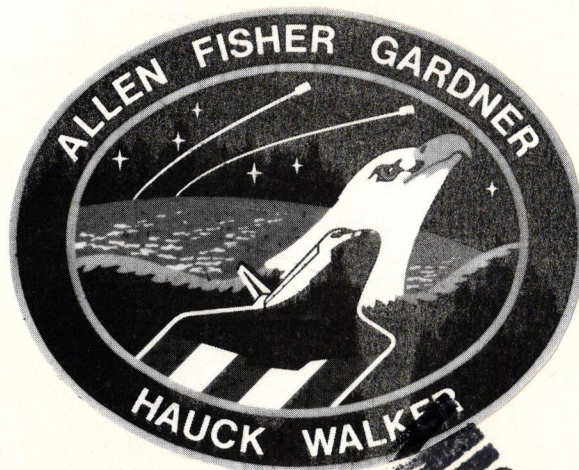


MASTER #1



10-1985

MICROFILMED

**CREW ACTIVITY
PLAN**

**STS
51-A**

<u>CONTENTS</u>	<u>PAGE</u>
INTRODUCTION.....	v
STS 51-A OVERVIEW.....	1-1
SUMMARY TIMELINE.....	2-1
DETAILED TIMELINE.....	3-1
FLT DAY 1.....	3-2
FLT DAY 2.....	3-6
FLT DAY 3.....	3-10
FLT DAY 4.....	3-15
FLT DAY 5.....	3-20
FLT DAY 6.....	3-24
FLT DAY 7.....	3-29
FLT DAY 8.....	3-34
FLT DAY 9.....	3-38
CONTINGENCY TIMELINES.....	4-1
HIGH PRIORITY MISSION.....	4A-1
CONSUMABLES CURVES.....	5-1
STS 51-A DAP BOOK.....	6-1
STS 51-A ATTITUDE TIMELINE	7-1

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INTRODUCTION

The STS 51-A Crew Activity Plan is the flight data file article that contains the on-orbit timeline. It does not contain the detailed timelines that are covered in the Ascent, Post Insertion, Rendezvous, EVA, Deorbit Prep, and Entry checklists. The STS 51-A Rendezvous book contains all RMS procedures required until grapple of the HS376 spacecraft. The EVA checklist contains the detailed procedures required for HS376 berthing including MFR, RMS, and MMU operations. All other RMS procedures are in the PDRS OPS Checklist. For continuity, the entire flight is shown in the summary level timeline.

The section entitled 'Crew Activity Plan Notes (constraints and guidelines)', included in CAPs for previous flights, has been published as a generic document (not in individual CAPs).

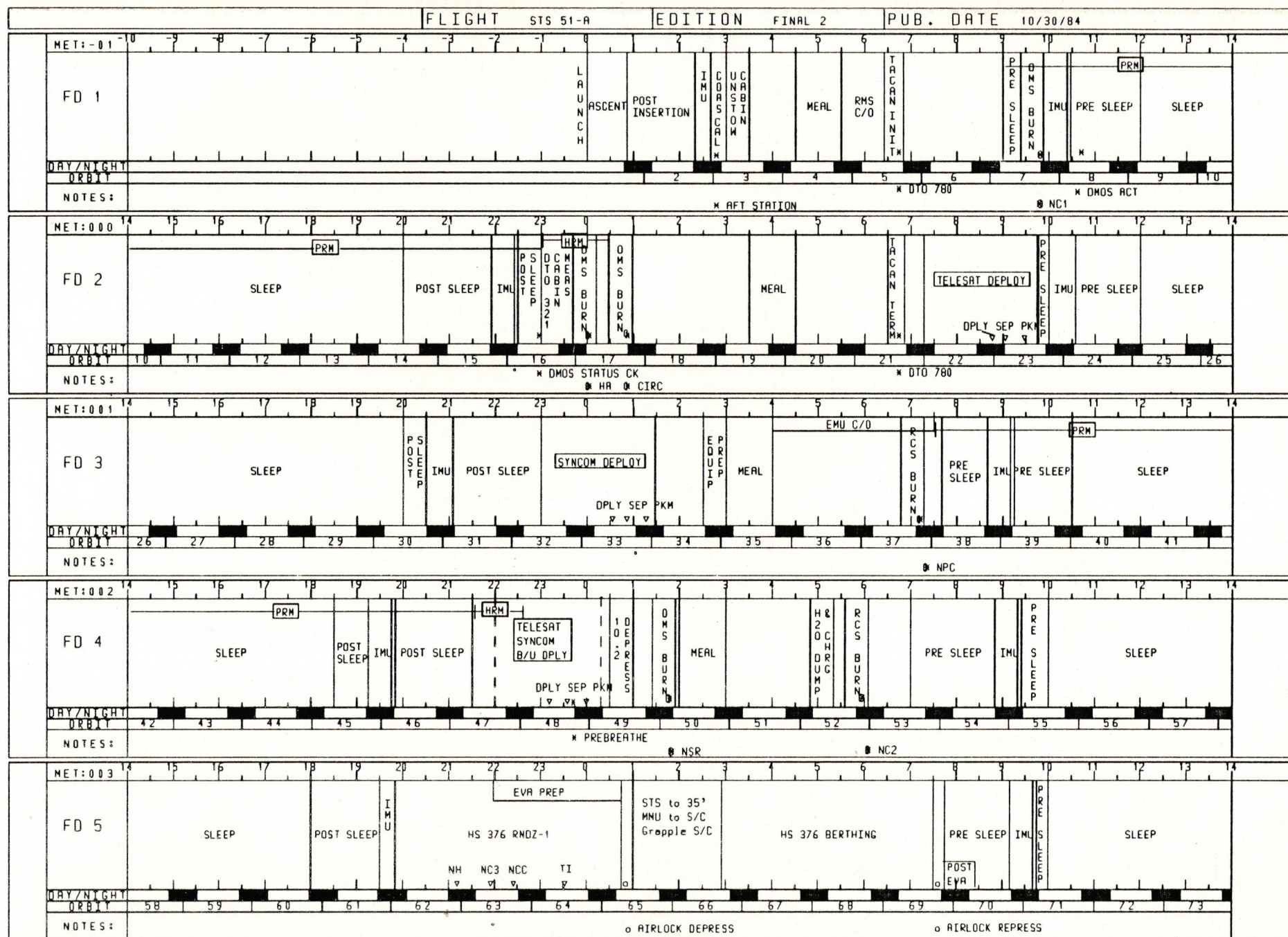
This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive and the requirements of the STS 51-A Flight Requirements Document.

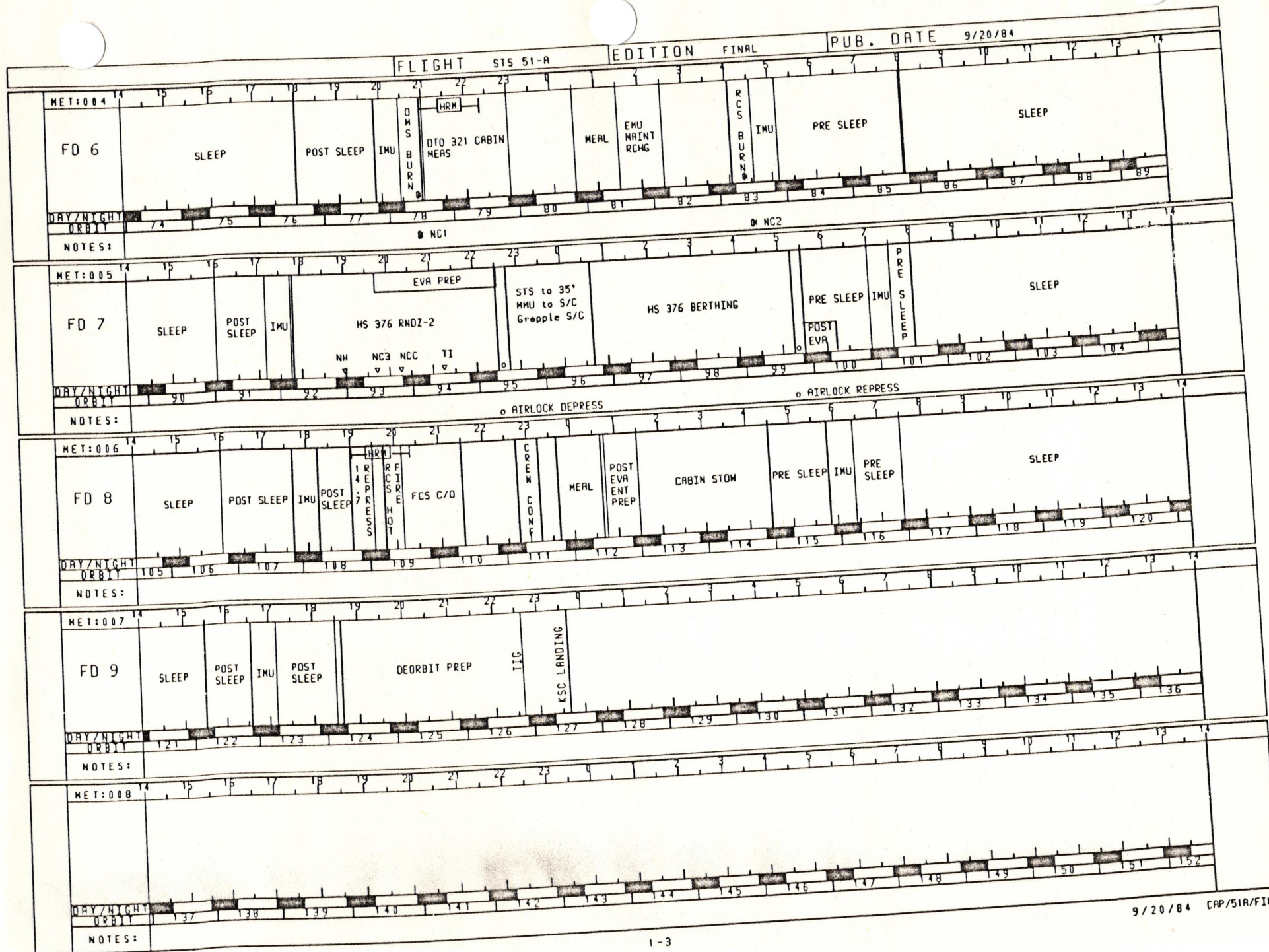
The flight profile (Cycle 5 trajectory data) used for this Crew Activity Plan is for a launch date of November 2, 1984, at 13:23 GMT. Orbiter inertial attitudes are expressed relative to Mean of 1950 (M50) reference frame.

Exercise has not been scheduled but will be accomplished every day except for the ascent and entry days.

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STS 51-A OVERVIEW





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SUMMARY TIMELINE

SUMMARY TIMELINE

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
307:13:23/ 308:01:23	000:00:00/ 000:12:00	307:07:23/ 307:19:23	01/ 307 CST	-30.1		NOVEMBER 2, 1984	STS 51-A	FINAL 2	10/30/84

CST : 307	FD : 01	MET : 000
-----------	---------	-----------

STS	POST INSERTION	IMU MNV	IMU MNV	ZLV MNV	AFT MNV	PLAMP/SSM CONF	APU COLL	RMS PWRUP	RMS C/O	RMS PWRDN	TACAN	OMS BURN	IMU MNV	ZLV MNV
LAUNCH	OMS - 1	OMS - 2	PLBD MNV	PLBD OPS	KU-BD DPLY	UNSTOW CABIN	FOOD MARKS	MEAL PREP	MEAL					PRE SLEEP ACT
PL			CL STATUS SHLD	STATUS CK				CAMERA ASSEMBLY						
DAY/NIGHT														
ORBIT														
GSTON COVERAGE	-DKR	-YAR	-BDA -DKR -ACN	-GDX -MIL -MLX	-ACN	-GDX -MIL -ACN	-GMM -HAW	-GMM -HAW	-GMM -HAW	-GMM -HAW	-GMM -HAW	-GMM -HAW	-GMM -HAW	-GMM -HAW
TORS														
ATTITUDE	ASCENT	BIASED -ZLV	IMU											

NOTES:	• AFT STATION • APU HTR DEACT • -ZLV, -XVV • APU HTR RECONFIG • 0700 0780 ON-ORBIT TACAN NAVIGATION • -ZLV, -YVV * * NOTE: THE LAUNCH TIME FOR 7 NOV IS 13:18 GMT VICE 13:23. ALL GMT/CST TIMES SLIP 5 MIN. * *
--------	---

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
308:01:23/ 308:13:23	000:12:00/ 001:00:00	307:19:23/ 308:07:23	01 / 307 CST	-28.4		NOVEMBER 2, 1984	STS 51-A	FINAL	9/20/84

CST : 307	FD : 01	MET : 000	12	13	14	15	16	17	18	19	20	21	22	23	0
CST:308 FD:02															
STS	SLEEP										IMU ZLV MNV R			OMS BURN	
	POST SLEEP ACT										CAP MERS		AM LIRCKNS		
	OMS START														
PL	HAWK DEACT														
DAY/NIGHT	9 10 11 12 13 14 15 16														
ORBIT															
STON COVERAGE	-GMM -AGO -ACN -DKR -GMM -AGO -DKR -DKR -MAD -MAX -YAR -ORR -MLX -MIL -BDA -DKR -MAD -MAX -YAR -ORR -MLX -MIL -BDA -DKR -YAR -HAW -GDX														
TORS E M	-ZLV -YVV -ZLV -YVV														
ATTITUDE	-ZLV -YVV -ZLV -YVV														
NOTES:	0 DTD 0321 CREW COMPARTMENT STRUCTURE DEFLECTION 0 -ZLV, -XVV														

[illegible]

9/20/84 CAP/51A/FIN

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
311:01:23/ 311:13:23	003:12:00/ 004:00:00	310:19:23/ 311:07:23	04/ 310 CST	-17.4		NOVEMBER 5, 1984	STS 51-A	FINAL	9/20/84

CST : 310
 FD : 04
 MET : 003

20 21 22 23 0 1 2 3 4 5 6 7
 CST: 311
 FD: 05
 12 13 14 15 16 17 18 19 20 21 22 23

STS	SLEEP				IMU MULTI MNR		RENDEZVOUS-1				M C I V
							NH ▼ NC3 ▼ NCC ▼ TI ▼				
					POST SLEEP ACT						
									P/TV SETUP	P/TV ACT	
PL									EVA PREP		
DAY/NIGHT											
ORBIT	57 58 59 60 61 62 63 64										
GSTDN COVERAGE	-ACN -DKR -GMM -AGO -DKR -MAX -BDA -DKR -MAD -MAX -MIL -MLX -BDA -DKR -MAD -MAX -YAR -ORR -MIL -MLX -BDA -DKR -YAR -ORR -GDX -GDS -MIL -BDA -MLX -DKR -ACN -YAR -HAM -DKR -GDX -GDS -MIL -MLX -BDA										
TDRS E M											
ATTITUDE	-ZLV -YVV IMU RNDZ										
NOTES:											

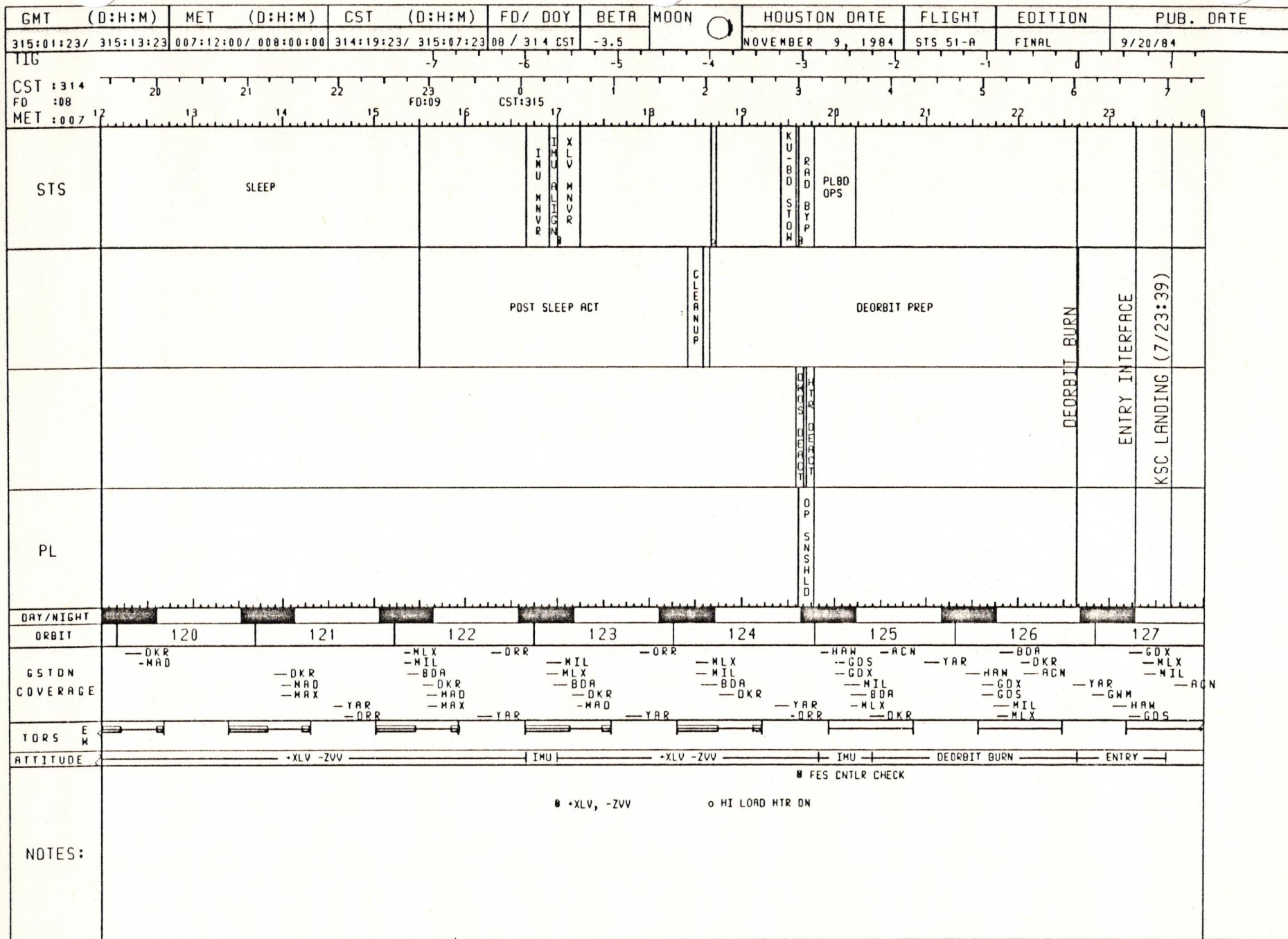
10/30/84 CAP/51A/FIN 2

9/20/84 CAP/51A/FIN

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
313:13:23/ 314:01:23	006:00:00/ 006:12:00	313:07:23/ 313:19:23	07 / 313 CST	-8.4	☉	NOVEMBER 8, 1984	STS 51-A	FINAL	9/20/84

CST : 313 FD : 07 MET : 006		0 1 2 3 4 5 6 7 8 9 10 11 12													
STS									IMUL U M N V R	SM ON L V A R T C R K	SLEEP				
		P/TV ACT						PRE SLEEP ACT							
		EVA SUPPORT (RMS/WFR OPS)													
		G R A P P L E S / C	I N S T A B S	I N S T A D A P T R	B E R T H S / C			AR IE RP L R E C S K S	POST EVA						
PL															
DAY/NIGHT															
ORBIT	96	97	98	99	100	101	102	103							
GSTON COVERAGE	-GDS -GDX -MIL -MLX -BDA -ACN	-HAM -GDX -GDS -MIL -ACN	-GWM -HAM -AGO	-GWM -HAM -AGO	-GWM -HAM -AGO	-GWM -HAM -AGO	-GWM -HAM -AGO	-GWM -HAM -AGO	-GWM -HAM -AGO	-GWM -HAM -AGO	-GWM -HAM -AGO				
TORS E M	-GWM	-GWM	-GWM	-GWM	-GWM	-GWM	-GWM	-GWM	-GWM	-GWM	-GWM				
ATTITUDE	RNDZ	SOLAR TRK				IMU	SOLAR TRK								
NOTES:	RENDEZVOUS-2														

GMT (D:H:M)	MET (D:H:M)	CST (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
314:13:23/ 315:01:23	007:00:00/ 007:12:00	314:07:23/ 314:19:23	08 / 314 CST	-5.1	☉	NOVEMBER 9, 1984	STS 51-A	FINAL 2	10/30/84
CST : 314 FD : 08 MET : 007									
STS	POST EVA ENT PREP	CABIN STOW			IMU MNV R	XLV MNV R		SLEEP	
			RMS PWR UP	H2O DUMP SURVEY	RMS PWR DN	PRE SLEEP ACT			
	MEAL								
PL									
DAY/NIGHT									
ORBIT	112	113	114	115	116	117	118	119	
GSTON COVERAGE	-GMM -HAM -GDS -GDX -MIL -MLX --ACN	-GMM -HAM -GDS -GDX	-GMM -HAM -AGO -ACN	-GMM -HAM -AGO -ACN	-GMM -HAM -AGO -ACN	-ACN -GMM -AGO -ACN -DKR	-GMM -AGO -ACN -DKR	-GMM -AGO -ACN -DKR	-GMM -AGO -ACN -DKR
TORS E M									
ATTITUDE	SOLAR TRK IMU XLV -ZVV								
NOTES:									



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DETAILED TIMELINE

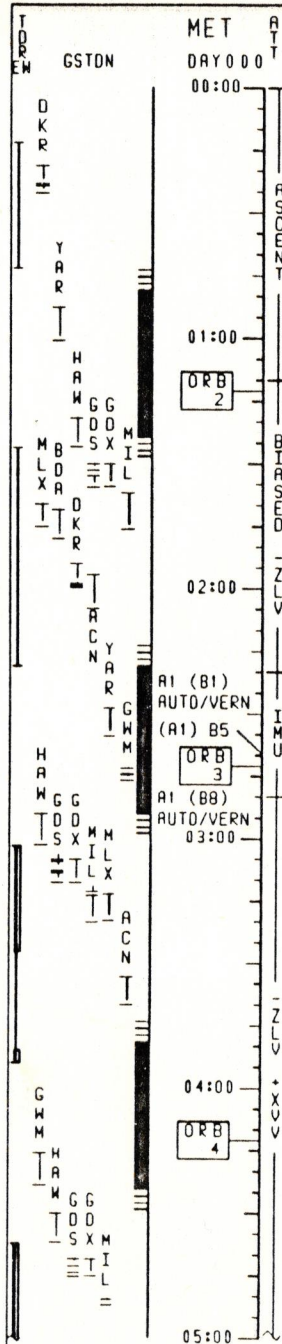
DETAILED
TIMELINE

DETAILED TIMELINE

STS 51-A DETAILED

PL

MCC



Activities prior to 0/02:20 MET are in the
ASCENT and POST INSERTION CHECKLISTS
Orbiter attitude when entering the CAP
is BIASED -ZLV, +XUV

COAS CALIBRATION LOG

STAR ID: -Z 13, RIGEL
STAR AVAIL UNTIL: 03:04

-Z Δ BIAS

UPDATE TIME: _ / _ : _ : _

IMU ALIGN LOG

STAR ID: -Y: 38, NAVI
-Z: 13, RIGEL
ANG DIF: 85.2

STARS AVAIL: 02:19 TO 03:04

REQD ID: -Y _ -Z _ ANG ERR _ . _ _
1 2 3

ANG: ΔX () _ . _ () _ . _ () _ . _

ΔY () _ . _ () _ . _ () _ . _

ΔZ () _ . _ () _ . _ () _ . _

EXECUTION TIME: _ / _ : _ : _

◀ MNVR IMU ALIGN ATT

STAR PAIR (A1)

A/AUTO/VERN (02:20) Init MNVR

IMU ALIGN - S TRK (ORB OPS)

COAS CALIBRATION (ORB OPS)

Change DAP B to B8

MNVR (TRK) -ZLV, +XUV

TG=2 BV=3 OM=180

A/AUTO/VERN Init TRK

AFT CONTROLLER C/O

(ORB OPS, GNC)

PCS 1(2) CONFIG (ORB OPS) (2 CMN)

LAMP & FIRE SUPPR TEST

(ORB OPS, EPS)

019 ✓COAS PWR-OFF, Mount COAS-AFT

UNSTOW CABIN EQUIP

FOOD WARMER ACT (CUE CARD)

MEAL PREP (CUE CARD)

P/TV CAMR ASSY
(PHOTO/TV, P/TV DATA)

APU STEAM VENT HTR DEACT

R2 BLR CNTLR (three) - OFF

ON MCC CUE

R2 APU FUEL PUMP/VLV COOL B-OFF

CNTLR PWR(three) -OFF

MEAL

UPDATE (ACN)
REFSMAT
NORMALIZATION

INFORM CREW
GO FOR APU
COOL OFF

TV (HAW)
(GND CNTL-PLB)

M C C

S T S

MEAL

RMS POWERUP
(PDRS OPS, RMS PWRUP)

RMS CHECKOUT
(PDRS OPS, RMS C/O)

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

RMS POWERDOWN
(PDRS OPS, RMS PWDRN)
NOTE: In step 2, leave
the arm deployed

TACAN INIT - DTO 0780
L1 ✓AV BAY 1,2,3 FAN A(B) - ON
L4 cb AC1#C TACAN 1 - CL
AC2#C TACAN 2 - CL
AC3#C TACAN 3 - CL
07 TACAN 1,2,3 MODE (three) - GPC
ANT SEL - AUTO

UPDATE (TDRS)
OMS BURN PAD

PRM, Step 1 (PL OPS, RME)

PAM ASE TEMP CHECK
(PAM DPY, CN-ORR OPS)

UPDATE (HAW)
H2O SPLY DUMP
QTY TKS A & B

ON-ORBIT OMS BURN
(ORB OPS, OMS)
(2 CMN) |

PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

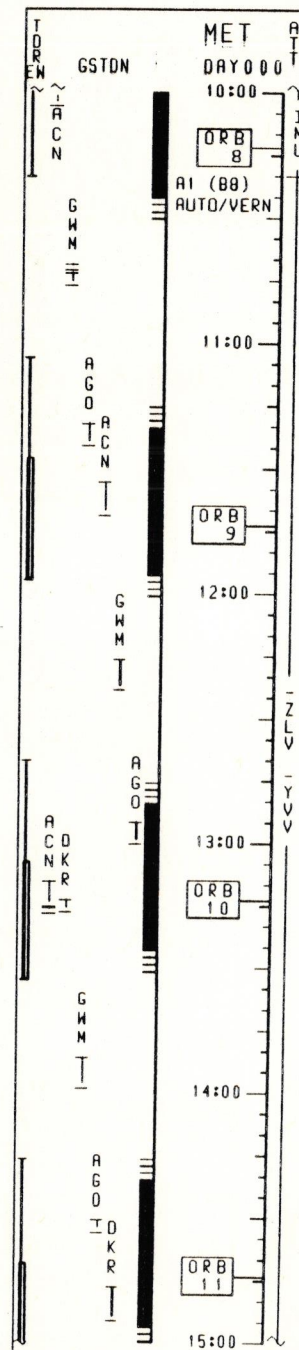
◀ NC1 TIG (0/09:48)

◀ MNVR IMU ALIGN AT STAR PAIR (A1)
A/AUTO/VERN (09:55) Init MNVR

STS 51-A DETAILED

PL

MCC



STS

MNVR IMU ALIGN ATT

IMU ALIGN - S TRK (ORB OPS)

Change DAP B to B8

MNVR (TRK) -ZLV, -YVV

TG=2 BV=3 OM=90

A/AUTO/VERN Init TRK

PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

IMU ALIGN LOG

REQD ID:

-Y____, -Z____ ANG ERR ____
1 2 3

ANG:

ΔX () ____ () ____ () ____

ΔY () ____ () ____ () ____

ΔZ () ____ () ____ () ____

EXECUTION TIME:

____ / ____ : ____ : ____

DMOS, STEP 1 (PL OPS, DMOS)

SLEEP

M C C

TDR EN

GSTON

MET DAY 000

R1 (88)

AUTO/VERN

15:00

16:00

ORB 12

17:00

ZLV

YVV

ORB 13

18:00

ORB 14

19:00

20:00

MAX T

ORR

YAR T

B O A R T

M I L T

H L X T

D K R A D

MAX T

STS

SLEEP

STS 51-A DETAILED

PL

MCC

STS

Change DAP 8 to B8

MNVR (TRK) -ZLV, +XVV

TG=2 BV=3 ON=180

A/AUTO/VERN Init TRK

MET
DAY 001

01:00
A1 (B8)
AUTO/VERN
ORB
18

02:00

ORB
19

03:00

04:00

ORB
20

05:00

ORB
21

06:00

MEAL PREP (CUE CARD)

MEAL

MCC ONLY
START PRELIM
DPLY COMP
CYCLE

MCC ONLY
PRELIM DPLY
COMP RESLTS
TO POCC

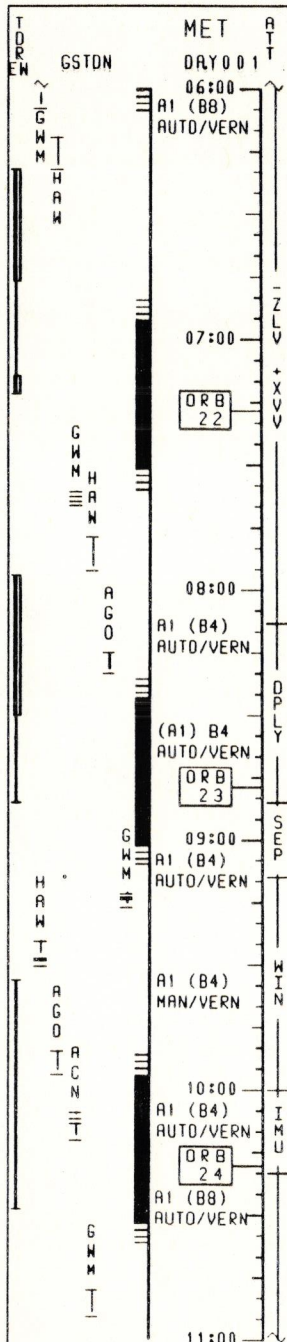
MCC ONLY
DPLY UPDATES
DUE FROM
POCC
START FINAL
DPLY COMP
CYCLE

STS 51 - A DETAILED

STS

PL

MCC



TACAN TERM - DTD 0780
 07 TACAN 1,2,3 MODE (three) - OFF
 L4 cb AC14C TACAN 1 - OP
 AC24C TACAN 2 - OP
 AC34C TACAN 3 - OP

IMU ALIGN LOG
 RECD ID:

-Y ____, -Z ____, ANG ERR __. __. __
 1 2 3

ANG:

ΔX () . . . () . . . () . . .

ΔY () . . . () . . . () . . .

ΔZ () . . . () . . . () . . .

EXECUTION TIME:

__ / __ : __ : __

PRE SLEEP ACTIVITY
 (ORB OPS, CREW SYS)

◀ MNVR IMU ALIGN ATT
 STAR PAIR (A1)
 A/AUTO/VERN (10:00) Init MNVR
 IMU ALIGN - S TRK (ORB OPS)
 Change DAP B to BB
 MNVR (TRK) -ZLV, -YVV
 TG=2 BV=3 OM=90
 A/AUTO/VERN Init TRK

P/TV 03 SETUP (SAT DEPLOY-PAM)
 (PHOTO/TV, P/TV SCENES)

P/TV 03 ACT (SAT DEPLOY-PAM)
 (PHOTO/TV, P/TV SCENES)

RMS POWERDOWN
 (PDRS OPS, RMS PHRON)
 NOTE: In step 2, leave
 the arm deployed
 LOAD PCMMU FORMAT (ORB OPS)
 Load 103 / 161

PAM ASE TEMP CHECK
 (PAM DPY, ON-ORB OPS)

DEPLOY REVIEW

TELESAT CHECKOUT AND DEPLOY
 (PAM DPY, PREDEPLOY CHECKOUT)

MNVR TO DEPLOY ATT

MEC SEQ START/SUNSHIELD OPEN
 SPIN SEQ START

◀ DEPLOY (01/08:47)

◀ SEP BURN (01/09:02)
 RMS PWUP
 MNVR WINDOW PROTECT ATT

◀ PKM (RMS PKM VIEW)

UPDATE (GMM)
 DEPLOY &
 SEP PADS

UPLINK (TORS)
 DPLY TIME &
 SEP PAD

MCC ONLY
 START B/U
 DPLY COMP
 CYCLE

TV (HAW)
 (GND CNTL-CAB)

UPLINK (HAW)
 KU COMM
 PWR - ON

UPDATE (AGO)
 H2O SPLY DUMP
 QTY TKS A & B

STS 51-A DETAILED

PL

MCC

PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

MET
DAY 001
11:00
AI (B8)
AUTO/VERN
ORB 25
12:00
ORB 26
13:00
ORB 27
14:00
15:00
16:00

GSTDN

TOR EN

AGG TACN

GWN

AGG TACN

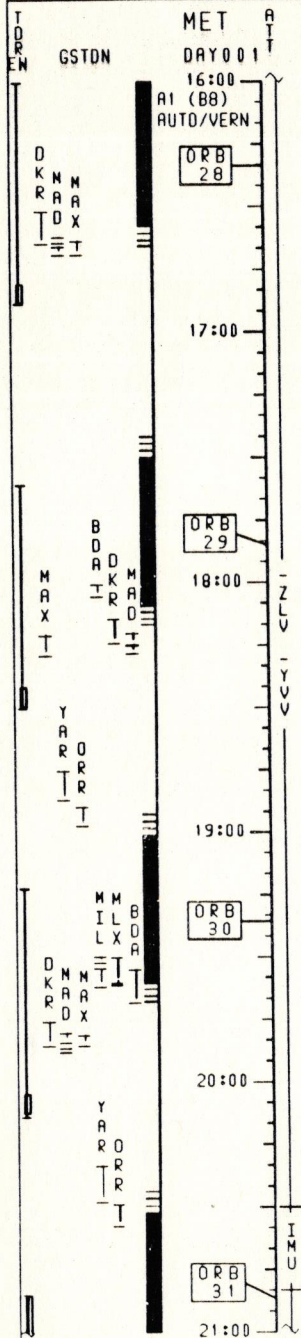
GWN

DKR

STS 51-A DETAILED

PL

MCC



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

MCC ONLY
 PRELIM DPLY
 COMP RESULTS
 TO POCC
 UPDATE (YAR)
 H2O SPLY DUMP
 QTY TKS A & B
 OMS/RCS
 ICONNECT
 CONFIG

Diagram illustrating the timeline and sequence of events for STS 51-A, detailing the deployment and operation of the Orbiter (ORB) and the External Tank (ET) and Solid Rocket Boosters (SRB).

Timeline (MET DAY 001):

- 21:00:** MET DAY 001. STS 51-A DETAILLED.
- 22:00:** POST SLEEP ACTIVITY (ORB OPS, CREW SYS).
- 23:00:** P/TV 03 SETUP (SAT DEPLOY-SYNCOM) (P/TV, P/TV SCENES).
- 23:00:** P/TV 03 ACT (SAT DEPLOY-SYNCOM) (P/TV, P/TV SCENES).
- 00:00:** DEPLOY REVIEW.
- 00:00:** PAYLOAD CHECKOUT AND DEPLOY (SYNCOM OPY, PAYLOAD CHECKOUT AND DEPLOY).
- 00:00:** PIVOT/KEEL PIN RETRACTION.
- 00:00:** DEPLOY OPS.
- 01:00:** MNVR TO DPLY ATT.
- 01:00:** PUSH OFF PIN RETRACTION.
- 01:00:** STATUS CHECK.
- 01:00:** DEPLOY (2/00:39).
- 01:00:** SEP BURN (2/00:53).
- 01:00:** RMS PWRUP.
- 01:00:** MNVR WINDOW PROTECT ATT.
- 01:00:** PKM (RMS PKM VIEW).
- 01:00:** VTR SETUP (03 - SYNCOM) (Cue Cord).
- 01:00:** VTR PLAYBACK (03 - SYNCOM) (Cue Cord).
- 01:00:** VTR at TORS (01:45-02:08).
- 02:00:** RMS POWERDOWN (PDRS OPS, RMS PWRDN).
- 02:00:** NOTE: In step 2, leave the arm deployed.

Configuration and Operations:

- Config DAP A,B to A1,B8:** MNVR (TRK) -ZLV, -XVV. TG-2 BV-3 OM-180. A/AUTO/VERN Init TRK.
- Orbiter (ORB) Operations:**
 - ORB 32
 - ORB 33
 - ORB 34
- Deployment and Operations:**
 - DEPLOY REVIEW
 - PAYLOAD CHECKOUT AND DEPLOY (SYNCOM OPY, PAYLOAD CHECKOUT AND DEPLOY)
 - PIVOT/KEEL PIN RETRACTION
 - DEPLOY OPS
 - MNVR TO DPLY ATT
 - PUSH OFF PIN RETRACTION
 - STATUS CHECK
 - DEPLOY (2/00:39)
 - SEP BURN (2/00:53)
 - RMS PWRUP
 - MNVR WINDOW PROTECT ATT
 - PKM (RMS PKM VIEW)
 - VTR SETUP (03 - SYNCOM) (Cue Cord)
 - VTR PLAYBACK (03 - SYNCOM) (Cue Cord)
 - VTR at TORS (01:45-02:08)
 - RMS POWERDOWN (PDRS OPS, RMS PWRDN)
 - NOTE: In step 2, leave the arm deployed.

Additional Information:

- MCC ONLY:** DPLY UPDATES DUE FROM POCC. START FINAL DPLY COMP CYCLE.
- UPDATE (MIL):** DEPLOY & SEP PADS. UPLINK (BOA). DPLY TIME & SEP PAD.
- MCC ONLY:** START B/U DPLY COMP CYCLE.
- TV (MIL):** (GND CNTL-CAB).
- UPLINK (HAW):** KU COMM. PHR - ON. VTR (TORS).

STS 51-A DETAILED

MCC

PL

VTR PLAYBACK (03 - SYNCOM)

VTR PLAYBACK (03 - TELESAT)
(Cue Card)
VTR at HAW, TORS (03:09-03:43)

VTR (HAW, TORS)

TV/VTR DEACT
(Cue Card)

UPDATE (HAW)
RCS BURN PAD

STS

MEAL PREP (Cue Card)

EQUIP PREP
(EVA, EQUIP PREP)
(2 CMN)

NOTE: Do not config 35 mm cameras

MEAL

RMS POWERUP
(PORS OPS, RMS PHRUP)
SPLY/WASTE H2O DUMP NOZ SURVEY
(PORS OPS, EXT SURVEYS)
WASTE WATER DUMP
(ORB OPS, ECLS)

EMU CHECKOUT
(EVA, EMU CHECKOUT)
(2 CMN)

RMS POWERDOWN
(PORS OPS, RMS PHRDN)
Note: Step 2, leave MPMs deployed

ON-ORBIT RCS BURN
(ORB OPS, RCS)
(2 CMN)

MET
DAY 002

AI (B8)
AUTO/VERN

ORB
35

03:00

04:00

ORB
36

05:00

ORB
37

06:00

07:00

GSTDN

MB
ID
LA

TACN

YARG

MM

ILX

TT

ACNT

TT

ACNT

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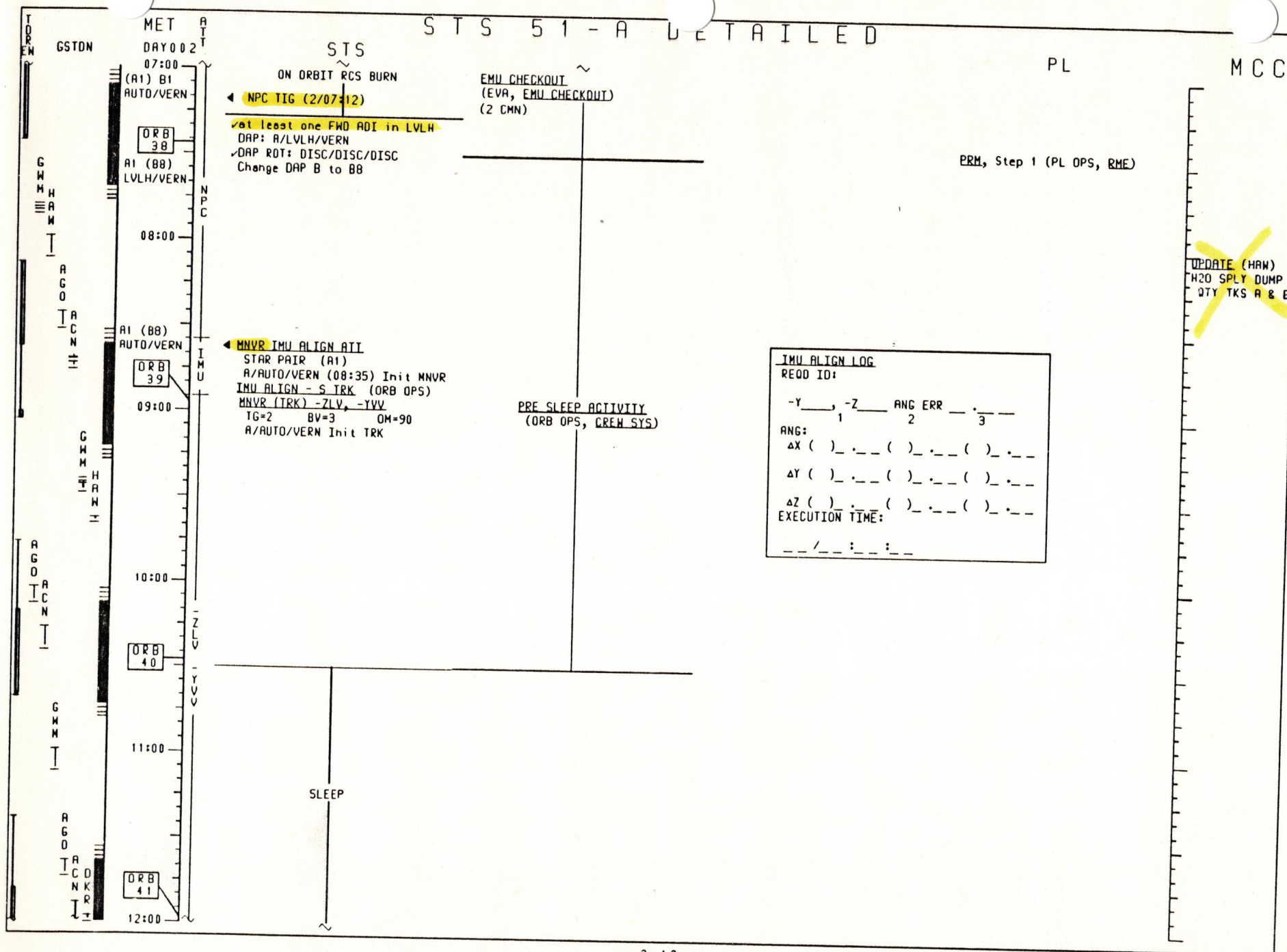
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TT

STS 51-A DETAILED

PL

MCC

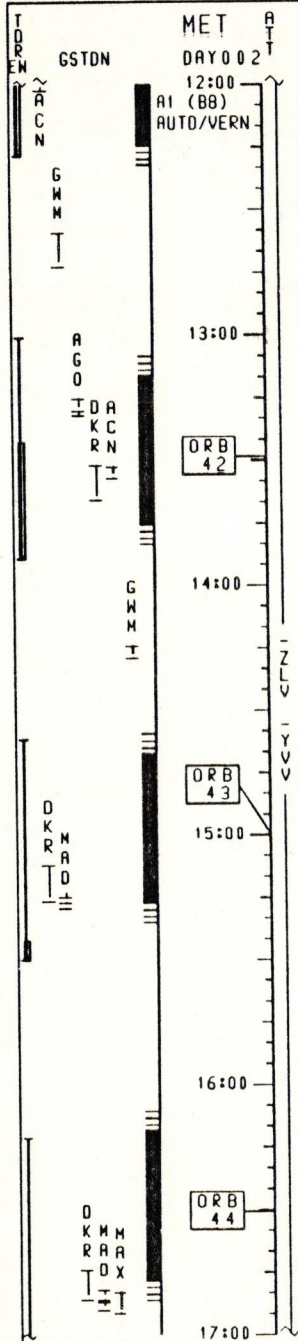


IMU ALIGN LOG		
REQ ID:		
-Y	-Z	ANG ERR
1	2	3
ANG:		
ΔX	()	()
ΔY	()	()
ΔZ	()	()
EXECUTION TIME:		
//:_/_/_/		

STS 51-A DETAILED

PL

MCC



STS

SLEEP

M C C

[illegible]

M C C

STS

Script TV
DMS 2

UPDATE (MIL)
OMS BURN PAD

NC TIG (2/23/33)
Change DAP B to B8
MNVR (TRK) -ZLV, +XVV
TG=2 BV=3 OM=180
A/AUTO/VERN Init TRK

EVA crew 2 tabs aspirin

PREP FOR 10.2 PSI CABIN
(C EVA OPS, 10.2 PSI CABIN)
CABIN DEPRESS TO 10.2 PSI
(C EVA OPS, 10.2 PSI CABIN)
(2 CMN)

P/TV 04 SETUP (MIDDECK ACT)
(PHOTO/TV, P/TV SCENES)

P/TV 04 ACT (MIDDECK ACT)
(PHOTO/TV, P/TV SCENES)

LFH PREBREATH INIT & TERM
(C EVA OPS, 10.2 PSI CABIN)
(2 CMN)

UPDATE (ACN)
OMS BURN PAD

01:00

MEAL PREP (CUE CARD)

10.2 PSI CABIN CONFIG

(C EVA OPS, 10.2 PSI CABIN) (2 CMN)

ON-ORBIT OMS BURN
(ORB OPS, OMS)
(2 CMN)

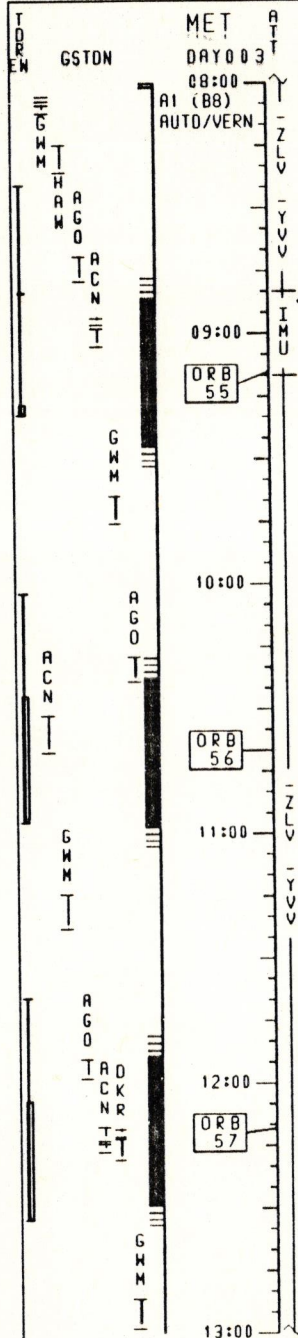
◀ NSR TIG (3/01/50)
Change DAP B to B8
MNVR (TRK) -ZLV, +XVV
TG=2 BV=3 OM=180
A/AUTO/VERN Init TRK

MEAL

STS 51-A DETAILED

PL

MCC



COAS CAL ?

MNVR TMU ALIGN ATT
 STAR PAIR (A1)
 A/AUTO/VERN (08:50) Init MNVR
 TMU ALIGN - S TRK (ORB OPS)
 MNVR (TRK) -ZLV, -YVV
 TG=2 BV=3 OM=90
 A/AUTO/VERN Init TRK

PRE SLEEP ACTIVITY
 (ORB OPS, CREW SYS)

SLEEP

TMU ALIGN LOG

READ ID:

-Y____, -Z____ ANG ERR ____
 1 2 3

ANG:

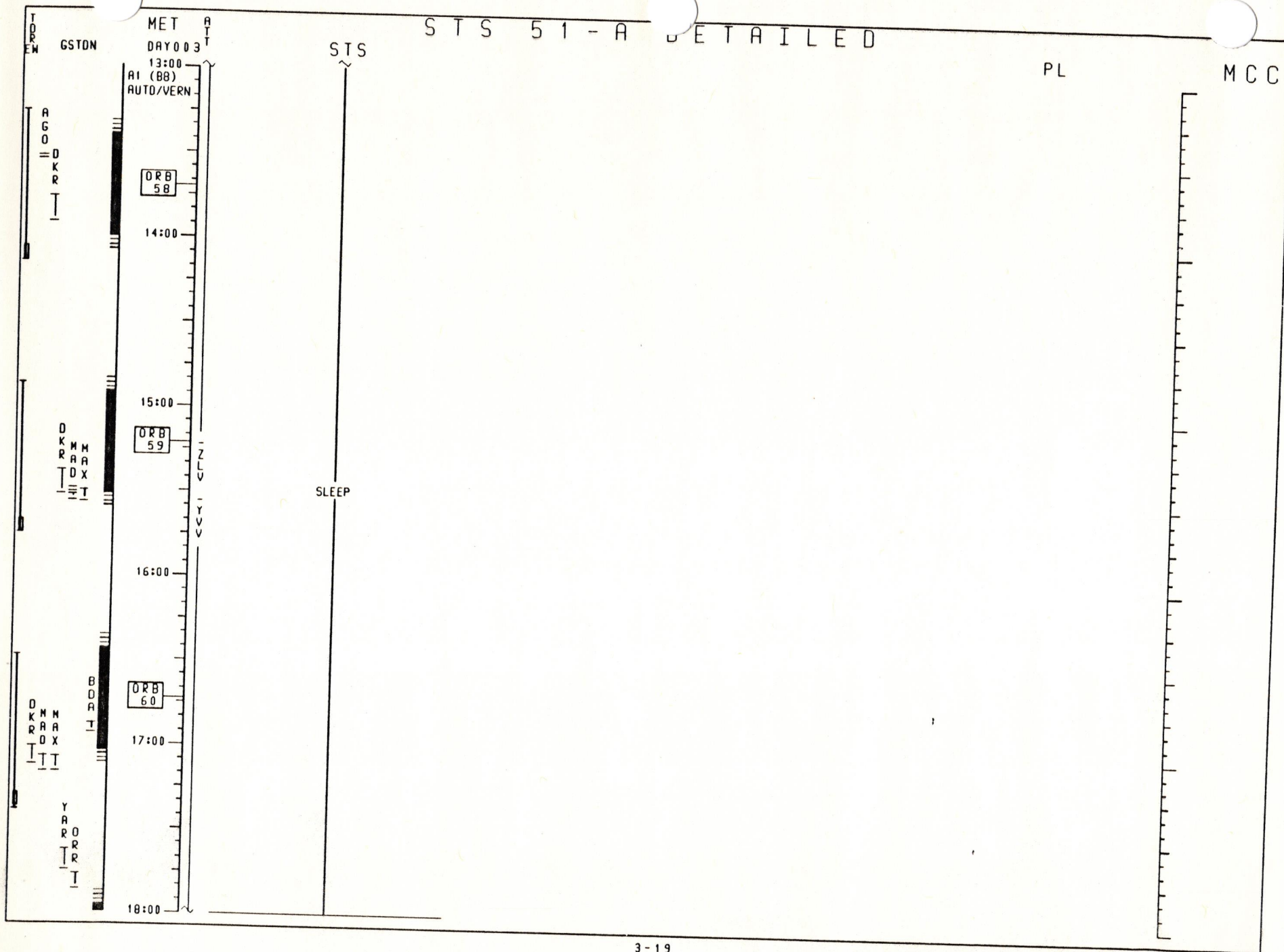
ΔX () ____ () ____ () ____

ΔY () ____ () ____ () ____

ΔZ () ____ () ____ () ____

EXECUTION TIME:

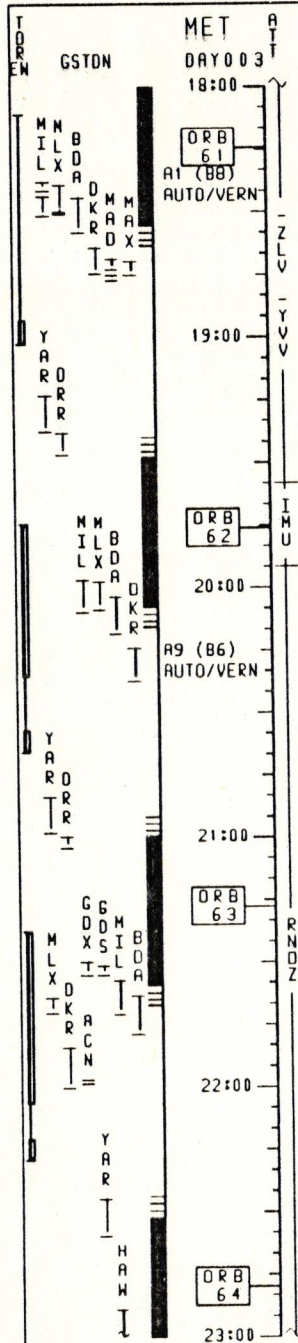
__ / __ : __ : __



STS 51-A DETAILED

PL

MCC



NOMINAL
RNDZ PET 0/00:00
EQUALS
MET 3/21:13 (NH TIG)

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

◀ MNVR IMU ALIGN ATT
STAR PAIR (B1)
A/AUTO/VERN (19:35) Init MNVR
IMU ALIGN - 5 TRK (ORB OPS)
DETAILED TIMELINE
(RNDZ, RNDZ-1)
(2 CMN)

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

◀ NH TIG (3/21:13)

P/TV 05 SETUP (EVA PREP)
(PHOTO/TV, P/TV SCENES)

P/TV 05 ACT (EVA PREP)
(PHOTO/TV, P/TV SCENES)

◀ NC3 TIG (3/21:59)

EVA PREP
(EVA, EVA PREP)
(3 CMN)

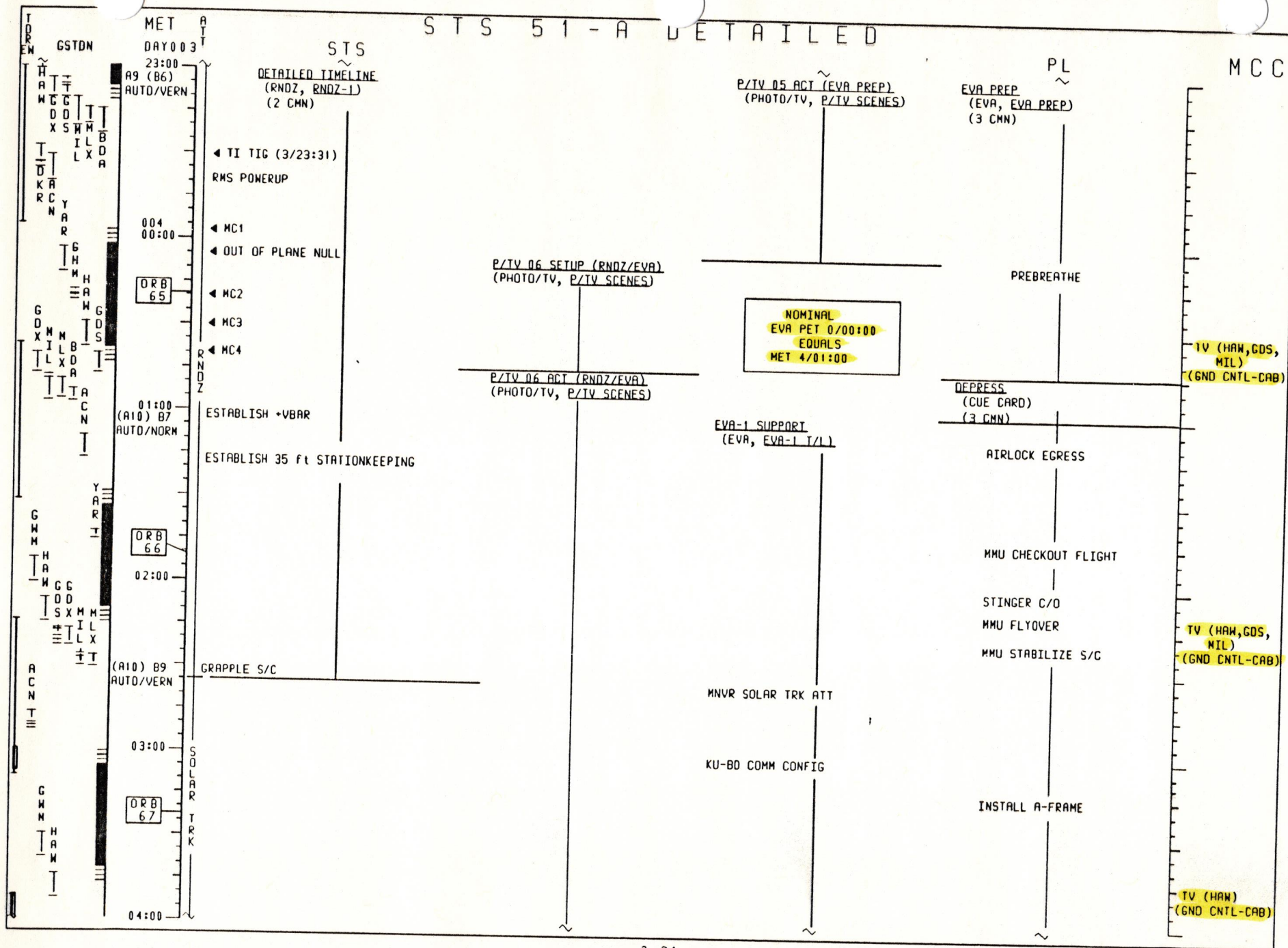
◀ NCC TIG (3/22:33)

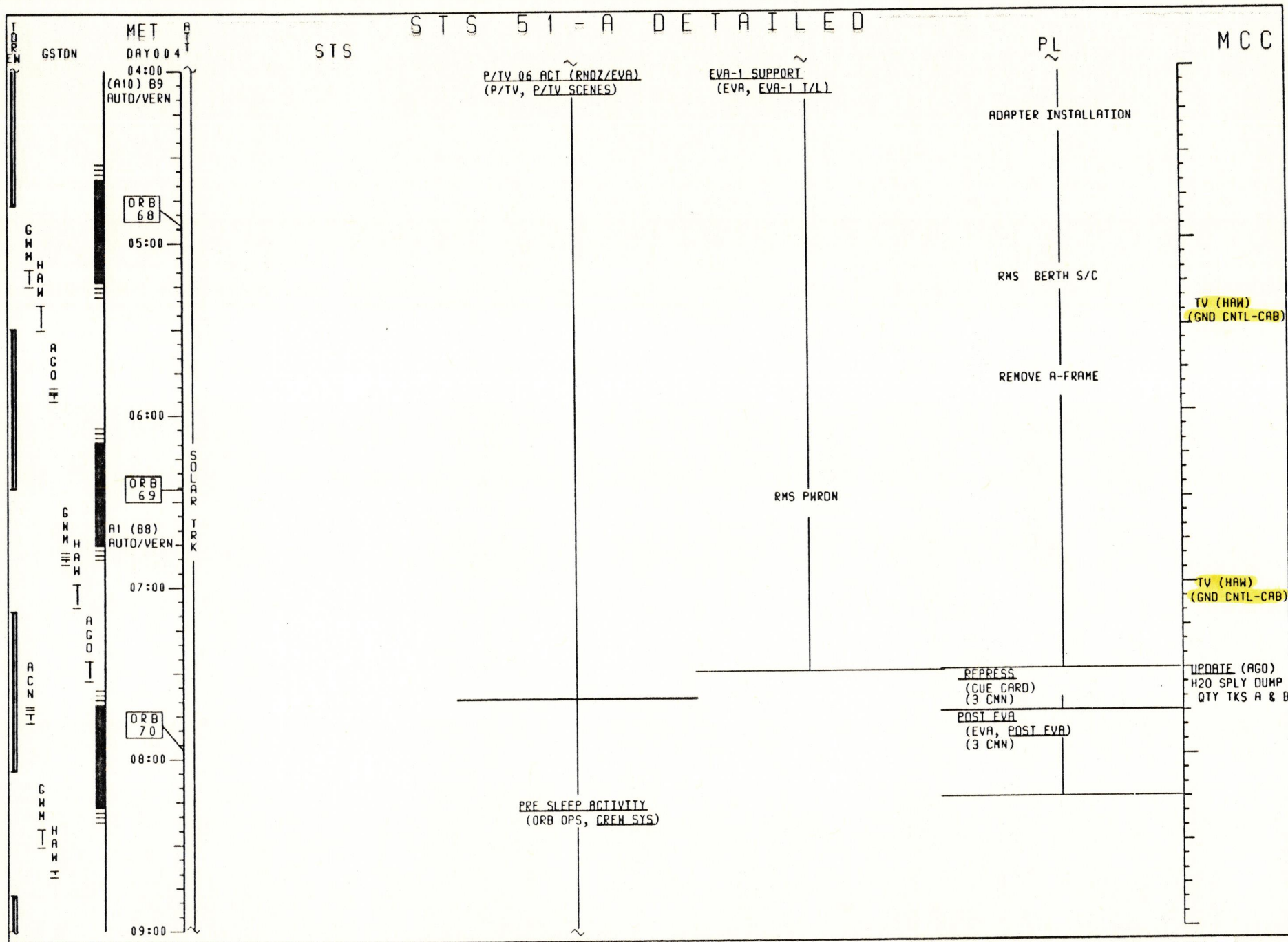
UPDATE (MIL)
H2O SPLY DUMP
QTY TKS A & B
DMS/RCS
ICONNECT
CONFIG

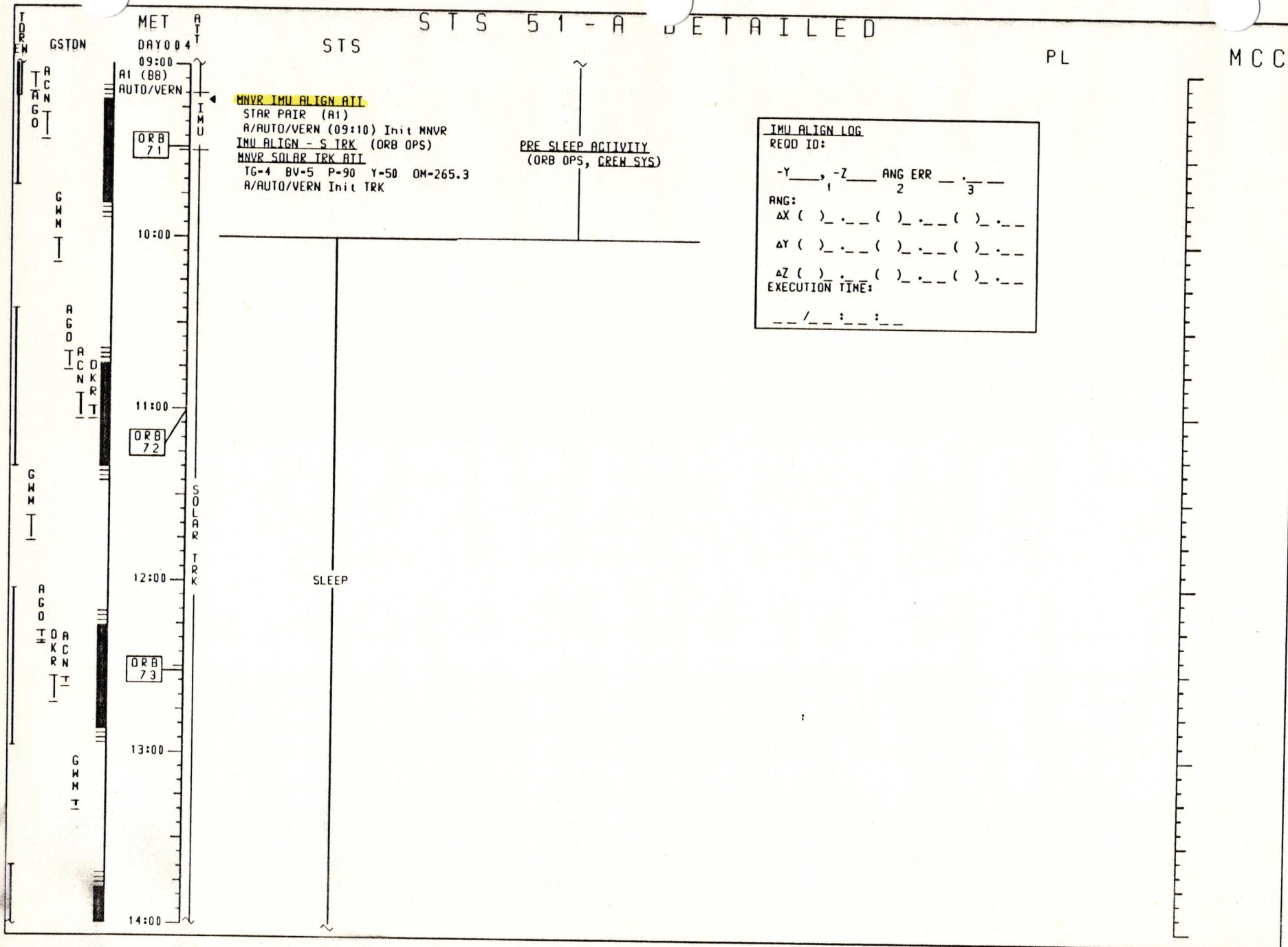
UPLINK (DKR)
TGT SV AND
COV MATRIX

UPDATE (YAR)
PREL NH, NC3 &
TI BURN PADS

STS 51-A DETAILED



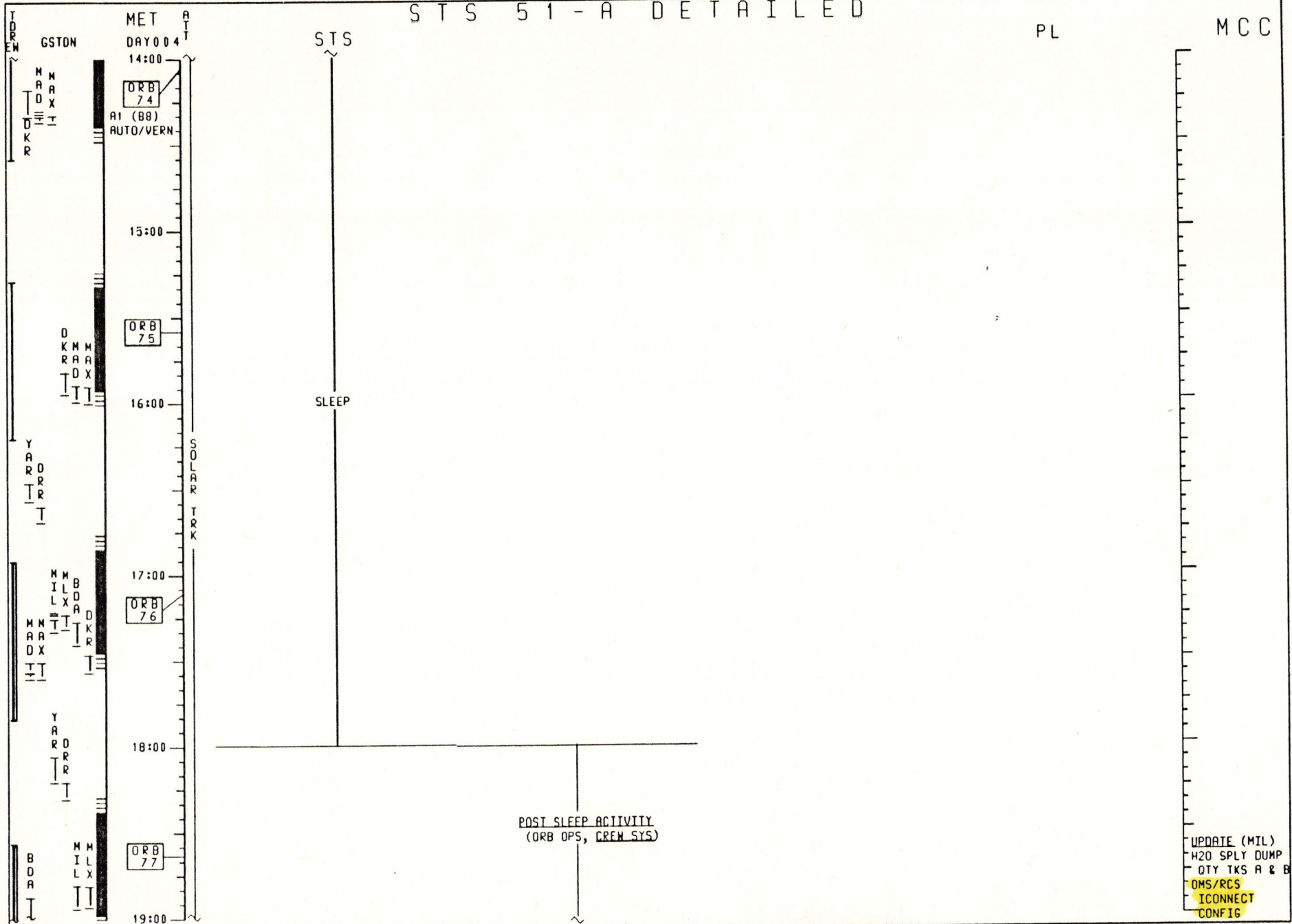




STS 51-A DETAILED

PL

MCC



UPDATE (MIL)
H2O SPLY DUMP
QTY TKS A & B
OMS/RCS
ICONNECT
CONFIG

M C C

CAP/51A/FIN 2 10/30/84

S T S 5 1 - A D E T A I L E D

TDR
GSTDN
MET DAY 005
00:00
A1 (B8)
AUTO/VERN
ORB 81
01:00
ORB 82
02:00
ORB 83
03:00
04:00
(A1) B1
AUTO/VERN
05:00
SOLAR
TRK
NC2
IMU

ACN
YAR
GMM
HAW
GDS
GDX
MILX
ACNT
GDS =
ACN =
GMM
HAW

STS

P/TV 04 SETUP (MIDDECK ACT)
(PHOTO/TV, P/TV SCENES)

DMOS if not already?

MEAL

P/TV 04 ACT (MIDDECK ACT)
(PHOTO/TV, P/TV SCENES)

PL
✓
VTR PLAYBACK (06-RNDZ/EVA)
(Cue Card)

VIR DEACT
(Cue Card)

EMU MAINT/RECHARGE
(EVA, EMU MAINT/RECHARGE)
(2 CMN)

TV (HAW, TORS)
(GND CNTL-CAB)

UPDATE (TDRS)
RCS BURN PAD

IMU ALIGN LOG
REQD ID:

-Y____, -Z____ ANG ERR ____ . ____
1 2 3

ANG:

$$\Delta X \quad () _ . _ _ () _ . _ _ () _ . _ _$$
$$\Delta Y \quad () \quad . \quad () \quad . \quad () \quad .$$
 ΔZ () . () . () .

EXECUTION TIME:

_____ / _____ : _____ : _____

ON-ORBIT RCS BURN
(ORB OPS, RCS)
(2 CMN) |

◀ NC2 TIG (5/04:31)

MNYR INU ALIGN ALL

STAR PAIR (02)
A/AUTO/VERN (04:35) Init MNVR
IMU ALIGN - S TRK (ORB OPS)

Change DAP B to B8

STS 51-A DETAILED

PL

MCC

UPDATE (TORS)
H2O SPLY DUMP
QTY TKS A & B

STS
MNVK SOLAR TRK ATT
TG-4 BV-5 P-90 Y-50 OM-298.6
A/AUTO/VERN Init TRK

PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

MET AT

DAY 005
05:00
AI (BB)
AUTO/VERN

ORB 84

06:00

ORB 85

07:00

08:00

ORB 86

09:00

ORB 87

10:00

SOLAR TRK

GSTDN

TORN

GMM HAM

AGG ACN

GMM HAM

AGG ACN

GMM HAM

AGG ACN

M C C

SLEEP

7 - 28

CAP/51A/FIN

9/20/94

MCC

STS 51-A DETAILED
 PL
 MCC

MET DAY 005
 15:00
 A1 (B8)
 AUTO/VERN

STS
 SLEEP

ORB 91
 16:00
 SOLAR TRK

NOMINAL
 RNDZ PET 0/00:00
 EQUALS
 MET 5/19:01 (NH TIG)

MNVR IMU ALIGN ATT
 STAR PAIR (B1)
 A/AUTO/VERN (17:15) Init MNVR
 IMU ALIGN - S TRK (ORB OPS)
 MNVR SOLAR TRK ATT
 TG=4 BV=5 P=90.3 Y=310.6 DM=296.5
 A/AUTO/VERN Init TRK
 DETAILED TIMELINE
 (RNDZ, RNDZ-2)
 (2 CMN)

POST SLEEP ACTIVITY
 (ORB OPS, CREW SYS)

ORB 92
 18:00
 SOLAR TRK
 A9 (B6)
 AUTO/VERN

ORB 93
 19:00
 NH TIG (5/19:01)

NC3 TIG (5/19:46)

P/TV 05 SETUP (EVA PREP)
 (PHOTO/TV, P/TV SCENES)

P/TV 05 ACT (EVA PREP)
 (PHOTO/TV, P/TV SCENES)

EVA PREP
 (EVA, EVA PREP)
 (3 CMN)

UPDATE (DKK)
 H2O SPLY DUMP
 QTY TKS A & B
 DMS/RCS
 ICONNECT
 CONFIG
 UPDATE (YAR)
 PREL NH, NC3
 TI BURN PRODS

STS 51 - A DETAILED

STS 51-A DETAILED TIMELINE

Left Column (Vertical Timeline):

- 20:00:** MET DAY 005, A9 (B6) AUTO/VERN, ORB 94
- 21:00:** NCC TIG (5/20:21), TI TIG (5/21:18), RMS POWERUP
- 22:00:** MC1, OUT-OF-PLANE NULL, MC2, MC3, MC4, ORB 95
- 23:00:** (A10) B7 AUTO/NORM, ESTABLISH +VBAR, ESTABLISH 35 ft STATIONKEEPING, ORB 96
- 00:00:** (A10) B9 AUTO/VERN, GRAPPLE S/C
- 01:00:** End of timeline

Right Column (Mission Phases):

- P/TV 05 ACT (EVA PREP):** (PHOTO/TV, P/TV SCENES)
- EVA PREP:** (EVA, EVA PREP) (3 CMN)
- P/TV 06 SETUP (RNDZ/EVA):** (PHOTO/TV, P/TV SCENES)
- NOMINAL:** EVA PET 0/00:00, EQUALS, MET 5/22:45
- P/TV 06 ACT (RNDZ/EVA):** (PHOTO/TV, P/TV SCENES)
- EVA-2 SUPPORT:** (EVA, EVA-2 T/I)
- KU-BD COMM CONFIG:**
- P/TV 07 ACT (EVA PREP):** (PHOTO/TV, P/TV SCENES)
- EVA PREP:** (EVA, EVA PREP) (3 CMN)
- P/TV 08 ACT (EVA PREP):** (PHOTO/TV, P/TV SCENES)
- EVA PREP:** (EVA, EVA PREP) (3 CMN)

Bottom Column (Ground Station Activity):

- TV (HAW, GDS, MIL):** (GND CNTL-CAB)
- TV (HAW, GDS, MIL):** (GND CNTL-CAB)

STS 51-A DETAILED

STS

PL

MCC

P/TV 06 ACT (RNOZ/EVA)
(P/TV, P/TV SCENES)

EVA-2 SUPPORT
(EVA, EVA-2 T/L)

INSTALL A-FRAME

TV (HAW, GOS
MIL)
(GND CNTL-CAB)

ADAPTER INSTALLATION

RMS BERTH S/C

TV (HAW)
(GND CNTL-CAB)

REMOVE A-FRAME

RMS PHRDN

TV (HAW)
(GND CNTL-CAB)

REPRESS
(CUE CARD)
(3 CMN)

POST EVA
(EVA, POST EVA)
(3 CMN)

UPDATE (TORS)
A20 SPLY DUMP
QTY TKS A & B

PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

FLOW O2 during Repress

STS 51 - A DETAILED

PL

MCC

STS

MET DAY 006
06:00
A1 (BB)
AUTO/VERN
07:00
ORB 101
08:00
ORB 102
09:00
ORB 103
10:00
11:00

SOLAR TRK
IMU
SOLAR TRK

MNVR IMU ALIGN ATT
STAR PAIR (A1)
A/AUTO/VERN (07:00) Init MNVR
IMU ALIGN - S TRK (ORB OPS)
MNVR SOLAR TRK ATT
TG=4 BV=5 P=90 Y=50 DM=268.1
A/AUTO/VERN Init TRK

PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

IMU ALIGN LOG

REQD ID:

-Y __, -Z __ ANG ERR __.3__
1 2 3

ANG:

ΔX () . () . () .

ΔY () . () . () .

ΔZ () . () . () .

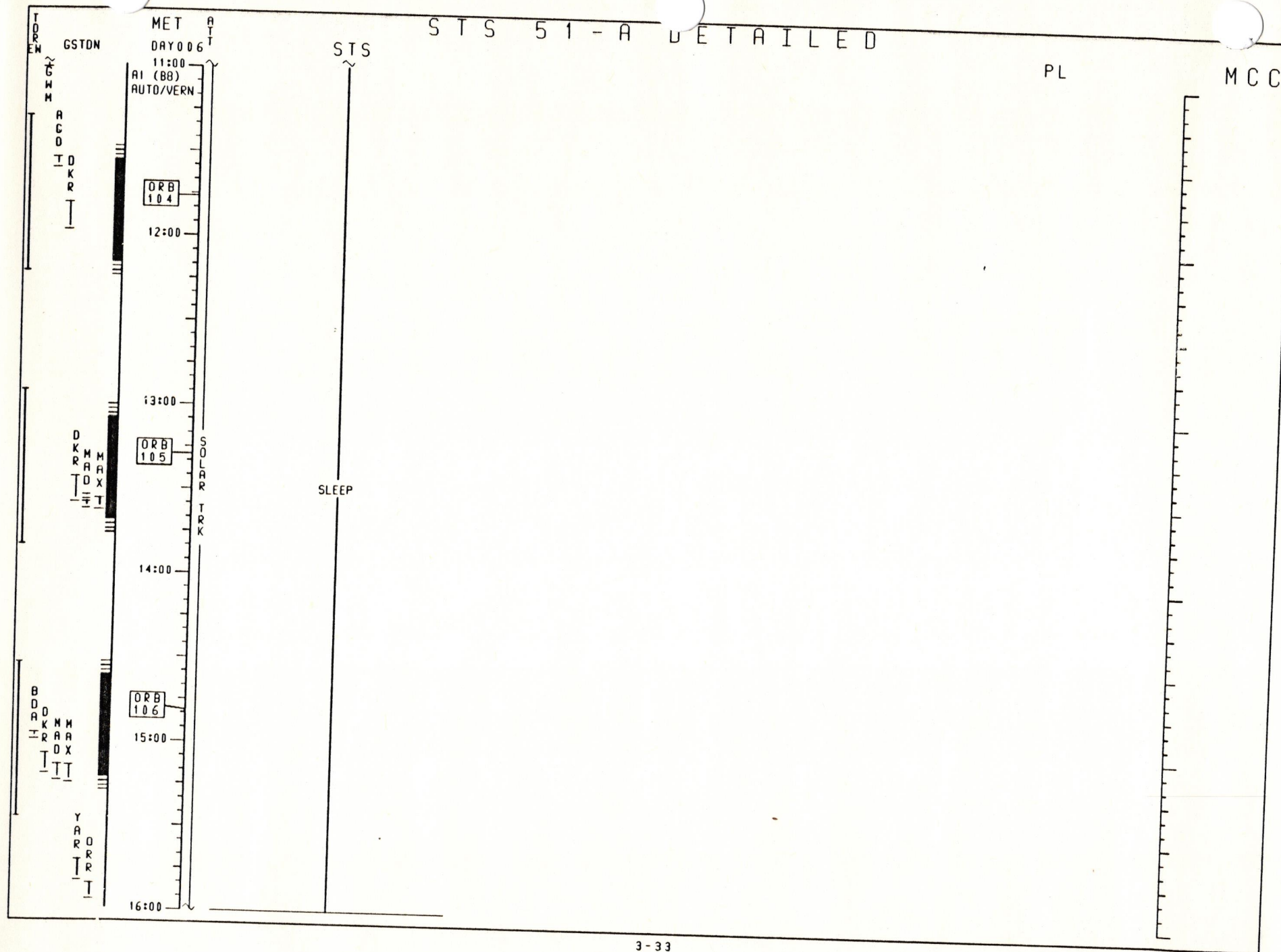
EXECUTION TIME:

__ / __ : __ : __

STS 51-A DETAILED

PL

MCC



STS 51-A DETAILED

PL

MCC

TOR EN GSTON MET AT DAY 006
 16:00
 A1 (B8)
 AUTO/VERN
 ORB 107
 SOLAR TRK
 17:00
 YARRRR
 ORB 108
 18:00
 SOLAR TRK
 19:00
 ORB 109
 SOLAR TRK
 20:00
 A3 (B8)
 MAN/NORM
 21:00
 A1 (B8)
 AUTO/NORM
 A1 (B8)
 AUTO/VERN
 ORB 110
 HAW

Filter Cleaning

POST SLEEP ACTIVITY
 (ORB OPS, CREW SYS)

MNVR IMU ALIGN ATT
 STAR PAIR (A1)
 A/AUTO/VERN (17:40) Init MNVR
 IMU ALIGN - S TRK (ORB OPS)
 MNVR SOLAR TRK ATT
 TG-4 BV-5 P-90 Y-50 OM-106.6
 A/AUTO/VERN Init TRK

APU STEAM VENT HTR ACT
 R2 BLR CNTLR PWR/HTR(three)-B
 CNTLR(three) -ON

CABIN REPRESS TO 14.7 PSI
 (C EVA OPS, 10.2 PSI CABIN)
 PCS 2 CONFIG
 (2 CMN)

LAMP & FIRE SUPPR TEST
 (ORB OPS, EPS)

RCS HOT FIRE TEST
 (ORB OPS, RCS) (2 CMN)

Change OAP A to A1
 ECS CHECKOUT
 (ORB OPS, GND)
 (2 CMN)

EMU MAINT/RECHARGE
 (EVA, EMU MAINT/RECHARGE)
 (2 CMN)

IMU ALIGN LOG
 RECD ID:

-Y____, -Z____ ANG ERR ____
 1 2 3
 ANG:
 ΔX () ____ () ____ () ____
 ΔY () ____ () ____ () ____
 ΔZ () ____ () ____ () ____
 EXECUTION TIME:
 ____ / ____ : ____ : ____

HRM III, Step 1 (PL OPS, RME)

HRM III, Step 2
 (PL OPS, RME)

VTR SETUP (06-RNDZ/EVA)
 (Cue Card)

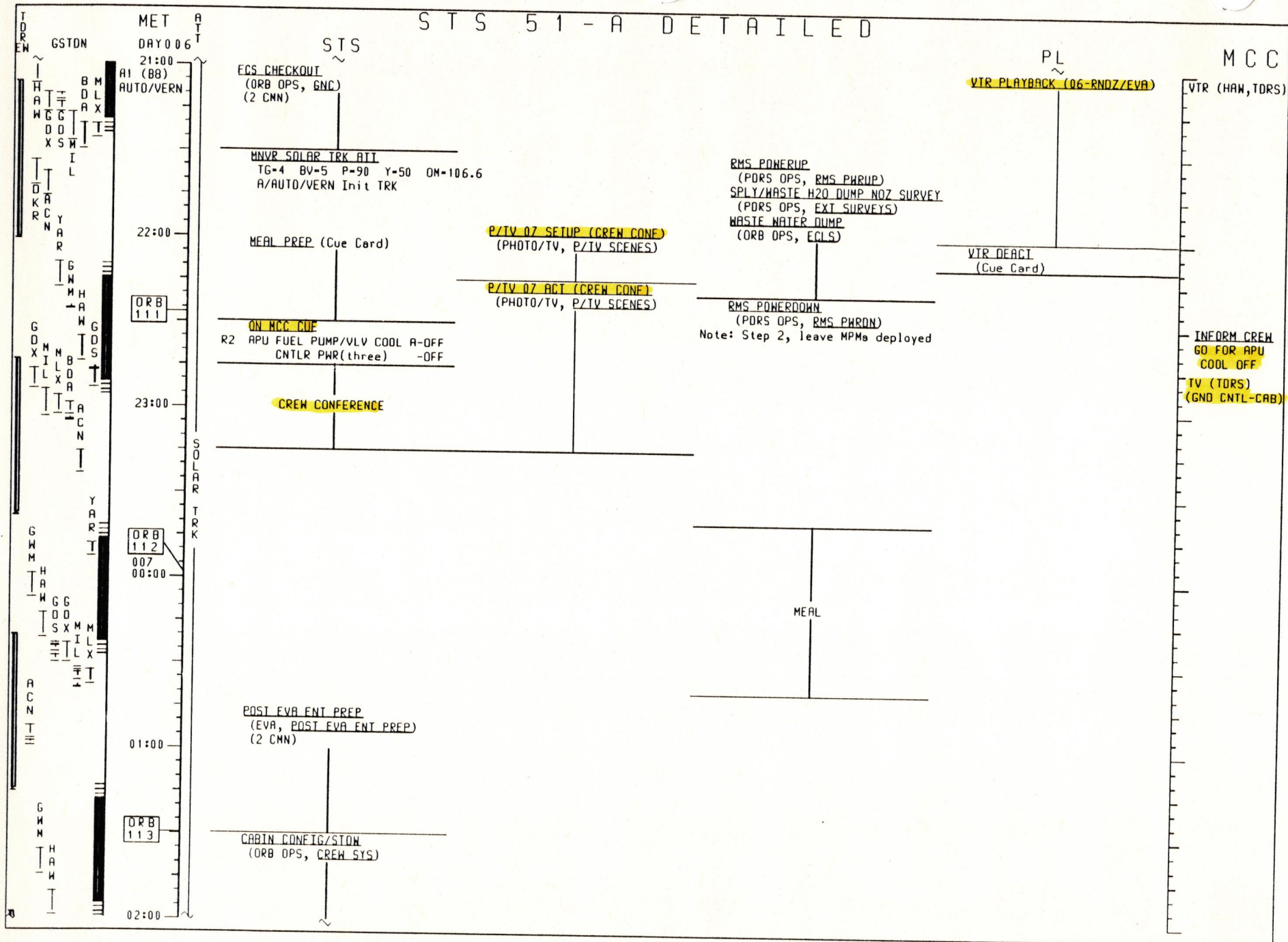
VTR PLAYBACK (06-RNDZ/EVA)
 (Cue Card)

VTR at HAW, TORS (20:58-22:00)

VTR (HAW, TORS)

UPDATE (MIL)
 H2O SPLY DUMP
 QTY TKS A & B
 TMS/RCS
 ICONNECT
 CONFIG

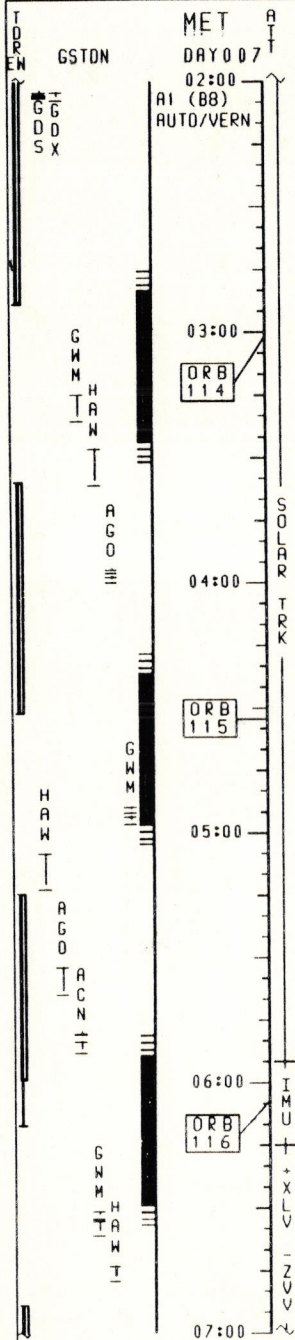
STS 51-A DETAILED



STS 51-A DETAILED

PL

MCC



STS
CABIN CONFIG/STOW
(ORB OPS, CREW SYS)

RMS POWERUP
(PDRS OPS, RMS PHRUP)
SPLY/WASTE H2O DUMP NOZ SURVEY
(PDRS OPS, EXT SURVEYS)
WASTE WATER DUMP
(ORB OPS, ECLS)

RMS POWERDOWN
(PDRS OPS, RMS PHRON)

PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

- ◀ MNVR IMU ALIGN ATT
STAR PAIR (A1)
A/AUTO/VERN (05:55) Init MNVR
- ◀ IMU ALIGN - S TRK (ORB OPS)
- ◀ MNVR (TRK) - XLV, -ZVV
TG=2 BV=1 OM=0
A/AUTO VERN (06:15) Init TRK

IMU ALIGN LOG

RECD ID:

-Y____, -Z____ ANG ERR ____ . ____
1 2 3

ANG:

ΔX () . ____ () . ____ () . ____

ΔY () . ____ () . ____ () . ____

ΔZ () . ____ () . ____ () . ____

EXECUTION TIME:

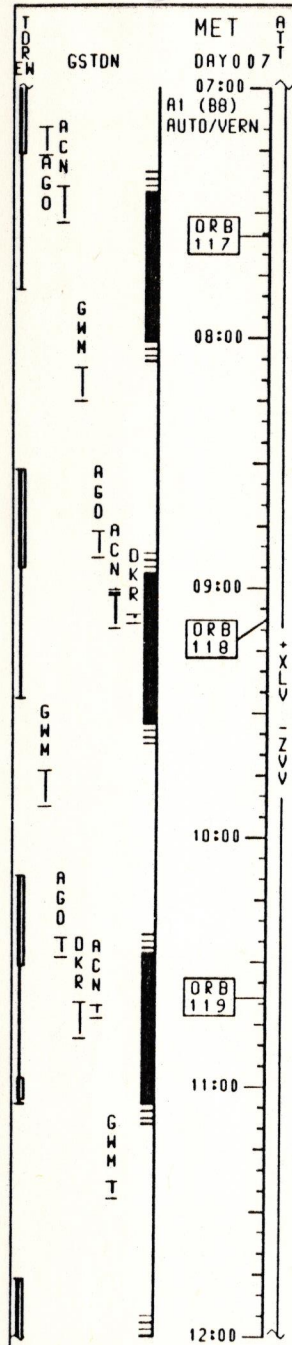
__ / __ : __ : __

UPDATE (HAW)
H2O SPLY DUMP
QTY TKS A & B

STS 51-A DETAILED

PL

MCC



STS

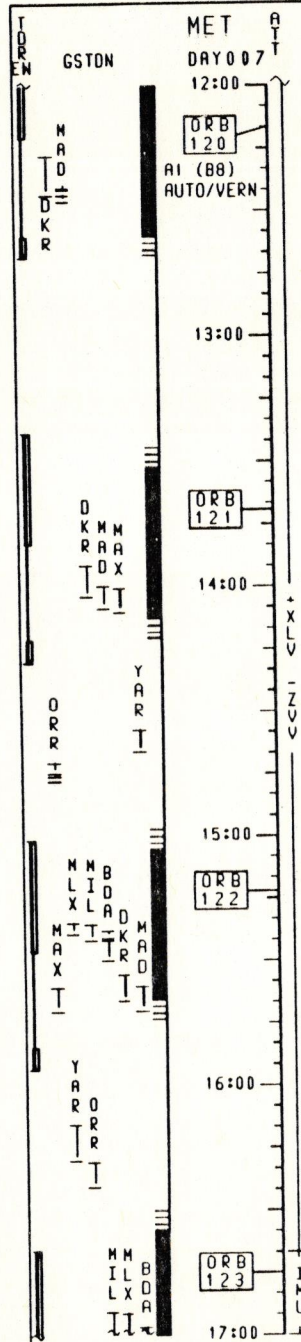
PRE SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

STS 51-A DETAILED

PL

MCC



STS

SLEEP

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MNVR IMU ALIGN ATT
STAR PAIR (A1)
A/AUTO/VERN (16:40) Init MNVR
IMU ALIGN - S TRK (ORB OPS)

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

UPDATE (YAR)
H2O SPLY DUMP
QTY TKS A & B

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CONTINGENCY TIMELINES

CONTINGENCY
TIMELINES

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HIGH PRIORITY MISSION

The HighPriority mission timeline is based on the following assumptions:

- The mission duration is ~144 hours with landing occurring on FD7.
- The following priority activities, as defined by Flight Rules, comprise the requirements for the High Priority mission plan:
 - (1) Anik deployment
(23D PKM Primary/49A PKM Backup)
 - (2) Syncom deployment
(34A PKM Primary/49A PKM Backup)
 - (3) Palapa retrieval
- Nominal mission timeline is followed through FD5, MET 4/18:00.
- The nominal day prior to entry (FD8) timeline is used as FD6 for the High Priority timeline. Crew will wake up at MET 4/18:00 and start sleep at MET 5/08:00.
- The primary landing is at KSC runway 33 on orbit 96, MET 6/00:23, with a backup to EDW on orbit 97.
- Other payload activities will be scheduled to the maximum extent possible.

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CONSUMABLES CURVES

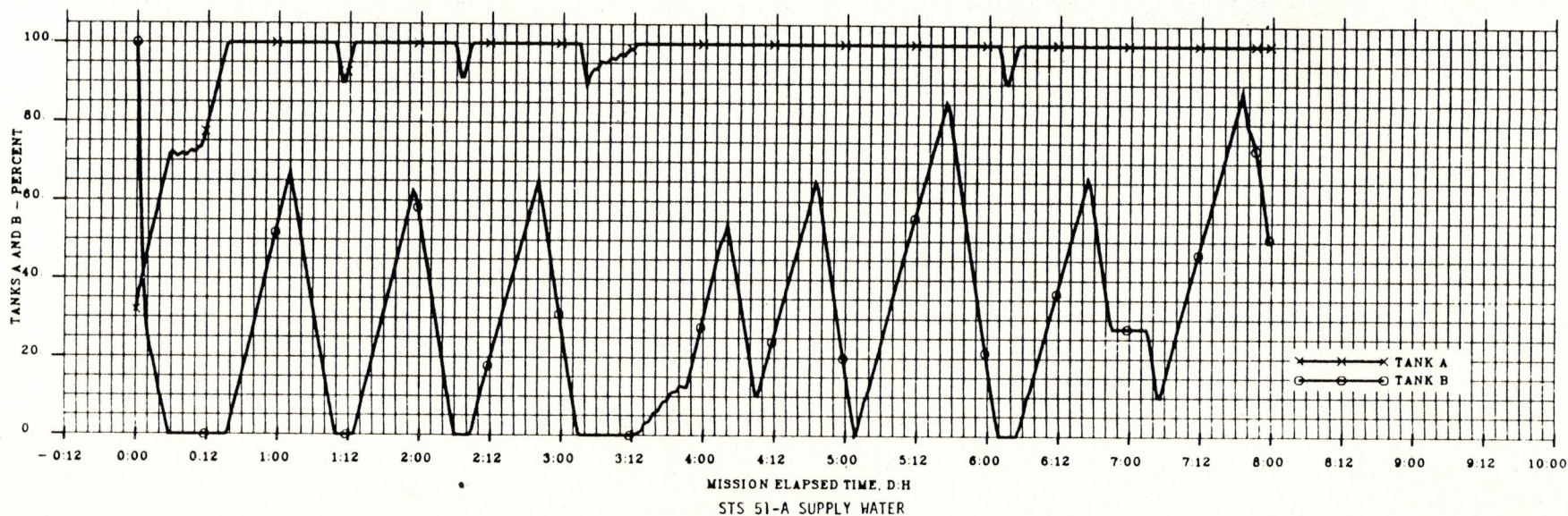
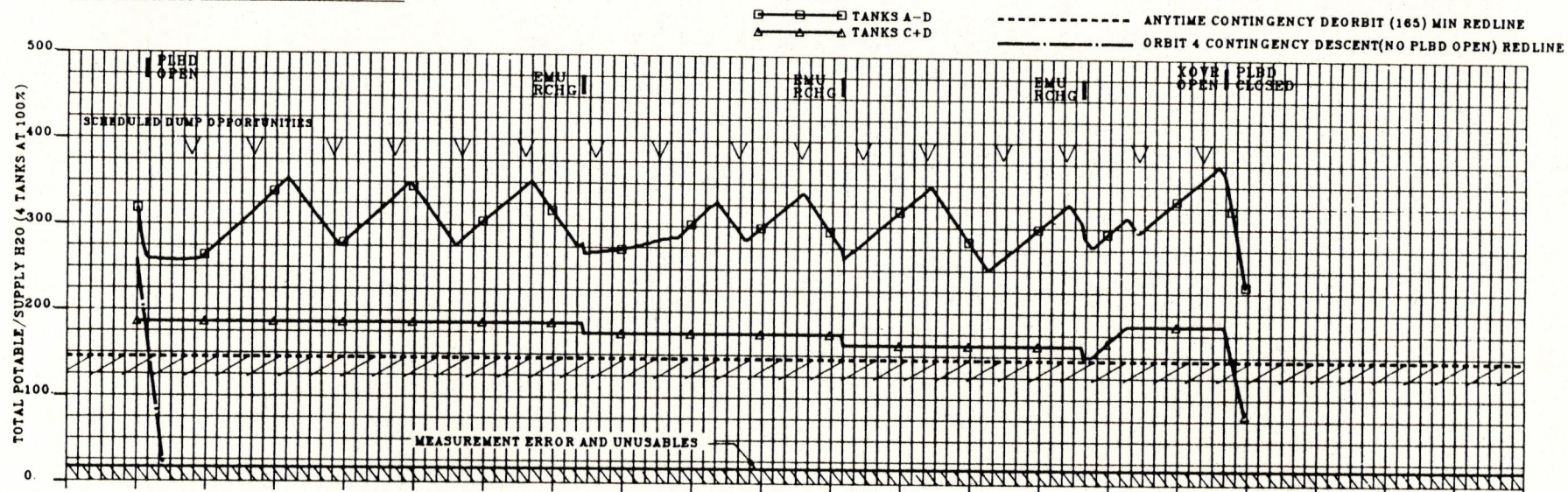
CONSUMABLES
CURVES

CONSUMABLES CURVES

MISSION PLANNING AND ANALYSIS DIVISION

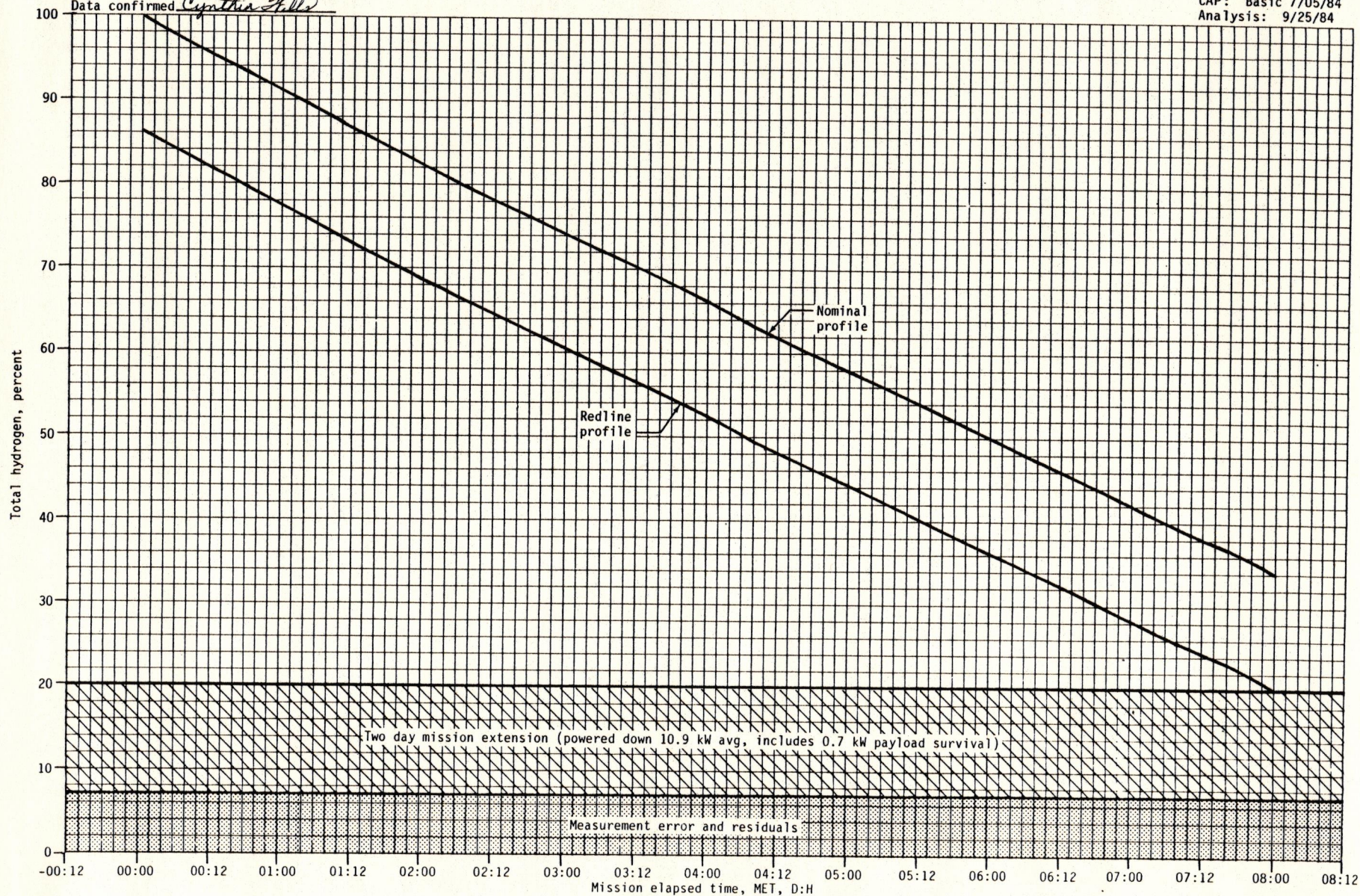
C WELLS, S. J. THOMAS
JSC-19949 (CAP) 7/5/84
DATA CONFIRMED

TRAJECTORY: OFF
CAP: BASIC 7/5/84
ANALYSIS DATE: 10/3/84



S. Price/FPB/MPAD
Data source JSC-19949(CAP) 7/05/84
Data confirmed *Cynthia Ellis*

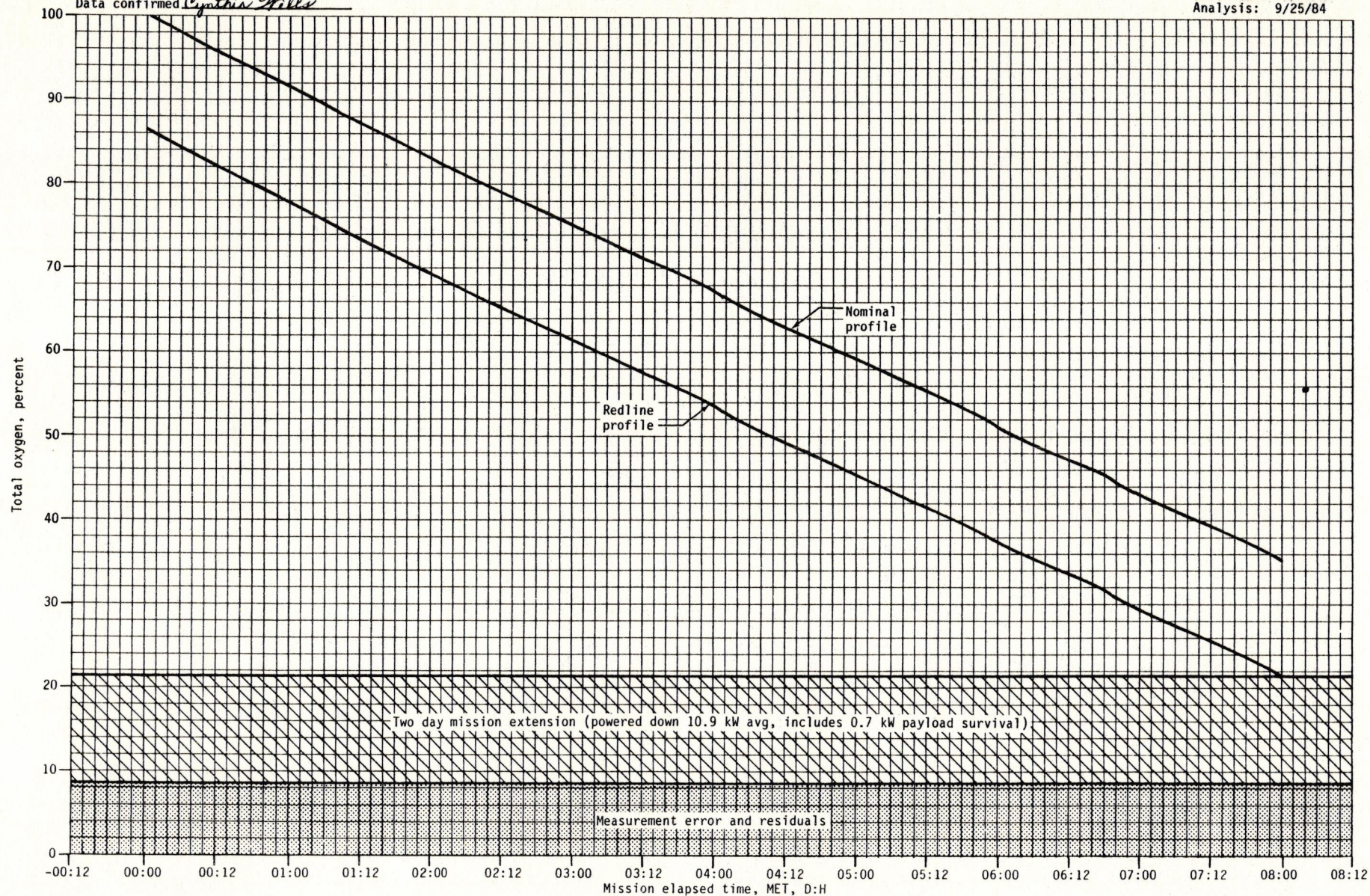
Trajectory: Cycle 3
CAP: Basic 7/05/84
Analysis: 9/25/84



STS 51-A cryogenic hydrogen profile.

S. Price/FPB/MPAD
Data source JSC-19949(CAP) 7/05/84
Data confirmed *Cynthia Heller*

Trajectory: Cycle 3
CAP: Basic 7/05/84
Analysis: 9/25/84

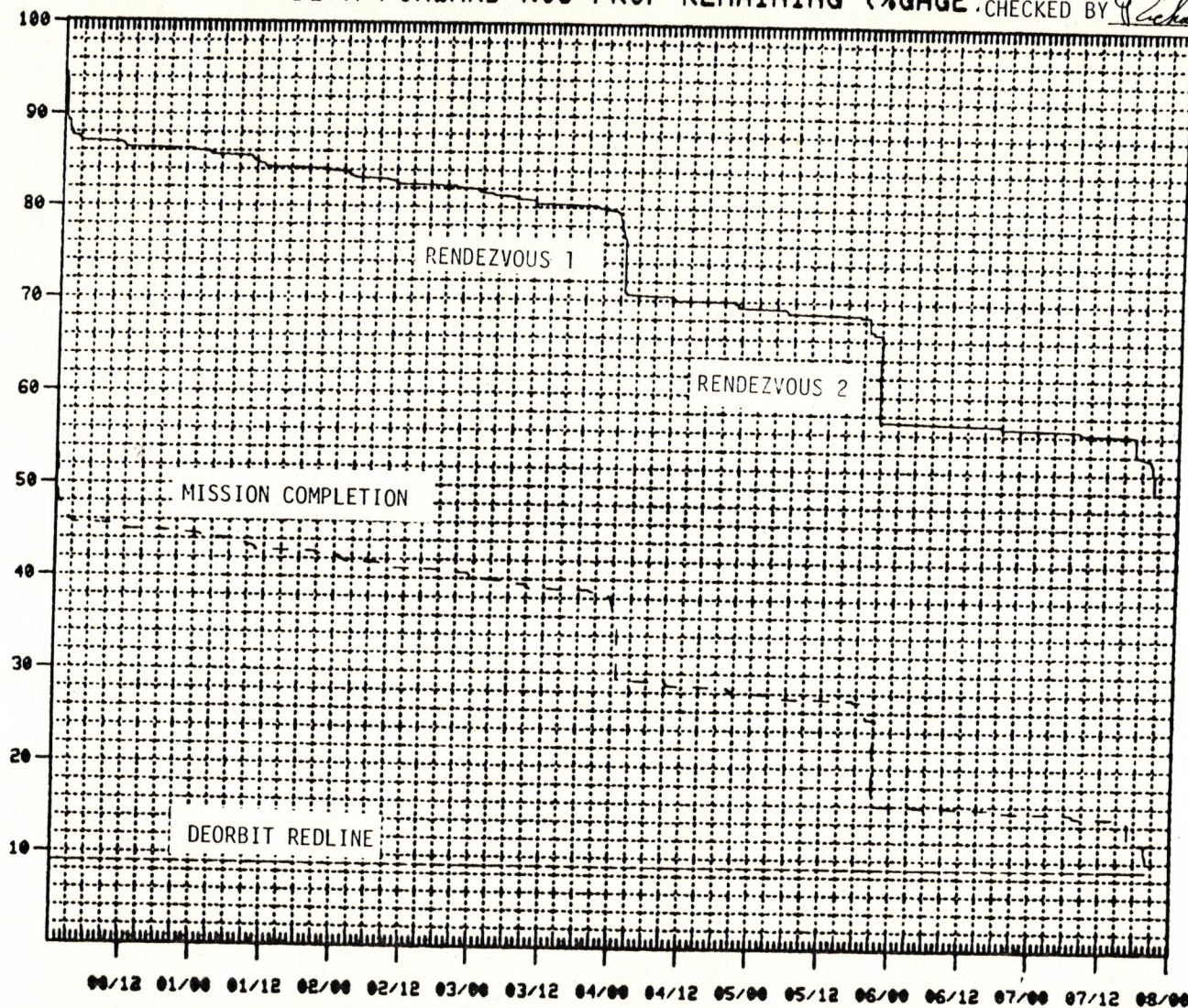


STS 51-A cryogenic oxygen profile.

51-A FORWARD RCS PROP REMAINING (%GAGE

B. E. JONES/FM2
 DATA SUBMITTAL J-737 Add 6
 JSC-19949 (CAP) 7/5/84
 CHECKED BY *Richard H. Ray*

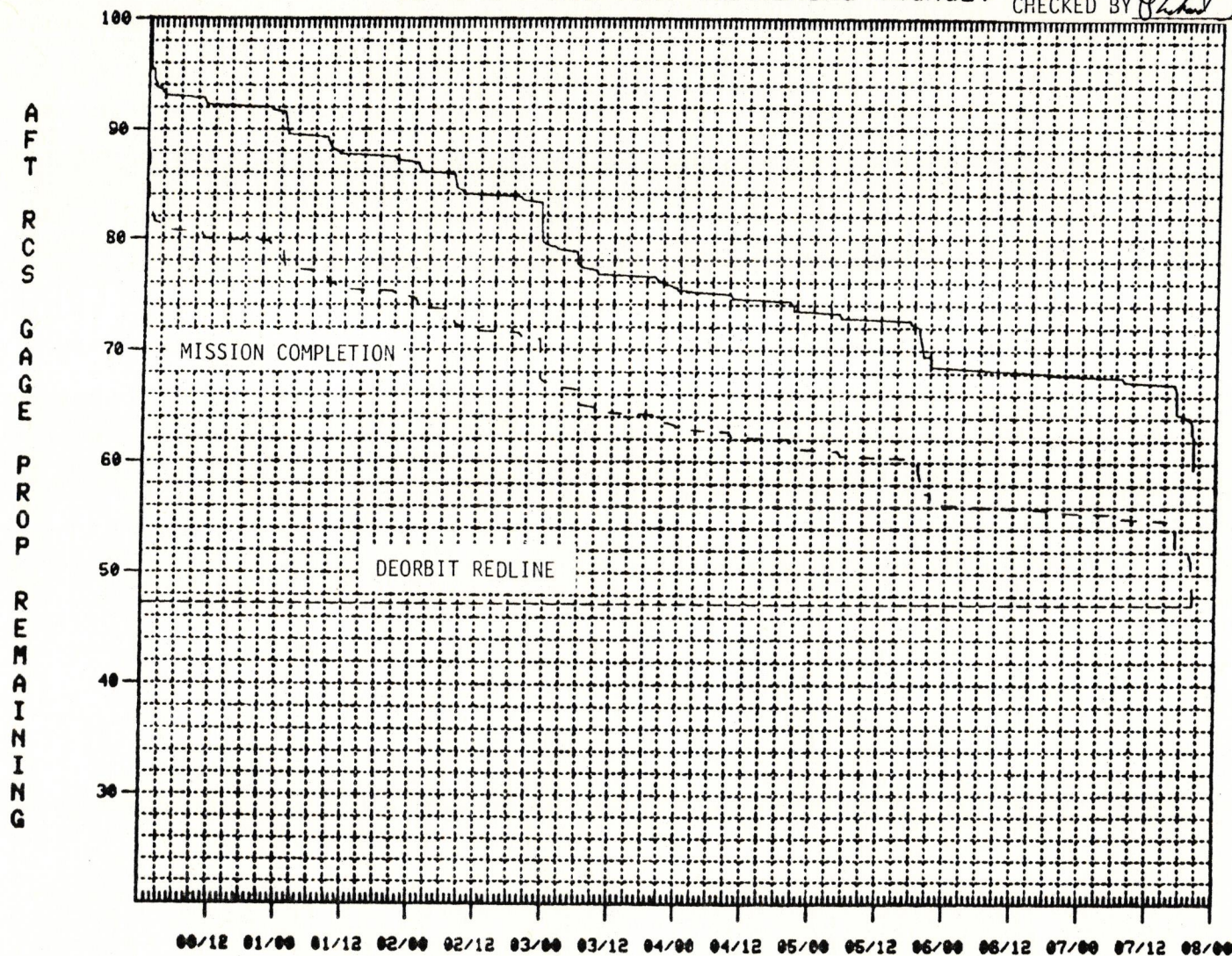
FORWARD
 RCS
 GAGE
 PROP
 REMAINING



MISSION ELAPSED TIME IN DAYS/HOURS

51-A AFT RCS PROP REMAINING (%GAGE)

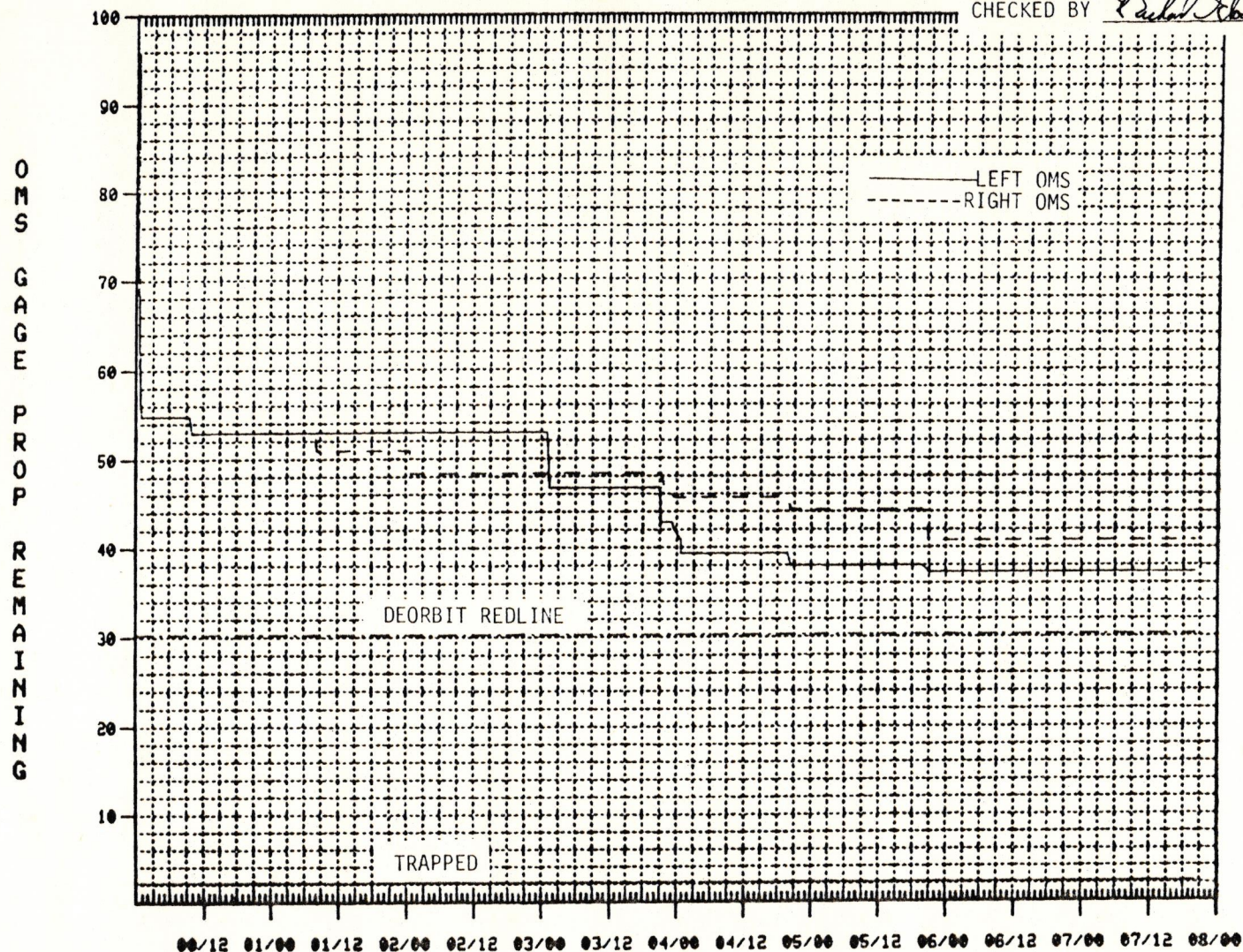
B. E. JONES/FM2
 DATA SUBMITTAL J-737 Add 6
 JSC-19949 (CAP) 7/5/84
 CHECKED BY *[Signature]*



MISSION ELAPSED TIME IN DAYS/HOURS

51-A OMS PROP REMAINING (%GAGE)

B.E. JONES/FM2
 DATA SUBMITTAL J-737 Add 6
 JSC-19949 (CAP) 7/5/84
 CHECKED BY *[Signature]*



MISSION ELAPSED TIME IN DAYS/HOURS

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