

STS-124/1J

FD 08 Execute Package



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Approved by FAO: Jaime Marshik

Last Updated: Jun 7 2008 9:44AM GMT

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

1 MSG INDEX

2

| 3 <u>MSG NO.</u> | <u>TITLE</u> |
|------------------|---|
| 4 061 | JEMRMS ALL STOP PROTOCOL |
| 5 062 | FD08 FLIGHT PLAN REVISION |
| 6 063 | FD08 MISSION SUMMARY |
| 7 064 | FD08 TRANSFER MESSAGE |
| 8 065 | FD08 MMT SUMMARY |
| 9 066 | FD8 PAO Event Summary - CNN, WCBS-TV, WDAY-TV |
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| 11 068 | Stowage Locations for FD08 Plan (GMT 159/160) |
| 12 069 | Lab RWS SSC Reposition |
| 13 070 | FD08 EVA Deltas |
| 14 072 | 1.104 JEMRMS Partial Deploy to EVA 3 Start |

15

16 1. Post Sleep Cryo Config

17 For today's cryo config, the active tanks will be O2 Tanks 2, 3 and 4, and H2 Tanks 2
18 and 5.

19

20 **R1 O2, H2 MANF VLV TK2 (two) - OP (tb-OP)**
21 **O2 TK3 HTRS A, B (two) - AUTO**

22

23 **A11 CRYO TK4 HTR O2 A - AUTO**

24

25 **A15 CRYO TK5 HTR O2 A - OFF**

26

27 2. Cryo System Reconfig

28 Due to the potential for destratification in CRYO tanks during vehicle maneuvers, EGIL
29 has inserted steps into today's timeline, prior to the maneuver to the Waste Dump
30 attitude to preemptively activate cryo heaters. Once the maneuvers are completed,
31 EGIL will provide additional steps real-time to reconfigure the CRYO system.

32

33 3. FCMS Items

34 Due to a nuance with the onboard network, the FCMS data file may not automatically be
35 copied to the KFX laptop at the end of the procedure. If you receive an error message
36 stating "There was a problem copying the file. Try copying the file manually," notify MCC
37 and we will downlink the file from the WINDECOM laptop.

38

39 4. Items for Aki

- 40 a. Could you report the S/Ns or the B/Cs for the power cables, power supplies,
41 network cables and multi-use brackets/desks specific to each "laptop" for the two
42 SSC's installed in the JPM?
- 43 b. Thank you for your hard work every day. Yesterday we noticed that one of the
44 two cabin duct maintenance caps was floating in the JPM. Please stow this duct
45 cap and confirm that both duct caps are in the Equipment Bag Assy "1J
46 Activation Kit" (P/N G11F5160-1) at JPM1D7.
- 47 c. We noticed in a photo that the FDS partition at JPM1F6 is peeled off. Please re-
48 attach the FDS partition and report the status to SSIPC.
- 49
- 50

1 5. Missing PWR S/N 2002

2 PWR S/N 2002 was reported missing. The last known location of this PWR was
3 A/L1D1_B2. Another possible location could be near the OGS rack. If not at either of
4 these locations, check with an ISS crewmember to determine alternate location of this
5 PWR. If PWR S/N 2002 is not found, dump remaining PWRs S/Ns, 1007, 1025, 2003,
6 and 2004 as planned. Report status of PWR S/N 2002 to MCC-H.
7

8 6. Waste Water/PWR Dumps

9 The waste tank (waste dump line) and 5 PWRs (supply dump line) will be dumped
10 simultaneously. Once the Waste Water Dump is complete, 2 CWCs will be dumped
11 through the waste line. DO NOT dump the PWRs and CWCs simultaneously to preclude
12 nozzle icing.

13 Prior to opening either dump valve, verify with MCC-H in proper dump attitude.
14

15 a. WASTE WATER DUMP

16 Perform a Waste Water Dump using SUPPLY/WASTE WATER DUMP (ORB
17 OPS, ECLS) p. 5-2. MCC-H will TMBU limits.

18 Dump the waste tank to 5%. Waste nozzle open time will be ~15 minutes.
19

20 After completing Step I-2 (dump termination), proceed directly to CWC
21 OVERBOARD DUMP (see item 7 below).
22

23 b. PWR DUMP – SUPPLY LINE

24 Perform PWR DUMP – SUPPLY LINE (ORB OPS, ECLS) p. 5-40. Dump
25 PWR S/Ns 1007, 1025, 2002, 2003, and 2004. MCC-H will TMBU limits.
26 It is not necessary to close the Supply H2O Dump Valve in between each
27 PWR in Step 4.
28

29 Dump the PWRs even if they appear empty to ensure any residual air is
30 removed prior to refilling the bags.
31

32 Step 6 (POST-DUMP RECONFIG) does not have to be performed
33 immediately following PWR dump termination. Temp stow the PWRs near
34 the Galley for future fills. Stow the B-B hose and R-Y QD in the Ziploc bag
35 and label it “USED” with gray tape. Stow the Ziploc bag in the CHCK.
36

37 7. CWC Overboard Dump

38 Verify that the PWR Dumps are complete prior to dumping the CWCs. DO NOT dump
39 PWRs and CWCs at the same time. ISS Technical CWC S/N 1072 must be dumped
40 first to prevent contaminating the bag with a used hose.
41

42 Perform CWC OVERBOARD DUMP (ORB OPS, ECLS) p. 5-32. Dump ISS Technical
43 CWC S/N 1072 first, followed by Shuttle Condensate CWC S/N 5050. Begin with Step A
44 then go to Step D. Step C (Heater Activation) is not required; the heater was left on after
45 the Waste Water Dump. MCC will TMBU limits.
46

47 Waste nozzle open time will be ~18 minutes for the ISS Technical CWC and ~50
48 minutes for the Shuttle Condensate CWC. When the CWC dumps are complete, temp
49 stow CWC S/N 5050 for use on FD10. ISS Technical CWC s/n 1072 may be re-stowed
50 at NOD1D2.
51

MSG 062A - FD08 FLIGHT PLAN REVISION

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8. Lab RWS SSC Reposition

We have noticed the SSCs providing extra camera views for SSRMS Ops have been positioned directly behind RWS monitors 1 and 3. There are concerns that this position may cause the RWS monitors to overheat due to airflow blockage to the monitor fans. Therefore, we have added some time into the timeline today for you to reposition the SSCs to be above the monitors. MSG 069 has some images of how the SSCs were positioned on past missions.

9. FD8 EVA Deltas for Potential Port SARJ Inspection

Mike and Ron,

As you are aware, consideration is being given to revisit the Port SARJ during EVA 3. We are uplinking a briefing that will point out areas of interest and provide potential changes to EVA 3 Tool Config to include tools that might be used to collect samples. We expect to know early today if this task will be added to EVA 3. Reference MSG 070.

10. REPLACE PAGES 2-26, 2-28 and 3-80 THROUGH 3-89.

GMT 06/07/08 (159)

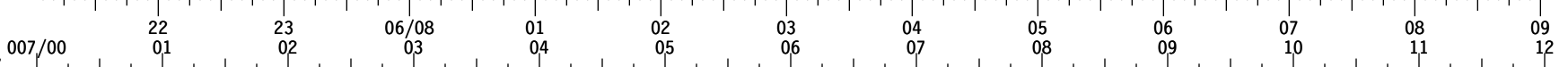
MET Day 006

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 007/00

| | | | | | | | | | | | | | | | | | | | |
|---------|-----------------|----------------|------------|-------------------|-------------------|-------------------|---------------------|--------------------|-------------------|-----------------------|-----------------|-----------------|-----------|--------------------|------|-----------------------|----------------|-------------|--|
| STS-124 | FD08 | SLEEP | POST SLEEP | U P E D I R A T | A M P R I V O R | MDDK XFER | W C N D - - T I | C O N D | MDDK XFER | C M N D - - T I | MDDK XFER | EXERCISE | MDDK XFER | PEAVO ENT | MEAL | MDDK XFER | X T F R E I | B F R I E F | |
| | PLT HAM | SLEEP | POST SLEEP | S M I R N M V R ^ | W I A N S I T T E | DUMP PWR | MDDK XFER | FLTR CLN - INSPECT | C I W N C I T T S | F O A M A P P S W A P | F C M S O P S | C T W C R I C M | C X F E R | PEAVO ENT | MEAL | MDDK XFER | EXER CISE | | |
| | MS1 NYBERG | SLEEP | POST SLEEP | S M R N M V S ^ | A M I A R M V L | S S C | MDDK XFER | EXERCISE | B U S - I | JEMRMS-INIT-DEPLOY | B U S - T | PEAVO ENT | MEAL | JLP VEST OUTFIT 1A | | | | | |
| | MS2 GARAN | SLEEP | POST SLEEP | E _ L K P R E P | EVA TOOL CONFG | EXERCISE | TVCIC RMV | TVCIC INST | PEAVO ENT | MEAL | MDDK XFER | CGSE RACK RCNFG | | | | | | | |
| | MS3 FOSSUM | SLEEP | POST SLEEP | E _ L K P R E P | EVA TOOL CONFG | M B T A X T / ^ | MDDK XFER | TVCIC RMV | TVCIC INST | PEAVO ENT | MEAL | MDDK XFER | EXERCISE | | | | | | |
| | MS4 HOSHIDE | SLEEP | POST SLEEP | D J R R A M S ^ | EXERCISE | H R M - I | JEMRMS BUS MON S/U | JRMS HRM RELEASE | D R Y | JEMRMS-INIT-DEPLOY | D J R R A M S ^ | PEAVO ENT | MEAL | JLP VEST OUTFIT 1A | | | | | |
| DN | FE-2 REISMAN | SLEEP (8.5) | PS | PW | DPC | F N L K C K T R M | T M V N I T S | HANDOVER | CEVIS | TVIS | MEAL | HANDOVER | | | | | | | |
| EXP 17 | ISS CDR VOLKOV | SLEEP (8.5) | PS | * B M P 0 1 I N I | P S D P C P W | K P T - 2 E X E 2 | U O R B G S A N | D 3 3 | RED | P A O S U | MEAL | COX-MNT | H O T O K | CEVIS | IMS | P W | | | |
| | FE-1 KONONENKO | SLEEP (8.5) | PS | PW | DPC | И П 1 M N T | С И 3 И П К 1 R & R | VELO + RED | MEAL | K P T - 2 - E X E | TVIS | | | | | | | | |
| UP | FE-2 CHAMITOFF | SLEEP (8.5) | PS | PW | DPC | T M V N I T S | HANDOVER | DCS T/A | PMC | CEVIS | MEAL | HANDOVER | | | | | | | |
| STS | ORBIT DAY/NIGHT | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | | | | | | | | | |
| | TDRS W -171 | | | | | | | | | | | | | | | | | | |
| | TDRS E -46 | | | | | | | | | | | | | | | | | | |
| | Z 275 | | | | | | | | | | | | | | | | | | |
| | ORB ATT | BIAS -XLV -ZVV | | | *R PAO-EVENT | | | BIAS -XLV +YVV | | | *CMG TO STS | | | *STS TO CMG | | | BIAS -XLV -ZVV | | |
| NOTES | | | | | | | ^EVA3 VIEW | | | ^COND TERM/INIT | | | ^INSTALL | | | #JEM DRAG-THRU DSCNCT | | | |
| | | | | | | | #JEM DRAG-THRU CNCT | | | #INSTALL | | | | | | | | | |
| | | | | | | | ^FINAL ACT PT2 | | | | | | | | | | | | |

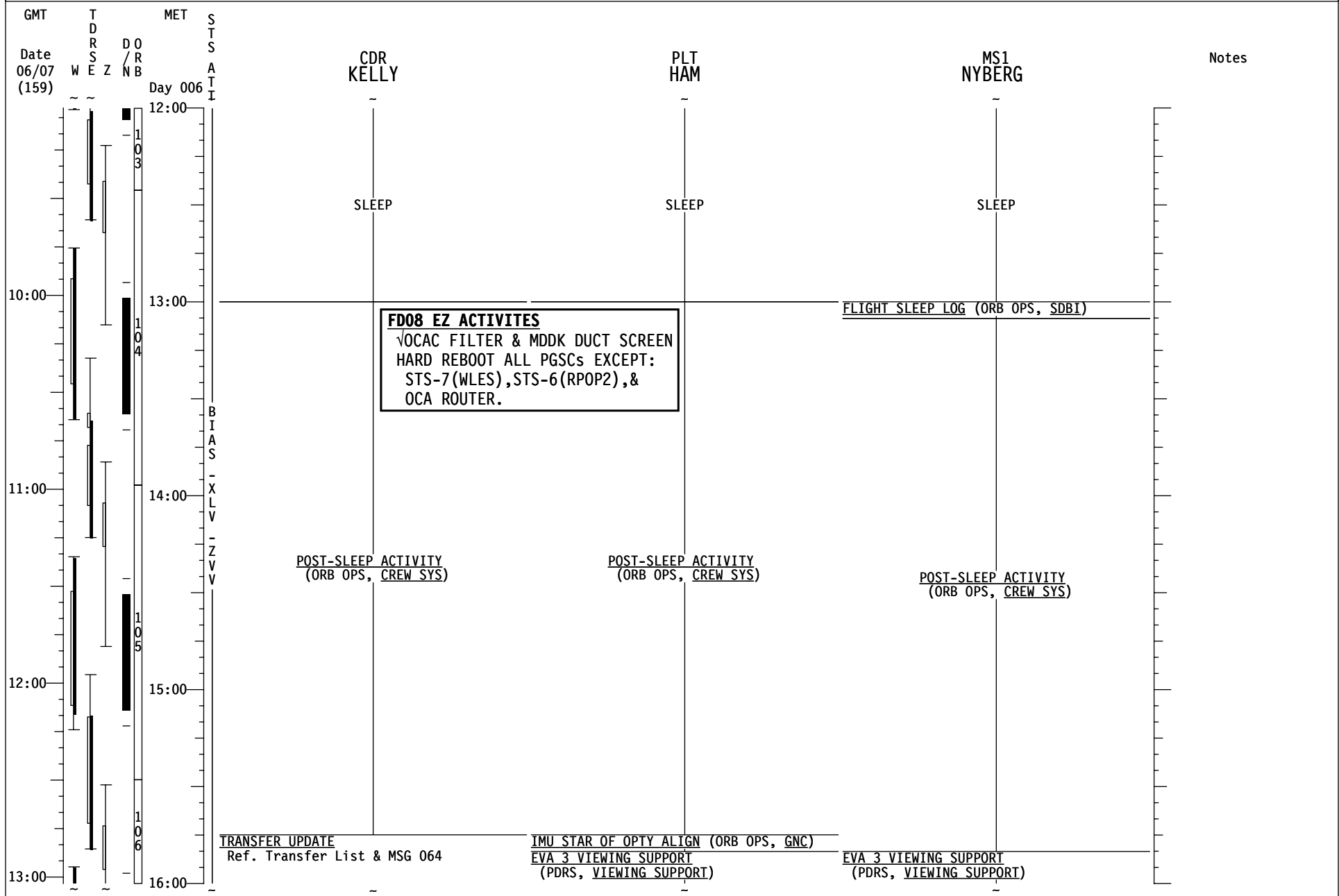
GMT 06/07/08 (159)

MET Day 007

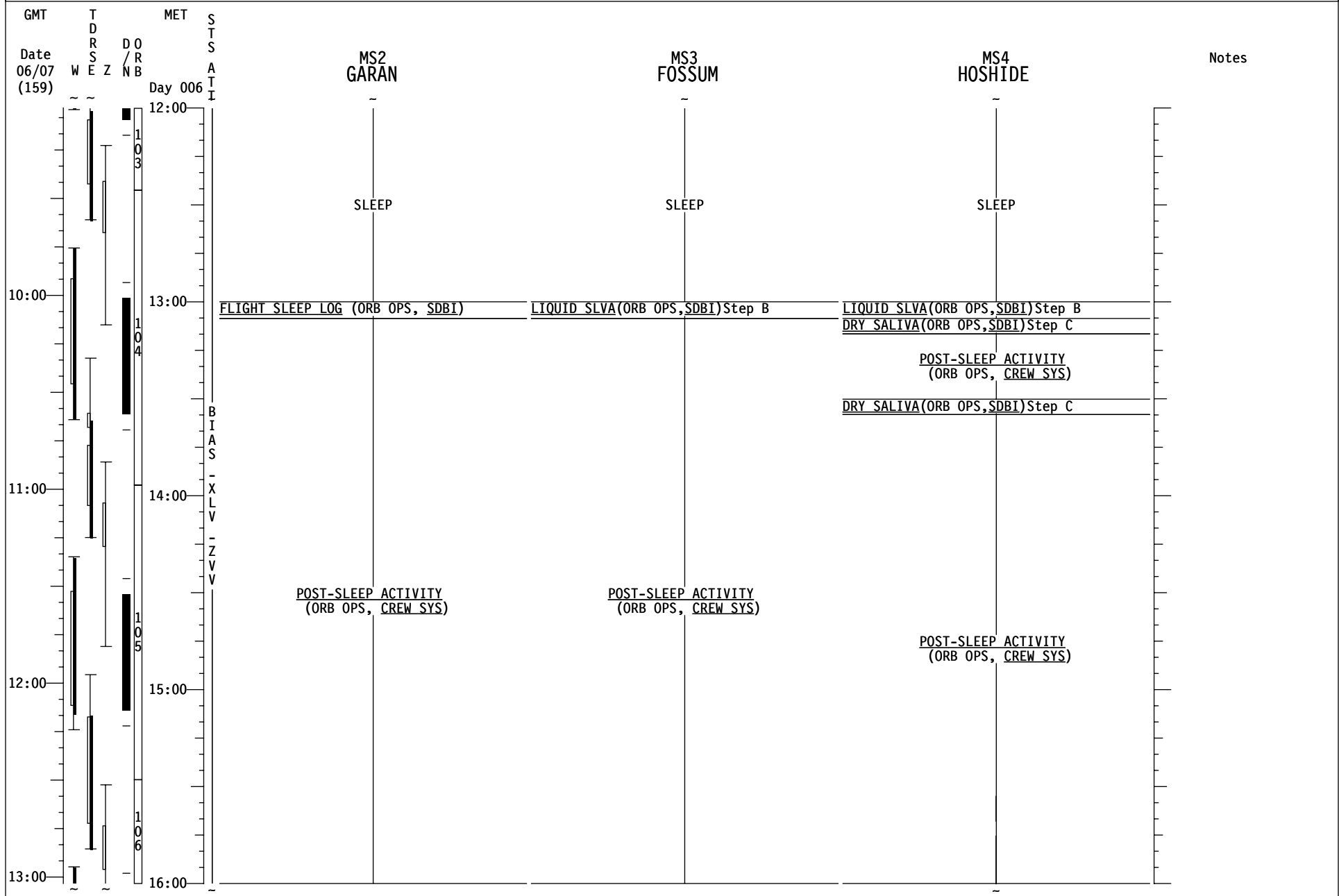


| | | | | | | | | | | | |
|---------------------------------|--------------------------|--------------------------------------|-------------------|-----------|---|------------------------|------------------------------|-----------|---------------------------|-----------|-------|
| S T S - 1 2 4 | FD08 CDR KELLY | PRE SLEEP | EVA 3 PROC REVIEW | PS | PMCP A/G | PS | PE AV O E N T | PRE SLEEP | MASK PB/TOOL CONFIG | PRE SLEEP | SLEEP |
| | PLT HAM | EXER CISE | EVA 3 PROC REVIEW | PRE SLEEP | | | | SLEEP | | | |
| | MS1 NYBERG | SM SN RV MR S* | EVA 3 PROC REVIEW | PRE SLEEP | | | | SLEEP | | | |
| | MS2 GARAN | PS | EVA 3 PROC REVIEW | PRE SLEEP | | MASK PB/TOOL CONFIG | PRE SLEEP | SLEEP | | | |
| | MS3 FOSSUM | PS | EVA 3 PROC REVIEW | PRE SLEEP | | MASK PB/TOOL CONFIG | PRE SLEEP | SLEEP | | | |
| | MS4 HOSHIDE | SM SN RV MR S* | EVA 3 PROC REVIEW | PRE SLEEP | PE AV O E N T | PRE SLEEP | | DRY | SLEEP | | |
| D N | FE-2 REISMAN | F F Q | EVA 3 PROC REVIEW | DPC | P W | PS | PA O S U | PS | SLEEP (8.5) | | |
| E X P | ISS CDR VOLKOV | PW | EVA 3 PROC REVIEW | DPC | P W | PS | BM Φ1 END | PS | SLEEP (8.5) | | |
| 1 7 | FE-1 KONONENKO | TVIS EX ER | EVA 3 PROC REVIEW | DPC | PW | PS | | | SLEEP (8.5) | | |
| U P | FE-2 CHAMITOFF | WRM CWC INIT | EVA 3 PROC REVIEW | DPC | C T B W E A C R T M T | PS | | | SLEEP (8.5) | | |
| S T S | ORBIT DAY/NIGHT | 111 112 113 114 115 116 117 118 119 | | | | | | | | | |
| | W -171 | [Timeline bars for W -171] | | | | | | | | | |
| | TDRS E -46 Z 275 | [Timeline bars for TDRS E -46 Z 275] | | | | | | | | | |
| | ORB ATT | *EVA3 *PAO-DEACT BIAS -XLV -ZVV | | | | | | | | | |
| | NOTES | | | | | | | | | | |

STS-124 FD08



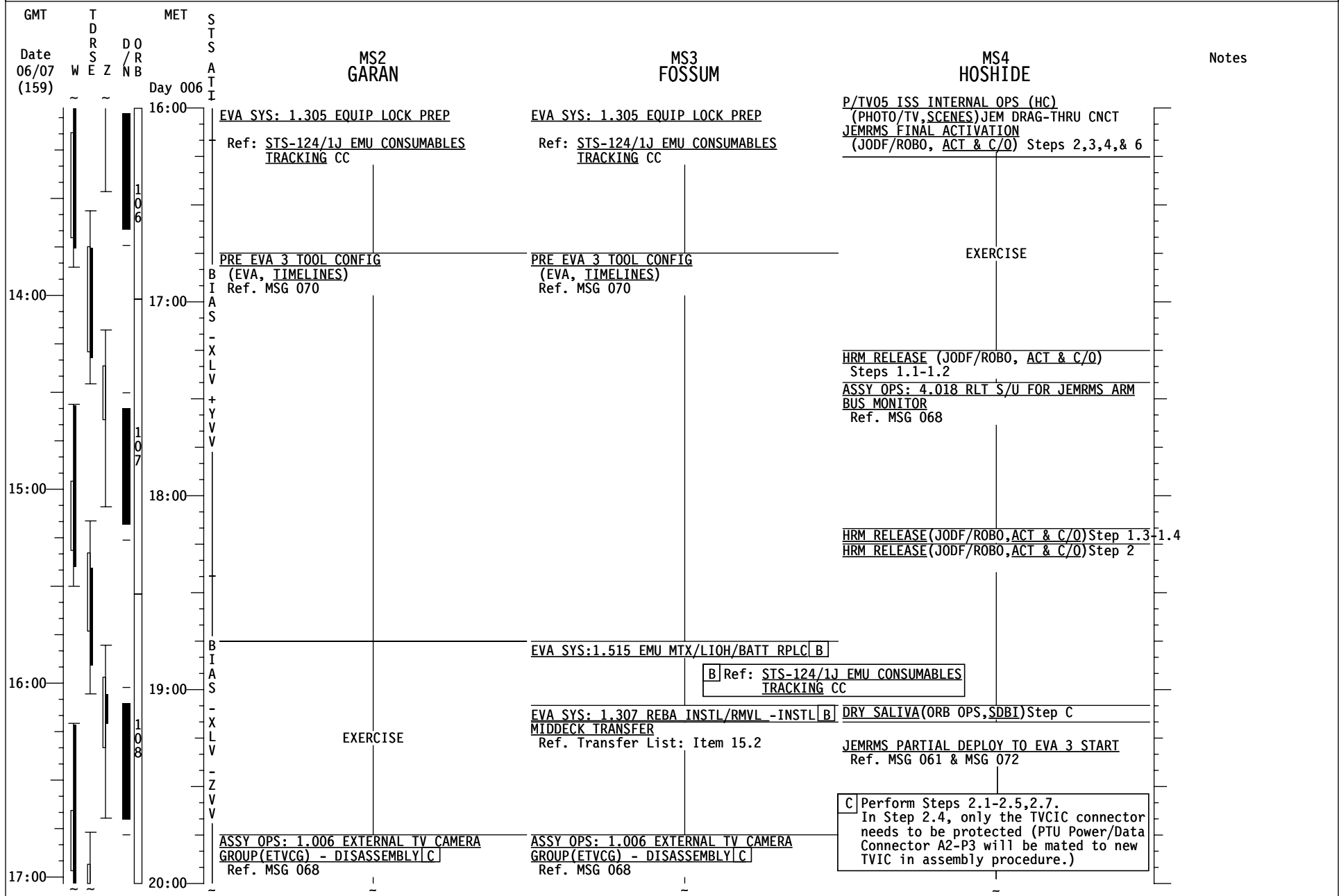
STS-124 FD08



STS-124 FD08

| GMT | T D R S E Z | MET | S T S A T | CDR KELLY | PLT HAM | MS1 NYBERG | Notes |
|------------------|-------------|---------|-----------|--|--|---|---------------------------------|
| Date 06/07 (159) | W | Day 006 | | | | | |
| 16:00 | | | I | A15 CRYO TK5 HTR 02 A - AUTO MCC for proper DAP config for ATT H/O When ISS is Free Drift,DAP:LVLH, when rates < 0.1,DAP:AUTO | EVA 3 VIEWING SUPPORT (PDRS, VIEWING SUPPORT) | EVA 3 VIEWING SUPPORT (PDRS, VIEWING SUPPORT) | |
| | | | | MNVR (TRK) BIAS -XLV +YVV (SIMO DUMP) TG=2 BV=5 P=166 Y=353 OM=195 A12/AUTO/VERN Init TRK | SUPPLY/WASTE WATER DUMP (ORB OPS, ECLS) Init Waste Dump Do not open nozzle until in dump attitude. Ref. MSG 062, Item 6 | ASSY OPS: 1.800 AMIA INSTALL & REMOVAL Steps 4-6 Ref. Transfer List: Items 15.3 & 701.2 Ref. MSG 068 | UPDATE H2O WASTE DUMP QTY |
| | | | | MIDDECK TRANSFER Ref. Transfer List | PWR DUMP - SUPPLY LINE (ORB OPS, ECLS) Dump PWR S/N's 1007,1025,2002,2003,2004 Ref. MSG 062, Item 6 | | |
| 14:00 | | | B | SUPPLY/WASTE WATER DUMP (ORB OPS, ECLS) | | | |
| | | | I | Terminate Waste Dump | | | |
| | | | S | CWC OVERBOARD DUMP (ORB OPS, ECLS) - Initiate Condensate Dump Dump S/N 1072, Ref. MSG 062, Item 7 | | | |
| | | | X | | MIDDECK TRANSFER Ref. Transfer List | | |
| | | | L | CWC OVERBOARD DUMP (ORB OPS, ECLS) + Terminate Condensate Dump, Init Condensate Dump Dump S/N 5050, Ref. MSG 062, Item 7 | | | |
| | | | Y | | | | |
| | | | V | MIDDECK TRANSFER Ref. Transfer List: Item 705.3 | | | |
| 15:00 | | | | | | | |
| | | | | CWC OVERBOARD DUMP (ORB OPS, ECLS) Term Cond Dump | | | |
| | | | | MNVR (TRK) BIAS -XLV -ZVV TG=2 BV=5 P=166 Y=353 OM=190 A12/AUTO/VERN Init TRK | FILTER CLEANING (IFM, SCHEDULED MAINTENANCE) Inspect filters & clean as necessary (Locker: MA16G) | EXERCISE | |
| | | | B | When ISS is GO for attitude control, DAP:FREE | | | |
| | | | I | N2 RPRS USING P/L N2 VLV A | | | |
| 16:00 | | | A | MIDDECK TRANSFER Ref. Transfer List | | | |
| | | | S | (ORB OPS, ECLS) Steps 1,3-7 MCC will TMBU SM limits | | | |
| | | | X | | | JEMRMS BUS MONITOR OPS (JODF/ROBO, ACT & C/O)Steps 1 & 2 | |
| | | | L | | SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) INIT #5 Ref. MSG 020 | JEMRMS PARTIAL DEPLOY TO EVA 3 START Ref. MSG 061 & MSG 072 | |
| | | | V | | FOAM APPLICATOR SWAP Ref. Transfer List: Items 21,22,709 & 714 | | |
| 17:00 | | | | EXERCISE | | | |

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STS-124 FD08

| GMT | T D R S E Z | MET | S T S A T I | Notes |
|------------------|-------------|---------|---|---|
| Date 06/07 (159) | W E Z | Day 006 | CDR KELLY PLT HAM MS1 NYBERG | |
| 18:00 | | 20:00 | EXERCISE | FC MONITORING SYS (FCMS) OPS (ORB OPS, EPS) Ref. MSG 062, Item 3 |
| | | | MIDDECK TRANSFER Ref. Transfer List | JEMRMS PARTIAL DEPLOY TO EVA 3 START Ref. MSG 061 & MSG 072 |
| | | | | SHUTTLE/ISS H2O CONT FILL (ORB OPS, ECLS) TERM Report B/C and S/N to MCC |
| | | | CWC TRANSFER Transfer 1 CWC to ISS | JEMRMS BUS MONITOR OPS (JODF/ROBO,ACT & C/O)Steps 3 & 5 |
| 19:00 | | 21:00 | PUBLIC AFFAIRS EVENT ISS KU: 20:57-21:31 Ref. MSG 066 | PUBLIC AFFAIRS EVENT ISS KU: 20:57-21:31 Ref. MSG 066 |
| | | | MEAL | MEAL |
| | | | MEAL | MEAL |
| 20:00 | | 22:00 | MIDDECK TRANSFER Ref. Transfer List | MIDDECK TRANSFER Ref. Transfer List |
| | | | | ASSY OPS: 7.009 VEST OUTFIT JPM TO JLP PART 1 Steps 1-7, & 11 Remove PPRV cap and stow per MSG 068 before Step 1. |
| | | | | D (ORB OPS, ECLS) Steps 8-13 MCC will TMBU SM limits |
| | | | N2 REPRESS USING P/L N2 VALVES D | |
| | | | DAILY STS/ISS CREW TRANSFER TAGUP | EXERCISE |
| | | | TRANSFER BRIEF Call down status to MCC | |
| 21:00 | | 00:00 | | |

UPLINK
β21 Only
Box 40,54,60

STS-124 FD08

| GMT | T D R S E Z | MET | S T S A T I | MS2 GARAN | MS3 FOSSUM | MS4 HOSHIDE | Notes |
|------------------|-------------|---------|-------------|--|--|--|---|
| Date 06/07 (159) | W E Z | Day 006 | | | | | |
| 18:00 | | 20:00 | | <p>ASSY OPS: 1.006 EXTERNAL TV CAMERA GROUP(ETVCG) - DISASSEMBLY[C] Ref. MSG 068</p> <p>ASSY OPS: 1.007 EXTERNAL TELEVISION CAMERA GROUP (ETVCG) - ASSEMBLY Steps 1,2.1,2.3-2.9,4.1-End Ref. MSG 068</p> | <p>ASSY OPS: 1.006 EXTERNAL TV CAMERA GROUP(ETVCG) - DISASSEMBLY[C] Ref. MSG 068</p> <p>ASSY OPS: 1.007 EXTERNAL TELEVISION CAMERA GROUP (ETVCG) - ASSEMBLY Steps 1,2.1,2.3-2.9,4.1-End Ref. MSG 068</p> | <p>JEMRMS PARTIAL DEPLOY TO EVA 3 START Ref. MSG 061 & MSG 072</p> | |
| | | | | | | | <div style="border: 1px solid black; padding: 2px;"> <p>C Perform Steps 2.1-2.5,2.7. In Step 2.4, only the TVCIC connector needs to be protected (PTU Power/Data Connector A2-P3 will be mated to new TVIC in assembly procedure.)</p> </div> |
| | | 21:00 | | <p>PUBLIC AFFAIRS EVENT ISS KU: 20:57-21:31 Ref. MSG 066</p> | <p>PUBLIC AFFAIRS EVENT ISS KU: 20:57-21:31 Ref. MSG 066</p> | <p>P/TVO5 ISS INTRNL OPS(HC) (P/TV,SCENES) JEM DRAG THRU DISCONNECTION JEMRMS DEACT PREP (JODF/ROBO, ACT & C/O) Steps 3-4</p> <p>PUBLIC AFFAIRS EVENT ISS KU: 20:57-21:31 Ref. MSG 066</p> | |
| 19:00 | | 22:00 | | MEAL | MEAL | MEAL | |
| | | | | | | | |
| | | 23:00 | | <p>MIDDECK TRANSFER V Ref. Transfer List</p> | <p>MIDDECK TRANSFER Ref. Transfer List: Item 700.1</p> | <p>ASSY OPS: 7.009 VEST OUTFIT JPM TO JLP PART 1 Steps 1-7, & 11 Remove PPRV cap and stow per MSG 068 before Step 1.</p> | |
| 20:00 | | | | | | | |
| | | | | | EXERCISE | | |
| | | | | <p>JPM CGSE RACK ATTACHMENT RECONFIG (JODF/A&C, ACT & C/O)</p> | | | |
| 21:00 | | 00:00 | | | | | |

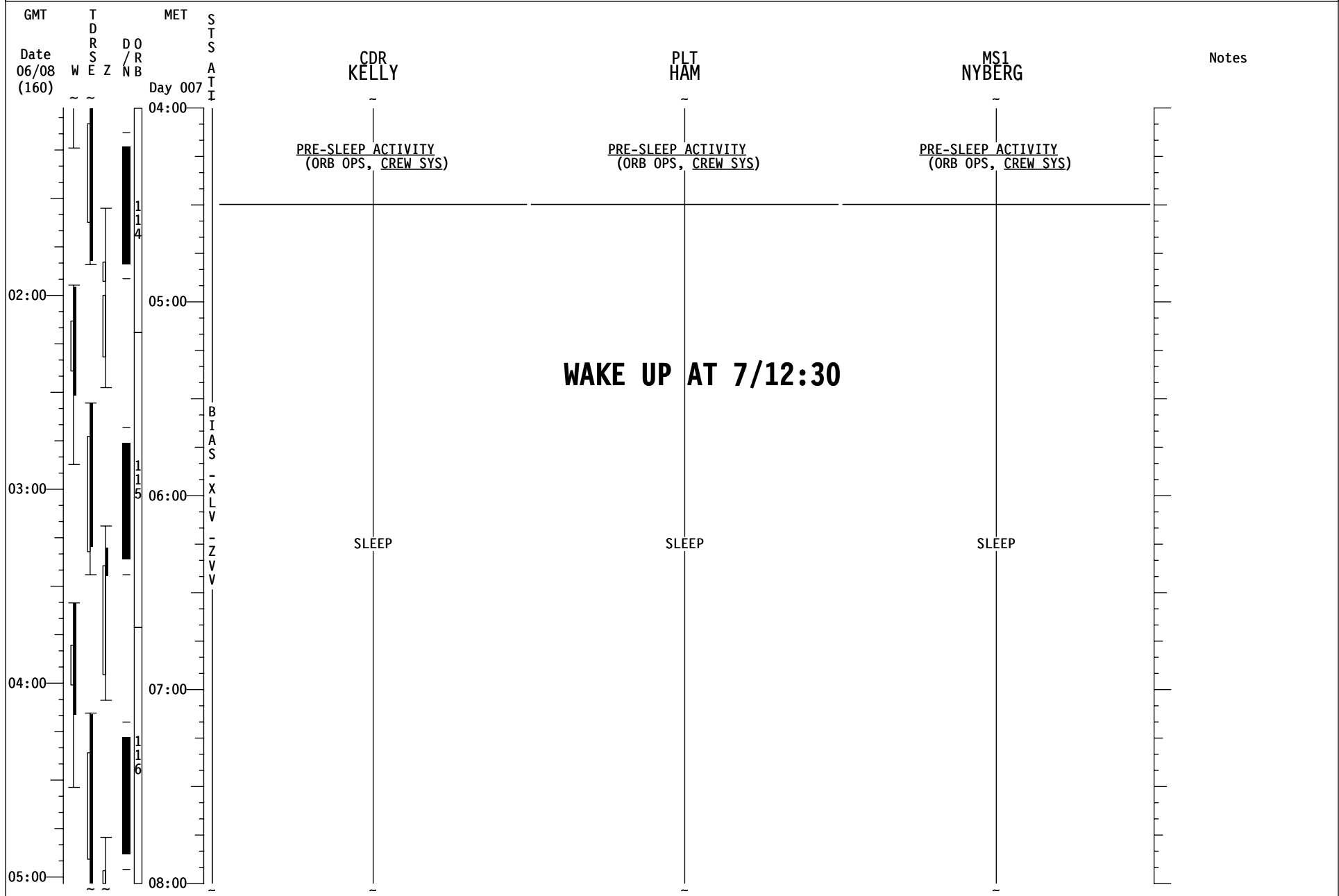
STS-124 FD08

| GMT | T D R S W E Z | MET | S T S A T I | CDR KELLY | PLT HAM | MS1 NYBERG | Notes |
|------------------|------------------|---------|----------------|--|--|--|--|
| Date 06/07 (159) | | Day 007 | | | | | |
| 00:00 | | | | PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) | EXERCISE | | ROBO: 5.101 JEMRMS DEPLOY VIEWING TO EVA3 START |
| | | | | EVA PROCEDURE REVIEW Ref: EVA 3 BRIEFING CARD (EVA, TIMELINES) | EVA PROCEDURE REVIEW Ref: EVA 3 BRIEFING CARD (EVA, TIMELINES) | EVA PROCEDURE REVIEW Ref: EVA 3 BRIEFING CARD (EVA, TIMELINES) | UPLINK β21 Only Box 40,60 |
| 22:00 | | | | PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) | | | |
| | | | | PRIVATE MEDICAL CONFERENCE Perform Via A/G 2 | | | |
| 23:00 | | | | PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) | | | |
| | | | | PUBLIC AFFAIRS EVENT ISS KU: 01:43-02:21 Ref. MSG 067 | | | |
| | | | | PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) | PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) | PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) | |
| 00:00 | | | | EVA SYS: 1.206 10.2 PSIA CAMPOUT MASK PREBREATHE Steps 1-16 Ref: EVA 3 TOOL CONFIG (EVA, TIMELINES) | | | |
| 01:00 | | | | PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) | | | |

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| GMT | TDRSEZ | MET | STS | MS2 | MS3 | MS4 | Notes |
|------------------------|--------|---------|------|---|---|---------|--|
| Date 06/07 (159) | W E Z | Day 007 | ASTI | GARAN | FOSSUM | HOSHIDE | |
| 00:00 | 111 | | | | | | <u>ROBO: 5.101 JEMRMS DEPLOY VIEWING TO EVA3 START</u> |
| | | | | <u>PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)</u> | <u>PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)</u> | | <u>DRY SALIVA(ORB OPS,SDBI)Step C</u> |
| | | | | <u>EVA PROCEDURE REVIEW</u> | <u>EVA PROCEDURE REVIEW</u> | | <u>EVA PROCEDURE REVIEW</u> |
| | | | | Ref: <u>EVA 3 BRIEFING CARD (EVA, TIMELINES)</u> | Ref: <u>EVA 3 BRIEFING CARD (EVA, TIMELINES)</u> | | Ref: <u>EVA 3 BRIEFING CARD (EVA, TIMELINES)</u> |
| 22:00 | 1112 | | | | | | |
| | | | | | | | <u>PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)</u> |
| 23:00 | | | | | | | |
| | | | | <u>PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)</u> | <u>PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)</u> | | <u>PUBLIC AFFAIRS EVENT</u> ISS KU: 01:43-02:21 Ref. MSG 067 |
| 00:00 | 1113 | | | | | | |
| | | | | <u>EVA SYS: 1.206 10.2 PSIA CAMPOUT MASK PREBREATHE</u> | <u>EVA SYS: 1.206 10.2 PSIA CAMPOUT MASK PREBREATHE</u> | | |
| | | | | Ref: <u>EVA 3 TOOL CONFIG (EVA, TIMELINES)</u> | Ref: <u>EVA 3 TOOL CONFIG (EVA, TIMELINES)</u> | | <u>PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)</u> |
| 01:00 | 1114 | | | | | | |
| | | | | | | | |
| 04:00 | | | | | | | |

STS-124 FD08



MSG 063 - FD08 MISSION SUMMARY

1
2 Good Morning Discovery!!!

3
4 Thanks for another day of stellar performance! All of you are doing such an awesome job!

5
6 Have a great day!!!!

7
8
9
10 YOUR CURRENT ORBIT IS: 185 X 181 NM

11
12 NOTAMS:

13
14 EDW – LAKEBED RUNWAY 15/33 ELS ONLY. OTHER LAKEBED RWYS RED.
15 NOR – LAKEBED RUNWAYS GREEN.
16 NTU – NGU TACAN CH CHANGED TO 86Y.
17 YJT – TACAN CH 78 DME ONLY.
18 HAW – RWY 31 CLOSED. RWY 13 TODA 8,994'.
19 WAK – CLOSED. NOT USABLE.
20 IKF – NOT USABLE. NO AGREEMENT.
21 BEN – NOT RECOMMENDED/NOT SUPPORTED.
22 ZZA – FIRST 600M (~2,000') OF RWY 30L NOT AVAILABLE. 10,200'
23 REMAINING.
24 NKT - CLOSED

25
26 NEXT 2 PLS OPPORTUNITIES:

27
28 EDT22R ORB 110 – 6/22:24 FEW250 250/12P18
29 NOR23 ORB 125 – 7/21:12 SKC 230/14P25

30
31 OMS TANK FAIL CAPABILITY:

32
33 L OMS FAILS: NO
34 R OMS FAILS: NO

35
36 LEAKING OMS PRPLT BURN:

37
38 L OMS LEAK: ALWAYS BURN RETROGRADE
39 R OMS LEAK: ALWAYS BURN RETROGRADE

40
41 OMS QUANTITIES(%)

42
43 L OMS OX = 30.3 R OMS OX = 30.3
44 FU = 29.9 FU = 30.3

45
46 SUBTRACT INTERCONNECT COUNTER TO OBTAIN CURRENT OMS QUANTITIES
47
48
49
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MSG 063 - FD08 MISSION SUMMARY

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DELTA V AVAILABLE:

| | |
|--------------------------------|---------------|
| OMS | 316 FPS |
| <u>ARCS (TOTAL ABOVE QTY1)</u> | <u>38 FPS</u> |
| TOTAL IN THE AFT | 354 FPS |
| ARCS (TOTAL ABOVE QTY2) | 71 FPS |
| FRCS (ABOVE QTY 1) | 27 FPS |
| AFT QTY 1 | 80 % |
| AFT QTY 2 | 42 % |

| <u>SYSTEM</u> | <u>FAILURE</u> | <u>IMPACT</u> | <u>WORK AROUND</u> |
|---------------|---|---|--|
| EPS | The instrumentation for the FC3 H2 flowmeter and FC3 cell performance monitor (CPM) was lost (a common fuse may have opened). | Loss of FC3 cell performance monitor (CPM) which provides insight into the health of fuel cell 3. Also, loss of insight into FC3 H2 flows used to monitor FC purge and other troubleshooting. | We are bus tied B-C for additional insight into the health of fuel cell 3, and we will need to perform an FCMS data take daily. MCC will use alternate methods to verify fuel cell purge. |

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MSG 064 (17-0364) - FD08 TRANSFER MESSAGE

Page 1 of 5

1
2 Good morning Aki and Mark!

3
4 You guys have done great work so far, and we see you ahead of the plan on transfer time!
5 Today is your BIG transfer day, so keep up the good work! Reading our Transfer tea leaves
6 (FAO has a far less charitable phrase for our prediction technique), we see you are currently
7 86% complete on Resupply, 35% complete on Return, and 52% complete overall!

8
9 We thought it might be helpful to offer you some big-picture words for the Russian separator
10 pumps: You brought up a new one in Bag A (transfer list item 15.1), you are going to return
11 a pump in Bag A (transfer list item 700.4), and you are going to return an additional pump in
12 Bag J (transfer list item 706.1). The pump returning in Bag A is the one that was removed
13 on FD5 during the R&R. The pump that is going to return in Bag J is a pump that failed a
14 while back. MCC-M has been working with Sergei and Oleg to pack the pumps for return
15 (containment & bagging), but we do not think that has been completed. Once Sergei and
16 Oleg have them packed up, you can transfer them to Bags A & J.

17
18 Mark, your choreography today now includes transferring the BMRRM Bag (transfer list item
19 705.3). This bag contains several food containers and a Pallet that must be removed prior
20 to transfer. All of these items can be stowed loose in the location of the BMRRM Bag (use
21 ISS bungees if needed). Only the empty bag is returning on 1J.

22
23 Reminder: the transfer brief will be held on the big loop today instead of A/G2.

24
25 For STS, the Transfer List Excel file, FD08_Transfer_List_STS124.xls, is located on the KFX
26 machine in **C:\OCA-up\transfer**.

27
28 For ISS, the Transfer List Excel file, FD08_Transfer_List_STS124.xls, is located in **K:\OCA-**
29 **up\transfer**.

30 31 **FD08 Choreography (items for transfer today)**

- 32 – Item 701.2 (Karen): Transfer returning AMIA during MDDK XFER activity
- 33 – Items 15.2 & 700.1 (Mike): Transfer new and old TVCIC during MDDK XFER
34 before and after the ETVCG R&R
- 35 – Items 705.3 (Mark): Transfer the BMRRM Bag during MDDK XFER
- 36 – Items 21, 22, 709, & 714 (Ken): Swap Foam Applicators and Duxseal during
37 foam applicator swap activity

38 39 **Please update the Transfer List as follows:**

40
41 In **RESUPPLY** tab:

42 On page 7: item 17, strike through "Purge" in the Item Name column.

43 WAS: Sample Purge Bags

44 IS: Sample Bags

45
46 In **RETURN** tab:

47 Replace pages 6, 8, & 13

MSG 064 (17-0364) - FD08 TRANSFER MESSAGE

Page 2 of 5

1 **FD09 Choreography (items for transfer tomorrow)**

2 - None

3

4

5 Let us know if you have questions.

6 - The Transfer Team

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MSG 065 - FD07 MMT SUMMARY

1 FD07 MMT Summary

2

3 The FD07 MMT briefly met to discuss mission progress and everything continues to proceed
4 very well. Congratulations on another successful EVA! The EVA team has reviewed the
5 glove photos and has cleared them for all subsequent EVAs. The MMT community is
6 working no significant issues and is looking forward to the upcoming JEM RMS activation.

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17-0368 (MSG 069) - Lab RWS SSC Reposition

Page 1 of 1

We have noticed the SSCs providing extra camera views for SSRMS Ops have been positioned directly behind RWS monitors 1 and 3. There are concerns that this position may cause the RWS monitors to overheat due to airflow blockage to the monitor fans. We would like you to reposition the SSCs to help eliminate this overheating concern. The images below show how the SSCs have been positioned on past Missions.



OBJECTIVE:

Deploy JEMRMS Main Arm (MA) Wrist cluster from launch position, then Partial SY Joint Deploy for EVA 3.




LOCATION:

JPM1A6 (JEMRMS Console)

DURATION:

1 hour 30 minutes with two crew members

NOTE

1. Notation“(AOS/M)” indicates that AOS during execution of step is mandatory. If currently LOS, or expecting LOS prior to completion of an AOS/M step, wait for next AOS to perform.
2. When Operation Sequence File (OSF) loading is completed, RMS ODF Scenario Set window is automatically closed.
3. When mode transition from FOR/Joint Auto to Position Hold is completed in the Operation Procedure File (OPF) operation, MA FOR/Joint Auto Mode window is automatically closed.
4. RMS-ODF window buttons:
 Step: Proceed to next script line
 Start: Start RMS-ODF execution
 End: Stop RMS-ODF execution
5. When the start or step button is clicked for joint angle calculation, calculation is automatically performed.
6. After selecting Proceed in the RLF operation, MA starts moving
7. When configuring Video System on RLT(SLT), Monitor should be selected first, then camera.
8. For all non-JEM related cameras, the pan, tilt and zoom must be checked on PCS. **MCC-H** can direct you to the appropriate PCS camera status Reader display to obtain telemetry. These displays can be found at:
C&T: Video: Video Status Reader [Video Status Reader](#)
9. For MUX view on RMS Mon with US camera view(either shuttle or ISS USOS) and JEM camera view routed, PCS will be used to route MUX view to CVIU input. These PCS displays can be found at:
C&T: Video: Split Screen Routing [SCU Split Screen Routing](#)
Then, RLT will be used to route this view from CVIU to the target RMS Mon.

* If required, use MA BRAKES switch to terminate motion.
*

1. CONFIGURING VIDEO SYSTEM FOR WRIST CLUSTER DEPLOY

Configure Cameras as required.

| RMS Mon1 | RMS Mon2 | SSC (V10) |
|---|--|---|
| Mux 24: Tip Elbow (+80, -5; Zoom: 2 cm) /EXT F (-90, +5) (09:P1 Lower Outboard +149, -2.3; Zoom: 4.7 cm)) | EXT A (+94, +8) (22: Base Elbow (+75, -5; Zoom: 2 cm)) | 71: OBSS ITVC (+16, -42; HFOV: 10 deg) |

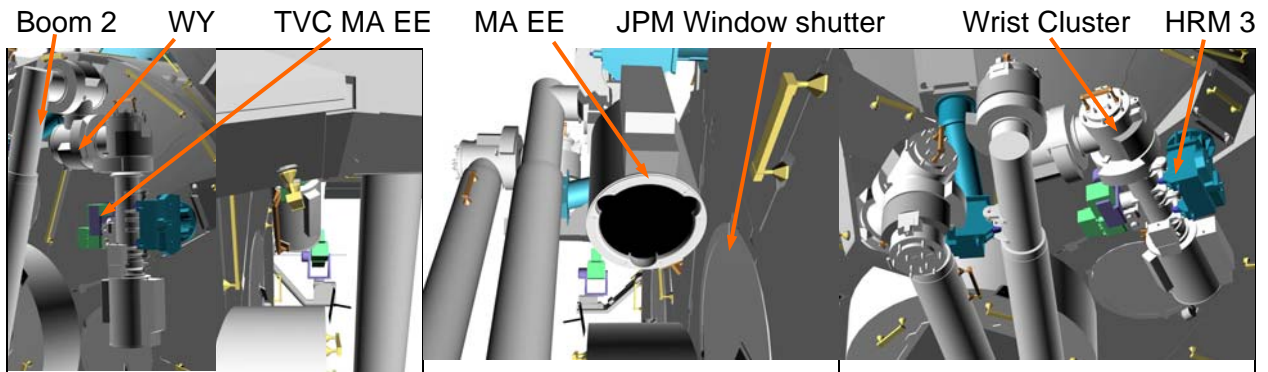


Figure 1.1 - Launch Posn.
Mux 24: Tip Elbow
(+80, -5; Zoom: 2 cm)
/EXT F (-90, +5)

Figure 1.2 - Launch Posn.
EXT A (+94, +8)

Figure 1.3 - Launch Posn.
71: OBSS ITVC
(+16, -42; HFOV: 10 deg)

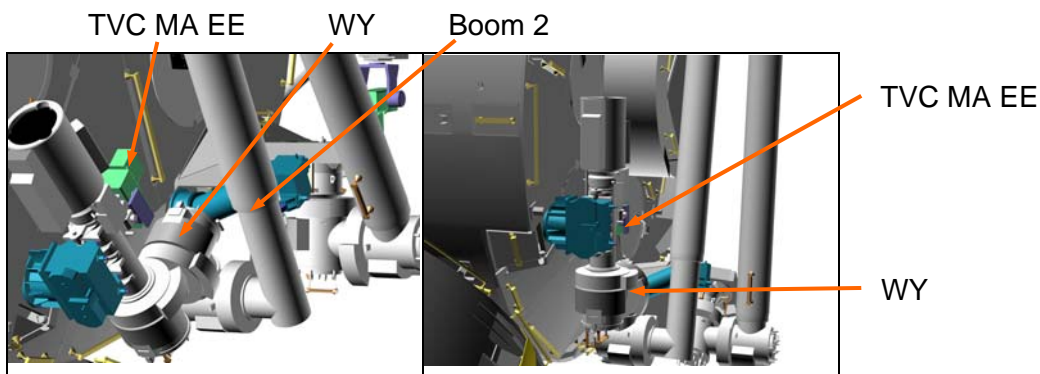


Figure 1.4 - Launch Posn.
09:P1 Lower Outboard
(+149, -2.3; Zoom: 4.7 cm)

Figure 1.5 - Launch Posn.
22: Base Elbow
(+75, -5; Zoom: 2 cm)

NOTE
Expect Singularity Annunciation through out this task.

2. RECORDING MA JOINT ANGLES

RLT

JEMRMS: MA
JEMRMS: Main Arm

Record MA Joint Angles after HRM Release.

| SY[J1] | SP[J2] | EP[J3] | WP[J4] | WY[J5] | WR[J6] | |
|--------|--------|--------|--------|--------|--------|----------|
| -90.0 | -51.0 | +172.0 | -164.0 | 0.0 | +180.0 | Expected |
| | | | | | | |

3. TRANSITIONING MDP MODE TO BRAKE

Verify Current Mode – Standby

JEMRMS: Mode

JEMRMS: Mode

'Main Arm Control Mode'

cmd MA Brake (Verify Current Mode – Brake)

4. LOADING OSF

NOTE

OSF takes ~40 sec to load.

JEMRMS: ODF

JEMRMS: RMS ODF

pick File: Open Scenario File – Nominal

JEMRMS: RMS ODF Scenario Set

sel MA_DEPLOY_PART1

cmd Load

Verify RMS ODF Scenario Set window is closed.

JEMRMS: ODF

JEMRMS: RMS ODF

Verify Scenario – MA_DEPLOY_PART1

5. DISENGAGING MA BRAKES

RIP MA BRAKES → OFF (OFF Lt – Illuminated)

RLT Verify Current Mode – Pos Hold

6. WRIST CLUSTER JOINT CHECKOUT IN JOINT AUTO

6.1 Selecting OPF

JEMRMS: ODF

JEMRMS: RMS ODF

sel 1 MA_W_CLUSTER_JOINT_CO

cmd Start (▶)

Verify Procedure – MA_W_CLUSTER_JOINT_CO

6.2 Performing Wrist Cluster Joint Checkout

NOTE
 Refer to Joint Angles recorded in step 2 for [J1] to [J6]

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|---|--|-----------------------|--------|------|--------|----|----|----|---------|------|------|------|------|------|------|---------|-------|-------|--------|--------|-----|--------|-----------|------|------|------|------|------|------|--------|------|------|------|------|------|------|--|--|--|--|------|--|--|-------|-----|-----|-----|------|-----|-----|
| | a. MA Joint Auto Mode Xtion RLT [RMS ODF] > cmd Mode Change – MA Joint Auto --- | [1] cmd Step () Verify Current Mode – Joint Auto Verify MA Joint Auto Mode Window is displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b. RMS-RLF Load RLT [RMS ODF] > Load rm001jm0 --- | [2] cmd Step () Verify Procedure – rm001jm0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b-1. Moving WP For Wrist Cluster Joint CO > MA.Joint.Rel_Ang.Calc | [3] cmd Start () | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | [4] <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> JEMRMS: MA Joint Auto Mode </div> Verify the following items. (within ± 0.3 deg) <table border="1" style="border-collapse: collapse; width: 100%; text-align: center;"> <thead> <tr> <th colspan="7">Joint Moving Plan: WP</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+172.0</td> <td>-164.0</td> <td>0.0</td> <td>+180.0</td> </tr> <tr> <td>(Current)</td> <td>[J1]</td> <td>[J2]</td> <td>[J3]</td> <td>[J4]</td> <td>[J5]</td> <td>[J6]</td> </tr> <tr> <td>Target</td> <td>[J1]</td> <td>[J2]</td> <td>[J3]</td> <td>[J4]</td> <td>[J5]</td> <td>[J6]</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>-0.2</td> <td></td> <td></td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>+0.2</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table> Expected | Joint Moving Plan: WP | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +172.0 | -164.0 | 0.0 | +180.0 | (Current) | [J1] | [J2] | [J3] | [J4] | [J5] | [J6] | Target | [J1] | [J2] | [J3] | [J4] | [J5] | [J6] | | | | | -0.2 | | | Error | 0.0 | 0.0 | 0.0 | +0.2 | 0.0 | 0.0 |
| Joint Moving Plan: WP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +172.0 | -164.0 | 0.0 | +180.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1] | [J2] | [J3] | [J4] | [J5] | [J6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1] | [J2] | [J3] | [J4] | [J5] | [J6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | -0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | 0.0 | 0.0 | +0.2 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] Enable {Proceed} | [5] cmd Step () <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> JEMRMS: MA Joint Auto Mode </div> Verify Ready – blue Verify Proceed is active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | [6] (AOS/M) <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px; text-align: center;"> <u>NOTE</u> Joint motion is ~15 sec. </div> cmd Proceed Verify In Progress – blue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | [7] When In Progress – gray, Verify the following items. (within ± 0.3 deg) <table border="1" style="border-collapse: collapse; width: 100%; text-align: center;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1]</td> <td>[J2]</td> <td>[J3]</td> <td>[J4]</td> <td>[J5]</td> <td>[J6]</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>-0.2</td> <td></td> <td></td> </tr> </tbody> </table> | Joint | SY | SP | EP | WP | WY | WR | Current | [J1] | [J2] | [J3] | [J4] | [J5] | [J6] | | | | | -0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1] | [J2] | [J3] | [J4] | [J5] | [J6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | -0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

6.3 Aborting JEM RMS-OPF

NOTE

1. When the JEM RMS-OPF is aborted, following message will occur on RLT.
'Consl Config RMS ODF Execution Error'
This message can be ignored.
2. When abort cmd send, RMS ODF Abort window is automatically closed.

JEMRMS: ODF

JEMRMS: RMS ODF

cmd Abort ()

JEMRMS: RMS ODF Abort

'Select Abort ODF Type in the List'

sel RMS-OPF

cmd **Execute**

JEMRMS: RMS ODF

Verify Procedure – not displayed

7. DEPLOYING WRIST AND ELBOW JOINT IN JOINT AUTO

7.1 Recording MA Joint Angles And Transitioning MDP Mode To Pos Hold

JEMRMS: MA
 JEMRMS: Main Arm

Record MA Joint Angles after Wrist Cluster Joint Checkout.

| | | | | | |
|---------|---------|---------|---------|---------|---------|
| SY[J1a] | SP[J2a] | EP[J3a] | WP[J4a] | WY[J5a] | WR[J6a] |
| -90.0 | -51.0 | +172.0 | -164.2 | +0.0 | +180.0 |
| | | | | | |

Expected

Verify Current Mode – Joint Auto

JEMRMS: Mode
 JEMRMS: Mode
 'Main Arm Control Mode'
cmd MA Position Hold (Verify Current Mode – Pos Hold)

On SSIPC GO.



7.2 Selecting OPF


JEMRMS: ODF
 JEMRMS: RMS ODF
 sel 2 MA_DEPLOY
cmd Start (▶)
 Verify Procedure – MA_DEPLOY

7.3 Deploying Wrist Joint In Joint Auto

NOTE
 Refer to Joint Angles recorded in step 7.1 for [J1a] to [J6a]

| | SCRIPT WINDOW | REQD OPERATOR ACTION | |
|---|--|--|-----|
| | a. MA Joint Auto Mode Xtion RLT [RMS ODF] | | [1] |
| > | cmd Mode Change – MA Joint Auto --- | cmd Step (⏏) Verify Current Mode – Joint Auto. Verify MA Joint Auto Mode Window is displayed. | |
| | b. RMS-RLF Load RLT [RMS ODF] > Load rm002jm0 --- | cmd Step (⏏) Verify Procedure – rm002jm0 | [2] |
| | b-1. Moving WP For MA Deploy | | [3] |
| > | MA.Joint.Abs_Ang.Calc | cmd Start (▶) | |

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|--|-----------------------|-----------------|---------------|--------|----|----|----|---------|-------|-------|-------|--------|-------|-------|---------|-------|-------|--------|--------|------|--------|-----------|-------|-------|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|-------|-------|-----|-----|-----|-----------------|---------------|-----|
| | | <div style="text-align: right;">[4]</div> <p>JEMRMS: MA Joint Auto Mode</p> <p>Verify the following items. (within ± 0.3 deg)</p> <table border="1" data-bbox="667 331 1305 573"> <thead> <tr> <th colspan="7">Joint Moving Plan: WP</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+172.0</td> <td>-164.2</td> <td>+0.0</td> <td>+180.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>[J4a]</td> <td>[J5a]</td> <td>[J6a]</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>[J5a]</td> <td>[J6a]</td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>[J4a] +173.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table> <div style="text-align: right;">Expected</div> | Joint Moving Plan: WP | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +172.0 | -164.2 | +0.0 | +180.0 | (Current) | [J1a] | [J2a] | [J3a] | [J4a] | [J5a] | [J6a] | Target | [J1a] | [J2a] | [J3a] | -173.0 | [J5a] | [J6a] | Error | 0.0 | 0.0 | 0.0 | [J4a] +173.0 | 0.0 | 0.0 |
| Joint Moving Plan: WP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +172.0 | -164.2 | +0.0 | +180.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2a] | [J3a] | [J4a] | [J5a] | [J6a] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | [J2a] | [J3a] | -173.0 | [J5a] | [J6a] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | 0.0 | 0.0 | [J4a] +173.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] Enable {Proceed} | <div style="text-align: right;">[5]</div> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;"><u>NOTE</u></p> <p>9 cm clearance between MA EE and JPM Window shutter is maintained during WP rotation. Monitor this clearance using EXT A.</p> </div> <p>cmd Step ()</p> <p>JEMRMS: MA Joint Auto Mode</p> <p>Verify Ready – blue</p> <p>Verify Proceed is active.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | <div style="text-align: right;">[6]</div> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;"><u>NOTE</u></p> <p>Joint motion is ~60 sec.</p> </div> <p>cmd Proceed</p> <p>Verify In Progress – blue</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div style="text-align: right;">[7]</div> <p>When In Progress – gray,</p> <p>Verify the following items. (within ± 0.3 deg)</p> <table border="1" data-bbox="667 1317 1382 1397"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>[J5a]</td> <td>[J6a]</td> </tr> </tbody> </table> | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | [J2a] | [J3a] | -173.0 | [J5a] | [J6a] | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] | [J2a] | [J3a] | -173.0 | [J5a] | [J6a] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > b-2. Moving WY For MA Deploy MA.Joint.Abs_Ang.Calc | <div style="text-align: right;">[8]</div> <p>cmd Step ()</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div style="text-align: right;">[9]</div> <p>JEMRMS: MA Joint Auto Mode</p> <p>Verify the following items. (within ± 0.3 deg)</p> <table border="1" data-bbox="667 1760 1305 2002"> <thead> <tr> <th colspan="7">Joint Moving Plan: WY</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+172.0</td> <td>-173.0</td> <td>+0.0</td> <td>+180.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>[J5a]</td> <td>[J6a]</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+7.0</td> <td>[J6a]</td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>[J5a] -7.0</td> <td>0.0</td> </tr> </tbody> </table> <div style="text-align: right;">Expected</div> | Joint Moving Plan: WY | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +172.0 | -173.0 | +0.0 | +180.0 | (Current) | [J1a] | [J2a] | [J3a] | -173.0 | [J5a] | [J6a] | Target | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | [J6a] | Error | 0.0 | 0.0 | 0.0 | 0.0 | [J5a] -7.0 | 0.0 |
| Joint Moving Plan: WY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +172.0 | -173.0 | +0.0 | +180.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2a] | [J3a] | -173.0 | [J5a] | [J6a] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | [J6a] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | 0.0 | 0.0 | 0.0 | [J5a] -7.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| SCRIPT WINDOW | | REQD OPERATOR ACTION | | | | | | | | | | | | | | |
|--------------------------|---|--|-------------|--------------------------|------|-------|----|----|----|---------|-------|-------|-------|--------|------|-------|
| | > RLT [MA Joint Auto] Enable {Proceed} | [10] cmd Step () JEMRMS: MA Joint Auto Mode Verify Ready – blue Verify Proceed is active. | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | [11] <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">NOTE</td> </tr> <tr> <td style="text-align: center;">Joint motion is ~45 sec.</td> </tr> </table> cmd Proceed Verify In Progress – blue | NOTE | Joint motion is ~45 sec. | | | | | | | | | | | | |
| NOTE | | | | | | | | | | | | | | | | |
| Joint motion is ~45 sec. | | | | | | | | | | | | | | | | |
| | | [12] When In Progress – gray, Verify the following items. (within ± 0.3 deg) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+7.0</td> <td>[J6a]</td> </tr> </tbody> </table> | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | [J6a] |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | |
| Current | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | [J6a] | | | | | | | | | | |

7.4 Verifying Wrist Cluster Deployed

Verify Wrist Cluster Deployed Posn

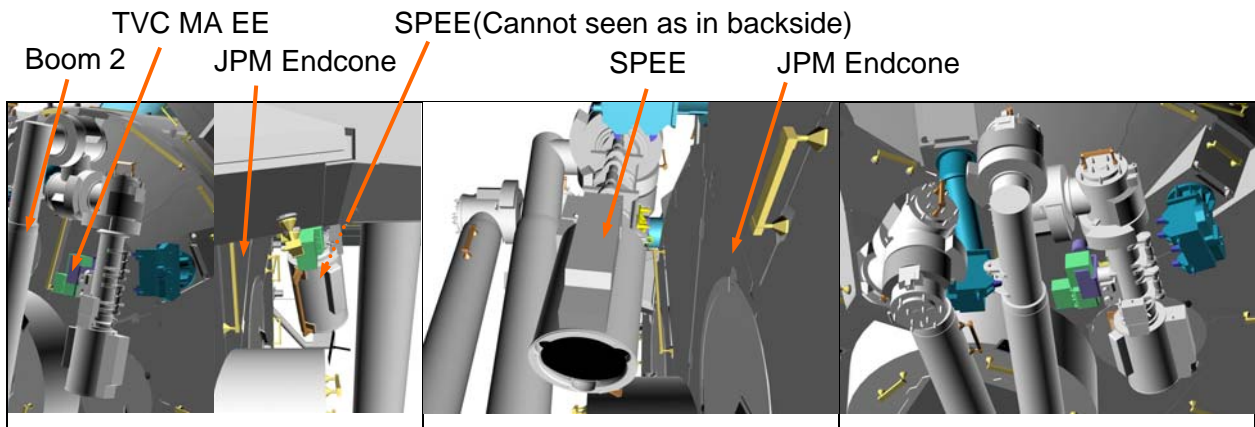


Figure 3.1 - Wrist Cluster Deployed
 24: Tip Elbow
 (+80, -5; Zoom: 2 cm)
 /EXT F (-90, +5)

Figure 3.2 - Wrist Cluster Deployed
 EXT A (+94, +8)

Figure 3.3 - Wrist Cluster Deployed
 71: OBSS ITVC
 (+16, -42; HFOV: 10 deg)

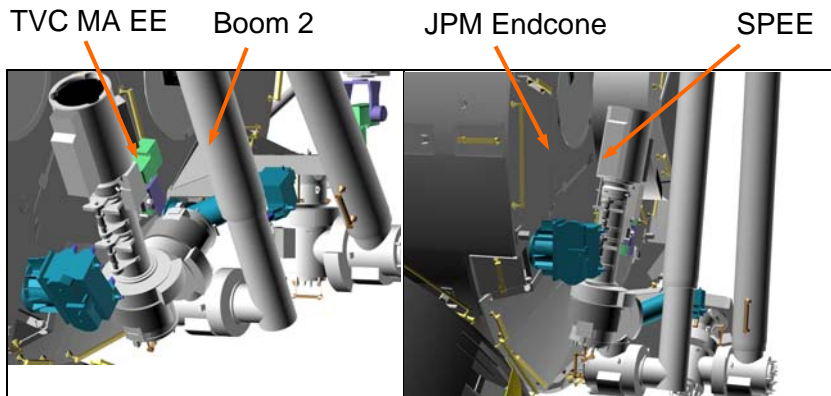


Figure 3.4 - Wrist Cluster Deployed
 09:P1 Lower Outboard
 (+149, -2.3; Zoom: 4.7 cm)

Figure 3.5 - Wrist Cluster Deployed
 22: Base Elbow
 (+75, -5; Zoom: 2 cm)

7.5 Deploying Boom 3 Clear Of HRM 3 In Joint Auto

NOTE
 Refer to Joint Angles recorded in step 7.1 for [J1a] to [J6a]

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|--|-----------------------|--------|------|----------------|----|----|----|---------|-------|-------|-------|--------|------|-------|---------|-------|-------|--------|--------|------|--------|-----------|-------|-------|-------|--------|------|-------|--------|-------|-------|-------|--------|------|-------|-------|-----|-----|-----|-----|-----|----------------|
| | > b-3. Moving WR For MA Deploy MA.Joint.Abs_Ang.Calc | <div style="text-align: right;">[1]</div> cmd Step () | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div style="text-align: right;">[2]</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> JEMRMS: MA Joint Auto Mode </div> Verify the following items. (within ± 0.3 deg) <div style="border: 1px solid black; padding: 5px; margin-top: 5px; width: fit-content;"> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="7">Joint Moving Plan: WR</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+172.0</td> <td>-173.0</td> <td>+7.0</td> <td>+180.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+7.0</td> <td>[J6a]</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+7.0</td> <td>+90.0</td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>[J6a] -90.0</td> </tr> </tbody> </table> </div> <div style="text-align: right; margin-top: -10px;">Expected</div> | Joint Moving Plan: WR | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +172.0 | -173.0 | +7.0 | +180.0 | (Current) | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | [J6a] | Target | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | +90.0 | Error | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | [J6a] -90.0 |
| Joint Moving Plan: WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +172.0 | -173.0 | +7.0 | +180.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | [J6a] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | [J6a] -90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] > Enable {Proceed} | <div style="text-align: right;">[3]</div> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p style="text-align: center;"><u>NOTE</u></p> <ol style="list-style-type: none"> 1. The clearance between TVC MA EE and MA Boom 2 decreases to 11 cm during WR rotation. Monitor this clearance using Tip Elbow. 2. The clearance between SPEE and JPM Endcone decreases to 8 cm during WR rotation. Monitor this clearance using EXT A . </div> cmd Step () <div style="border: 1px solid black; padding: 5px; margin-top: 5px; width: fit-content;"> JEMRMS: MA Joint Auto Mode </div> Verify Ready – blue Verify Proceed is active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | <div style="text-align: right;">[4]</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px; width: fit-content; text-align: center;"> <p style="text-align: center;"><u>NOTE</u></p> Joint motion is ~3:23 </div> cmd Proceed Verify In Progress – blue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div style="text-align: right;">[5]</div> When In Progress – gray, Verify the following items. (within ± 0.3 deg) <div style="border: 1px solid black; padding: 5px; margin-top: 5px; width: fit-content;"> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+7.0</td> <td>+90.0</td> </tr> </tbody> </table> </div> | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

7.6 Verifying Wrist Roll Deployed Posn

Verify Wrist Roll Deployed Posn

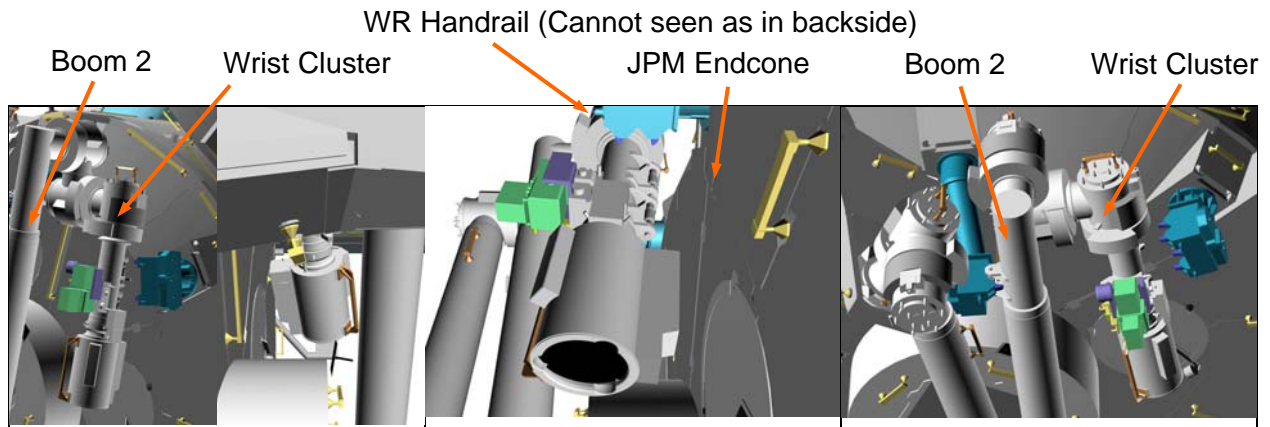


Figure 4.1 - Wrist Roll Deployed
 24: Tip Elbow
 (+80, -5; Zoom: 2 cm)
 /EXT F (-90, +5)

Figure 4.2 - Wrist Roll Deployed
 EXT A (+94, +8)

Figure 4.3 - Wrist Roll Deployed
 71: OBSS ITVC
 (+16, -42; HFOV: 10 deg)

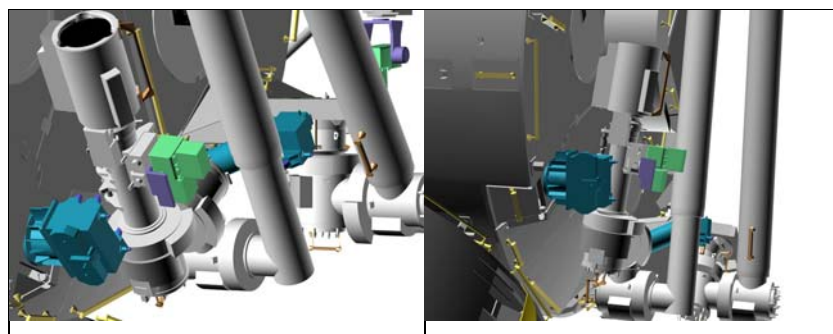






Figure 4.4 - Wrist Roll Deployed
 09:P1 Lower Outboard
 (149, -2.3; Zoom: 4.7 cm)

Figure 4.5 - Wrist Roll Deployed
 22: Base Elbow
 (+75, -5; Zoom: 2 cm)

7.7 Deploying Wrist Yaw Joint In Joint Auto

NOTE
 Refer to Joint Angles recorded in step 7.1 for [J1a] to [J3a]

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|-----------------------|---|--|-------|----|----|----|---------|-------|-------|-------|--------|-------|-------|---------|-------|-------|--------|--------|------|-------|-----------|-------|-------|-------|--------|------|-------|--------|-------|-------|-------|--------|-------|-------|-------|-----|-----|-----|-----|-------|-----|
| | > b-4. Moving WY For MA Deploy MA.Joint.Abs_Ang.Calc | cmd Step () [1] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | [2] JEMRMS: MA Joint Auto Mode Verify the following items. (within ± 0.3 deg) <table border="1" data-bbox="667 533 1305 741"> <thead> <tr> <th colspan="7">Joint Moving Plan: WY</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+172.0</td> <td>-173.0</td> <td>+7.0</td> <td>+90.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+7.0</td> <td>+90.0</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>-81.0</td> <td>0.0</td> </tr> </tbody> </table> Expected | Joint Moving Plan: WY | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +172.0 | -173.0 | +7.0 | +90.0 | (Current) | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | +90.0 | Target | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | Error | 0.0 | 0.0 | 0.0 | 0.0 | -81.0 | 0.0 |
| Joint Moving Plan: WY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +172.0 | -173.0 | +7.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2a] | [J3a] | -173.0 | +7.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | 0.0 | 0.0 | 0.0 | -81.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] Enable {Proceed} | [3] <table border="1" data-bbox="667 786 1350 1088"> <thead> <tr> <th colspan="1">NOTE</th> </tr> </thead> <tbody> <tr> <td>1. The clearance between Wrist Cluster (TVC MA EE) and MA Boom 2 decreases to 21 cm during WY rotation. Monitor this clearance using OBSS ITVC.</td> </tr> <tr> <td>2. The clearance between WR Handrail and JPM Endcone decreases to 7 cm during WY rotation. Monitor this clearance using EXT A.</td> </tr> </tbody> </table> cmd Step () JEMRMS: MA Joint Auto Mode Verify Ready – blue Verify Proceed is active. | NOTE | 1. The clearance between Wrist Cluster (TVC MA EE) and MA Boom 2 decreases to 21 cm during WY rotation. Monitor this clearance using OBSS ITVC. | 2. The clearance between WR Handrail and JPM Endcone decreases to 7 cm during WY rotation. Monitor this clearance using EXT A. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NOTE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. The clearance between Wrist Cluster (TVC MA EE) and MA Boom 2 decreases to 21 cm during WY rotation. Monitor this clearance using OBSS ITVC. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. The clearance between WR Handrail and JPM Endcone decreases to 7 cm during WY rotation. Monitor this clearance using EXT A. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} | [4] <table border="1" data-bbox="667 1335 1350 1402"> <thead> <tr> <th colspan="1">NOTE</th> </tr> </thead> <tbody> <tr> <td>Joint motion is ~4:13</td> </tr> </tbody> </table> cmd Proceed Verify In Progress – blue | NOTE | Joint motion is ~4:13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NOTE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint motion is ~4:13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | [5] When In Progress – gray, Verify the following items. (within ± 0.3 deg) <table border="1" data-bbox="667 1621 1358 1693"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> </tbody> </table> | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [RMS ODF] Enable End button | [6] cmd Step () Verify Status – Completed Verify End button is active. cmd End () | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

7.8 Configuring Video System For Boom2 Clear Of HRM 2

Configure Cameras as required.

| RMS Mon1 | RMS Mon2 | SSC (V10) |
|---|--|---|
| Mux 24: Tip Elbow (+80, -5; Zoom: 2 cm) /EXT F (-80, -30; Z = 2) (22: Base Elbow (+75, -5; Zoom: 2 cm)) | EXT A (+94, +8) (22: Base Elbow (+75, -5; Zoom: 2 cm)) | 71: OBSS ITVC (+16, -42; HFOV: 10 deg) |

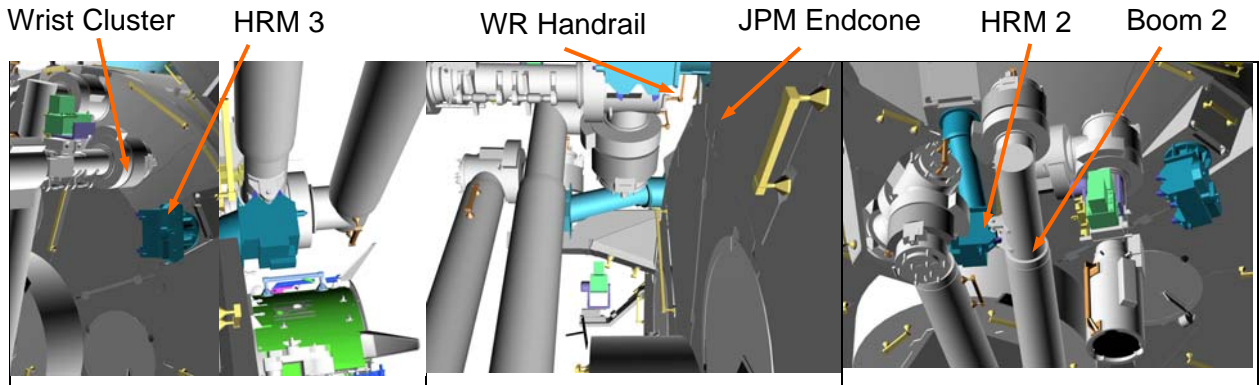


Figure 5.1 - Wrist Yaw Deployed
 Mux 24: Tip Elbow
 (+80, -5; Zoom: 2 cm)
 /EXT F (-80, -30; Z = 2)

Figure 5.2 - Wrist Yaw Deployed
 EXT A (+94, +8)

Figure 5.3 - Wrist Yaw Deployed
 71: OBSS ITVC
 (+16, -42; HFOV: 10 deg)

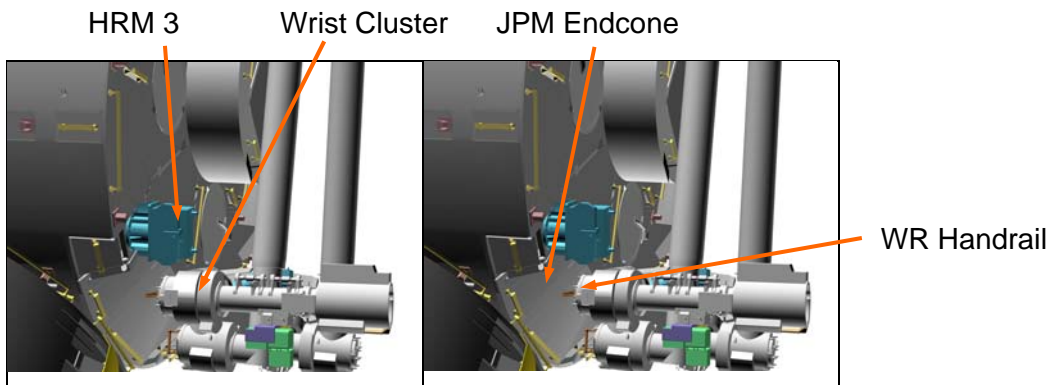




Figure 5.4 - Wrist Yaw Deployed
 22: Base Elbow
 (+75, -5; Zoom: 2 cm)

Figure 5.5 - Wrist Yaw Deployed
 22: Base Elbow
 (+75, -5; Zoom: 2 cm)

7.9 Deploying Elbow Joint In Joint Auto

NOTE
 Refer to Joint Angles recorded in step 7.1 for [J1a] to [J3a]

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|---|--|-----------------------|--------|-------|-------|----|----|----|---------|-------|-------|-------|--------|-------|-------|---------|-------|-------|--------|--------|-------|-------|-----------|-------|-------|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|-------|--|--|--|------|--|--|--|-------|-----|-----|------|-----|-----|-----|
| | c. RMS-RLF Load RLT [RMS ODF] > Load rm003jm0 --- | [1] cmd Step () Verify Procedure – rm003jm0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | c-1. Moving EP For Elbow Cluster Joint CO > MA.Joint.Rel_Ang.Calc | [2] cmd Start () | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | [3] <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> JEMRMS: MA Joint Auto Mode Verify the following items. (within ± 0.3 deg) </div> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <thead> <tr> <th colspan="7">Joint Moving Plan: EP</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+172.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>-0.2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>0.0</td> <td>+0.2</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table> <div style="text-align: right; margin-top: -10px;">Expected</div> | Joint Moving Plan: EP | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +172.0 | -173.0 | +88.0 | +90.0 | (Current) | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | Target | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | -0.2 | | | | Error | 0.0 | 0.0 | +0.2 | 0.0 | 0.0 | 0.0 |
| Joint Moving Plan: EP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +172.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | -0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | 0.0 | +0.2 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] Enable {Proceed} --- | [4] cmd Step () <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> JEMRMS: MA Joint Auto Mode Verify Ready – blue Verify Proceed is active. </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | [5] <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px; text-align: center;"> NOTE Joint motion is ~14 sec. </div> cmd Proceed Verify In Progress – blue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | [6] When In Progress – gray, Verify the following items. (within ± 0.3 deg) <table border="1" style="border-collapse: collapse; text-align: center; width: 100%; margin-top: 5px;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3a]</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>-0.2</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Record EP[J3b] Current Joint Angle: _____ deg | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | -0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] | [J2a] | [J3a] | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | -0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|--|-----------------------|--------|-------|-------|----|----|----|---------|-------|-------|--------|--------|-------|-------|---------|-------|-------|--------|--------|-------|-------|-----------|-------|-------|-------|--------|-------|-------|--------|-------|-------|--------|--------|-------|-------|-------|-----|-----|-----------------|-----|-----|-----|
| | > c-2. Moving EP For MA Deploy MA.Joint.Abs_Ang.Calc | cmd Step () [7] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">NOTE</p> <p>Refer to Joint Angles recorded in Step 7.9 Block [6] (previous page) for [J3b]</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>JEMRMS: MA Joint Auto Mode</p> <p>Verify the following items. (within ± 0.3 deg)</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7" style="text-align: left;">Joint Moving Plan: EP</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+171.8</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2a]</td> <td>[J3b]</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>[J2a]</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>0.0</td> <td>[J3b] -169.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table> <p style="text-align: right;">Expected</p> | Joint Moving Plan: EP | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +171.8 | -173.0 | +88.0 | +90.0 | (Current) | [J1a] | [J2a] | [J3b] | -173.0 | +88.0 | +90.0 | Target | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | Error | 0.0 | 0.0 | [J3b] -169.0 | 0.0 | 0.0 | 0.0 |
| Joint Moving Plan: EP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +171.8 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2a] | [J3b] | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | 0.0 | [J3b] -169.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] Enable {Proceed} | <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">NOTE</p> <ol style="list-style-type: none"> The clearance between HRM 3 and Wrist Cluster (WR) decreases to 10 cm during EP rotation. Monitor this clearance using Tip Elbow. The clearance between WR Handrail and JPM Endcone increases to 10 cm during EP rotation. Monitor this clearance using EXT A. </div> cmd Step () [9] JEMRMS: Mode JEMRMS: MA Joint Auto Mode Verify Ready – blue Verify Proceed is active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">NOTE</p> <p>Joint motion is ~38 sec</p> </div> cmd Proceed Verify In Progress – blue [10] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | When In Progress – gray, Verify the following items. (within ± 0.3 deg) [11] <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>[J2a]</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> </tbody> </table> | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

7.10 Configuring Video System For Boom1 Clear Of HRM 1

Configure Cameras as required.

| RMS Mon1 | RMS Mon2 | SSC (V10) |
|--|--|---|
| Mux 24: Tip Elbow (+80, -5; Zoom: 2 cm) /EXT F (-80, -20) (22: Base Elbow (+75, -6; Zoom: 2 cm)) | EXT A (+88, -47) (22: Base Elbow (+80, 0; Zoom: 1.2 cm)) | 71: OBSS ITVC (+16, -42; HFOV: 10 deg) |

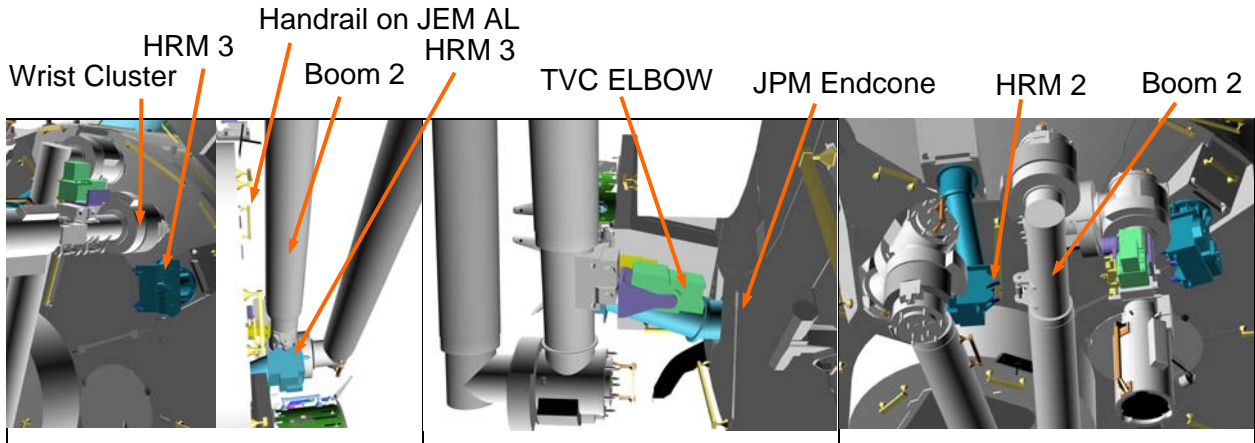


Figure 6.1 - Boom1 Clear of HRM 1
 Tip Elbow
 (+80, -5; Zoom: 2 cm)
 /EXT F (-80, -20)

Figure 6.2 - Boom1 Clear of HRM 1
 EXT A (+88, -47)

Figure 6.3 - Boom1 Clear of HRM 1
 71: OBSS ITVC
 (+16, -42; HFOV: 10 deg)

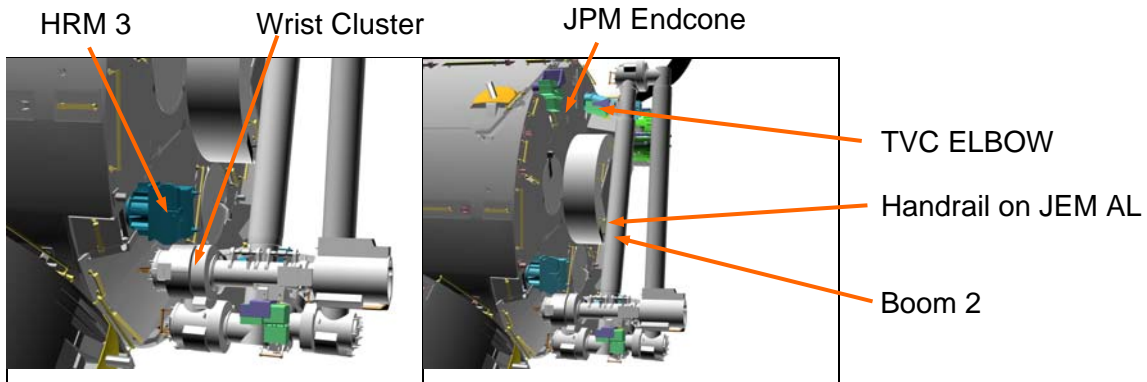





Figure 6.4 - Boom1 Clear of HRM 1
 22: Base Elbow
 (+75, -6; Zoom: 2 cm)

Figure 6.5 - Boom1 Clear of HRM 1
 22: Base Elbow
 (+80, 0; Zoom: 1.2 cm)

7.11 Deploying Shoulder Pitch Joint In Joint Auto

NOTE
 Refer to Joint Angles recorded in step 7.1 for [J1a] to [J2a]

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|--|-----------------------|--------|-------|-------|----|----|----|---------|-------|-------|--------|--------|-------|-------|---------|-------|-------|--------|--------|-------|-------|-----------|-------|-------|--------|--------|-------|-------|--------|-------|-------|--------|--------|-------|-------|--|--|------|--|--|--|--|-------|-----|------|-----|-----|-----|-----|
| | > c-3. Moving SP For Shoulder Cluster Joint CO MA.Joint.Rel_Ang.Calc | cmd Step () [1] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> JEMRMS: MA Joint Auto Mode Verify the following items. (within ± 0.3 deg) </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 5px;"> <thead> <tr> <th colspan="7" style="text-align: left;">Joint Moving Plan: SP</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-51.0</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2a]</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>[J2a]</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td></td> <td></td> <td>+0.2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>-0.2</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table> Expected | Joint Moving Plan: SP | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -51.0 | +169.0 | -173.0 | +88.0 | +90.0 | (Current) | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | Target | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | +0.2 | | | | | Error | 0.0 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Joint Moving Plan: SP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -51.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | +0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] Enable {Proceed} | cmd Step () [3] <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> JEMRMS: MA Joint Auto Mode Verify Ready – blue Verify Proceed is active. </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px; text-align: center;"> NOTE Joint motion is ~17 sec. </div> cmd Proceed Verify In Progress – blue [4] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | When In Progress – gray, Verify the following items. (within ± 0.3 deg) <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>[J2a]</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td></td> <td></td> <td>+0.2</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Record SP[J2b] Current Joint Angle: _____ deg [5] | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | +0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] | [J2a] | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | +0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > c-4. Moving SP For MA Deploy MA.Joint.Abs_Ang.Calc | cmd Step () [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|---|---|-----------------------|--------|-------|-------|----|----|----|---------|-------|-------|--------|--------|-------|-------|---------|-------|-------|--------|--------|-------|-------|-----------|-------|-------|--------|--------|-------|-------|--------|-------|-------|--------|--------|-------|-------|-------|-----|----------------|-----|-----|-----|-----|
| | | <p style="text-align: right;">[7]</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;"><u>NOTE</u></p> <p>Refer to Joint Angles recorded in Step 7.11 Block [5] (previous page) for [J2b]</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>JEMRMS: MA Joint Auto Mode</p> <p>Verify the following items. (within ± 0.3 deg)</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7" style="text-align: left;">Joint Moving Plan: SP</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-50.8</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>[J2b]</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Target</td> <td>[J1a]</td> <td>-48.0</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Error</td> <td>0.0</td> <td>[J2b] +48.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table> <p style="text-align: right;">Expected</p> | Joint Moving Plan: SP | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -50.8 | +169.0 | -173.0 | +88.0 | +90.0 | (Current) | [J1a] | [J2b] | +169.0 | -173.0 | +88.0 | +90.0 | Target | [J1a] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | Error | 0.0 | [J2b] +48.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Joint Moving Plan: SP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -50.8 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | [J2b] | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | 0.0 | [J2b] +48.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>> RLT [MA Joint Auto] Enable {Proceed}</p> | <p style="text-align: right;">[8]</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;"><u>NOTE</u></p> <ol style="list-style-type: none"> 1. 9 cm clearance between Handrail on JEM AL and MA Boom 2 is maintained during SP rotation. Monitor this clearance using EXT F. 2. 15 cm clearance between TVC ELBOW and JPM Endcone is maintained during SP rotation. Monitor this clearance using EXT A. </div> <p>cmd Step ()</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>JEMRMS: MA Joint Auto Mode</p> <p>Verify Ready – blue</p> <p>Verify Proceed is active.</p> </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>> Push {Proceed} ---</p> | <p style="text-align: right;">[9]</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;"><u>NOTE</u></p> <p>Joint motion is ~33 sec.</p> </div> <p>cmd Proceed</p> <p>Verify In Progress – blue</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <p style="text-align: right;">[10]</p> <p>When In Progress – gray, Verify the following items. (within ± 0.3 deg)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a]</td> <td>-48.0</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> </tbody> </table> | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

8. DEPLOYING SHOULDER YAW JOINT IN JOINT AUTO AND JOINT OCAS

8.1 Configuring Video System For Shoulder Yaw Deploy

Configure Cameras as required.

| RMS Mon1 | RMS Mon2 | SSC (V10) |
|--|--|---|
| Mux 24: Tip Elbow (+80, -5; Zoom: 2 cm) /EXT F (-80, -20) (22: Base Elbow (+75, -6; Zoom: 2 cm)) | EXT A (+71, -48) (22: Base Elbow (+80, 0; Zoom: 1.2 cm)) | 71: OBSS ITVC (+16, -42; HFOV: 10 deg) |

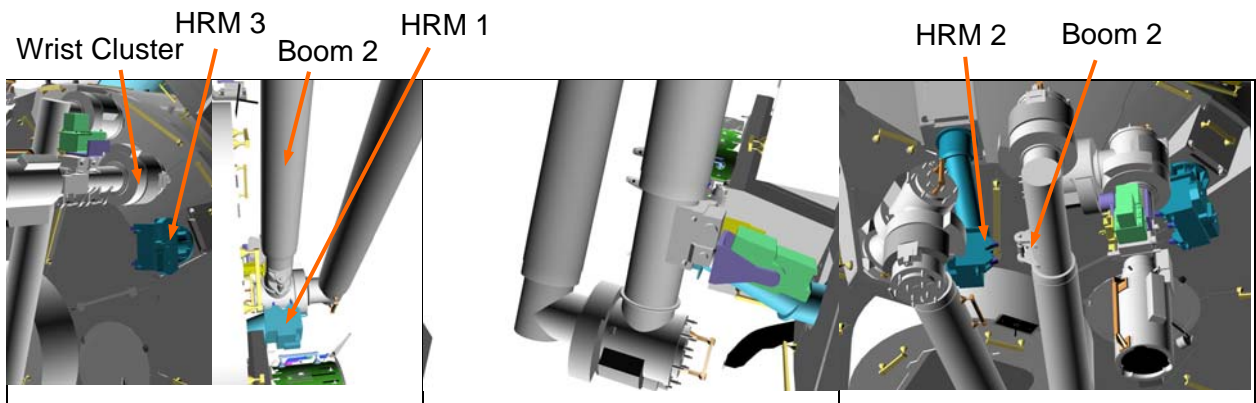


Figure 7.1 - Shoulder Yaw Deploy
 24: Tip Elbow
 (+80, -5; Zoom: 2 cm)
 /EXT F (-80, -20)

Figure 7.2 - Shoulder Yaw Deploy
 EXT A (+71, -48)

Figure 7.3 - Shoulder Yaw Deploy
 71: OBSS ITVC
 (+16, -42; HFOV: 10 deg)

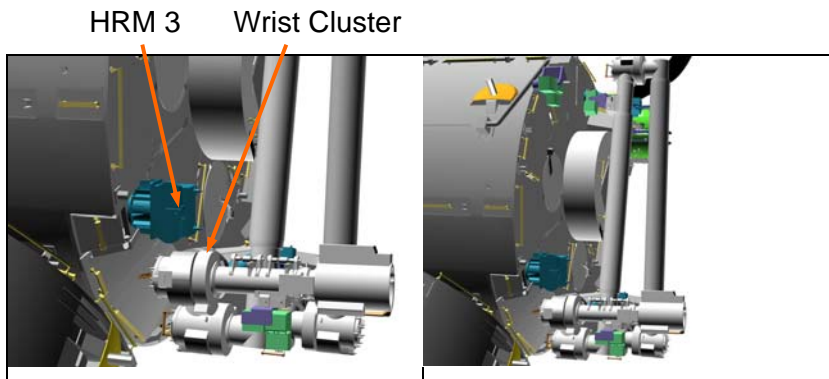




Figure 7.4 - Shoulder Yaw Deploy
 22: Base Elbow
 (+75, -6; Zoom: 2 cm)

Figure 7.5 - Shoulder Yaw Deploy
 22: Base Elbow
 (+80, 0; Zoom: 1.2 cm)

8.2 Performing Shoulder Yaw Cluster Joint Checkout

NOTE
 Refer to Joint Angle[J1a] recorded in step 7.1.

| | SCRIPT WINDOW | REQD OPERATOR ACTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|---|-----------------------|--------|-------|-------|----|----|----|---------|---------------|-------|--------|--------|-------|-------|---------|-------|-------|--------|--------|-------|-------|-----------|-------|-------|--------|--------|-------|-------|--------|---------------|-------|--------|--------|-------|-------|-------|------|-----|-----|-----|-----|-----|
| | > c-5. Moving SY For Shoulder Cluster Joint CO MA.Joint.Rel_Ang.Calc | cmd Step () [1] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">JEMRMS: MA Joint Auto Mode</div> Verify the following items. (within ± 0.3 deg) <table border="1" style="margin: 5px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="7">Joint Moving Plan: SY</th> </tr> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>-90.0</td> <td>-48.0</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>(Current)</td> <td>[J1a]</td> <td>-48.0</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Target</td> <td>[J1a] +0.2</td> <td>-48.0</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> <tr> <td>Error</td> <td>-0.2</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table> Expected [2] | Joint Moving Plan: SY | | | | | | | Joint | SY | SP | EP | WP | WY | WR | Current | -90.0 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | (Current) | [J1a] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | Target | [J1a] +0.2 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | Error | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Joint Moving Plan: SY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | -90.0 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Current) | [J1a] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Target | [J1a] +0.2 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > RLT [MA Joint Auto] Enable {Proceed} | cmd Step () [3] <div style="border: 1px solid black; padding: 2px; margin: 5px auto; width: fit-content;">JEMRMS: MA Joint Auto Mode</div> Verify Ready – blue Verify Proceed is active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | > Push {Proceed} --- | <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; text-align: center;"><u>NOTE</u> Joint motion is ~16 sec.</div> cmd Proceed Verify In Progress – blue [4] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | When In Progress – gray, Verify the following items. (within ± 0.3 deg) <table border="1" style="margin: 5px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Joint</th> <th>SY</th> <th>SP</th> <th>EP</th> <th>WP</th> <th>WY</th> <th>WR</th> </tr> </thead> <tbody> <tr> <td>Current</td> <td>[J1a] +0.2</td> <td>-48.0</td> <td>+169.0</td> <td>-173.0</td> <td>+88.0</td> <td>+90.0</td> </tr> </tbody> </table> Record SY[J1b] Current Joint Angle: _____ deg [5] | Joint | SY | SP | EP | WP | WY | WR | Current | [J1a] +0.2 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Joint | SY | SP | EP | WP | WY | WR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | [J1a] +0.2 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

8.3 Aborting JEM RMS-ODF

NOTE

3. When the JEM RMS-ODF is aborted, following message will occur on RLT.
 'Consl Config RMS ODF Execution Error'
 This message can be ignored.

4. When abort cmd send, RMS ODF Abort window is automatically closed.

JEMRMS: ODF

JEMRMS: RMS ODF

cmd Abort ()

JEMRMS: RMS ODF Abort

'Select Abort ODF Type in the List'

sel RMS-OSF

cmd Execute

JEMRMS: RMS ODF

Verify Scenario – not displayed

8.4 Transitioning MDP Mode To Joint OCAS

JEMRMS: Mode

JEMRMS: Mode

cmd MA Position Hold (Verify Current Mode – Pos Hold)

cmd MA Joint OCAS (Verify Current Mode – Joint OCAS)

8.5 Setting Target Joint Angles And Scale Factors

NOTE

Refer to Joint Angle[J1b] recorded in step 8.2 block 5.

JEMRMS: MA Joint OCAS Mode

Input 'Target' joint angles and 'Scale Factor' for SY Partial Posn.
 Press [Enter].

| Joint | SY | SP | EP | WP | WY | WR |
|--------------------|-------|-------|--------|--------|-------|-------|
| (Current) | [J1b] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 |
| Target | -67.0 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 |
| Scale Factor: % | 7.3 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |

Verify the followings. (within ± 0.1 deg for Current, Target and Error, within ± 0.01 deg/sec for Max Rate)

| Joint | SY | SP | EP | WP | WY | WR |
|----------------------|---------------|-------|--------|--------|-------|-------|
| (Current) | [J1b] | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 |
| Target | -67.0 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 |
| Error | [J1b] + 67 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Max Rate: deg/sec | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| Scale Factor: % | 7.3 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |

8.6 Verifying Ready To Arm Motion

cmd Load
 Verify Ready – blue
 Verify Proceed is active.

8.7 Moving MA to SY Partial Position

| <u>NOTE</u> | |
|-------------|---|
| 1. | Joint motion is ~1:26. After selecting Proceed in the OCAS operation, MA starts moving. |
| 2. | The clearance between HRM 3 and Wrist Cluster (WR) decreases to 11 cm during SY rotation. Monitor this clearance using Tip Elbow. |

cmd Proceed
 Verify In Progress – blue

When In Progress – gray,
 Verify MA Joint Angles. (within ± 0.3 deg)

| SY | SP | EP | WP | WY | WR |
|-------|-------|--------|--------|-------|-------|
| -67.0 | -48.0 | +169.0 | -173.0 | +88.0 | +90.0 |

8.8 Verifying EVA 3 Start Posn

Verify EVA 3 Start Posn.

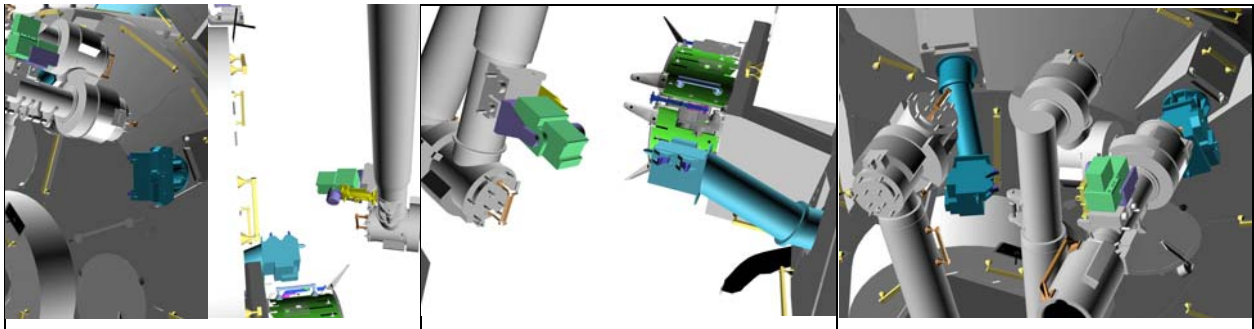


Figure 8.1 - EVA3 Start Posn
 24: Tip Elbow
 (+80, -5; Zoom: 2 cm)
 /EXT F (-80, -20))

Figure 8.2 - EVA3 Start Posn
 EXT A (+71, -48)

Figure 8.3 - EVA3 Start Posn
 71: OBSS ITVC
 (+16, -42; HFOV: 10 deg)

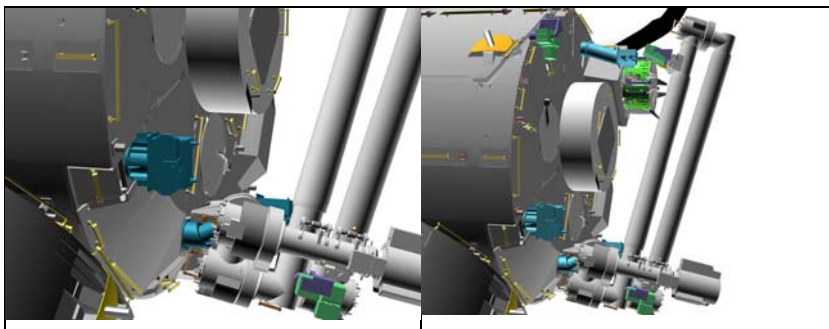


Figure 8.4 - EVA3 Start Posn
 22: Base Elbow
 (+75, -6; Zoom: 2 cm)

Figure 8.4 - EVA3 Start Posn
 22: Base Elbow
 (+80, 0; Zoom: 1.2 cm)

8.9 Transitioning MDP Mode To Position Hold

JEMRMS: MA Joint OCAS Mode
cmd Close (Verify MA Joint OCAS Mode window is closed)

JEMRMS: Mode

 'Main Arm Control Mode'
cmd MA Position Hold (Verify Current Mode – Pos Hold)

9. ENGAGING MA BRAKES

RIP MA BRAKES → ON (ON Lt – Illuminated)

RLT Verify Current Mode – Brake

Notify **SSIPC**, “JEMRMS Partial Deploy to EVA 3 Start complete”.