

STS-122/1E

FD 08 Execute Package



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Approved by FAO: Jennifer Clevenger

A handwritten signature in black ink, appearing to read 'Jennifer Clevenger', written over a white background.

Last Updated: Feb 14 2008 8:14AM GMT

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

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MSG INDEX

MSG NO. TITLE

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1. DUMP EQUIPMENT PREGATHER

In preparation for the upcoming PWR and CWC dump activities, you will need to pregather the following equipment prior to the dumps:

- a. AL1D1_A2: PWR S/N 1012
- b. Node 1 Deck 2: EMU Waste Water CWC S/N 1059
- c. Middeck: CWC S/N 5060 which was temp stowed after Condensate Changeout on FD6
- d. Contingency Hose and Cable Kit (CHCK) in the window shade bag: B-B hose and R-Y QD adapter (used FD6) and Y-Y hose
- e. Break out box locker (MF280): Waste Water Dump (WWD) Filter

2. SUPPLY/WASTE WATER DUMP

Perform a simo Supply/Waste water dump using SUPPLY/WASTE WATER DUMP (ORB OPS, ECLS) p. 5-2. MCC will TMBU limits in steps B and K.

Prior to opening either dump valve, verify with MCC-H that ISS arrays are in proper config.

Supply Dump will be 60 minutes.

Dump the waste tank to 5%. Waste nozzle open time will be ~12 minutes. Once the waste dump is complete, proceed to PWR Dump (can be worked simo with Supply Dump).

1
2 3. PWR DUMP – WASTE LINE

3 After completing the waste water dump, dump PWR S/N 1012 using PWR DUMP –
4 WASTE LINE (ORB OPS, ECLS) p. 5-37. MCC will TMBU limits in steps 2 and 7.

5
6 Dump the PWR even if it appears empty to ensure any residual air is removed prior to
7 refilling the bag.

8
9 After the PWR is dumped, temp stow it near the galley for a future fill. Stow the B-B
10 hose and R-Y QD in the ziplock bag and label it “USED” with gray tape. Stow the
11 ziplock bag in the CHCK. The WWD filter will be required for the CWC Dump.

12
13 4. CWC OVERBOARD DUMP

14 After completing the PWR Dump, dump CWC S/N 5060 using CWC OVERBOARD
15 DUMP (ORB OPS, ECLS) p. 5-32. MCC will TMBU limits in steps B and H.

16
17 Waste nozzle open time will be ~55 minutes. When the CWC dump is complete, temp
18 stow the CWC on the middeck. This CWC will return to ISS prior to hatch closure, but
19 may be used again for condensate collection.

20
21 With the remaining time in the dump attitude, dump as much as possible of EMU Waste
22 Water CWC S/N 1059. Waste nozzle open time will be ~50 minutes to dump completely.
23 The EMU Waste Water CWC should be returned to ISS A/L.

24
25 5. LiOH SWAP

26 Perform the following LiOH swap to have all available unused LiOH cans in the LiOH
27 Box:

28
29 From middeck Bag D, remove the four unused STS-122 cans decal #32-35. Swap these
30 four LiOH cans for any four of the ten (decal #1-10) *already used* STS-122 LiOH cans in
31 the LiOH Box.

32
33 Put three of the used STS-122 LiOH cans in Bag D. Two (2) used cans go into the 3-can
34 cushion cutout area and one (1) can goes into the single LiOH can cushion cutout. One
35 (1) used LiOH can should be wrapped in a towel or clothes and placed in locker MF14H.

36
37 When complete, report the used decal numbers and their locations to MCC.

38
39 6. We need to assure proper lip sync for the ESA VIP event this afternoon in the Columbus
40 module. An on-camera test has been scheduled on MS1 over ISS Ku for a voice check
41 at 6/17:50.

42
43 7. With the mission being extended, we are looking at how to manage food and other
44 consumables. Do you feel comfortable with the amount of food onboard, or do you think
45 you will need to utilize food from Station?

46
47 In the mean time, Crew Systems suggests the following:

- 48 1. Consolidate food packs from previous days into one locker and monitor inventory.
49 2. Conserve towels and washcloths where possible (84 man-days manifested with a few
50 spares).
51

1
2 8. Hello Rex, Hans, Stan, Dex, and Peggy:

3
4 Fantastic job on the EVA yesterday! In addition to the normal prep work for tomorrow's
5 EVA 3, we have a few added items for you.

6
7 As a reminder, EVA 3 will be cold, especially near the EPF. Use your heaters and adjust
8 your TCVs accordingly.

9
10 Stan: For EVA 3 you will need to reuse some of your EMU items. You have the option
11 of using the following items from MK ECOK - a pair of comfort gloves (L/Thin), TCU top
12 (M) and wristlets. Three ziplock bags of MK ECOK were transferred from shuttle to
13 NOD2_O2. If you can't find it there, it may be in MK ECOK mesh bag in NOD1. Extra
14 moleskin/mosite is located in the Crew Comfort Kit in the M-02 1010 EMU Soft Goods
15 outer pocket in the airlock. Let MCC know what you decide.

16
17 Rex and Stan: In preparation for EVA 3, you will need to perform the LV EMU
18 Reconfiguration and Swap. The required steps are listed in the detailed timeline.

19
20 For EVA 3, we are going to ask you to do a swatch test of the airlock divot found on
21 EVA 1. You will perform swatch tests with a spare overglove and a swatch tool. We
22 have added a 30 minute swatch tool build activity for Peggy. The swatch tool build up is
23 in MSG 069 (16-1036) and the procedure to take the swatch samples is in MSG 070 (16-
24 1037). In addition, we still want you to take 3-4 more photos of the handrail damaged
25 area. We think the best place to pick this up is after EuTEF transfer.

26
27 Finally, if time permits at the end of EVA 3, we would like you to perform a few SARJ
28 inspection tasks. The highest priority SARJ item is to photograph the Datum-A "divot"
29 and remove any debris. The second SARJ task is to inspect the single covers that have
30 not been previously inspected. The briefing package is in MSG 066 (16-1032), the
31 detailed procedure is in MSG 067 (16-1033), and the photography requirements are
32 in MSG 068 (16-1034).

33
34 9. Back on FD3, SSOR#1 experienced intermittent lock with the Station radio SSSR#1,
35 which disrupted big loop calls. Shortly thereafter we had you switch over to SSOR#2,
36 which has worked fine ever since. For trouble shooting purposes, we would like to
37 take the opportunity to monitor the performance of SSOR#1 overnight during crew
38 sleep. If the anomaly repeats, CATO will swap to SSSR#2 from the ground and if that
39 does not fix the issue, you may be without a big loop overnight (ICOM via BPSMU will be
40 unaffected). Leland has a step in his Pre-sleep callout to perform this radio swap for
41 us. The plan will be to return back to SSOR#2 when you wake up the following
42 morning.

43
44 10. There are no exercise constraints for FD08.

45
46 11. REPLACE PAGES 2-26, 2-28, AND 3-80 THROUGH 3-89.

02/14/08 01:58:34

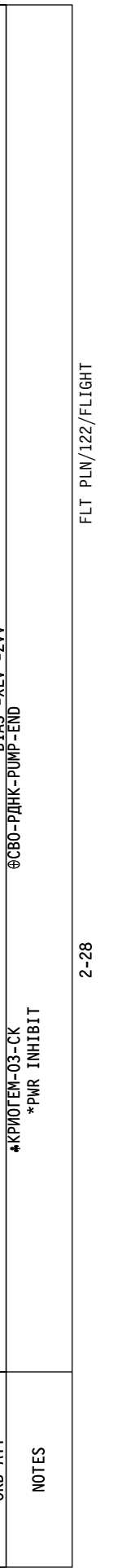
REPLANNED

FD08

GMT 02/14/08 (045)

MET Day_007

Day	00	01	02	03	04	05	06	07	08	09	10	11	12
CDR FRICK	OFF DUTY	EVA3 PROC REVIEW	PMCA A/G3	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
	OFF DUTY #1	EVA3 PROC REVIEW	CTLS WETIWCROA MHP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
MS1 MELVIN	OFF DUTY	EVA3 PROC REVIEW	P/TVO7 EVA S/U	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
	OFF DUTY #2	EVA3 PROC REVIEW	PRE SLEEP	PRE SLEEP	MASK PB/TOOL CONFIG 10.2 DPRS	PRE SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
MS3/EV2 SCHLEGEL	OFF DUTY	EVA3 PROC REVIEW	MUS	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
	OFF DUTY #3	EVA3 PROC REVIEW	PRE SLEEP	PRE SLEEP	MASK PB/TOOL CONFIG 10.2 DPRS	PRE SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
FE-2 TANI	HANDOVER PMC	EVA3 PROC REVIEW	DCPW DPC	PRE SLEEP-ISS	PRE SLEEP-ISS	PRE SLEEP-ISS	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
	EXERCISE CEVIS	EVA3 PROC REVIEW	TAP DPC	PRE SLEEP-ISS	PRE SLEEP-ISS	PRE SLEEP-ISS	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
FE-1 MALENCHENKO	EXERCISE TVIS	VELO + RED	DCPW DPC	PRE SLEEP-ISS	PRE SLEEP-ISS	PRE SLEEP-ISS	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
	HANDOVER ERPK	EVA3 PROC REVIEW	PW DPC	PRE SLEEP-ISS	PRE SLEEP-ISS	PRE SLEEP-ISS	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP



NOTES

*КРЮГЕМ-03-СК

*PMR INHIBIT

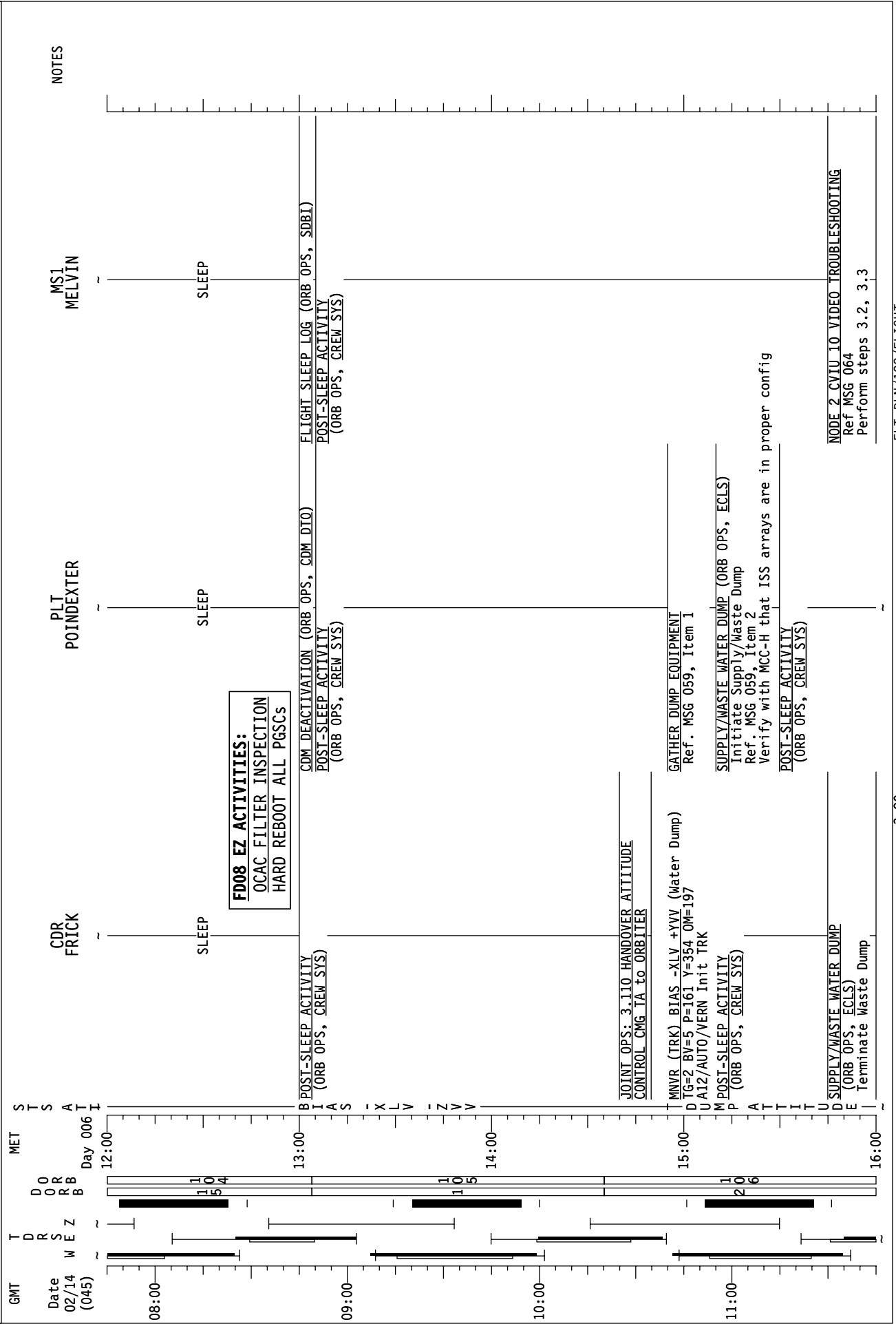
@CBO-PДНК-PUMP-END

BIAS -XLV -ZV

FLT PLN/122/FLIGHT

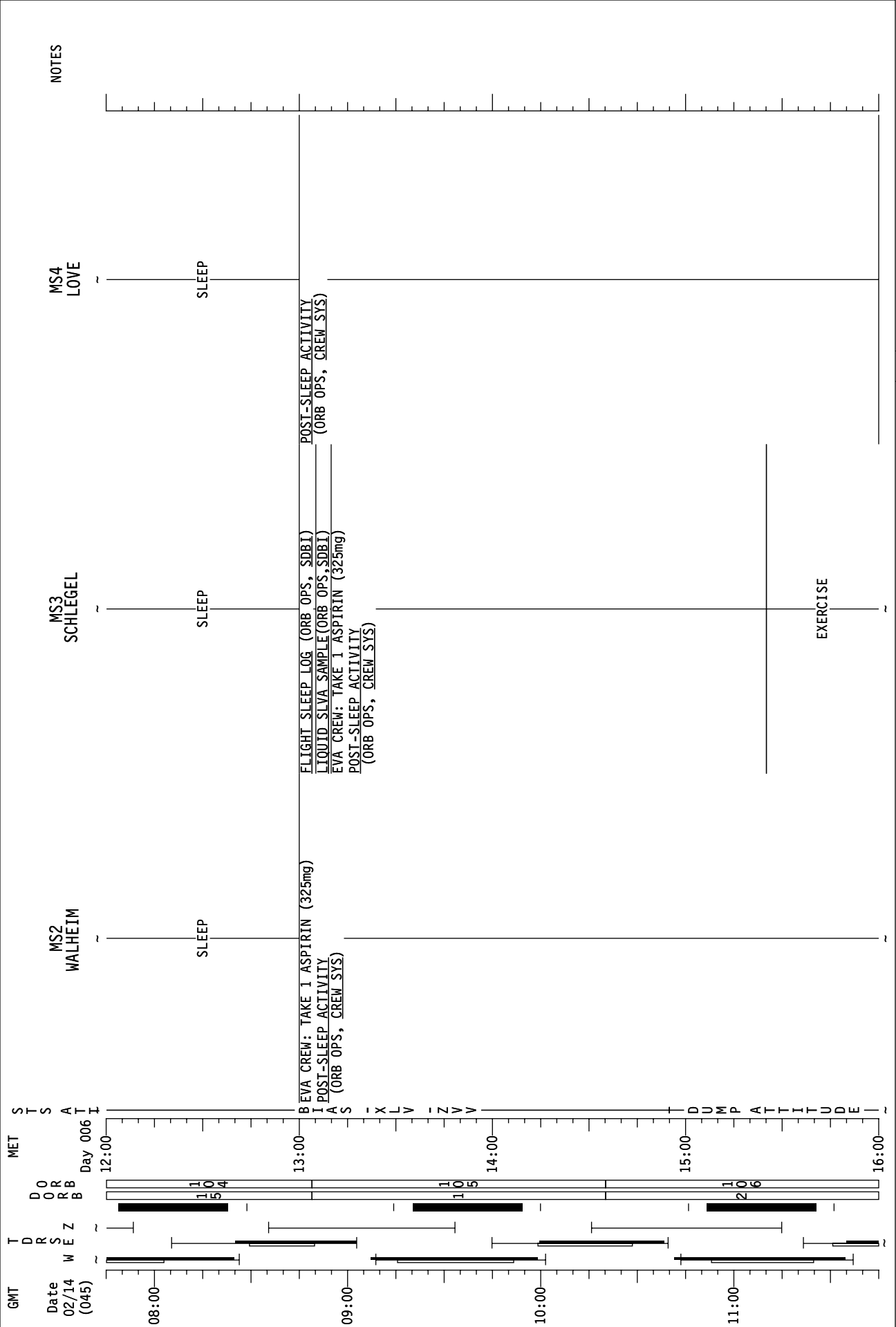
STS-122 FD (08)

REPLANNED



STS-122 FD (08)

REPLANNED



STS-122 FD (08)

REPLANNED

GMT	Date 02/14 (045)	DRS WEZ	TDRS MET	DORB Day 006	STAS I	FRICK CDR	PLT POINDEXTER	MSI MELVIN	NOTES
12:00									
13:00									
14:00									
15:00									
16:00									
17:00									
18:00									
19:00									
20:00									

POST-SLEEP ACTIVITY (ORB OPS, CREW SVS)
 N2 REPRESS USING PAYLOAD N2 VLVS [A]
 CMC OVERBOARD DUMP (ORB OPS, ECLS)
 Ref. MSG 059, Item 4
 TRANSFER OPS
 Ref. Transfer List

PMR DUMP - WASTE LINE (ORB OPS, ECLS)
 Ref. MSG 059, Items 1 & 3
 SUPPLY/WASTE WATER DUMP (ORB OPS, ECLS)
 Terminate Supply Dump
 EXERCISE

MNVR (TRK) BIAS -XLV -ZVY
 TG=2 BV=5 P=161 Y=354 OM=192
 A12/AUTO/VERN Init TRK
 JOINT OPS: 3.111 HANDOVER ATTITUDE CONTROL ORBITER to CMG1A
 EXERCISE

ESA VIP EVENT
 ISS S&K-BD AVAIL: 19:00:32 - 19:36:24
 Ref. MSG 063
 MEAL

ISS KU Avail: 17:50 - 18:00
 L17 Check MCIU filter screen
 PRE-VIP EVENT LIP SYNC TEST [B]
 Ref. MSG 059, Item 6
 TRANSFER OPS
 Ref. Transfer List

TRANSFER BRIEF
 Call down status to MCC
 EXERCISE

N2 REPRESS USING PAYLOAD N2 VLVS (ORB OPS, ECLS)
 On MCC Go, perform steps 7-12
 MCC will TMBU a11 S/W limits
 MEAL

MEAL

MEAL

MEAL

MEAL

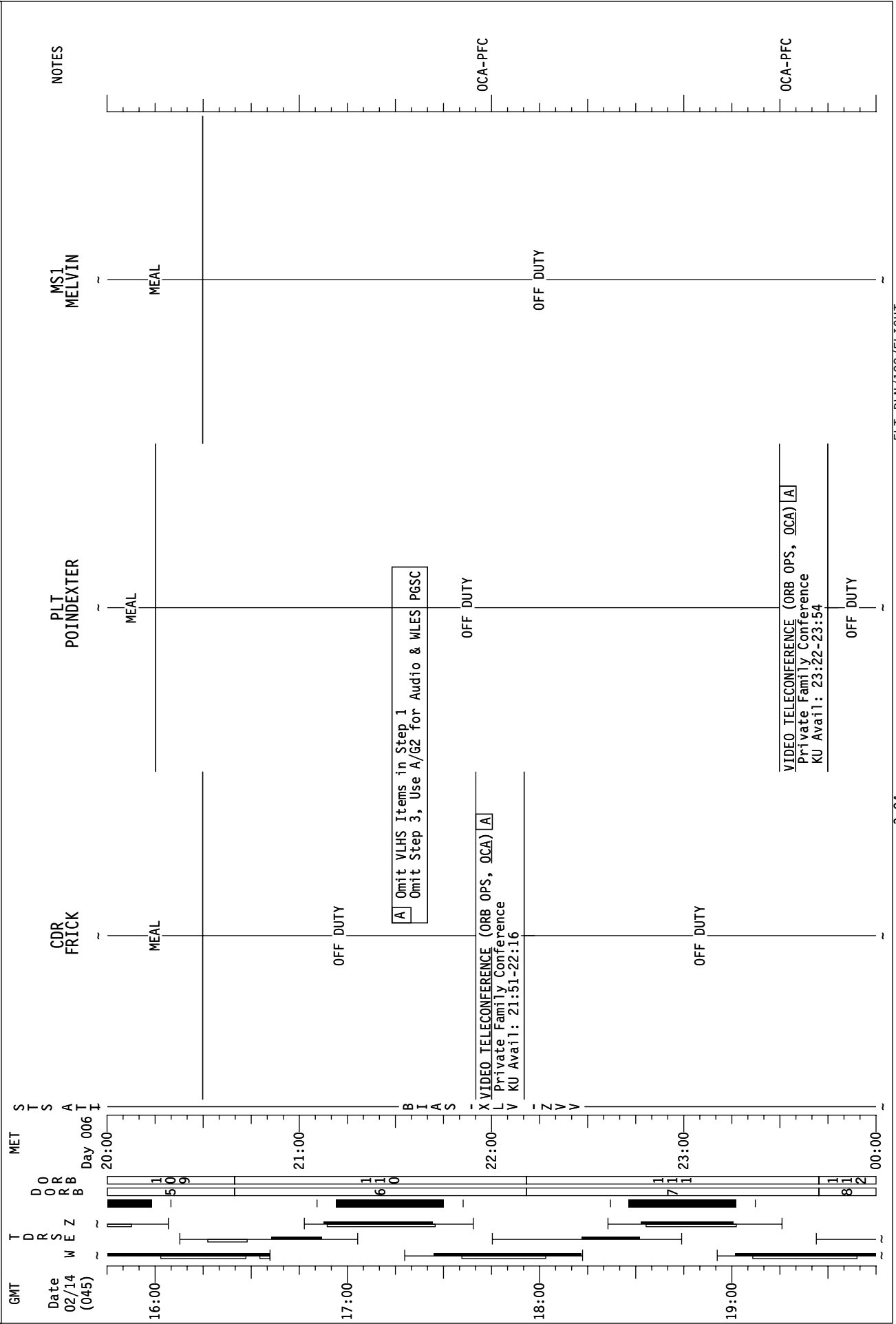
STS-122 FD (08)

REPLANNED

GMT	Date 02/14 (045)	DRS W E Z	MET	STSS A T I	MS2 WALHEIM	MS3 SCHLEGEL	MS4 LOVE	NOTES
12:00								
13:00								
14:00								
15:00								
16:00								
17:00								
18:00								
19:00								
20:00								

STS-122 FD (08)

REPLANNED



STS-122 FD (08)

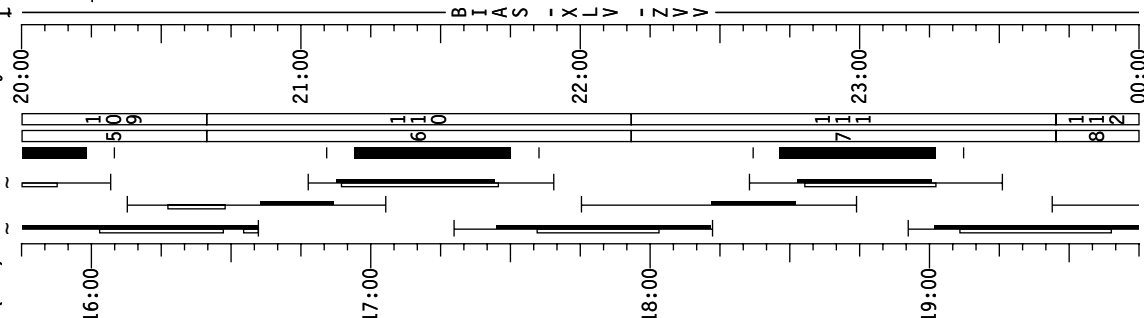
REPLANNED

GMT Date 02/14 (045)

DRS W E Z

DOORB B

MET STA Day 006 I



MS2
WALHEIM

MS3
SCHLEGEL

MS4
LOVE

NOTES

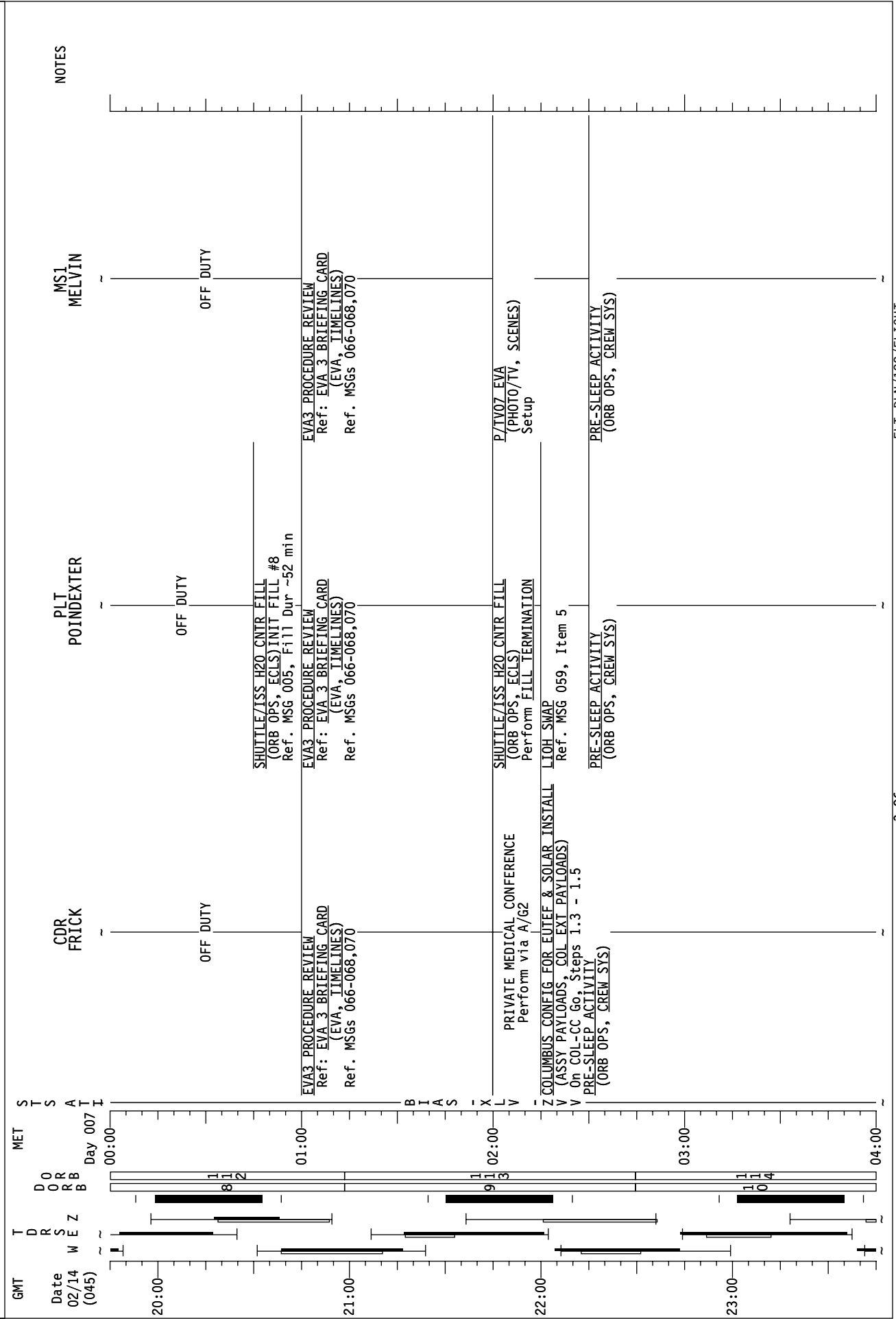
A Omit VLHS Items in Step 1
Omit Step 3, Use A/G2 for Audio & MLES PGSC

VIDEO TELECONFERENCE (ORB OPS, OCA) [A]
Private Family Conference
KU Avail: 22:49-23:15

OCA-PFC

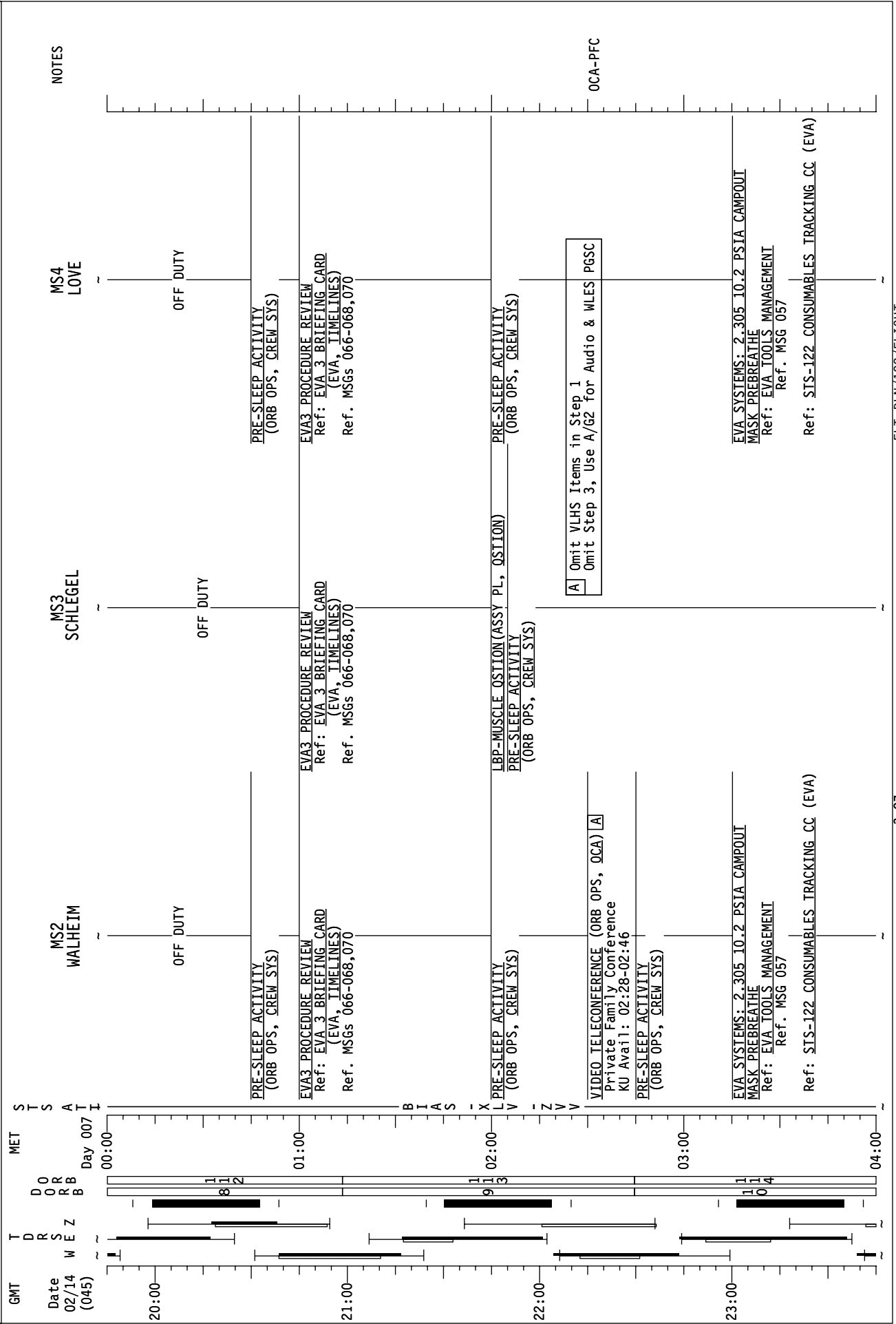
STS-122 FD (08)

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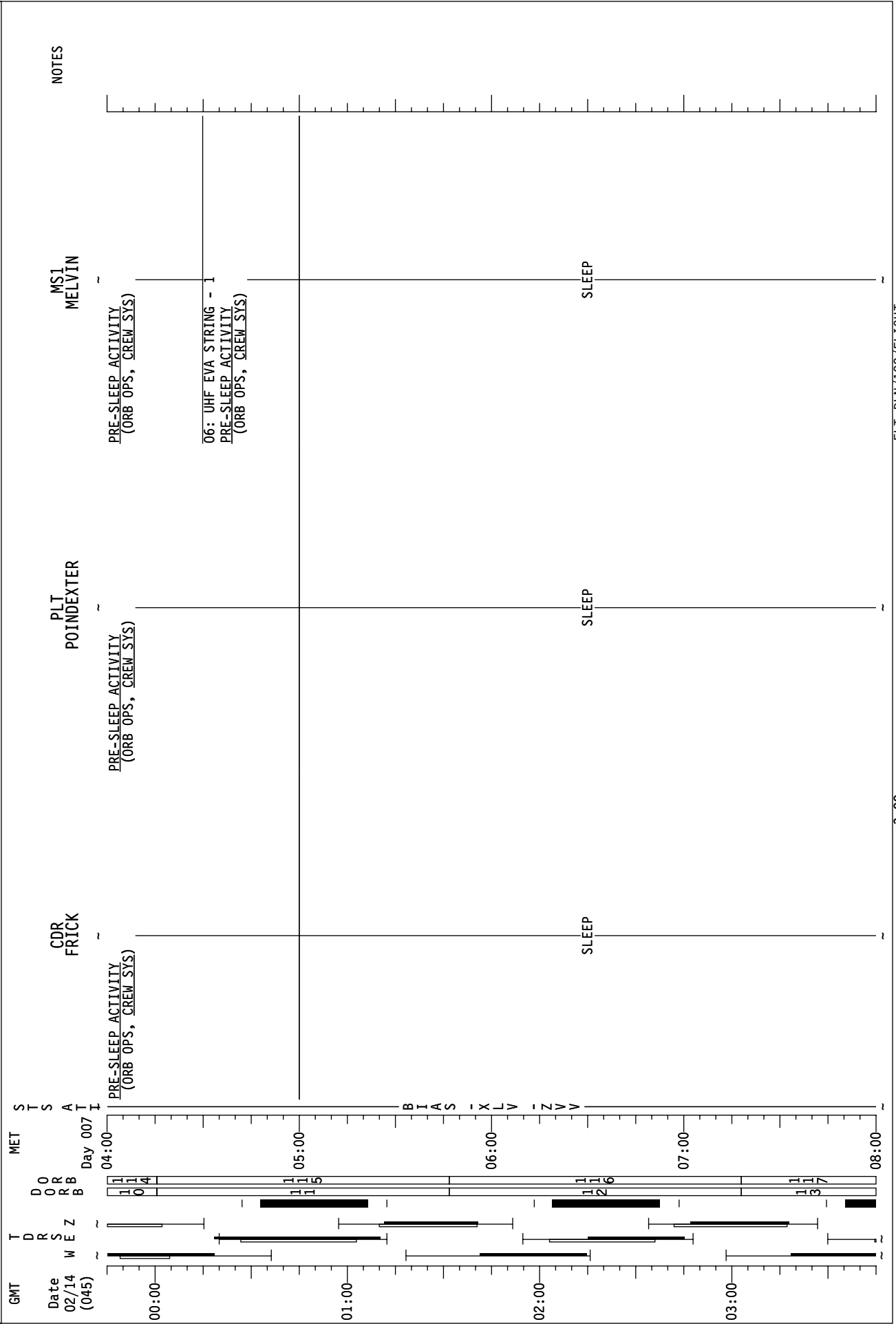
STS-122 FD (08)

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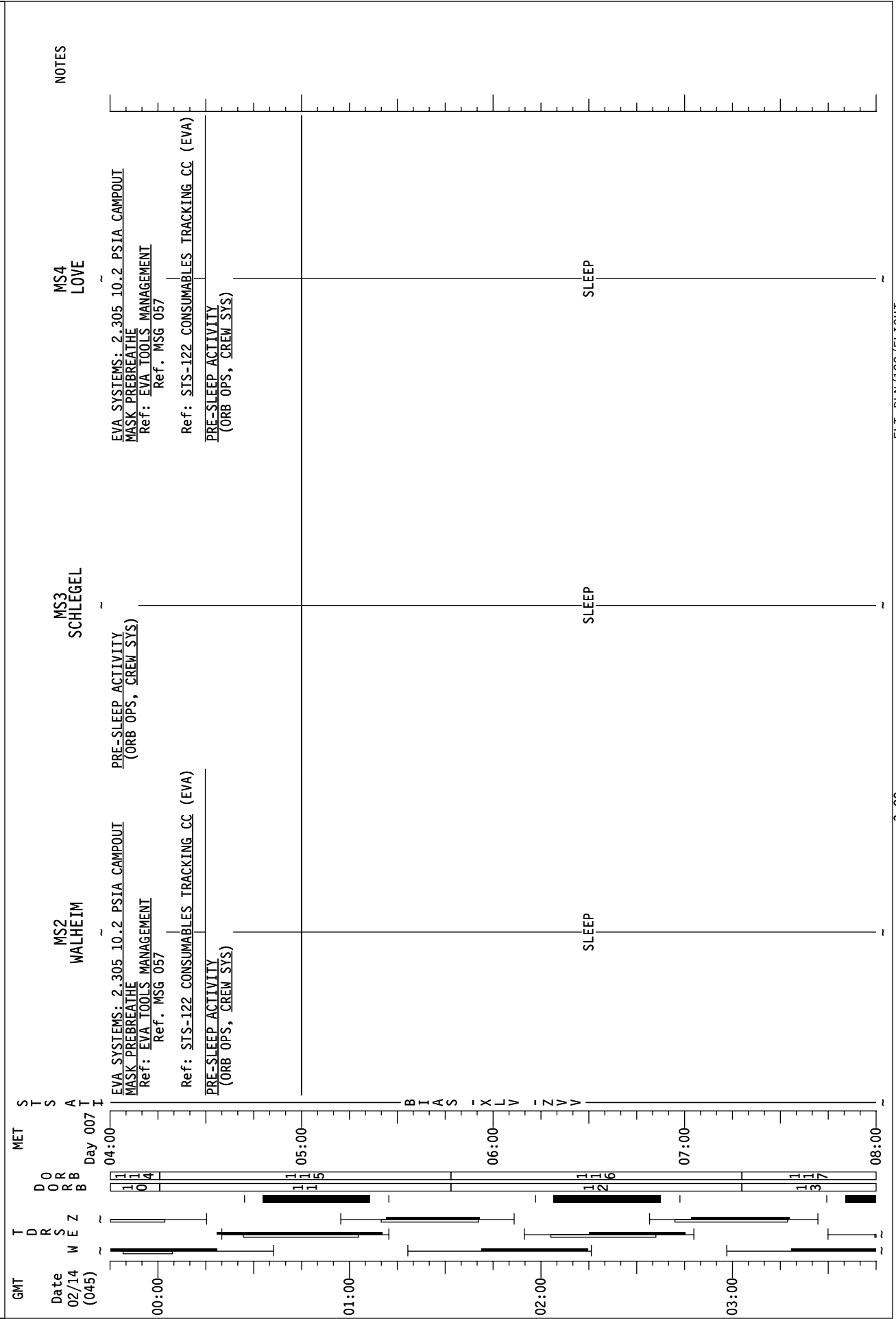
STS-122 FD (08)

REPLANNED



STS-122 FD (08)

REPLANNED



MSG 060A - FD08 MISSION SUMMARY

1
2 Good Morning Atlantis!

3
4 Another great EVA and Columbus up and running! You can't ask for much more than that!!

5
6 Take some time today to enjoy the results of all your hard work!

7
8
9
10 YOUR CURRENT ORBIT IS: 185 X 176 NM

11
12 NOTAMS:

13
14 EDW – LAKEBED RUNWAYS RED.

15 NOR – LAKEBED RUNWAYS GREEN.

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

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

18 WAK – NOT USABLE.

19 IKF – NOT USABLE.

20 DIW – TACAN OTS.

21 LAJ – TACAN CH 45 OTS.

22 NGU – TACAN CHANNEL CHANGED TO CH 22.

23 BEN – POLITICALLY NOT RECOMMENDED/NOT SUPPORTED.

24 DOV – 14/32 CLOSED.

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

26
27
28 NEXT 2 PLS OPPORTUNITIES:

29
30 KSC33 ORB 109 – 6/19:58 (FEW040 030/8P14)

31 EDW04 ORB 126 – 7/21:49 (SKC 060/9P14)

32
33
34 OMS TANK FAIL CAPABILITY:

35
36 L OMS FAIL: NO

R OMS FAIL: NO

37
38
39 LEAKING OMS PRPLT BURN:

40
41 L OMS LEAK: ALWAYS BURN RETROGRADE

42 R OMS LEAK: ALWAYS BURN RETROGRADE

43
44
45 OMS QUANTITIES(%)

46
47 L OMS OX = 35.0 R OMS OX = 35.4

48 FU = 35.3 FU = 35.2

49
50 SUBTRACT ICNCT COUNTER FOR CURRENT OMS QUANTITIES

51
END OF PAGE 1 OF 2, MSG 060A

MSG 060A - FD08 MISSION SUMMARY

DELTA V AVAILABLE:

OMS 323 FPS
 ARCS (TOTAL ABOVE QTY1) 46 FPS
 TOTAL IN THE AFT 369 FPS

ARCS (TOTAL ABOVE QTY2) 79 FPS
 FRCS (ABOVE QTY 1) 23 FPS

AFT QTY 1 79 %
 AFT QTY 2 41 %

<u>SYSTEM</u>	<u>FAILURE</u>	<u>IMPACT</u>	<u>WORK AROUND</u>
Airlock	PSA EMU1 Channel shutdown when UIA EV power taken to off.	PSA power unavailable to EV1 until DC/DC channel reset on the PSA.	IV performed reset of PSA EMU1 DC/DC channel.
EMU	EV2 failed leak check during EVA Prep at 14.7 psia	Slight delay in timeline. Troubleshooting was done according to 2.115 Failed Leak Check at 14.7	Removed and re-installed right glove. Passed subsequent leak check
EMU	EV1 loss of communications for ~ 50 sec. during POST DEPRESS	EV1 temporary loss of communications with EV, IV, MCC-H.	EV1 performed a "Warm Restart". Ground continues to review and will provide work around as required.
EMU	Sublimator snow	None	Same suits on STS 118 had sublimator snow. It is still within spec. No action req'd.
EMU	ISS and MCC lost video from EV2 while he is in truss	EV2 temporary loss of video	First power cycle was no joy (Hans reported that he didn't press the button hard enough). Second power cycle did work.

MSG 061 - FD07 MMT SUMMARY

1 FD07 MMT SUMMARY

2

3 The MMT met today to review mission progress, orbiter systems status, and TPS inspection
4 results. The analysis for the Left OMS Stinger tile was completed and, as expected, was
5 cleared for entry. As a result, all of the orbiter TPS has been fully cleared for entry pending
6 Late Inspection. The MMT also decided to extend the mission by an extra docked day in
7 order to assist with Columbus outfitting.

8

9 **Orbiter Status:** The vehicle continues to operate very well and there are no new
10 anomalies. The team continues to troubleshoot the ISS/Orbiter video issue on Ch71 and
11 believes the problem is being caused by the same drag-through cable that is also causing
12 the chroma interference we have seen on the CCTV system.

13

14 **Extension Day/Cryo Margins:** The mission is now 13+0+2 with ~3 hours of O2 margin.
15 Both the Shuttle and Station Programs agreed to transfer any available O2 margin above a
16 13 day mission to the ISS on FD9/10. At this time, the 3 hours of O2 margin equates to
17 ~25lbs of O2 being transferred to the ISS.

18

19 **LOMS Stinger Tile:** The missing tile on the LOMS Stinger (figure 1 & 2) has been cleared
20 for entry. Both ascent and descent effects were considered and the thermal results showed
21 that the OMS pod stinger structure and the systems inside of the stinger compartment do
22 not exceed their certification limits. The stress assessment also shows that sufficient margin
23 is maintained at the tile loss location.

24

25 **SRB/RSRM Final Report:** There were no hardware issues to report during SRB open
26 assessments based on engineering evaluation criteria and previous flight experience. There
27 are 10 squawks identified for the SRB, but none are vehicle or operational impacts. The
28 team continues to evaluate the LH SRB main parachute anomaly.

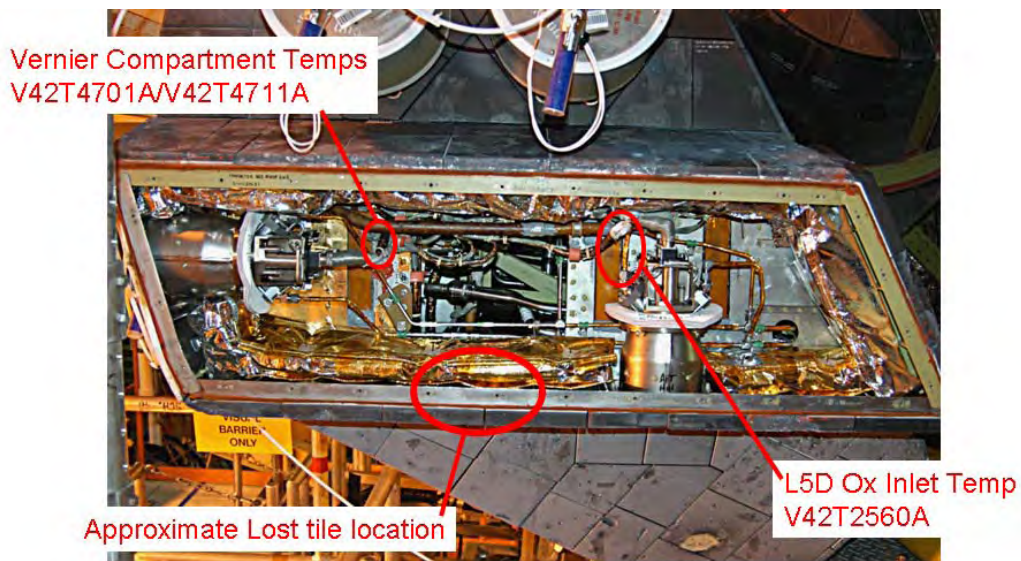
29

30 **ET Final Report:** The tank performed very well for it's third tanking with 10 prepress cycles
31 (LCC limit is 13). The preliminary ET foam loss assessment indicates no new failure modes.
32 (Figure 3)



Figure 1 Location of the missing tile on the LOMS Stinger

1
2
3



A TCS blanket is installed on back of (removed) vernier compartment door
 Figure 2 Hardware locations in the stinger in proximity to the missing tile

4
5
6

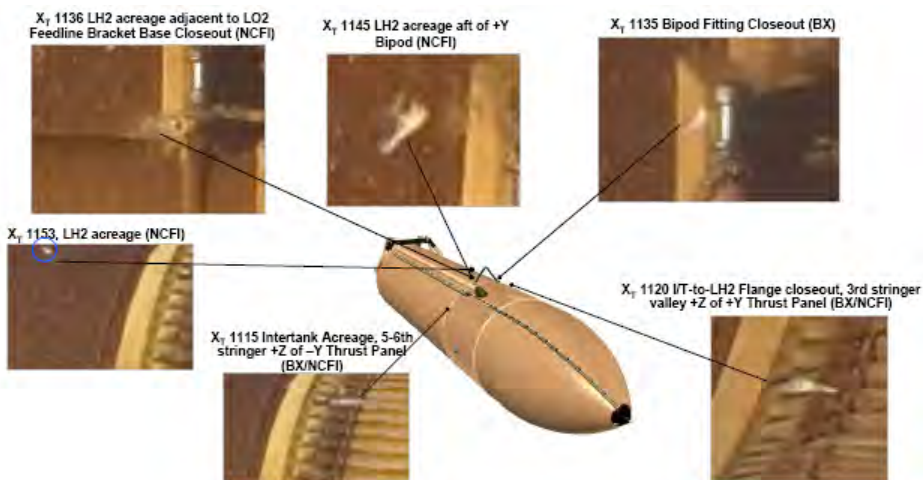


Figure 3 ET Foam loss locations

7
8

MSG 062 (16-1028) - FD08 TRANSFER MESSAGE

Page 1 of 4

1 Good morning Leland & Stan,
2

3 As we mentioned last night, we're working some changes to Return Bag 700. We'll have
4 the details for you in the FD09 Transfer List, but we wanted to let you know that these
5 changes will allow us to accommodate 4½ lbs of Dan's crew pref.
6

7 We're still doing some final checks on the return BMRRM configuration, and expect to have
8 a revised procedure for you tomorrow. We're working to minimize changes to the current
9 configuration and also address safety concerns, since this is one of the heaviest things that
10 we have ever returned on the Middeck.
11

12
13 The Transfer List Excel file, FD08_TransferList_STS122.xls, is located on the KFX machine
14 in **C:\OCA-up\transfer**.

15
16 For ISS, the Transfer List Excel file, FD08_TransferList_STS122.xls, is located in **K:\OCA-**
17 **up\transfer**.
18

19
20 **FD07 Choreography**

21 - Items 807 & 808 (Dan): Swap EVA Action Finders per P/TV-EVA DCS-TRNARND.
22

23
24 **Please update the Transfer List as follows:**

25
26 In **RESUPPLY** tab:

27 Replace page Resupply-12
28

29 In **RETURN** tab:

30 Replace pages Return-10 and Return-11
31

32
33 Call us with any questions.

34
35 - The Transfer Team
36
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16-1030 (MSG 064) NODE 2 CVIU 10 VIDEO TROUBLESHOOTING

Page 1 of 8 pages

OBJECTIVE:

Troubleshoot Orbiter to ISS Common Video Interface Unit (CVIU) #10 video connectivity. A connector at the base of NOD2S4 rack is disconnected and pin kit jumpers are inserted to cross the transmit and receive lines between the Orbiter and CVIU 10. The most likely problem is miswiring between the CVIU and the Orbiter. If this test is unsuccessful, loopback jumpers will allow different parts of the cabling to be tested by sending video signals down one channel and verify signal is received back on the other channel.

LOCATION:

NOD2S4

DURATION:

ISS Crew – 1 hour

STS Crew –15 minutes

CREW:

One ISS crewmember

One STS crewmember

PARTS:

None

MATERIALS:

Kapton Tape

TOOLS:

DCS 760 Camera

Flashlight (crew preference)

ISS Pin Kit P/N SJG33110644-301

Page 4

20 Ga. Pin/Socket Test Jumper Leads, 24 in Qty = 6

Page 6

20 Ga. Pin/Pin Test Jumper Leads, 5 in Qty = 2

20 Ga. Socket/Socket Test Jumper Leads, 5 in Qty = 2

ISS IVA Toolbox:

Drawer 2:

5/32" Hex Head, 1/4" Drive

Driver Handle, 1/4" Drive

Drawer 5:

Magnifying Glass (7X) (optional)

REFERENCED PROCEDURES:

None

16-1030 (MSG 064) NODE 2 CVIU 10 VIDEO TROUBLESHOOTING

Page 2 of 8 pages

1. ACCESSING CONNECTOR

- NOD2S4
- 1.1 Remove/relocate any stowage from the base of NOD2S4 rack to gain access to rack Utility Interface Panel (UIP).
 - 1.2 Loosen NOD2S4-02 closeout panel fasteners (four) and remove closeout (5/32" Hex Head, Driver Handle, 1/4" Drive)
Temporarily stow closeout panel

2. DISCONNECTING HMU332 P08 AND INSTALLING JUMPERS FOR CROSSOVER TESTS

NOTE

1. HMU 332 P08 connector only has video cabling thru it with a maximum signal strength of 1 VAC, thus there are no safing steps required prior to demating the connection.
2. This step will install jumpers to test whether the video signals between the Orbiter and ISS have their "transmit" or "receive" wires crossed.
3. Disconnecting 332 P08 connector will cause a loss of Orbiter-to-ISS video connectivity to CVIU 11.

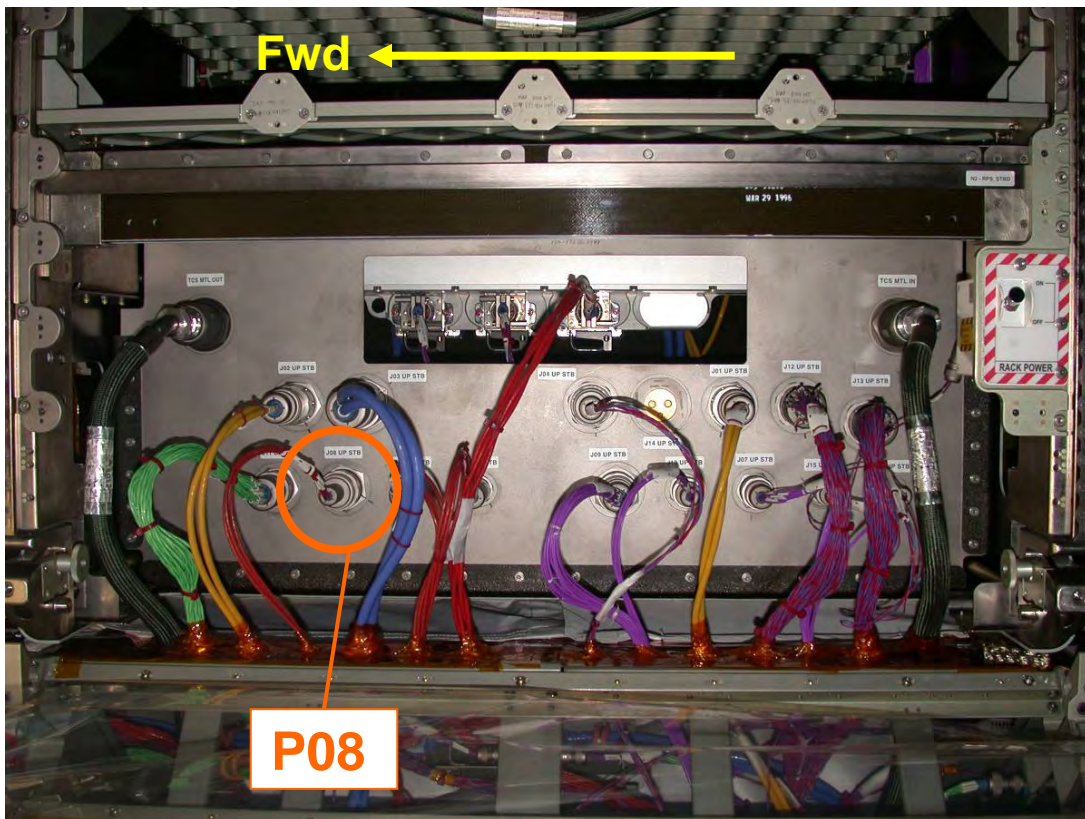


Figure 1. - Connector Cover Assembly

16-1030 (MSG 064) NODE 2 CVIU 10 VIDEO TROUBLESHOOTING

Page 3 of 8 pages

2.1 HMU 332 P08 ←|→ J08 UP STB (NOD2S4 rack UIP)
Refer to Figure 1.

Table 1. - HMU 332 P08 / rack J08 Function Description

Pin/Socket #	Function
V	RF Video PMA 2 (Orbiter) to CVIU 10
G	RF Video Return PMA 2 (Orbiter) to CVIU 10
4	RF Video CVIU 10 to PMA 2 (Orbiter)
7	RF Video Return CVIU 10 to PMA 2 (Orbiter)

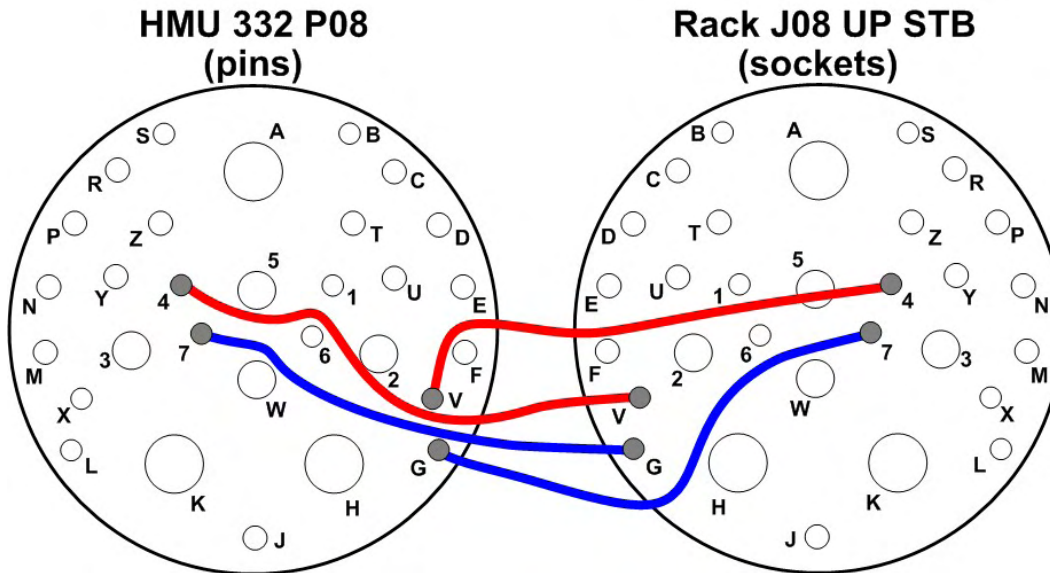


Figure 2. - Crossover Jumper Arrangement (HMU 332 P08 to rack J08)

NOD2S4 2.2 Install 20 Ga. Pin/Socket Test Jumper Leads, 24 in (four) between HMU 332 P08 connector and rack J08 UP STB connector to swap the forward and return video lines.

Jumper →|← HMU 332 P08 pin 4 and rack J08 socket V

Jumper →|← HMU 332 P08 pin 7 and rack J08 socket G

Jumper →|← HMU 332 P08 pin V and rack J08 socket 4

Jumper →|← HMU 332 P08 pin G and rack J08 socket 7

Flashlight, Magnifying Glass (crew preference)

Refer to Figure 2.

2.3 Photo document jumper configuration (DCS 760 Camera).

2.4 Restrain HMU 332 P08 connector, if necessary. (Kapton Tape)

2.5 Notify **MCC-H** when complete with installation of crossover jumpers.

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3. TESTING OF CROSSOVER JUMPERS

MCC-H 3.1 Perform {2.601 VDS Auto Route-Deroute}, Steps 1 through 4 for routings below, (SODF: C&T: NOMINAL: VIDEO), then:

- 1) Lab Cam → ISS Video Channel (CVIU 10 Output)
- 2) Orbiter Channel 1 (CVIU 10 Input) → Downlink
- 3) Orbiter Channel 1 (CVIU 10 Input) → Lab RWS Monitor

Shuttle 3.2 A7 √ACTIVATION, OPERATION for CAMR C (Cue Card, TV) performed
Flight Deck

R12(VPU) √VPU PWR - ON (LED on)
Green Jumper - ISS

A3 √MON 1, 2 SOURCE - PNL
A7 VID OUT MON 1 pb - push
IN PL 2 pb - push
VID OUT MON 2 pb - push
IN C pb - push

√CAMR C VIDEO on MON 2

NOTE

Crewmember on Flight Deck will be the only source of pass/fail verification of ISS-to-Shuttle test.

Shuttle 3.3 Report to **MCC-H** whether Mon 1 view is from ISS Lab camera.
Flight Deck (Indicating ISS-to-Orbiter video successful)

US LAB 3.4 Determining success of Orbiter-to-ISS video:
If Ku-Band video not available,
| Report to **MCC-H** whether Shuttle Payload Bay Camera C is
| displayed on RWS Monitor

MCC-H If Ku-Band video is available,
| Verify Shuttle Camera C visible on ISS Downlink

3.5 Wait for **MCC-H** assessment before proceeding.

* If Crossover test fails, proceed to Step 5 for loopback testing

4. CONFIGURING HMU 332 P08 FOR SEMI-PERMANENT USE

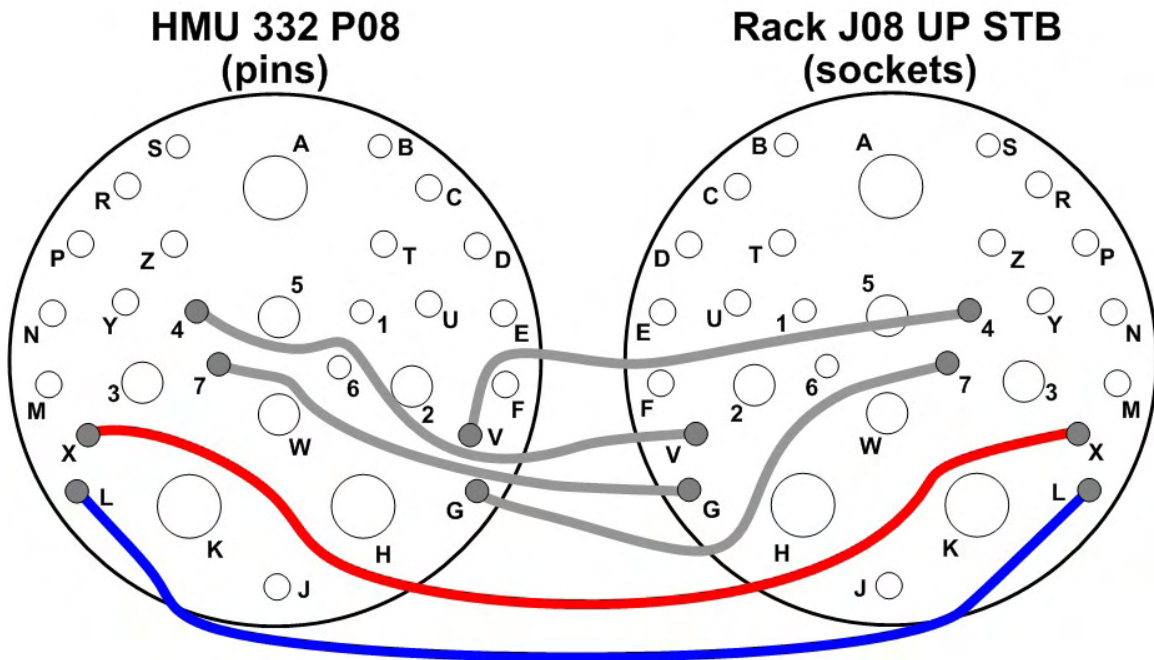


Figure 3.- Permanent Jumper Arrangement (HMU 332 P08 to rack J08)

NOTE

Due to long lead time to create a new jumper to correct misconfigured wiring, the Jumpers will be left installed in the NOD2S4 UIP area. Two additional jumpers are required to allow Orbiter-to-ISS video connectivity to CVIU 11.

- NOD2S4
- 4.1 **On MCC-H GO**, install two additional 20 Ga. Pin/Socket Test Jumper Leads, 24 in (two) between HMU 332 P08 connector and rack J08 UP STB connector.
 Jumper →|← HMU 332 P08 pin X and rack J08 socket X
 Jumper →|← HMU 332 P08 pin L and rack J08 socket L
 Refer to Figure 3.
 - 4.2 Check pins/sockets on HMU 332 P08 connector and rack J08 UP STB connector to verify pins are straight and no FOD is present.
 - 4.3 Photo document jumper configuration (DCS 760 Camera).

16-1030 (MSG 064) NODE 2 CVIU 10 VIDEO TROUBLESHOOTING

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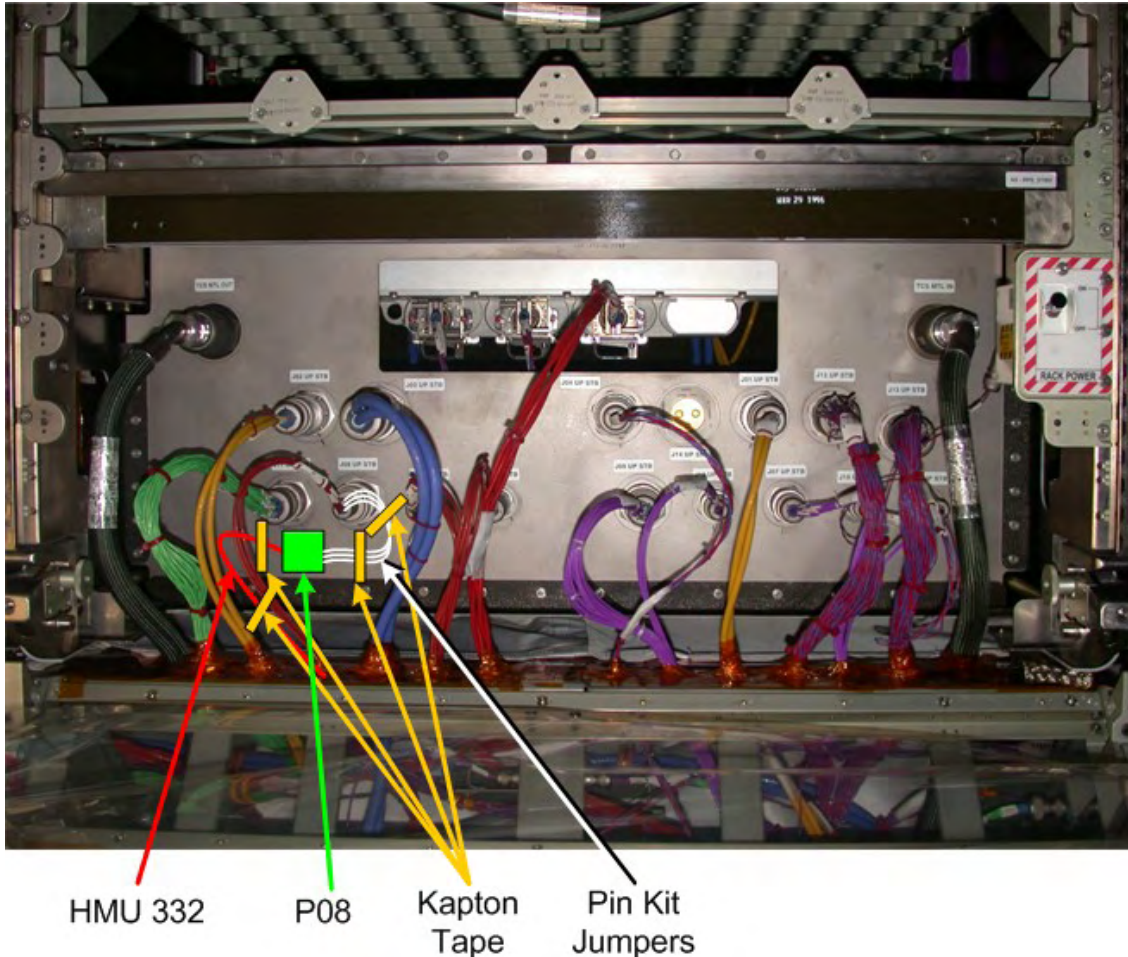


Figure 4. - Permanent Configuration of HMU 332 P08 in UIP area with Jumpers installed.

4.4 Tape HMU 332 P08 connector to NOD2S4 UIP (Kapton Tape) near J8.

Ensure pins on HMU 332 P08 connector are not subject to bending.
Apply Kapton Tape for jumper strain relief, as necessary.
Refer to Figure 4.

4.5 Photo document final jumper configuration (DCS 760 Camera).

4.6 Install NOD2S4-02 closeout panel and tighten (snug) fasteners (four)
(5/32" Hex Head, Driver Handle, 1/4" Drive).

4.7 Stow any remaining tools, materials.

Shuttle 4.8 Mon 1, 2 - Source and Select as needed
Flight Deck

5. [CONFIGURING HMU 332 P08 FOR LOOPBACK TEST \(IF REQUIRED\)](#)

NOTE

This step installs jumpers at the NOD2S4 Rack to allow CVIU 10 output video to be returned to the CVIU 10 input channel. The Orbiter video coming through PMA2 will be returned back along the same path to be monitored on the Flight Deck. This test will verify both CVIU and Orbiter video system functionality, independent of each other.

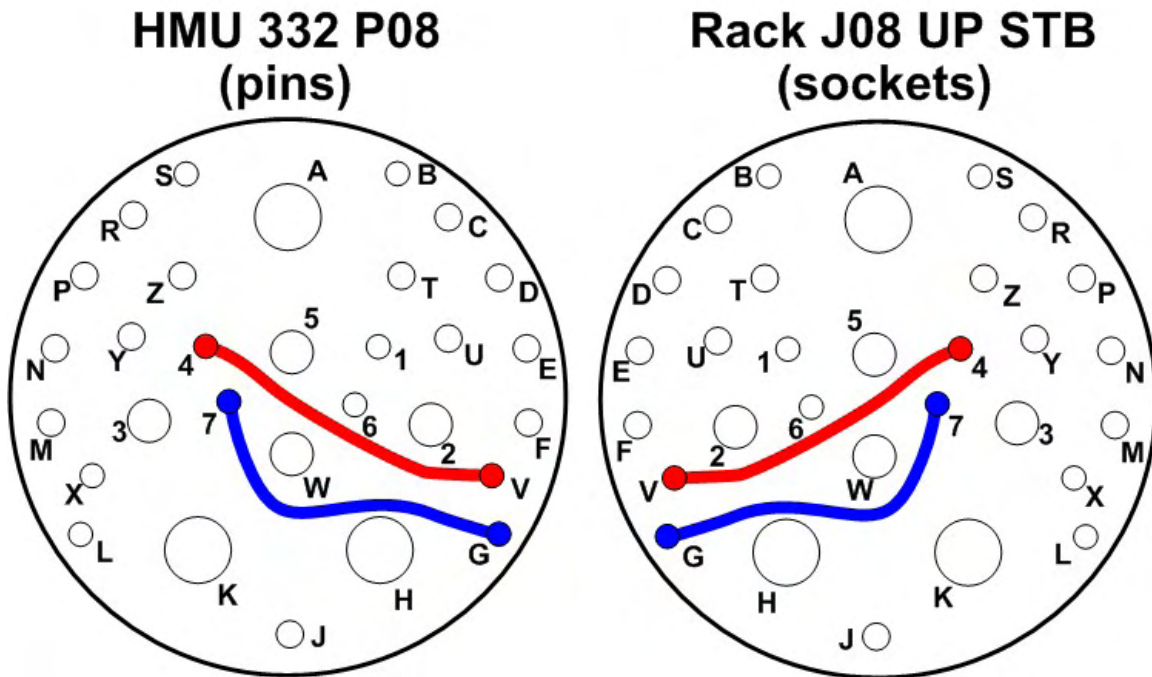


Figure 5. - Loop Back Jumper Arrangement (for both HMU 332 P08 and rack J08).

- NOD2S4
- 5.1 Remove previously installed jumpers, temp stow.
 - 5.2 Install 20 Ga. Socket/Socket Test Jumper Leads, 5 in (two) onto HMU 332 P08 connector to create Orbiter loop back.
 Jumper →|← pin V and pin 4
 Jumper →|← pin G and pin 7
 Refer to Figure 5.
 - 5.3 Install 20 Ga. Pin/Pin Test Jumper Leads, 5 in (two) onto NOD2S4 rack J08 UP STB connector to create CVIU loop back.
 Jumper →|← socket V and socket 4
 Jumper →|← socket G and socket 7
 Refer to Figure 5.
 - 5.4 Photo document jumper configuration (DCS 760 Camera).
 - 5.5 Notify **MCC-H** when complete with installation of both loop back jumpers.

16-1030 (MSG 064) NODE 2 CVIU 10 VIDEO TROUBLESHOOTING

Page 8 of 8 pages

6. TESTING OF CVIU 10 VIDEO WITH LOOPBACK JUMPERS (IF REQUIRED)

MCC-H

- 6.1 Perform {2.601 VDS Auto Route-Deroute}, Steps 1 through 4, (SODF: C&T: NOMINAL: VIDEO), then:
- 6.2 Determine whether ISS loopback test is successful based on ISS downlink video.

NOTE

Crewmember on Flight Deck will be the only source of pass/fail verification for Shuttle loopback test.

Shuttle
Flight Deck

- 6.3 Report to **MCC-H** whether Mon 1 view matches Mon 2.
- 6.4 Green Jumper - LDRI/ITVC
Mon 1, 2 - Source and Select as needed

7. RECONNECTING HMU 332 P08 AND INSTALLING CLOSEOUT (IF REQUIRED)

NOD2S4

- 7.1 **On MCC-H GO**, remove all Test Jumper Leads (four) between HMU 332 P08 connector and rack J08 UP STB connector.
- 7.2 Check pins/sockets on HMU 332 P08 connector and rack J08 UP STB connector to verify pins are straight and no FOD is present before remating connectors.
- 7.3 HMU 332 P08 →|← J08 UP STB (NOD2S4 rack UIP)
Refer to Figure 1.
- 7.4 Install NOD2S4-02 closeout panel and tighten (snug) fasteners (four) (5/32" Hex Head, Driver Handle, 1/4" Drive).
- 7.5 Stow test jumpers in ISS Pin Kit.
- 7.6 Stow any remaining tools, materials.

SARJ Get-Ahead Tasks

- The SARJ inspection during EVA 14 provided images of potential damage to the outboard race ring Datum A surface. The imagery is not conclusive as to whether it is damage (a divot) or debris buildup. We will be adding a SARJ Get Ahead to EVA 3 to be performed after you stow everything back at the A/L. This is the highest priority get ahead after the 1J/A tool relocations. You will revisit the divot location, take pictures, and attempt to remove the spot with an EVA wipe. In addition to this task, you will inspect and photograph the remaining single covers (5) that have not yet been inspected. 4 of the 5 covers will require taking a tape sample on the outer canted surface.
- A DOUG state file can be provided if you would like.

SARJ Cover Locations

Cover remove and inspection order

1E EVA 3:

EV1 and EV2:

Double Cover 18

Single Cover 16*

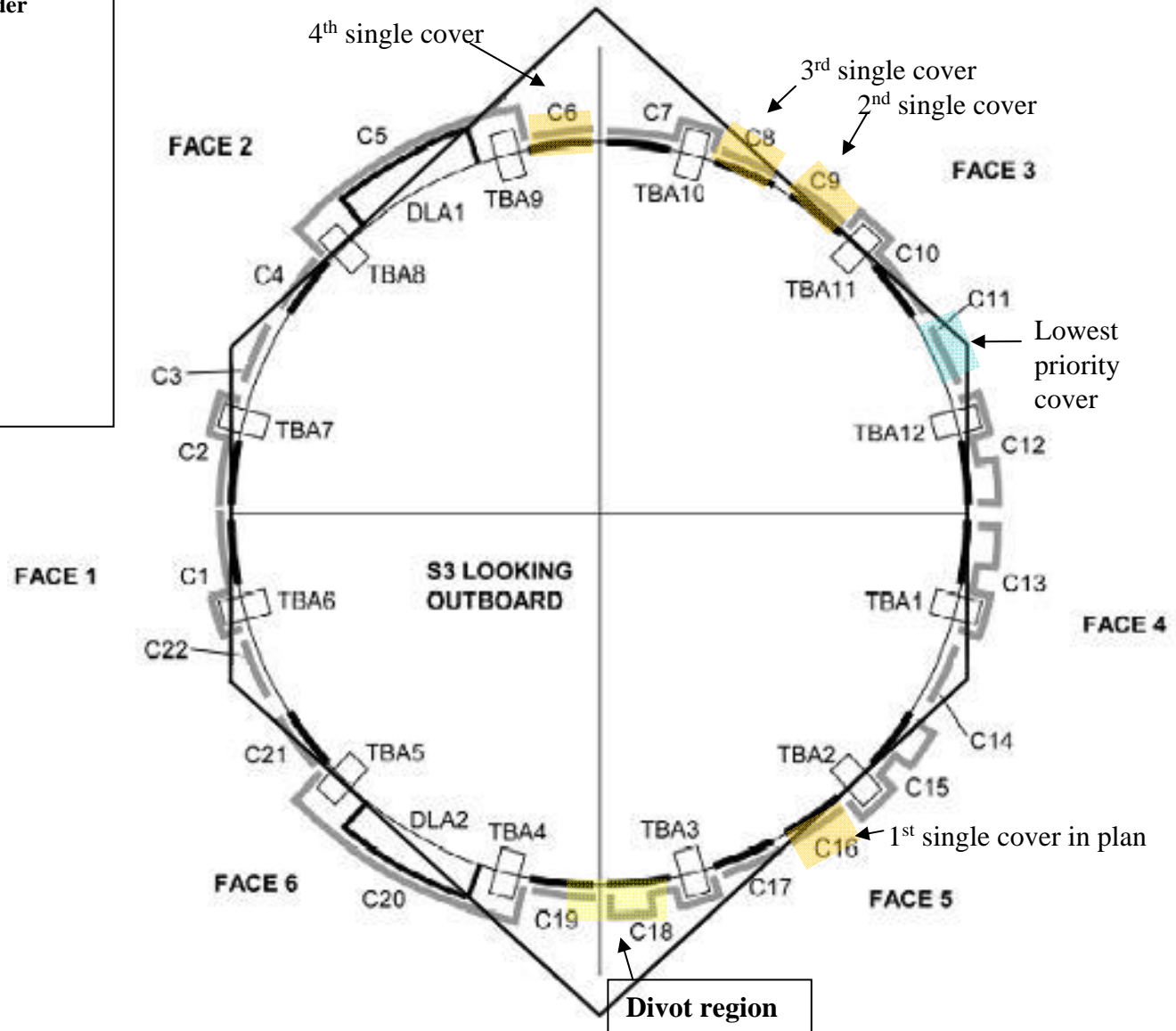
Single Cover 9*

Single Cover 8*

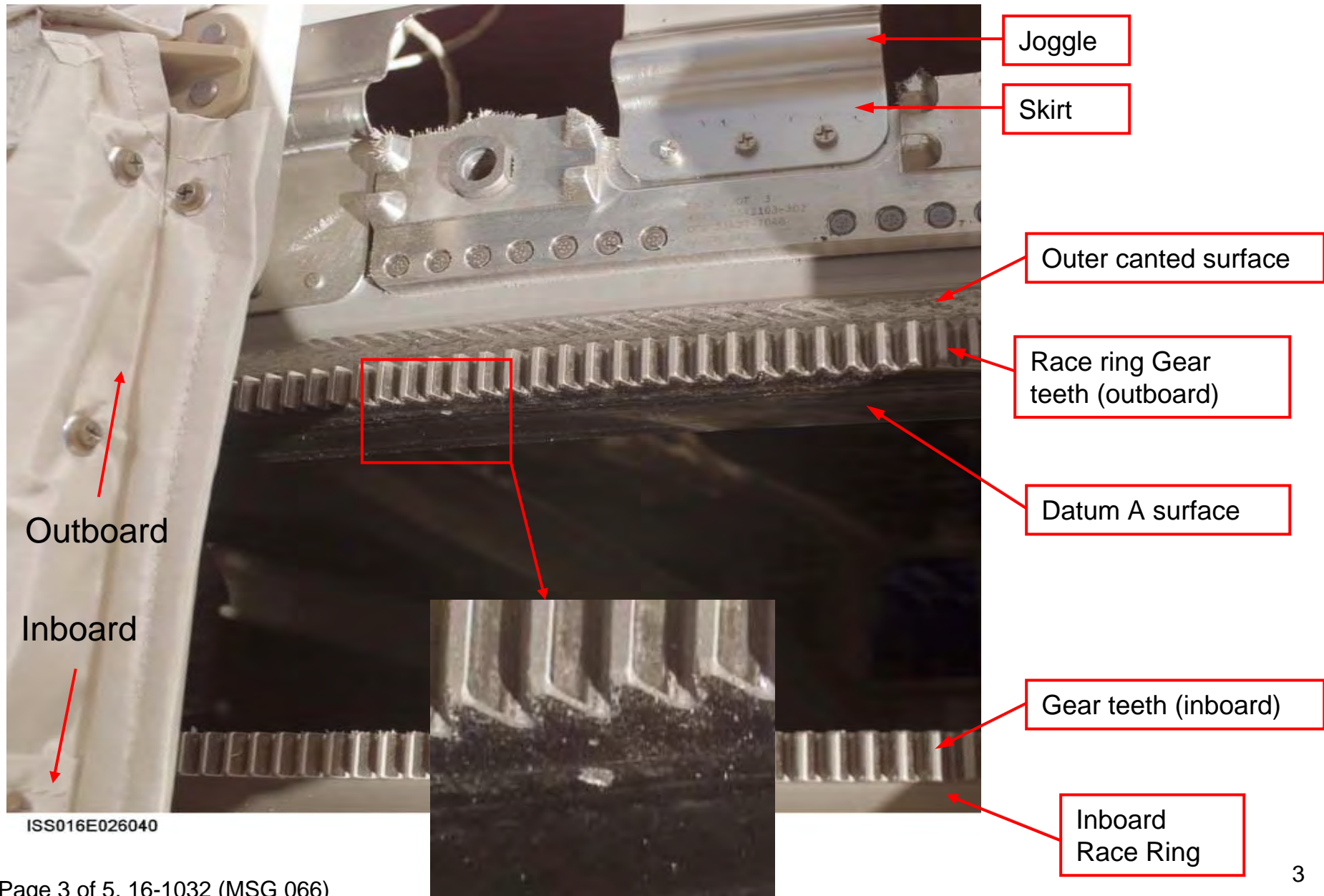
Single Cover 6*

Single Cover 11

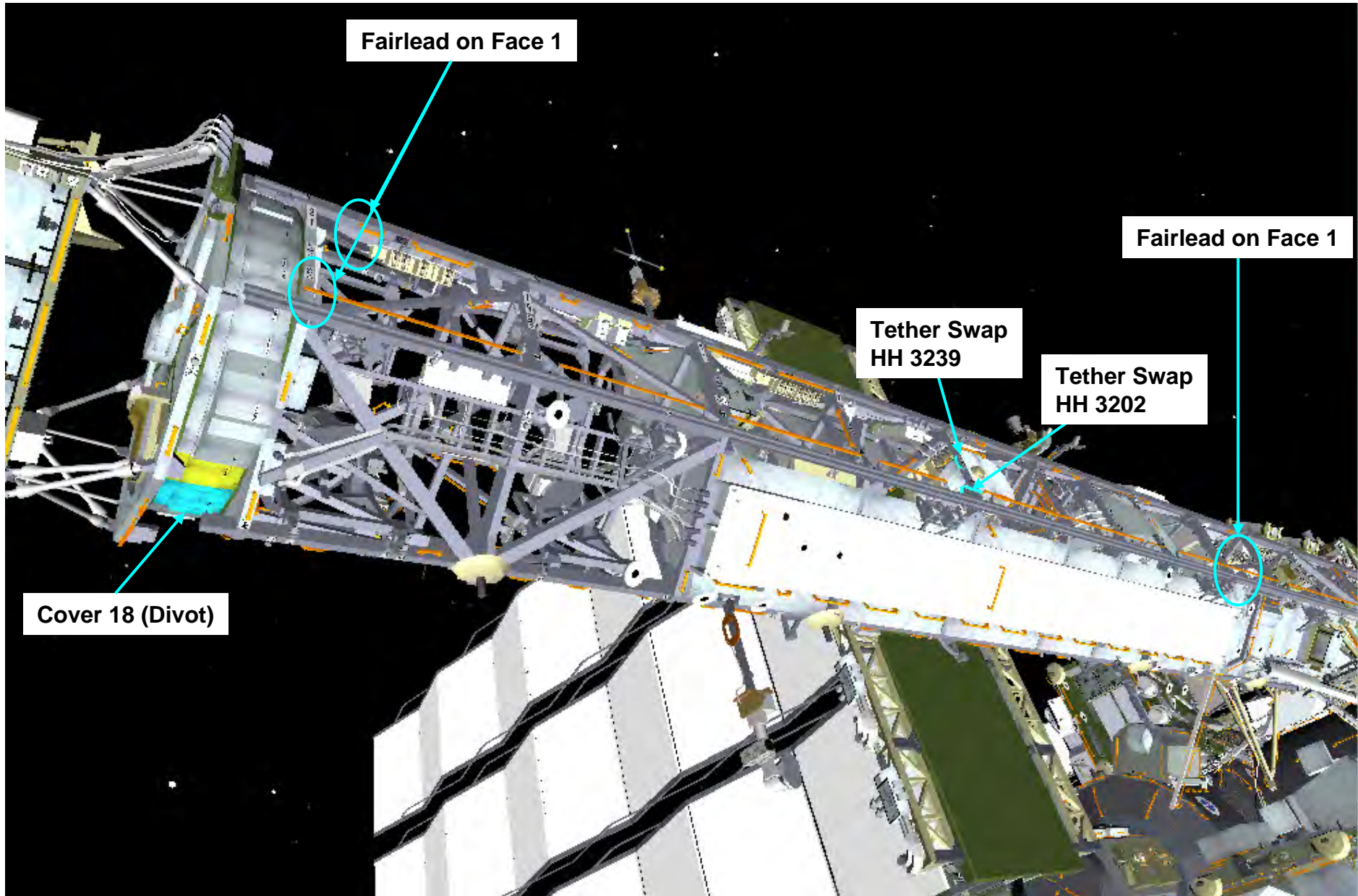
* - Take a Tape Sample



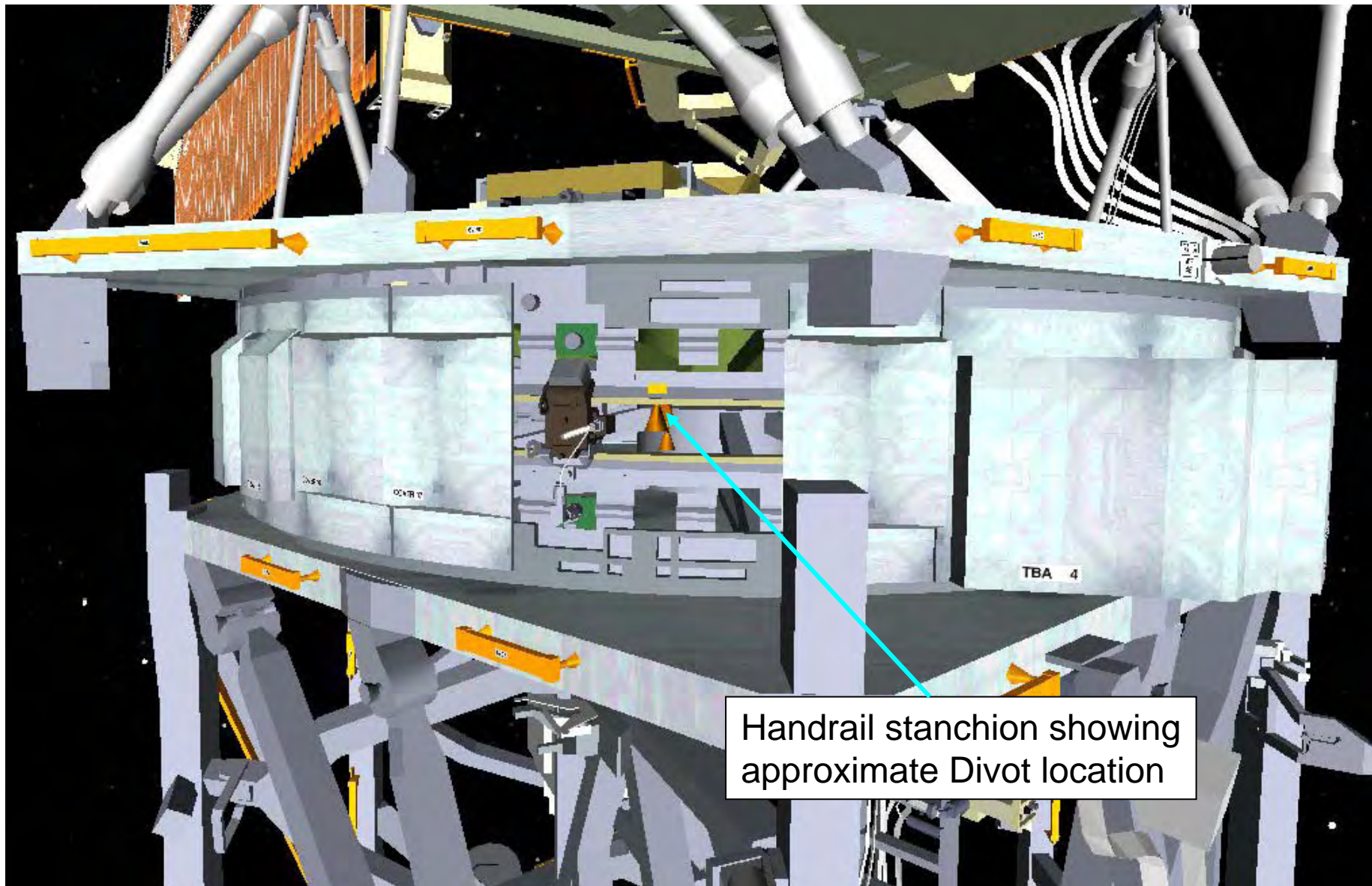
SARJ Terminology Refresher and Divot Location



Tether Routing Plan



Expected Location of Divot



Handrail stanchion showing approximate Divot location

SARJ INSPECTION

Tool Config

<input type="checkbox"/>	SARJ crewlock bag
<input type="checkbox"/>	Ret equip tether (Lg-eq) - airlock
<input type="checkbox"/>	Adj equip tether - ext
<input type="checkbox"/>	EVA wipes (3)
<input type="checkbox"/>	Kapton tape strips on door (8)
<input type="checkbox"/>	Configured per MSG 16457 (page 5), labeled 1E1 – 1E8
<input type="checkbox"/>	Ret equip tether (to integral D-ring)
<input type="checkbox"/>	Book clip w/ zip tie (aqua) tether point
<input type="checkbox"/>	Ret equip tether (to integral D-ring)
<input type="checkbox"/>	Book clip w/ zip tie (aqua) tether point
<input type="checkbox"/>	Ret equip tether (to ext D-ring) (EV1 overgloves)
<input type="checkbox"/>	Adj equip tether (hooks to door handle)
<input type="checkbox"/>	Digital camera w/ flash and mount (35 mm lens, w/ flash and bracket)
<input type="checkbox"/>	Adj equip tethers (2, secure camera to crewlock bag)

Each EV:

Additional Adj equip tether on MWS for fairleads

INHIBIT PAD

S3 SARJ
MCC

√ S3 SARJ locked at 300 degrees

When EV crew working within 2 ft or outboard of SARJ (planned during SARJ Inspection):

1. √DLA 1(2) – LOCKED
2. All motor setpoints set to zero
3. All motors deselected

OR

4. Both DLAs – LOCKED

SARJ INSPECTION – DATUM-A OUTBOARD RACE RING

Cover remove and inspection order

1E EVA 3:

EV1 and EV3:

Double Cover 18

Single Cover 16*

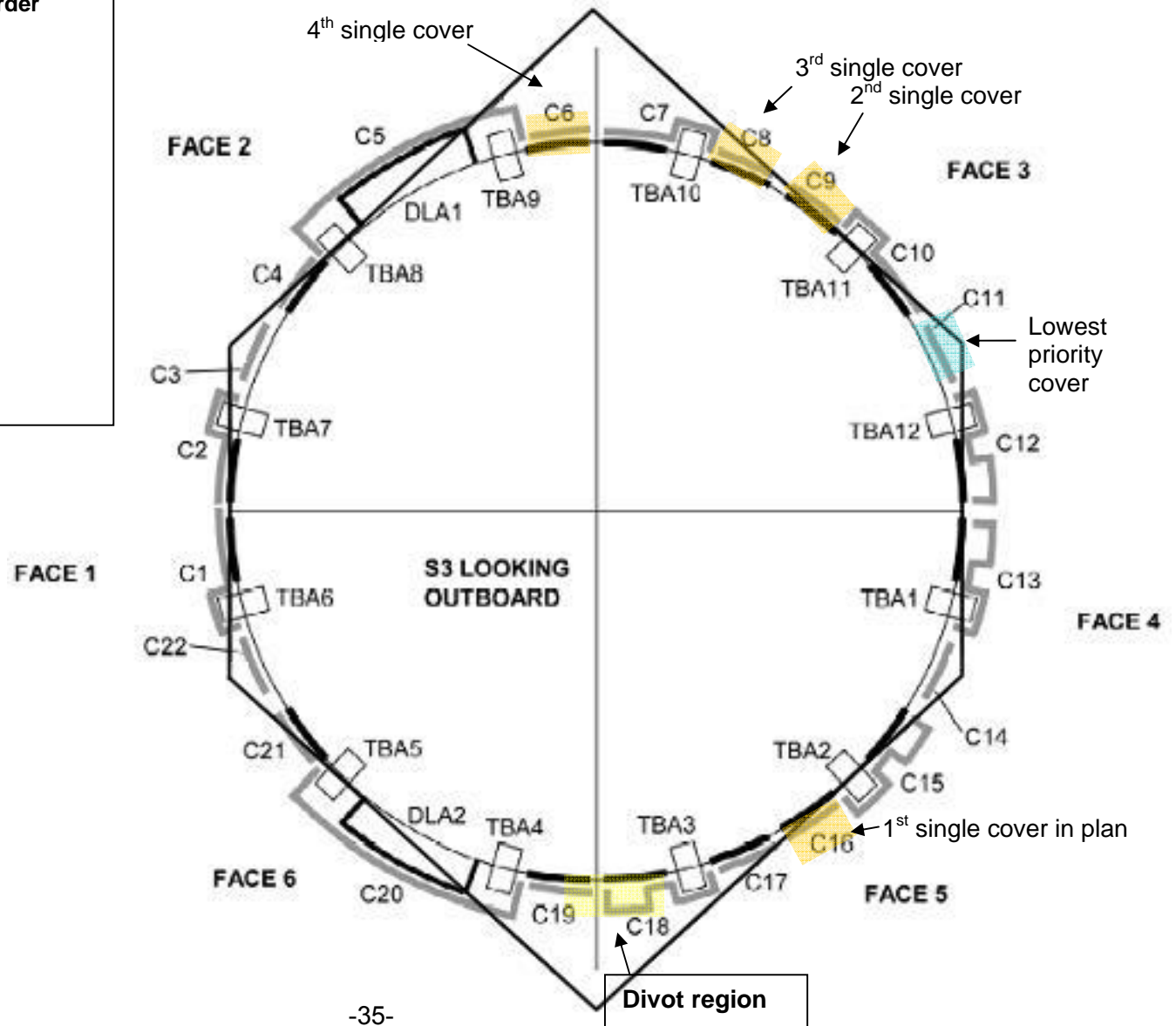
Single Cover 9*

Single Cover 8*

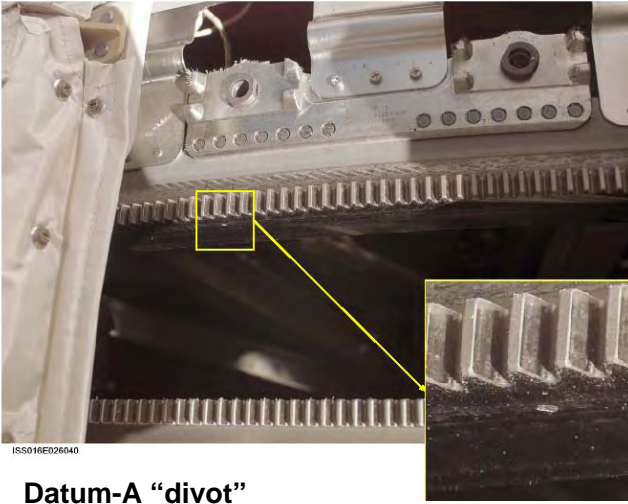
Single Cover 6*

Single Cover 11

* - Take a Tape Sample



SARJ INSPECTION – DATUM-A OUTBOARD RACE RING

IV	EV1 & EV3
<p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • First priority: Datum A divot inspection (divot is expected to be under cover 18) • Second priority covers 16, 9, 8, 6 • Third priority: cover 11 • Cover 18 is a double wide cover (6 inboard bolts) • Covers 6, 8, 9, 11, 16, 19 are single wide covers (4 inboard bolts) • For single cover inspections, perform best effort visual assessments of all adjacent structure • Because STBD TRRJ will continue to rotate, tether line fairleads are required on face 1  <p style="text-align: center;">Datum-A “divot”</p>	<div style="border: 2px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">WARNING</p> <ol style="list-style-type: none"> 1. Sharp edge - spring loaded captive EVA fasteners (SARJ MLI cover bolts); ends of springs may protrude 2. Avoid contact with any exposed sharp edges during cover removal and SARJ inspection </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">CAUTION</p> <p>The following precautions should be taken to prevent loss of inboard MLI cover fasteners during removal:</p> <ul style="list-style-type: none"> • Limit turn count to minimum required for fastener release • Minimize side loading of bolt head • Maintain axial force on fastener to compress spring during rotation </div> <p>SARJ INSPECTION SETUP</p> <ol style="list-style-type: none"> 1. At airlock, stow APFR w/ 55 ft tether (A/L STBD Toolbox WIF) and COL crewlock bag; keep spare 85 ft tethers 2. Retrieve SARJ crewlock bag with camera and flash from airlock 3. Translate up CETA spur; fairlead on face 1 4. Translate to S1 HH 3202 (EV1)/HH 3239 (EV3) (face 1 CETA rail) 5. Tether swap to spare 85-ft safety tether on S1 HH 3202 (EV1)/HH 3239 (EV3) <ul style="list-style-type: none"> □ Verify hook locked, reel unlocked 6. Translate to S3/S4 interface, fairlead on face 1 in-board of SARJ 7. Translate to SARJ cover 18 (face 5, nadir) <p>DATUM-A OUTBOARD RACE RING INSPECTION</p> <ol style="list-style-type: none"> 8. Inspect gloves; status MCC on RTV and Vectran state; remove overgloves as required 9. RET MLI cover 18 to adjacent cover 10. PGT[A6 (8.3), CCW2, 30.5] 6-Ext 7/16 release inboard cover fasteners, 9 turns only (add single turns incrementally as required for release) 11. Remove MLI cover 18; temp stow w/ previously installed RET and adj eq tether on adjacent cover <ul style="list-style-type: none"> □ Inspect backside of cover, both MLI and frame 12. Perform search on outboard race ring for ‘divot’ on Datum A surface (should be centered between adjacent covers) 13. Perform visual inspection of the ‘divot’ and report conditions to IV 14. Attempt to remove debris from Datum A surface with EVA Wipe 15. Report success of debris removal to IV 16. If debris can be removed, stow EVA wipe (inside-out and rolled up) with debris in crewlock bag for return to ground

SARJ INSPECTION – DATUM-A OUTBOARD RACE RING

IV	EV1 & EV3
	<p>17. If debris cannot be removed or damage is observed, retrieve digital camera/flash from crewlock bag</p> <p>18. Take images of the damage area w/ digital camera</p> <ul style="list-style-type: none"> • Focus only on the Datum A surface • Attempt 6-8 photos • Take photos at multiple angles (focused only on datum-A target) <p>19. Retrieve cover from temp stow location and re-install</p> <p>20. PGT[A1 (2.5), CW2, 30.5] 6-Ext 7/16 drive inboard cover fasteners, ~8 turns (Partially engage all MLI cover fasteners prior to final torque)</p>

SARJ INSPECTION – SINGLE COVER INSPECTION

IV	EV1 & EV3
<p style="text-align: center;"><u>NOTE</u></p> <ul style="list-style-type: none"> • Cover 7 was previously removed • Thermal constraints: <ul style="list-style-type: none"> ○ Any one additional cover in the Cover 1 to Cover 13 group may be removed for up to 1.5 hours. ○ Any two additional covers in the Cover 1 to Cover 13 group may be removed for up to 0.5 hours. Both additional covers must be reinstalled before the expiration of the 0.5 hour clock to prevent TBA over-temperature conditions. ○ Removal of covers 14-22 is thermally unconstrained 	<p style="text-align: center;"><u>SARJ SINGLE COVER INSPECTION</u></p> <p>Perform the following steps for covers 16, 9, 8, 6, 11 (in order), as time permits</p> <ol style="list-style-type: none"> 1. RET cover to adjacent cover 2. PGT[A6 (8.3), CCW2, 30.5] 6-Ext 7/16 release inboard cover fasteners, 9 turns only (add single turns incrementally as required for release) 3. Remove MLI cover; temp stow w/ previously attached RET and adj eq tether on adjacent cover <ul style="list-style-type: none"> □ Inspect backside of cover, both MLI and frame 4. Perform visual inspection of the following and report conditions to IV: <ul style="list-style-type: none"> A. General condition of all exposed SARJ surfaces <ul style="list-style-type: none"> I. Outboard race ring surface: <ul style="list-style-type: none"> a. Outer canted surface b. Datum A surface II. Outboard skirt and joggles III. Outboard race ring gear teeth B. Characterize debris accumulation locations 5. Take images of the following hardware w/ digital camera: <ul style="list-style-type: none"> • Take 4-6 close photos of each surface to capture entire surface once photos are combined <ul style="list-style-type: none"> A. Entire exposed outer canted surface of outboard race ring at normal incidence B. Outboard race ring Datum A surface 6. If lighting allows, inspect outboard race ring inner canted surface (look through joint) <p style="text-align: center;"><u>Note:</u> Steps 8-11 (tape sample collection) are for covers 16, 9, 8, and 6 only</p> 7. Retrieve tape strips from crewlock bag as reqd 8. Notify IV which # tape strips are used for SARJ hardware <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;"><u>CAUTION</u> Avoid contacting Inboard race ring bearing surfaces with Kapton tape</p> </div> <ol style="list-style-type: none"> 9. Collect tape samples from a single location on the outer canted surface of the outboard race ring 10. Fold used tape samples in half (sticky side to sticky side) and stow in trash bag 11. Retrieve SARJ cover from temp stow location and install 12. PGT[A1 (2.5), CW2, 30.5] 6-Ext 7/16 drive inboard cover fasteners, ~8 turns (Partially engage all MLI cover fasteners prior to final torque)

SARJ INSPECTION, SINGLE WIDE COVERS DATA TABLE

Cover:		18/19 (divot)	16	9	8	6	11
Back side of MLI cover and frame							
General Condition							
Outboard Race Ring Debris Inspection	Outer Canted		P (4-6) #:	P (4-6) #:	P (4-6) #:	P (4-6) #:	P (4-6)
	Datum A	P (6-8)	P (4-6)	P (4-6)	P (4-6)	P (4-6)	P (4-6)
	Skirt and Joggles						
	Gear Teeth						
	Inner Canted (if light permits)						
MLI Cover (green light, bolt seated)		18 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Rem: A6, CCW2, 30.5		19 <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Inst: A1, CW2, 30.5		<input type="checkbox"/> <input type="checkbox"/>					

P = photos requires
= Kapton Sample Required

SARJ INSPECTION CLEANUP

IV	EV1 & EV3
<p><u>Crewlock bag inventory</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Adj equip tether – ext <input type="checkbox"/> Ret equip tether – ext (overgloves) <input type="checkbox"/> Adj equip tether – ext (overgloves) <input type="checkbox"/> Digital camera (35 mm) w/ flash and mount <input type="checkbox"/> Adj equip tethers for digital camera (2) <input type="checkbox"/> 2 EVA wipes (1 in trash bag) <input type="checkbox"/> Book clips (2) <input type="checkbox"/> Ret equip tethers for book clips (2) 	<p><u>SARJ INSPECTION CLEANUP</u></p> <ol style="list-style-type: none"> 1. Inspect gloves; status MCC on RTV and Vectran state 2. Don overgloves 3. Attach digital camera with flash to crewlock bag 4. Retrieve crewlock bag; perform tool inventory 5. Retrieve SARJ fairleads 6. Translate to A/L safety tether (S1 HH 3202 and HH 3239) 7. Tether swap to A/L 85-ft safety tether <ul style="list-style-type: none"> <input type="checkbox"/> Verify load strap hook slide lock – L <input type="checkbox"/> Check safety tether reel unlocked 8. Stow spare 85-ft safety tether anchor hook on MWS 9. Translate to top of CETA spur; retrieve fairleads 10. Translate to airlock 11. Retrieve 55' safety tether from APFR in A/L STBD toolbox WIF 12. Go to EVA 3 Ingress; add SARJ crewlock bag stow to EV1 step 8

SARJ INSPECTION - TASK DATA

Tools:

EV1 (FF)	EV3 (FF)
See Tool Config	

EVA Fasteners:

Fastener Name	Label	Qty	Head Size	Install Torque (ft-lb)	Release Torque (ft-lb)	Failure Torque (ft-lb)	Turns	RPM
SARJ Cover Bolts	N/A	4 or 6	7/16"	0.8-3.8 on-orbit	Expect: 3.4 PGT: 8.3	Remv: 13.7 Inst: 3.8	7-9	30

EVA Connectors: NA

Foot Restraints: NA

Notes:

1. First priority: Datum A divot inspection (divot is expected to be under cover 18)
2. Second priority covers 16, 9, 8, 6
3. Third priority: cover 11
4. Cover 18 is a double wide cover (6 inboard bolts)
5. Covers 6, 8, 9, 11, 16, 19 are single wide covers (4 inboard bolts)
6. For single cover inspections, perform best effort visual assessments of all adjacent structure
7. Because STBD TRRJ will continue to rotate, tether line fairleads are required on face 1
8. Any one additional cover in the Cover 1 to Cover 13 group may be removed for up to 1.5 hours.
9. Any two additional covers in the Cover 1 to Cover 13 group may be removed for up to 0.5 hours. Both additional covers must be reinstalled before the expiration of the 0.5 hour clock to prevent TBA over-temperature conditions.
10. Cover 7 was previously removed
11. Thermal constraints:
 - a. Removal of covers 14-22 is thermally unconstrained
 - b. Any one additional cover in the Cover 1 to Cover 13 group may be removed for up to 1.5 hours.
 - c. Any two additional covers in the Cover 1 to Cover 13 group may be removed for up to 0.5 hours. Both additional covers must be reinstalled before the expiration of the 0.5 hour clock to prevent TBA over-temperature conditions.

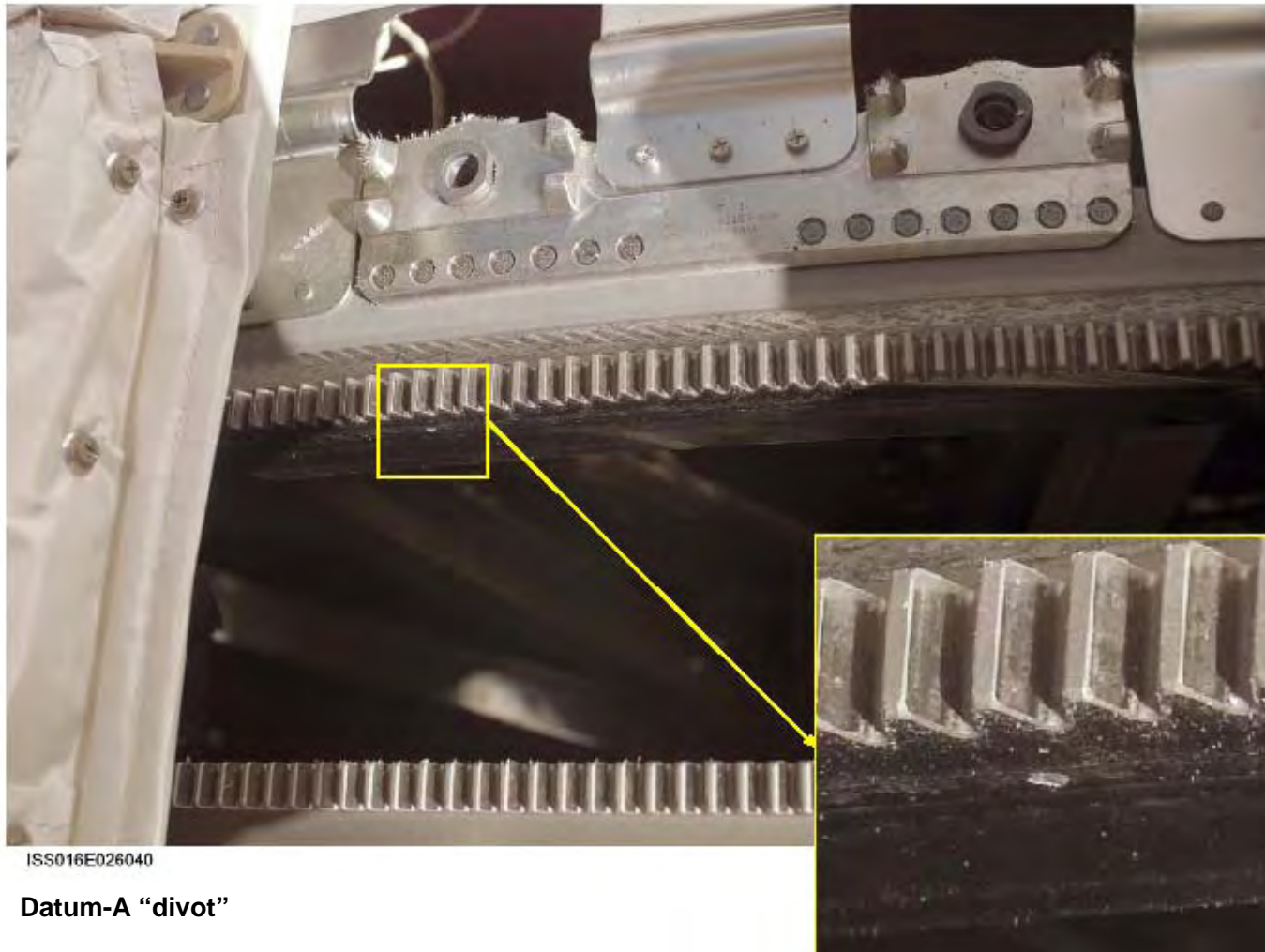
Cautions:

1. Do not use tape on inboard race ring or gear teeth
2. The following precautions should be observed to prevent loss of inboard MLI cover fasteners during removal:
 - Limit turn count to minimum required for fastener release
 - Minimize side loading of bolt head
 - Maintain axial force on fastener to compress spring during rotation
3. SARJ Race Ring is not tolerant to nicks and scratches. Exercise care within the vicinity of the Race Ring while handling components.
4. Do not reengage outboard MLI cover spring clamps during re-installation of cover. Spring clamp engagement will preclude future SARJ rotation.

Warnings:

1. Sharp edge - spring loaded captive EVA fasteners (SARJ MLI cover bolts); ends of springs may protrude
2. Potential exists for sharp edge hazards on the TBA bearing package and mount. Attempt to limit contact to tether points only.
3. Avoid contact with any exposed sharp edges during cover removal and SARJ inspection
4. Verify SARJ is locked (one DLA locked, one DLA engaged) to prevent rotation while EV crew is in vicinity of rotational plane plus 6 feet.

SARJ INSPECTION - TASK DATA



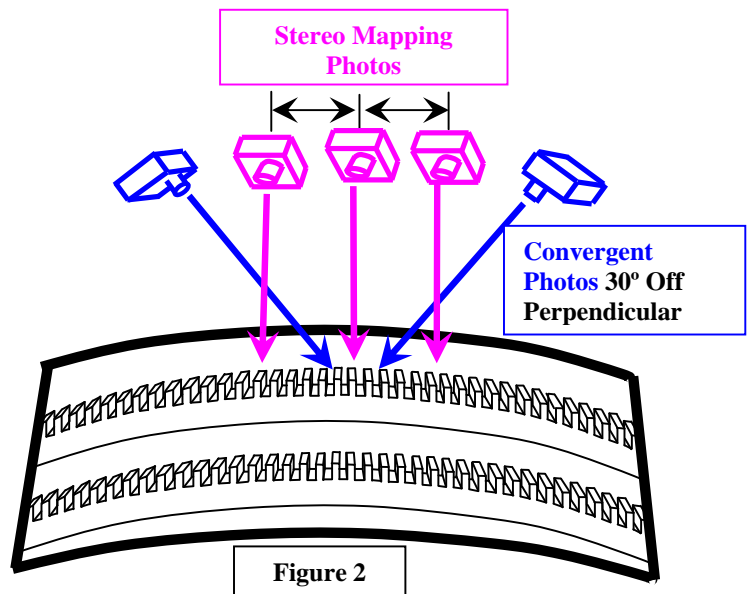
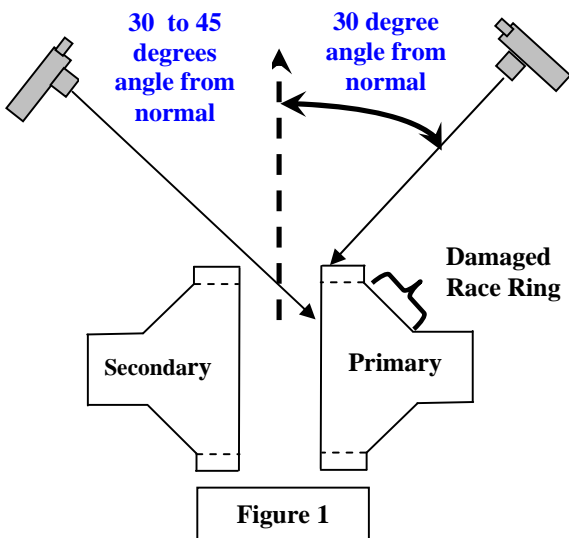
ISS016E026040

Datum-A "divot"

**Photography Documentation Request for SARJ Inspection
For STS-122 EVA Inspection**

From the Image Science and Analysis Group /KX

1. Take image to identify under which cover you are imaging (e.g. TBA number, single covers show cover label).
2. **General Photo Guidelines:** Acquire stereo mapping images of the entire damaged race ring surface under the covers (Single covers – 6 to 7 shots, Double covers – 11 to 13 shots). Images should be taken with the **35mm** lens Camera with/without flash depending on natural illumination. (Remember that the flash should be turned off between shots to save the battery)
 - a. The first and last images should be convergent imagery. Acquire one photo 30° left of the perpendicular and the other photo 30° right of the perpendicular.
 - b. The other images should be taken perpendicular to the damaged surface (race ring or Datum "A"), with the camera tilted 30° to 45° from the surface normal so that it faces into the damaged surface (see figure 1).
 - c. Stereo photos should be taken ~18 to 24 inches from race ring with a lateral shift of 6" between photo
 - d. Photos should be centered and focused on the surface containing the damage.
 - e. Report approx. number of shots per cover. There are ~250-300 shots per camera available.



16-1036 (MSG 069) - Airlock Handrail Swatch Test Tool Prep

Page 1 of 4

OBJECTIVE:

Build a tool to use for performing a sharp edge swatch test on the ISS Airlock Handrail impact crater. One overglove will be donned on the crewmember's dominant hand during EVA to perform a swatch test. A second overglove will be wrapped around an EVA socket to provide a harder surface behind the swatch. Both tools will remain in the airlock until the swatch test is performed.

DURATION:

30 min

CREW:

1 Crew

TOOLS REQUIRED:

Item	Part Number	Location
Overglove (qty 2, old config, not laced) Note - select the two least damaged overgloves of this configuration	0106-813600-03/04	A/L1O1, Ziplock for EVA Overgloves (may be some in Staging Bag as well)
7/16 x 9-in rigid socket	SEG33106930-305	A/L1O0, behind closeout: CTB 1161, PGT Hardware
Zip Ties (2) Note - zip ties are aqua colored, 7.31 inch	SDD13101649-302	A/L1D2, behind closeout: CTB 1221, EVA Camera Accessories
RET w/ pip pin OR Socket Caddy	SEG33106164-383 SEG33106938-301	Tether Staging Area Crewlock Bag #4 (NTA Tools)

SWATCH TOOL PREP



Figure 1. - Final swatch tool configuration

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1. Remove any loose or hanging RTV pads from overgloves.
2. Photograph condition of both overgloves to document pre-test status.
3. Set aside one overglove (dominant hand) - it will be donned during EVA to perform swatch test.
4. With other overglove palm facing you, turn overglove thumb inside out (Fig. 2).



Figure 2. - Step 4.

5. Fold velcro wrist strap to backside of overglove (will end up inside of the swatch tool, out of the way).
6. Insert socket into pinky side of overglove until tip just protrudes (Fig. 3).



Figure 3. - Steps 5 & 6 - Laced overglove shown, recommend non-laced ones.

7. Roll overglove tightly around socket until tip of socket aligns with opening into overglove forefinger (Fig. 4). Ensure overglove tether point is accessible.



Figure 4. - Step 7.

8. Insert socket into overglove forefinger; align overglove tether loop with pip pin hole in socket (Fig. 5).



Figure 5. - Step 8.

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9. Wrap Velcro strap tightly around base of tool (Fig. 6).



Figure 6. - Step 9.

10. Install Zip Ties (2) approximately 3-in apart, folding excess material under zip tie as required to keep the roll tight (Fig. 7).



Figure 7. - Step 10.

11. Trim off loose ends of zip ties, ensuring no sharp edges remain.
12. Install pip pin (from RET or socket caddy) through overglove tether point and into socket.
13. Configure Overglove and Swatch Tool with RETs in airlock for EVA 3. Inform **MCC-H** of the config used (socket caddy or RET, number of RETs).

Airlock Handrail Inspection

- Photograph area
 - 3-4 photos, various angles, in daylight
 - Use 35 mm lens, 18-24 inches from handrail
- Perform swatch tests
- Stow swatch samples
 - Avoid further contact with swipe locations to preserve for ground analysis

Swatch Testing

- Four swatch samples
 - RTV and Vectran on Swatch Tool
 - RTV and Vectran on Overgloves (on dominant hand)
- For each swatch sample:
 - Press swatch firmly against area of interest
 - Slide swatch across damaged area in single stroke
 - Perform one stroke in each direction (see Fig 1)
 - Do not repeat tests at same location on sample (see Fig 2)
- Once swatch sample complete, report findings to MCC-H
- Attempt to feel for surface variations during each stroke; report any noticeable material snagging to MCC-H after each stroke

Figure 1. Orientation for Inspection of Handrail Damage

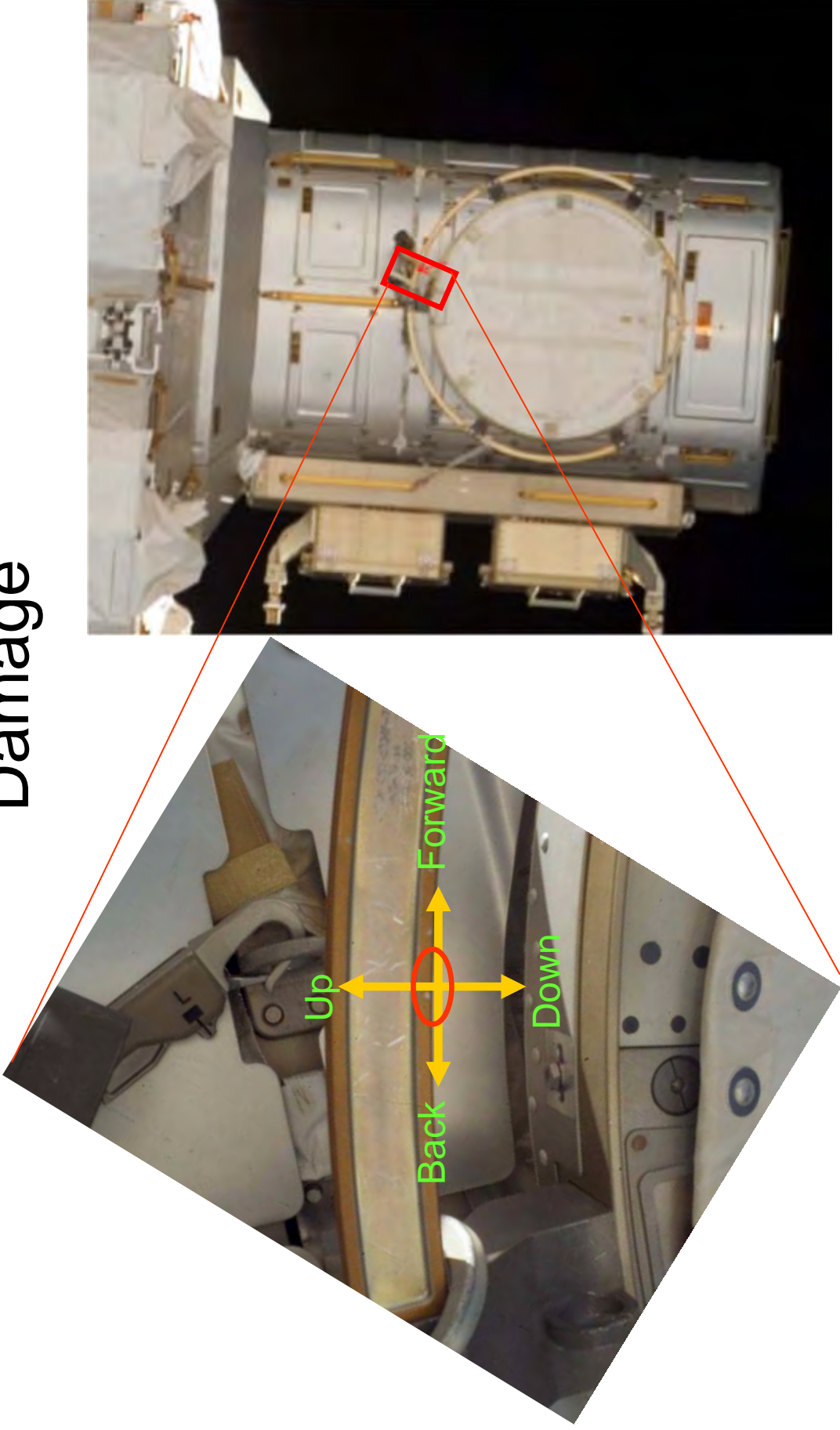
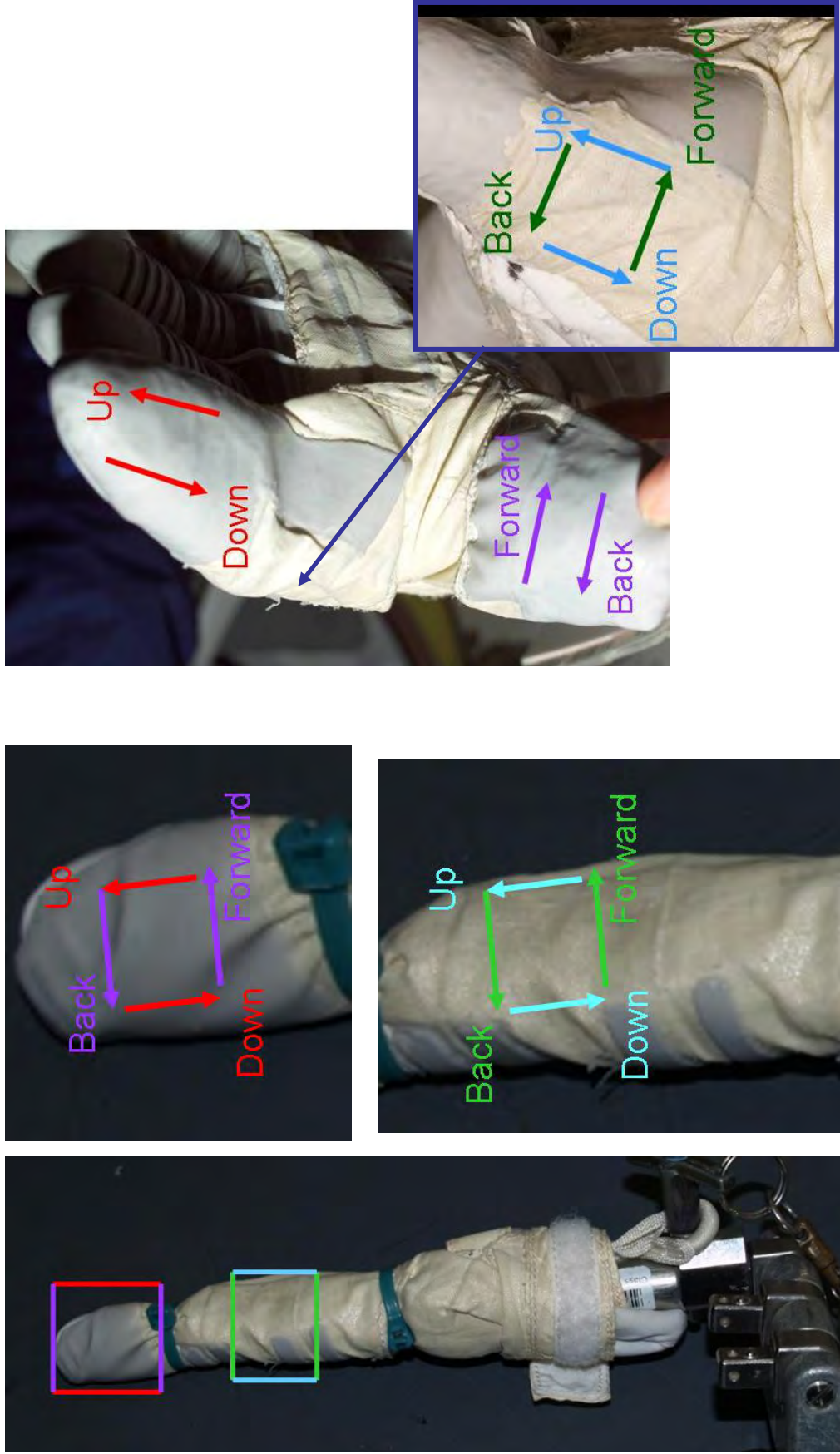


Figure 1

Figure 2. Sample locations



Overglove

Swatch Tool