

# STS-122/1E

## FD 04 Execute Package



MSG	Page(s)	Title
023A	1 - 14	<a href="#">FD04 Flight Plan Revision (pdf)</a>
024	15 - 17	<a href="#">FD04 Mission Summary (pdf)</a>
025	18 - 20	<a href="#">FD03 MMT Summary (pdf - Electronic Only)</a>
026	21	<a href="#">FD04 Transfer Message (pdf)</a>
027	22	<a href="#">Modified ET Umbilical Well Imagery Downloading Procedure (pdf)</a>
028	23 - 33	<a href="#">SSRMS DOUG Setup Notes for 1E (pdf)</a>

**Approved by FAO:** Jennifer Clevenger

Last Updated: Feb 10 2008 8:49AM GMT  
JEDI (Joint Execute package Development and Integration), v2.0

A handwritten signature in black ink, appearing to read 'Jennifer Clevenger', written in a cursive style.

1  
2 MSG INDEX

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<u>MSG NO.</u>	<u>TITLE</u>
5 023	FD04 Flight Day Revision
6 024	FD04 Mission Summary (16-1003)
7 025	FD03 MMT Summary
8 026	FD04 Transfer Message (16-1004)
9 027	Modified ET Umbilical Well Imagery Downloading Procedure
10 028	SSRMS DOUG Setup Notes for 1E (16-1007)

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- 15 1. The DIDBs you filled on FD 3 (GMT 40) can't be used for the EVAs due to potential  
16 microbial growth, which can occur after 24 hours from the time they were filled with non-  
17 iodinated water. We don't want the DIDB water disposed of in the WCS. However, you  
18 do have the option to drink the water from them before 24 hours elapses.  
19
- 20 2. To support EVA 1 on FD 5 (GMT 42) with MS2 and MS4, the following changes to the  
21 FD 4 (GMT 41) EVA preparation activities should be performed:  
22

23 **LV EMU RECONFIGURATION AND SWAP (EVA, AIRLOCK CONFIG), pg FS 2-12**

- 24
- 25 A. In Step 1: Instead of stowing EMU Battery in M-02 bag, remove and temp  
26 stow EMU battery (s/n 2066) and LiOH cartridge (s/n 2030) from Sg EMU  
27 (3015).  
28
  - 29 B. Add Step 1b: Transfer Vent Port Plugs from Lv EMU (3018) to Sg EMU  
30 (3015).  
31
  - 32 C. Add Step 1c: Remove DIDB from Sg (3018) and temp stow in desired  
33 location (notify MCC of location). DIDB will be restowed later for return to  
34 Houston.  
35
  - 36 D. Add Step 9a: Install EMU battery (s/n 2066) and LiOH cartridge (s/n 2030) in  
37 Lv EMU (3018).  
38

39 **EVA SYSTEMS: 1.305 EQUIPMENT LOCK PREP**

- 40
- 41 A. In Step 1: Retrieve new DIDBs (2) from shuttle middeck (MD CEIL, PORT 2)  
42 and fill at shuttle galley.  
43
  - 44 B. In Step 10: Remove the filled DIDB from Wh EMU (3017) and temp stow in  
45 desired location (notify MCC of location). The DIDB will be restowed later for  
46 return to Houston.  
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MSG 023A - FD04 FLIGHT PLAN REVISION

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3. The table below lists crew exercise constraints for FD04:

Activity	Exercise Constraints	
	Shuttle	ISS
OBSS Focused Inspection	Exercise during imaging is not allowed (due to possible image distortion)	Exercise during imaging is not allowed (due to possible image distortion)

4. REPLACE PAGES 2-10, 2-12, AND 3-32 THROUGH 3-41.



02/10/08 02:37:58

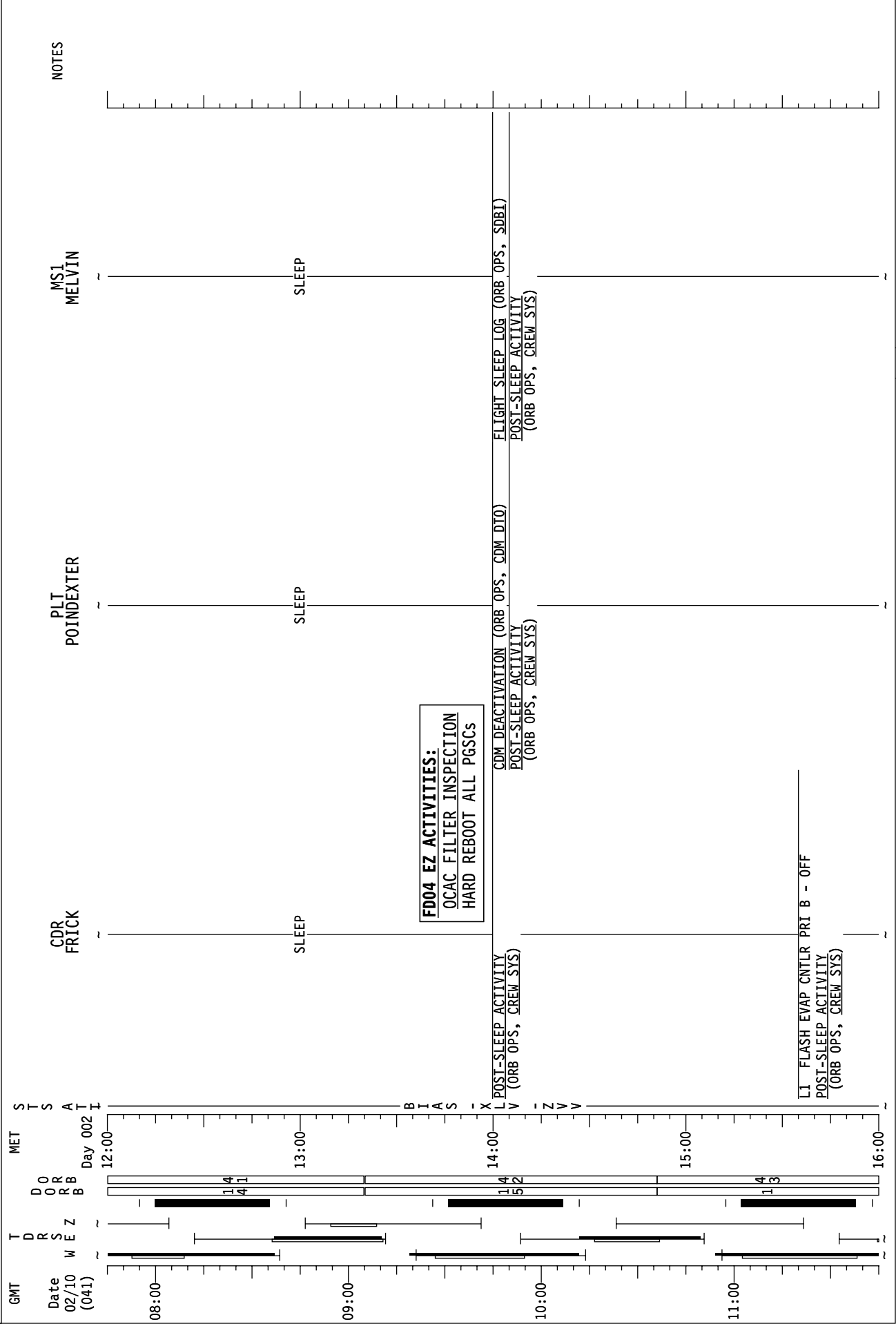
REPLANNED

FD04 GMT 02/10/08 (041) 003/00 MET Day\_003

20	21	22	23	01	02	03	04	05	06	07	08	09	10	11	12
CDR FRICK	EVA1 PROC RVW	IMM U	PMC A/G	PRE SLEEP											
PLT POINDEXTER	EVA1 PROC RVW	ET UMB PHOTO D/L		PRE SLEEP											
MS1 MELVIN	EVA1 PROC RVW	XT R F A I R E G E R F	LDRI DNK	PRE SLEEP											
MS2/EV1 WALHEIM	EVA1 PROC RVW			PRE SLEEP	MASK PB/TOOL CONFIG										
MS3/EV2 SCHLEGEL	EVA1 PROC RVW			PRE SLEEP											
MS4/EV3 LOVE	EVA1 PROC RVW			PRE SLEEP	MASK PB/TOOL CONFIG										
FE-2 TANI	EVA1 PROC RVW			PRE SLEEP											
ISS CDR WHITSON	VEST JIM OUTFIT PREP R		DCS CNFG	PRE SLEEP-ISS											
FE-1 MALENCHENKO	IMS CYBA PLUG INV	IMS T I	PREP WORK DPC	PRE SLEEP-ISS											
FE-2 EXP16 EYHARTS	HANDOVER	EVA1 PROC RVW	PREP WORK DPC	PRE SLEEP-ISS											
DAY/NIGHT ORBIT	49	50	51	52	53	54	55	56							
TDRS	W -171.0	E -46.0	Z -275.0												
ORB ATT															
NOTES	BIAS -XLV -ZVV														

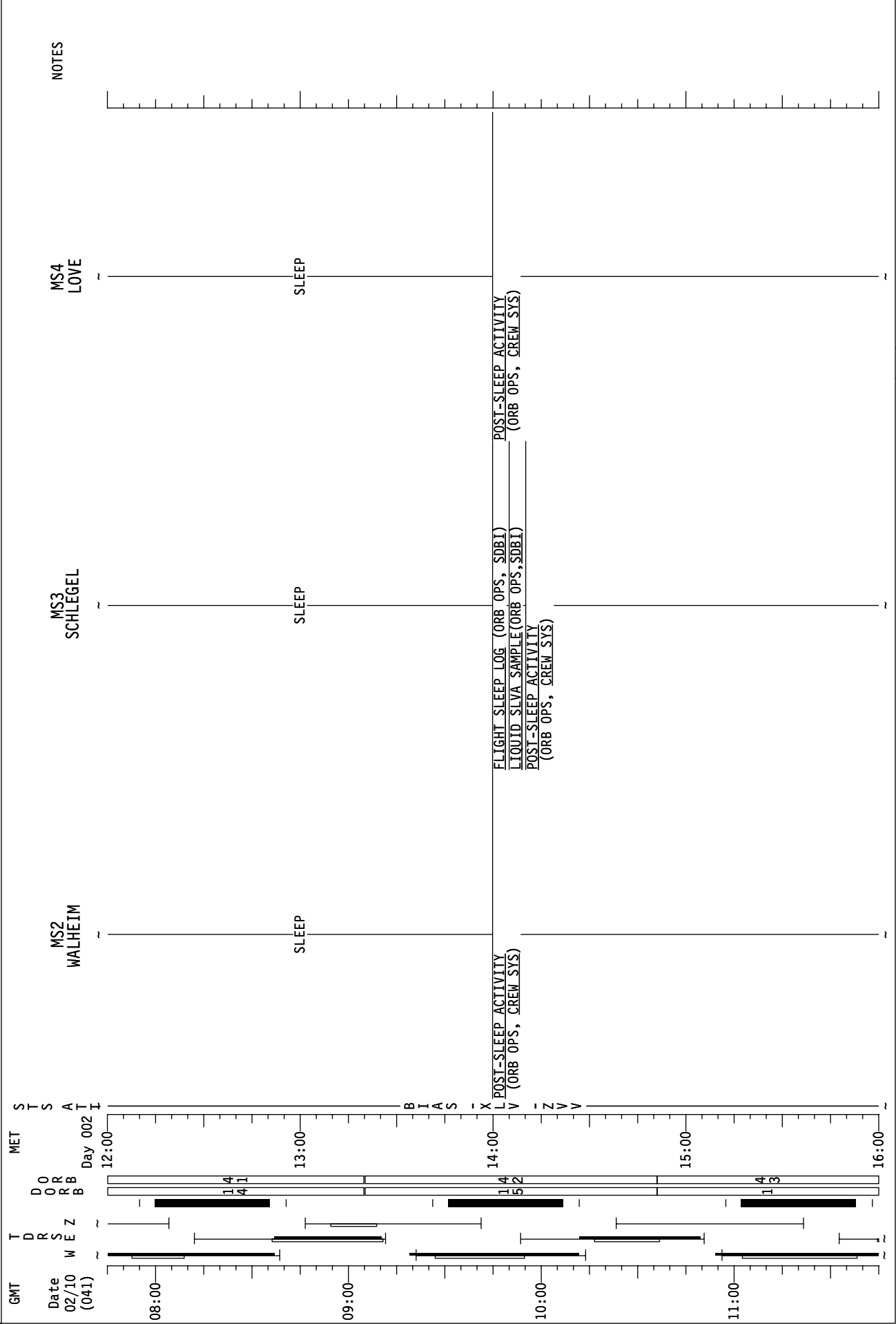
# STS-122 FD (04)

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# STS-122 FD (04)

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STS-122 FD (04)

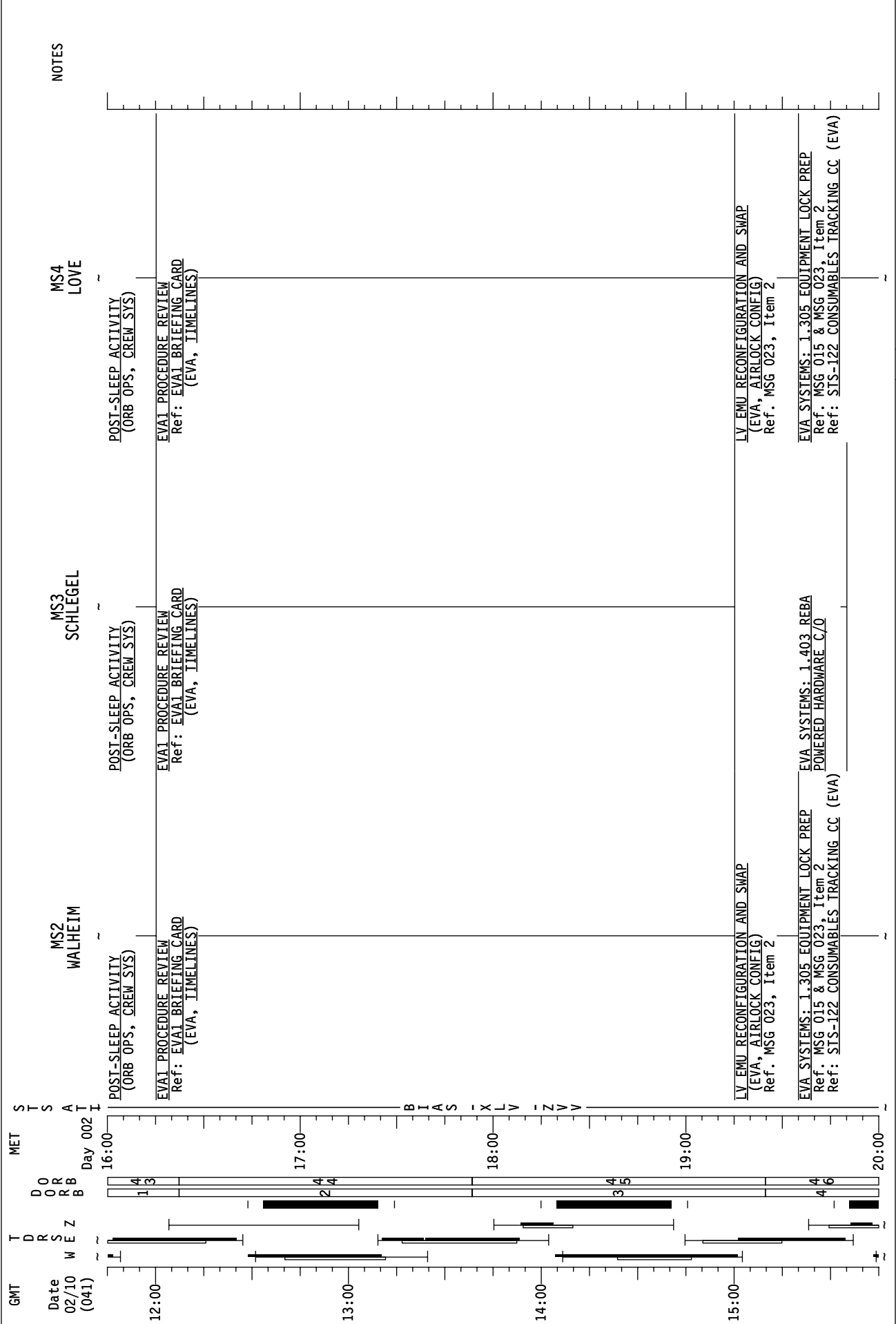
REPLANNED

GMT	Date 02/10 (041)	DRS W E Z	T R S	D O R B	MET Day 002 I	CDR FRICK	PLT POINDEXTER	MS1 MELVIN	NOTES
12:00				1 4 1 3		POST-SLEEP ACTIVITY (ORB OPS, CREW SYS) LI TOPPING EVAP HTR DUCT se1 - OFF NOZ L,R - OFF JOINT OPS: 3.102 NITROGEN TRANSFER INITIATION Setup and Initiate	POST-SLEEP ACTIVITY (ORB OPS, CREW SYS) SSRMS EVA 1 PROCEDURE REVIEW Ref. MSG 028		
13:00				2 4 2 4		SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) INIT FILL #4 Ref. MSG 005, Fill Dur -52 min			
14:00				3 5		SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) V Perform FILL TERMINATION CMC TRANSFER Transfer 1 CMC to ISS	EXERCISE		
15:00				4 6		SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) INIT FILL #5 Ref. MSG 005, Fill Dur -52 min TRANSFER OPS Ref. Transfer List	EXERCISE		
16:00									
17:00									
18:00									
19:00									
20:00									



# STS-122 FD (04)

## REPLANNED



STS-122 FD (04)

REPLANNED

GMT	Date 02/10 (041)	DRS W E Z	MET Day 002 I	STS A	CDR FRICK	PLT POINDEXTER	MS1 MELVIN	NOTES
16:00			20:00		SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) Perform FILL TERMINATION	EXERCISE	TRANSFER OPS Ref. Transfer List	
17:00			21:00		MEAL	MEAL	MEAL	
18:00			22:00		OFF DUTY	OFF DUTY	OFF DUTY	
19:00			23:00		CWC TRANSFER Transfer 1 CWC to ISS	TRANSFER OPS Ref. Transfer List	L17 Check MCIU filter screen DOUG REVIEW Ref. MSG TBD Proc will be uplinked ASAP	
			00:00		DOUG REVIEW Ref. MSG TBD Proc will be uplinked ASAP		FOCUSED INSPECTION Ref. MSG TBD Proc will be uplinked ASAP	

STS-122 FD (04)

REPLANNED

GMT	Date 02/10 (041)	DRS W E Z	TDRS MET	DOORB Day 002 I	MS2 WALHEIM	MS3 SCHLEGEL	MS4 LOVE	NOTES
16:00				4 6	MEAL	MEAL		EVA SYSTEMS: 1.305 EQUIPMENT LOCK PREP Ref. MSG 015 & MSG 023, Item 2 Ref: STS-122 CONSUMABLES TRACKING_CC (EVA)
17:00					MEAL	MEAL		
18:00				4 7	OFF DUTY	OFF DUTY		VIDEO TELECONFERENCE (ORB OPS, OCA) PFC Omit VLHS Items in Step 1 Omit Step 3 Use A/G2 for Audio & WLES PGSC
19:00				4 8	EXERCISE			OCA-PFC
20:00								
21:00								
22:00								
23:00								
00:00								

TRANSFER OPS  
Ref. Transfer List

DOUG REVIEW  
Ref. MSG TBD  
Proc will be uplinked ASAP

FOCUSED INSPECTION  
Ref. MSG TBD  
Proc will be uplinked ASAP

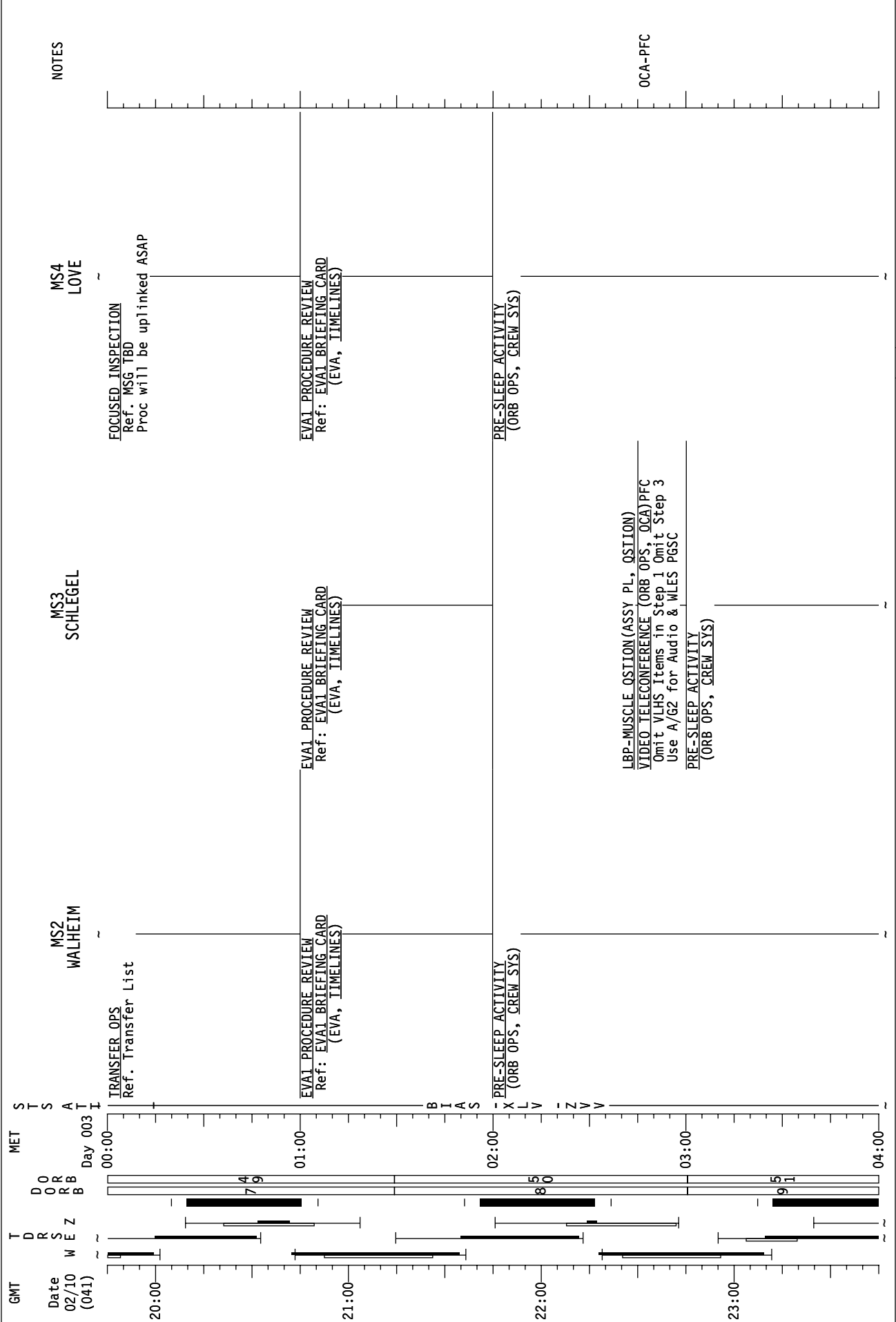
STS-122 FD (04)

REPLANNED

GMT	Date 02/10 (041)	DRS W E Z	TDRS MET	CDR FRICK	PLT POINDEXTER	MSI MELVIN	NOTES
20:00				CDR FRICK	PLT POINDEXTER	MSI MELVIN	
20:00				FOCUSSED INSPECTION Ref. MSG TBD Proc will be uplinked ASAP	TRANSFER OPS Ref. Transfer List	FOCUSSED INSPECTION Ref. MSG TBD Proc will be uplinked ASAP	
21:00				EVAL PROCEDURE REVIEW Ref: EVAL BRIEFING CARD (EVA, TIMELINES)	EVAL PROCEDURE REVIEW Ref: EVAL BRIEFING CARD (EVA, TIMELINES)	EVAL PROCEDURE REVIEW Ref: EVAL BRIEFING CARD (EVA, TIMELINES)	
22:00				IMU ALIGN - S IRK (ORB OPS, GNC)	UMBILICAL WELL TPS CAMR IMGRY D/L (ORB OPS, PGSC) Ref. MSG 027	TRANSFER TAGUP Coordinate with xfer counterpart	
22:00						TRANSFER BRIEF Call down status to MCC	
23:00				PRIVATE MEDICAL CONFERENCE Perform via A/G2		PLAYBACK (DIGITAL) (PHOTO/TV, CUE CARD) LDRI SURVEYS KU TDRW: 02:41-03:10	
23:00				PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	
24:00							

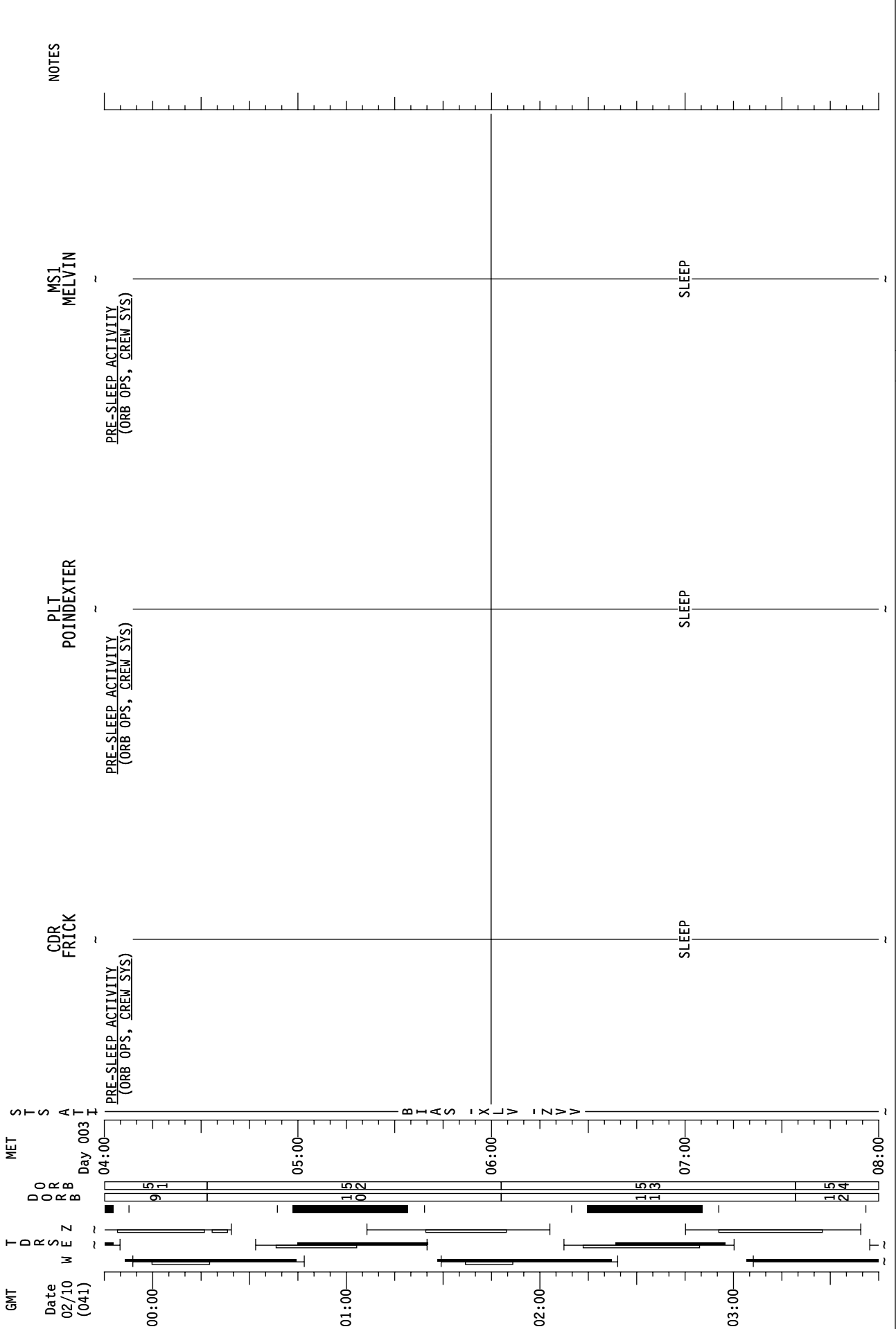
STS-122 FD (04)

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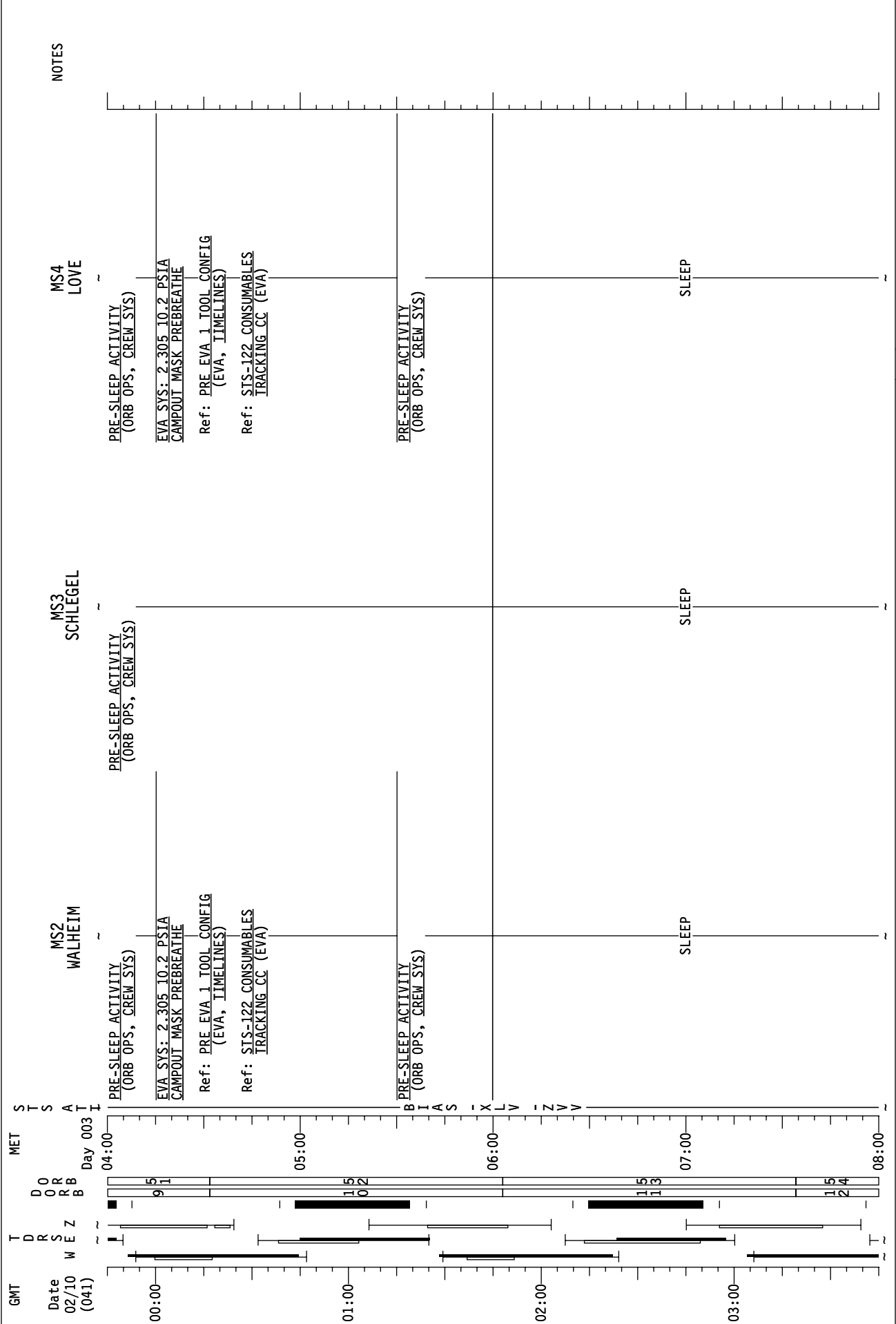
# STS-122 FD (04)

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STS-122 FD (04)

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## MSG 024 (16-1003) - FD04 MISSION SUMMARY

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Good Morning Atlantis!!!

Thanks for the beautiful rendezvous and docking yesterday!

Today's timeline is basically the same as what you saw last night before you went to bed, although we've increased the focused inspection time by about thirty minutes.

Pictures of the starboard OMS pod blanket appear to show that a corner of the blanket is lifted. That is why it was decided to do a focused inspection of this area today. The MMT has not yet had a chance to discuss what a "lifted blanket corner" in this area means for entry, but the OPO and MER is going to recommend that it be categorized as a "TPS Degraded" case, which carries no restrictions on entry "as is". Of course, this is preliminary and based on the view that we have. The Focused inspection will tell us more, but we just wanted you to know how it is seen at this time.

The pictures of the lifted OMS pod blanket are in the MMT summary, MSG025.

If you would like copies of the daily ISS stowage location notes for your activities on ISS that may require additional stowage information, just ask Peggy to print them out for you.

Below is the information from EGIL on consumables that you requested last night before you went to bed.

### Additional Day (Above 12+0+2)

Current O2 Margin Available : **240 lbm**

Additional Day O2 Requirement: **268.5 lbm** (*Assumes 14.3 KW average power level for additional day plus an extra day's worth of heaters for Columbus and ICC*)

O2 needed for additional docked day: **28.5 lbm** (41.5 KWH)

EGIL calculates that we need to be **225 W** below the predicted power levels during the docked timeframe to get the additional 28.5 lbs of O2.

To accomplish this we've deactivated GPS String 2, INCO will be commanding the Ku to standby during blockage periods, and EECOM is investigating deactivating the FES while docked.

The crew has also done a terrific job saving power. Flight Day 3 was well under predicted power levels mostly due to the crew limiting the use of the Payload Bay Floodlights (@ 200 watts/light).

We recommend that the crew continue to be frugal with power (no Spartan measures required) by minimizing lights, deactivate CRTs when not required, deactivating the galley fan when not in use etc. By continuing to take these cryo-saving steps, we anticipate that we will be able to make a 12+1+2 mission as well as have O2 to transfer to ISS.

Have a great day!



**MSG 024 (16-1003) - FD04 MISSION SUMMARY**

Page 2 of 3

1 YOUR CURRENT ORBIT IS: 185 X 176 NM

2

3 NOTAMS:

4

5 EDW – LAKEBED RUNWAYS RED.

6 NOR – LAKEBED RUNWAYS GREEN.

7 NKT – RWYS 05L/23R + 14L/32R NOT USABLE.

8 HAW – RWY 31 CLOSED; RWY 13 TODA 8,994'.

9 WAK – NOT USABLE.

10 IKF – NOT USABLE.

11 DIW – TACAN OTS.

12 LAJ – TACAN CH 45 OTS.

13 NGU – TACAN CHANNEL CHANGED TO CH 22.

14 BEN – POLITICALLY NOT RECOMMENDED/NOT SUPPORTED.

15 DOV – 14/32 CLOSED.

16 ZZA – FIRST 600M (~2,000') OF RWY 30L NOT AVAILABLE. 10,200' REMAINING.

17 JDG – DIEGO GARCIA: CLOSED FRI 1800Z - MON 0100Z.

18 GUA – TACAN OTS 2230 - 0330Z 10 FEB - 12 FEB.

19

20 NEXT 2 PLS OPPORTUNITIES:

21

22 EDW22 ORB 49 – 3/00:50 (BKN250 270/2P3)

23 NOR17 ORB 64 – 3/23:38 (SCT250 180/5P8)

24

25 OMS TANK FAIL CAPABILITY:

26

27 L OMS FAIL: NO

R OMS FAIL: NO

28

29 LEAKING OMS PRPLT BURN:

30

31 L OMS LEAK: ALWAYS BURN RETROGRADE

32 R OMS LEAK: ALWAYS BURN RETROGRADE

33

34 OMS QUANTITIES(%)

35

36 L OMS OX = 34.1 R OMS OX = 34.8

37 FU = 34.4 FU = 34.6

38

39 DELTA V AVAILABLE:

40

41 OMS 322 FPS

42 ARCS (TOTAL ABOVE QTY1) 39 FPS

43 TOTAL IN THE AFT 361 FPS

44

45 ARCS (TOTAL ABOVE QTY2) 68 FPS

46 FRCS (ABOVE QTY 1) 25 FPS

47

48 AFT QTY 1 81 %

49 AFT QTY 2 43 %

50

51

# MSG 024 (16-1003) - FD04 MISSION SUMMARY

Page 3 of 3

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<u>SYSTEM</u>	<u>FAILURE</u>	<u>IMPACT</u>	<u>WORK AROUND</u>
APU	APU 3 Fuel Pump Drain Line Heater A was erratic.	'S88 APU FU LN 3' message will annunciate if heater fails on or off.	Alternate heater was selected (A12 APU HTR TK/FU LN/H2O SYS 3B) and is performing well. No further action required.
COMM	SSOR 1 Intermittent Receiver Lock	SSOR 1 exhibited frequent dropouts on forward and return links, affecting the "Big Loop" from ISS to Shuttle and Shuttle to ISS.	SSOR 2 selected, operating nominally.
DPS	GPC 3 Mode Switch Anomaly	GPC 3 was not used for Rendezvous. Due to the re-IPL, G3 Archive is no longer resident in GPC 3.	GPC 3 re-IPLed

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1 **FD03 MMT Summary**

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3 The FD03 MMT met to review the mission progress which included a continued review of  
4 ascent imagery along with the minor orbiter systems anomalies. The MMT was pleased with  
5 the excellent rendezvous and successful docking. Additionally, the MMT performed a  
6 preliminary review of the ascent trajectory and propulsion systems launch day performance  
7 all of which was nominal. During the MMT it was acknowledged that a crew medical issue  
8 was in work that could affect the FD04 EVA, but no details were given. After the MMT, the  
9 decision was made to slip the EVA 24 hours. The ISS is happy to have visitors and the ESA  
10 team is ready for an exciting docked mission and installation of the Columbus Module.

11  
12 **Orbiter Systems** - Orbiter Systems continue to operate well. The following minor orbiter  
13 anomalies were noted but none of these are considered significant: APU 3 seal cavity drain  
14 line A heater has an erratic thermostat, GPC 3 common set fault, Supply Tank pressure  
15 FDA, and O2 Tank 1 check valve delayed reseal.

16  
17 Current Cryo margins support 11+1+2 plus an additional 21 hours. The team is still weighing  
18 the option of additional power downs to gain an additional docked day versus preserving the  
19 O2 for transfer.

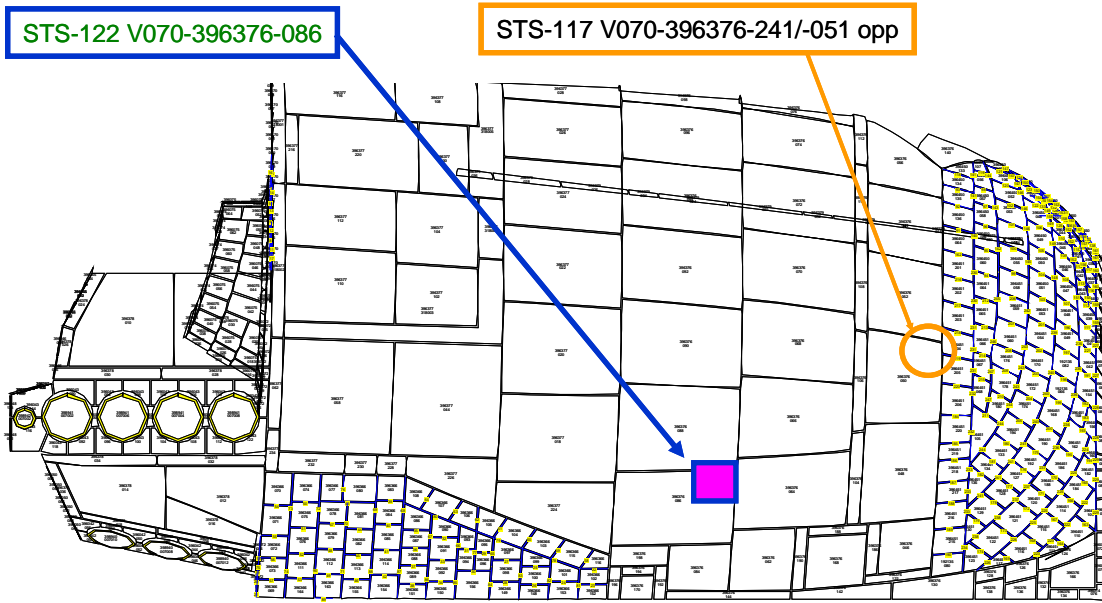
20  
21 **Ascent Performance Review** - The preliminary ascent data review indicates that ascent was  
22 very nominal. There was no evidence of SRB hold down post stud hang-ups in the orbiter  
23 acceleration data. Additionally, the SSME, ET, and ascent trajectory data (alpha, beta, q-  
24 bar, altitude, and altitude rates), all indicate that powered flight was nominal with no issues.  
25 Adaptive Guidance was triggered during this mission with a throttle bucket of 74% (72% was  
26 pre-launch prediction). Preliminary data reviews also shows that the SRB performance, and  
27 the pad debris environment were nominal with no issues.

28  
29 **FD 2 Inspection Preliminary Results** - 583 Regions of Interest were identified on the RCC  
30 from the FD2 inspection. This number of ROIs is considered average. The FD02 TPS  
31 review has 6 items of interest with the R OMS Pod blanket being the highest priority. The  
32 RPM imagery is also being reviewed.

33  
34 **R OMS Pod Blanket** - A blanket aft and outboard of the STS-117 location (Figure 1) has  
35 pulled up on one corner.(Figure 2). Unfortunately at this time, imagery has not provided  
36 detailed dimensions nor conditions inside the cavity. The lack of any discoloration on the  
37 blanket could indicate that the blanket did not separate at the RTV layer. The team will  
38 discuss the need for a focused inspection later today.

39  
40 **Ascent Debris Review** - The team continues to collect and review the ascent imagery.  
41 Several debris pieces have been observed to liberate between the times of 132.9-133.2 sec  
42 MET with one confirmed impact to the orbiter belly (Figure 3). Also, after SSME ignition but  
43 before liftoff, the LOMS stinger lost a tile (Figure 4). That area is under review by the TPS  
44 team for entry, but it is known that the entry thermal environment is more benign than the  
45 ascent thermal environment at this location.

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Figure 1 - R OMS Pod Blanket location relative to STS-117 blanket (location overlaid from LOMS pod location)



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Figure 2 - R OMS Pod Blanket pulled back

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Figure 3 - 2: 13 MET Multiple debris releases with one orbiter impact



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Figure 4 - Pre-Liftoff loss of tile from L OMS Stinger

**MSG 026 (16-1004) - FD04 TRANSFER MESSAGE**

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Good morning Leland & Stan,

Great work on the Transfer List yesterday! We appreciate all the unscheduled transfer ops and the Transfer Brief.

The Transfer List Excel file, FD04\_TransferList\_STS122.xls, is located on the KFX machine in **C:\OCA-up\transfer**.

For ISS, the Transfer List Excel file, FD04\_TransferList\_STS122.xls, is located in **K:\OCA-up\transfer**.

**FD04 Choreography**

- XFR UPDATE (Leland): Incorporate uplinked return plan in Transfer List book.
- Item 6 (Dan): Transfer Double Cold Bag to ISS during DCB XFER.
- Items 13-13.5 & 700-700.4 (Leland): After items complete, temp stow CTB at NOD2P2 (will be packed with additional return items on subsequent flight days).

**Please update the Transfer List as follows:**

In **LAYOUTS** tab:

Add pages L-2 thru L-5

In **RETURN** tab:

Add pages Return Page 1 thru Return Page 11

Call us with any questions.

- The Transfer Team

1  
2 **Modified ET Umbilical Well Imagery Downloading Procedure (~45 min)**  
3

- 4 1. Retrieve hard drive with 118 load from locker MA16G  
5  
6 2. Perform A31P Hard Drive Change out (ORB OPS, PGSC) on STS-7 (WLES) with  
7 the 118 load hard drive, temp stow removed hard drive  
8  
9 3. Boot up STS 7 (WLES)  
10  
11 4. Run Ping Master to confirm STS 7 (WLES) is on the Network  
12  
13 5. Perform Umbilical Well TPS Camera Imagery Downloading (ORB OPS, PGSC)  
14  
15 6. After both sets are downloaded from the camera, copy the files to the STS-3 (KFX)  
16 machine to the respective folders:  
17 n:\Oca-down\Dcs\UMBILICAL  
18 n:\Oca-down\Dcs\UMBILICAL 2  
19  
20 7. Verify that all images have been successfully copied to STS 3 KFX machine  
21  
22 8. Change out the 118 load hard drive with the 122 temp stowed hard drive by  
23 performing A31P Hard Drive Change out (ORB OPS, PGSC)  
24  
25 9. Boot up STS 7 (WLES)  
26  
27 10. Run Ping Master on STS7 (WLES) to confirm that the PGSC is on the network  
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29 11. Stow 118 load hard drive  
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31 12. Inform MCC that Umbilical Well imagery is ready for downlink  
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**DOUG Setup for FD03 (OBSS Handoff)**

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 “**STS122\_1.110 OBSS GRP**”, open
4. Confirm steps **4.1** 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\_B’.
    - 4.1.2 In SSRMS Reconfig Dialog box, select ‘SSRMS ->NODE2\_PDGF’.
    - 4.1.3 In SSRMS Reconfig Dialog box, select ‘MT\_to\_WORKSITE\_7’.
  - 4.2 Display ► Puddle Plot Shoulder/Wrist
  - 4.3 For real-time support, Display ► Show SSRMS Target
  - 4.4 For Real-time support, Options ► SSRMS Proximity, set all distances to 24 (inches)

**Notes:**

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

Procedure	Step	Targets		
		Camera	SSRMS	RMS
				OBSS PRE-GRAPPLE AT HANDOFF
1.110 OBSS GRAPPLE	2		1.110 Step 2 Setup SSRMS @ Docking	
	3		1.110 Step 3 FOR OCAS to Berthed OBSS Pre-grapple	
	4.4		1.110 Step 4.4 Berthed OBSS Grapple	

5. For procedure “1.111 OBSS Maneuver To Handoff” Step 4 configure for current ISS configuration.
  - 5.1 Reconfig ► Orbiter Inspection
    - 5.1.1 In Orbiter Inspection Dialog box, select ‘OBSS\_GF2\_to SSRMS’



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Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.111 OBSS Maneuver To Handoff	4		1.111 Step 4 MNVR to OBSS Low Hover	
	5		1.111 Step 5 Intermediate Position	
	6		1.111 Step 6 OBSS Handoff Position	
				OBSS HANDOFF

6. For procedure “1.112 OBSS Ungrapple” Step 2 configure for current ISS configuration.

6.1 Reconfig ► Orbiter Inspection

6.1.1 In Orbiter Inspection Dialog box, select ‘OBSS\_GF1\_to\_SRMS’.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.112 OBSS Ungrapple	1		1.112 Step 1 Setup	
	2.3		1.112 Step 2.3 MNVR to GF Backoff Position	
	3		1.112 Step 3 SSRMS @ Overnight Park	

**DOUG Setup for FD04 (PDGF Install, Columbus Unberth & Install)**

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 “**STS122\_1.210 EVA1**”, 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\_B’.
    - 4.1.2 In SSRMS Reconfig Dialog box, select ‘SSRMS ->NODE2\_PDGF’.
    - 4.1.3 In SSRMS Reconfig Dialog box, select ‘MT\_to\_WORKSITE\_WS7’.
  - 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:**

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

Procedure	Step	Targets		
		Camera	SSRMS	RMS
				COLUMBUS VIEWING
1.210 PDGF Retrieve	2		1.210 Step 2 SSRMS @ Overnight Park	
	3		1.210 SSRMS @ APFR Pre-Install pos	
	4		1.210 Step 4 APFR INSTL pos	
Toggle ► APFR_SSRMS JntSystems ► APFR_SSRMS In APFR_SSRMS Dialog box, select ‘12/PP/A/6’ Reconfig ► EV1 select ‘APFR_SSRMS’				
	5		1.210 Step 5 PDGF Lower Bolts Pos	

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	6		1.210 Step 6 PDGF Upper Bolts Pos	
	7		1.210 Step 7 PDGF Low Hover Pos	
1.211 PDGF Install	2		1.211 Step 2 SSRMS @ Pre-Instl Pos	
	3		1.211 Step 3 PDGF Install Pos	
	4		1.211 Step 4 MNVR to PDGF Pre-Install Pos	
	5		1.211 Step 5 SSRMS @ APFR Pre-Engress	
	6		1.211 Step 6 APFR Engress/Removal	
<i>Toggle ► APFR_SSRMS</i>				
	7		1.211 Step 7 SSRMS to Clear Payload Pos	
	8		1.211 Step 8 SSRMS @ Col Pre-Grp pos	
1.310 Columbus Grapple	1		1.310 Step 1 Setup	
	2.5		1.310 Step 2.5 Berthed Grapple Pos	

5. For procedure '1.310 Columbus Step 2.5 configure for current ISS configuration'
  - 5.1 Reconfig ► Columbus
    - 5.1.1 In Columbus Reconfig Dialog box, select 'Col >SSRMS'

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.311 Columbus Install	7		1.311 Step 7 MNVR COL to Low Hover	
	8		1.311 Step 8 SSRMS @ Clear PLB	
	9		1.311 Step 9 Pre-Instl Pos	
	12		1.311 Step 12 RTL Position	
	14		1.311 Step 14 Instl Position	

**DOUG Setup for FD05 (Columbus 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 “**STS122\_1.312 Col Ungrapple**”, 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\_B’.
    - 4.1.2 In SSRMS Reconfig Dialog box, select ‘SSRMS ->NODE2\_PDGF’.
    - 4.1.3 In SSRMS Reconfig Dialog box, select ‘MT\_to\_WORKSITE\_WS7’.
  - 4.2 Reconfig ► Columbus
    - 4.2.1 In Columbus Dialog box, select ‘Col>Node2’
  - 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:**

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

Procedure	Step	Targets		
		Camera	SSRMS	RMS
				COLUMBUS VIEWING
1.312 Columbus Ungrapple	1		1.312 Step 1 Setup (Col INSTL Pos)	
	2.3		1.312 Step 2.3 MNVR to Col Backoff	
	3		1.312 Step 3 Clear Orbiter	
	4		1.312 Step 4 SJ to JOCAS Start Pos	
	5		1.312 Step 5 JOCAS to Overnight Pos	

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**NOTE:** If SSRMS has to maneuver to the Focused Inspection scroll down to the targets specified in the table.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
2.410 Maneuver to Focused Inspection Viewing	1		2.410 Step 1 SSRMS @ Overnight Park	
	2		2.410 Step 2 SSRMS @ Orbiter Clearance	
	3		2.410 Step 3 SJ (SP) to Survey Support	
	4.1		2.410 Step 4.1 SJ (WP) to Orbiter Aft View	
	4.1		2.410 Step 4.1 SJ (WY) to Orbiter Aft View	
	4.2		2.410 Step 4.2 SJ (WP) to Forward View	
	4.2		2.410 Step 4.2 SJ (WY) to Forward View	
	4.3		2.410 Step 4.3 SSRMS @ Survey Support Pos	
	5		2.410 SJ (SP) Orbiter Clearance	
	6		2.410 SSRMS @ Overnight Park Pos	

**DOUG Setup for FD06 (EVA2 P1 NTA 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
    - 3.1.2 From Load State Dialog box, select “**STS122\_1.410 EVA2**”, 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\_B’.
    - 4.1.2 In SSRMS Reconfig Dialog box, select ‘SSRMS ->NODE2\_PDGF’.
    - 4.1.3 In SSRMS Reconfig Dialog box, select ‘MT\_to\_WORKSITE\_WS7’.
  - 4.2 Reconfig ► Columbus
    - 4.2.1 In Columbus Dialog box, select ‘Col>Node2’
  - 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:**

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

Procedure	Step	Targets		
		Camera	SSRMS	RMS
				EVA 2 VIEWING
1.410 EVA 2 P1 NTA R&R	2		1.410 Step 2 Setup (SSRMS @ Ornt)	
	3		1.410 Step 3 JOCAS Intermediate	
	4		1.410 Step 4 SJ (SR) APFR Pre-Ing	
	5		1.410 Step 5 APFR Ingress	

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<i>Toggle ► APFR_SSRMS</i>			
<i>JntSystems ► APFR_SSRMS</i>			
<i>In APFR_SSRMS Dialog box, select '12/PP/F/6'</i>			
<i>Reconfig ► EV1</i>			
<i>select 'APFR_SSRMS'</i>			
	7		1.410 Step 7 NTA Backup
	8		1.410 Step 8 SSRMS to Clr Pyld Bay
	9		1.410 Step 9 SSRMS @ Spare NTA Pre-Stow
	10		1.410 Step 10 NTA Stow
	11		1.410 P1 NTA Pre-retrieve
	11		1.410 P1 NTA Retrieve
	12		1.410 Step 12 MNVR to P1 NTA Pre-Stow Pos
	12		1.410 Step 12 MNVR to NTA Stow Pos
	13		1.410 Step 13 MNVR to Spare NTA Pre-Retrieve
	13		1.410 Step 13 MNVR to Spare NTA Retrieve
	14		1.410 Step 14 MNVR to Spare NTA Pre-INSTL
	14		1.410 Step 14 MNVR to Spare NTA INSTL
	15		1.410 Step 15 MNVR P1 NTA Pre-Stow
	15		1.410 Step 15 MNVR P1 NTA Stow
	16		1.410 Step 16 MNVR to Clear Pos
	17		1.410 Step 17 JOCAS to NTA low Hover
	18		1.410 Step 18 MNVR to NTA backoff
	19		1.410 Step 19 NTA INSTL Pos
<i>Reconfig ► EV1</i>			
<i>select 'APFR_SSRMS'</i>			
<i>JntSystems ► APFR_SSRMS</i>			
<i>In APFR_SSRMS Dialog box, select '6/TT/F/6'</i>			
	21		1.410 Step 21 MNVR to Low Hover
	22		1.410 Step 22 JOCAS to Overnight Pos

**DOUG Setup for FD08 (EVA3 - Solar Transfer)**

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 '**STS122\_1.510 EVA 3**', open
  - 3.2 Confirm steps **3.2.1-3.2.5.1** 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\_B*'.
      - 3.2.1.2. In SSRMS Reconfig Dialog box, select '*SSRMS - >NODE2\_PDGF*'.
      - 3.2.1.3. In SSRMS Reconfig Dialog box, select '*MT\_to\_WORKSITE\_7*'.
    - 3.2.2 Reconfig ► Columbus
      - 3.2.2.1. In Columbus Dialog box, select '*Col>Node2*'
    - 3.2.3 Reconfig ► Orbiter Inspection
      - 3.2.3.1. In Orbiter Inspection Dialog box, select '*OBSS\_GF1\_to\_SRMS*'
    - 3.2.4 Toggle ► APFR
      - 3.2.4.1. In toggle select *APFR\_SSRMS*
    - 3.2.5 JntSystems ► APFR\_SSRMS
      - 3.2.5.1. In *APFR\_SSRMS* Dialog box, select '*6/TT/F/6*'
  - 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:**

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

Procedure	Step	Targets		
		Camera	SSRMS	RMS
				COLUMBUS VIEWING
1.510 EVA 3 - SOLAR TRANSFER	2		1.510 Step 2 Overnight Pos	
	3		1.510 Step 3 APFR Pre-Ingress	



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	4		1.510 Step 4 APFR Ingress	
<i>JntSystems ► APFR_SSRMS</i> <i>In APFR_SSRMS Dialog box, select '12/PP/F/6'</i> <i>Reconfig ► EV1</i> <i>select 'APFR_SSRMS'</i>				
	7		1.510 Step 7 MNVR to Low Hover	
	8		1.510 Step 8 JOCAS to Intermediate Pos	
	9		1.510 Step 9 SJ (SP) Solar Pre-Instl	
	10		1.510 Step 10 Setup for Solar INSTL	
	11		1.510 Step 11 Solar INSTL Pos	
	12		1.510 Step 12 Solar Backoff	
	13		1.510 Step 13 SJ (SP) to Clear Col Pos	
	14		1.510 Step 14 Keel Pin Backoff	
	15		1.510 Step 15 Keel Pin Cover Pos	
	16		1.510 Step 16 Return to Keel Pin Backoff	

4. Before proceeding on to procedure '1.511 configure for current ISS configuration.

4.1 Reconfig ► ICC\_Lite

4.1.1 In ICC\_Lite Reconfig Dialog box, select 'Solar\_to\_Col'.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.511 EVA3 - CMG RETURN	2		1.511 Step 2 JOCAS to CMG MLI Pre-Removal	
	3		1.511 Step 3 CMG MLI Removal	
<i>JntSystems ► APFR_SSRMS</i> <i>In APFR_SSRMS Dialog box, select '12/PP/A/6'</i>				
	4		1.511 Step 4 Setup for Shim Bolt Pos	
	5		1.511 Step 5 MNVR to CMG Bolt Pos	
	6		1.511 Step 6 MNVR to CMG MNVR to CMG Backoff	
	7		1.511 Step 7 JOCAS to High Hover	
	8		1.511 Step 8 SJ (SR) to CMG Low Hover	
	10		1.511 Step 10 CMG INSTL	

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	11		1.511 Step 11 CMG MLI Cover	
	12		1.511 Step 12 Reconfig APFR	
<i>JntSystems ► APFR_SSRMS</i> <i>In APFR_SSRMS Dialog box, select '12/PP/F/6'</i>				
	14		1.511 Step 14 MNVR to JOCAS Start Pos	

5. Before proceeding into Procedure '1.512 EVA 3 - EUTEF TRANSFER' configure for current ISS configuration.
  - 5.1 Reconfig ► STS122\_EVA\_3
    - 5.1.1 In STS122\_EVA\_3 box select "Install\_CMG\_onto\_ICC"
  - 5.2 Reconfig ► EV1
    - 5.2.1.1. In EV1 Dialog box, select 'EV1 -> APFR\_SSRMS'
  - 5.3 JntSystem ► APFR\_SSRMS
    - 5.3.1 In the APFR\_SSRMS Box change the settings to 12/PP/F/6.

Procedure	Step	Targets		
		Camera	SSRMS	RMS
1.512 EVA3 - EUTEF TRANSFER	2		1.512 Step 2 JOCAS to EuTEF Pre-Retrieve	
	3		1.512 Step 3 EuTEF Retrieve	
	4		1.512 Step 4 MNVR to EuTEF Low Hover	
	5		1.512 Step 5 JOCAS to EuTEF Intermediate Pos	
	6		1.512 Step 6 SJ (SP) to Pre-Instal	
	7		1.512 Step 7 EuTEF Pre-INSTL	
	8		1.512 Step 8 EuTEF INSTL	
	9		1.512 Step 9 EuTEF Fram Bolt Pos	
	10		1.512 Step 10 APFR Egress/Removal	
	12		1.512 Step 12 MNVR to Clear Pos	
	13		1.512 Step 13 JOCAS to Undock Pos	