CO	PRE SLEEP	SLEEP		
	PS	SVOP-OP	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	MEAL	PRE SLEEP	SLEEP		
DAY/NIGHT	ORBIT														
TDRS	ORBIT														
ATTITUDE	BIAS -YLV +ZVV														
NOTES:	@DSO 623 LBNP @DSO 326 o SPLV DUMP INIT @BIAS +XLV +ZVV @DTO 667 PILOT SIM @DTO 663 ACOU DOS o -ZLV, +YVV o SPLV DUMP TERM @DTO 667 PILOT SIM @LOAD_FUTURE_MNVR														

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
265:15:28/ 266:03:28		012:00:00/ 012:12:00		265:10:28/ 265:22:28		13/265 CDT	-12.7		SEPTEMBER 22, 1993	STS 58	FINAL 1	8/17/93				
CDT	:265	0	11	12	13	14	15	16	17	18	19	20	21	22	12	
FD	:13															
MET	:012															
ORBITER	CDR	EXERCISE		MEAL			DSO 314	120-TV3	DSO 802	120-TV3	REPAIR	REPAIR	REPAIR	PRE SLEEP	PRE SLEEP	SLEEP
	PLT	FILE	SETUP	PAVENT	MEAL	PSETUP	EXERCISE	P/TV07	DSO 314	MNVR	OARE	MNVR	PRE SLEEP	PRE SLEEP	XLV	SLEEP
	MS2	FILE	SAARCE	PAVENT	MEAL	120-TV3	120-TV3	DSO 314	P/TV06	SAREX	STOW	PS	PP	PRE SLEEP		SLEEP
	MS1		DISSECT	MEAL	DISSECT	DSO 904		EXERCISE						PRE SLEEP		SLEEP
PAYLOAD	MS3		CAGE	MEAL	UNS-CAL	ARRU			RDNT-CK					PRE SLEEP		SLEEP
	MS4		PAVENT	MEAL	EXERCISE	ARRU	CAGE	DSO 904	RDNT-CK					PRE SLEEP		SLEEP
	PS		DISSECT	MEAL	DISSECT	DSO 904		DSO 802	EXERCISE					PRE SLEEP		SLEEP
	DAY/NIGHT	193		194		195		196		197		198		199		200
TDRS	E		M		E		M		E		M		E		M	
ATTITUDE	BIAS -YLV +ZVV		-P/Y/R		-ZLV +YVV		BIAS +XLV +ZVV									
NOTES:	@DSO 802(SCENE 13,15,19,20) o SPLY DUMP INIT @DSO 904 HUMAN FACTORS @DSO 326 o SPLY DUMP TERM @-ZLV, +YVV @-ZLV, +YVV												@BIAS +XLV +ZVV @LOAD FUTURE MNVR			

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
266:03:28/ 266:15:28	012:12:00/ 013:00:00	265:22:28/ 266:10:28	/265 CDT	-10.5		SEPTEMBER 22, 1993	STS 58	FINAL 1	8/17/93

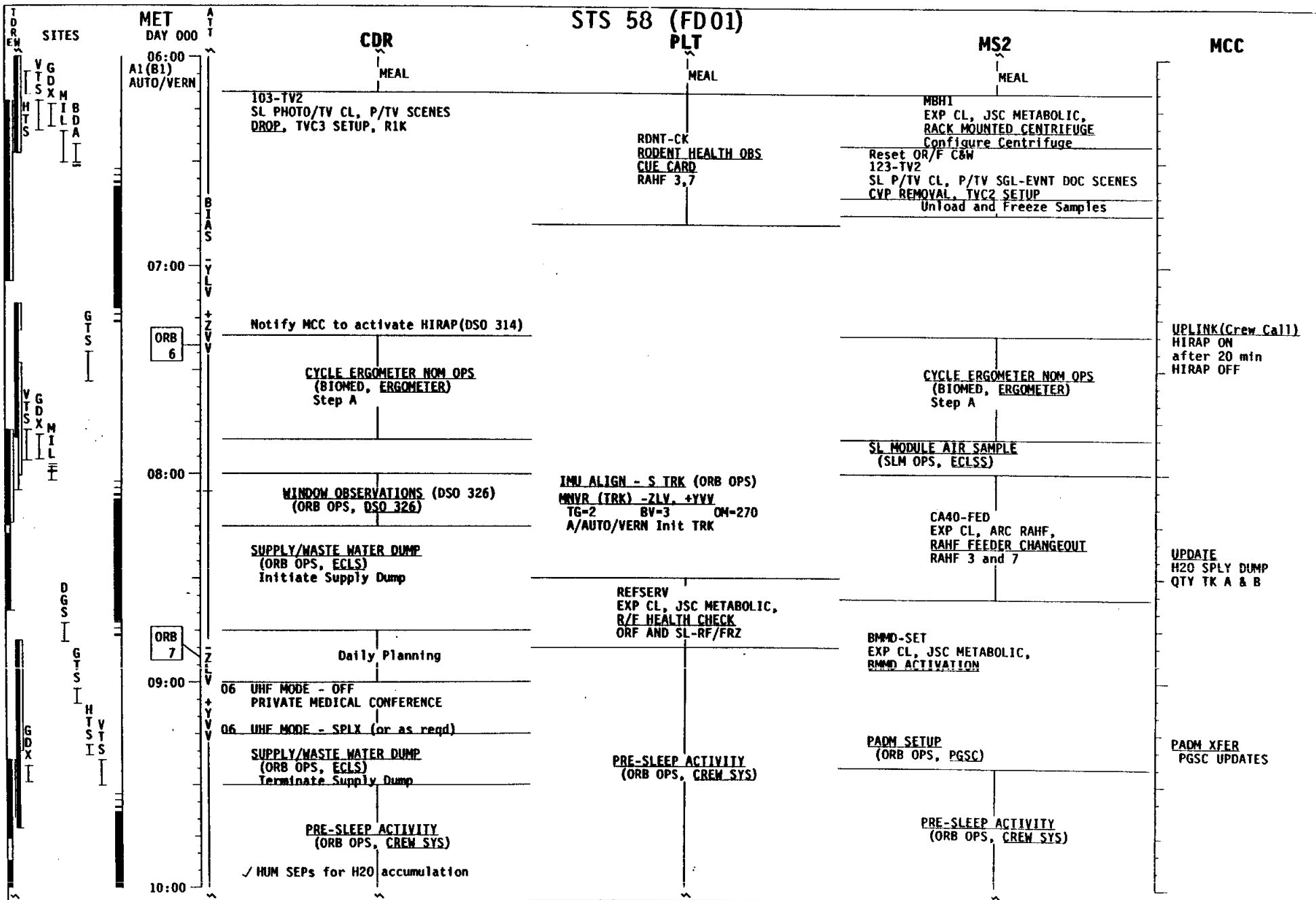
CDT :265	23	0	CDT:266	1	2	3	4	5	6	7	8	9	10	0	MET:013
FD :13	12	13	14	15	16	17	FD 14	18	19	20	21	22	23		
MET :012															

ORBITER	CDR	SLEEP	POST SLEEP	POST SLEEP	YLV MNV R	D/P	MNH 14	W D O S	M B H 1 4	FCS C/O	RCS HOT	YLV MNV R	MEAL	
	PLT	SLEEP	POST SLEEP	PSL /EB TTN VUP OP 5	ZLV MNV R			PA /C T V O 6		FCS C/O	RCS HOT	RCS HOT	EXERCISE	
	MS2	SLEEP	POST SLEEP	POST SLEEP		LBNP PREP				LBNP SOAK		D S O 9 0 4	LBNP SOAK	
	MS1	SLEEP	POST SLEEP	POST SLEEP			D/P		R D N T - M B 3	C A G E - T R N	R D N T - M B 3		R D N T - M B 3	C A G E - T R N
PAYLOAD	MS3	SLEEP	POST SLEEP	POST SLEEP			D/P		C A L - 0 6 6	R E S T - C O			EXERCISE	
	MS4	SLEEP	POST SLEEP	POST SLEEP			D/P			R D N T - M B 3		C A G E - T R N	R D N T - M B 3	
	PS	SLEEP	POST SLEEP	POST SLEEP			D/P			H C T - R E A D		C A G E - T R N	R E S T - C O	E X E R C I S E
	DAY/NIGHT	[Day/Night Cycle Diagram]												
ORBIT	[Orbit Cycle Diagram]													
TDRS	[TDRS Cycle Diagram]													
ATTITUDE	BIAS +XLV +ZVV													
NOTES:	<ul style="list-style-type: none"> o -ZLV, +YVV o SPLY DUMP INIT o BIAS -YLV +ZVV o DSO 623 LBNP o DSO 326 o APU HTR ACT o SPLY DUMP TERM o BIAS -YLV -XVV o BIAS -YLV -XVV o APU HTR RECONF o DSO 904 HUMAN FACTORS 													

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE	
267:03:28/ 267:15:28		013:12:00/ 014:00:00		266:22:28/ 267:10:28		/266 CDT	-6.2		SEPTEMBER 23, 1993	STS 58	FINAL 1	8/17/93	
CDT	:266	23	0	CDT:267	1	2							
FD	:14	12	13	14	15	16	FD 15	17	18	19	20	21	
MET	:013											0 MET:014	
ORBITER	CDR	SLEEP (7)					POST SLEEP	ENT DSO PREP	POST SLEEP	DEORBIT PREP			
	PLT	SLEEP (7)					POST SLEEP		POST SLEEP	DEORBIT PREP	DEORBIT PREP		
	MS2	SLEEP (7)					POST SLEEP	ENT DSO PREP	POST SLEEP	DEORBIT PREP			
	MS1	SLEEP					POST SLEEP	FINAL SL DEACT	POST SLEEP	DEORBIT PREP			
PAYLOAD	MS3	SLEEP					FINAL SL DEACT	POST SLEEP	DEORBIT PREP	DEORBIT PREP			
	MS4	SLEEP					POST SLEEP	C-V ENTRY		DEORBIT PREP			
	PS	SLEEP					POST SLEEP	C-V ENTRY		DEORBIT PREP			
	DEORBIT BURN*												
DAY/NIGHT													
ORBIT	217 218 219 220 221 222 223 224												
TDRS													
ATTITUDE	BIAS +XLV +ZVV -ZLV +YVV -XSI IMU COMM ENTRY												
NOTES:	@-ZLV, +YVV @ENTRY DSO PREP 603B @DTO 623 CABIN AIR MON ■ BURN MNVR ■ SPLY DUMP INIT ■ SPLY DUMP TERM												
											D/O * BURN 13/23:29	EDW LNDG 14/00:29	

DETAILED TIMELINE

DETAILED
TIMELINE

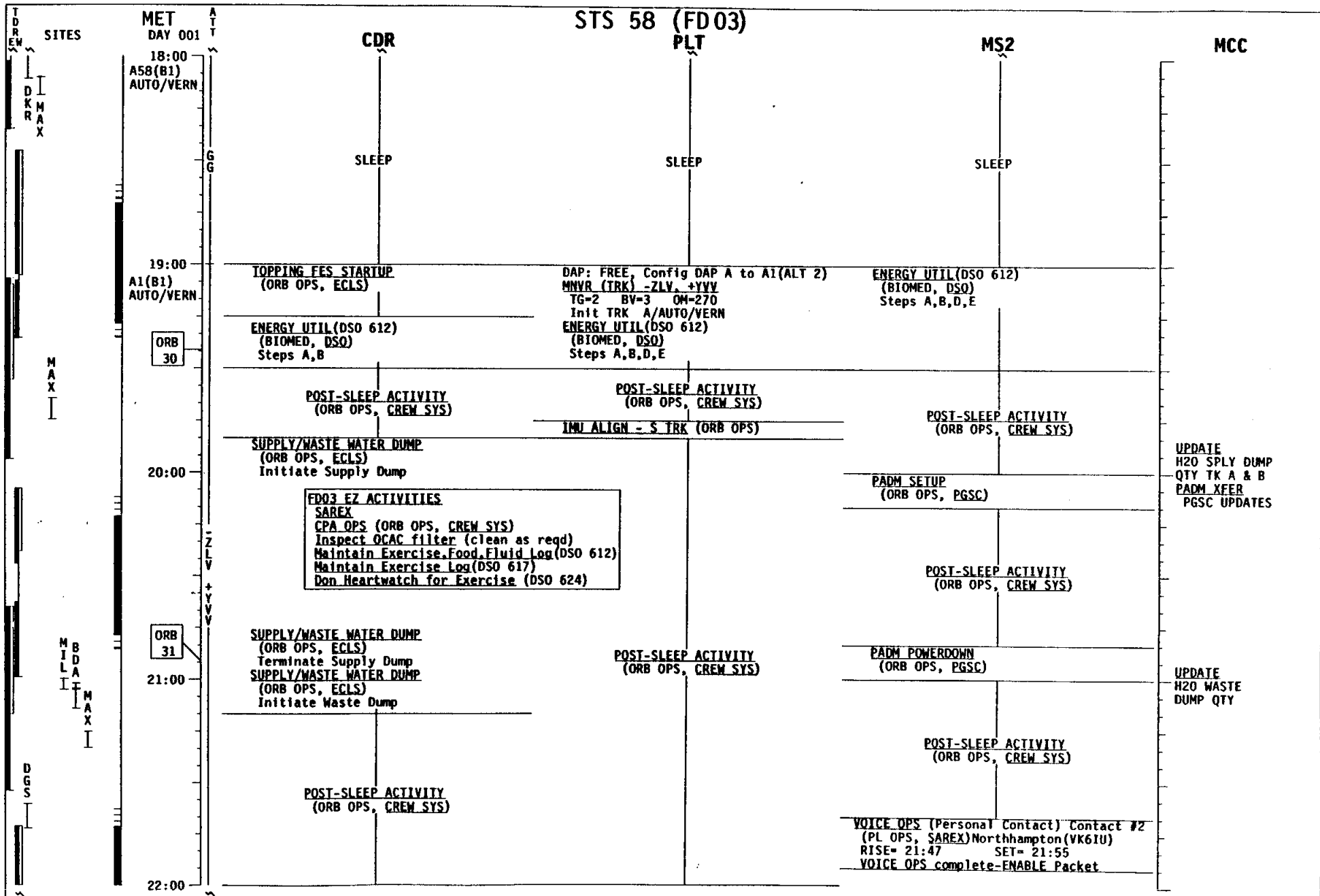


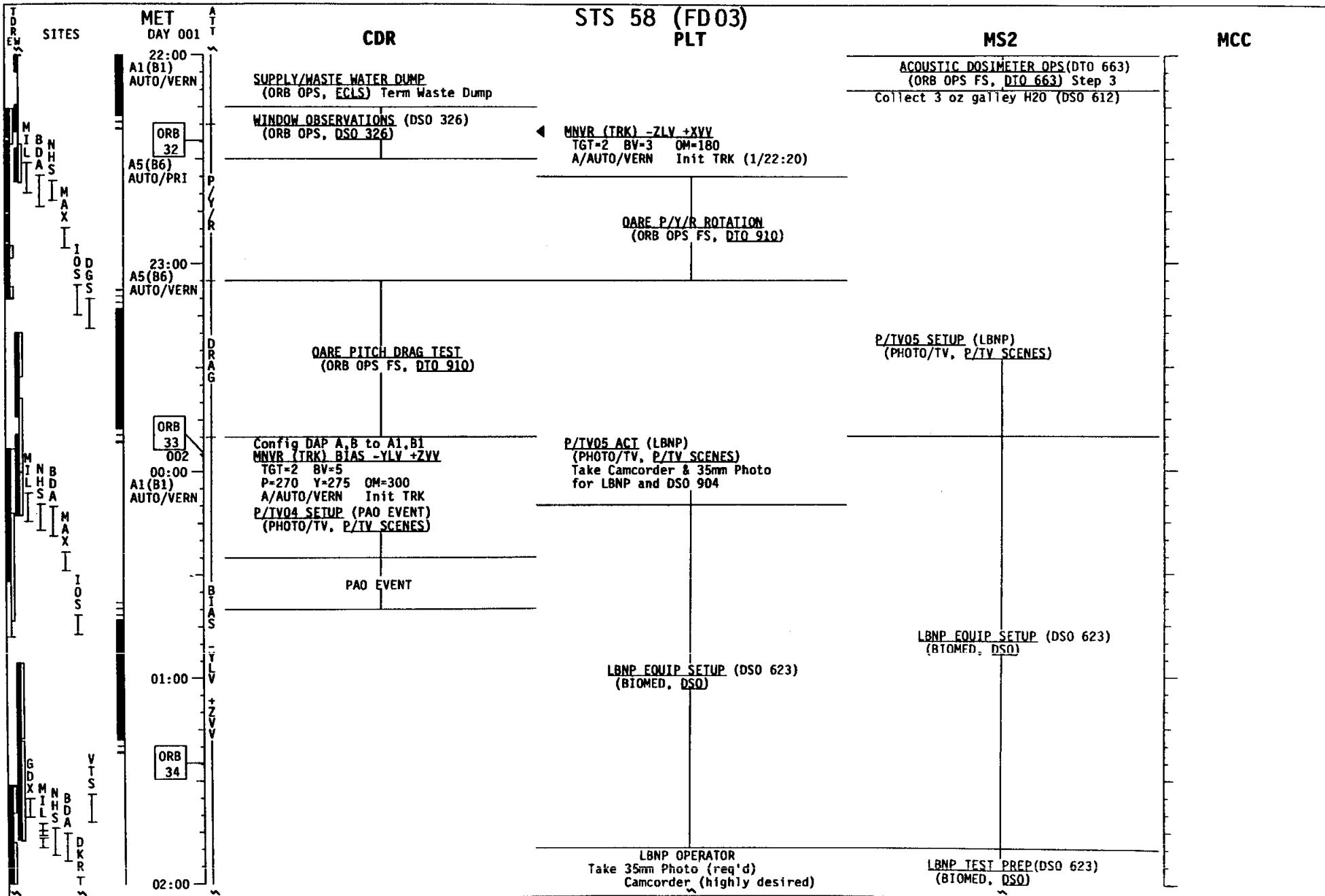
SITES		MET DAY 000	STS 58 (FD02)		MS2	MCC
		A1(B1) AUTO/VERN	CDR	PLT		
22:00			Daily Planning	Notify MCC 15 minutes prior to exercise start. Record Start/Stop times of exercise (DSO 314).		UPLINK(Crew Call) HIRAP ON after 20 min HIRAP OFF
ORB 16			P/TV04 SETUP (PAO EVENT) (PHOTO/TV, P/TV SCENES)		MBH2 EXP CL, JSC METABOLIC, BACK MOUNTED CENTRIFUGE	
23:00			CV-SETUP EXP CL, JSC E294/066, GENERAL SETUP	EXERCISE	Unload and freeze samples	
ORB 17				ACOUSTIC DOSIMETER OPS(DTO 663) (ORB OPS FS, DTO 663) Steps 1,2	EXERCISE	
00:00			PAO EVENT	PAO EVENT		
ORB 17 001			WINDOW OBSERVATIONS (DSO 326) (ORB OPS, DSO 326)	FILTER CLEANING (IFM, SCHEDULED MAINTENANCE)	FILTER CLEANING (IFM, SCHEDULED MAINTENANCE)	
01:00			Notify MCC 15 minutes prior to exercise start. Record Start/Stop times of exercise (DSO 314).	ENERGY UTIL(DSO 612) (BIOMED, DSO) Steps C6-7	ENERGY UTIL(DSO 612) (BIOMED, DSO) Steps C6-7	UPLINK(Crew Call) HIRAP ON after 20 min HIRAP OFF
ORB 18			EXERCISE	AIR MONITOR INSI (DSO 611) (BIOMED, DSO)	REFSERV EXP CL, JSC METABOLIC, R/F HEALTH CHECK ORF AND SL-RF/FRZ	
20:00					DOME DOME II CUE CARD UNSTOW AND SETUP EQUIP	
22:00			ENERGY UTIL(DSO 612) (BIOMED, DSO) Steps C6-7	30%-EXER EXP CL, JSC E294/066, CV ASSESSMENT, Operator	107-TV2 SL PHOTO/TV CL, P/TV SCENES DOME, TV2 SETUP, RIA	

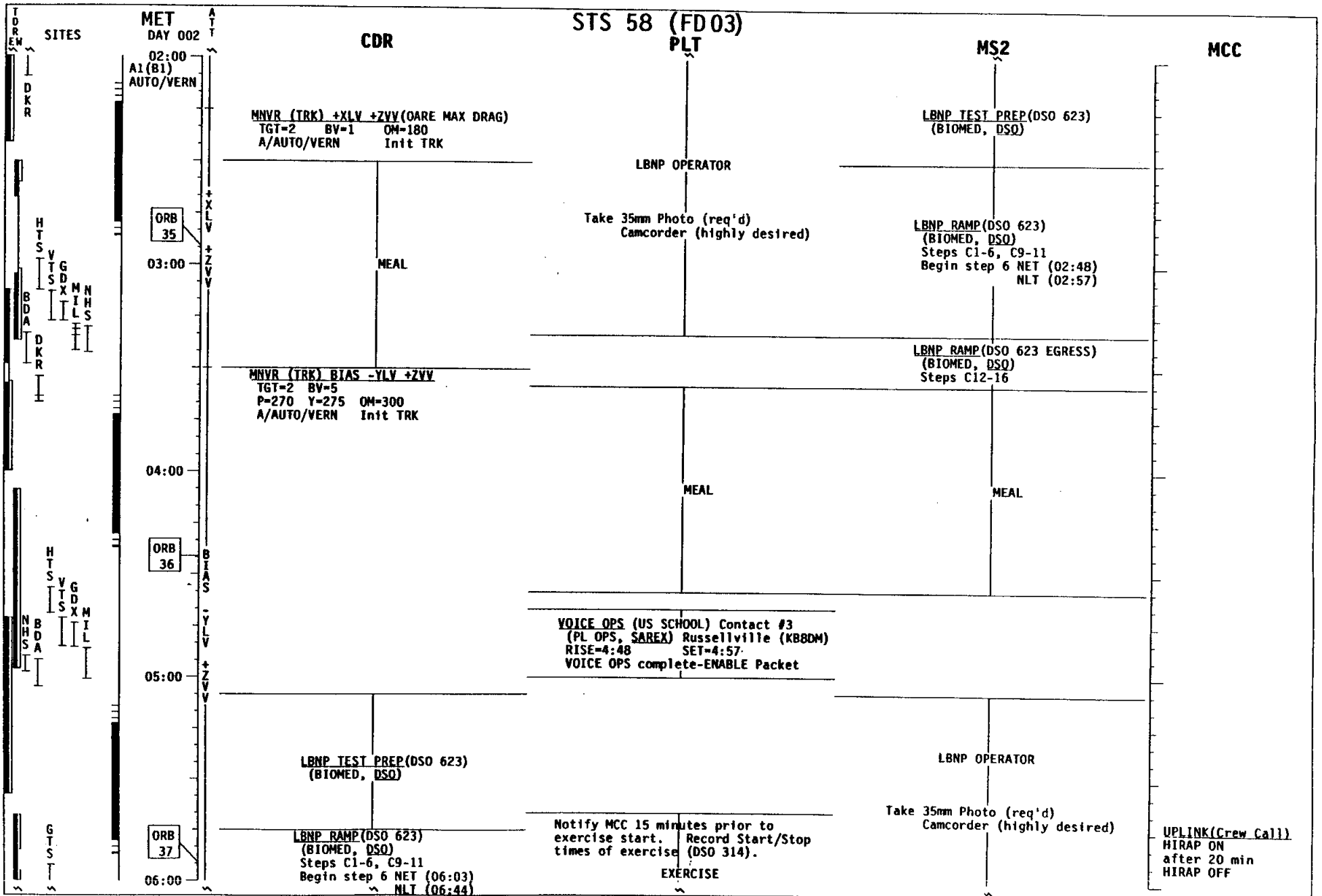
SITES		MET DAY 001	CDR	STS 58 (FD02) PLT	MS2	MCC
I D R E W G T S V T S H T S V G D X M I L L H T S B D A I I G T S V T S H T S V G D X M I L L H D G S V T S H T S	06:00	A1(B1) AUTO/VERN	120-TV3 SL PHOTO/TV CL, P/TV DOC SCENES SPECIAL EVENT, TVC3	QV-102 ACCEL DATA COL (DSO 314) (ORB OPS FS, DSO 314)	VOICE OPS (Checkout) Contact #1 (PL OPS, SAREX) Houston (W5RRR) RISE=6:21 SET=6:29 VOICE OPS complete-ENABLE Packet	UPLINK (Crew Call) HIRAP ON after 60 min HIRAP OFF
	07:00	ORB 22	WINDOW OBSERVATIONS (DSO 326) (ORB OPS, DSO 326)	30%-EXER EXP CL, JSC E294/066, CV ASSESSMENT Operator	QV-102 ACCEL DATA COL (DSO 314) (ORB OPS FS, DSO 314)	DOME-OP DOME I CUE CARD Operator
	08:00	(A1)B5 FREE/VERN	REFSERV EXP CL, JSC METABOLIC, R/F HEALTH CHECK ORF AND SL-RF/FRZ	60%-EXER EXP CL, JSC E294/066, CV ASSESSMENT Operator		
		A1(B1) AUTO/VERN	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	IMU ALIGN - S TRK (ORB OPS) MNVR (TRK) HUD CAL ATT TG-22 BV-5 P=355.4 Y=1.4 OM=blank A/AUTO/VERN Init TRK (08:00) HUD CAL (ORB OPS)	DOME-OP DOME I CUE CARD Operator	
		ORB 23	SUPPLY/WASTE WATER DUMP (ORB OPS, ECLS) Init Supply Dump	Config DAP B to B1 MNVR (TRK) -ZLY, +YVV TG=2 BV=3 OM=270 A/AUTO/VERN Init TRK	DOME DOME II CUE CARD UNSTOW AND SETUP EQUIP	UPDATE H2O SPLY DUMP QTY TK A & B
	09:00		Daily Planning	ACOUSTIC DOSIMETER OPS (DIO 663) (ORB OPS FS, DIO 663) Step 3	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	
			06 UHF MODE - OFF PRIVATE MEDICAL CONFERENCE		PADM SETUP (ORB OPS, PGSC)	PADM XFER PGSC UPDATES
			06 UHF MODE - SPLX (or as reqd)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)		
			SUPPLY/WASTE WATER DUMP (ORB OPS, ECLS) Term Supply Dump			
	10:00		PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)			

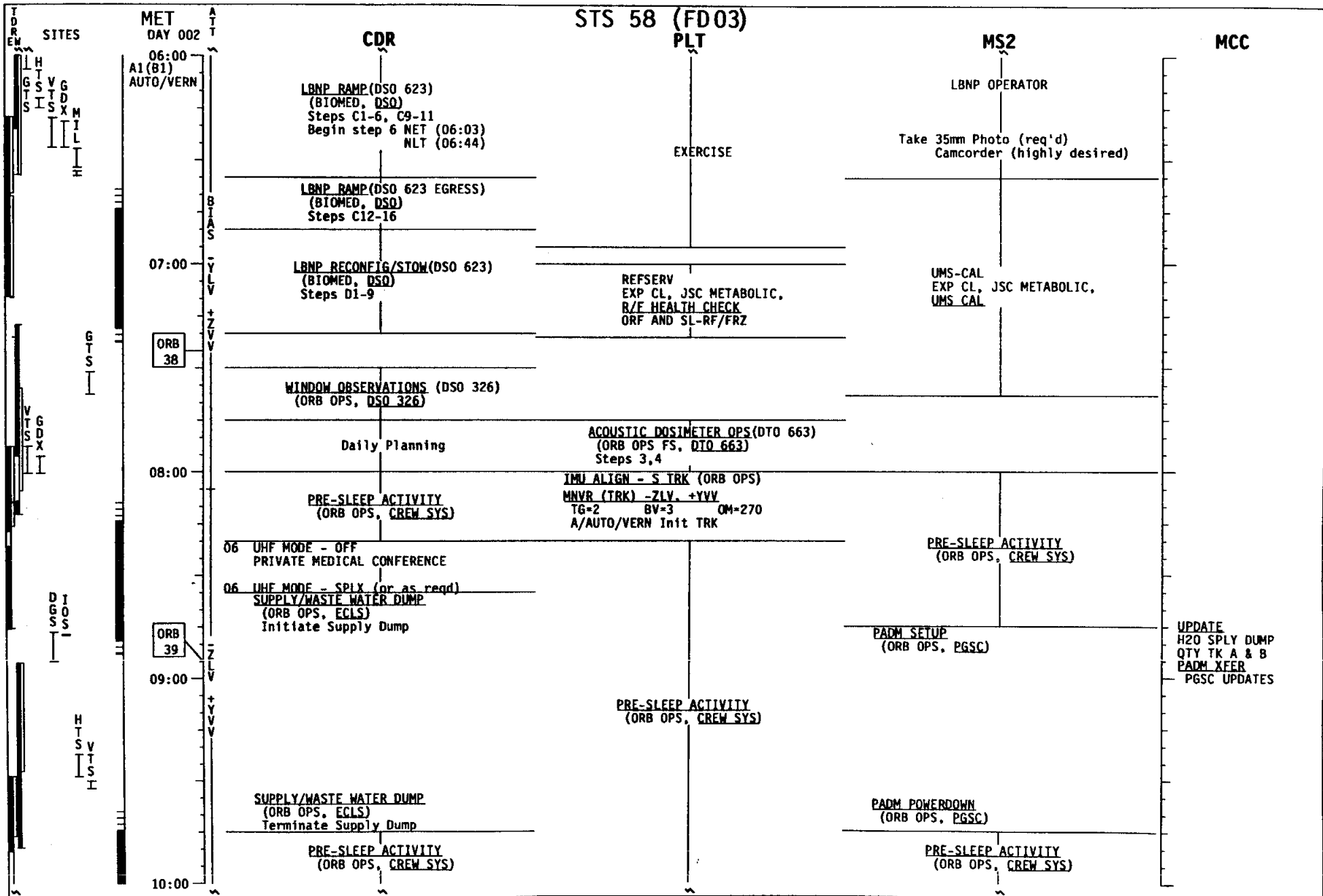
HUD CALIBRATION LOG	
STAR ID:	22, ALTAR
STAR AVAIL:	07:54 TO 08:41
+X Δ BIAS	_____
UPDATE TIME:	___ / ___ : ___

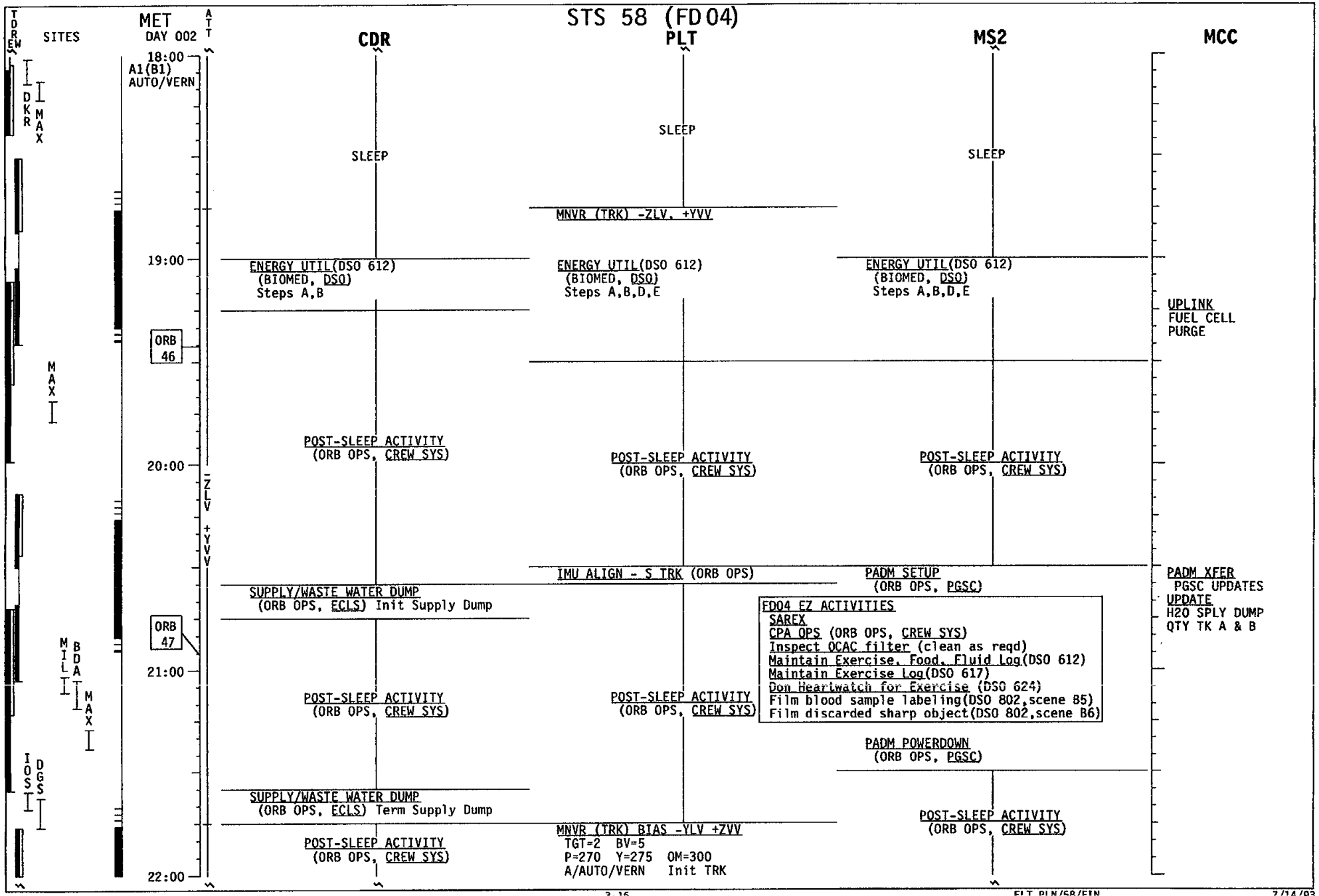
STS 58 (FD03)



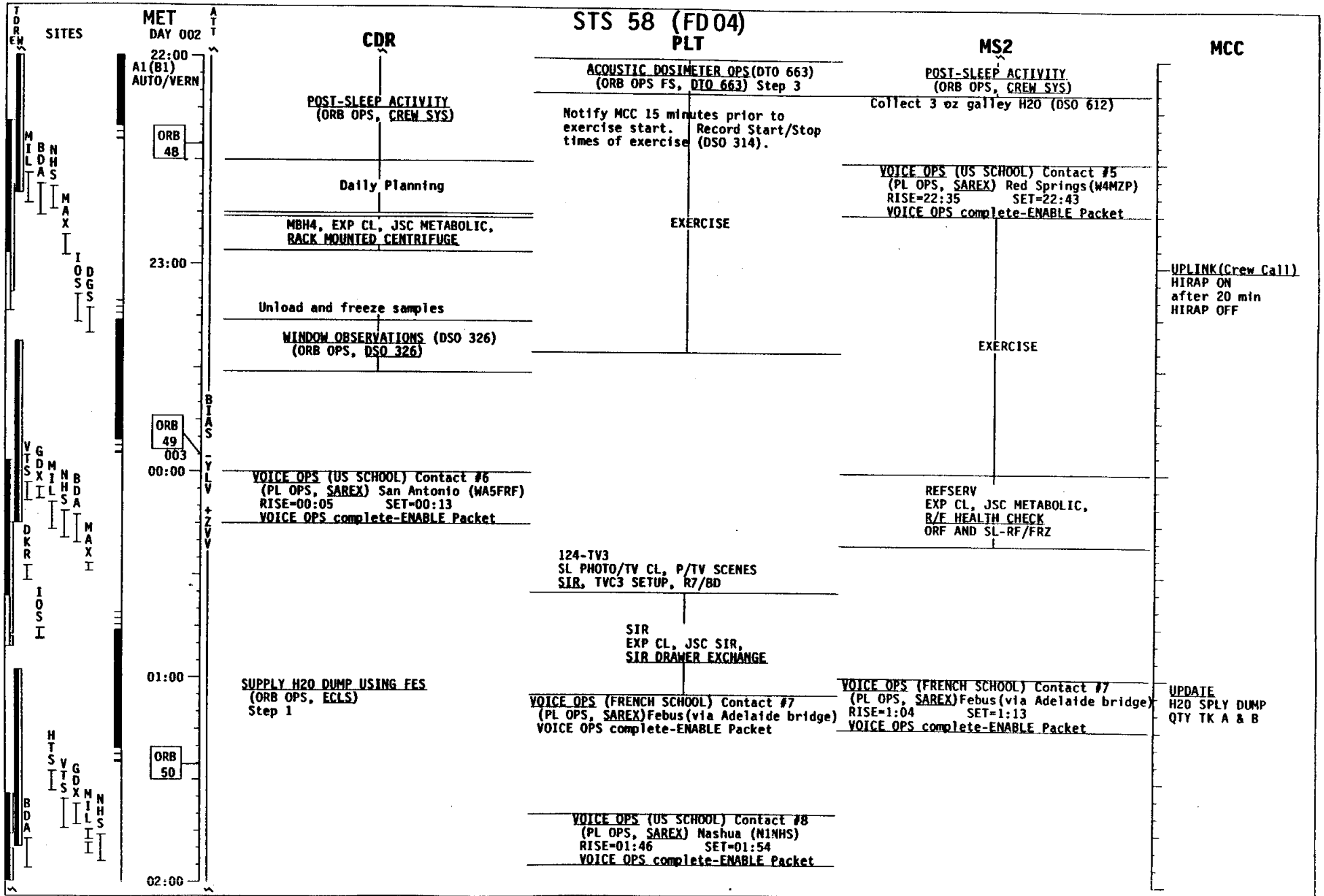




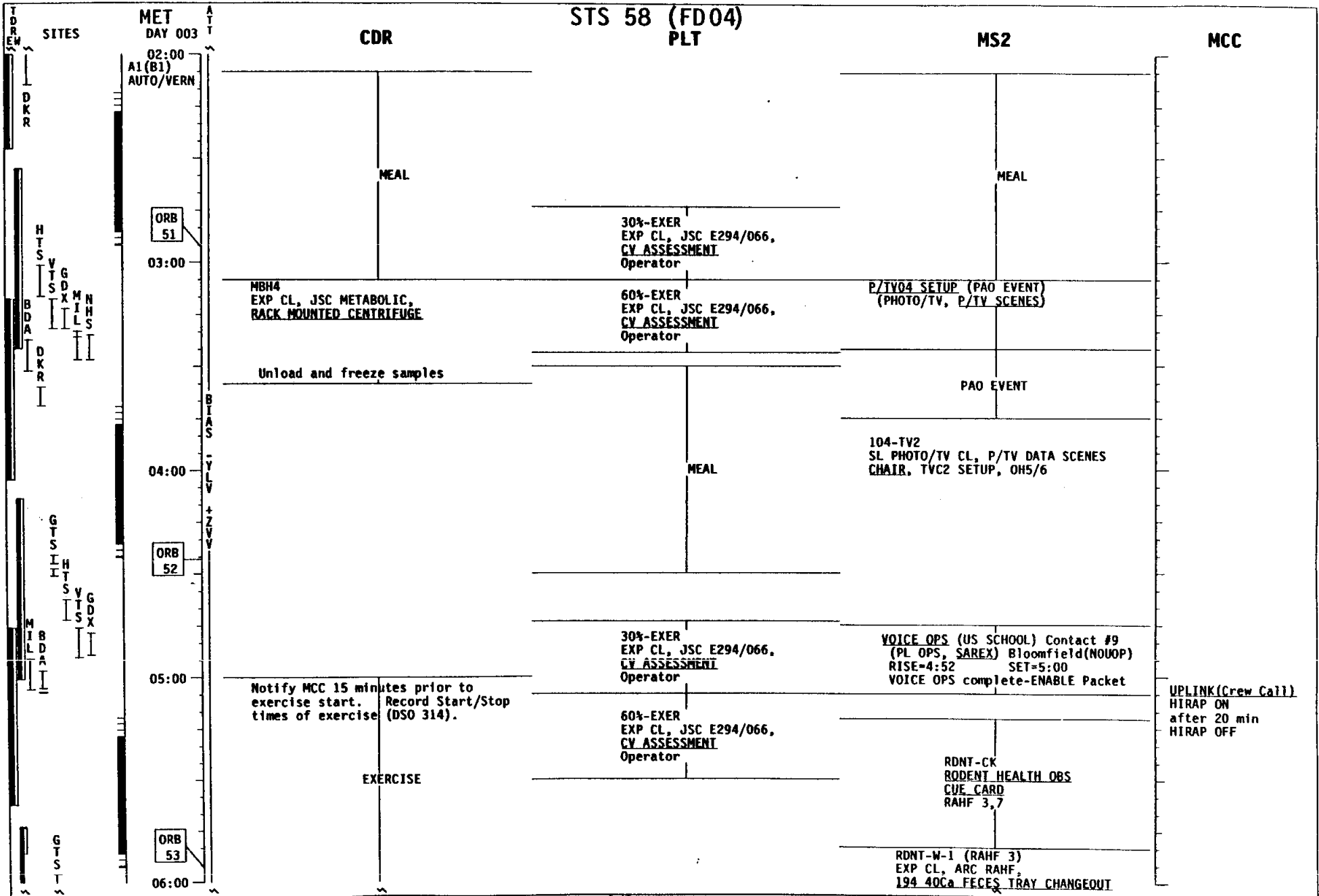




STS 58 (FD04) PLT



STS 58 (FD04) PLT



STS 58 (FD04) PLT

MET
DAY 003

MS2

MCC

06:00
A1(B1)
AUTO/VERN

07:00

ORB 54

08:00

09:00

ORB 55

10:00

SITES

DR EN

GTS

GDX

MIL

DGS

GTS

HTS

GDX

IOSS

HTS

CDR

EXERCISE

SUPPLY H2O DUMP USING FES
(ORB OPS, ECLS)
Step 2 with FES required

WINDOW OBSERVATIONS (DSO 326)
(ORB OPS, DSO 326)

Daily Planning

06 UHF MODE - OFF
PRIVATE MEDICAL CONFERENCE

06 UHF MODE - SPLX (or as reqd)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

VOICE OPS (US SCHOOL) Contact #10
(PL OPS, SAREX) League City (W5RRR)
RISE-6:26 SET-6:34
VOICE OPS complete-ENABLE Packet

30%-EXER
EXP CL, JSC E294/066,
CV ASSESSMENT
Operator

60%-EXER
EXP CL, JSC E294/066,
CV ASSESSMENT
Operator

CV-STOW
EXP CL, JSC E294/066,
CV ASSESSMENT, CLEAN-UP/POWERDOWN

BAG-DRY
EXP CL, JSC E294/066,
CV ASSESSMENT, BAG DRY

ACOUSTIC DOSIMETER OPS (DTO 663)
(ORB OPS FS, DTO 663) Step 3

IMU ALIGN - S TRK (ORB OPS)
MNVF (TRK) -ZLV, +YVV
TG-2 BV-3 OM-270
A/AUTO/VERN Init TRK

When in attitude,
[GNC 20 DAP CONFIG] (DSO 314)
DEADBAND ATT VERN: ITEM 9+0.5 EXEC

At 3/9:00,
[GNC 20 DAP CONFIG] (DSO 314)
DEADBAND ATT VERN: ITEM 9+1.0 EXEC

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

RONT-W-1
EXP CL, ARC RAHF,
194 40Ca FECEs TRAY CHANGEOUT
RAHF 3

REFSERV
EXP CL, JSC METABOLIC,
R/F HEALTH CHECK
ORF AND SL-RF/FRZ

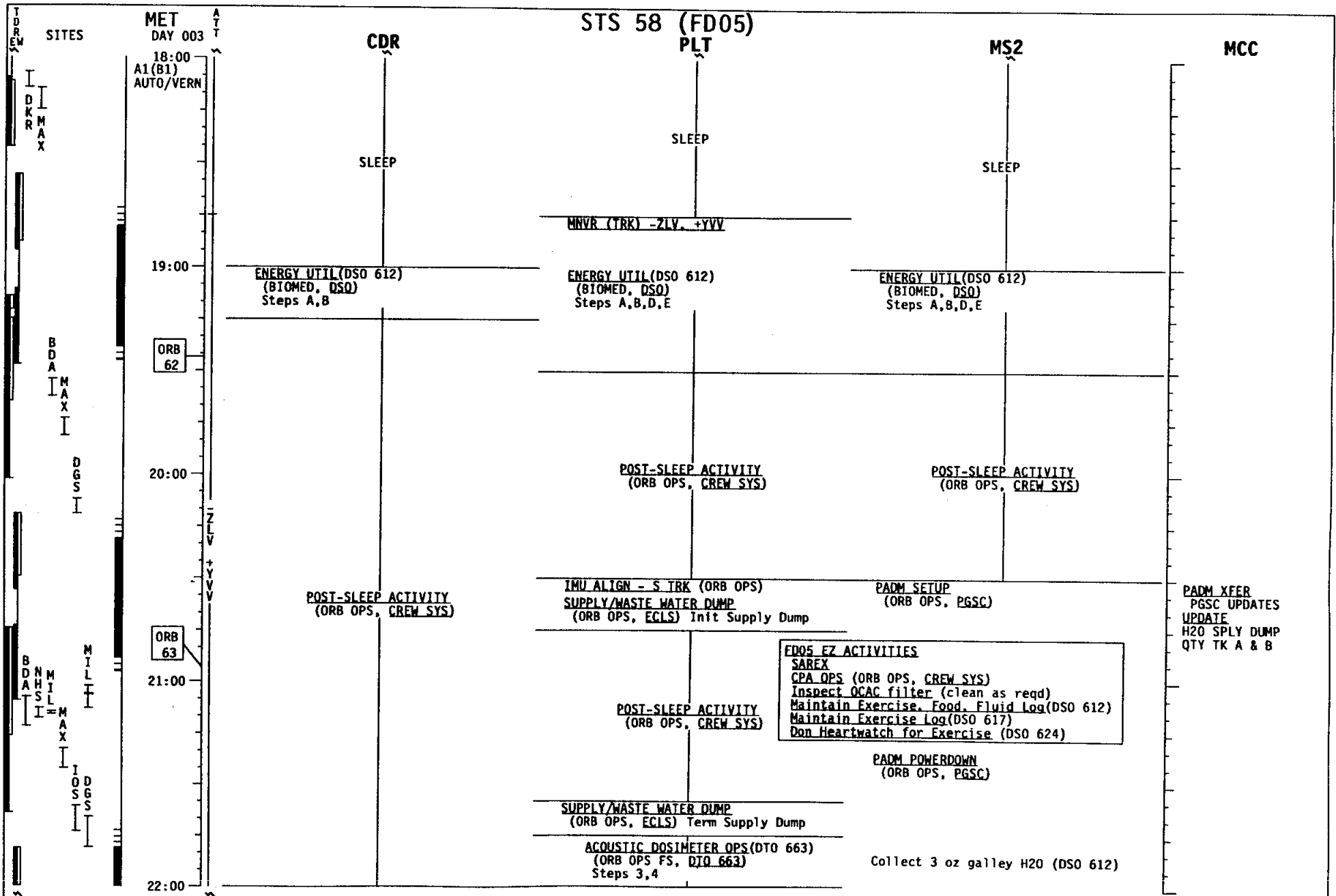
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

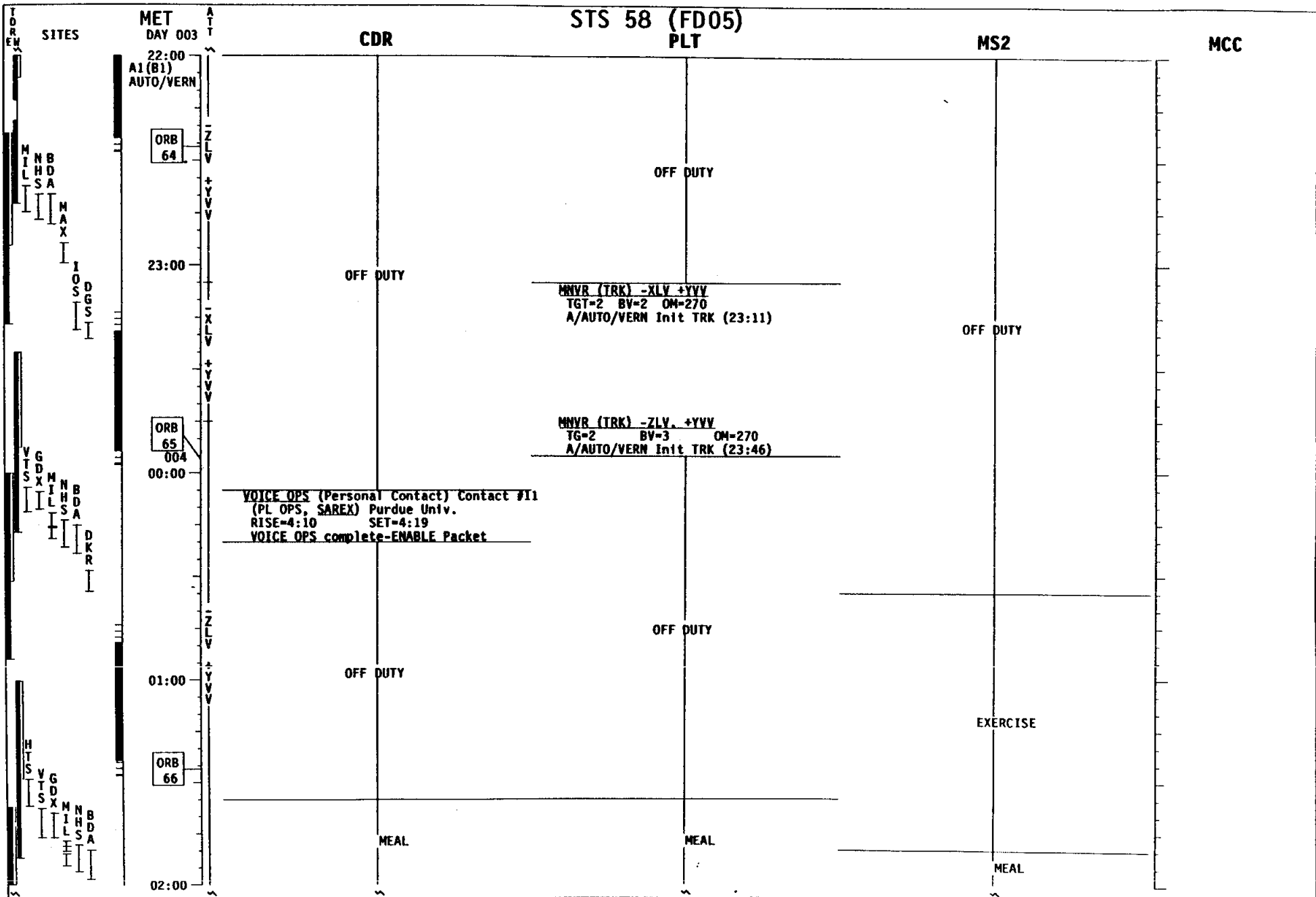
PADM SETUP
(ORB OPS, PGSC)

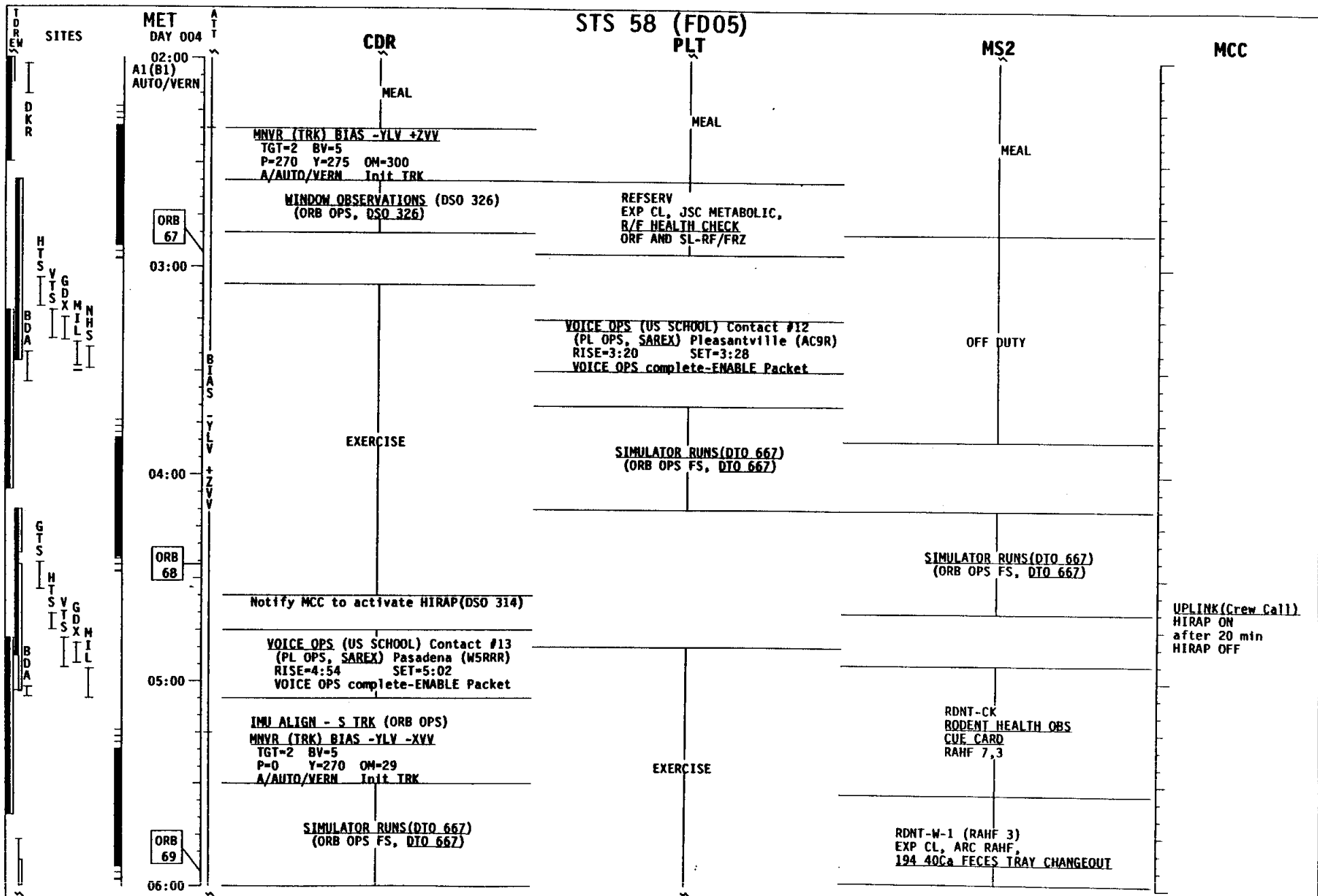
PADM POWERDOWN
(ORB OPS, PGSC)

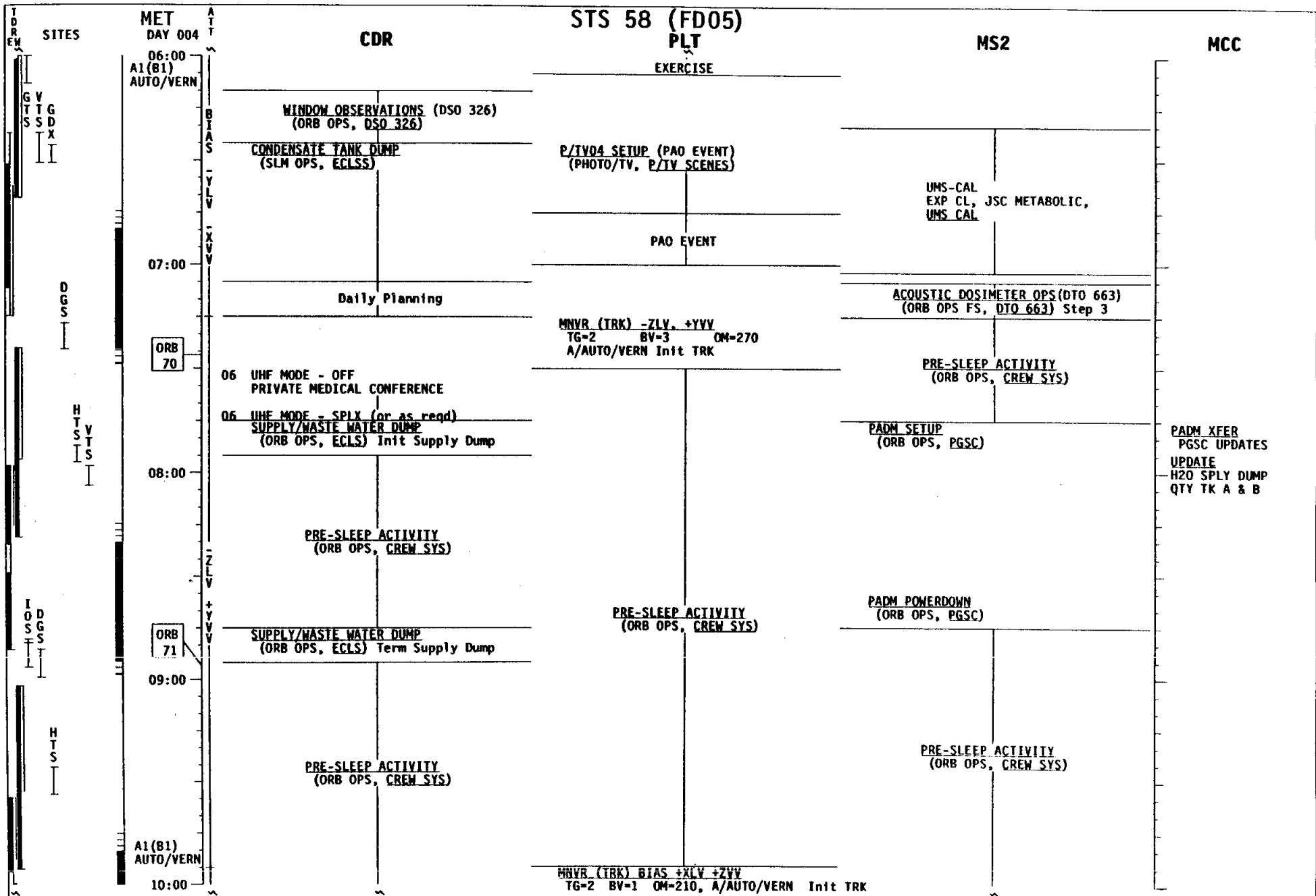
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

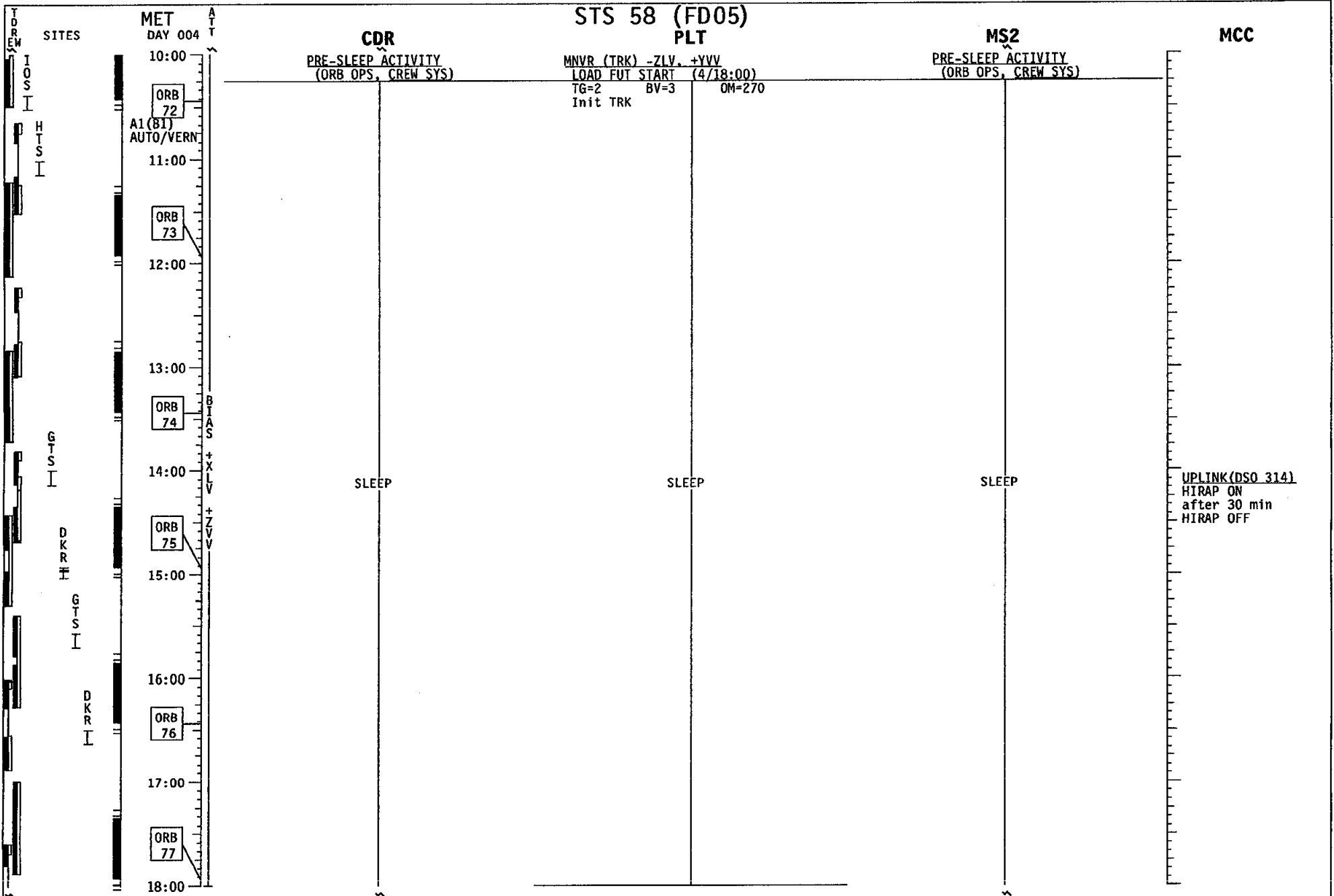
UPLINK (DSO 314)
HIRAP ON
after 60 min
HIRAP OFF
PADM XFER
PGSC UPDATES

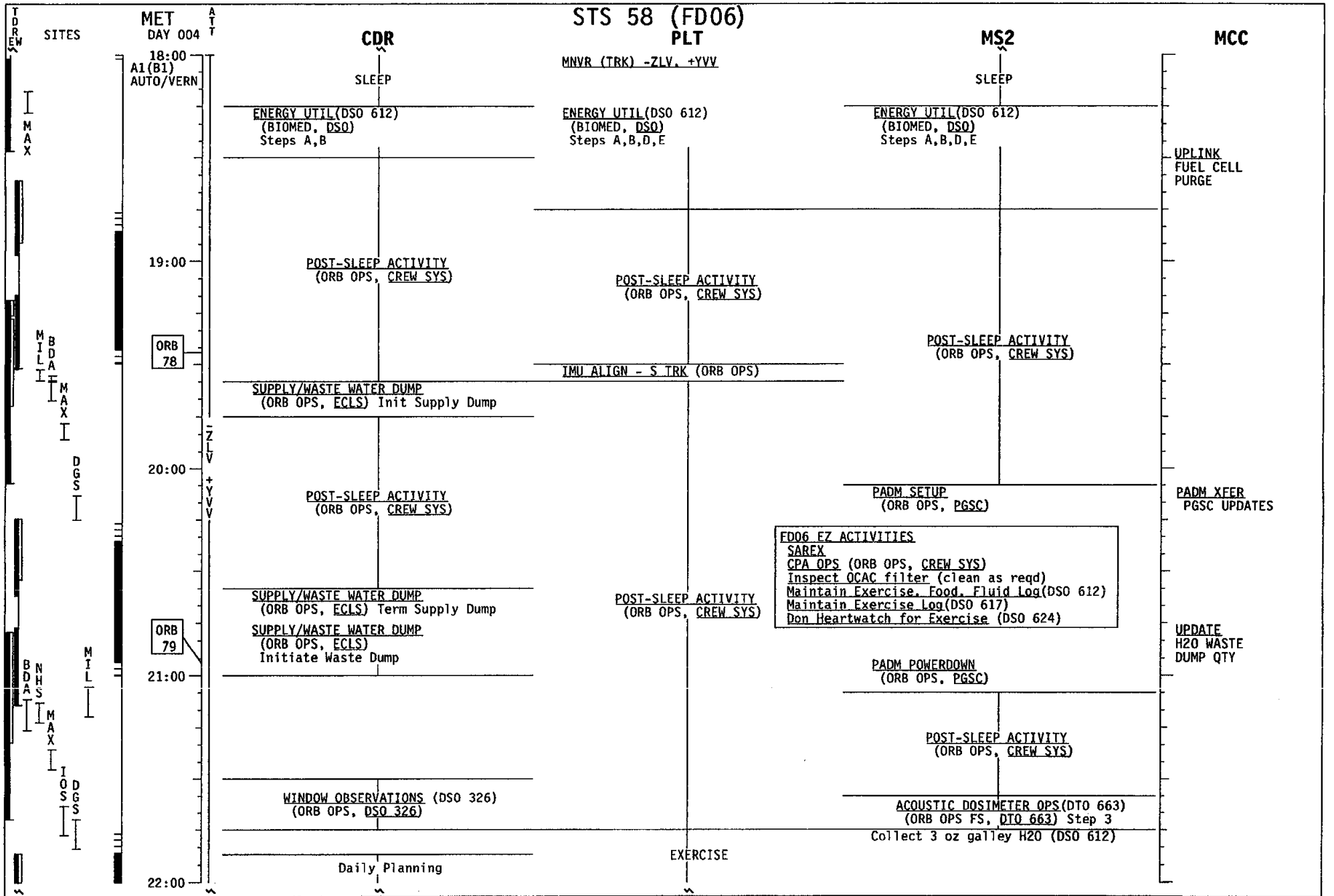


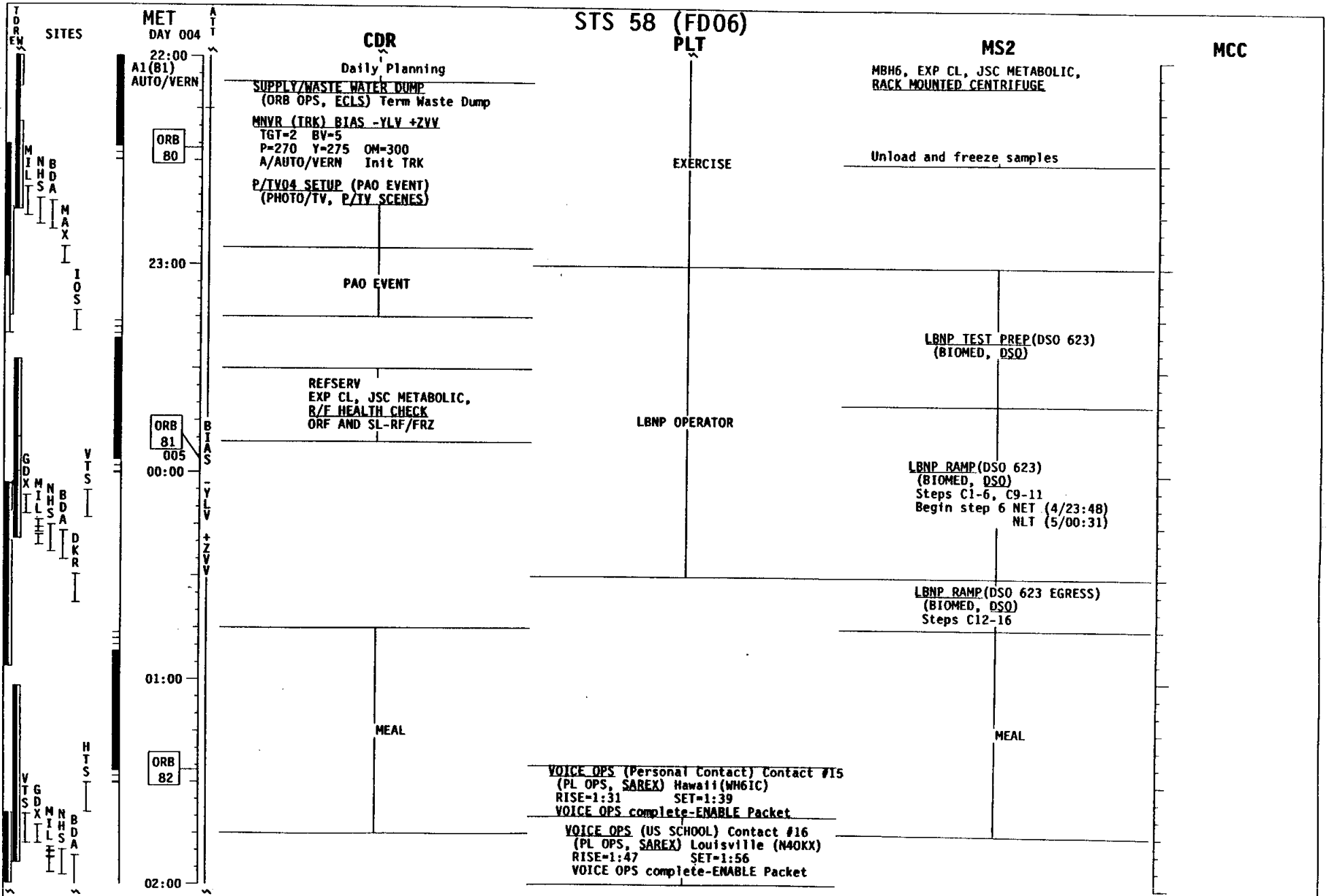


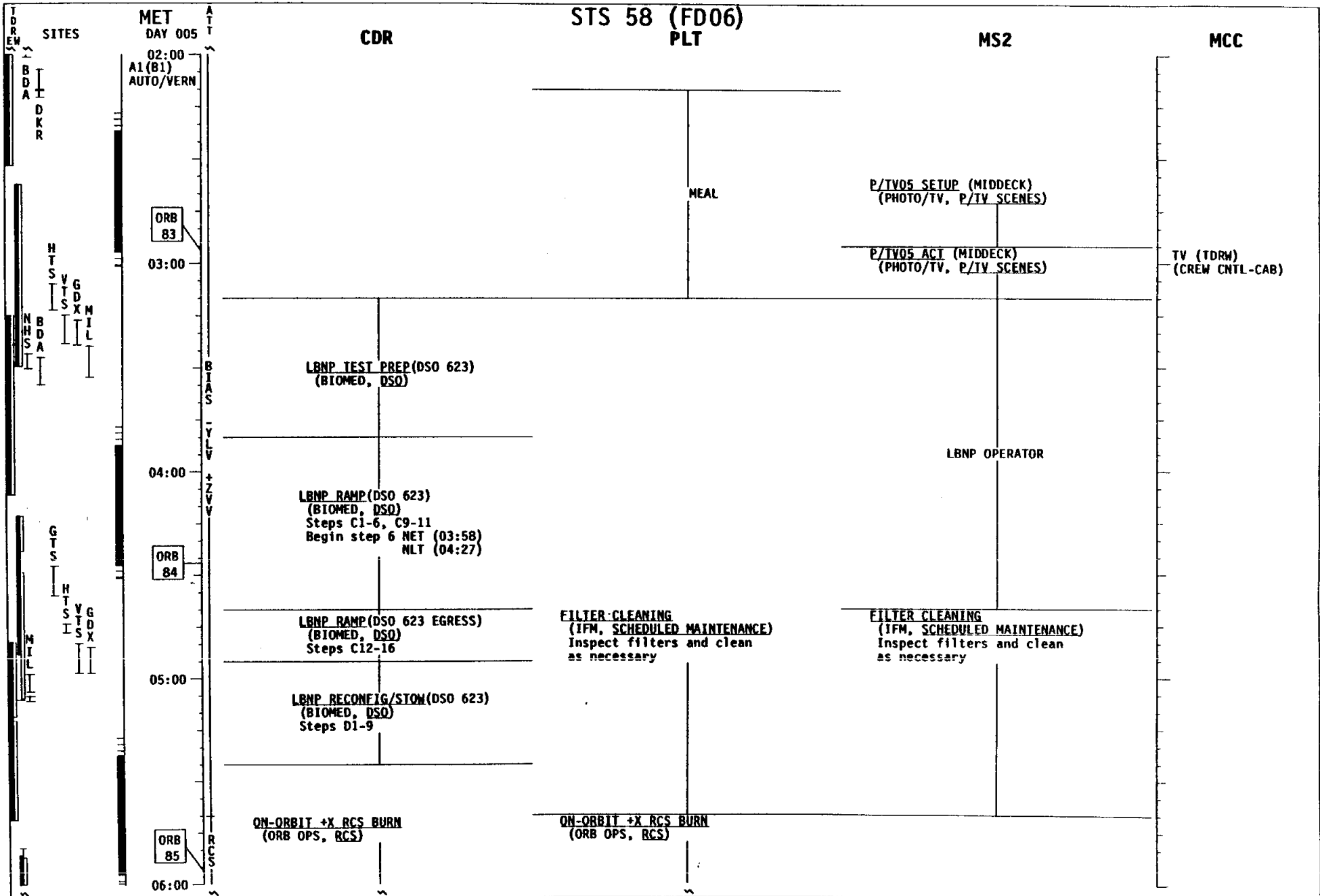


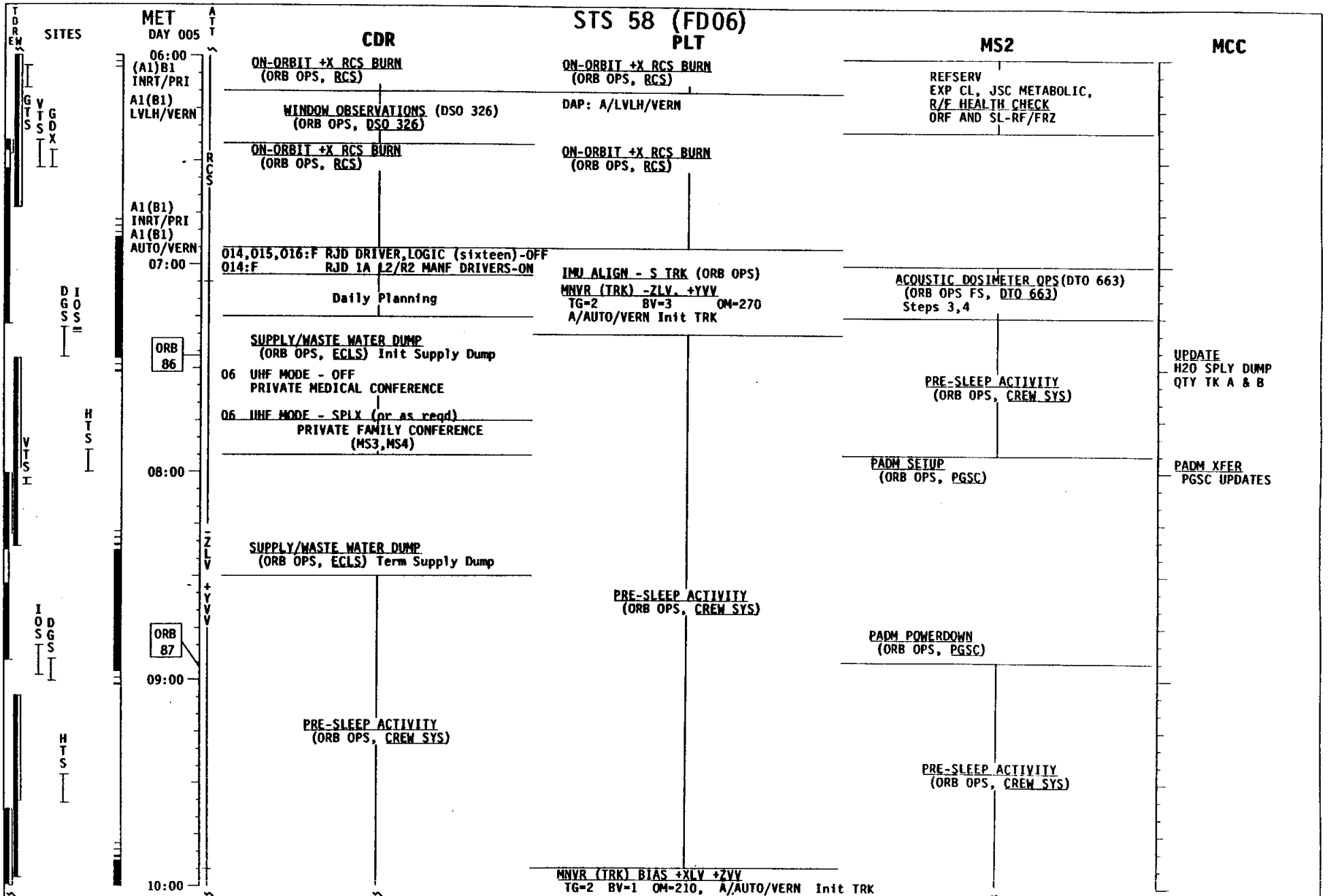


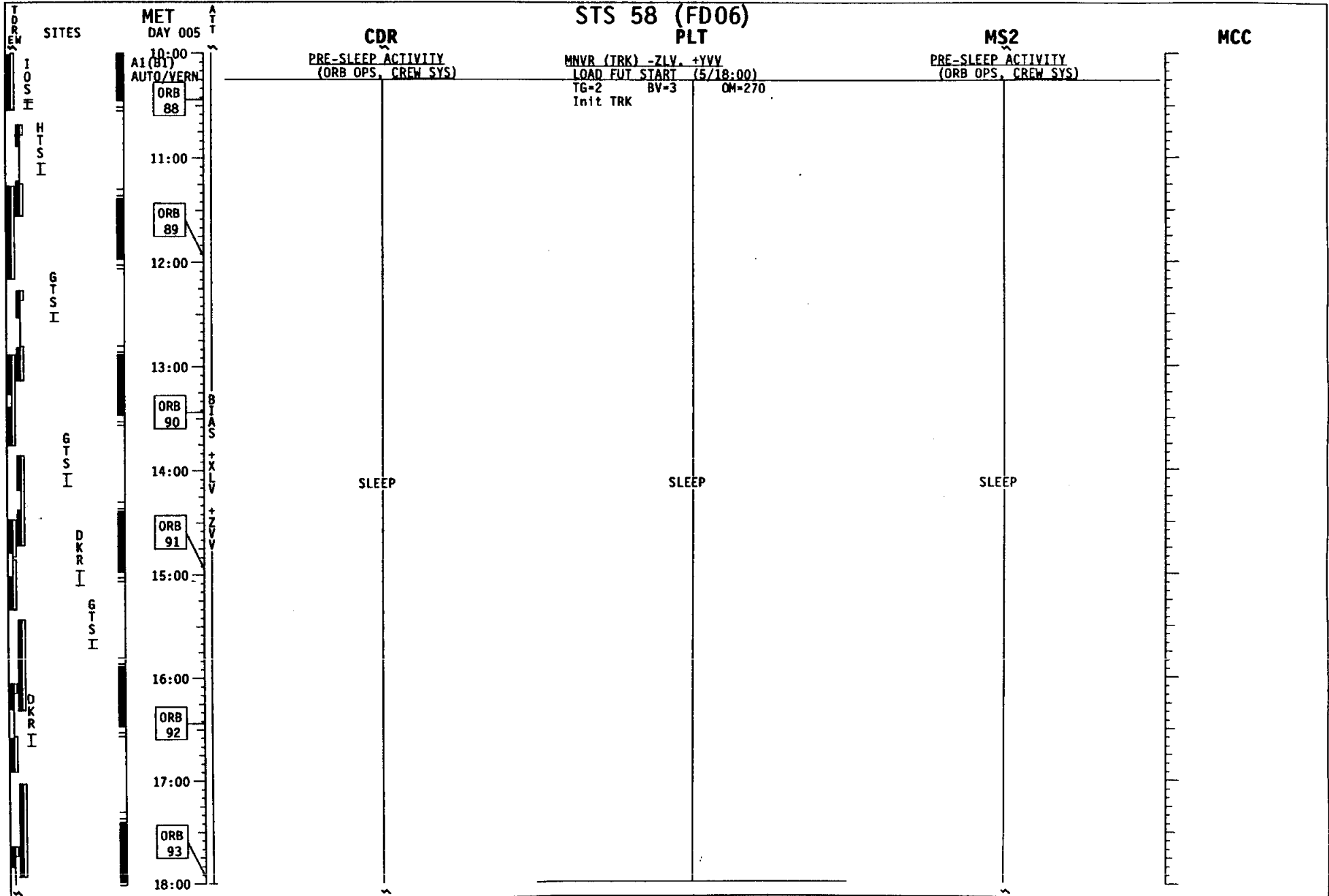


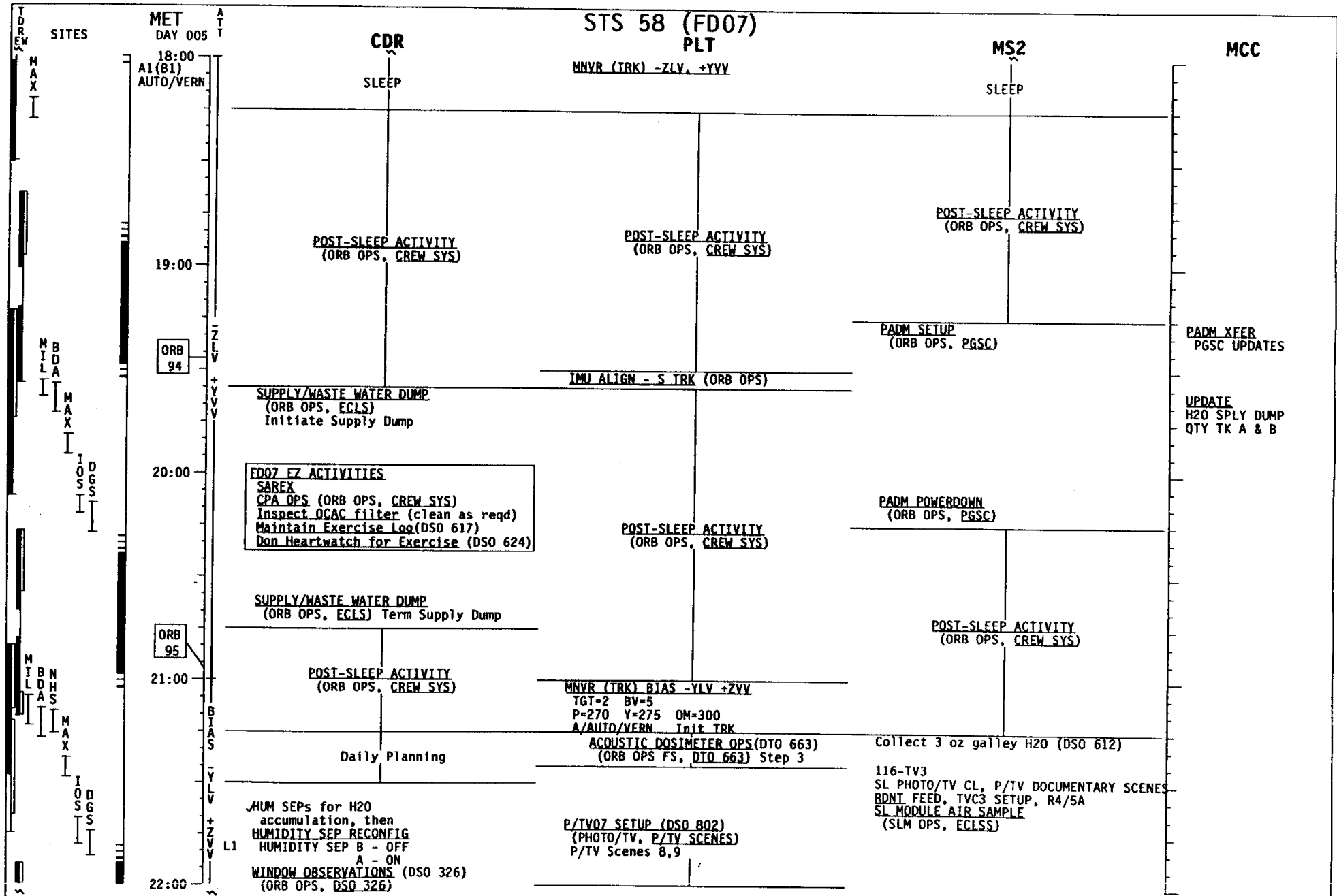


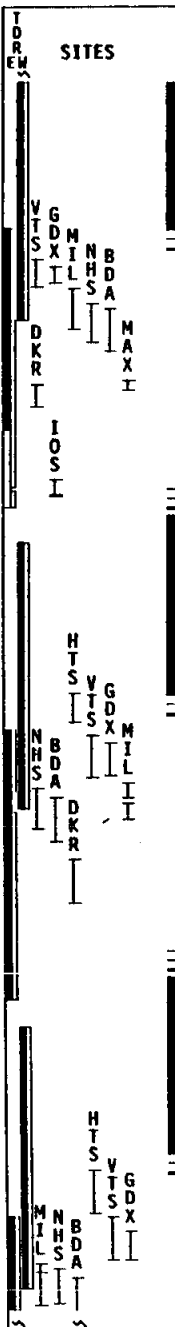
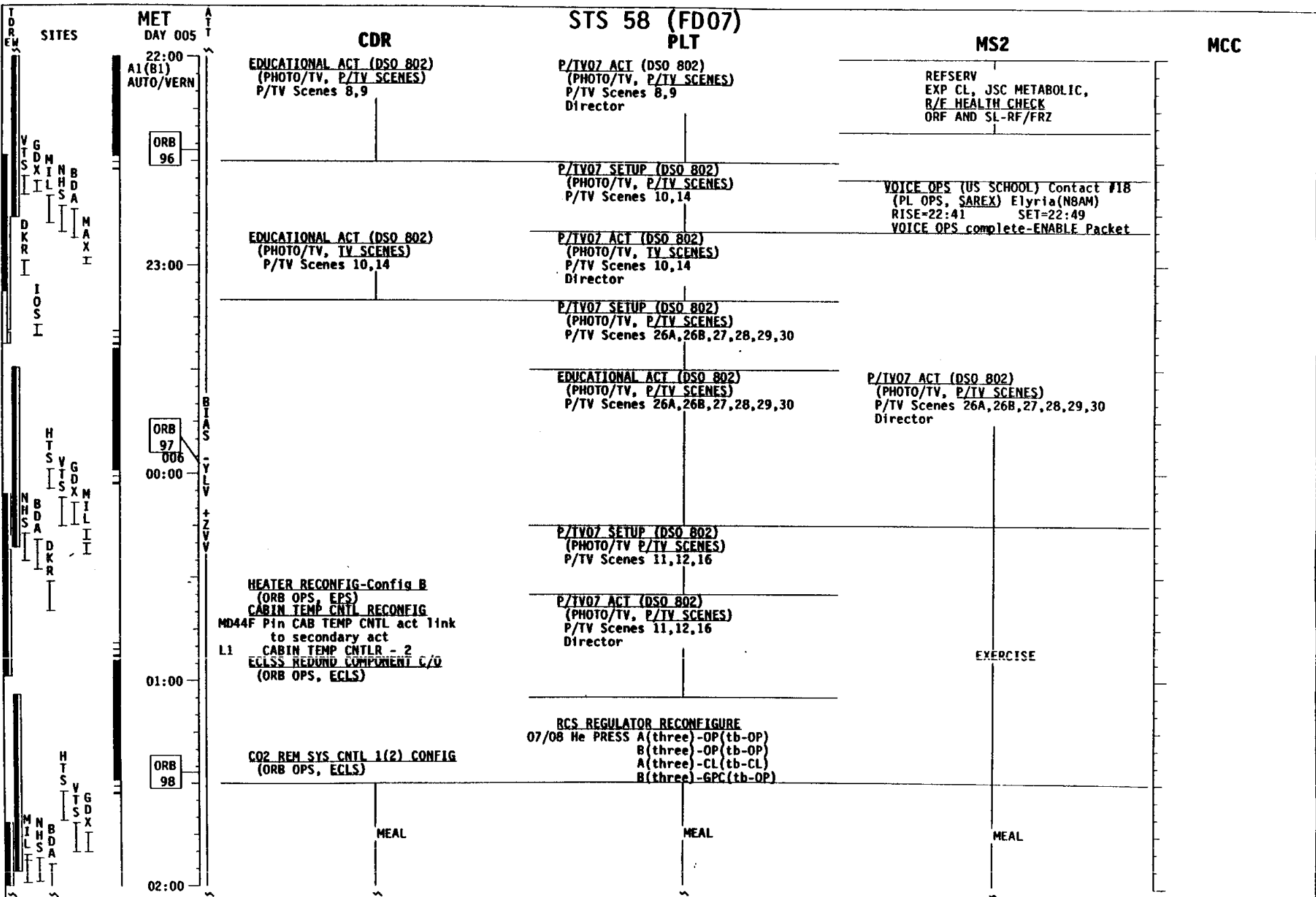


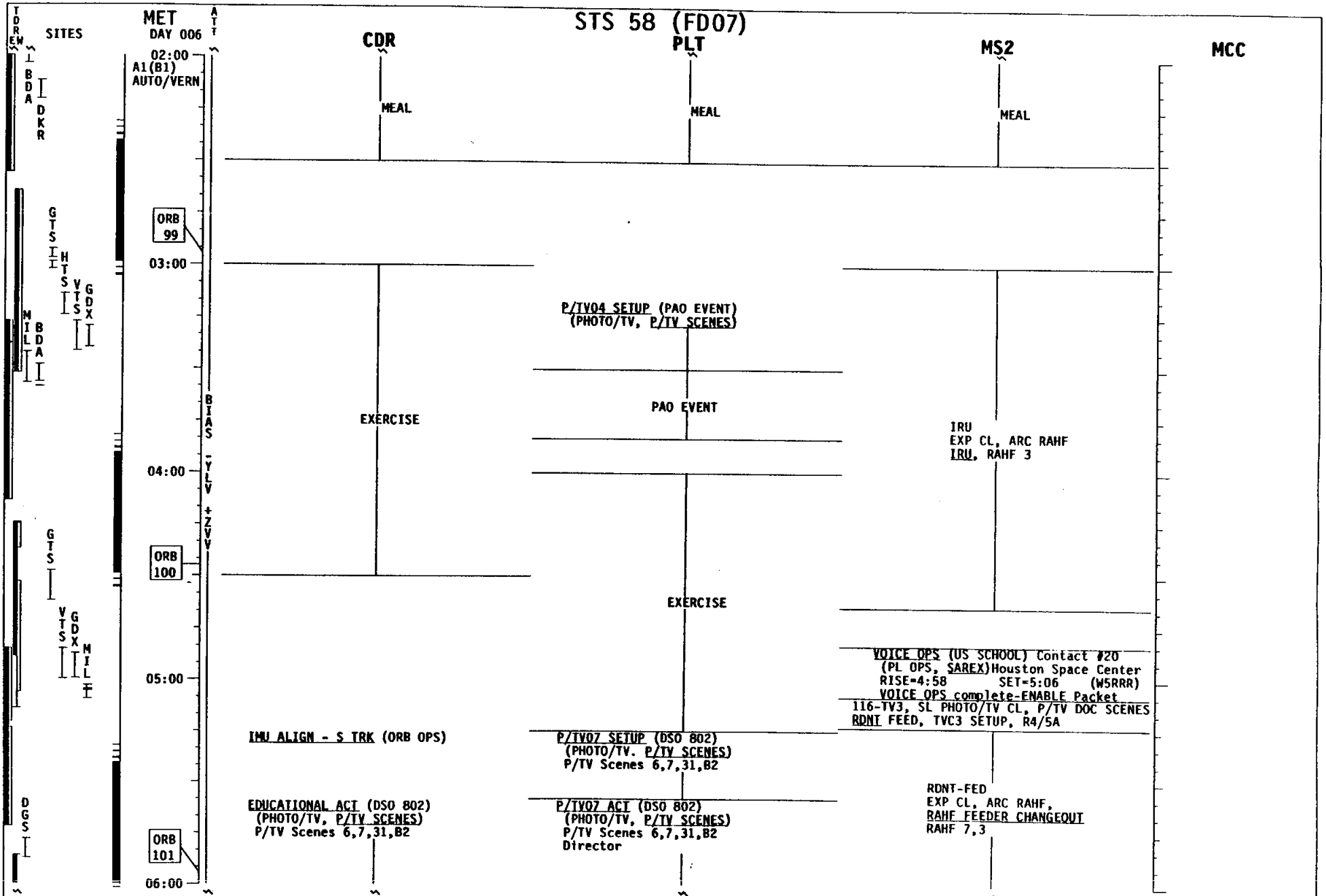


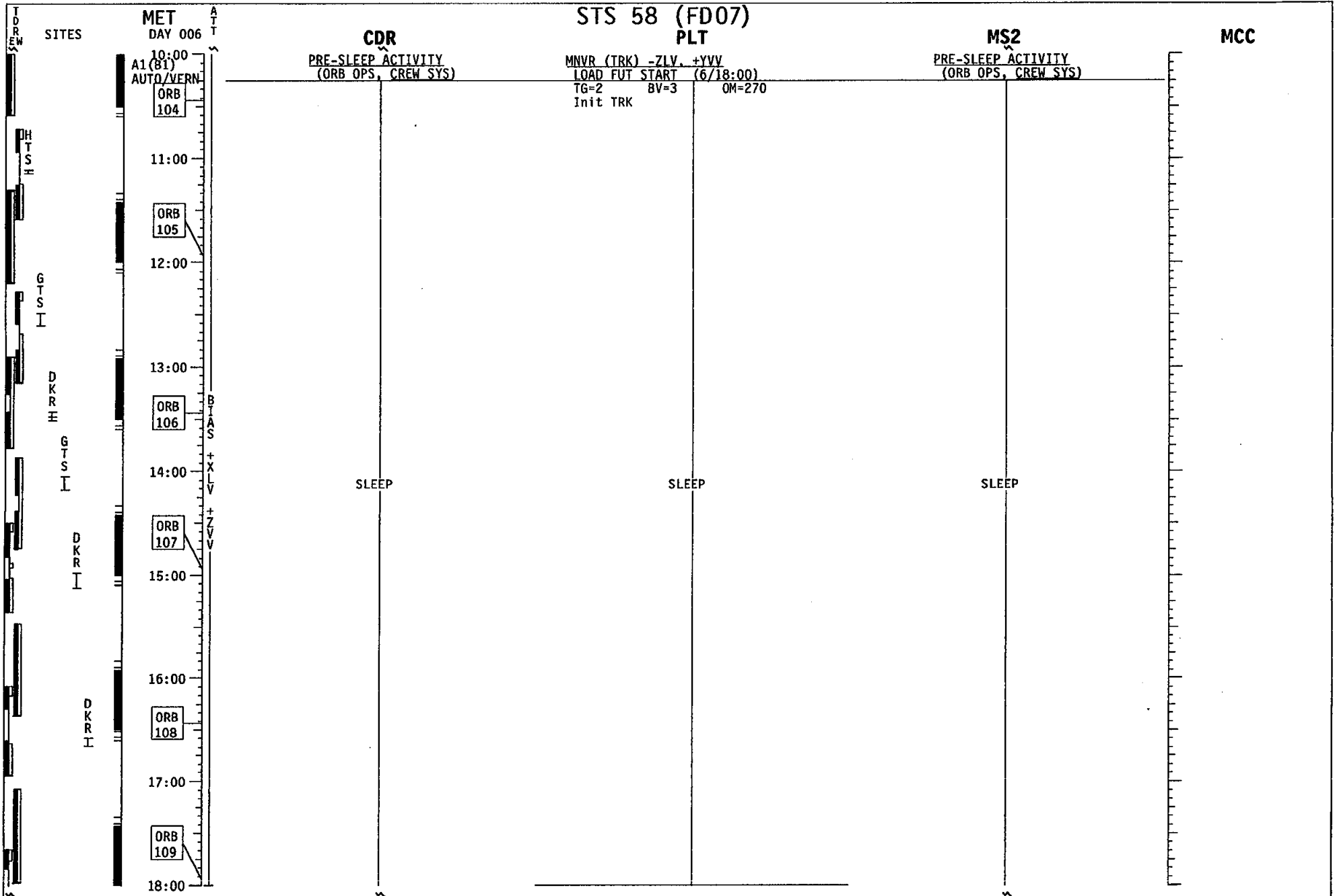


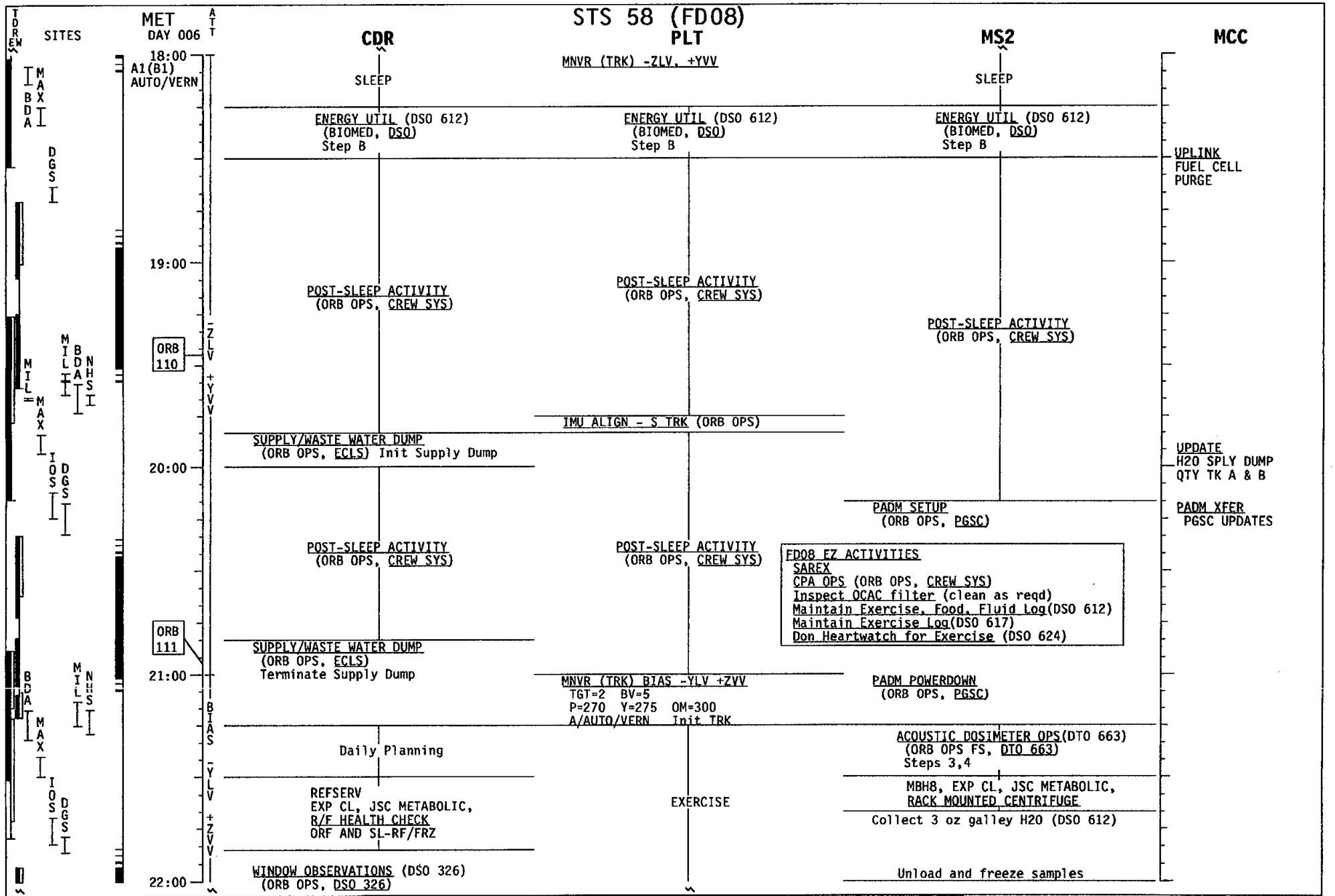


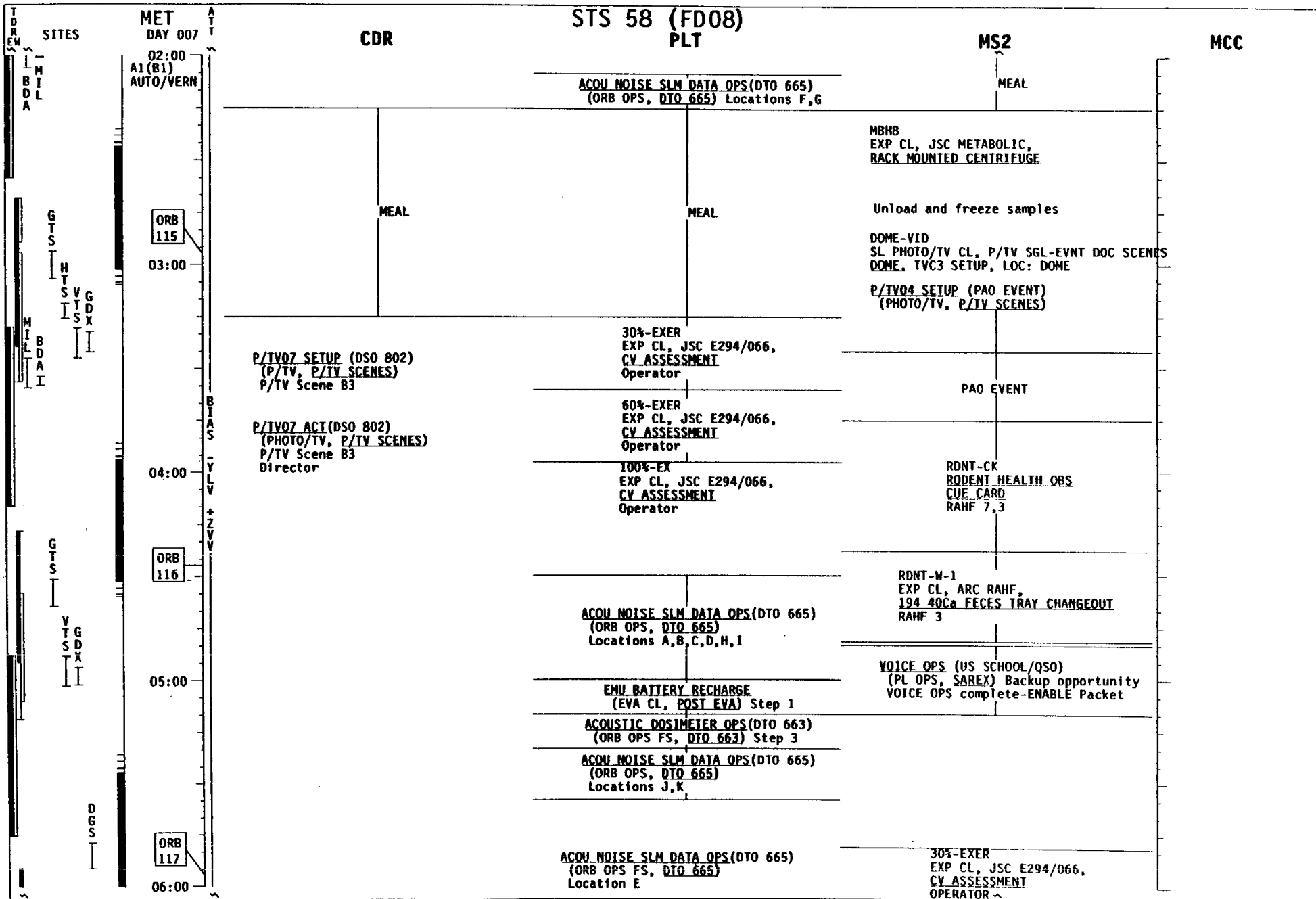


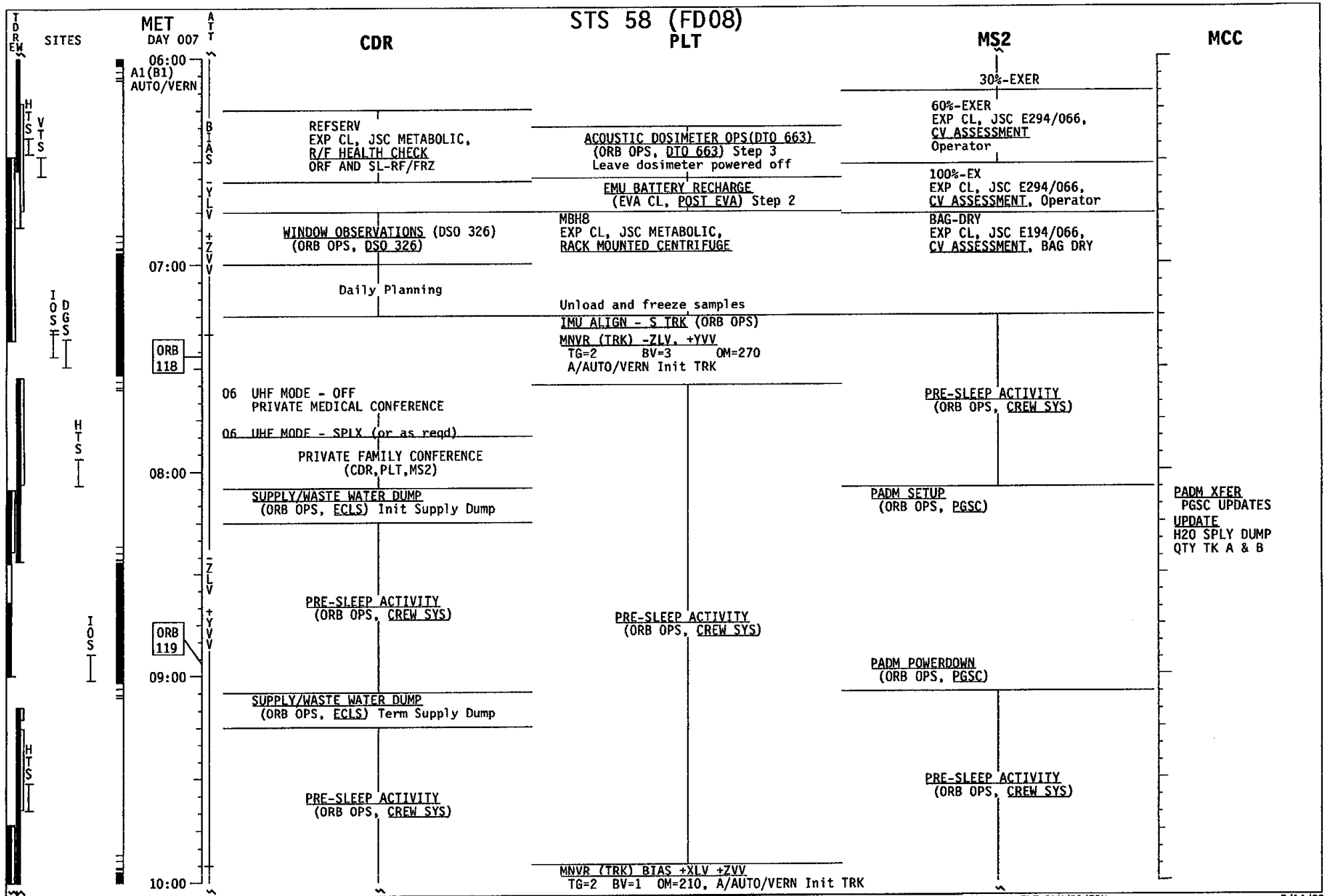


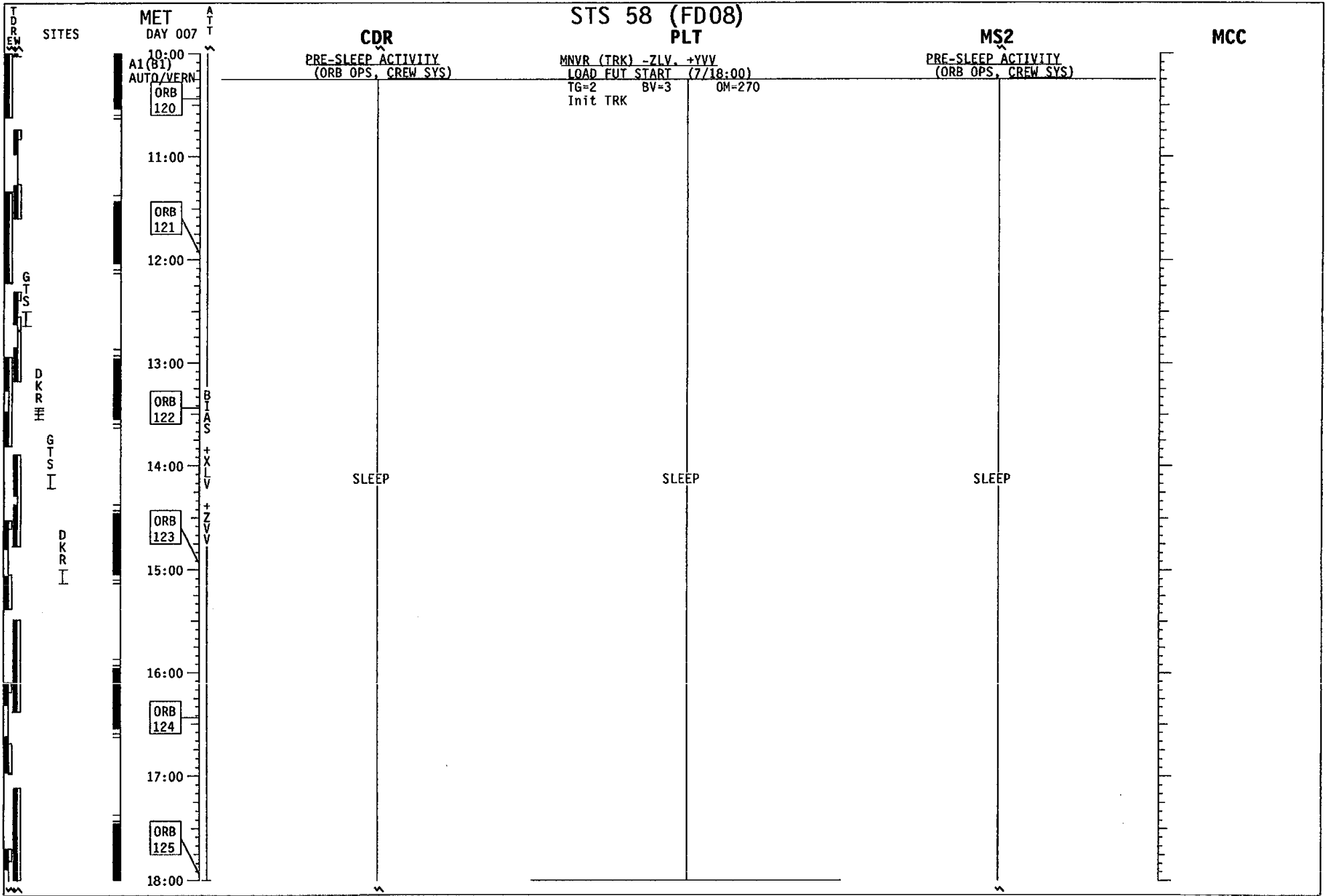


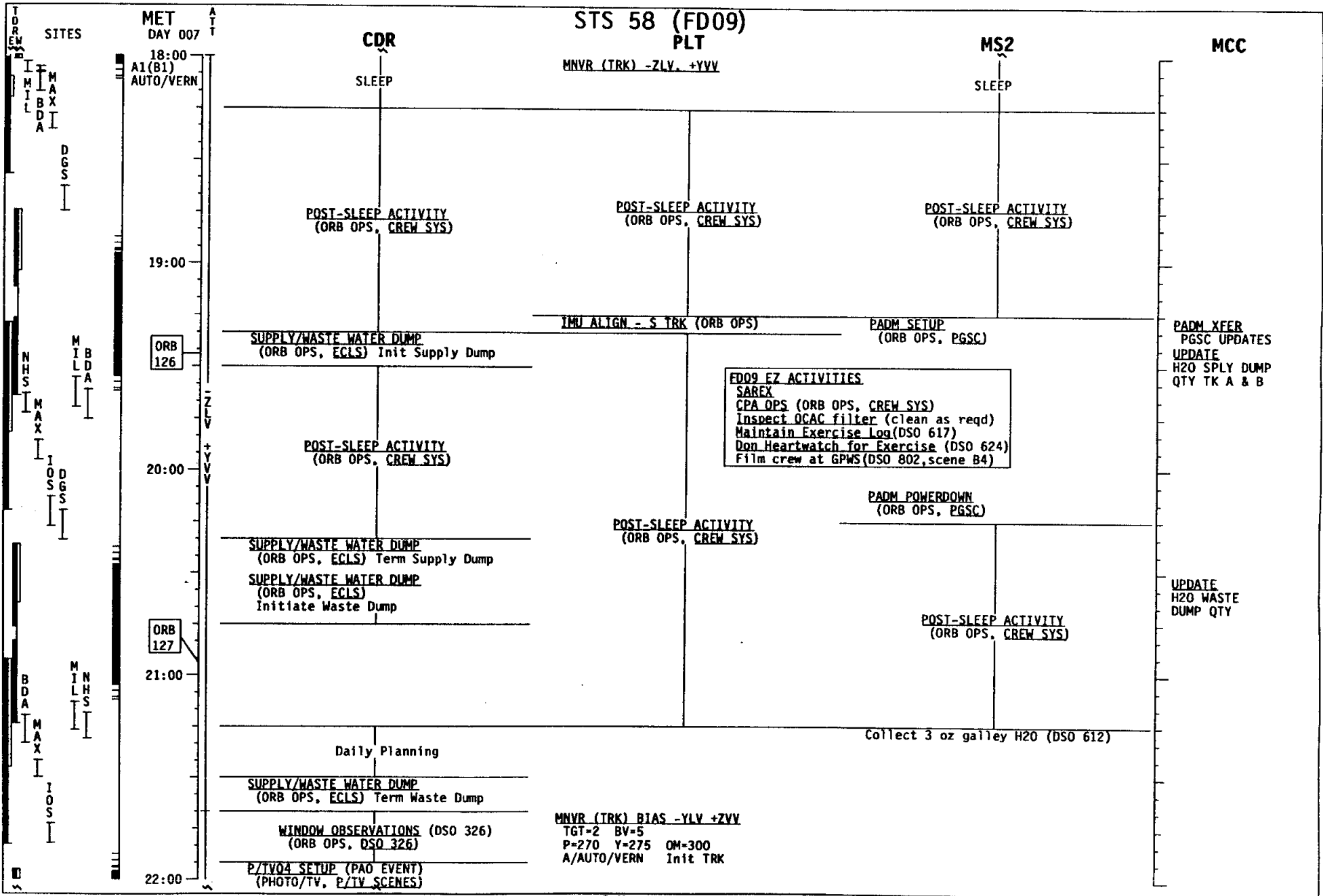


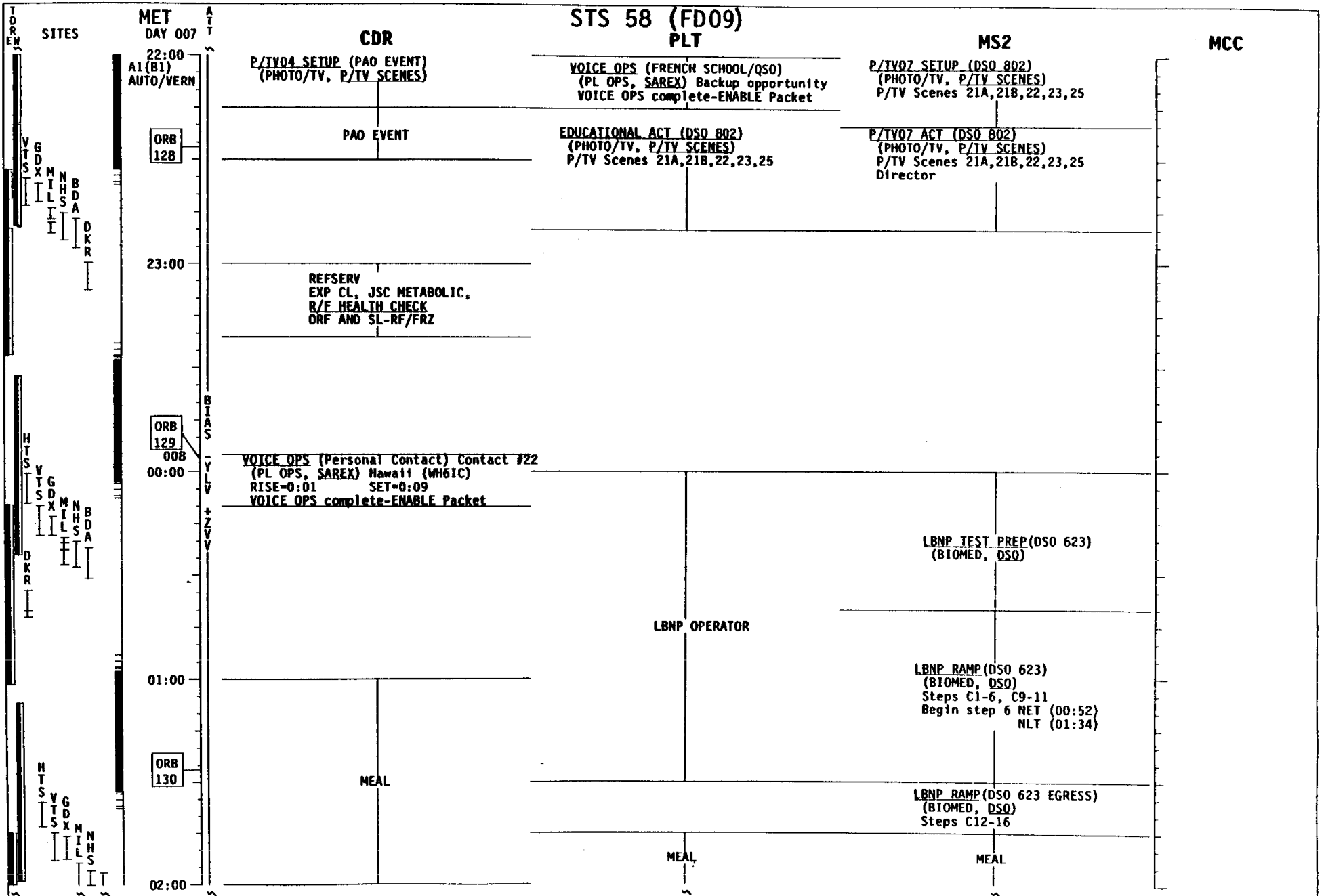


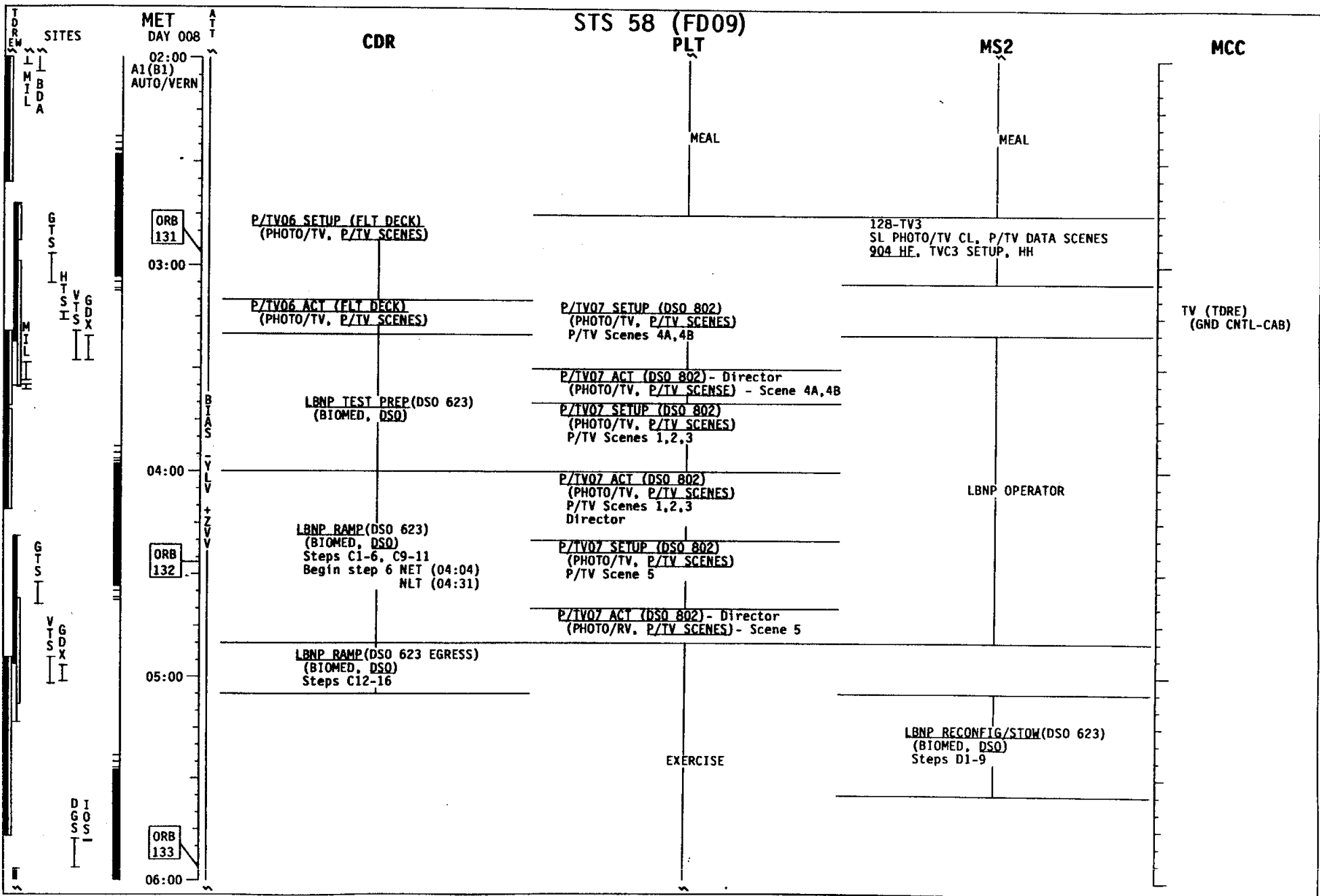


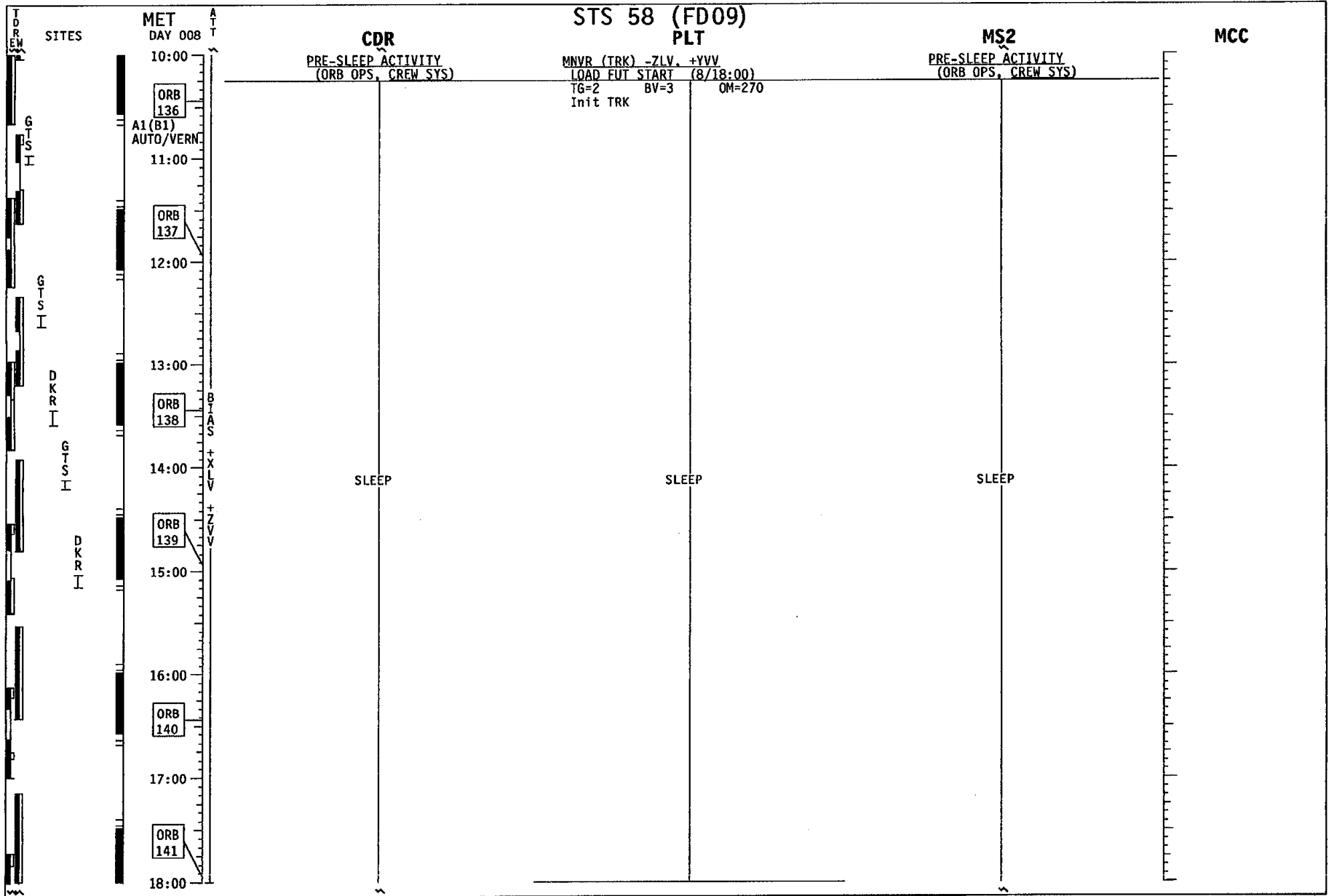












STS 58 (FD09)
PLT

CDR
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MNVR (TRK) -ZLV, +YVV
LOAD FUT START (8/18:00)
TG=2 BV=3 OM=270
Init TRK

MS2
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MCC

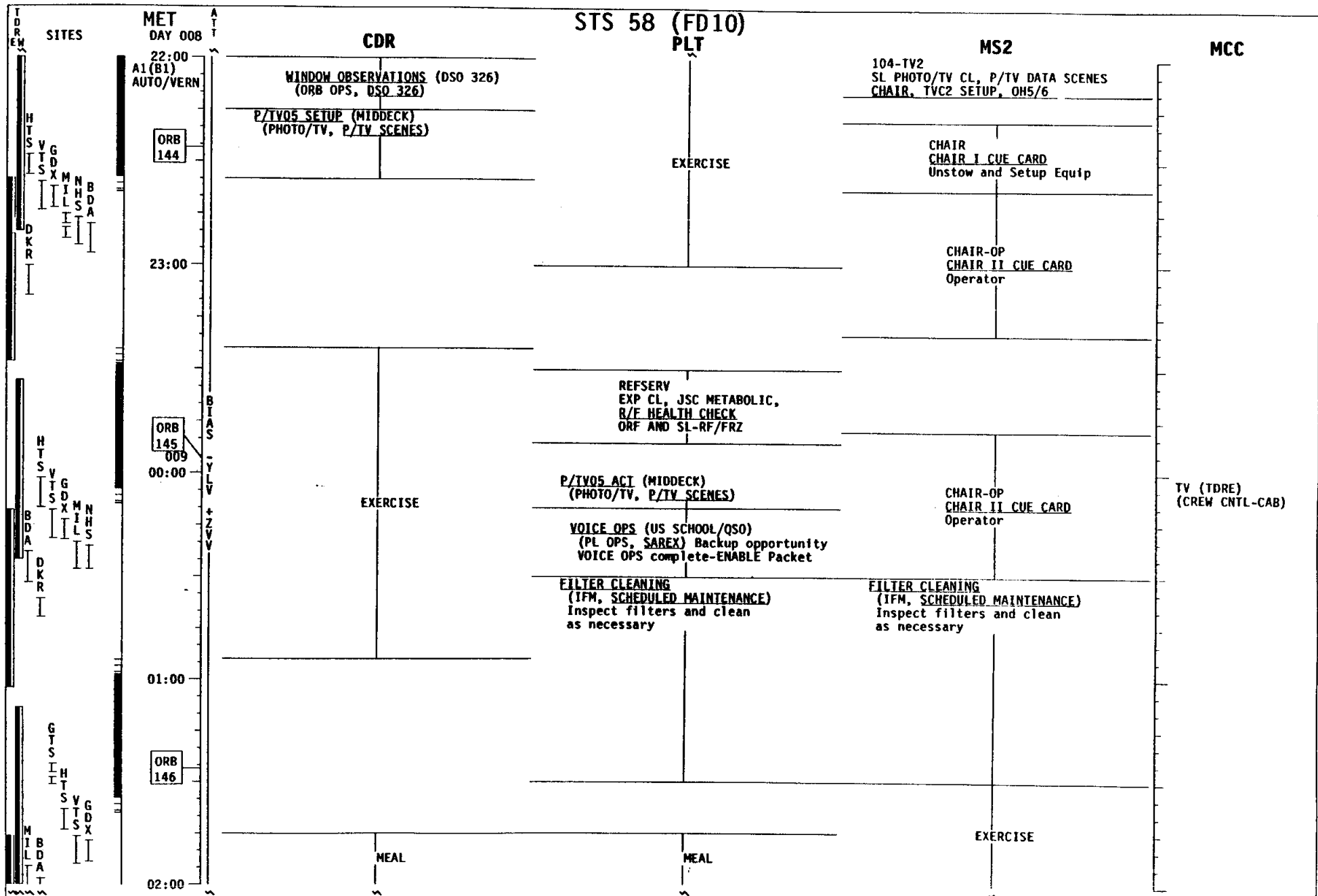
MET
DAY 008

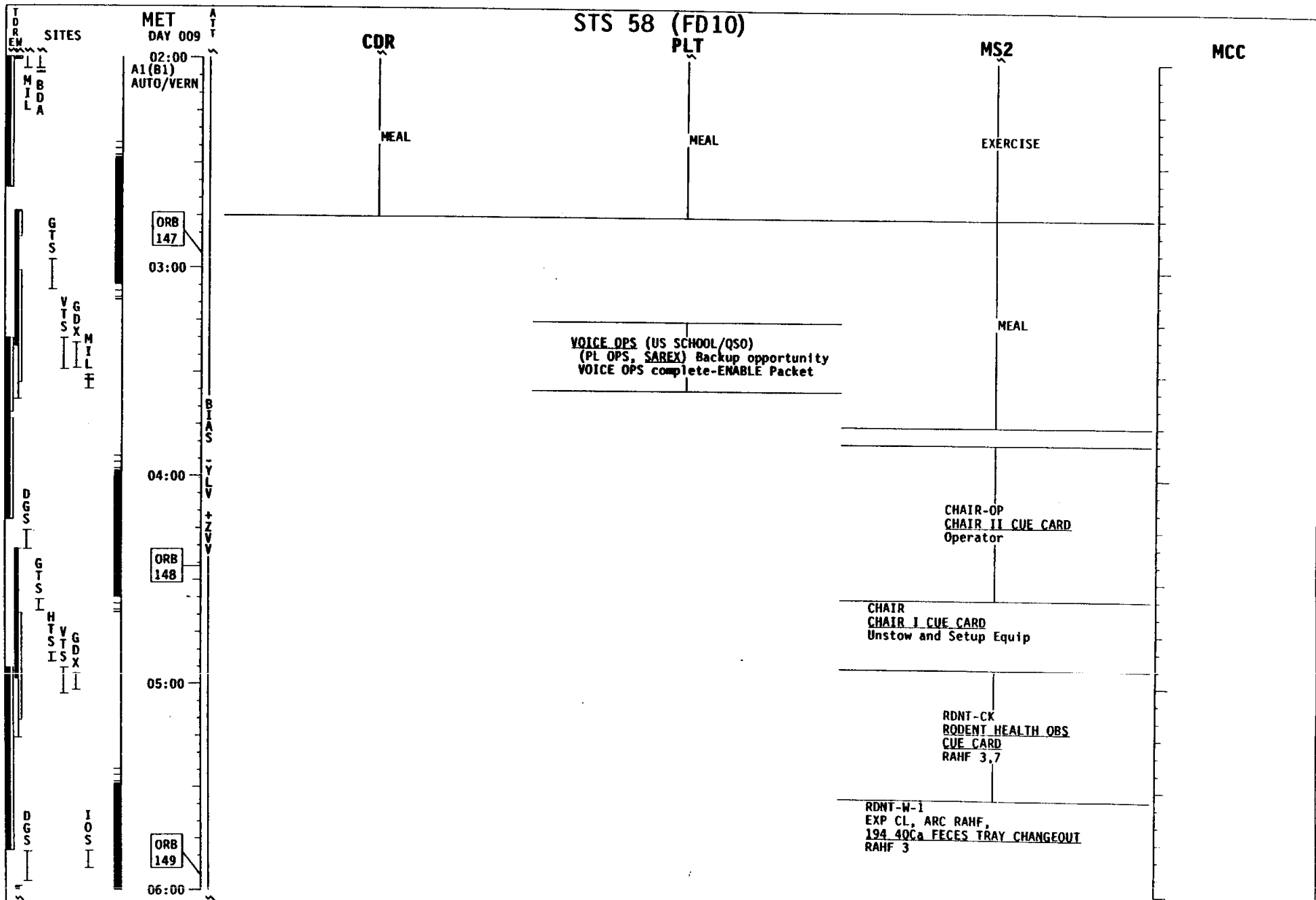
10:00
ORB 136
A1 (B1)
AUTO/VERN
11:00
ORB 137
12:00
13:00
ORB 138
14:00
ORB 139
15:00
16:00
ORB 140
17:00
ORB 141
18:00

SLEEP

SLEEP

SLEEP





STS 58 (FD10) PLT

CDR

MS2

MCC

MET
DAY 009

06:00
A1(B1)
AUTO/VERN

07:00

ORB
150

08:00

ORB
151

09:00

10:00

BIAS

-YLV

+ZVV

-YLV

+ZVV

-ZLV

+YVV

-ZLV

+YVV

-ZLV

+YVV

REFSERV
EXP CL, JSC METABOLIC,
R/F HEALTH CHECK
ORF AND SL-RF/FRZ

Daily Planning

WINDOW OBSERVATIONS (DSO 326)
(ORB OPS, DSO 326)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

IMU ALIGN - S TRK (ORB OPS)
MNVR (TRK) -ZLV, +YVV
TG=2 BV=3 OM=270
A/AUTO/VERN Init TRK

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

06 UHF MODE - OFF
PRIVATE MEDICAL CONFERENCE

06 UHF MODE - SPLX (or as reqd)
SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Initiate Supply Dump

PADM SETUP
(ORB OPS, PGSC)

PADM XFER
PGSC UPDATES
UPDATE
H2O SPLY DUMP
QTY TK A & B

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS) Term Supply Dump

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PADM POWERDOWN
(ORB OPS, PGSC)

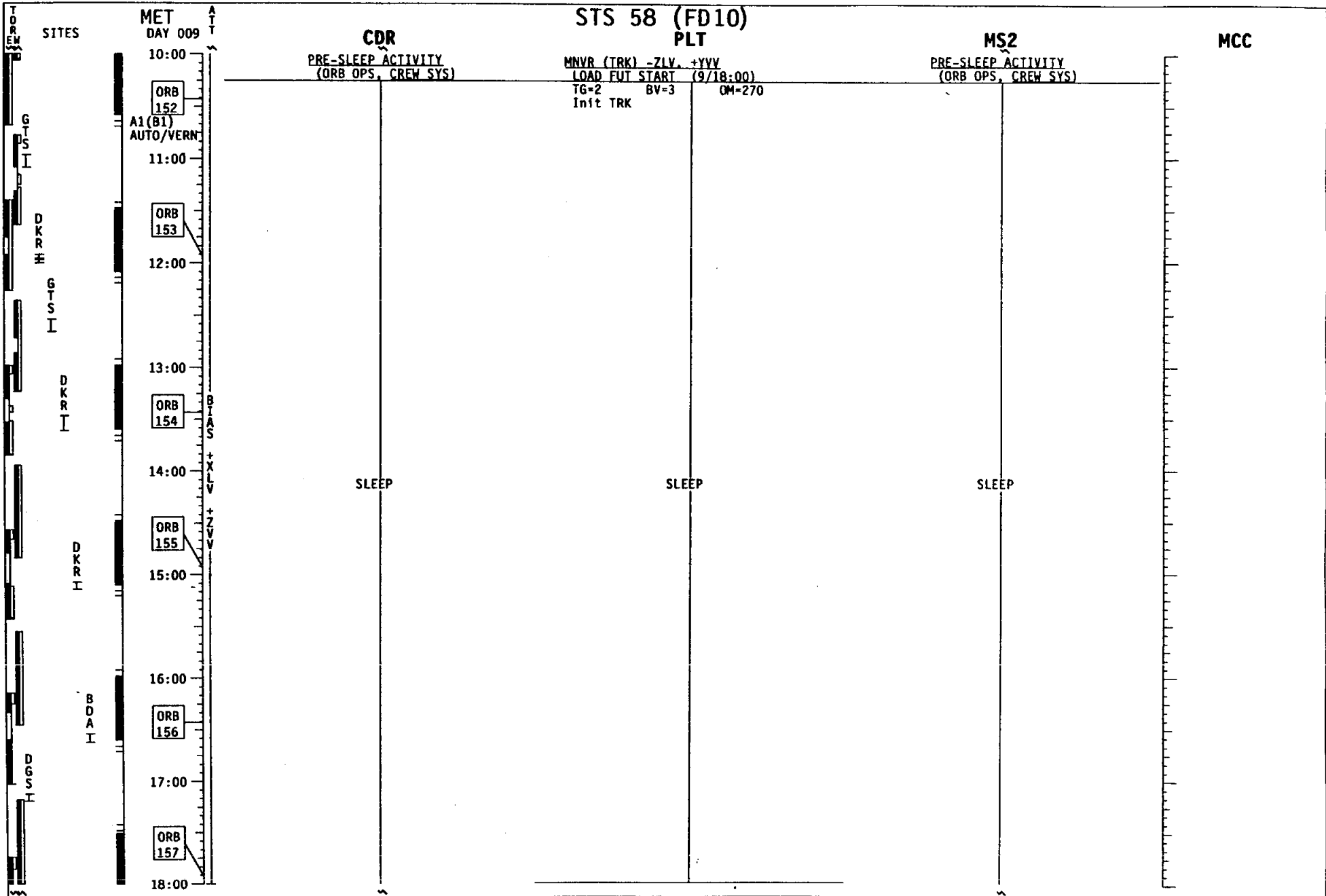
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

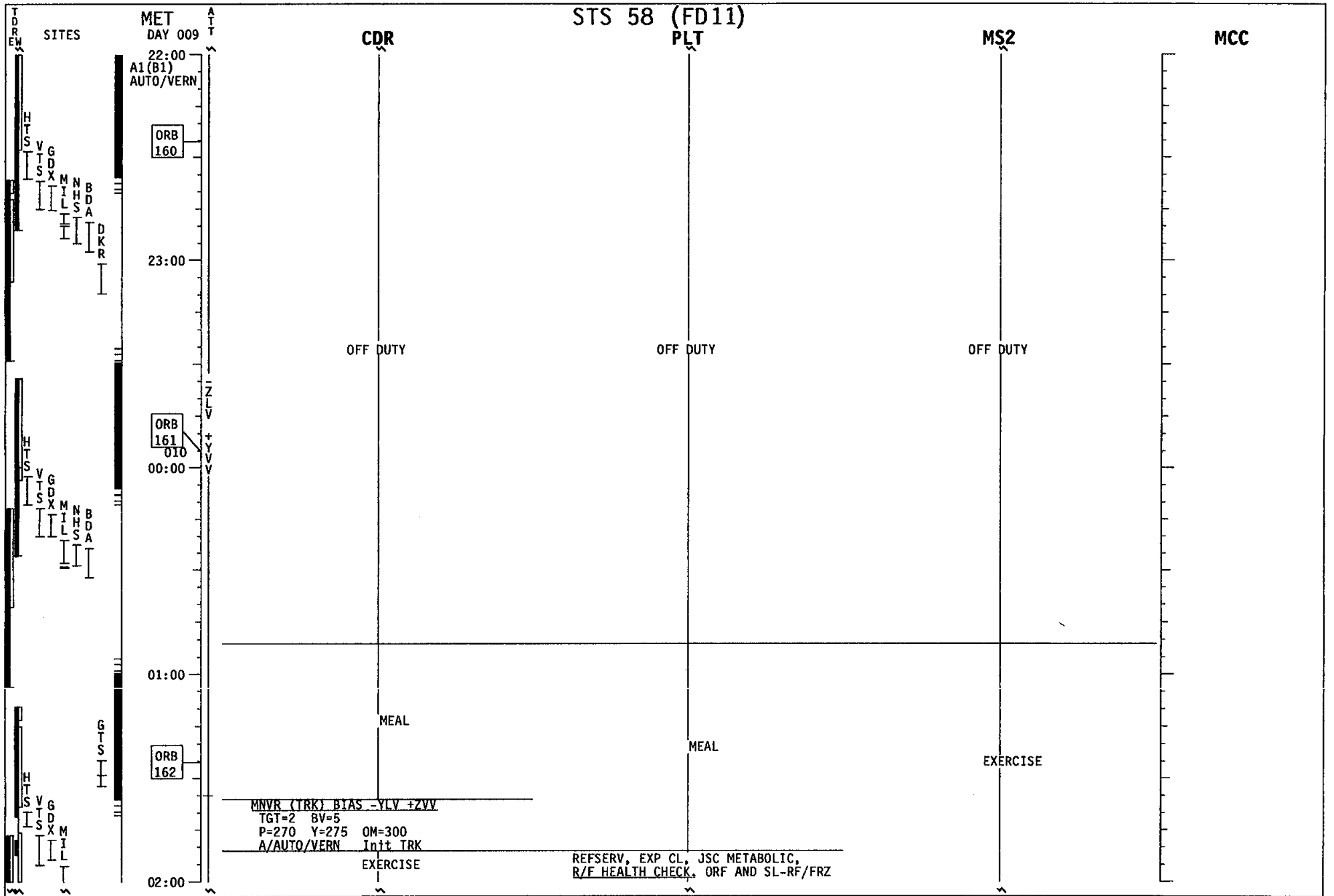
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

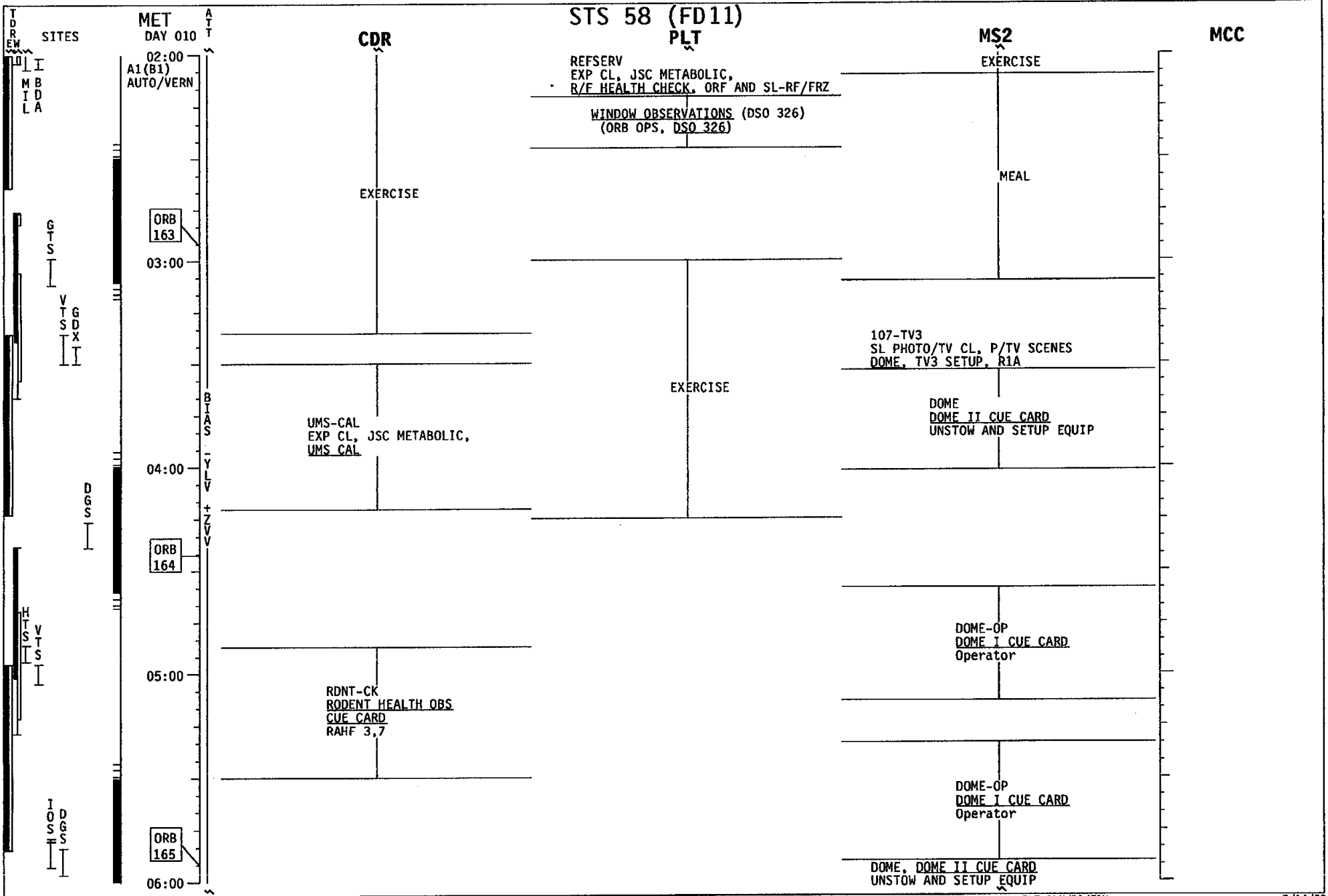
MNVR (TRK) BIAS +XLV +ZVV
TG=2 BV=1 OM=210, A/AUTO/VERN Init TRK

RDNT-W-1
EXP CL, ARC RAHF,
194 40Ca FECEs TRAY CHANGEOUT
RAHF 3

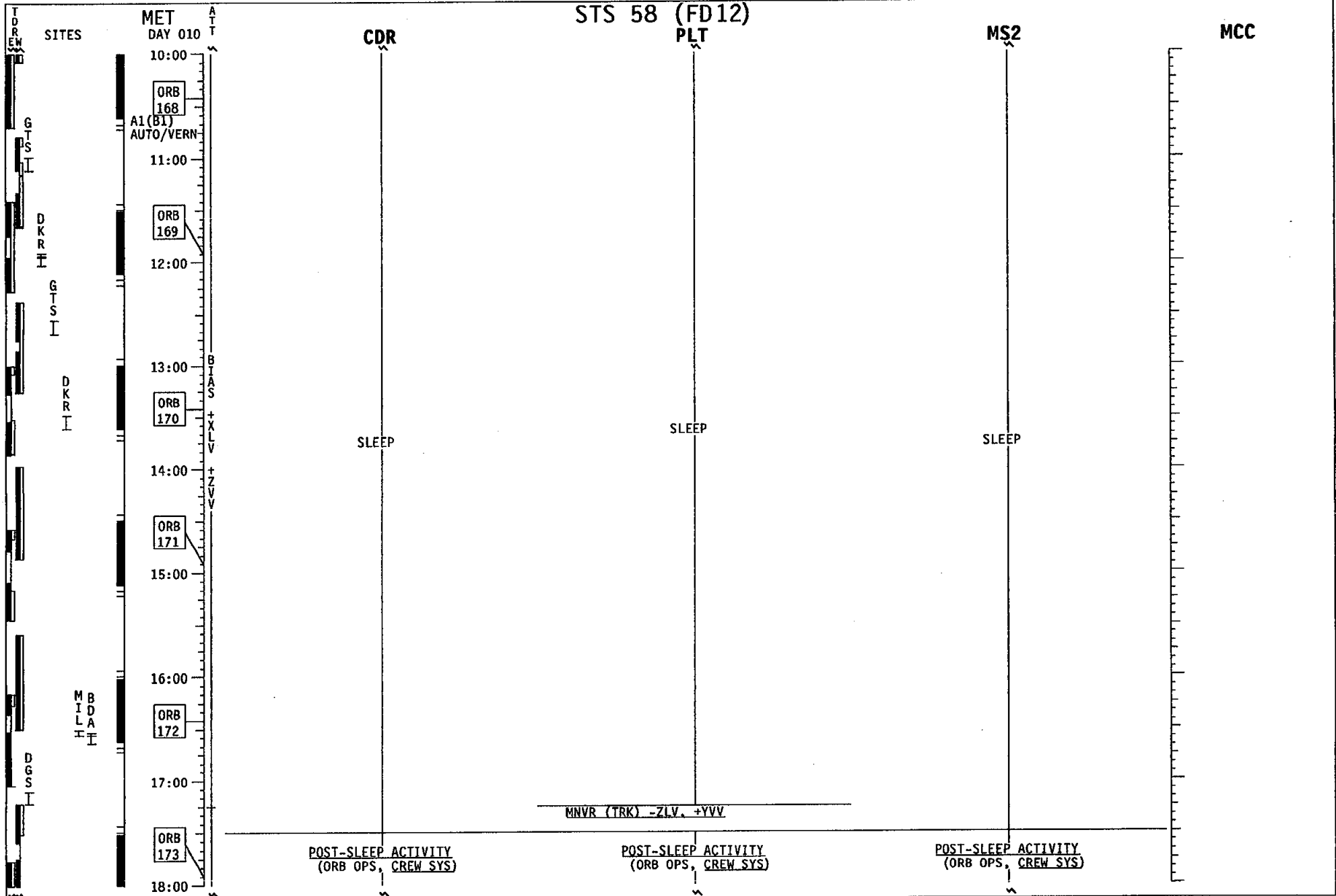


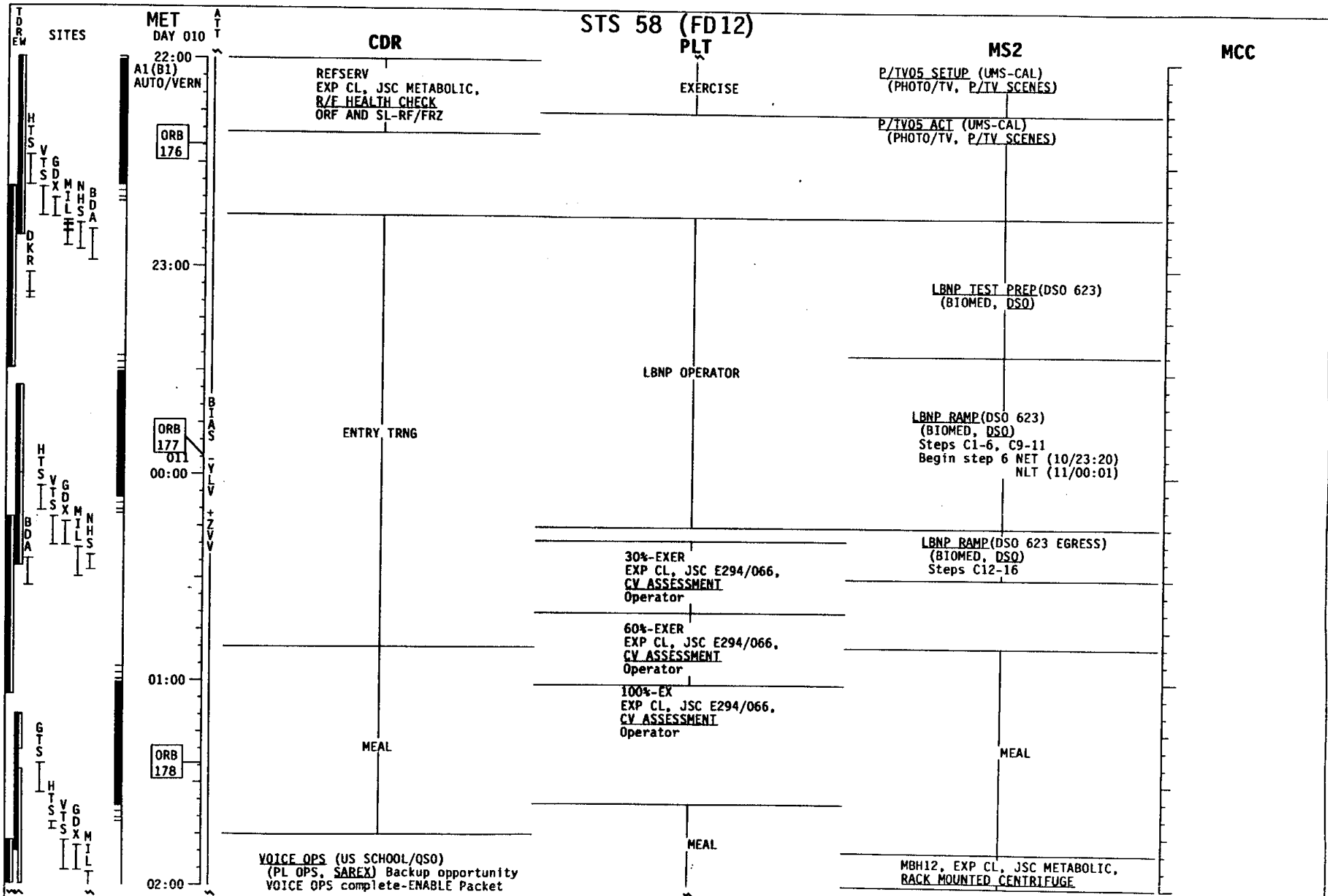


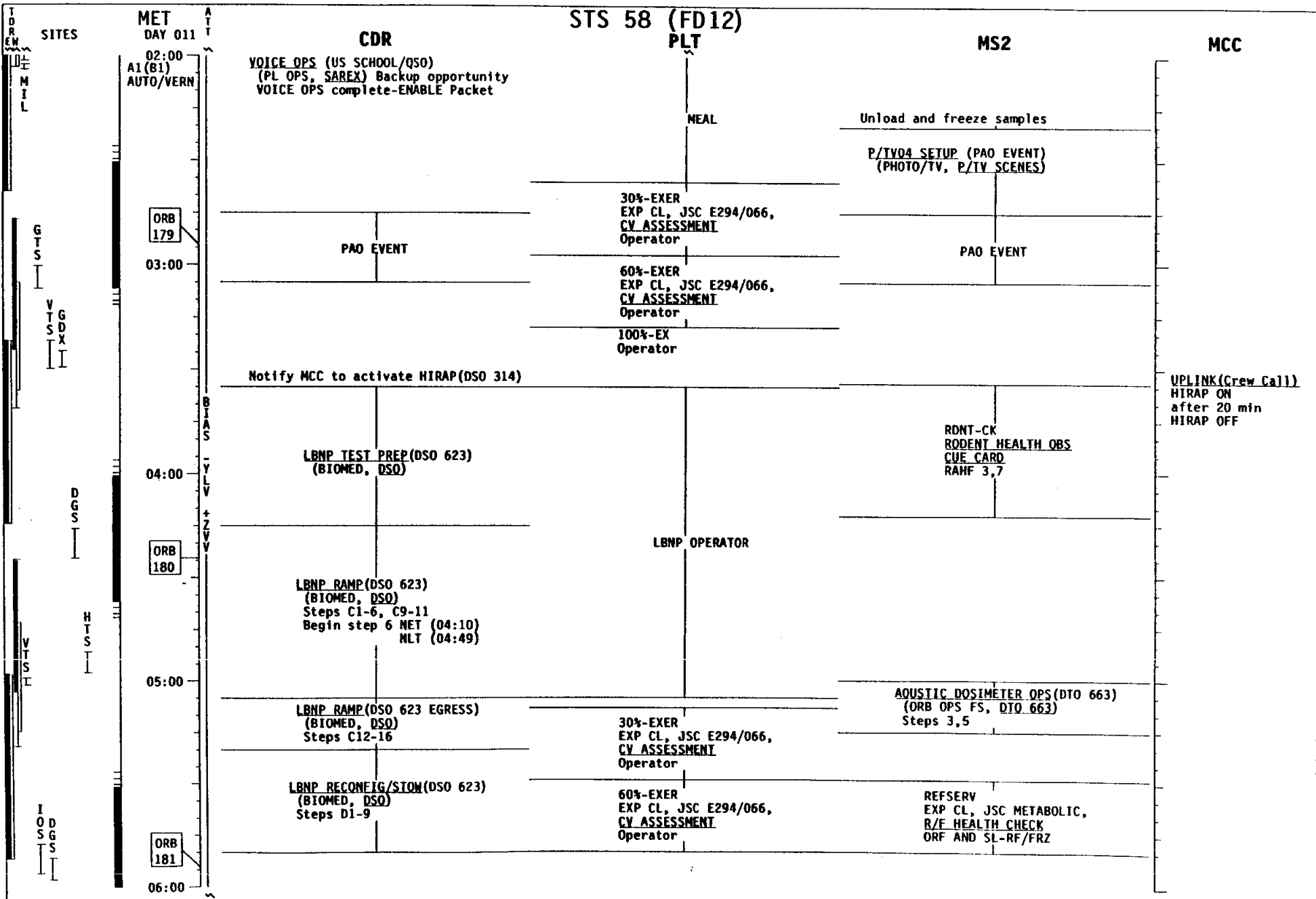


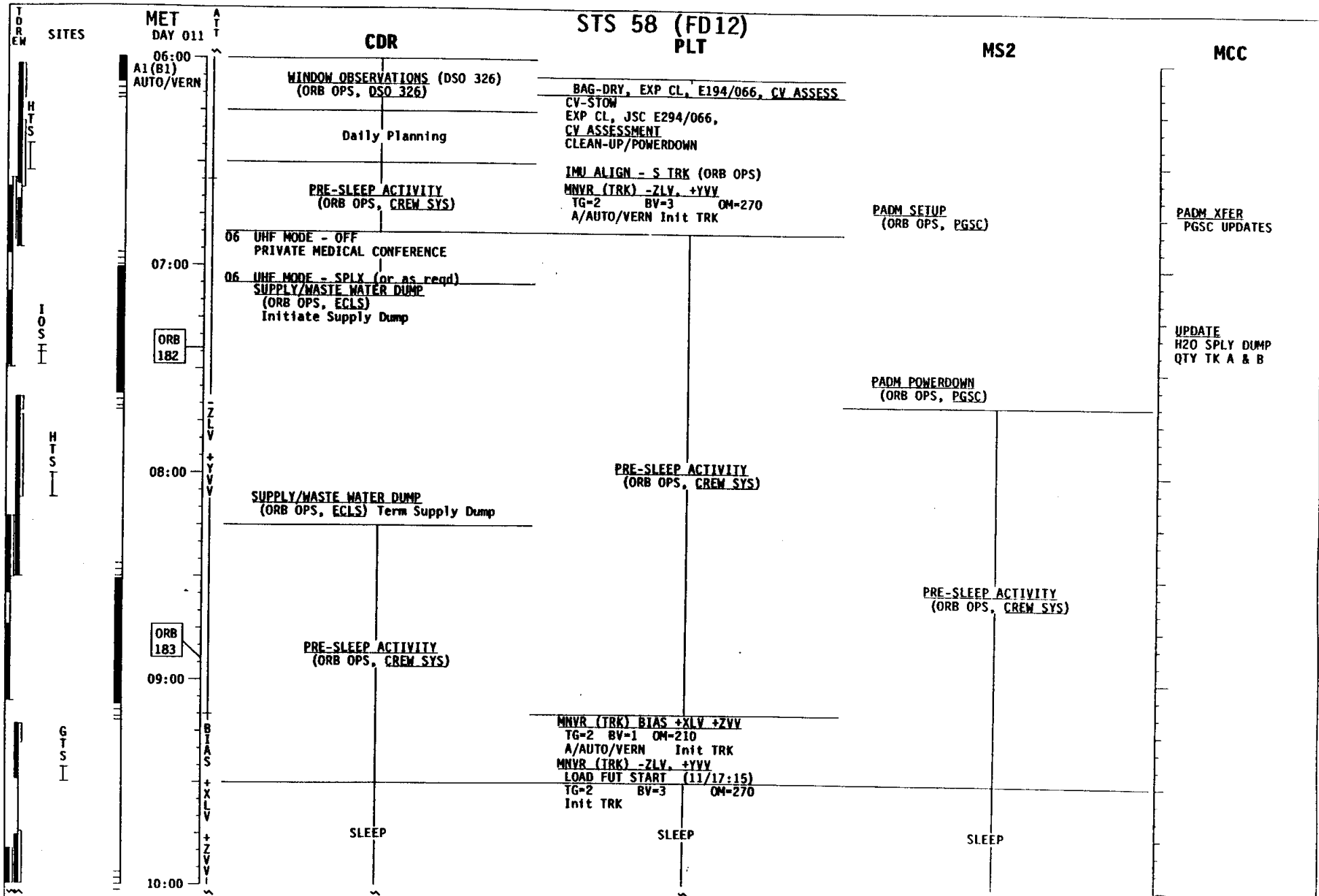


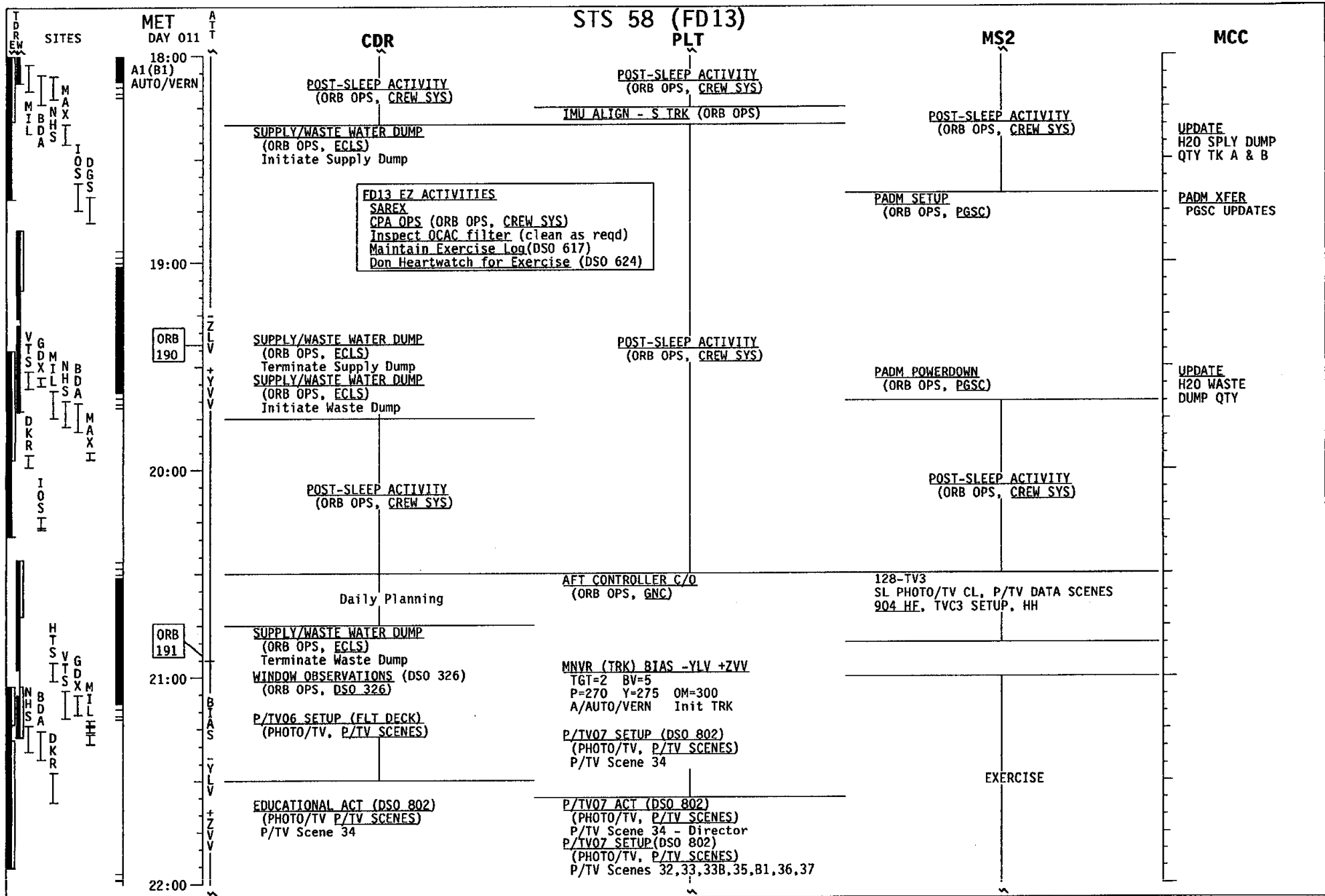
STS 58 (FD12)

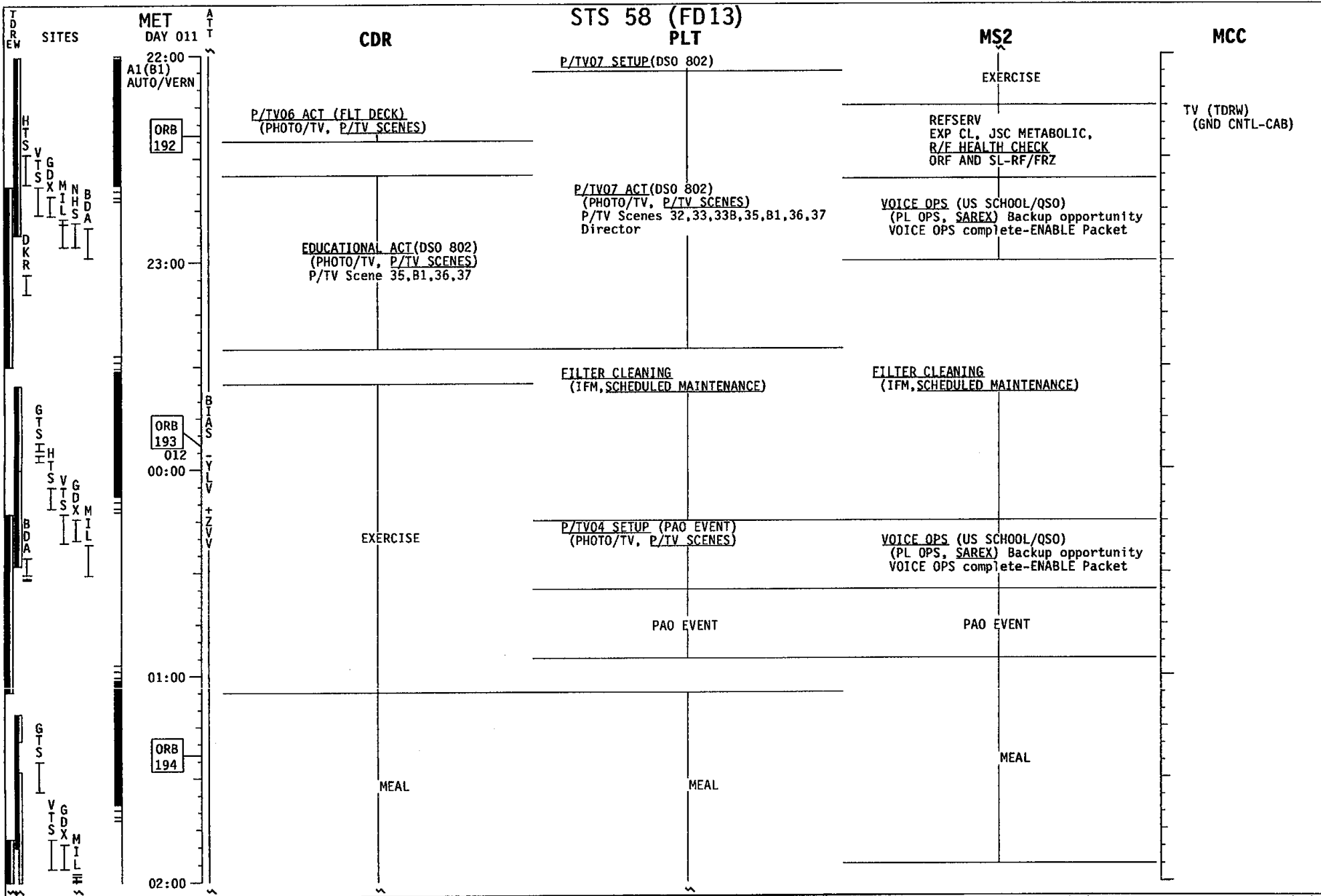


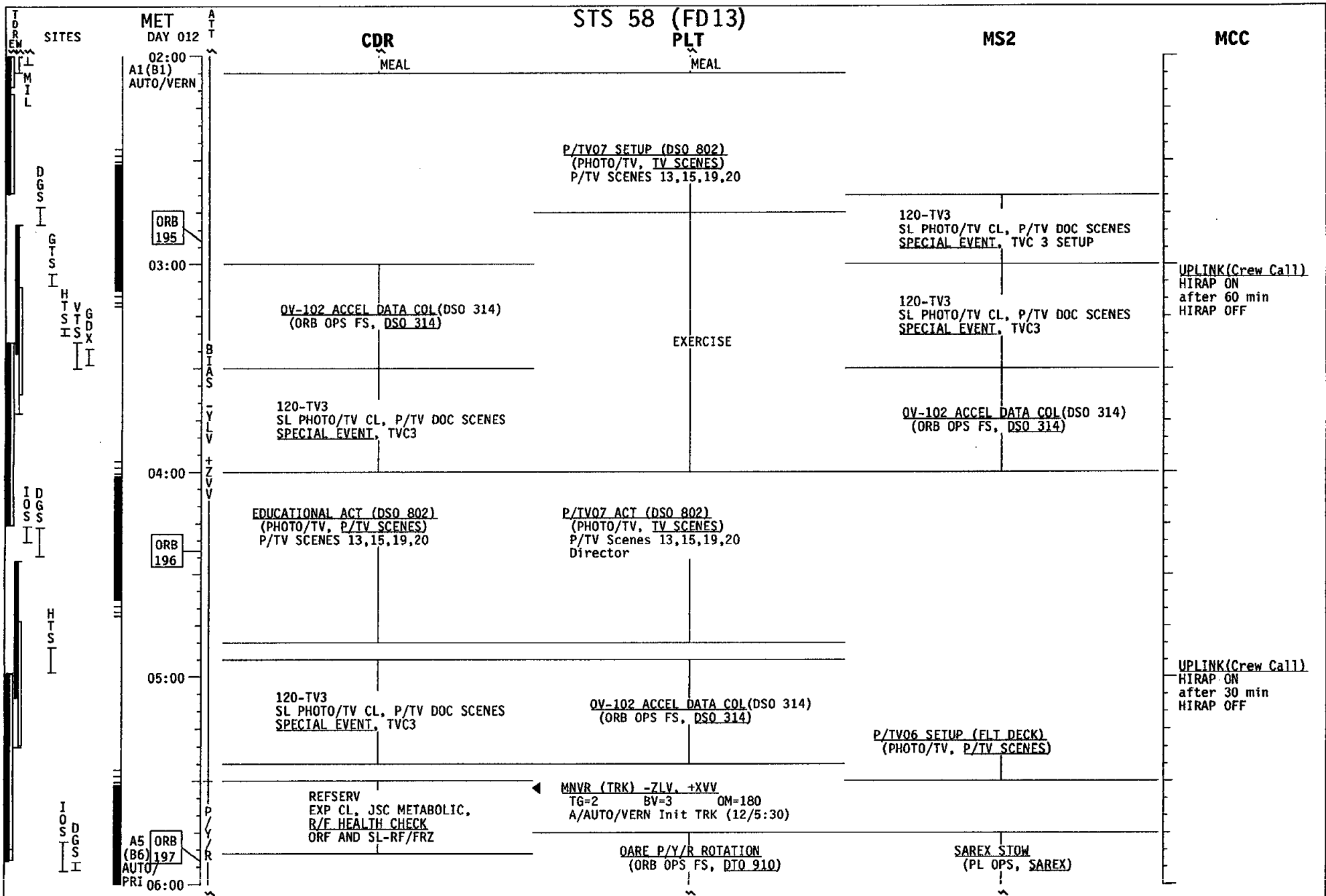


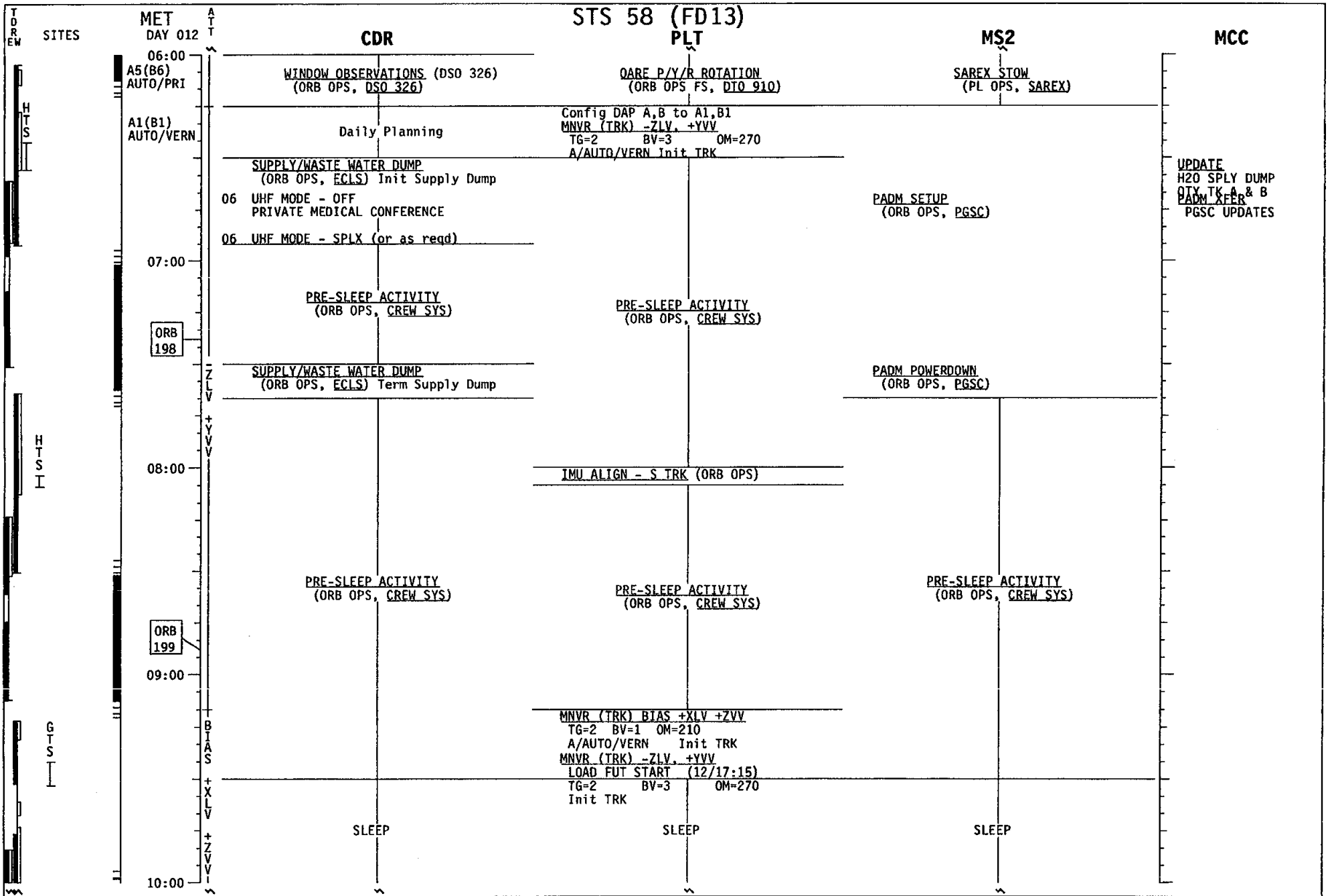


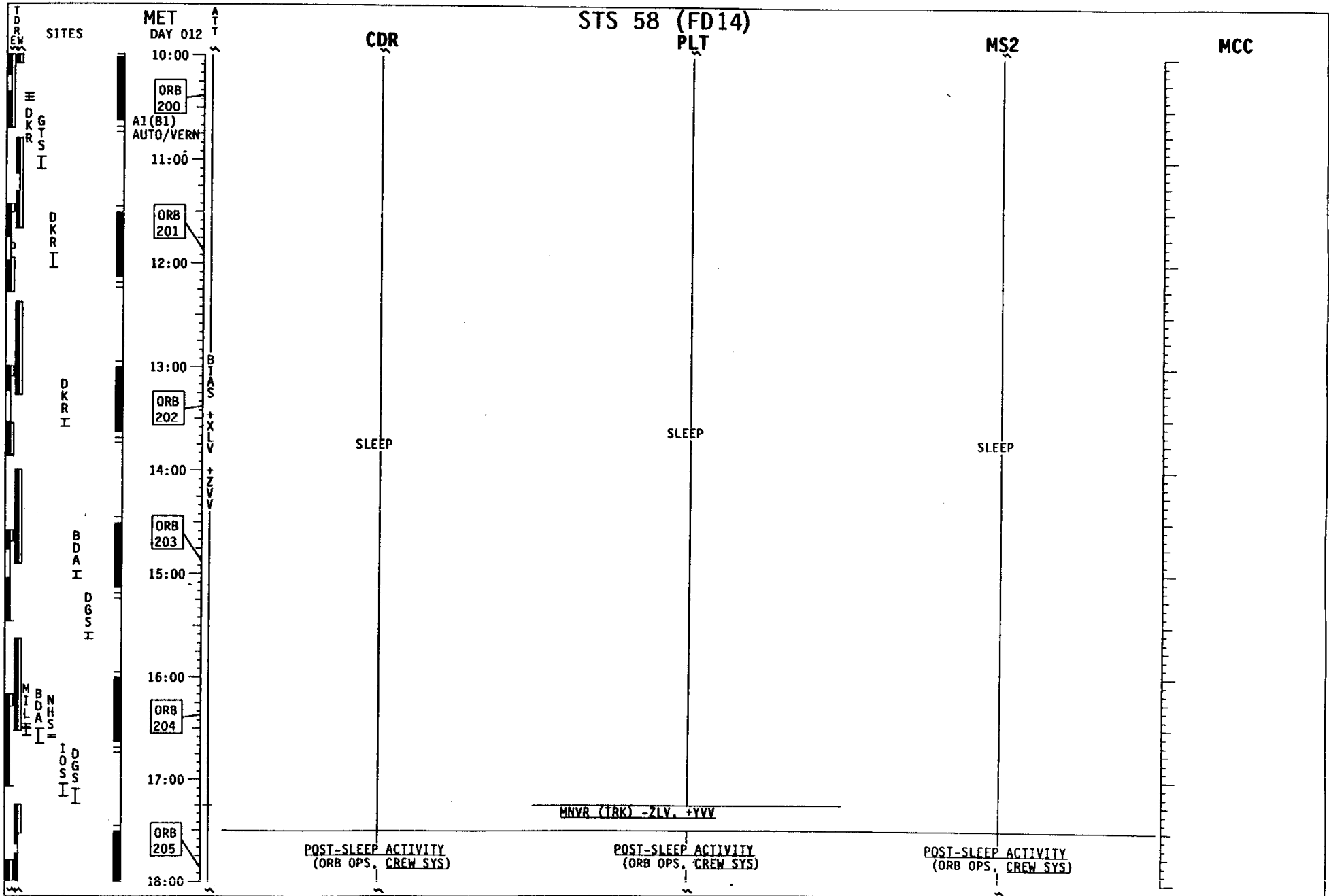


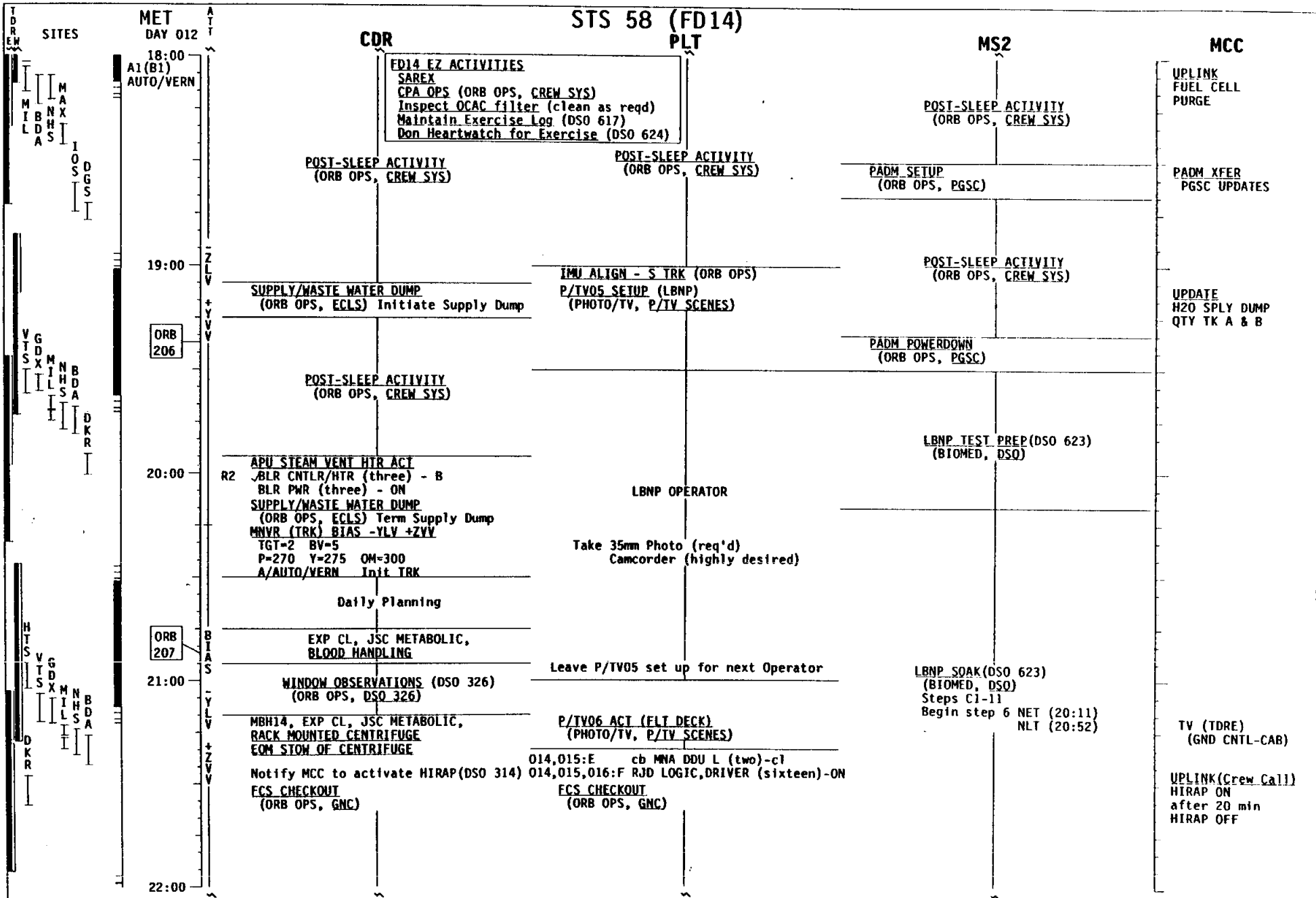


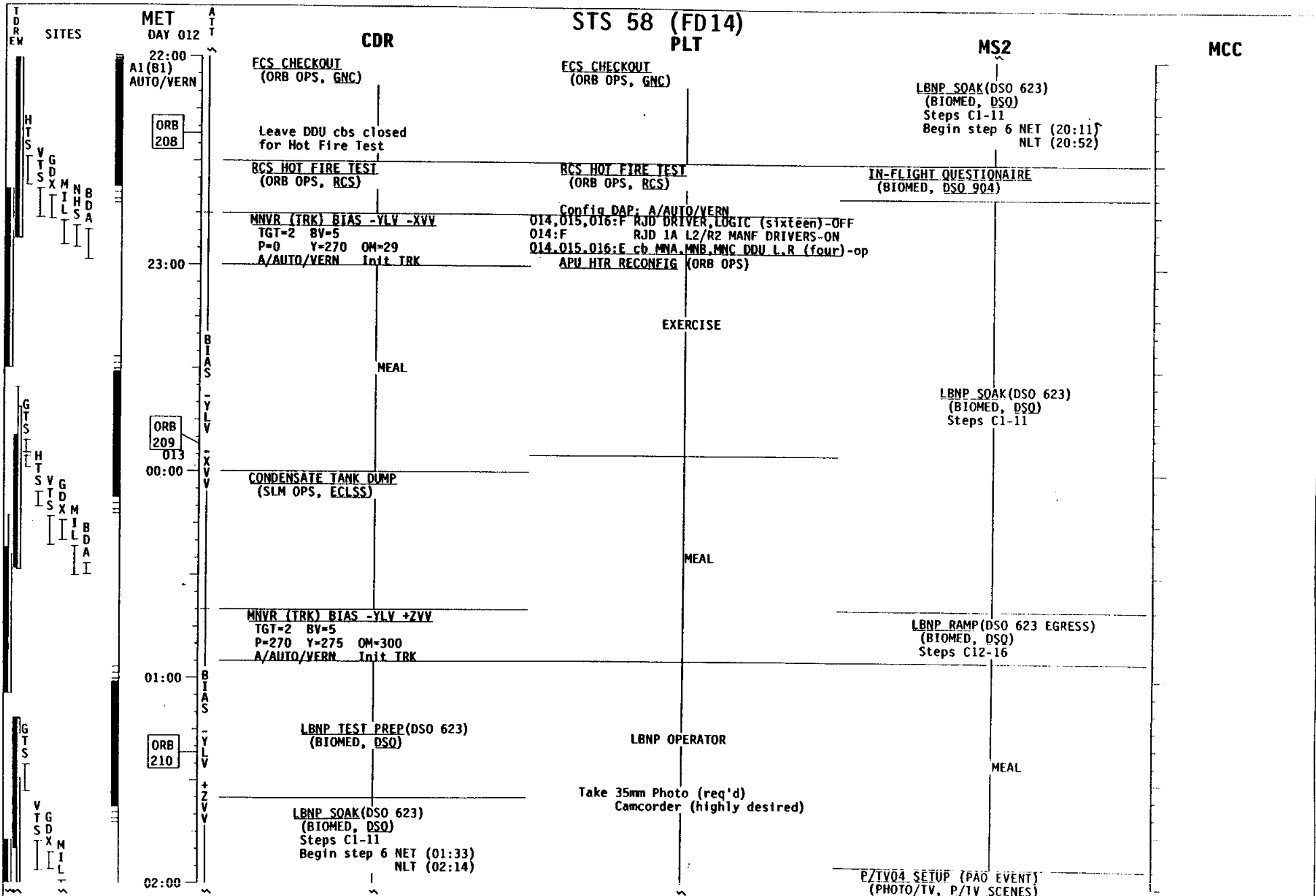


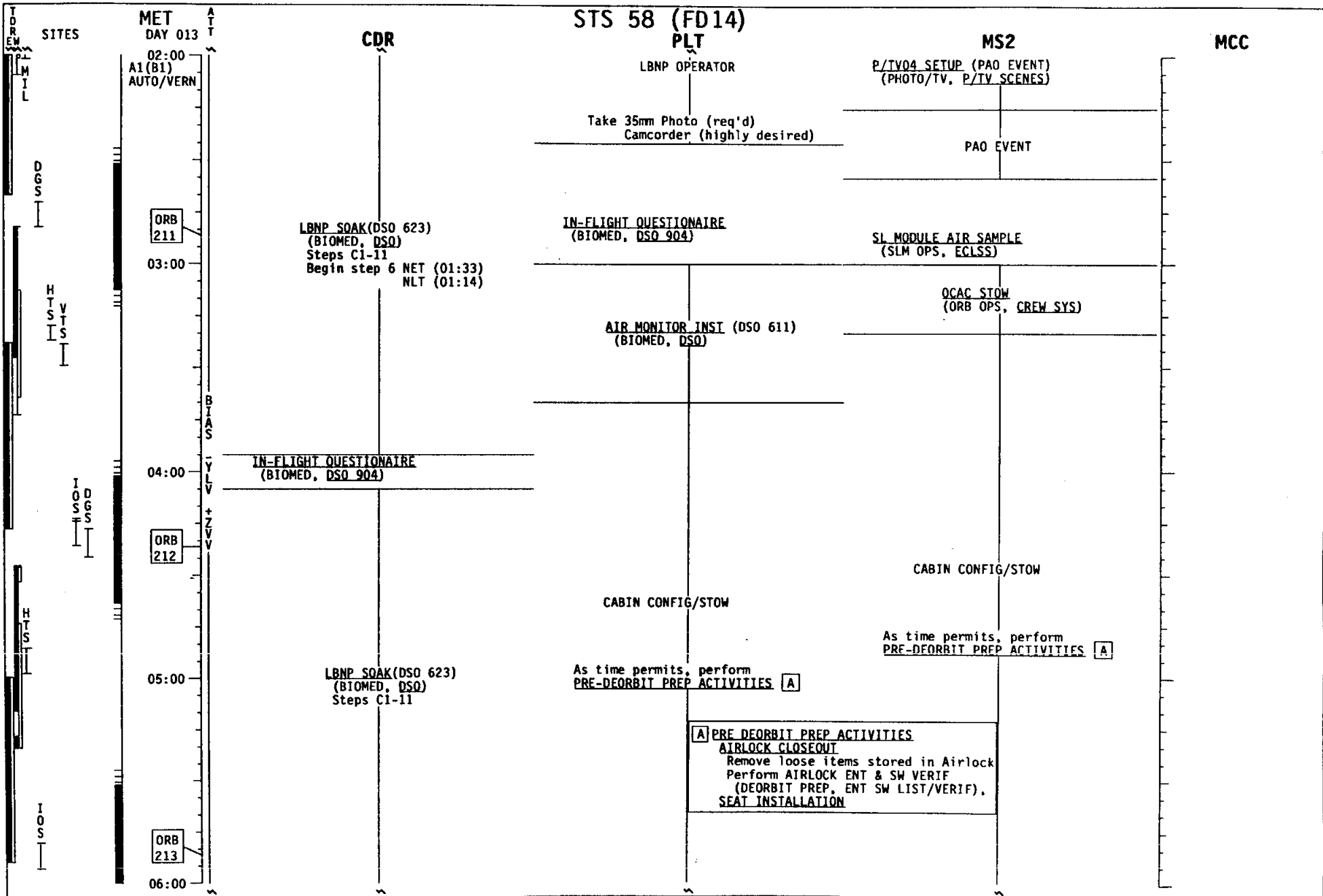












T
D
R
E
W

SITES

MET
DAY 013

A
T

STS 58 (FD14) PLT

CDR

MS2

MCC

06:00
A1(B1)
AUTO/VERN

LBNP SOAK(DSO 623)

LBNP RAMP(DSO 623 EGRESS)
(BIOMED, DSO)
Steps C12-16

CABIN CONFIG/STOW

CABIN CONFIG/STOW

WINDOW OBSERVATIONS (DSO 326)
(ORB OPS, DSO 326)

IMU ALIGN - S TRK (ORB OPS)

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

LBNP RECONFIG/STOW(DSO 623)
(BIOMED, DSO)
Steps D1-12

06 UHF MODE - OFF
PRIVATE MEDICAL CONFERENCE

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Initiate Supply Dump

UPDATE
H2O SPLY DUMP
QTY TK A & B

07:00 06 UHF MODE - SPLX (or as reqd)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

ORB
214

-Z
LV

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Terminate Supply Dump

08:00 PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

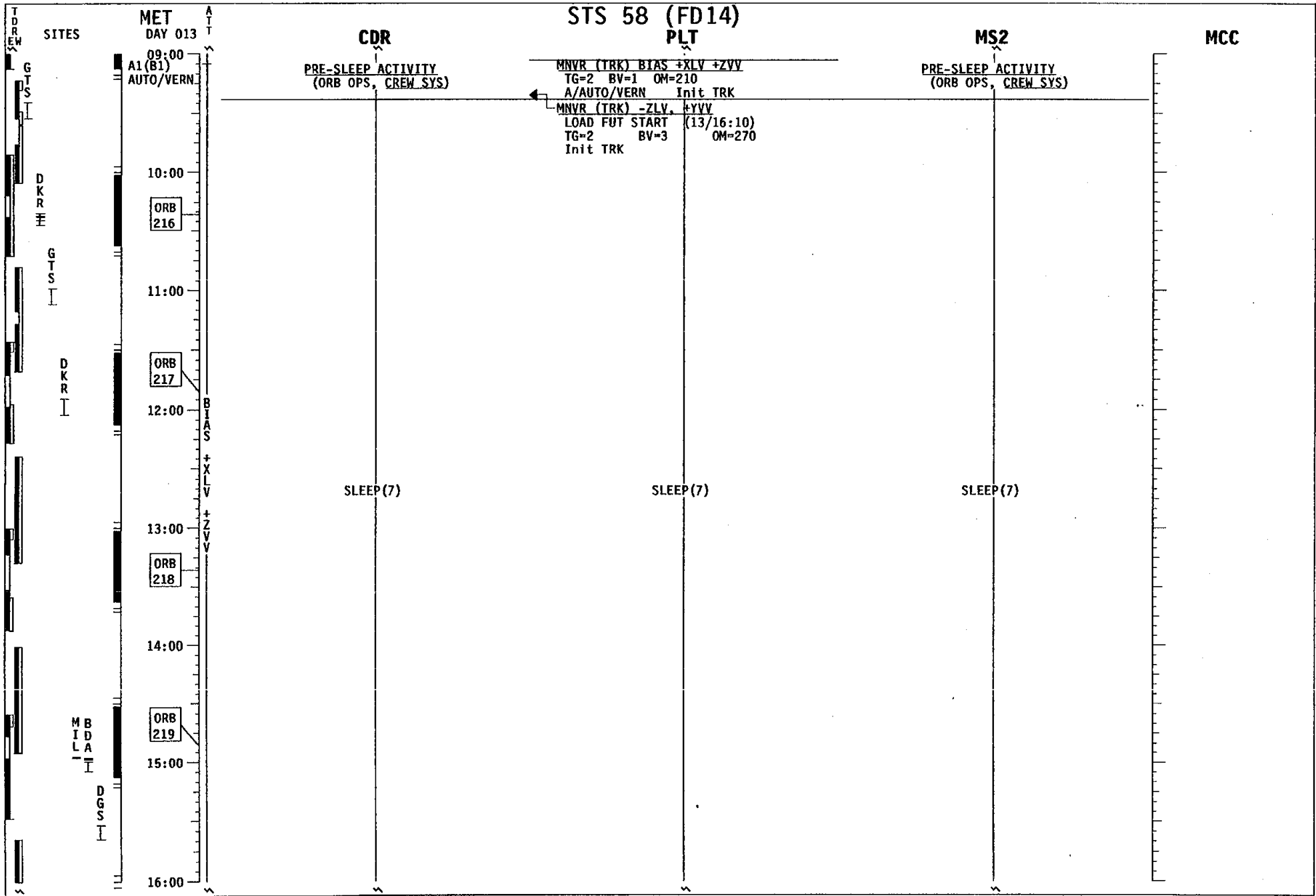
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

+Y
VV

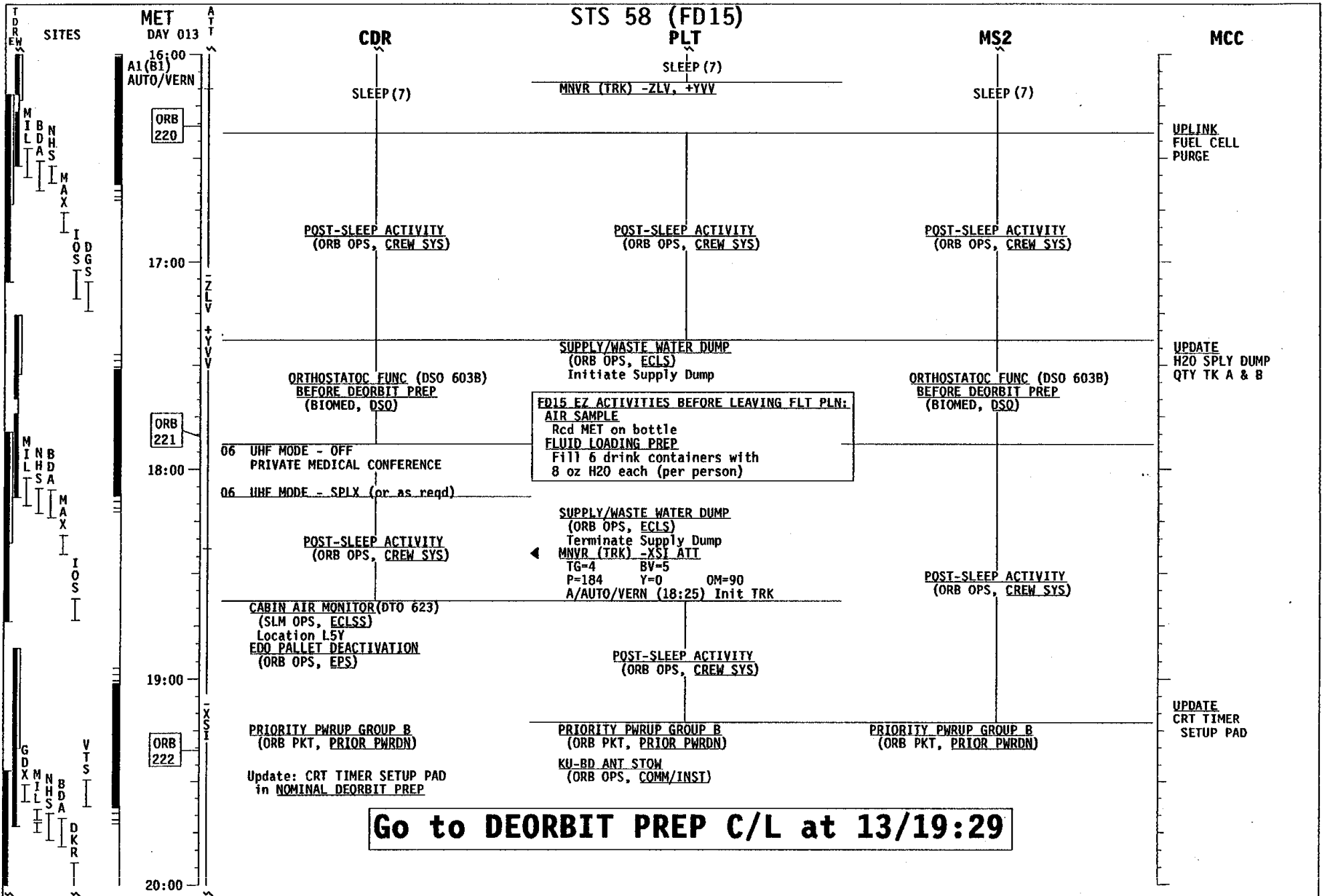
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

ORB
215

09:00



This Page Intentionally Blank



This Page Intentionally Blank

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

ATTITUDE TIMELINE

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 000/01:12:00 MET 22:44 253/16:40:00 GMT 50:44	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO PRI	DSC 0.200 DB AT 5.00 DB RT 0.20	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post insertion
2 000/03:25:00 MET 36:31 253/18:53:00 GMT 19:04:31 (in att at ss)	INRTL R=283.00 MNVR P=185.00 Y=333.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 167 P 38	SPECIAL STAR PR -Y: 51 -Z: 22	imu align -z coas cal
3 000/03:55:00 MET 04:06:34 253/19:23:00 GMT 34:34	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 1
4 000/08:05:00 MET 18:19 253/23:33:00 GMT 46:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
5 000/10:40:00 MET 48:42 254/02:08:00 GMT 16:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 353 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
6 000/18:45:00 MET 53:42 254/10:13:00 GMT 21:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
7 000/21:45:00 MET 58:19 254/13:13:00 GMT 26:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 2
8 001/08:00:00 MET 03:30 254/23:28:00 GMT 31:30 (in att nlt ss)	TGT=22 RA= 297.090 BV=5 DEC= 8.738N P=355.40 Y= 1.40 OM=(blank)	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 81 P 127	INRTL R=150.50 P=334.37 Y=301.67	min mnvr to C22 hud cal
9 001/08:30:00 MET 41:05 254/23:58:00 GMT 255/00:09:05	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
10 001/10:30:00 MET 37:51 255/01:58:00 GMT 02:05:51	TGT=2 BV=5 P=357.51 Y= 0.97 OM=249.18	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 159 P 3	LVLH R=249.17 P=268.21 Y=358.02	bias +xlv bay north gg / oare cal sleep
11 001/19:00:00 MET 07:51 255/10:28:00 GMT 35:51	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply/waste dump
12 001/22:20:00 MET 27:30 255/13:48:00 GMT 55:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd oare rotation set up

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 001/22:35:00 MET 255/14:03:00 GMT	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	pitch rotation
2 001/22:41:00 MET 255/14:09:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd pitch rot stop yaw rot setup
3 001/22:44:00 MET 255/14:12:00 GMT	LVLH FREE ROTATION ROTR ABOUT +Z AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	yaw rotation
4 001/22:50:00 MET 255/14:18:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd yaw rot stop roll rot setup
5 001/22:53:00 MET 255/14:21:00 GMT	LVLH FREE ROTATION ROTR ABOUT +X AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	roll rotation
6 001/22:59:00 MET 255/14:27:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd roll rot stop
7 001/23:05:00 MET 06:40 255/14:33:00 GMT 34:40	TGT=2 BV=5 P= 70.00 Y= 0.00 OM=180.00	A5 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 70	LVLH R=180.00 P=340.00 Y= 0.00	oare pitch drag set up
8 001/23:20:00 MET 255/14:48:00 GMT	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=0.058	B6 LVLH VERN	DSC 0.200 DB AT 10.0 DB RT 0.50		LVLH R=180.00 P=340.00 Y= 0.00	pitch start
9 001/23:40:00 MET 255/15:08:00 GMT		A5 LVLH VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 0	LVLH R=180.00 HOLD P=270.40 Y= 0.00	pitch stop
10 001/23:50:00 MET 57:56 255/15:18:00 GMT 25:56	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 3
11 002/02:15:00 MET 22:56 255/17:43:00 GMT 50:56	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 56 P 0	LVLH R=180.00 P=270.00 Y= 0.00	+xlv belly fwd oare max drag
12 002/03:30:00 MET 37:56 255/18:58:00 GMT 19:05:56	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 3

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 002/08:05:00 MET 18:19 255/23:33:00 GMT 46:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
2 002/10:40:00 MET 48:42 256/02:08:00 GMT 16:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 67 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
3 002/18:45:00 MET 53:42 256/10:13:00 GMT 21:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
4 002/21:45:00 MET 58:19 256/13:13:00 GMT 26:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 4
5 003/08:05:00 MET 18:19 256/23:33:00 GMT 46:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
6 003/10:40:00 MET 48:42 257/02:08:00 GMT 16:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 90 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
7 003/18:45:00 MET 53:42 257/10:13:00 GMT 21:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump off duty
8 003/23:11:00 MET 18:30 257/14:39:00 GMT 46:30 (in att at ss)	TGT=2 BV=2 P=180.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 56 P 180	LVLH R= 90.00 P= 90.00 Y= 0.00	-xlv bay south star view
9 003/23:46:00 MET 53:30 257/15:14:00 GMT 21:30 (in att at sr)	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep off duty
10 004/02:20:00 MET 33:19 257/17:48:00 GMT 18:01:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 5
11 004/05:15:00 MET 22:36 257/20:43:00 GMT 50:36	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 29.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 270 P 90	LVLH R= 90.00 P=180.00 Y=331.00	bias -ylv tail fwd s/l cond dump
12 004/07:15:00 MET 26:30 257/22:43:00 GMT 54:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump dso 314 db coll

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 004/09:55:00 MET 10:03:42 258/01:23:00 GMT 31:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 37 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
2 004/18:00:00 MET 08:42 258/09:28:00 GMT 36:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply/waste dump
3 004/22:15:00 MET 28:19 258/13:43:00 GMT 56:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 6
4 005/05:45:00 MET 53:17 258/21:13:00 GMT 21:17	INRTL R=286.00 MNVR P= 35.00 Y= 4.00 tig 5/06:05	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 93 P 146		orbit adjust (if req'd)
5 005/06:06:00 MET 258/21:34:00 GMT		A1 LVLH VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 76	LVLH R= 0.38 HOLD P=193.56 Y=359.64	lvh hold
6 005/06:30:00 MET 36:56 258/21:58:00 GMT 22:04:56	INRTL R= 74.00 MNVR P=215.00 Y=357.00 tig 5/06:50	B1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 89 P 33		orbit adjust (if req'd)
7 005/07:05:00 MET 14:04 258/22:33:00 GMT 42:04	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
8 005/09:55:00 MET 10:03:42 259/01:23:00 GMT 31:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 315 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
9 005/18:00:00 MET 08:42 259/09:28:00 GMT 36:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
10 005/21:00:00 MET 13:19 259/12:28:00 GMT 41:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 7
11 006/06:15:00 MET 24:02 259/21:43:00 GMT 52:02	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd oare rotation setup
12 006/06:30:00 MET 259/21:58:00 GMT	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	pitch rotation

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 006/06:36:00 MET 259/22:04:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd pitch rot stop yaw rot setup
2 006/06:39:00 MET 259/22:07:00 GMT	LVLH FREE ROTATION ROTR ABOUT +Z AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	yaw rotation
3 006/06:45:00 MET 259/22:13:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd yaw rot stop roll rot setup
4 006/06:48:00 MET 259/22:16:00 GMT	LVLH FREE ROTATION ROTR ABOUT +X AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	roll rotation
5 006/06:54:00 MET 259/22:22:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd roll rot stop
6 006/07:20:00 MET 27:30 259/22:48:00 GMT 55:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
7 006/09:55:00 MET 10:03:42 260/01:23:00 GMT 31:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 346 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
8 006/18:00:00 MET 08:42 260/09:28:00 GMT 36:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
9 006/21:00:00 MET 13:19 260/12:28:00 GMT 41:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 8
10 007/07:20:00 MET 33:19 260/22:48:00 GMT 23:01:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
11 007/09:55:00 MET 10:03:42 261/01:23:00 GMT 31:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 338 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
12 007/18:00:00 MET 08:42 261/09:28:00 GMT 36:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply/waste dump

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 007/21:40:00 MET 53:19 261/13:08:00 GMT 21:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 9
2 008/06:05:00 MET 12:36 261/21:33:00 GMT 40:36	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 29.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 270 P 90	LVLH R= 90.00 P=180.00 Y=331.00	bias -ylv tail fwd s/l cond dump
3 008/07:20:00 MET 31:30 261/22:48:00 GMT 59:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
4 008/09:55:00 MET 10:03:42 262/01:23:00 GMT 31:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 225 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
5 008/18:00:00 MET 08:42 262/09:28:00 GMT 36:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
6 008/21:00:00 MET 13:19 262/12:28:00 GMT 41:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 10 crew conf
7 009/07:20:00 MET 33:19 262/22:48:00 GMT 23:01:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
8 009/09:55:00 MET 10:03:42 263/01:23:00 GMT 31:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 214 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
9 009/18:00:00 MET 08:42 263/09:28:00 GMT 36:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep off duty sply dump
10 010/01:35:00 MET 48:19 263/17:03:00 GMT 16:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 11
11 010/06:35:00 MET 48:19 263/22:03:00 GMT 16:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
12 010/09:10:00 MET 18:42 264/00:38:00 GMT 46:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 127 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 010/17:15:00 MET 23:42 264/08:43:00 GMT 51:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
2 010/20:15:00 MET 28:19 264/11:43:00 GMT 56:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 12
3 011/06:35:00 MET 48:19 264/22:03:00 GMT 16:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
4 011/09:10:00 MET 18:42 265/00:38:00 GMT 46:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 180 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
5 011/17:15:00 MET 23:42 265/08:43:00 GMT 51:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply/waste dump
6 011/20:55:00 MET 21:08:19 265/12:23:00 GMT 36:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 13
7 012/05:30:00 MET 39:02 265/20:58:00 GMT 21:07:02	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd oare rotation setup
8 012/05:45:00 MET 265/21:13:00 GMT	LVLH ROTR FREE ROTATION ABOUT +Y AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	pitch rotation
9 012/05:51:00 MET 265/21:19:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd pitch rot stop yaw rot setup
10 012/05:54:00 MET 265/21:22:00 GMT	LVLH ROTR FREE ROTATION ABOUT +Z AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	yaw rotation
11 012/06:00:00 MET 265/21:28:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd yaw rot stop roll rot setup
12 012/06:03:00 MET 265/21:31:00 GMT	LVLH ROTR FREE ROTATION ABOUT +X AXIS RATE=1.000	A5 LVLH PRI	DSC 0.200 DB AT 3.00 DB RT 0.20		LVLH R=180.00 P= 0.00 Y= 0.00	roll rotation

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 012/06:09:00 MET 265/21:37:00 GMT	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=180.00	A5 AUTO PRI	DSC 0.200 DB AT 3.00 DB RT 0.20	EARTH R 0 P 90	LVLH R=180.00 P= 0.00 Y= 0.00	-zlv nose fwd roll rot stop
2 012/06:15:00 MET 22:30 265/21:43:00 GMT 50:30	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
3 012/09:10:00 MET 18:42 266/00:38:00 GMT 46:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 30 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
4 012/17:15:00 MET 23:42 266/08:43:00 GMT 51:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
5 012/20:15:00 MET 28:19 266/11:43:00 GMT 56:19	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 14 fcs c/o rcs hotfire
6 012/22:45:00 MET 52:36 266/14:13:00 GMT 20:36	TGT=2 BV=5 P= 0.00 Y=270.00 OM= 29.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 270 P 90	LVLH R= 90.00 P=180.00 Y=331.00	bias -ylv tail fwd s/l cond dump
7 013/00:40:00 MET 47:36 266/16:08:00 GMT 15:36	TGT=2 BV=5 P=270.00 Y=275.00 OM=300.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 265 P 90	LVLH R=275.00 P= 0.00 Y=300.00	bias -ylv nn fd 14
8 013/06:35:00 MET 48:19 266/22:03:00 GMT 16:19	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 360 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns pre sleep sply dump
9 013/09:05:00 MET 13:42 267/00:33:00 GMT 41:42	TGT=2 BV=1 P= 0.00 Y= 0.00 OM=210.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 53 P 0	LVLH R=210.00 P=270.00 Y= 0.00	bias +xlv belly fwd sleep
10 013/16:10:00 MET 18:42 267/07:38:00 GMT 46:42	TGT=2 BV=3 P= 90.00 Y= 0.00 OM=270.00	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 90.00	-zlv ns post sleep sply dump
11 013/18:25:00 MET 33:03 267/09:53:00 GMT 10:01:03	TGT=4 BV=5 P=184.00 Y= 0.00 OM= 90.00 RA= 180.693 DEC= -0.299S	A1 AUTO VERN	DSC 0.200 DB AT 1.00 DB RT 0.02	SUN R 180 P 176	INRTL R=218.72 P= 2.82 Y= 3.20	-xsi
12 013/20:29:00 MET 36:06 267/11:57:00 GMT 12:04:06 (mnvr tig-2:58)	INRTL R=238.00 MNVR P= 78.00 Y=309.00	A1 AUTO PRI	DSC 0.200 DB AT 5.00 DB RT 0.20	SUN R 112 P 97	-Y: ST 54 -Z: ST 27	deorbit imu

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

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT	
1 013/20:42:00 MET 47:19 267/12:10:00 GMT 15:19	INRTL R= 92.00 MNVR P=218.00 Y= 17.00	TRANS AUTO PRI	DSC 0.500 DB AT 3.50 DB RT 0.50	SUN R 109 P 42	-Y: ST 38 -Z: ST 13	deorbit verif comm attitude
2 013/23:12:00 MET 13:57 267/14:40:00 GMT 41:57 (mnvr tig-0:15)	INRTL R= 51.00 MNVR P=185.00 Y=359.00 tig 13/23:26:32	TRANS AUTO PRI	DSC 0.500 DB AT 3.50 DB RT 0.50	SUN R 128 P 5		deorbit burn attitude

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

STS-58 DAP BOOK

DAP A CONFIGURATIONS

	ITEM #	A1*	A2	A3	A4	A5	A6	A7	A8	A58
TRANSLATION										
PULSE ft/sec	1	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.10
ROTATION										
DSC RT NORM °/sec	2	0.200	0.400	0.200	0.500	0.200	0.200	0.200	0.200	0.200
VERN °/sec	3	0.200	0.400	0.008	0.200	0.200	0.200	0.200	0.200	0.200
PULSE NORM °/sec	4	0.10	0.10	0.10	0.10	0.88	0.10	0.10	0.10	0.10
VERN °/sec	5	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
COMP NORM °/sec	6	.00	.00	.00	.00	.00	.00	.00	.00	.00
VERN °/sec	7	.000	.000	.000	.000	.000	.000	.000	.000	.000
DEADBAND										
ATT NORM (deg)	8	5.00	1.00	1.00	3.00	3.00	5.00	2.00	2.00	40.00
VERN (deg)	9	1.000	1.000	0.070	1.000	1.000	1.000	1.000	1.000	40.000
RATE NORM °/sec	10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30
VERN °/sec	11	.020	.020	.010	.020	.020	.020	.020	.020	.300
JET OPT										
P	12	1	1	1	1	1	3	1 or 3	1	3
Y	13	1	1	3	1	1	3	1 or 3	1	3
CNTL ACCEL	14	0	0	0	0	0	0	0	0	0

*I-LOADED OPS-2 DAP Configuration

DAP B CONFIGURATIONS

	ITEM #	B1*	B2	B3	B4	B5	B6	B7	B8
TRANSLATION									
PULSE ft/sec	15	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.01
ROTATION									
DSC RT NORM °/sec	16	0.500	0.200	0.200	0.200	0.200	0.200	0.500	0.200
VERN °/sec	17	0.200	0.200	0.200	0.008	0.016	0.200	0.200	0.200
PULSE NORM °/sec	18	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
VERN °/sec	19	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
COMP NORM °/sec	20	.00	.00	.00	.00	.00	.00	.00	.00
VERN °/sec	21	.000	.000	.000	.000	.000	.000	.000	.000
DEADBAND									
ATT NORM (deg)	22	3.00	3.00	3.00	0.30	3.00	10.00	2.00	2.00
VERN (deg)	23	1.000	1.000	1.000	0.100	0.033	10.000	1.000	1.000
RATE NORM °/sec	24	0.20	0.20	0.20	0.20	0.20	0.50	0.20	0.20
VERN °/sec	25	.020	.020	.020	.010	.020	.500	.020	.020
JET OPT									
P	26	1	3	1	3	3	1	1 or 3	1
Y	27	1	3	1	3	3	1	1 or 3	1
CNTL ACCEL	28	0	0	0	0	0	0	0	0

*I-LOADED OPS-2 DAP Configuration except TRANSLATION PULSE (I-LOADED is 0.02 ft/sec)

ALT DAP CONFIGURATIONS

	ITEM #	ALT1*	ALT2	ALT3
RATE DEADBAND	32	0.200	0.070	0.300
JET OPTION	33	1	1 or 3	3
NUMBER OF JETS	34	2	1	1
ON TIME	35	0.08	0.08	0.08
DELAY	36	0.00	0.00	0.00

*I-LOADED OPS-2 DAP Configuration



<u>DAP</u>	<u>PURPOSE</u>	<u>DAP</u>	<u>PURPOSE</u>
A1	- NOMINAL IMU ALIGN LOSS OF VERN (NOSE & TAIL)	B1	- NOMINAL PRCS IMU ALIGN OMS & RCS BURNS
A2	- PTC	B2	- LOSS OF VERN (TAIL ONLY)
A3	- GG	B3	- LOSS OF VERN (NOSE & TAIL) GG MNVR
A4	- PRE/POST DEPLOY	B4	- SSUS DEPLOY
A5	- OARE	B5	- COAS CAL
A6	- LOSS OF VERN (TAIL ONLY)	B6	- OARE
A7	- RENDEZVOUS	B7	- RENDEZVOUS
A8	- PROX OPS	B8	- PROX OPS
A58	- OARE GG CAL		

FLT PLN-1a/58/O/B



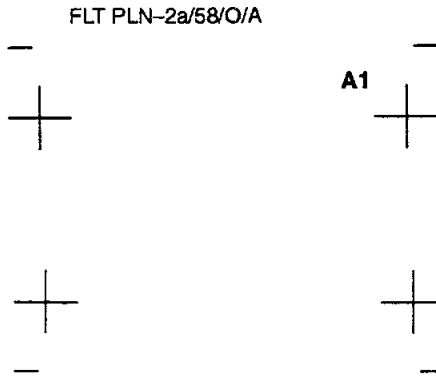
This DAP Book Page Intentionally Blank

FLT PLN-1b/58/O/A





DAP A



FLT PLN-2a/58/O/A

A1

DAP A1

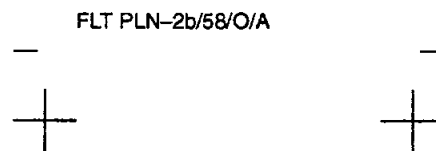
PURPOSE:

NOMINAL
IMU ALIGN
LOSS OF VERN
(NOSE & TAIL)

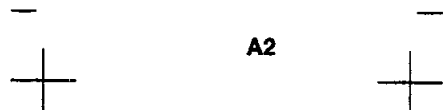


A1

		TRANSLATION	
0.10	1	PULSE	
		ROTATION	
0.200	2	DSC RT NORM	
0.200	3	VERN	
0.10	4	PULSE NORM	
0.010	5	VERN	
.00	6	COMP NORM	
.000	7	VERN	
		DEADBAND	
-5.00	8	ATT NORM	
-1.000	9	VERN	
0.20	10	RATE NORM	
-0.20	11	VERN	
1	12	JET OPT	P
1	13		Y
0	14	CNTL ACCEL	



FLT PLN-2b/58/O/A



A2

FLT PLN-3a/58/O/A



A1

DAP A2

PURPOSE:
PTC

FLT PLN-3b/58/O/A

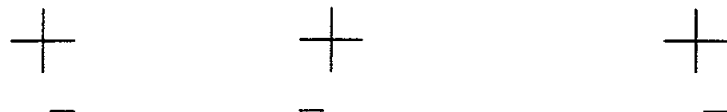
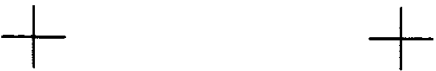


A2

DAP A3

PURPOSE:
GG

FLT PLN-4b/58/O/A



A2

0.10 1 TRANSLATION PULSE

ROTATION
0.400 2 DSC RT NORM
0.400 3 VERN
0.10 4 PULSE NORM
0.010 5 VERN
.00 6 COMP NORM
.000 7 VERN

DEADBAND
-1.00 8 ATT NORM
-1.000 9 VERN
0.20 10 RATE NORM
0.20 11 VERN

1 12 JET OPT P
1 13 Y

0 14 CNTL ACCEL

FLT PLN-4a/58/O/A



A3



A3

0.10 1 TRANSLATION PULSE

ROTATION
0.200 2 DSC RT NORM
0.008 3 VERN
0.10 4 PULSE NORM
0.010 5 VERN
.00 6 COMP NORM
.000 7 VERN

DEADBAND
-1.00 8 ATT NORM
-0.070 9 VERN

0.20 10 RATE NORM
0.10 11 VERN

1 12 JET OPT P
3 13 Y

0 14 CNTL ACCEL

FLT PLN-5a/58/O/A



A4



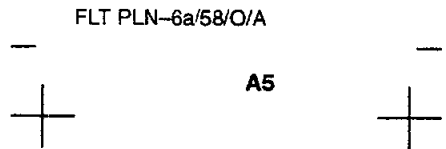
DAP A4
 PURPOSE:
 PRE/POST DEPLOY



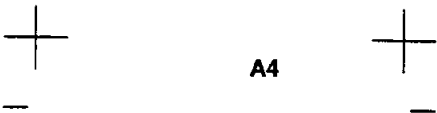
A4

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

FLT PLN-5b/58/O/A



A5



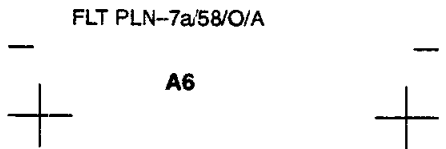
DAP A5
 PURPOSE:
 OARE



A5

	TRANSLATION	
0.1 0	1	PULSE
	ROTATION	
0.2 0 0	2	DSC RT NORM
0.2 0 0	3	VERN
0.8 8	4	PULSE NORM
0.0 1 0	5	VERN
.0 0	6	COMP NORM
.0 0 0	7	VERN
	DEADBAND	
-3.0 0	8	ATT NORM
-1.0 0 0	9	VERN
0.2 0	10	RATE NORM
.0 2 0	11	VERN
1	12	JET OPT P
1	13	Y
0	14	CNTL ACCEL

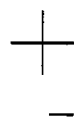
FLT PLN-6b/58/O/B



A6



A5



DAP A6

PURPOSE:
LOSS OF VERN
(TAIL ONLY)

A6

- 0.1 0 1 TRANSLATION PULSE
- 0.2 0 0 2 ROTATION DSC RT NORM
- 0.2 0 0 3 VERN
- 0.1 0 4 PULSE NORM
- 0.0 1 0 5 VERN
- .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-7b/58/O/A

FLT PLN-8a/58/O/A



A7



A6



DAP A7

PURPOSE:
RENDEZVOUS

A7

- 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 6 COMP NORM
- .0 0 0 7 VERN
- 2.0 0 8 DEADBAND ATT NORM
- 1.0 0 0 9 VERN
- 0.2 0 10 RATE NORM
- .0 2 0 11 VERN
- 1 or 3 12 JET OPT P
- 1 or 3 13 Y
- 0 14 CNTL ACCEL

FLT PLN-8b/58/O/A

FLT PLN-9a/58/O/A



A8



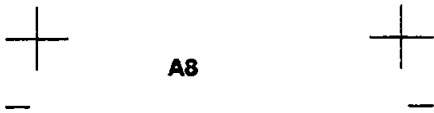


A7

DAP A8

PURPOSE:
PROX OPS

FLT PLN-9b/58/O/A



A8

DAP A58

PURPOSE:
OARE GG CAL

FLT PLN-10b/58/O/B



A8

- | | | | |
|----------|----|-------------|------|
| 0.05 | 1 | TRANSLATION | |
| | | PULSE | |
| | | | |
| ROTATION | | | |
| 0.200 | 2 | DSC RT | NORM |
| 0.200 | 3 | | VERN |
| 0.10 | 4 | PULSE | NORM |
| 0.010 | 5 | | VERN |
| .00 | 6 | COMP | NORM |
| .000 | 7 | | VERN |
| | | | |
| DEADBAND | | | |
| -2.00 | 8 | ATT | NORM |
| -1.000 | 9 | | VERN |
| | | | |
| 0.20 | 10 | RATE | NORM |
| .020 | 11 | | VERN |
| | | | |
| 1 | 12 | JET OPT | P |
| 1 | 13 | | Y |
| | | | |
| 0 | 14 | CNTL ACCEL | |

FLT PLN-10a/58/O/A



A58



A58

- | | | | |
|----------|----|-------------|------|
| 0.10 | 1 | TRANSLATION | |
| | | PULSE | |
| | | | |
| ROTATION | | | |
| 0.200 | 2 | DSC RT | NORM |
| 0.200 | 3 | | VERN |
| 0.10 | 4 | PULSE | NORM |
| 0.010 | 5 | | VERN |
| .00 | 6 | COMP | NORM |
| .000 | 7 | | VERN |
| | | | |
| DEADBAND | | | |
| 4.000 | 8 | ATT | NORM |
| 4.0000 | 9 | | VERN |
| | | | |
| 0.30 | 10 | RATE | NORM |
| .300 | 11 | | VERN |
| | | | |
| 3 | 12 | JET OPT | P |
| 3 | 13 | | Y |
| | | | |
| 0 | 14 | CNTL ACCEL | |

FLT PLN-24a/58/O/A





DAP B

FLT PLN-24b/58/O/A



FLT PLN-11a/58/O/A



DAP B1

B1

PURPOSE:

NOMINAL
PRCS IMU ALIGN
OMS & RCS
BURNS

15	0.10
16	0.500
17	0.200
18	0.04
19	0.002
20	.00
21	.000

22	3.00
23	-1.000

24	0.20
25	.020

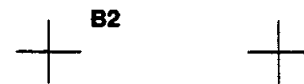
26	1
27	1

28	0
----	---

FLT PLN-11b/58/O/A



FLT PLN-12a/58/O/B





DAP B2

PURPOSE:

LOSS OF VERN
(TAIL ONLY)



B2

15	0.1 0
16	0.2 0 0
17	0.2 0 0
18	0.0 4
19	0.0 0 2
20	.0 0
21	.0 0 0
22	- 3.0 0
23	- 1.0 0 0
24	0.2 0
25	.0 2 0
26	3
27	3
28	0

FLT PLN-12b/58/O/A

FLT PLN-13a/58/O/B



DAP B3

PURPOSE:

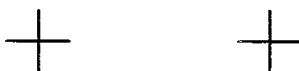
LOSS OF VERN
(NOSE & TAIL)
GG MNVR

B3

15	0.1 0
16	0.2 0 0
17	0.2 0 0
18	0.0 4
19	0.0 0 2
20	.0 0
21	.0 0 0
22	- 3.0 0
23	- 1.0 0 0
24	0.2 0
25	.0 2 0
26	1
27	1
28	0

FLT PLN-13b/58/O/A

FLT PLN-14a/58/O/B





DAP B4

PURPOSE:
SSUS DEPLOY



B4

15	0.10
16	0.200
17	0.008
18	0.04
19	0.002
20	.00
21	.000
22	<u>0.30</u>
23	<u>-0.100</u>
24	0.20
25	<u>-0.10</u>
26	3
27	3
28	0

FLT PLN-14b/58/O/A

FLT PLN-15a/58/O/B



DAP B5

PURPOSE:
COAS CAL



B5

15	0.10
16	0.200
17	0.016
18	0.04
19	0.002
20	.00
21	.000
22	<u>3.00</u>
23	<u>-0.033</u>
24	0.20
25	<u>0.20</u>
26	3
27	3
28	0

FLT PLN-15b/58/O/A

FLT PLN-16a/58/O/B



+ B5 +

DAP B6

PURPOSE:
OARE

+ +

B6

15	0.10
16	0.200
17	0.200
18	0.04
19	0.002
20	.00
21	.000
22	1.000
23	1.0000
24	0.50
25	0.500
26	1
27	1
28	0

FLT PLN-16b/58/O/B

FLT PLN-17a/58/O/B

+ +

+ B7 +

+ B6 +

DAP B7

PURPOSE:
RENDEZVOUS

B7

15	0.05
16	0.500
17	0.200
18	0.04
19	0.002
20	.00
21	.000
22	-2.00
23	-1.000
24	0.20
25	.020
26	1 or 3
27	1 or 3
28	0

FLT PLN-17b/58/O/A

FLT PLN-18a/58/O/A

+ +

+ B8 +

+ B7 +

+ +

DAP B8

B8

PURPOSE:
PROX OPS

15	0.01
16	0.200
17	0.200
18	0.04
19	0.002
20	.00
21	.000
22	-2.00
23	-1.000
24	0.20
25	.020
26	1
27	1
28	0

FLT PLN-18b/58/O/A

FLT PLN-19a/58/O/A

+ +

+ +

+ B8 +

+ DAP PURPOSE +

- ALT1 - NOMINAL I-LOAD
- ALT2 - LOSS OF VERNIS
- ALT3 - OARE CAL LOSS OF VERNIS

FLT PLN-20a/58/O/B

+ ALT1 +

FLT PLN-19b/58/O/A

+ +

+ **DAP ALT1** +

PURPOSE:
NOMINAL I-LOAD

FLT PLN-20b/58/O/A

+ **ALT1** +

RATE DB
32 0.200
JET OPT
33 1
JETS
34 2
ON TIME
35 -0.08
DELAY
36 -0.00

FLT PLN-21a/58/O/A

+ +

+ **ALT2** +

+ **DAP ALT2** +

PURPOSE:
LOSS OF VERNIS

FLT PLN-21b/58/O/A

+ **ALT2** +

RATE DB
32 0.070
JET OPT
33 1 or 3
JETS
34 1
ON TIME
35 -0.08
DELAY
36 -0.00

FLT PLN-22a/58/O/A

+ **ALT1** +

+ **ALT3** +

+ **DAP ALT3** +

PURPOSE:

OARE CAL
LOSS OF VERNIS

FLT PLN-22b/58/O/B

+ **ALT3** +

RATE DB	
32	0.3 0 0
JET OPT	
33	3
# JETS	
34	1
ON TIME	
35	- 0.0 8
DELAY	
36	- 0.0 0
FLT PLN-25a/58/O/A	

+ **ALT2** +

+ +

+ +

FLT PLN-25b/58/O/A

+ **ALT3** +

UNIV PTG	
TGT ID = 1	Orbiting Vehicle
= 2	Earth ctr
= 3	Earth tgt
	Input LAT (± 90)
	LON (± 180 , + = East)
	ALT (-3444.0 to 20000.0 nm)
= 4	Sun ctr
= 5	Celestial tgt
	Input RA (0-359.99)
	DEC (± 90)
= 11-110	Nav Stars
BODY VECT = 1	+X*
= 2	-X*
= 3	-Z*
= 4	-Y Star Tracker*
= 5	Optional
	Input P (0-359.99)
	Y (270-359.99, 0-90)
* input OM →	OM (0-359.99)
MON AXIS = 1	+X
2	-X
CNTL ACCEL = 0	Orbiter Alone
= 1 thru 5	not used
PRI JET OPT = 1	Normal
= 2	Nose only
= 3	Tail only
ALT JET OPT = 1	Normal
= 2	Illegal entry
= 3	Tail only

FLT PLN-23a/58/O/A

This DAP Book Page Intentionally Blank

FLT PLN-23b/58/O/A

STS-58
FLIGHT PLAN NOTES

FLT PLN
NOTES

FLIGHT PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION

Inclination: 39.0°
Altitude: 153 x 153
Duration: 14 + 2

Major Events

<u>EVENT</u>	<u>MET</u>	<u>DATE</u>	<u>CDT</u>	<u>GMT</u>	<u>ΔV</u>	<u>ORBIT</u>
Launch	0/00:00	9/10/93	10:28	253/15:28	--	--
OMS-2 C/O	0/00:40	--	--	--	198	153 x 153
D/O Burn	13/23:26	--	--	--	268	--
Landing	14/00:23	9/24/93	10:52	267/15:52	--	--

Landing opportunities are:

		<u>Landing Orbit</u>	<u>Site</u>	<u>Local Time</u>
		<u>No.</u>		
Nominal	Primary	225	EDW	08:51 PDT
	1 rev late	226	EDW	10:25 PDT
	Weather Alt	225	KSC	11:59 EDT
1 Day Late	Primary	241	EDW	08:44 PDT
	1 rev late	242	EDW	10:18 PDT
	Weather Alt	241	KSC	11:52 EDT
2 Days Late	Primary	257	EDW	08:36 PDT
	1 rev late	258	EDW	10:10 PDT
	Weather Alt	257	KSC	11:44 EDT

B. CREW

CDR - John Blaha
PLT (IV) - Rick Searfoss
MS1 - Rhea Seddon
MS2 - Bill McArthur
MS3 (EV2) - David Wolf
MS4 (EV1) - Shannon Lucid
PS - Martin Fettman

C. COMMUNICATIONS

TDRS Support: East (41° W), West (174° W)
Backup Real-Time TV: GDS(GDX), MIL(MLX)
Contingency GSTDN: MIL(MLX), BDA(BDX), DKR, DFR, GDS(GDX), MAD
Contingency RTS: HTS, GTS, VTS, IOS, CTS, OTS, DGS

Lead time for site call-up: GSTDN - 2 hr, RTS - 4 hr

D. PAYLOADS

1. Spacelab Life Sciences - 2

The SLS-2 dedicated life sciences mission is a continuation of life sciences investigations initiated on SLS-1. The experiments will be concentrated in four

science disciplines: cardiovascular/cardiopulmonary, neuroscience, regulatory physiology (renal/endocrine and hematology), and musculoskeletal. The 14 experiments which comprise the SLS-2 scientific payload consist of eight human and six rodent investigations.

1.1 Primary In-flight Payload Elements

Cardiovascular/Cardiopulmonary

a. In-flight Study of Cardiovascular Deconditioning (066)

The effects of zero gravity on circulatory and respiratory functions are determined for resting and exercising subjects by means of gas analysis using a noninvasive rebreathing technique.

b. Pulmonary Function During Weightlessness (198)

Human pulmonary function in zero gravity is observed by noninvasive measurement of parameters related to pulmonary gas exchange. Results will be compared to those obtained in Earth gravity.

c. Cardiovascular Adaptation to Zero Gravity (294)

This study of cardiovascular function and dimensions uses a variety of test methods on subjects at rest and during exercise.

Neuroscience

a. Vestibular Experiments in Spacelab (072)

A study of human vestibular adaptation to weightlessness and the basis of space motion sickness is performed using several techniques with emphasis on otolith system measurements.

b. A Study of the Effects of Space Travel on Mammalian Gravity Receptors (238)

The biochemical and structural integrity of the otolith organs of the rat are studied postflight to determine the chronic and/or progressive effects of space flight.

Regulatory Physiology

a. Regulation of Erythropoiesis in Rats During Space Flight (012)

The roles of nutritional status and hemoconcentration in rat blood cell production during space flight are studied.

b. Regulation of Blood Volume During Space Flight (141)

This investigation is designed to evaluate the use of rats as models for humans in hematological studies.

c. Fluid Electrolyte Regulation During Space Flight (192)

Blood, urine, and saliva samples are analyzed for parameters that indicate changes in fluid, electrolyte, renal, and circulatory status of humans exposed to weightlessness.

d. Influence of Space Flight on Erythrokinetics in Man (261)

Blood is collected from crewmembers to determine whether reduced red cell mass associated with microgravity is due to decreased production or increased hemolysis.

Musculoskeletal

a. Protein Metabolism During Space Flight (120)

Human whole-body metabolism is studied, using isotope-labeled glycine as a tracer to determine whether nitrogen loss is caused by decreased uptake and production of protein, or by increased mobilization and metabolism of muscle protein.

b. Effects of Zero Gravity on Biochemical and Metabolic Properties of Skeletal Muscle in Rats (127)

Alterations in the functional capacity of rat skeletal muscles are determined by the use of preflight and postflight exercise tests and tissue analysis.

c. Bone, Calcium, and Space Flight (194)

Analysis of rat wastes for tracer calcium added to the diet and bone morphology examinations are used to characterize bone loss attributable to microgravity.

d. Electron Microscopy, Electromyography, and Protease Activity of Rat Hindlimb Muscles (303)

Morphological, biochemical, and histochemical changes in muscles attributable to launch and re-entry stress, in-flight atrophy, and postflight repair are determined by in-flight activity monitoring and postflight analysis of enzymes.

e. Pathophysiology of Mineral Loss During Space Flight (305)

Dual Stable Isotopes of calcium are administered to crewmembers (one orally and one intravenously) to determine whether elevated fecal calcium is caused by decreased gastrointestinal absorption or by active gastrointestinal excretion.

2. Shuttle Amateur Radio Experiment (SAREX II-C)

SAREX II-C is a suite of amateur radio equipment consisting of a handheld transceiver, window antenna, headset assembly, interface module, spare battery set, packet module, and a personal tape recorder. SAREX will also use one of the orbiter PGSCs. The crew will use SAREX to communicate with various ground radio operators.

E. ON-ORBIT DTOs

1. ET TPS Performance (DTO 312)

Cameras located in the orbiter umbilical well and in the flight deck will be used to obtain photographs of the ET after separation.

2. On-Orbit PRSD Cryo H2 Boiloff (DTO 413)

This DTO will determine accurate power reactant stowage and distribution (PRSD) boiloff rates of Shuttle vehicles. This information will be used to more accurately predict cryo quantities for long-duration missions.

3. Cabin Air Monitoring (DTO 623)

This DTO will use the solid sorbent sampler to continuously sample the orbiter atmosphere throughout the flight. The solid sorbent sampler is to be flown on all Spacelab manned module flights.

4. Acoustical Noise Dosimeter Data (DTO 663)

The primary purpose of this DTO is to obtain baseline data of time-averaged acoustical noise levels in the middeck and the module using an audio dosimeter.

5. Acoustical Noise Sound Level Data (DTO 665)

The purpose of this DTO is to obtain baseline data of octave-band acoustical noise levels for the middeck and flight deck using a Spacelab analog sound level meter. The Spacelab sound level meter will also be used to record sound level readings for the SLS-2 payload.

6. Portable Inflight Landing Operations Trainer (PILOT) (DTO 667)

This DTO consists of a laptop PC with landing software and a spare RHC (essentially a landing simulator). The DTO will attempt to verify that the simulator will assist the CDR and PLT in maintaining a high level of proficiency for approach and landing on EDO missions.

7. Orbital Acceleration Research Experiment (DTO 910)

The OARE will acquire accurate measurement data of low level aerodynamic acceleration on the orbiter in the free-molecular flow regime of the upper atmosphere.

F. ON-ORBIT DSOs

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

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

2. Dried Blood Method for In-Flight Storage (DSO 325)

This DSO will examine the effects of space flight on the passive absorption of blood plasma onto a paper filter. Protocol 1 will have the crew draw blood from a subject and prepare several dried blood samples as well as some frozen control samples for analysis on the ground. Protocol 2 will utilize the same techniques as Protocol 1 except that no blood draws are required. The blood for the samples will be flown in a freezer. Protocol 2 is a reserve DSO and is not scheduled in the Flight Plan.

3. Orbiter Window Inspection (DSO 326)

This DSO will visually document window abrasions made by orbital debris. The crew will check the windows every morning and evening for new abrasions and will record their findings in a log.

4. InterMars Tissue Equivalent Proportional Counter (DSO 485)

This experiment is located in the payload bay and consists of a spectrometer, radiation detector, data storage board, computer clock, multi-channel analyzer, discriminators, amplifiers, and power supply.

The purposes of the experiment are to demonstrate the ability of the hardware to withstand the radiation environment and to gather data on the radiation environment for future EVAs and single event upset data.

The experiment will be activated by the crew in Post Insertion and deactivated in Deorbit Prep.

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

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

6. Air Monitoring Instrument Evaluation and Atmosphere Characterization (DSO 611)

DSO 611 is designed to evaluate and verify air monitoring equipment to ensure proper function and operation inflight. Data will be collected on contaminant levels during missions of varying durations to be used to establish baseline levels and to evaluate potential risks to crew health and safety. The Microbial Air Sampler (MAS) configuration will be flown on STS-58.

7. Energy Utilization (DSO 612)

DSO 612 will be used to develop, verify, and optimize appropriate countermeasures for maintaining entry, landing, and egress capabilities after extended duration flights. This requires prevention of muscle atrophy, weight loss, and negative nitrogen and potassium balances. Crewmembers will provide urine and saliva samples and will keep a log of all exercise, and food and fluid intake. Measurements will also be taken on the crewmembers' blood glucose level.

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

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

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

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

10. Lower Body Negative Pressure (LBNP) Countermeasures (DSO 623)

This experiment will assess the LBNP countermeasure effectiveness at the end of shuttle flights.

11. Cardiorespiratory Responses to Submaximal Exercise (DSO 624)

For this DSO the crew will wear a heart watch during exercise to help evaluate the changes in aerobic capacity pre-, in-, and postflight.

12. Education Activities (DSO 802)

The purpose of this DSO is to produce an educational video product with scenes recorded on orbit and on the ground. The crew will film several scenes on orbit using the camcorder.

13. Documentary Television (DSO 901)

This DSO requires live television transmission or VTR dumps of crew activities and spacecraft functions which include: Payload Bay Views, orbiter and payload crew activities, VTR downlink of Crew Activities, inflight Crew Conference, and unscheduled TV activities.

14. Documentary Motion Picture Photography (DSO 902)

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

15. Documentary Still Photography (DSO 903)

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

16. Assessment of Human Factors (DSO 904)

This DSO will evaluate human-machine interactions during GPWS operations and LBNP operations.

This Page Intentionally Blank

FLIGHT DATA FILE
Distribution
58 FLT PLN FSP FIM

** JSC **

AP/STALL, H.S.
AP/WARD, D.K.
AP3/BRANCH DISTRIBUTION (10)
AP5/CUMMINGS, L. (2)
AP5/SCHOER, R.K.
CA/PUDDY, D.R.
CA44/BERTRAND, O.J.
CB/BOLDEN, C.F.
CB/FAMILY ESCORT MGR
DA/LIBRARY
DA/STONE, B.R.
DA82/ACTION CENTER (2)
DDMS/STS CONT SUPPORT OFF
DF22/DPS FDF REP (7)
DF24/INCO FDF REP (3)
DF42/EVA (6)
DF43/CREW SYSTEMS
DF44/ROBOTICS SECTION (5)
DF62/GNC SECTION HEAD
DF63/PROP
DF63/SECTION HEAD
DF7/EECON/EGIL LIBRARY (3)
DG45/DINGWALL, J.
DI32/WALKER, C.S.
DJ2/BRANCH CHIEF
DJ4/QUICK, T.K. (3)
DM11/CHIEF
DM22/HEAD (2)
DM4/CHIEF
DM41/RANDELS, K.D.
DM42/HEAD (7)
DM43/HEAD (4)
DM43/STRAIGHT, D.J.
DM46/FDO
DM46/HEAD (2)
DM46/LSO
DO/CHIEF
DO/PIPPERT E.B., JR.
DO12/OPS SAFETY OFFICE
DO4/BOOK MANAGER FLT PLN (10)
DO4/FAO TEAM (20)
DO4/FLT PLANNING BRANCH (4)
DO45/HEAD

DO6/LIBRARY (18)
DP/CHIEF
DT23/DPS/NAV SECT (6)
DT23/TODD, K.
DT33/COMM (2)
DT35/PAYLOADS (3)
DT35/ROWEN, G.C.
DT46/SIM SUP OFFICE
DT48/TRAINING SYS SECTION (3)
DT66/CONTROL PROP (4)
EC/CTSD LIBRARY
EC3/ROTTER, H.A.
EC6/COUNTS, B.R. (2)
EE2/RCA SUPPORT
EE6/LEONARD, A.L. (2)
EE6/TCO/LIBRARY
EE7/SCHMALZ, M.D.
EG/CRITELLI, S. (2)
EG/LIBRARY
EG1/BLUCKER, T.J.
EG2/FRANK, K.
EK/LIBRARY
EP2/JENKINS, L.W.
ER61/MC FADIN, L. (2)
ES3/CHANG, Y. PHD
ES32/SERNA, R.
GA/HOLLOWAY, T.W.
GF/LIEBERGOT, S.A.
GF/LODEN, H.A.
JL/BILLINGSLEY, D.G. (2)
JL2/SLATER, R.
JL5/SUPPORT (2)
JM33/ST1 CENTER (3)
MER-30/LIBRARY (10)
NS2/CHIEF
NS4/LIBRARY (2)
SD/WATSON, T.L. (5)
SD26/PANDER, L. (2)
SD26/WARD, D.F.
SD5/CHARLES, J.B.
SE4/KALLA, L.
SN15/ERSAF
SN15/PITTS, D.
SN3/HARDY, A.C.
SP33/JOHNSON, M.L.
SP4/RAUCH, J.
SP44/KLOERIS, V.
SP44/SMITH, A.F.
TA/MANAGER
TB/CUSTOMER SUPT SPEC (4)
TC2/CONDE, A. (2)
TJ4/HOLLMAN, M.P.
TM2/MANAGER (3)

TH3/HOOVER, R.
VF32/GERLACH, D.A.
VG/MANAGER
VP/FLT SUPPORT EQUIP (3)
VP12/FITTS, D.J. (3)
VP5/GOODMAN, J.R. (2)
WE3/LIBRARY
ZR1/USAF TECHNICAL LIBRARY
ZS8/SNG

** JSC OFFSITE **

ALLIED SIGNAL-HOUSTON
8338-555/OSD DOCUMENT CNTL (5)

BARRIOS-HOUSTON
BARR/2-300/DEFENSE SYSTEMS GROUP

CAE LINK-HOUSTON
TSC/LIBRARY

LOCKHEED-HOUSTON
C70/KEENER, J.F.
C87/WEISSINGER, W.D.

MARTIN MARIETTA-HOUSTON
GEGS/VOLLMER, P.C. (23)
GEGS BLDG/MIC LIBRARY (5)
ID2/BRAND, S.H.

MCDONNELL DOUGLAS-HOUSTON
B1/BROUSSARD, A.
TA2CK/CARMODY, R.

PARAMAX-HOUSTON
B32F/BLD9/GARDNER, J.A.
U03D/HOPE, A.J.
U03D/IV&T MANAGER

RSOC-HOUSTON
R12A/SMITH, W.E.
R128-16/SAIL/GN&C
R16C/BERTRAND, B. (2)

R16C/ORB DSGN LIBRARY
R16C/SAWIN, D.L.
R16E/COOPER, D.
R16E/KOCEN, M.H.
R16E/NAVIGATION LIBRARY
R16E/TRAJ OPS SUPPORT (3)
R16H/FRENCH, J.
R20B/SYSTEMS LIBRARY
R21E1/MURRAY, J.
R21M/WARD, P.A.
ZC20/MEREDITH, M.

IBN-HOUSTON
6402A/SILVA, E. (3)

BOEING AEROSPACE-HOUSTON
P O BOX 58747
HOUSTON, TX 77058
HF-10/TRAVLOS, J.A.
HF-10/WIBLE, L.

CALSPAN/JOHNSON OPERATIONS
P O BOX 580668
HOUSTON, TX 77258-0668
F6E6S/MARTINEZ, M.A.

HONEYWELL-HOUSTON
2525 BAY AREA BLVD
SUITE 150
HOUSTON, TX 77058
GEDERBERG, T.

ROCKWELL-HOUSTON
ZC01/BATTLE, H.H.
ZC01/VESELKA, D.S.
ZC01/WOODALL, J.W.
ZC01-555/DEVAULT, G.H.
ZC01-555/TAYLOR, J.T.
ZC03/BRYAN, L.W.

** PRIORITY MAIL **

NASA GSFC
519.1/SPIF (2)
530/MORSE, G.

NASA GSFC
542.2/HENRY, D.G.
553.3/SLADE, M. (2)

NASA HEADQUARTERS
ME/MANN, B.J.(JEANNIE)
ME/PERRY, C.F. (2)
PM/MC CULLA, J.W.
PT/SHAFER, R.
SB/STEWART, D.F., MD (2)
SM-8/BENSON, R.H.

NASA KSC
CV-PSD-1/HACKEY, A.J.
F264/HUNTER, R.
F266/MC INTYRE, S.
F268/HOGSTON, C.R.
LSO-215/KELLY, T.E.
LSO-247/HOOPER, J. (2)
MK/SHAW, B.H.
PA-PIB/GRINTER, K.
TP-TMS-A/CREW QUARTERS
TP-TMS-B/VITT OFFICE
TP-VPD-1/SOWASH, S. (2)
LIBRARY-D

NASA MSFC
CA01/TAYLOR, J.B. (2)
CN22D/TECH DOC REPOSITORY
CT21/LIVINGSTON, J.
E002/MELTON, T. (2)
E022/DIGESU, S.
E022/PDF MGR (2)
E042/BRANCH CHIEF
E043/BRANCH CHIEF
E052/CHIEF DATA MGMT
ES44/HILL, C.K.
NT1/MARSHAL OPERATIONS

FALCON AIR FORCE BASE
SPACE COMMAND
50055-DOSL
FALCON, CO 80912-5000
LAUNCH OPERATIONS OFF

ROCKWELL INTERNATIONAL DOWNEY
SPACE SYSTEMS DIVISION
12214 LAKEWOOD BOULEVARD
DOWNEY, CA 90241
841-2,AC85/TAYLOR, B.N.
841-2,FA43/MALAGON, M.J. (28)
FB13/FRANK, G.

WHITE SANDS TEST FACILITY
P O DRAWER MM
LAS CRUCES, NM 88004
GC/GOMEZ, N.

** U.S. MAIL **

MCDONNELL DOUGLAS-HUNTSVILLE
689 DISCOVERY DRIVE
HUNTSVILLE, AL 35806
21A1/SPACELAB LIBRARY
23B1/FRENCH, A.L.
23B1/SHERRICK, S.
32C2/SPACEHAB
MDSSC/TRW/ANDERS, B.

ALLIED/BENDIX AEROSPACE
OAG SUITE 450
10210 GREENBELT RD
SEABROOK, MD 20706
BEADLING, R. (5)

CANADIAN ASTRONAUT PROGRAM OFF
P O BOX 7014
STATION V
VANIER, ONTARIO
K1L 8E2
AIKENHEAD, B.A.

DRAPER LABORATORIES
555 TECHNOLOGY SQUARE
CAMBRIDGE, MA 02139-3539
M54A/LARSON, R.A.
M54C/TURNBALL, J.
KACHMAR, P.

HAMILTON STANDARD
BRADLEY FIELD RD.
WINDSOR LOCKS, CT 06096
1A-2-X65/RUEL, S.D.

HONEYWELL AVIONICS DIVISION
13350 US HWY 19N
CLEARWATER, FL 34624-7290
MS737-5/MC GUIRE, G.M.

INTERMETRICS, INC.-CA
5312 BOLSA AVE
HUNTINGTON BEACH, CA 92649
KOEHLER, K.

INTERMETRICS, INC.-WA
1750 112TH AVE NE
SUITE D-151
BELLEVUE, WA 98004
NIKKEL, G.

NASA GSFC-AL
117 JETPLEX CIRCLE
SUITE C-7
MADISON, AL 35758
442/OLSON, K.

ROCKWELL INTERNATIONAL CORP.
ROCKETDYNE DIVISION
6633 CANOGA AVENUE
CANOGA PARK, CA 91303
055-LA38/CONNOR, T.J.
055-LA38/LOVELY, R.G.

SPAR AEROSPACE
9445 AIRPORT ROAD
BRAMPTON, ONTARIO
CANADA L6S4J3
WOODLAND, C. (2)

TELEDYNE BROWN ENGINEERING
CUMMINGS RESEARCH PARK
300 SPARKMAN DRIVE, NW
P. O. BOX 070007
HUNTSVILLE, AL 35807-7007
MS 172/GILCHRIST, M.

=====
Total 414
(07/23/93 - MKITCHEN)

NOTE
* FOR CHANGES *
* IN DISTRIBUTION *
* OR ADDRESS CORRECTIONS *
CONTACT THE FDF MANAGEMENT
* OFFICE AT (713) 244-7893 *
* OR MAIL TO *
DO46/DISTRIBUTION MANAGER,
* HELEN CANADA *
