

STS-121/ULF1.1

FD 04 Execute Package



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Approved by FAO: L. Eadie

Last Updated: Jul 7 2006 5:29AM GMT

JEDI (Joint Execute package Development and Integration), v2.04.0003

NO EXERCISE

07/06/06 23:08:07

REPLANNED

GMT 07/07/06 (188)

MET Day 002

003/00

S T S - 1 2 1	FD04 CDR LINDSEY	SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	EXERCISE	N2 XFER INIT	PAO A/G	MEAL	MPLM VEST PRESS	MPLM VEST INGRS CNFG	MPLM ACT1	MPLM VEST INGRS CNFG	MPLM ACT2	M I P N L G M R		
	PLT KELLY	SLEEP	POST SLEEP	PTV06 OPS	EXERCISE	PTV06 OPS		PAO A/G	MEAL	CWC XFER (2)	OBSS TPS SURVEY				P S R L E E P		
	MS1 FOSSUM	SLEEP	POST SLEEP		PTV06 OPS	P C B M * V E R I F	CBM 1ST STG	CBM 2ND STG & ABOLTS	MEAL	CE V I S	EMU XFER & RCFG	R H E / B W A	ROOBA L K C K & C/O I I	E _ L K P R E P	ROOBA P / B T E S T	EVA TOOL CNFG	
	MS2 NOWAK	SLEEP	POST SLEEP	MPLM INSTL GRPL	MPLM UNBTH	MPLM INSTL	MPLM INSTL	M E A L	MEAL	U N G R P L A B	MBS GRAPPLE	LAB UNGRPL	MNVR SRVY SUPT	OBSS TPS SURVEY		LAB GRAPPLE	EXER CISE
	MS3 WILSON	SLEEP	POST SLEEP	MPLM INSTL GRPL	MPLM UNBTH	MPLM INSTL	MPLM INSTL	M E A L	MEAL	U N G R P L A B	EXERCISE	DOUG RVW	OBSS TPS SURVEY		LAB GRAPPLE		
	MS4 SELLERS	SLEEP	POST SLEEP		PTV06 OPS	P C B M * V E R I F	CBM 1ST STG	CBM 2ND STG & ABOLTS	MEAL	CE V I S	EMU XFER & RCFG	R H E / B W A	ROOBA L K C K & C/O I I	E _ L K P R E P	ROOBA P / B T E S T	EVA TOOL CNFG	
I S S	ISS CDR	SLEEP	POST SLEEP	DPC C B C S * P R E P	H/O	V O A TK12 CYBA ЦД1 UNINST	БИО-5 INIT	MIDDAY-MEAL	CBCS CAMRA RMV	ACY MHP HC REPLC	COX ⊕	TVIS		VELO + HC	⊕		
	FE-1	SLEEP	POST SLEEP	DPC Δ	MPLM UNBTH	MPLM INSTL	MPLM INSTL	N2 XFER INIT	MEAL	MBS GRAPPLE	LAB UNGRPL	MNVR SRVY SUPT	RED	ROOBA L K C K & C/O I I	E _ L K P R E P	ROOBA P / B T E S T	TVIS
	FE-2 Reiter	SLEEP	POST SLEEP	DPC MORN PREP WK	H/O	X R F V E W R	MPLM VEST EQUIP S/U	MIDDAY-MEAL	PMC	MPLM VEST PRESS	MPLM VEST INGRS CNFG	MPLM VEST INGRS CNFG	MPLM VEST INGRS CNFG	MPLM VEST INGRS CNFG	M I P N L G M R		

S T S	DAY/NIGHT	41		42		43		44		45		46		47		48	
	ORBIT	[ORBIT TRACKING]															
	TDRS	W -171	[TDRS TRACKING]														
	E - 46	[TDRS TRACKING]															
	Z -275	[TDRS TRACKING]															
	ORB ATT	BIAS -XLV -ZVV															

NOTES

*ACT *DEACT ▼VDS-VTR TAPE-EXCH
 ^OFF ΔMORN PREP WK
 ^REPRIORITIZE *INSPECT
 ┌───┐ *POWERUP
 MPLM PRESS CK

⊕COFC-3-BX-REPRESS

⊕DCS 760 W
 ⊕COFC-AOK F
 ⊕PEO D/L

GMT 07/07/06 (188)

MET Day 003

		19		20		21		22		23		07/08		01		02		03		04		05		06		12	
		003/00		01		02		03		04		05		06		07		08		09		10		11		12	
STS-121	FD04 CDR LINDSEY	PO T V S 0 5	X F A G E R U P	OL D T R I P *	PRE SLP	EVA 1 PROC RVW	PRE SLEEP	PMC OCA	PRE SLEEP	SLEEP																	
	PLT KELLY	*760 S/U	B X F A G E R	RJMC XFER	EVA 1 PROC RVW	PRE SLEEP	SLEEP																				
	MS1 FOSSUM	DCS 760 w/ FLASH	E X F A G E R	RJMC XFER	EVA 1 PROC RVW	PRE SLEEP	SLEEP																				
	MS2 NOWAK	EXER CISE	PRE SLEEP	EVA 1 PROC RVW	PRE SLEEP	SLEEP																					
	MS3 WILSON	M S P / L U M	X F A G E R U P	PRE SLEEP	EVA 1 PROC RVW	PRE SLEEP	SLEEP																				
	MS4 SELLERS	EXERCISE	EVA 1 PROC RVW	PRE SLEEP	SLEEP																						
ISS	ISS CDR	⊕		D P R E P	EVE PREP WK	PAO DPC	PRE SLEEP-ISS	SLEEP																			
	FE-1	TVIS	S / U	P R E P	EVA 1 PROC RVW	PAO DPC	PRE SLEEP-ISS	SLEEP																			
	FE-2 Reiter	M S P / L U M	X F A G E R U P	X B F R E I E F	P R E P	EVE PREP WK	PAO DPC	PRE SLEEP-ISS	SLEEP																		
STS	DAY/NIGHT	[Timeline with shaded blocks]																									
	ORBIT	[Timeline with shaded blocks]																									
STS	TDRS	W -171	[Timeline with shaded blocks]																								
		E - 46	[Timeline with shaded blocks]																								
	Z -275	[Timeline with shaded blocks]																									
ORB ATT		BIAS -XLV -ZVV																									
NOTES		*PRE SLEEP ⊕P60 D/L ^DEACT *STATUS CK																									

MSG 020C - FD04 FLIGHT PLAN REVISION

1 MSG INDEX

2

3 MSG NO. TITLE

4 20 FD04 Flight Plan Revision

5 21 FD04 Mission Summary

6 22 FD04 Transfer Message

7 23 EVA Battery Charging Deltas

8 24 FD04 PAO Event Summary

9 25 FD04 Water Summary

10 26 FD03 MMT Summary (13-0622)

11 27 FD04 Focused Inspection Summary

12 29 SSRMS DOUG Setup Notes for ULF1.1 (13-0545A)

13 30 Blade Blocker Thermal Information (13-0624)

14 31 FD04 Summary Timeline

15

16 1. OCA PGSC NETWORK ITEMS:

17

18 Please describe what error indications you saw on the wireless access point during
19 network setup on FD1 that led you to believe that it was failed.

20

21 When inserting a DSC card into any PGSC other than the KFX machine, please
22 remember to launch the KFX application on that same machine. We are unable to
23 access the cards on those PGSCs without KFX being launched as well.

24

25 2. DAP PANEL UPDATE:

26

27 Since we are Loss of Vern please update the DAP panel config to B/FREE/ALT. This
28 will minimize actions needed if Shuttle attitude control is required.

29

30 3. LiOH CARTRIDGE UPDATES:

31

32 The LiOH cartridges slated for EVA 2 on FD7 need to be swapped. It turns out that
33 LiOH s/n 2026 has a little higher capacity than LiOH s/n 2030. It would make more
34 sense to use LiOH s/n 2026 (b/c EMUD58J) for EV-1, in EMU 3006. That means LiOH
35 s/n 2030 (b/c EMUD42J) would be used for EV-2, in EMU 3015. Please note this
36 change on the STS-121 CONSUMABLES TRACKING CUE CARD.

37

38 4. WORDS ON TRANSFER MESSAGE:

39

40 Today's Transfer Message is larger than planned pre-flight. Just like yesterday, you'll
41 need to print the Change Pages in the Transfer Message (Msg 22) on your own.

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MSG 020C - FD04 FLIGHT PLAN REVISION

1 5. PEN AND INK CHANGES TO ISS EVA CHECKLIST:

2
3 Please Pen and Ink the following changes into the STS-121 hardcopy ISS EVA Checklist
4 (do not make changes to the generic ISS copy):

5
6 In EVA SYS: 1.240 POST EVA, add:

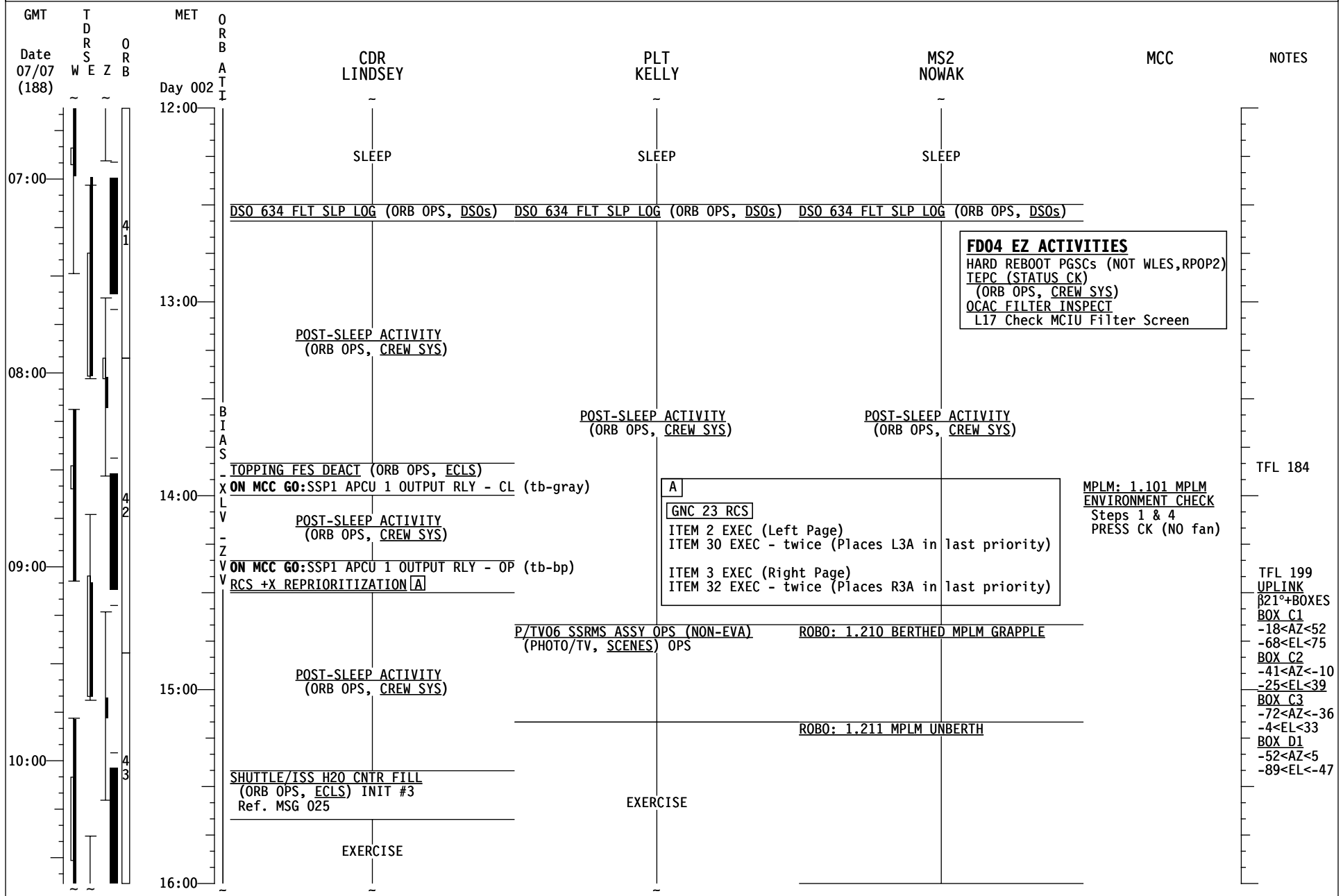
7 31a. Confirm nominal suit fit and inform **MCC-H** if step 67 needed.

8
9 67. Communicate suit fit issues with **MCC-H** (restricted)

10
11 6. REPLACE PAGES 3-32 THROUGH 3-41.
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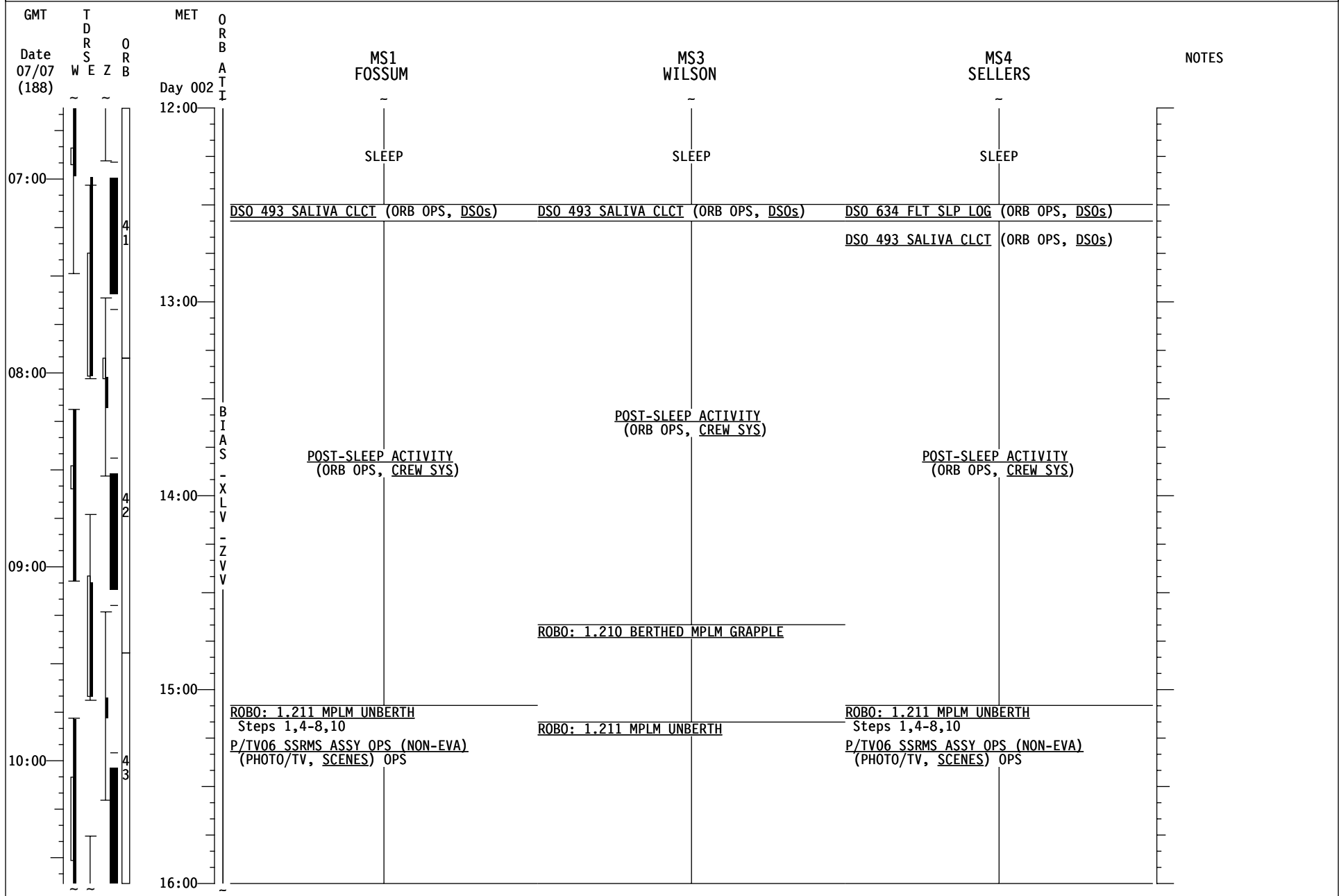
STS-121/ULF 1.1 (FD 04)

REPLANNED



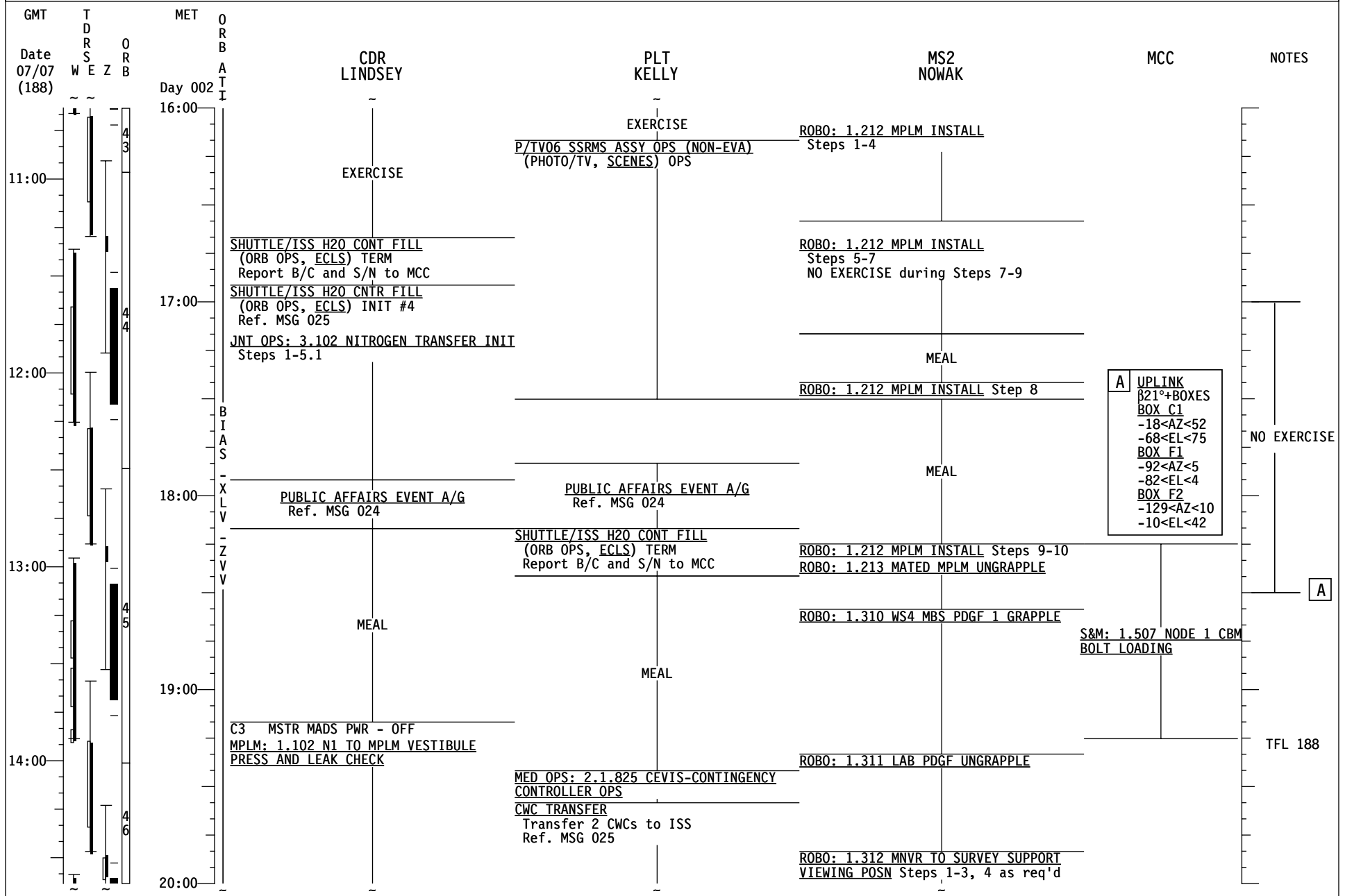
STS-121/ULF 1.1 (FD 04)

REPLANNED



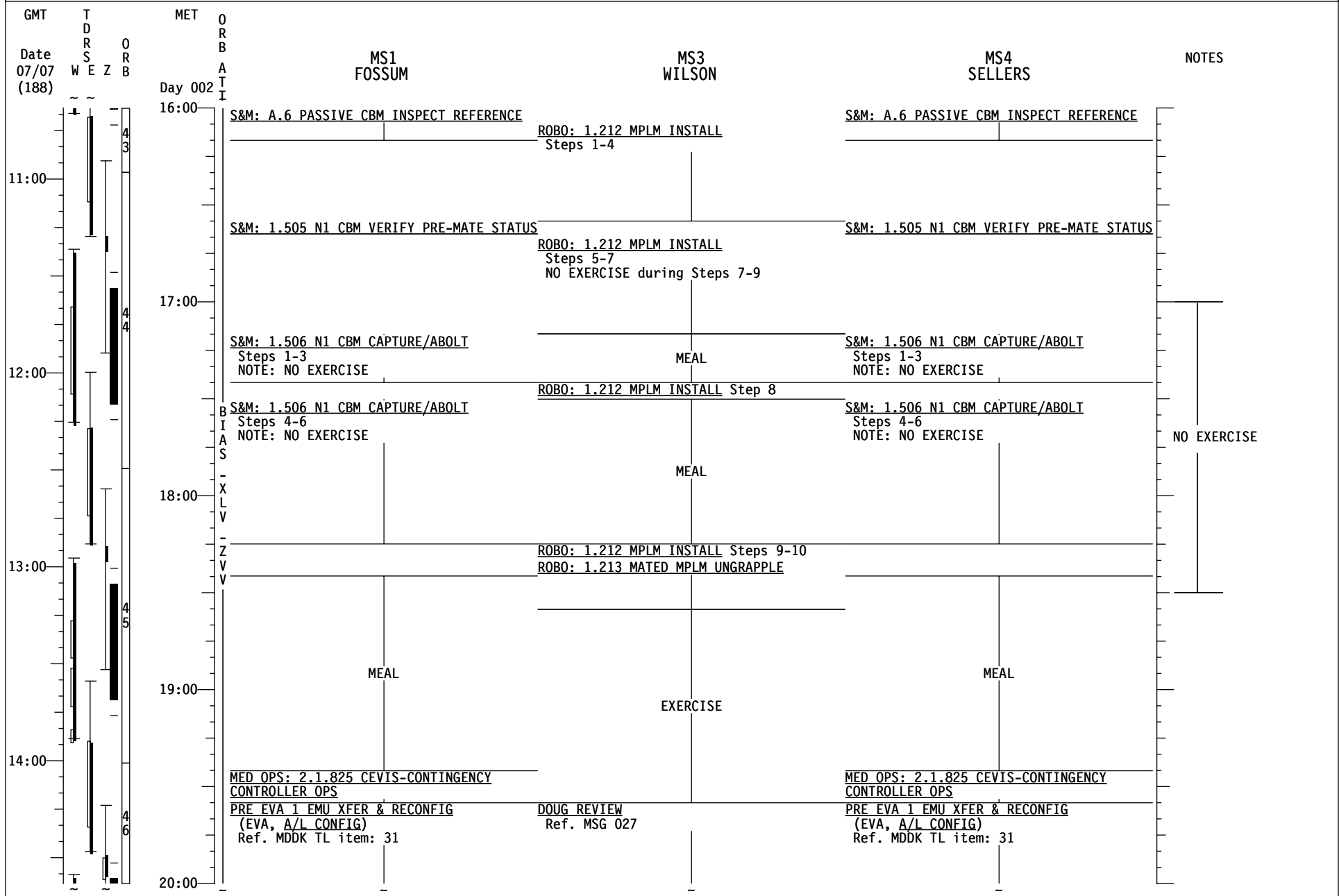
STS-121/ULF 1.1 (FD 04)

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STS-121/ULF 1.1 (FD 04)

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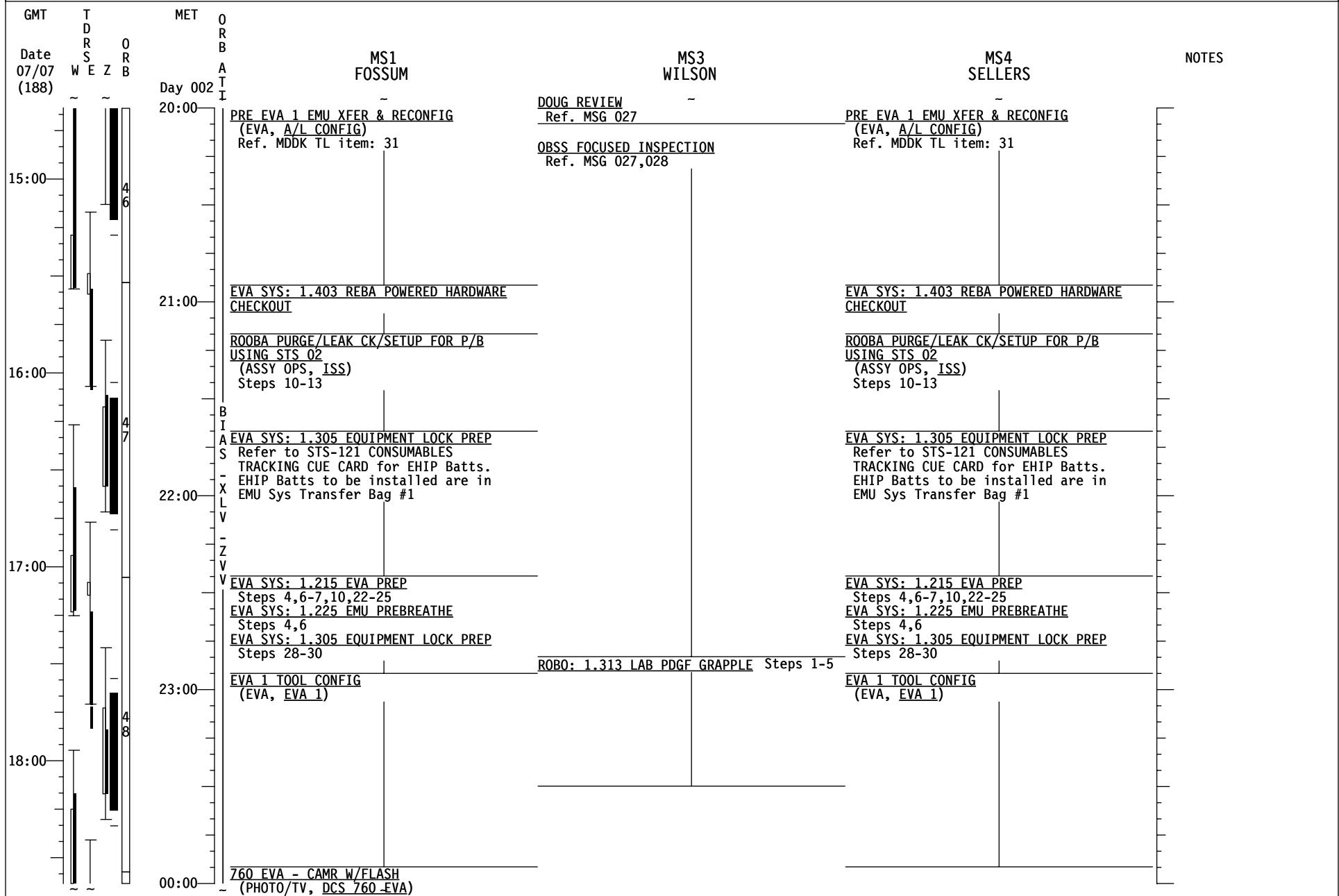
STS-121/ULF 1.1 (FD 04)

REPLANNED

GMT	TDRS	ORB	MET	ORBIT	CDR LINDSEY	PLT KELLY	MS2 NOWAK	MCC	NOTES
Date 07/07 (188)	W	S	E	Z					
Day 002									
20:00					MPLM: 1.102 N1 TO MPLM VESTIBULE PRESS AND LEAK CHECK	CWC TRANSFER Transfer 2 CWCs to ISS Ref. MSG 025	ROBO: 1.312 MNVR TO SURVEY SUPPORT VIEWING POSN Steps 1-3, 4 as req'd		
15:00					S&M: 1.108 MPLM VESTIBULE-CONFIGURE FOR INGRS Steps 1-5	OBSS FOCUSED INSPECTION Ref. MSG 027,028	OBSS FOCUSED INSPECTION Ref. MSG 027,028		
16:00					MPLM: 1.103 MPLM ACTIVATION Steps 1-2, Confirm MCC-H complete w/ Step 4, Continue with Steps 5, 7-10. Once complete, help FE-2 with CONFIG FOR INGRS Step 6				
17:00									
23:00					S&M: 1.108 MPLM VESTIBULE-CONFIG FOR INGRS Steps 7-8		ROBO: 1.313 LAB PDGF GRAPPLE Steps 1-5		
18:00					MPLM: 1.103 MPLM ACTIVATION Step 11 Once complete, help FE-2 with CONFIG FOR INGRS steps 9-12				
00:00					MPLM: 1.104 MPLM INGRESS Steps 1-6 Ref. MDDK TL items: 450,450.1	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	EXERCISE		UPLINK 821°+BOXES BOX_C1 -18<AZ<52 -68<EL<75 BOX_C2 -41<AZ<-10 -25<EL<39 BOX_C3 -72<AZ<-36 -4<EL<33 BOX_F3 -34<AZ<0 -45<EL<-10

STS-121/ULF 1.1 (FD 04)

REPLANNED



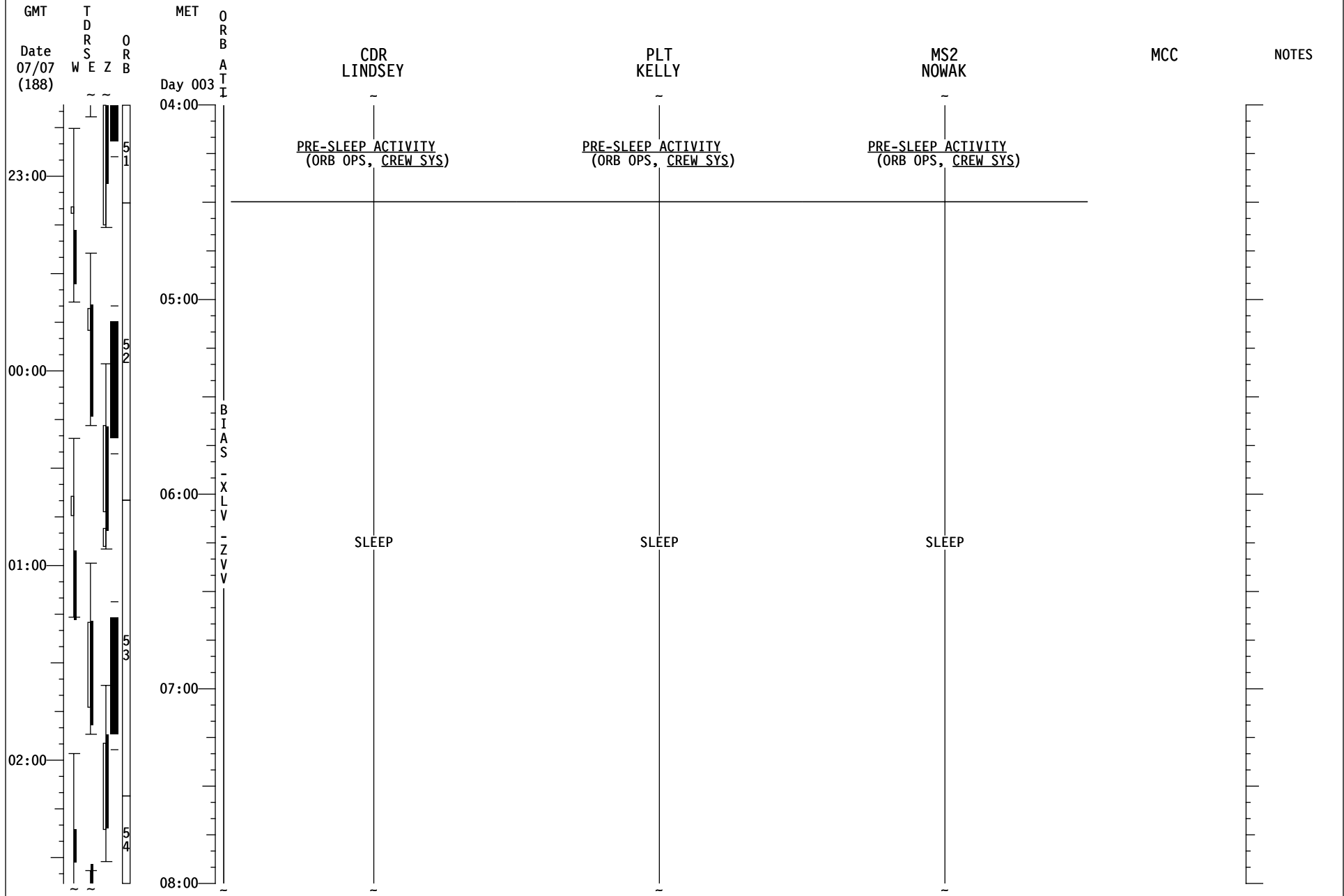
STS-121/ULF 1.1 (FD 04)

REPLANNED

GMT	T D R S E Z	O R B	MET	O R B	MS1	MS3	MS4	NOTES
Date	W E Z	A T I	Day 003	A T I	FOSSUM	WILSON	SELLERS	
07/07 (188)								
19:00					760 EVA - CAMR W/FLASH (PHOTO/TV, DCS 760 EVA)	MPLM SETUP FOR TRANSFER Ref. MPLM Resupply TL items: 100-105		
					ERCA XFER Ref. MPLM Resupply TL item: 243 EVA SYS: 1.403 REBA PWR'D H/W C/O Steps 2-6,11,14-16,19-21 EVA TOOLS MGMT (EVA, TOOLS & STOWAGE) Perform FD4-RJMC TRANSFER Ref. MPLM Resupply TL item 129 & swap tab items: 202,769 EVA 1 BRIEFING CARD (EVA, EVA 1)	TRANSFER TAGUP Coordinate with xfer counterpart (CDR,MS3,FE-2)	EXERCISE	
20:00						PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)		
						EVA 1 BRIEFING CARD (EVA, EVA 1)	EVA 1 BRIEFING CARD (EVA, EVA 1)	
21:00								
22:00					PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	
04:00								

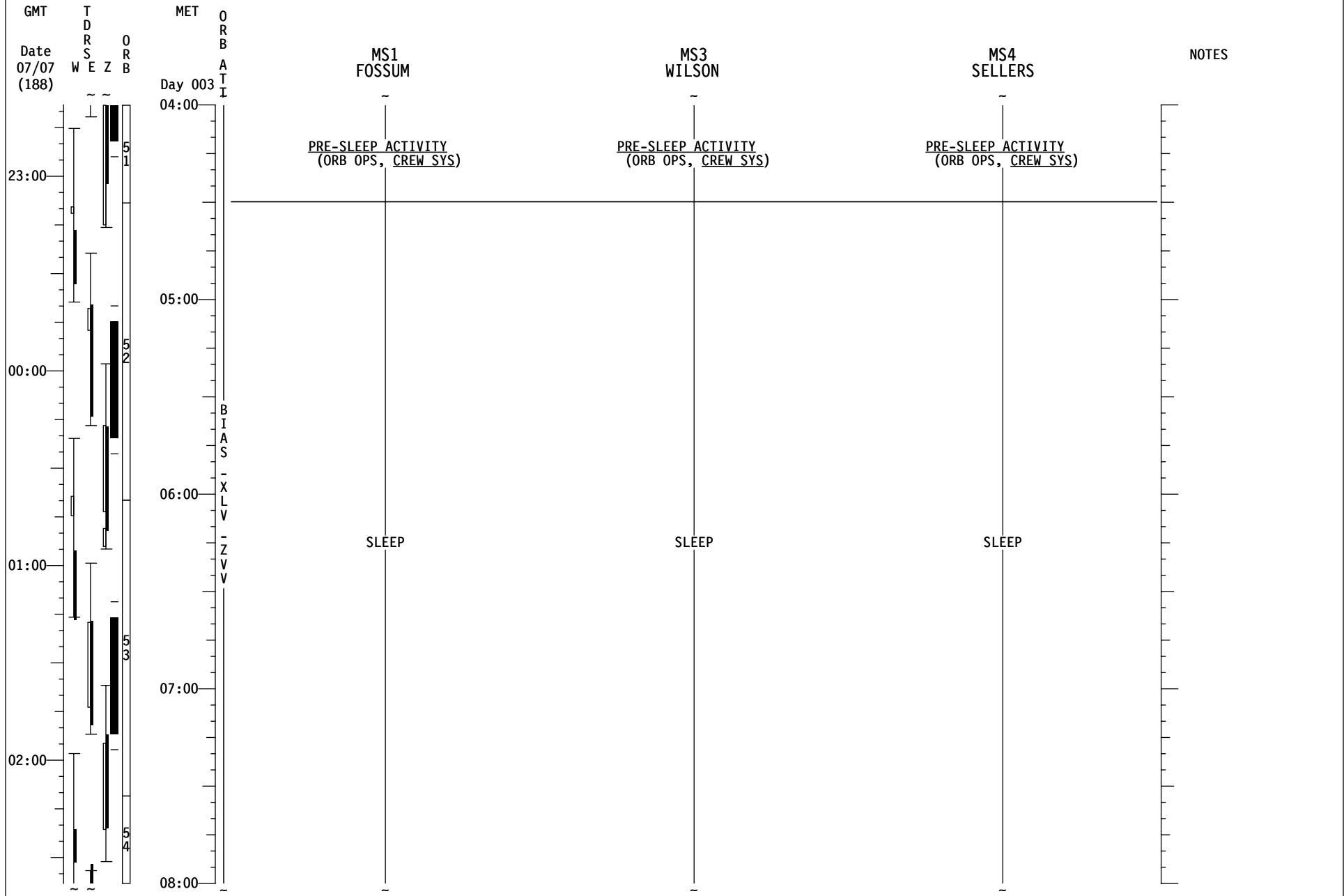
STS-121/ULF 1.1 (FD 04)

REPLANNED



STS-121/ULF 1.1 (FD 04)

REPLANNED



MSG 021A (13-0618A) - FD04 MISSION SUMMARY

Page 1 of 2

1
2 Good Morning Discovery!
3
4 Great job on the rendezvous and arm ops. The views from the ISS of the Shuttle looked
5 fantastic. Have fun putting a new room on the Station today – the float-in closet, every
6 home needs one.
7
8 We believe the temperature of L5L should bottom out around 60 degrees, which is below
9 the 90 degree use limit. So at this time, we will not use verns for attitude control while
10 docked. The plan is to use Station, USTO, for maneuvering to and holding dump attitudes.
11
12
13 YOUR CURRENT ORBIT IS: 191 X 178 NM
14
15 NOTAMS:
16
17 LAJES – TACAN 45X OUT OF SERVICE TILL 10 JUL
18 GUAM (GUA) – RWY 06L/24R CLOSED
19 AMBERLEY (AMB) – CLOSED
20 OCEANA (NTU) - RWY 23L/05R CLOSED
21 RIO GALLEGOS (AWG) - NOT APPROVED
22 ISTRES (FMI) – 33 RWY REMAINING MARKERS AVAIL ARE 300,600,900M
23
24 NEXT 2 PLS OPPORTUNITIES:
25
26 EDW22 ORB 49 – 3/00:49 (FEW060, 220@13P21 – EDW22 ONLY)
27 EDW22 ORB 64 – 3/23:36 (FEW120, 220@15P24 – EDW22 ONLY)
28
29 OMS TANK FAIL CAPABILITY:
30
31 L OMS FAILS: NO
32 R OMS FAILS: NO
33
34 LEAKING OMS PRPLT BURN:
35
36 L OMS LEAK: ALWAYS BURN RETROGRADE
37 R OMS LEAK: ALWAYS BURN RETROGRADE
38
39 OMS QUANTITIES(%)
40
41 L OMS OX = 34.6 R OMS OX = 37.2
42 FU = 35.1 FU = 37.9
43
44 SUBTRACT I'CNCT COUNTER FOR CURRENT OMS QUANTITIES
45
46 DELTA V AVAILABLE:
47
48 OMS 357 FPS
49 ARCS (TOTAL ABOVE QTY1) 26 FPS
50 TOTAL IN THE AFT 383 FPS
51

MSG 021A (13-0618A) - FD04 MISSION SUMMARY

Page 2 of 2

1	ARCS (TOTAL ABOVE QTY2)	58 FPS
2	FRCS (ABOVE QTY 1)	36 FPS
3		
4	AFT QTY 1	84 %
5	AFT QTY 2	46 %
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MSG 022 (13-0619) - FD04 TRANSFER MESSAGE

Page 1 of 1

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Good morning Thomas, Stephanie, and Steve,

MPLM Transfer Begins! Thanks for the detailed calldown yesterday. We've uplinked the MDDK and MPLM Return Location Sorts. These will not be updated again until the day of MPLM Config for Entry (for use during verification of MPLM rack contents).

Transfer Choreography for FD04:

- MDDK transfers: Transfer remaining EVA1 items from MDDK to ISS (EVA EMU SYS bags); also GSC from MPLM ingress stow in mddk
- MPLM Setup (remove tape from RSR doors; tape up MPLM maps; retrieve from ISS and deploy PBA, PFE, bungees, seat track studs, CTBs with RSP pivot pins)
- Transfer EVA1 items from MPLM to ISS (RJMC, ERCA; Swingarms).
- Transfer 2 mesh bags of CWCs from MPLM to MDDK for H2O fills on FD05

The Transfer List Excel file, FD04_TransferList_STS121.xls, is located on the KFX machine in **C:\OCA-up\transfer**.

For ISS, the Transfer List Excel file, FD04_TransferList_STS121.xls, is located in **K:\OCA-up\transfer**.

Please incorporate updates as follows (call us with any questions):

In the MDDK Transfer List Book

RETURN tab, make the following Pen & Ink change (if desired):

Page Return 3: Item 488: In item name, change quantity of IMAX from 7 to 5

RETURN SORT tab, Insert the following pages:

Page Rtn Loc 1 through Page Rtn Loc 4.

In the MPLM Resupply Transfer List Book

LAYOUTS tab,

Replace the Resupply Treasure Map page L-16

A4 RSP tab, Replace Page Resupply 16

SWAP tab, Replace Page Swap 20

In the MPLM Return Transfer List Book

RETURN tab,

Replace Page Return 24

Remove Page Return 31 and move it to the MPLM CLEANUP tab

RETURN SORT tab, Insert the following pages:

Page Rtn Loc 5 through Page Rtn Loc 18.

-The Transfer Team-

MSG 023A (13-0623A) - EVA BATTERY CHARGING DELTAS

Page 1 of 2

1 Recent on-orbit issues with the battery chargers have forced a change in the battery
2 charging plan. The previous plan had 4 Helmet light batteries charging at one time. Battery
3 chargers 3 and 4 can no longer charge helmet lights, which means only 2 helmet lights can
4 be charged at a time using battery charger 2. The battery charging plan will have to change
5 accordingly. The new attached STS-121 LOGISTICS CUE CARD has the new charging
6 plan.

7

8 The changes are as follows:

9

10 POST EVA 1 Battery Recharge

- 11 • Recharge only 2 Helmet Light Batteries s/n 1013 & 1014 for EVA 3
- 12 • Recharge REBAs s/n 1004 & 1005 -- as before

13 FD 6 Battery Recharge -- new

- 14 • An INITIATE will be added to FD 6. After TERMINATE of the POST EVA 1 charge,
15 swap Helmet Light Batteries s/n 1013 and 1014 with s/n 1011 and 1012. Then
16 INITIATE charge on the 2 Helmet Light Batteries (s/n 1011 & 1012) using Battery
17 Charger 2 (upper right) for EVA 3.
- 18 • A TERMINATE will be added on FD 7.

19

20 POST EVA 2 Battery Recharge

- 21 • Recharge only Helmet Light Batteries s/n 1019 & 1021 -- 1019 will be used with the
22 IR Camera
- 23 • Recharge REBAs s/n 1004 & 1005, and PGT Batts s/n 5012 & 5013 -- as before

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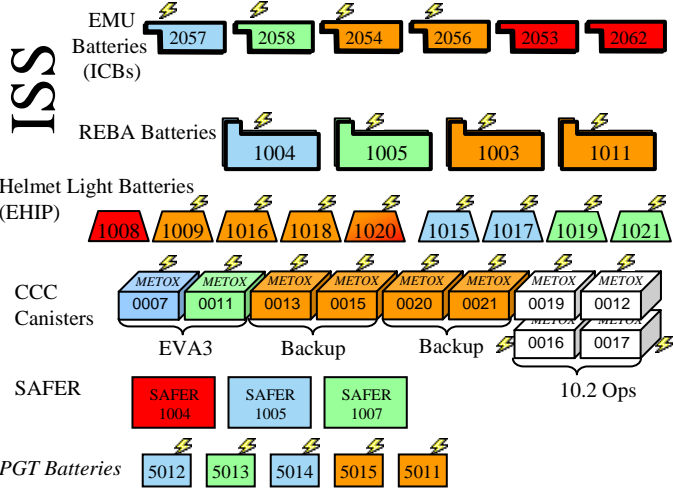
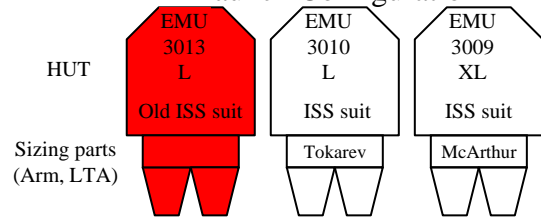
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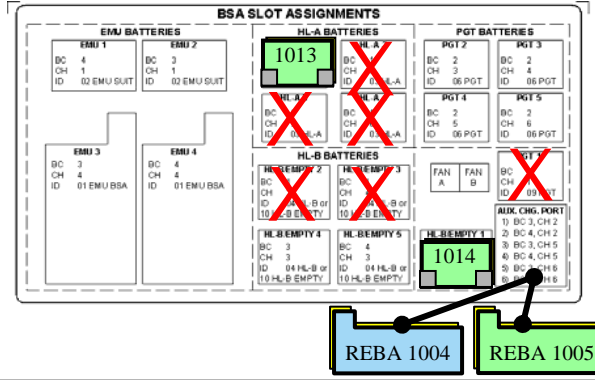
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STS-121 LOGISTICS CUE CARD

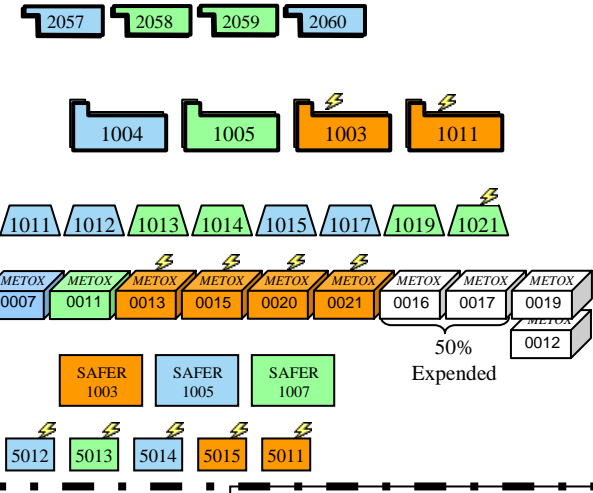
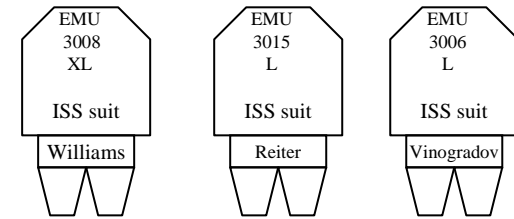
Launch Configuration



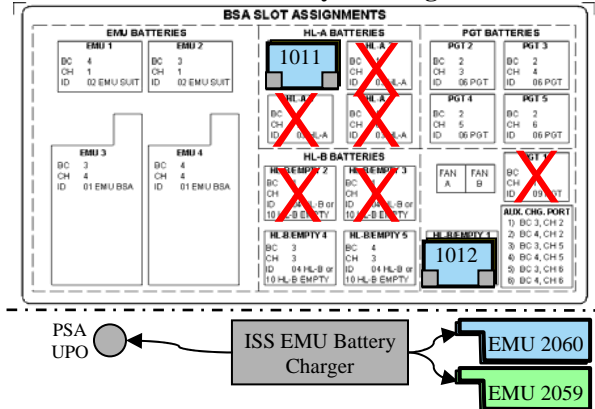
POST EVA 1 Battery Recharge



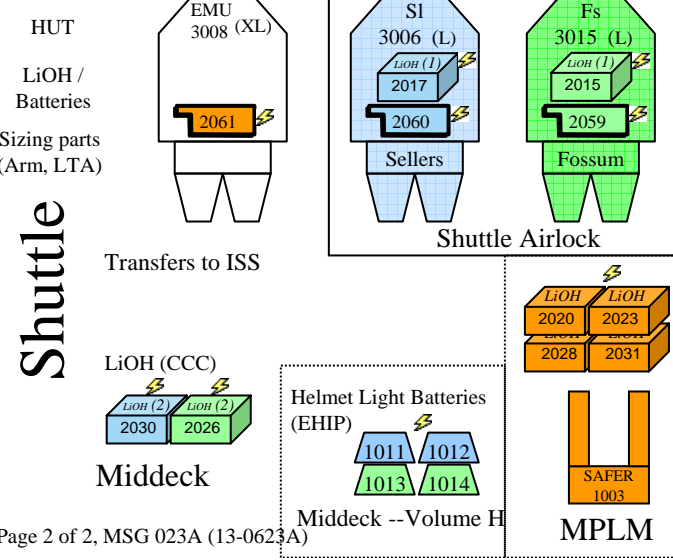
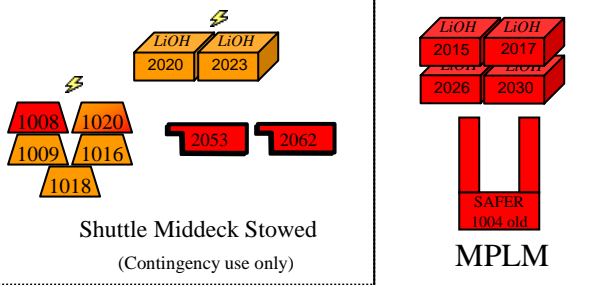
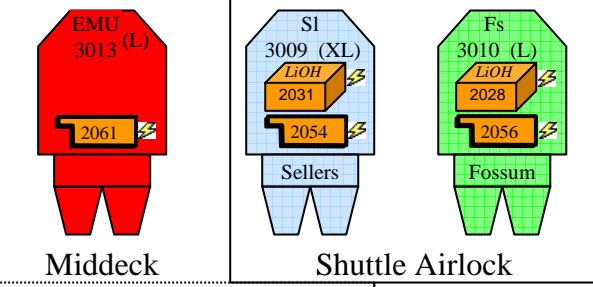
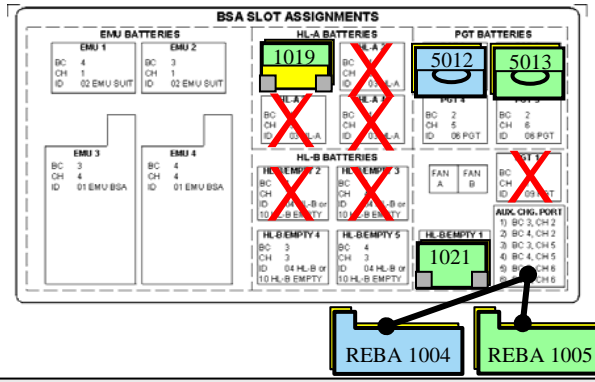
Landing Configuration



FD 6 Battery Recharge



POST EVA 2 Battery Recharge



- Items for Sellers
- Battery for the IR Camera
- Contingency use items
- Out of certification / not maintained
- Items for Fossum
- Charged or Regenerated

MSG 025 - FD04 WATER SUMMARY

1 The Shuttle/ISS H2O Container Fill initiation scheduled for CDR at MET 2/15:25 should
2 contain the following details:

3

4 SHUTTLE/ISS H2O CONT FILL INIT #3

5 (ORB OPS, ECLS)

6 Ag Biocide is req'd.

7 Sample is req'd.

8 Fill Duration: ~52 minutes

9 Report Serial Number and Barcode to MCC.

10

11 Following fill #3, at MET 2/16:55 CDR should perform:

12

13 SHUTTLE/ISS H2O CONT FILL INIT #4

14 (ORB OPS, ECLS)

15 Ag Biocide is req'd.

16 Sample is not req'd.

17 Fill Duration: ~52 minutes

18 Report Serial Number and Barcode to MCC.

19

20 After both fills are complete, temp stow bags on middeck. At MET 2/19:35 transfer the
21 CWCs to the water wall (NOD1P2) per the flight plan. If there is insufficient room for the bag
22 at this ISS location, report the actual stowage location to MCC.

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MSG 026 (13-0622) - FD03 MMT SUMMARY

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FD3 MMT Crew Summary

The MMT met to review the mission progress on FD 3. Overall there were very few items of discussion. A brief summary of the key items are included for your information.

L5L: The MMT discussed the forward plan for use of L5L during the docked timeframe. All 6 VRCS jets are required per existing analysis and certification for docked maneuvers. The ISS MMT has agreed to use US Thruster Only (USTO) attitude control mode for future mated water dump maneuvers on FD5 and FD 8 if all vernier jets are not available. There has been some discussion of various plans to attempt to keep L5L warm enough to allow shuttle verniers maneuvers since it is predicted to drop below 90 degrees and become unavailable during the docked phase. The MMT determined that this plan will need additional analysis before any proposed options are executed. The likely plan is to use either ALT DAP or USTO with the discussion centering on the trade of using ISS propellant at the expense of slightly higher loads for ALT DAP.

FES PRI- B: The MMT reviewed the flight rules for a failed primary FES. Neither FES PRI B nor the Secondary FES are being declared failed at this time. The flight rules call for an MDF only if both FES PRI B and FES PRI A are failed. A troubleshooting plan for post undocking is still in work. Here is a brief summary of what was observed on flight day 1 during the high load and topper core flush and during nominal FES operations:

	Hi LOAD + Topper	Topper Only	Hi Load Only
PRI A Controller	Good	Good	
PRI B Controller	Erratic/Shutdown	Erratic	
Secondary Controller		Good	Oscillated at Startup But Still Good

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Cryo Margins/Mission Extension- The cryo margins and other consumables currently support a 13+2 mission duration. The MCC and MMT would like to verify the docked power projections over next 24 hours and if these projections are as predicted, the MMT is expected to extend the mission by a day on FD 4.

Ascent Data Review- The MMT reviewed the pad debris environment and vehicle performance during ascent. Pad B is in very good shape after a slight sand blasting by the SRBs. No vehicle flight hardware has been found and the Pad environment was considered to be very nominal based on previous flight experience. Additionally, the preliminary ascent data shows that powered flight and post MECO were very nominal with no issues. The ET umbilical photography also showed that the tank performed very well and a summary of those pictures will be provided later in the mission for your review.

Inspection- The review of the RCC LDRI inspection data is approximately 87% complete. The only potential RCC focused inspection request identified so far is two locations on the nose cap that appear to be out of the field of view of the LDRI imagery. Depending on what is available with the 800 mm RPM photos, additional nose cap inspections may not be required since the RPM data may meet the TPS analysts requirements. Analysis of the RPM photography is also in work. So far the data indicates that the tile is in good shape with very little damage. The more extensive review of the data will occurred during the FD 4 MMT.

MSG 026 (13-0622) - FD03 MMT SUMMARY

Page 2 of 2

1 **GAP Filler-** Analysis for the protruding gap filler identified on the outer aft part of the port
2 wing should be complete tomorrow. The preliminary assessment is that this gap filler will
3 not need to be removed but there is still some open thermal analysis of the elevon actuators
4 and hydraulic lines. Two other protruding gap fillers have been identified. The first is one
5 tile row forward of the starboard ET door and appears to be protruding by as much as 1 inch
6 and the other is near the arrowhead. These reports were very late-breaking at the time of
7 the MMT and may be included as part of the focused inspection request. More details on
8 these items will provide after the review of all the RPM data at the FD 4 MMT.

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MSG 027 - FD04 FOCUSED INSPECTION SUMMARY

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Discovery, here 's a quick overview of today 's planned focused inspection. You 'll be getting more detailed products later in the morning.

The vehicle looks very clean and there are just a few areas of interest. Attached is an overview of the Orbiter belly and photos of each area.

1. Overview Map

2. Nosecap - There 's a spot on the starboard upper side of the nosecap that warrants another look. It 's similar to bird droppings but has a small black spot in the middle.

3. Tadpole Gap Filler – There is protruding gap filler on the Left Outboard corner of the RCC arrowhead plate between the tile and the RCC.

4. STBD ET Door Gap Filler – There is a protruding Ames gap filler just forward of the starboard ET door, slumped over slightly.

5. STBD Panel 9R – There is a large dark spot on panel 9R being called "the claw". It is a big spot with 4 elongated features. There is also a dark spot that is not in the baseline imagery.

6. STBD Panel 5R – There are two black scuff marks that are not in the baseline imagery.

Hope this helps to give you a big picture orientation

Mike Moses
Team 4 Flight

MSG 027 - FD04 FOCUSED INSPECTION SUMMARY

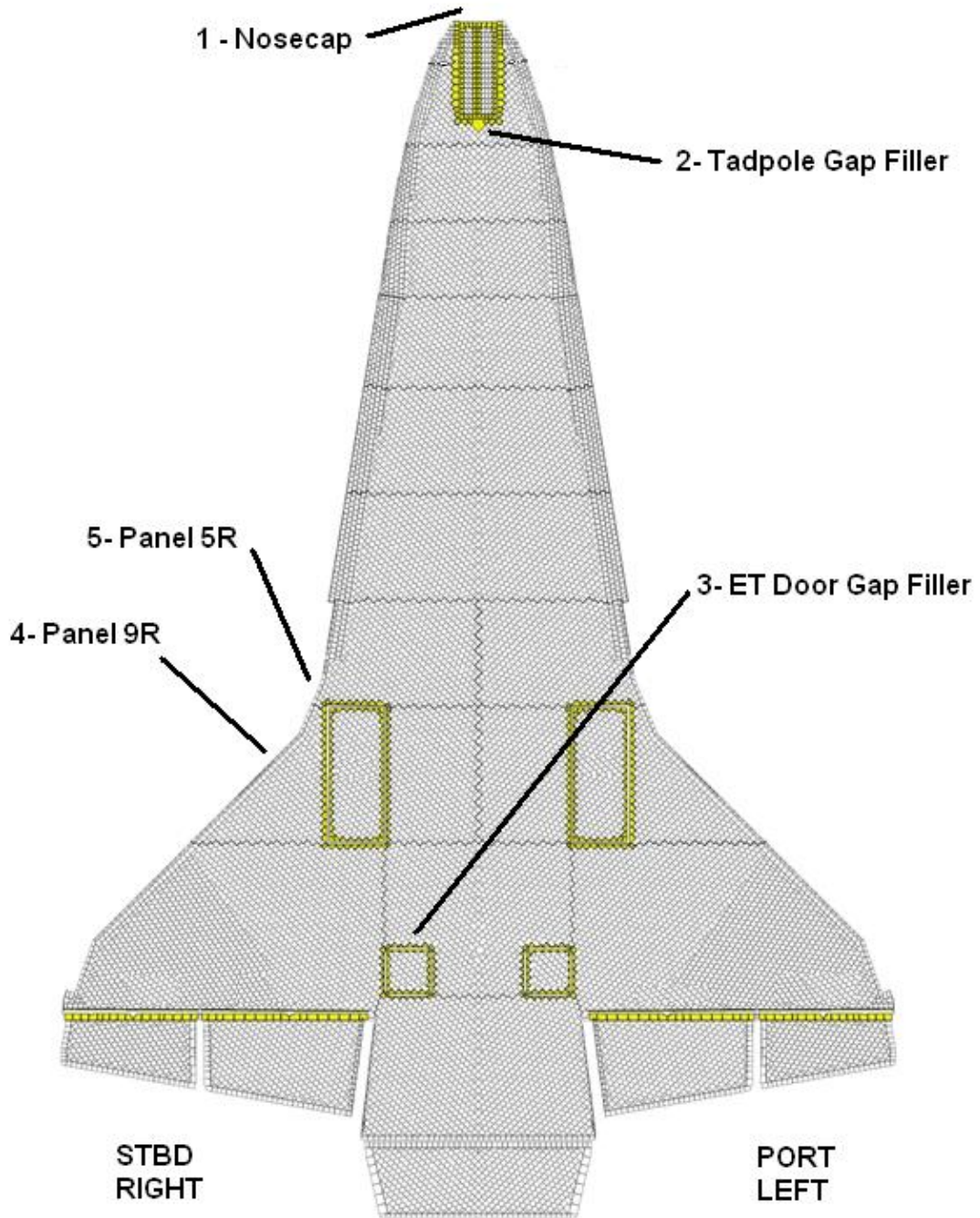


Figure 1

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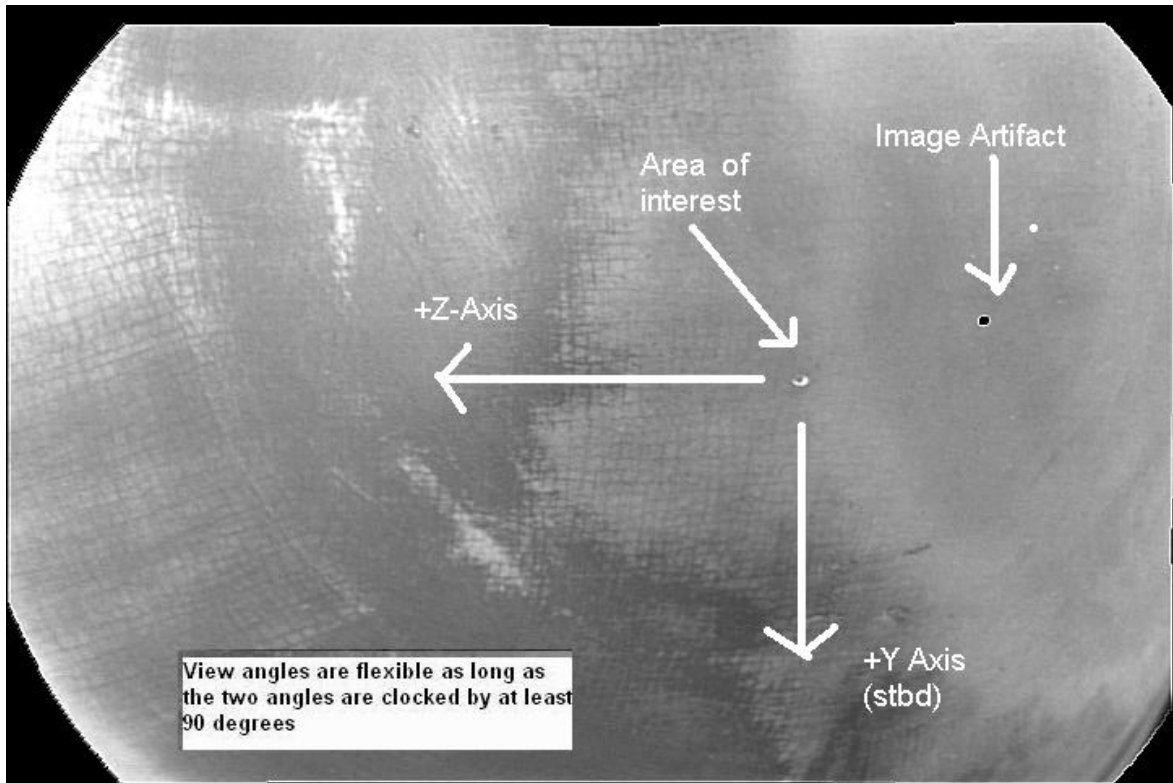


Figure 2

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MSG 027 - FD04 FOCUSED INSPECTION SUMMARY

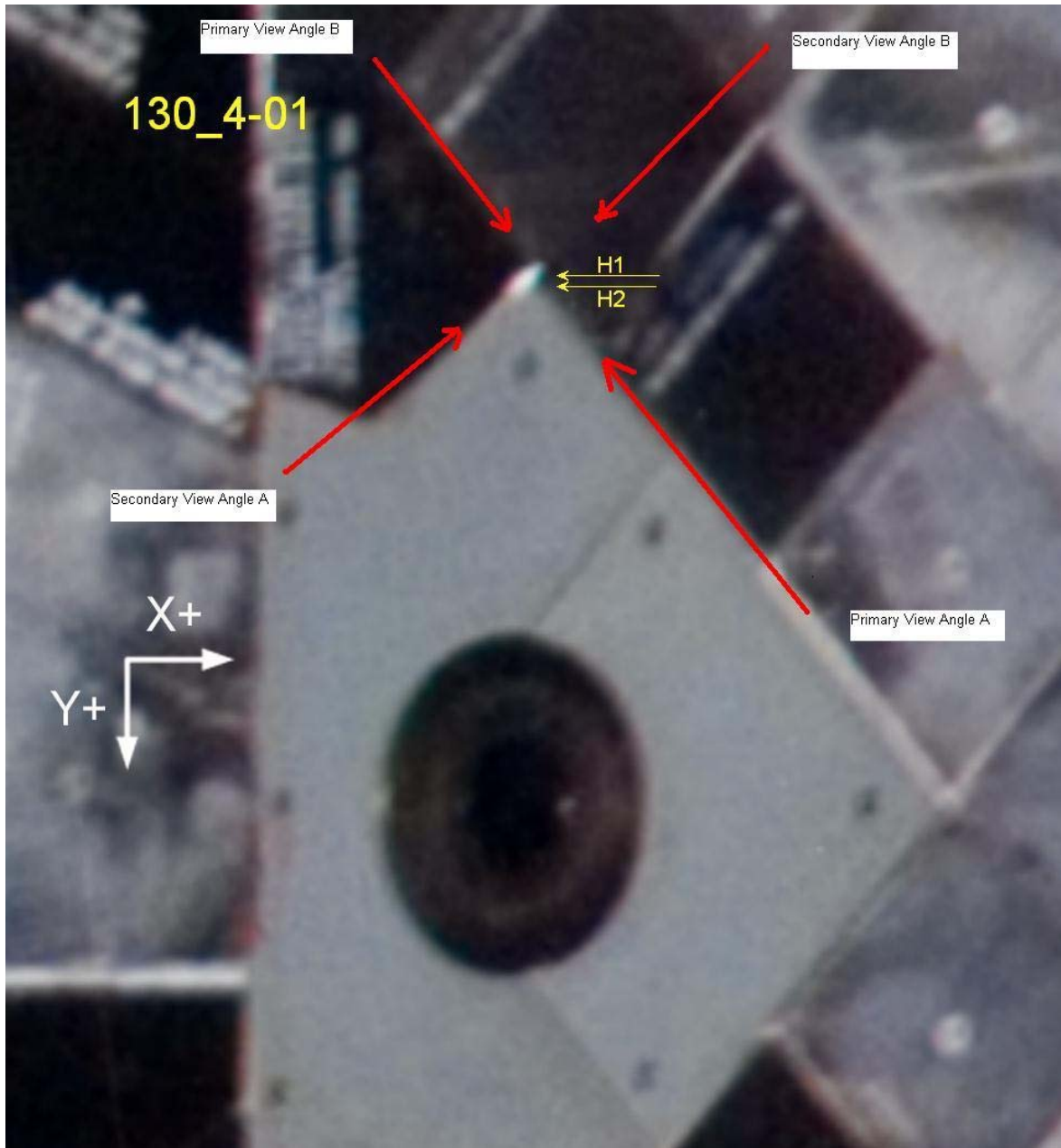


Figure 3

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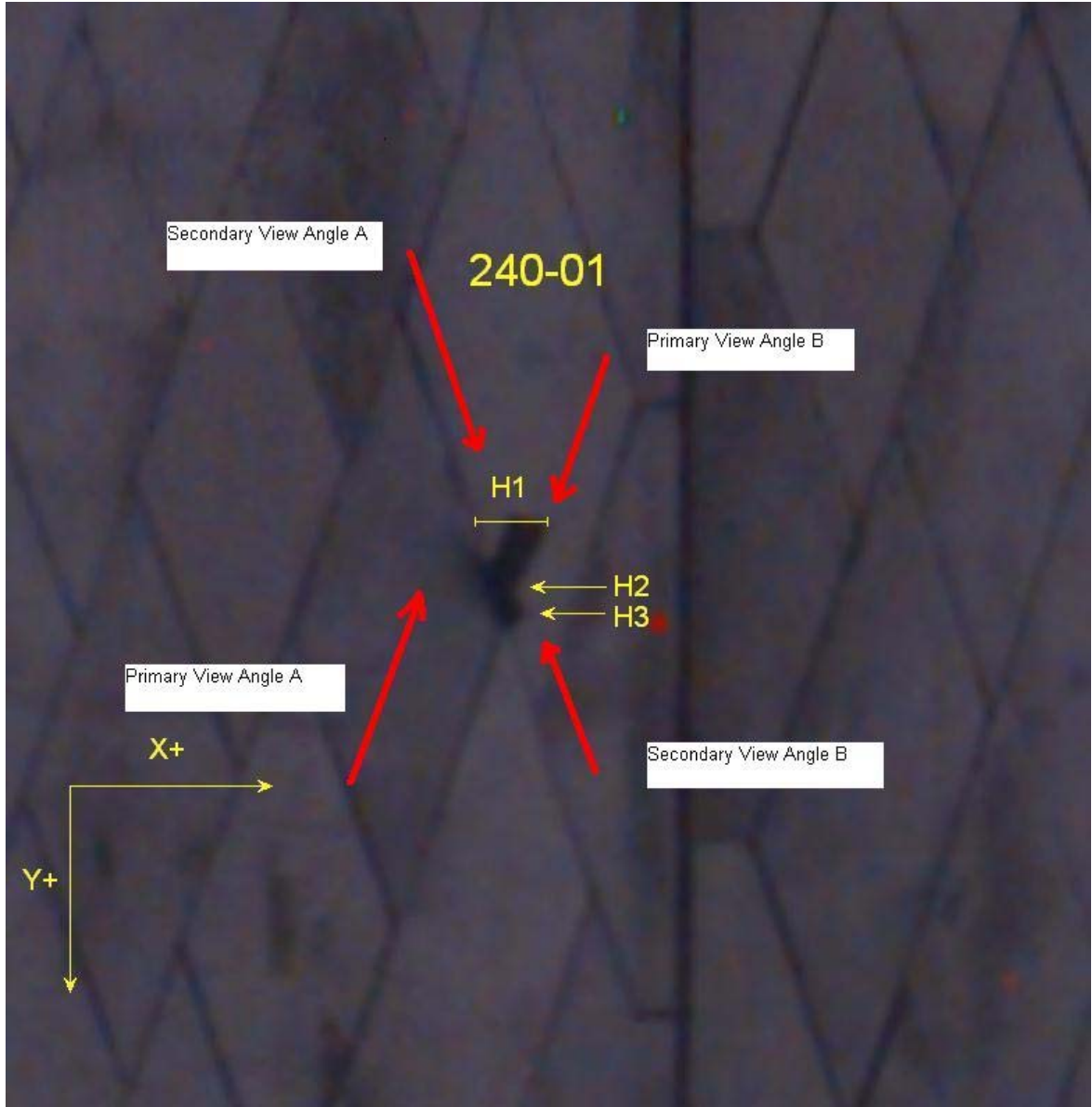


Figure 4

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MSG 027 - FD04 FOCUSED INSPECTION SUMMARY

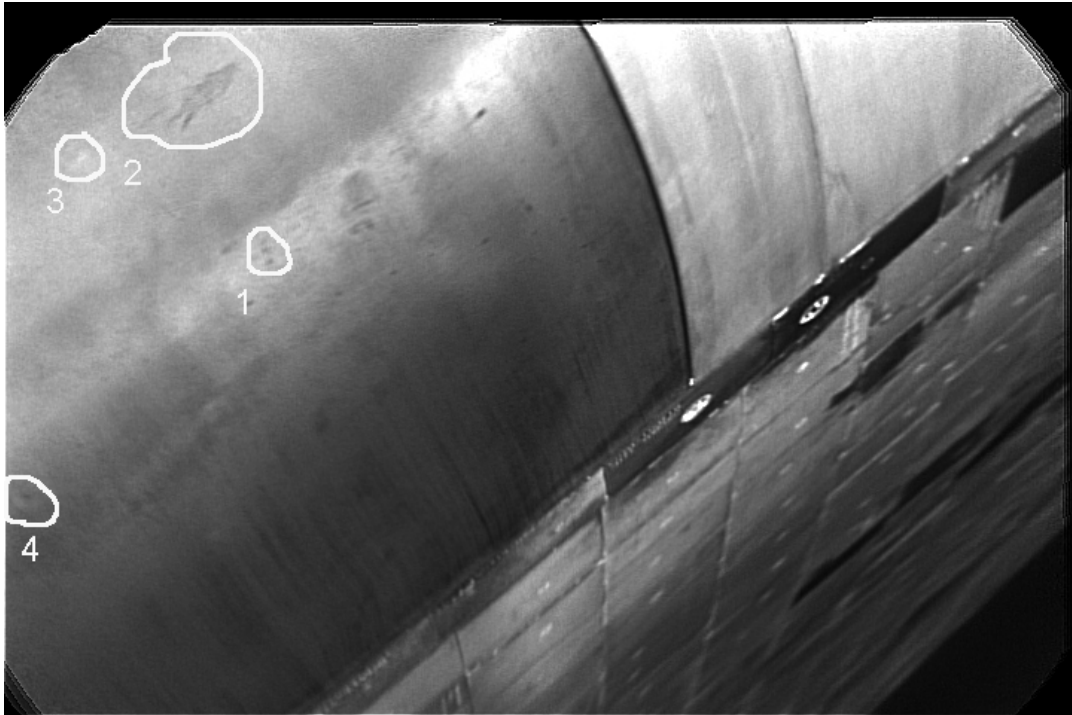


Figure 5

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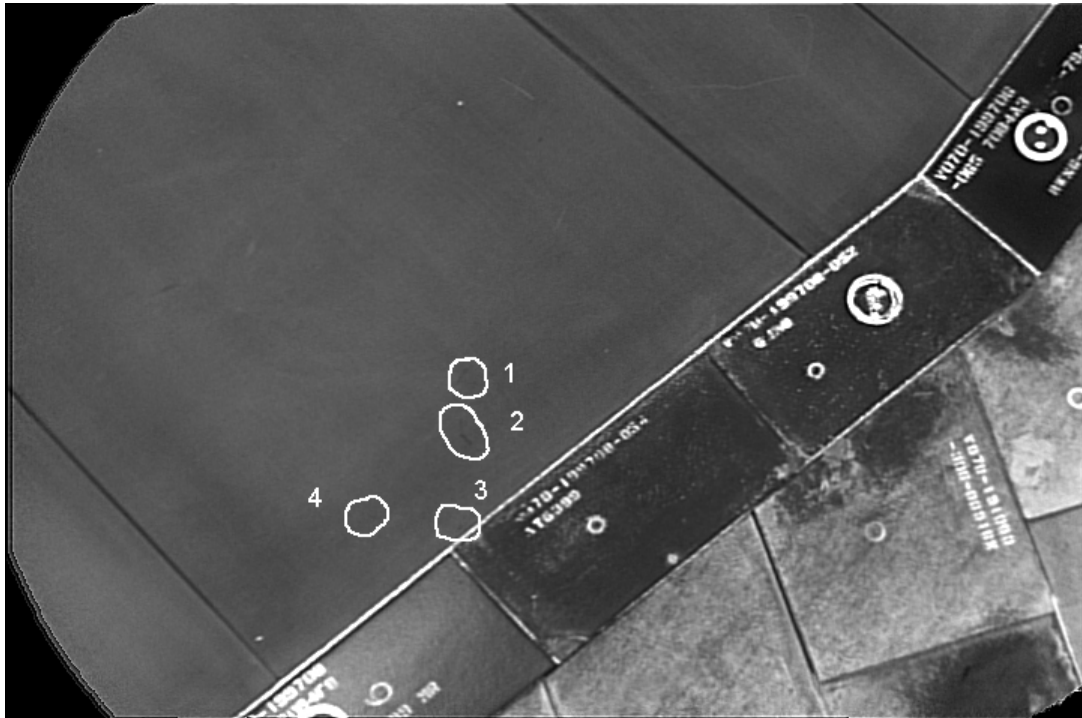


Figure 6

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13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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DOUG Setup for FD04 (MPLM Install, Walkoff to MBS)

1. For **stand-alone** procedure review, perform {1.301 DOUG Startup Procedure}, step 2 (SODF: POC: Activation and Checkout: DOUG)
2. For **SSRMS real-time support**, perform {1.301 DOUG Startup Procedure}, step 1 (SODF: POC: Activation and Checkout: DOUG)
 - 2.1 Set SSC volume such that tones are audible.
3. Configure for current ISS configuration and bring up displays.
 - 3.1 File ► Load State
 - 3.1.1 From Load State Dialog box, select 'ISSULF1d1_FD04_MPLM', open
4. Confirm steps **4.1-4.2** are complete with loaded state file, otherwise complete these steps as needed .
 - 4.1 Reconfig ► SSRMS
 - 4.1.1 In SSRMS Reconfig Dialog box, select 'SSRMS_BASE_A'.
 - 4.1.2 In SSRMS Reconfig Dialog box, select 'SSRMS ->LAB_PDGF'.
 - 4.1.3 In SSRMS Reconfig Dialog box, select 'MT_to_WORKSITE_WS4'.
 - 4.2 Reconfig ► Orbiter Inspection.
 - 4.2.1 In Orbiter Inspection Dialog box, select 'OBSS_GF1_to_SRMS'
 - 4.3 Display ► Puddle Plot Shoulder/Wrist
 - 4.4 For real-time support, Display ► Show SSRMS Target
 - 4.5 For Real-time support, Options ► SSRMS Proximity, set all distances to 24 (inches)

Notes:

1. Use the Home Key to cycle through the Camera, SSRMS and SRMS Targets.
2. Use Page Up and Page Down keys to scroll through Target selections.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.210 BERTHED MPLM GRAPPLE	2	ULF1.1 FD07 Stbd-Port View	ULF1.1 FD03 ACBM Inspection Posn	ULF1.1 FD03 SRMS MPLM Viewing Posn
	3		ULF1.1 FD04 Berthed MPLM Pre-Grapple Posn	
	4.5		ULF1.1 FD04 Expected Berthed MPLM Grapple Posn	

5. For procedure '1.211 MPLM Unberth' Step 9 configure for current ISS configuration
 - 5.1 Reconfig ► MPLM
 - 5.1.1 In MPLM Reconfig Dialog box, select 'MPLM>SSRMS'

13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.211 MPLM UNBERTH	9		ULF1.1 FD04 MPLM Low Hover Posn	
1.212 MPLM INSTALL	2		ULF1.1 FD04 MPLM Pre-Install Pause Pnt Posn	
	4		ULF1.1 FD04 MPLM Pre-Install Posn	
	7		ULF1.1 FD04 Expected MPLM RTL Posn	
	9		ULF1.1 FD04 Expected MPLM Install Posn	

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3 6. For procedure '1.213 Mated MPLM Ungrapple' Step 2 configure for current ISS
4 configuration

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6.1 Reconfig ► MPLM

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6.1.1 In MPLM Reconfig Dialog box, select 'MPLM>Node'

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8

9 NOTE: If SSRMS is to remain on the Lab PDGF skip down to the contingency procedures
10 and targets at the bottom of this note. If walk-off to MBS is planned continue with the next
11 block.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.213 MATED MPLM UNGRAPPLE	2.3		ULF1.1 FD04 Mated MPLM Ungrapple Posn	
1.310 WS4 MBS PDGF 1 GRAPPLE	1		ULF1.1 FD04 Mated MPLM Ungrapple Posn	
	2		ULF1.1 FD04 SP to MPLM Clearance Posn	
			ULF1.1 FD04 EP to MPLM Clearance Posn	
			ULF1.1 FD04 Final MPLM Clearance Posn	
	3		ULF1.1 FD04 MBS Grapple JOCAS 1 Posn	
	4		ULF1.1 FD04 MBS Grapple JOCAS 2 Posn	
	5		ULF1.1 FD04 MBS Grapple JOCAS 3 Posn	
	6		ULF1.1 FD04 SJ -SP to MBS PDGF1 Pre-Grapple Posn	
			ULF1.1 FD04 SJ -EP to MBS PDGF1 Pre-Grapple Posn - final	
	7.6		ULF1.1 FD04 MBS PDGF1 Grapple Posn	

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13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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- 1 7. For procedure 1.311 'Lab PDGF Ungrapple' step 1 Configure for current ISS
 2 configuration.
 3 7.1 Reconfig ► SSRMS
 4 7.1.1 In SSRMS Reconfig Dialog box, select 'SSRMS_BASE_B'.
 5 7.1.2 In SSRMS Reconfig Dialog box, select 'SSRMS ->MBS_PDGF1'.
 6

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.311 LAB PDGF UNGRAPPLE	1		ULF1.1 FD04 Lab PDGF Grapple Posn	
	2.6		ULF1.1 FD04 Lab PDGF Backoff Posn	
1.312 MNVR TO SURVEY SUPPORT VIEWING POSN	2		ULF1.1 FD04 JOCAS 1 End Posn	
	3		ULF1.1 FD04 Survey Supt Vwg Posn	
	4.1		ULF1.1 FD04 SJ -WP to Fwd Orbiter Vwg Posn	
			ULF1.1 FD04 SJ -WY to Fwd Orbiter Vwg Posn	
		ULF1.1 FD04 SJ +WP to Mid Orbiter Vwg Posn		
		ULF1.1 FD04 SJ +WY to Mid Orbiter Vwg Posn		
		ULF1.1 FD04 SJ +WP to Aft Orbiter Vwg Posn		
		ULF1.1 FD04 SJ +WY to Aft Orbiter Vwg Posn		
	4.2		ULF1.1 FD04 Survey Supt Vwg Posn	
1.313 LAB PDGF GRAPPLE	2		ULF1.1 FD04 JOCAS 1 End Posn	
	3		ULF1.1 FD04 Lab PDGF Pre-Grapple Posn	
	4.7		ULF1.1 FD04 Lab PDGF Grapple Posn	

- 7
 8 NOTE: If SSRMS has to remain on the Lab the following contingency procedures and
 9 targets will be used.

13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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1 DOUG Setup for FD04 (Contingency - No Walkoff Required)

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.213 MATED MPLM UNGRAPPLE	2.3		ULF1.1 CONT FD04 Mated MPLM Ungrapple Posn	
2.310 MNVR TO SURVEY SUPPORT VIEW POSN (LAB PDGF)	1		ULF1.1 CONT FD04 Mated MPLM Ungrapple Posn	
	2		ULF1.1 CONT FD04 Soyuz Clearance	
	3		ULF1.1 CONT FD04 MPLM Clearance Posn	
	4		ULF1.1 CONT FD04 Orbiter Clearance Posn	
	5		ULF1.1 CONT FD04 Survey Support Posn	
	6.1		ULF1.1 CONT FD04 +WP SJ Orbiter Aft Viewing	
			ULF1.1 CONT FD04 -WY SJ Orbiter Aft Viewing	
			ULF1.1 CONT FD04 -WP SJ Orbiter Fwd Viewing	
			ULF1.1 CONT FD04 -WY SJ Orbiter Fwd Viewing	
	6.2		ULF1.1 CONT FD04 Survey Support Posn	
	7		ULF1.1 CONT FD04 SJ SP JOCAS 3 start posn	
			ULF1.1 CONT FD04 JOCAS 3 to MBS	
	8		ULF1.1 CONT FD04 SP SJ to PDGF 1 Pregrapple Posn	
			ULF1.1 CONT FD04 EP to PDGF 1 Pregrapple Posn	

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13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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DOUG Setup for FD05 (MBS Ungrapple)

1. For **stand-alone** procedure review, perform {1.301 DOUG Startup Procedure}, step 2 (SODF: POC: Activation and Checkout: DOUG)
2. For **SSRMS real-time support**, perform {1.301 DOUG Startup Procedure}, step 1 (SODF: POC: Activation and Checkout: DOUG)
 - 2.1 Set SSC volume such that tones are audible.
3. Configure for current ISS configuration and bring up displays.
 - 3.1 File ► Load State
 - 3.1.1 From Load State Dialog box, select 'ISSULF1d1_FD05_Walkoff', open
4. Confirm steps **4.1-4.3** are complete with loaded state file, otherwise complete these steps as needed.
 - 4.1 Reconfig ► SSRMS
 - 4.1.1 In SSRMS Reconfig Dialog box, select 'SSRMS_BASE_A'.
 - 4.1.2 In SSRMS Reconfig Dialog box, select 'SSRMS ->LAB_PDGF'.
 - 4.1.3 In SSRMS Reconfig Dialog box, select 'MT_to_WORKSITE_WS4'.
 - 4.2 Reconfig ► MPLM
 - 4.2.1 In MPLM Dialog box, select 'MPLM>Node'
 - 4.3 Reconfig ► Orbiter Inspection
 - 4.3.1 In Orbiter Inspection Dialog box, select 'OBSS_GF1_to_SRMS'
 - 4.4 Display ► Puddle Plot Shoulder/Wrist
 - 4.5 For real-time support, Display ► Show SSRMS Target
 - 4.6 For Real-time support, Options ► SSRMS Proximity, set all distances to 24 (inches)

Notes:

1. Use the Home Key to cycle through the Camera, SSRMS and SRMS Targets.
2. Use Page Up and Page Down keys to scroll through Target selections.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.314 WS4 MBS PDGF 1 UNGRAPPLE	2	ULF1.1 FD07 Stbd-Port View	ULF1.1 FD05 MBS PDGF1 Grapple Posn	ULF1.1 FD03 SRMS MPLM Viewing Posn
	3.5		ULF1.1 FD05 Grapple fixture backoff Posn	

13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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DOUG Setup for FD07 (EVA2 - Pump Module Install & TUS R&R)

1. For **stand-alone** procedure review, perform {1.301 DOUG Startup Procedure}, step 2 (SODF: POC: Activation and Checkout: DOUG)
2. For **SSRMS real-time support**, perform {1.301 DOUG Startup Procedure}, step 1 (SODF: POC: Activation and Checkout: DOUG)
 - 2.1 Set SSC volume such that tones are audible.
3. Configure for current ISS configuration and bring up displays.
 - 3.1 File ► Load State
 - 3.1.1 From Load State Dialog box, select 'ISSULF1d1_FD07_EVA2', open
 - 3.2 Confirm steps 3.2.1-3.2.7 are complete with loaded state file, otherwise complete these steps as needed.
 - 3.2.1 Reconfig ► SSRMS
 - 3.2.1.1. In SSRMS Reconfig Dialog box, select 'SSRMS_BASE_A'.
 - 3.2.1.2. In SSRMS Reconfig Dialog box, select 'SSRMS ->LAB_PDGF'.
 - 3.2.1.3. In SSRMS Reconfig Dialog box, select 'MT_to_WORKSITE_5'.
 - 3.2.2 Reconfig ► MPLM
 - 3.2.2.1. In MPLM Dialog box, select 'MPLM>Node'
 - 3.2.3 Reconfig ► Orbiter Inspection
 - 3.2.3.1. In Orbiter Inspection Dialog box, select 'OBSS_GF1_to_SRMS'
 - 3.2.4 Reconfig ► EV1
 - 3.2.4.1. In EV1 Dialog box, select 'EV1 -> APFR_1'
 - 3.2.5 Options ► WIFs
 - 3.2.5.1. In Wif Dialog
 - 3.2.5.1.1. In WIF ref model (left), select 'ICC',
 - 3.2.5.1.2. In WIF list (right), select twice 'ICC_WIF_01' (fwd/port)
 - 3.2.5.1.3. In Thing to move (bottom), select 'APFR 1'
 - 3.2.5.1.4. Select 'OK'
 - 3.2.6 JntSystems ► APFR_1
 - 3.2.6.1. In APFR_1 Dialog box, select '9/QQ/G/2'
 - 3.2.7 Reconfig ► ICC
 - 3.2.7.1. In ICC Dialog box, select 'FIXED_GRAPPLE_BAR_2_to_Pump_Module'
 - 3.3 Display ► Puddle Plot Shoulder/Wrist
 - 3.4 For real-time support, Display ► Show SSRMS Target
 - 3.5 For Real-time support, Options ► SSRMS Proximity, set all distances to 24 (inches)

Notes:

1. Use the Home Key to cycle through the Camera, SSRMS and SRMS Targets.
2. Use Page Up and Page Down keys to scroll through Target selections.

13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.411 EVA 2 SETUP	2	ULF1.1 FD07 Stbd-Port View	ULF1.1 FD07 Grapple Fixture Backoff Posn	ULF1.1 FD05 SRMS EVA 2 Viewing Posn
	3		ULF1.1 FD07 SJ +SP Lab Camera Clearance Posn	
	4		ULF1.1 FD07 JOCAS to PM Pre-Grapple Setup Posn	
	5		ULF1.1 FD07 SJ -EP to Biased PM Pre-Grapple Posn	
			ULF1.1 FD07 SJ -SR to Biased PM Pre-Grapple Posn	
			ULF1.1 FD07 PM Pre-Grapple Posn	
1.412 PUMP MODULE GRAPPLE	3.5		ULF1.1 FD07 Approx PM Grapple Posn	

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4. For procedure '1.412 PUMP MODULE GRAPPLE' step 3.5 configure for current ISS configuration.
 4.1 Reconfig ► ICC
 4.1.1 In ICC Reconfig Dialog box, select 'Pump_Module -> SSRMS'.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.412 PUMP MODULE GRAPPLE	4		ULF1.1 FD07 Mnvr to PM Low Hover Posn	
1.413 MNVR PUMP MODULE TO ESP2	2		ULF1.1 FD07 JOCAS to PM High Hover Posn	
	3		ULF1.1 FD07 JOCAS to PM JOCAS End Posn	
	4		ULF1.1 FD07 SJ -EP to PM Intermediate Posn	

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5. FOR PROCEDURE '1.413 PUMP MODULE TO ESP2' step 4 configure for current ISS configuration.
 5.1 Toggle ► 'APFR_2' (on)
 5.2 Reconfig ► EV1
 5.2.1.1. In EV1 Dialog box, select 'EV1 -> APFR_2'
 5.3 Confirm step 5.2.1 is complete, otherwise complete this step as needed.
 5.3.1 Place APFR_2 on the ESP2_WIF_05 (fwd face) with settings '3/PP/F/11' (see 3.2.4 - 3.2.6 for detailed instructions)

13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.413 MNVR PUMP MODULE TO ESP2	5		ULF1.1 FD07 -X to PM Pre-Handoff Posn	
			ULF1.1 FD07 +Z to Approx PM Handoff Posn	

1 6. For procedure '1.414 PUMP MODULE UNGRAPPLE' step 2 configure for current ISS
2 configuration.

3 6.1 Reconfig ► ICC

4 6.1.1 In ICC Reconfig Dialog box, select 'Pump_Module -> ESP2'

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.414 PUMP MODULE UN-GRAPPLE	2.4		ULF1.1 FD07 Mnvr to PM Backoff Posn	
	3		ULF1.1 FD07 +Y to APFR Pre-Install Posn	
			ULF1.1 FD07 +X to APFR Pre-Install Posn	
			ULF1.1 FD07 +Z to APFR Pre-Install Posn	
			ULF1.1 FD07 -P to APFR Pre-Install Posn	
			ULF1.1 FD07 Approx APFR Install Posn	

6 7. For procedure '1.414 PUMP MODULE UNGRAPPLE' step 4 configure for current ISS
7 configuration.

8 7.1 Toggle ► 'APFR_SSRMS' (on) and 'APFR_2' (off)

9 7.2 Confirm step 7.2.1 is complete, otherwise complete this step as needed.

10 7.2.1 Jntsystems ► 'APFR_SSRMS'

11 7.2.1.1. In the 'APFR_SSRMS' dialog box , select '9/PP/F/6'

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.414 PUMP MODULE UN-GRAPPLE	4		ULF1.1 FD07 +X Backoff to APFR Pre-Install Posn	
1.415 TUS REMOVAL AT S0 TRUSS	2		ULF1.1 FD07 JOCAS to APFR Pre-Ingress Posn	
	3		ULF1.1 FD07 Mnvr to Approx APFR Ingress Posn	

14 8. For procedure '1.415 TUS REMOVAL AT S0 Truss' step 4 configure for current ISS
15 configuration.

16 8.1 Reconfig ► EV2

17 8.1.1 In the EV2 Dialog box select 'EV2 -> APFR_SSRMS'

13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.415 TUS REMOVAL AT S0 TRUSS	4		ULF1.1 FD07 Approx S0 TUS Retrieval Posn	

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NOTE: TUS 'Rotate' items below may be skipped, but are included to better represent the actual TUS removal and installation.

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9. For procedure '1.415 TUS REMOVAL AT S0 TRUSS' step 5 configure for current ISS configuration.

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9.1 Reconfig ► TUS_Reel_R&R

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9.1.1 In the TUS_Reel_R&R Dialog box, select 'Rotate_OLD_Nadir_TUS_in_S0' and 'Old_TUS_to_EV2'

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.415 TUS REMOVAL AT S0 TRUSS	5		ULF1.1 FD07 +X to S0 Backoff Posn	
			ULF1.1 FD07 +Y to S0 Backoff Posn	
1.416 MANEUVER TO ICC	2		ULF1.1 FD07 SJ +EP to S0 JOCAS Start Posn	
			ULF1.1 FD07 SJ +SP toS0 JOCAS Start Posn	
	3		ULF1.1 FD07 JOCAS to ICC High Hover Posn	
	4		ULF1.1 FD07 SJ -SR to ICC Low Hover Posn	

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10. For procedure '1.416 MANEUVER TO ICC' step 4 configure for current ISS configuration.

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10.1 Reconfig ► TUS_Reel_R&R

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10.1.1 In the TUS_Reel_R&R Dialog box, select 'Remove_Top_FSE_MLI'

16

10.1.2 In the TUS_Reel_R&R Dialog box, select 'Remove_Bottom_FSE_MLI'

17

10.2 Toggle ► 'APFR_3' (on) and 'APFR_1' (off)

18

10.3 Reconfig ► EV1

19

10.3.1.1. In EV1 Dialog box, select 'EV1 -> APFR_2'

20

10.4 Place APFR_3 on the 'ICC_WIF_02' (aft/stbd) with settings '4/II/F/12' (see 3.2.4 - 3.2.6 for detailed instructions)

21

22

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.417 TUS HANDOFF AT ICC	2	Select 'F3' to bring up Camera C for intuitive view	ULF1.1 FD07 Mnvr to Approx TUS Handoff Posn	

23

11. For procedure '1.417 TUS handoff at ICC' step 2 configure for current ISS configuration.

24

11.1 Reconfig ► TUS_Reel_R&R

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1 11.1.1 In the TUS_Reel_R&R Dialog box select 'Old_TUS_to_EV1'

2

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.417 TUS HANDOFF AT ICC	2		ULF1.1 FD07 Mnvr to Approx TUS Retrieve Posn	

3 12. For procedure '1.417 TUS handoff at ICC' step 2 Retrieve Posn configure for current ISS
4 configuration.

5 12.1Reconfig ► TUS_Reel_R&R

6 12.1.1 In the TUS_Reel_R&R Dialog box, select 'Rotate_NEW_TUS_on_FSE' and
7 'New_TUS_to_EV2'

8

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.417 TUS HANDOFF AT ICC	2		ULF1.1 FD07 Mnvr to Approx TUS Handoff Posn	

9 13. For procedure '1.417 TUS handoff at ICC' step 2 configure for current ISS configuration.

10 13.1Reconfig ► TUS_Reel_R&R

11 13.1.1 In the TUS_Reel_R&R Dialog box, select 'New_TUS_to_EV1' and
12 'Old_TUS_to_EV2'

13

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.417 TUS HANDOFF AT ICC	2		ULF1.1 FD07 Mnvr to Approx TUS Retrieve Posn	

14 14. For procedure '1.417 TUS handoff at ICC' step 2 configure for current ISS configuration.

15 14.1Reconfig ► TUS_Reel_R&R

16 14.1.1 In the TUS_Reel_R&R Dialog box, select 'Mount_OLD_TUS_on_FSE' and
17 'DeRotate_Old_TUS_on_FSE'

18

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.417 TUS HANDOFF AT ICC	2		ULF1.1 FD07 Mnvr to Approx TUS Handoff Posn	

19 15. For procedure '1.417 TUS handoff at ICC' step 2 configure for current ISS configuration.

20 15.1.1 In the TUS_Reel_R&R Dialog box, select 'New_TUS_to_EV2'

21 15.1.2 Toggle ►EV1

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.417 TUS HANDOFF AT ICC	3	ULF1.1 FD07 Stbd- Port View	ULF1.1 FD07 Mnvr to ICC Low Hover Posn	
1.418 MANEUVER TO S0 TRUSS	2		ULF1.1 FD07 SJ +SR ICC High Hover Posn	
	3		ULF1.1 FD07 JOCAS to S0 JOCAS Posn	
	4		ULF1.1 FD07 SJ -SP to S0 Backoff Posn	
			ULF1.1 FD07 SJ -EP to S0 Backoff Posn	
1.419 TUS INSTALL AT S0 TRUSS	2		ULF1.1 FD07 -Y to Approx S0 TUS Install Posn	
			ULF1.1 FD07 -X to Approx S0 TUS Install Posn	

2

3

16. For procedure '1.419 TUS Install at S0 Truss' step 3 configure for current ISS configuration.

4

5

16.1 Reconfig ► TUS_Reel_R&R

6

16.1.1 In the TUS_Reel_R&R Dialog box select 'Mount_NEW_Nadir_TUS_in_S0' and 'DeRotate_NEW_Nadir_TUS_on_S0'

7

8

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.419 TUS INSTALL AT S0 TRUSS	2		ULF1.1 FD07 Mnvr to Approx APFR Egress Posn	

9

17. For procedure '1.419 TUS Install at S0 Truss' step 3 configure for current ISS configuration.

10

11

17.1 Toggle ► EV2

12

13

14

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.419 TUS INSTALL AT S0 TRUSS	3		ULF1.1 FD07 Mnvr to APFR Uninstall Posn	

15

18. For procedure '1.419 TUS Install at S0 Truss' step 3 configure for current ISS configuration.

16

17

18.1 Toggle ► APFR_SSRMS

18

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.419 TUS INSTALL AT S0 TRUSS	4		ULF1.1 FD07 Mnvr to S0 Clear Posn	
1.420 MANEUVER TO EVA2 PARK POSN	2		ULF1.1 FD07 SJ +SP to Airlock JOCAS Start Posn	
	3		ULF1.1 FD07 JOCAS to Airlock Pre-APFR Posn	

- 1 19. The maneuver to MPLM Pre-Grapple Setup will only be executed on FD7 if EVA 3 is not
2 being performed. Without running the EVA 3 procedures, the SSRMS starting
3 configuration does not match the procedure. All joints except for SP are within
4 tolerances, the SP delta is only 1.3 degrees. Expect minor impacts to the 'ERR' fields in
5 step 2 of procedure 1.220, but execute it as written.
6

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.220 MNVR TO MATED MPLM PRE-GRAPPLE SETUP	1		ULF1.1 FD07 Airlock Clear Posn	
	2		ULF1.1 JOCAS to Mated MPLM JOCAS 1 Posn	
	3		ULF1.1 JOCAS to Mated MPLM JOCAS 2 Posn	
	4		ULF1.1 SJ -SY to Mated MPLM Pre-Grapple Setup Posn	

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DOUG Setup for FD7 (EVA2 Contingency - PM manual Transfer, Skip PM, TUS Jettison, and TUS Temp Stow)

NOTE: 2.210 targets will be used in the event the FGB cannot be fully bolted to the Pump Module and a manual transfer by EVA is required.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.210 EVA 2 CONTINGENCY - APFR INGRESS	1	ULF1.1 FD07 Stbd-Port View	ULF1.1 CONT FD07 PM Pre-Grapple Posn	ULF1.1 FD05 SRMS EVA 2 Viewing Posn
	2		ULF1.1 CONT FD07 SJ +SR to JOCAS Start Posn	
			ULF1.1 CONT FD07 SJ +EP to JOCAS Start Posn	
			ULF1.1 CONT FD07 JOCAS to APFR Pre-Install Posn	
	3		ULF1.1 CONT FD07 Approx APFR Install Posn	

1. For procedure '2.210 EVA 2 CONTINGENCY - APFR INGRESS' step 3 configure for current ISS configuration.
 - 1.1 Toggle ► APFR_SSRMS
 - 1.2 Jntsystems ► APFR_SSRMS
 - 1.2.1 In the APFR_SSRMS dialog box, select '12/PP/F/6'

Procedure	Step	Targets		
		Camera	SSRMS	RMS
	4		ULF1.1 CONT FD07 Approx APFR Ingress Posn	

2. Reconfig ► EV1
 - 2.1 In the EV1 Dialog box select 'EV1 ->APFR_SSRMS'

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.211 EVA 2 CONTINGENCY - PUMP MODULE HANDOFF AT ICC	2		ULF1.1 CONT FD07 Approx PM ICC Handoff Posn	

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- 1 3. Reconfig ► ICC
- 2 3.1 In the ICC Dialog box, select 'Remove_Pump_Module_MLI' and 'Pump_Module ->
- 3 EV1'
- 4

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.211 EVA 2 CONTINGENCY - PUMP MODULE HANDOFF AT ICC	3		ULF1.1 CONT FD07 Mnvr EV to PM Low Hover Posn	
2.212 EVA 2 CONTINGENCY - PUMP MODULE HANDOFF AT ICC	1		ULF1.1 CONT FD07 Mnvr EV to PM Low Hover Posn	
	2		ULF1.1 CONT FD07 PM JOCAS End Posn	
	3		ULF1.1 CONT FD07 SJ - EP to PM Intermediate Posn	
	4		ULF1.1 CONT FD07 -X to PM Pre-Handoff Posn	
	5		ULF1.1 CONT FD07 Approx PM Handoff Posn	

- 5 NOTE: The remainder of procedure 2.212 assumes no TUS R&R.
- 6
- 7

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.212 EVA 2 CONTINGENCY - PUMP MODULE HANDOFF AT ICC	7		ULF1.1 CONT FD07 Mnvr to PM Backoff Posn	
	8		ULF1.1 CONT FD07 SJ +SP to JOCAS Start Posn	
			ULF1.1 CONT FD07 JOCAS to Airlock Pre-APFR Posn	

8

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NOTE: Procedure 2.213 will be used if the contingency PM case was completed and time allows for the TUS R&R.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.213 EVA 2 CONTINGENCY - SETUP FOR TUS R&R	1		ULF1.1 CONT FD07 PM Backoff Posn	
	2		ULF1.1 CONT FD07 SJ +EP to JOCAS Start Posn 2	
			ULF1.1 CONT FD07 JOCAS to TUS Reconfig Posn	
	3		ULF1.1 CONT FD07 SJ - SP to APFR Pre-Ingress Posn	

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NOTE: Procedure 2.214 targets will be used if it is decided the TUS R&R will be completed instead of Pump Module Install once the SSRMS has already maneuvered to the PM Pre-grapple.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.214 EVA 2 CONTINGENCY - PUMP MODULE PRE-GRAPPLE TO TUS R&R	1		ULF1.1 CONT FD07 PM Pre-Grapple Posn	
	2		ULF1.1 CONT FD07 SJ +SR to PLB Clearance Posn	
	3		ULF1.1 CONT FD07 JOCAS to Intermediate Posn 1	
	4		ULF1.1 CONT FD07 JOCAS to Intermediate Posn 2	
	5		ULF1.1 CONT FD07 SJ - SP to APFR Pre-Ingress Posn	

10

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- 1 NOTE: Procedure 2.215 targets will be used if it is decided the TUS R&R will be completed
 2 instead of Pump Module Install prior to any SSRMS manuevers on FD07.
 3

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.215 EVA 2 CONTINGENCY - MBS BACKOFF TO TUS R&R	1		ULF1.1 CONT FD07 Grapple Fixture Backoff Posn	
	2		ULF1.1 CONT FD07 SJ +SP to TUS Reconfig JOCAS Posn	
			ULF1.1 CONT FD07 JOCAS to TUS Reconfig Posn 2	
	3		ULF1.1 CONT FD07 SJ - SP to APFR Pre-Ingress Posn	

- 4
 5 NOTE: Procedure 2.216 targets will be used if it is decided the TUS R&R must be
 6 jettisoned. This procedure assumes EV has the TUS and is at the ICC Low Hover position.
 7

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.216 EVA2 CONTINGENCY - TUS JETTISON	1		ULF1.1 CONT FD07 ICC Low Hover Posn	
	2		ULF1.1 CONT FD07 -Y to Intermediate Posn	
	3		ULF1.1 CONT FD07 FOCAS to TUS Jettison Posn	
	4		ULF1.1 CONT FD07 FOCAS to Intermediate Posn	
	5		ULF1.1 CONT FD07 +Y to ICC Low Hover Posn	

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NOTE: Procedure 2.217 targets will be used if it is decided the TUS must be stowed on the CETA Cart. This procedure assumes EV has the TUS at S0.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.217 TUS STOW ON CETA CART	1		ULF1.1 CONT FD07 S0 Backoff Posn	
	2		ULF1.1 CONT FD07 Approx TUS Stow Posn	
	3		ULF1.1 CONT FD07 +X to APFR Pre-Egress Posn	
			ULF1.1 CONT FD07 +Z to APFR Pre-Egress Posn	
			ULF1.1 CONT FD07 Approx APFR Egress Posn	
	4		ULF1.1 CONT FD07 Mnvr to S0 Clear Posn	

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DOUG Setup for FD09 (Contingency EVA 3 - NOAX DTO)

1. For **stand-alone** procedure review, perform {1.301 DOUG Startup Procedure}, step 2 (SODF: POC: Activation and Checkout: DOUG)
2. For **SSRMS real-time support**, perform {1.301 DOUG Startup Procedure}, step 1 (SODF: POC: Activation and Checkout: DOUG)
 - 2.1 Set SSC volume such that tones are audible.
3. Configure for current ISS configuration and bring up displays.
 - 3.1 File ► Load State
 - 3.1.1 From Load State Dialog box, select 'ISSULF1d1_CONT_FD09_EVA3', open
 - 3.2 Confirm steps 3.2.1-3.2.4 are complete with loaded state file, otherwise complete these steps as needed.
 - 3.2.1 Reconfig ► SSRMS
 - 3.2.1.1. In SSRMS Reconfig Dialog box, select 'SSRMS_BASE_A'.
 - 3.2.1.2. In SSRMS Reconfig Dialog box, select 'SSRMS ->LAB_PDGF'.
 - 3.2.1.3. In SSRMS Reconfig Dialog box, select 'MT_to_WORKSITE_4'.
 - 3.2.2 Reconfig ► MPLM
 - 3.2.2.1. In MPLM Dialog box, select 'MPLM>Node'
 - 3.2.3 Reconfig ► Orbiter Inspection
 - 3.2.3.1. In Orbiter Inspection Dialog box, select 'OBSS_GF1_to_SRMS'
 - 3.2.4 Reconfig ► ICC
 - 3.2.4.1. In ICC Reconfig Dialog box, select 'Pump_Module -> ESP2'
 - 3.3 Display ► Puddle Plot Shoulder/Wrist
 - 3.4 For real-time support, Display ► Show SSRMS Target
 - 3.5 For real-time support, Options ► SSRMS Proximity, set all distances to 24 (inches)

Notes:

1. Use the Home Key to cycle through the Camera, SSRMS and SRMS Targets.
2. Use Page Up and Page Down keys to scroll through Target selections.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.510 EVA3 - APFR INSTALL AND INGRESS	2	ULF1.1 FD07 Stbd-Port View	ULF1.1 CONT FD09 Airlock Pre-APFR Posn	ULF1.1 FD09 SRMS MPLM Viewing Posn
	3		ULF1.1 CONT FD09 -Z to Approx Airlock APFR Posn	

4. For procedure '1.510 EVA3 APFR Install and Ingress' Step 4 configure for current ISS configuration
 - 4.1 Toggle ► APFR_SSRMS
 - 4.2 Confirm steps 4.2.1-4.2.2 are complete, otherwise complete these steps as needed.
 - 4.2.1 Reconfig ► EV1
 - 4.2.1.1. In EV1 Reconfig Dialog box, select 'EV1->APFR_SSRMS'
 - 4.2.2 Jnt Systems ► APFR_SSRMS ► '12/PP/F/8'

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.510 EVA3 - APFR INSTALL AND INGRESS	4		ULF1.1 CONT FD09 Mnvr to Airlock JOCAS Posn	
1.511 MANEUVER TO LMC	2		ULF1.1 CONT FD09 LMC JOCAS Posn	
1.512 EVA3 TPS DTO	2		ULF1.1 CONT FD09 Approx LMC Egress Posn	

2

5. For procedure '1.512 EVA3 TPS DTO' Step 2 configure for current ISS configuration

3

5.1 Reconfig ► TPS_Sample_Box

4

5.1.1 In TPS_Sample_Box Reconfig Dialog box, select 'Open_TPS_Sample_Box'

5

5.2 Confirm steps 5.2.1-5.2.2 are complete, otherwise complete these steps as needed.

6

5.2.1 Options ► WIFs

7

5.2.1.1. In left window select 'LCW'

8

5.2.1.2. In right window select twice 'BRIDGE_RAIL_WIF'

9

5.2.1.3. Thing to move 'APFR_1'

10

5.2.1.4. Select 'OK'

11

5.2.2 Reconfig ► EV2

12

5.2.2.1. In EV2 Reconfig Dialog box, select 'EV2->APFR_1'

13

5.2.3 Jnt Systems ► APFR_1 ► '10/PP/F/12'

14

15

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.512 EVA3 TPS DTO	2		ULF1.1 CONT FD09 Approx LMC Egress Posn	

16

6. For procedure '1.512 EVA3 TPS DTO' Step 3 configure for current ISS configuration

17

6.1 Jnt Systems ► APFR_SSRMS ► '12/PP/H/6'

18

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.512 EVA3 TPS DTO	3		ULF1.1 CONT FD09 Approx TPS DTO Start Posn APFR Reconfig	

20

7. For procedure '1.512 EVA3 TPS DTO' Step 4 configure for current ISS configuration

21

7.1 Reconfig ► EV2

22

7.1.1 In EV2 Reconfig Dialog box, select 'EV2->APFR_SSRMS'

23

7.2 Jnt Systems ► APFR_SSRMS ► '12/PP/F/6'

24

7.3 Reconfig ► EV1

25

7.3.1 In EV1 Reconfig Dialog box, select 'EV1->APFR_1'

26

27

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.512 EVA3 TPS DTO (08 May 06)	4		ULF1.1 CONT FD09 Approx LMC Egress Posn	

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- 8. For procedure '1.512 EVA3 TPS DTO' Step 5 configure for current ISS configuration
 - 8.1 Jnt Systems ► APFR_SSRMS ► '12/PP/F/8'

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.512 EVA3 TPS DTO	5		ULF1.1 CONT FD09 Mnvr to LMC JOCAS Posn	
1.513 MANEUVER TO AIRLOCK	2		ULF1.1 CONT FD09 JOCAS to Airlock JOCAS Posn	
1.514 APFR EGRESS AND REMOVAL	2		ULF1.1 CONT FD09 Approx Airlock APFR Posn	

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- 9. For procedure '1.514 APFR Egress and removal' Step 2 configure for current ISS configuration
 - 9.1 Toggle ► 'APFR_SSRMS'

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.514 APFR EGRESS AND REMOVAL	3		ULF1.1 CONT FD09 Mnvr to Airlock Clear Posn	

10

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.220 MNVR TO MATED MPLM PRE-GRAPPLE SETUP	2		ULF1.1 CONT FD09 Mated MPLM JOCAS 1 Posn	
	3		ULF1.1 CONT FD09 Mated MPLM JOCAS 2 Posn	
	4		ULF1.1 CONT FD09 SJ - SY Mated MPLM Pre-Ggrapple Setup Posn	

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DOUG Setup for FD10 (MPLM Berth, Walkoff to MBS)

- 1. For **stand-alone** procedure review, perform {1.301 DOUG Startup Procedure}, step 2 (SODF: POC: Activation and Checkout: DOUG)
- 2. For **SSRMS real-time support**, perform {1.301 DOUG Startup Procedure}, step 1 (SODF: POC: Activation and Checkout: DOUG)
 - 2.1 Set SSC volume such that tones are audible.
- 3. Configure for current ISS configuration and bring up displays.
 - 3.1 File ► Load State
 - 3.1.1 From Load State Dialog box, select 'ISSULF1d1_FD10_Berth', open
 - 3.2 Confirm steps 3.3-3.6 are complete with loaded state file, otherwise complete these steps as needed.

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- 1 3.3 Reconfig ► SSRMS
- 2 3.3.1 In SSRMS Reconfig Dialog box, select 'SSRMS_BASE_A'.
- 3 3.3.2 In SSRMS Reconfig Dialog box, select 'SSRMS ->LAB_PDGF'.
- 4 3.3.3 In SSRMS Reconfig Dialog box, select 'MT_to_WORKSITE_WS4'.
- 5 3.4 Reconfig ► MPLM
- 6 3.4.1 In MPLM Dialog box, select 'MPLM>Node'
- 7 3.5 Reconfig ► Orbiter Inspection
- 8 3.5.1 In Orbiter Inspection Dialog box, select 'OBSS_GF1_to_SRMS'
- 9 3.6 Reconfig ► ICC
- 10 3.6.1 In ICC Dialog box, select 'Pump Module >ESP2'
- 11 3.7 Display ► Puddle Plot Shoulder/Wrist
- 12 3.8 For real-time support, Display ► Show SSRMS Target
- 13 3.9 For Real-time support, Options ► SSRMS Proximity, set all distances to 24 (inches)

Notes:

- 1. Use the Home Key to cycle through the Camera, SSRMS and SRMS Targets.
- 2. Use Page Up and Page Down keys to scroll through Target selections.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.221 MATED MPLM GRAPPLE	2	MPLM Install	ULF1.1 FD10 Mated MPLM Pre-grapple Setup Posn	ULF1.1 FD09 SRMS MPLM Viewing Posn
	3		ULF1.1 FD10 Mated MPLM Pregrapple Posn	
	4.5		ULF1.1 FD10 Expected Mated MPLM Grapple Posn	

- 4. For procedure '1.222 MPLM Uninstall' Configure for current ISS configuration.
- 4.1 Reconfig ► MPLM
- 4.1.1 In MPLM Reconfig Dialog box, select 'MPLM > SSRMS'.

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.222 MPLM UNINSTALL	2		ULF1.1 FD10 MPLM Uninstall	
	4		ULF1.1 FD10 SJ +WY to Uninstall Clear Posn	
			ULF1.1 FD10 Uninstall Clear Posn	
	6		ULF1.1 FD10 MPLM Berth JOCAS 1	
	8		ULF1.1 FD10 MPLM Berth JOCAS 2 Posn	
	10		ULF1.1 FD10 Low Hover Posn	
1.223 MPLM BERTH	3		ULF1.1 FD10 Expected MPLM Berth Posn	

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5. For procedure '1.224 Berthed MPLM Ungrapple' Configure for current ISS configuration.
 5.1 Reconfig ► MPLM
 5.1.1 In MPLM Dialog box, select 'MPLM>BAY'

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.224 BERTHED MPLM UNGRAPPLE	2.3		ULF1.1 FD10 Berthed MPLM Ungrapple Posn	
1.315 FD10 WALKOFF TO MBS PDGF1	1	ULF1.1 FD07 Stbd-Port View	ULF1.1 FD10 Berthed MPLM Ungrapple Posn	
	2		ULF1.1 FD10 MBS Grapple JOCAS 3	
	3		ULF1.1 FD10 SJ -SP to MBS PDGF1 Pre-Grapple Posn	
			ULF1.1 FD10 MBS PDGF1 Pre-Grapple Posn	
	4.7		ULF1.1 FD10 MBS PDGF1 Grapple Posn	

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6. For procedure '1.316 FD10 Lab PDGF Ungrapple' step 1 Configure for current ISS configuration.
 6.1 Reconfig ► SSRMS
 6.1.1 In SSRMS Reconfig Dialog box, select 'SSRMS_BASE_B'.
 6.1.2 In SSRMS Reconfig Dialog box, select 'SSRMS ->MBS_PDGF1'

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.316 FD10 LAB PDGF UNGRAPPLE	1		ULF1.1 FD10 Lab PDGF Grapple Posn	
	2.6		ULF1.1 FD10 Lab PDGF Backoff Posn	
	3		ULF1.1 FD10 Clear Posn	

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NOTE: If the OBSS handoff and berth tasks are to be performed use the following contingency procedures and DOUG targets.

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DOUG Setup for FD10 (Contingency - OBSS Handoff)

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.120 MNVR TO OBSS GRAPPLE AT HANDOFF	1	ULF1.1 FD07 Stbd-Port View	ULF1.1 CONT FD10 Berthed MPLM Ungrapple Posn	ULF1.1 FD09 SRMS MPLM Viewing Posn
	2		ULF1.1 CONT FD10 Clear of MPLM Posn	
	3		ULF1.1 CONT FD10 Intermediate Posn	
	4		ULF1.1 CONT FD10 OBSS Pre-Grapple Posn	
				ULF1.1 FD10 SRMS OBSS Handoff
1.121 OBSS GRAPPLE AT HANDOFF	3.5		ULF1.1 CONT FD10 OBSS Grapple Posn	

12

13

7. For procedure '1.122 OBSS MNVR TO CLEAR UHF' step 2 Configure for current ISS configuration.

14

15

7.1 Reconfig ► Obiter Inspection

16

7.1.1 In Orbiter Inspection Reconfig Dialog box, select 'OBSS_GF2_to_SSRMS'.

17

13-0545A (MSG 029A) – SSRMS DOUG Setup Notes for ULF1.1

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1

Procedure	Step	Targets		
		Camera	SSRMS	RMS
				ULF1.1 FD10 SRMS OBSS Ungrapple
1.122 OBSS MNVR TO CLEAR UHF	2		ULF1.1 CONT FD10 Aft Posn	
	3		ULF1.1 CONT FD10 Clear UHF Antenna Posn	
1.123 OBSS BERTH	2		ULF1.1 CONT FD10 OBSS Low Hover	
	4		ULF1.1 CONT FD10 Expected OBSS Berthed Posn	

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8. For procedure '1.124 Berthed OBSS Ungrapple' step 2 Configure for current ISS configuration.

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8.1 Reconfig ► Obiter Inspection

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8.1.1 In Orbiter Inspection Reconfig Dialog box, select 'OBSS_to_STBD_MPMs'

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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.124 BERTHED OBSS UNGRAPPLE	2.3		ULF1.1 CONT FD10 OBSS GF Backoff Posn	
	3		ULF1.1 CONT FD10 Undock Viewing Posn	
				ULF1.1 FD03 SRMS Pre- Cradle

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MSG 030 (13-0624) - BLADE BLOCKER THERMAL INFORMATION

Page 1 of 1

1 The "thermal community" has concerns with transporting the blade blocker to the worksite in
2 the small trash bag. The current limit for continuous grasp touch temperature of an exposed
3 blade blocker is 56 (once removed from the airlock or MLI bag). Due to the material of the
4 small trash bag, apparently solar flux thermal energy can become trapped and the blade
5 blocker may get too hot within 20 minutes (very conservative number).

6
7 Given this, you can do the following (your choice):

- 8
9 1. Leave the blade blocker out of the small trash bag giving you about 56 minutes after
10 egress before it gets too hot.
11
12 2. Use the trash bag, but just understand that when the blade blocker is retrieved for
13 installation - it may be hot. You'll feel that before it causes damage to your glove so
14 let it hang from a tether or "hot potato" it between your hands. If its too hot to install,
15 you've got a backup.
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18 Let us know what you plan to do.
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