

19 MAR 10

Sheet 1 of 1

List of Implemented CR(s):

Assy_Ops-01984A Assy_Ops-02035
Assy_Ops-02034 Assy_Ops-02039

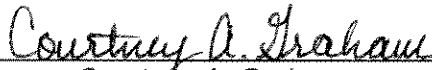
Uplinked Messages (or Approved Flight Notes) replaced by this PCN, remove from Book:

23-0023 (1.130)

Incorporates the following:

1. Replace cover
2. Replace iii thru xii
3. Replace 3 thru 12
After 54, add 54a thru 54d
Replace 397 thru 400

APPROVED BY:




Courtney A. Graham
Book Manager



Manager, Flight Procedures

Dgg



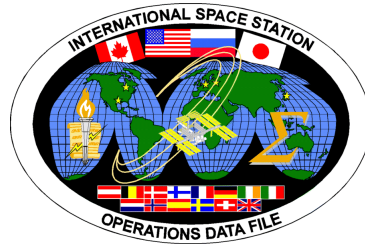
SODF Coordinator

ACCEPTED BY:



Michael T. Hurt
SODF Manager

File this PCN immediately behind the front cover as a permanent record



International Space Station Assembly Operations

ISS-19A

Mission Operations Directorate
Operations Division

19 MAR 10

*These procedures are available
electronically on the SODF Homepage
at <http://mod.jsc.nasa.gov/do3>*

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



United Space Alliance

PST CODE: ASSY OPS 19A FIN 4

**INTERNATIONAL SPACE STATION
ASSEMBLY OPERATIONS
ISS-19A**

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**INTERNATIONAL SPACE STATION
ASSEMBLY OPERATIONS
ISS-19A**

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1.100 S1 ATA REMOVAL AND REPLACEMENT PREP

(ASSY OPS/19A/FIN 1)

Page 1 of 9 pages

OBJECTIVE:

Prepares the S1 ATA for removal.

PART 1

NOTE

The following step will manually control the PM accumulator heater so that its temperature matches the ETCS loop setpoint within 2 degrees C. This step will allow a constant temperature to be maintained at the accumulator through all Beta angles. Manual heater control should be performed until the ATA is isolated.

1. CONTROLLING PM ACCUM HEATERS TO LOOP SETPOINT

S1: TCS: PM: Loop A PM Htrs

Loop A PM Htrs

'Commands'

'Accum Htr 1'

cmd Availability Inhibit – Arm (√– √)

cmd Availability Inhibit – Inh (√Availability – Inh)

'Telemetry'

'Accum Htr 1'

Verify RPC Position – Op

'Accum Htr 2'

cmd Availability Inhibit – Arm (√– √)

cmd Availability Inhibit – Inh (√Availability – Inh)

'Telemetry'

'Accum Htr 2'

Verify RPC Position – Op

S1: TCS

S1: Loop A Overview

'PM (Pump Module)'

If N2 Temp < 1.33 deg C

S1: TCS: PM : Loop A PM Htrs: RPCM S12B A RPC 07

RPCM S12B A RPC 07

'Commands'

cmd RPC Position – Close (√Posn – Cl)

1.100 S1 ATA REMOVAL AND REPLACEMENT PREP

(ASSY OPS/19A/FIN 1)

Page 2 of 9 pages

If N2 Temp > 5.33 deg C

S1: TCS: PM: Loop A PM Htrs: RPCM S12B A RPC 07

RPCM S12B A RPC 07

'Commands'

cmd RPC Position – Open ($\sqrt{\text{Posn}} - \text{Op}$)

Repeat step 1 until the PM accumulator is appropriately pre-conditioned. Manual heater operations will continue until the ATA is ready to be isolated in step 5.

NOTE

The following step should be performed when the pump module inlet pressure is at its peak in the orbit. This will preserve nitrogen.

2. PRESSURIZING ETCS LOOP A AND SUPPRESSING CWA

To suppress Event Code 4477 in the primary C&C MDM

Perform 1.210 SUPPRESS, INHIBIT, AND ENABLE C&W EVENTS, steps 1 to 4, 8 and 9 (SODF: GND AVIONICS: C&DH: NOMINAL), then:

S1: TCS: PM

Loop A PM

'Telemetry'

'PM'

Verify PM Inlet Press is at its maximum value for the orbit.

Record PM Inlet Press: _____ kPa

If PM Inlet Press = 2688 kPa \pm 10 kPa

Go to step 3.

If PM Inlet Press < 2583 kPa

For Loop A and a pressure of 2688 kPa

Perform 2.506 CHANGE ETCS LOOP A(B) PRESSURE - AUTO, all (SODF: TCS: NOMINAL: ETCS), then:

If PM Inlet Press > 2586 but < 2678 kPa

For Loop A and a pressure of 2688

Perform 2.508 INCREASE ETCS LOOP A(B) PRESSURE - MANUAL, all (SODF: TCS: NOMINAL: ETCS), then:

NOTE

If Suppressed Caution '**ETCS Loop A Pressure High/NH3 Transfer in Progress-S1**' is received, no action is required. FDIR will be inhibited in step 3.

1.100 S1 ATA REMOVAL AND REPLACEMENT PREP

(ASSY OPS/19A/FIN 1)

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3. INHIBITING NH3 RETURN FDIR

S1: TCS: Loop A Software: Loop A FDIR: Loop A ETCS FDIR Commands

Loop A ETCS FDIR Commands

'Commands'

'ETCS FDIR'

'NH3 Return'

cmd Inhibit – Arm (Verify – Inh Armed)

cmd Inhibit – Inhibit (Verify – Inh)

NOTE

Steps 4 and 5 should be performed at the point in the orbit when the PM Inlet pressure is the highest. This will prevent system overpressurization.

4. TERMINATING MANUAL HEATER OPS

S1: TCS: PM: Loop A PM Htrs: RPCM S12B A RPC 07

RPCM S12B A RPC 07

'Commands'

√RPC Position – Op

5. CLOSING THE PM INLET VALVE

S1: TCS

S1:Loop A Overview

'PM'

Verify PM Inlet Press is at its maximum value for the orbit.

S1: TCS: PM: Loop A PM Valves

Loop A PM Valves

'Commands'

'Inlet Isol Valve'

cmd Inlet Isol Valve Close – Arm (√ – √)

cmd Inlet Isol Valve Close – Close (√Posn – Cl)

6. REENABLING LOOP A PM ACCUM HEATERS

S1: TCS: PM: Loop A PM Htrs

Loop A PM Htrs

'Commands'

'Accum Htr 1'

cmd Availability Enable – Enable (√ – Ena)

'Accum Htr 2'

cmd Availability Enable – Enable (√ – Ena)

1.100 S1 ATA REMOVAL AND REPLACEMENT PREP

(ASSY OPS/19A/FIN 1)

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CAUTION

The following step should be performed no earlier than 6 minutes after entering eclipse. Performing the isolation before this time could result in an overpressurization of the fluid line. Steps 7 and 8 should be performed in quick succession to minimize the time the fluid line is liquid locked.

7. ISOLATING ATA FROM ETCS LOOP A

Verify that the ISS has been in eclipse for at least 6 minutes.

S1: TCS: Loop A Software: Loop A Off Nominal Commands

Loop A Off Nominal Commands

'Commands'

'ETCS Cmd Override'

sel ETCS Cmd Override – Ena PTC Vlv

cmd Set (\surd – Ena PTC Vlv)

S1: TCS: ATA: Loop A ATA Valves

Loop A ATA Valves

'Commands'

'ATA Valves'

'Both Isol Valves'

cmd Both Isol Valves Close – Arm (\surd – \surd)

S1: TCS: Loop A Software: Loop A Off Nominal Commands

Loop A Off Nominal Commands

'Commands'

'ETCS Cmd Override'

sel ETCS Cmd Override – Operate PTC Vlv

cmd Set (\surd – Operate PTC Vlv)

S1: TCS: ATA: Loop A ATA Valves

Loop A ATA Valves

'Commands'

'ATA Valves'

'Both Isol Valves'

cmd Both Isol Valves Close – Close (\surd Posn – Cl)

1.100 S1 ATA REMOVAL AND REPLACEMENT PREP

(ASSY OPS/19A/FIN 1)

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8. VENTING PRESSURE LOCKED ATA LINE

Loop A ATA Valves

'Commands'

'ATA Valves'

Verify Tank 1 Isol Valve – Closed

Verify Tank 2 Isol Valve – Closed

'Vent Valve'

cmd ATA Vent Valve Open – Arm (\surd – \surd)

cmd ATA Vent Valve Open – Open (\surd Posn – Op)

If Position \neq Open

The open arm and fire commands may be retried for up to 10 minutes.

If Position \neq Open after 10 minutes

S1: TCS: Loop A Software: Loop A Off Nominal Commands

Loop A Off Nominal Commands

'Commands'

'ETCS Cmd Override'

sel ETCS Cmd Override – Ena PTC Vlv

cmd Set (\surd – Ena PTC Vlv)

S1: TCS: ATA: Loop A ATA Valves

Loop A ATA Valves

'Commands'

'ATA Valves'

'Both Isol Valves'

cmd Both Isol Valves Open – Arm (\surd – \surd)

S1: TCS: Loop A Software: Loop A Off Nominal Commands

Loop A Off Nominal Commands

'Commands'

'ETCS Cmd Override'

sel ETCS Cmd Override – Operate PTC Vlv

cmd Set (\surd – Operate PTC Vlv)

S1: TCS: ATA: Loop A ATA Valves

Loop A ATA Valves

'Commands'

'ATA Valves'

'Both Isol Valves'

cmd Both Isol Valves Open – Open (\surd Position – Open)

>>

1.100 S1 ATA REMOVAL AND REPLACEMENT PREP

(ASSY OPS/19A/FIN 1)

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NOTE

1. The vent valve will remain open until prior to EVA 1 to mitigate the hazard associated with the possibility of NH3 leakage across the PM/ATA Isolation Valves after the line is vented.
2. After the ATA vent valve is closed, PM pressures will be monitored to determine if there is a leak across the PM Inlet Isolation valve. In the event that a leak through the PM inlet valve is determined to exceed a total of 0.45 kg (1 lbm) over a period of 2 days (which would liquid lock the line segment), the rate cannot be determined, or the ATA cannot be replaced in 2 days, then the PM inlet isolation valve should be opened to re-fill the inlet line.

9. CLOSING ATA VENT VALVE

S1: TCS: ATA: Loop A ATA Valves

Loop A ATA Valves

'Commands'

'ATA Valves'

'Vent Valve'

cmd ATA Vent Valve Closed – Arm ($\sqrt{-\sqrt{}}$)

cmd ATA Vent Valve Closed – Closed ($\sqrt{\text{Posn}} - \text{Cl}$)

PART 2

10. DEPRESSURIZING ETCS LOOP A ATA AND NTA

S1: TCS: NTA: Loop A NTA Valves

Loop A NTA Valves

'Commands'

'NTA Valves'

Verify Both Isol Valves Position – Open

NOTE

The following step will vent approximately 30 lbs of N2 overboard.

10.1 Setting GPRV Setpoint to Desired Pressure

S1: TCS: NTA: Loop A NTA Valves

Loop A NTA Valves

'Commands'

'GPRV'

'Setpoint'

sel Press Source – 3: NTA Out

input Setpoint – 6.9 kPa

cmd Set

1.100 S1 ATA REMOVAL AND REPLACEMENT PREP

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NOTE

GPRV software will select a setpoint value that is one step lower than the current pressure (not the commanded setpoint). When the loop pressure reaches the setpoint value, a lower setpoint (the next step value) will be commanded by the software. This process will continue until the commanded setpoint is reached.

10.2 Monitoring Loop Pressure

S1: TCS: ATA: Loop A ATA Valves

Loop A ATA Valves

'Telemetry'

Monitor NTA Outlet Press value as it approaches value entered in step 10.1.

NOTE

When the NTA outlet pressure value reaches the commanded setpoint, the ETCS Manager App Busy flag will clear. Waiting 5 minutes after the App Busy flag clears allows for pressures to stabilize.

S1: TCS: Loop A Software: Loop A ETCS Manager Details

Loop A ETCS Manager Details

'Telemetry'

'ETCS Manager'

'Data'

Verify App Busy – blank

Wait 5 minutes.

S1: TCS: ATA: Loop A ATA Valves

Loop A ATA Valves

'Telemetry'

Verify NTA Out Press: 6.9 ± 96.5 kPa

PART 3

11. FLUID QD DISCONNECTION

Loop depressurization is complete.

Crew is GO to Close(Demate) M1, M2, M3, and M4 QDs.

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PART 4

12. DISABLING ATA HEATERS

S1: TCS: ATA: Loop A ATA Heaters

Loop A ATA Heaters

'Commands'

'Group 1'

cmd Availability Inhibit – Arm (\surd – \surd)

cmd Availability Inhibit – Inh (\surd – Inh)

'Group 2'

cmd Availability Inhibit – Arm (\surd – \surd)

cmd Availability Inhibit – Inh (\surd – Inh)

13. APPLYING RPC INHIBITS TO ATA COMPONENTS

S1: TCS: ATA: Loop A ATA Htrs: RPCM S12B A RPC 12

RPCM S12B A RPC 12

cmd Close Cmd – Inhibit (Verify – Inh)

\surd RPC Position – Open

S1: TCS: ATA: Loop A ATA Htrs: RPCM S11A A RPC 14

RPCM S11A A RPC 14

cmd Close Cmd – Inhibit (Verify – Inh)

\surd RPC Position – Open

P1: EPS: RPCM S11A C: RPC 13

RPCM S11A C RPC 13

cmd Close Cmd – Inhibit (Verify – Inh)

\surd RPC Position – Open

PART 5

14. ELECTRICAL CONNECTOR DISCONNECTION

Electrical inhibits complete.

The crew is GO for electrical connector demate.

PART 6

15. INHIBITING ATA DEPENDENT ETCS FDIR AND SUPPRESSING CWA

S1: TCS: Loop A Software: Loop A FDIR: Loop A ETCS FDIR Addl

Commands

Loop A ETCS FDIR Addl Commands

'Commands'

'ETCS FDIR'

'ATA Overpress'

cmd Inhibit – Arm (Verify – Inh Armed)

cmd Inhibit – Inhibit (Verify – Inh)

'ATA Bellows Overpress'

cmd Inhibit – Arm (Verify – Inh Armed)

cmd Inhibit – Inhibit (Verify – Inh)

For Event Code 4479

Perform 1.210 SUPPRESS, INHIBIT, AND ENABLE C&W EVENTS,
steps 1 to 4, 8 and 9 (SODF: GND AVIONICS: C&DH: NOMINAL),
then:

For Event Code 4471

Perform 1.210 SUPPRESS, INHIBIT, AND ENABLE C&W EVENTS,
steps 1 to 4, 8 and 9 (SODF: GND AVIONICS: C&DH: NOMINAL),
then:

16. SUPPRESSING ATA HEATER MESSAGES

For Event Code 3700

Perform 1.210 SUPPRESS, INHIBIT, AND ENABLE C&W EVENTS,
steps 1 to 4, 8 and 9 (SODF: GND AVIONICS: C&DH: NOMINAL),
then:

For Event Code 3794

Perform 1.210 SUPPRESS, INHIBIT, AND ENABLE C&W EVENTS,
steps 1 to 4, 8 and 9 (SODF: GND AVIONICS: C&DH: NOMINAL),
then:

For Event Code 3713

Perform 1.210 SUPPRESS, INHIBIT, AND ENABLE C&W EVENTS,
steps 1 to 4, 8 and 9 (SODF: GND AVIONICS: C&DH: NOMINAL),
then:

For Event Code 3808

Go to 1.210 SUPPRESS, INHIBIT, AND ENABLE C&W EVENTS,
steps 1 to 4, 8 and 9 (SODF: GND AVIONICS: C&DH: NOMINAL).

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1.130 PREPARE ISS FOR RACK INSTALLATION ON 19A

(ASSY OPS/19A/FIN)

Page 1 of 4 pages

OBJECTIVE:

To remove and install Rack hardware on ISS to support installation of Racks transferred from the MPLM. Procedure assumes necessary AgCam hardware is removed.

LOCATION:

LAB1P4, LAB1D3, JPM1A1

DURATION:

35 minutes

LAB1P4 (5 minutes)

LAB1D3 (15 minutes)

JPM1A1 (15 minutes)

MATERIALS:

None

PARTS:

For ZSR:

ARIS - Pivot Fitting Bottom Right P/N 683-61711-32

For Worf:

ARIS Pivot Fitting Bottom Right P/N 683-61711-34

For MELFI-3

IHI/MHI Pivot Fitting Bottom, Left P/N 683-20100-1

IHI/MHI Pivot Fitting Bottom, Right P/N 683-20100-2

TOOLS:

Digital Camera

ISS Toolbox

Drawer 2:

Ratchet, 3/8" Drive

(40-200 in-lbs) Trq Wrench, 3/8" Drive

Drawer 3:

6" Long, 3/8" Hex Head, 3/8" Drive

REFERENCED PROCEDURE(S):

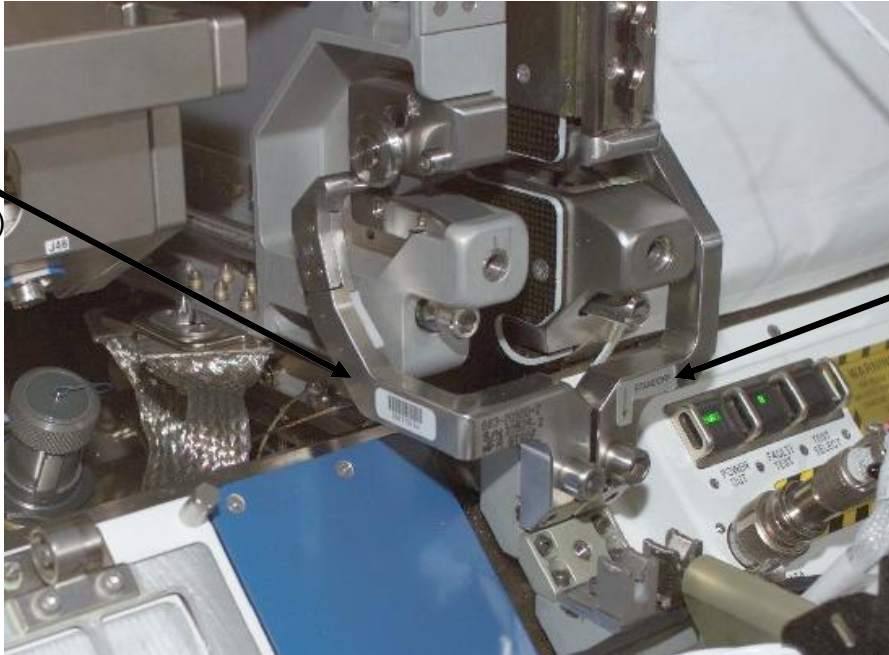
None

1.130 PREPARE ISS FOR RACK INSTALLATION ON 19A

(ASSY OPS/19A/FIN)

Page 2 of 4 pages

IHI/MHI Pivot
Fitting Bottom,
Right
(P/N 683-20100-2)



ARIS – Pivot
Fitting Bottom
Left
(P/N 683-61711-31)

Figure 1.- Pivot Fittings Shown Installed.

1. PREPARING LAB1P4 FOR ZSR INSTALLATION (5 MINUTES)

NOTE

The LAB1P4 location already has a Pivot Fitting bottom Left (P/N 683-61711-31) installed. Step 1 only installs the Right Pivot Fitting.

1.1 Record S/N of ARIS - Pivot Fitting Bottom Right (P/N 683-61711-32) to be installed: _____

LAB1P4

1.2 Install, torque ARIS - Pivot Fitting Bottom Right, fastener (one) to 150 in-lbs [Ratchet, 3/8" Drive; 6" Long, 3/8" Hex Head, 3/8" Drive; (40-200 in-lbs) Trq Wench, 3/8" Drive].
Refer to Figure 1.

1.130 PREPARE ISS FOR RACK INSTALLATION ON 19A

(ASSY OPS/19A/FIN)

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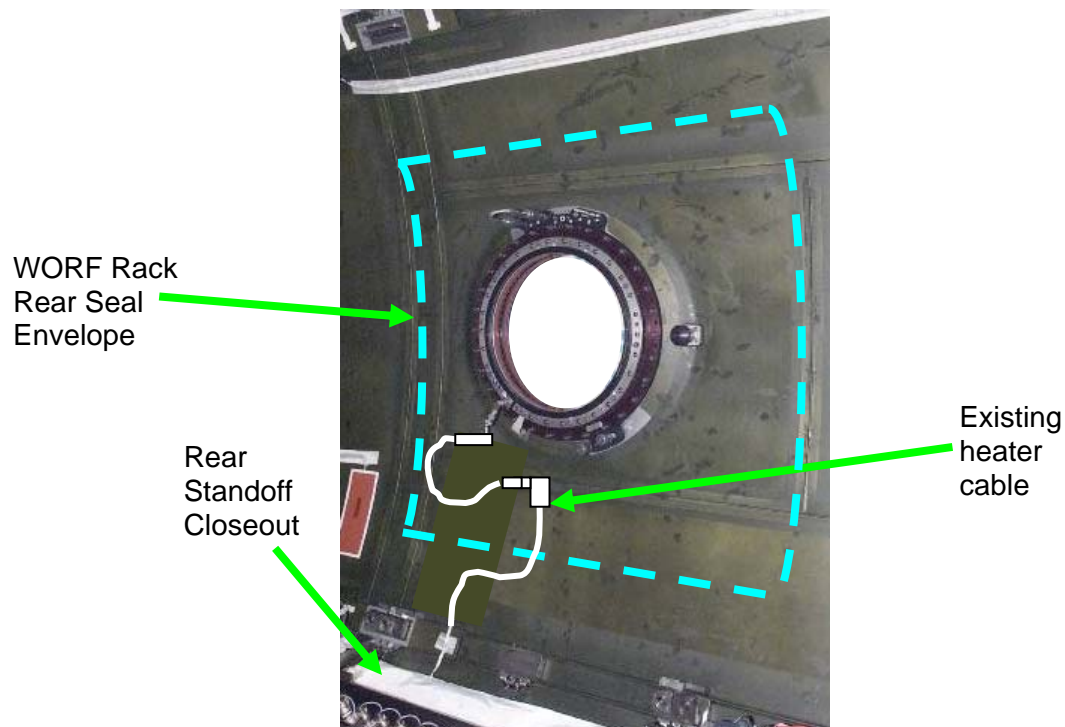


Figure 2.- Worf Rack Rear Seal Envelope.

2. PREPARING LAB1D3 FOR WORF RACK INSTALLATION (15 MINUTES)

NOTE

The LAB Window Heater Cable is not connected to the Scratch Pane. It is stowed taped to the LAB module wall. Steps 2.1 and 2.2 detach the cable and stow it in the Standoff.

LAB1D3

2.1 Detach tape that is holding Window Heater cable to LAB module.

2.2 To prevent LAB Window Heater cable from interfering with the Worf Rack Rear Seal Envelope:

Stow entire length of Window Heater cable in the Port Deck Standoff under the rear Standoff Closeout.

Refer to Figure 2.

2.3 Record S/N of ARIS Pivot Fitting Bottom Right P/N 683-61711-34:

2.4 Install, torque ARIS Pivot Fitting Bottom Right P/N 683-61711-34, fastener (one) to 150 in-lbs [Ratchet, 3/8" Drive; 6" Long, 3/8" Hex Head, 3/8" Drive; (40-200 in-lbs) Trq Wrench, 3/8" Drive].

Refer to Figure 1.

2.5 ✓ ARIS Pivot Fitting Bottom Left P/N 683-61711-33 still installed at the bottom left Standoff

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1.130 PREPARE ISS FOR RACK INSTALLATION ON 19A

(ASSY OPS/19A/FIN)

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If no ARIS Pivot Fitting Bottom Left installed

Perform steps 2.3 and 2.4 to install the ARIS Pivot Fitting Bottom Left on the left lower Standoff of the Rack bay.

2.6 Photo document the LAB Window hardware configuration and LAB1D3 Rack attachment points (Digital Camera).

3. PREPARING JPM1A1 FOR MELFI-3 RACK INSTALLATION (15 MINUTES)

JPM1A1

3.1 Remove ARIS - Pivot Fitting Bottom Left (P/N 683-61711-31), fastener (one) from JPM1A1 Standoff (Ratchet, 3/8" Drive; 6" Long, 3/8" Hex Head, 3/8" Drive).

Refer to Figure 1.

3.2 Remove ARIS - Pivot Fitting Bottom Right (P/N 683-61711-32), fastener (one) from JPM1A1 Standoff (Ratchet, 3/8" Drive; 6" Long, 3/8" Hex Head, 3/8" Drive).

Refer to Figure 1.

3.3 Record S/N of ARIS - Pivot Fitting Bottom Left (P/N 683-61711-31):

Record S/N of ARIS - Pivot Fitting Bottom Right (P/N 683-61711-32):

Record S/N of IHI/MHI Pivot Fitting Bottom, Left (P/N 683-20100-1):

Record S/N of IHI/MHI Pivot Fitting Bottom, Right (P/N 683-20100-2):

3.4 Install, torque IHI/MHI Pivot Fitting Bottom, Left (P/N 683-20100-1), fastener (one) to 150 in-lbs [Ratchet, 3/8" Drive; 6" Long, 3/8" Hex Head, 3/8" Drive; (40-200 in-lbs) Trq Wench, 3/8" Drive].

Refer to Figure 1.

3.5 Install, torque IHI/MHI Pivot Fitting Bottom, Right (P/N 683-20100-2), fastener (one) to 150 in-lbs [Ratchet, 3/8" Drive; 6" Long, 3/8" Hex Head, 3/8" Drive; (40-200 in-lbs) Trq Wench, 3/8" Drive].

Refer to Figure 1.

4. CLOSEOUT

4.1 Photo document newly installed hardware (Digital Camera).

4.2 Check for FOD within 3 ft radius.

4.3 Stow tools.

Notify **MCC-H** of task completion, S/Ns of installed hardware.

Table 1. Restow

Ops Nom	P/N	Qty
ARIS - Pivot Fitting Bottom Left	683-61711-31	1
ARIS - Pivot Fitting Bottom Right	683-61711-32	1

PAYLOAD DEACTIVATION

(ASSY OPS/19A/FIN 1)

Page 1 of 1 page

- | | | |
|-----------------|----|--|
| L12U
(SSP 1) | 1. | cb SW PWR 1 – op
cb PDIP 1 PWR 2/KuBAND RLY – op
MPLM CHAN 1 HTR PWR – OFF (tb-bp)
MPLM CHAN 2 HTR PWR – OFF (tb-bp)
cb PDIP1 PWR 1 – op |
| L12L
(SSP 2) | 2. | MPLM KEEL CAM PWR – OFF
MPLM KEEL CAM HTR/ILLUM PWR – OFF
cb SW PWR 3 – op
cb PDIP 2 PWR 2/MPLM RLY – op
cb PDIP 2 PWR 1 – op |
| L12 (PDIP 1) | | Ku BAND RATE – OFF |
| R1 | 3. | PL CAB – OFF
PRI MNC – OFF (tb-OFF)
AFT MN B – OFF |

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PAYLOAD REACTIVATION

(ASSY OPS/19A/FIN 1)

Page 1 of 1 page

- | | | |
|-----------------|----|--|
| R1 | 1. | PL CAB – MNA
PL PRI MNC – ON (tb-ON)
PL AFT MN B – ON |
| L12U
(SSP 1) | 2. | MPLM CHAN 1 HTR PWR – ON (tb-gray)
MPLM CHAN 2 HTR PWR – ON (tb-gray) |
| L12L
(SSP 2) | 3. | cb SW PWR 3 – cl
MPLM KEEL CAM HTR/ILLUM PWR – ON |

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