NODE 1 PATCH PANEL RECONFIGURATION

1. VERIFY P6 POWER GENERATION STATUS

PCS P6: EPS

P6:EPS

'ENERGY STORAGE 4B'

√Batt SOC 1 > 80%
√Batt SOC 2 > 80%
√Batt SOC 3 > 80%

'Energy Storage 2B'

√Batt SOC 1 > 80%
√Batt SOC 2 > 80%
√Batt SOC 3 > 80%

'DCSU 4B'

√Bus Voltage: 143 --- 165 V

'DCSU 2B'

√Bus Voltage: 143 --- 165 V

'P6:EPS:Bottom Left Corner'

√DDCU 4B Output Pwr + Channel 4B Output Power < 3 kW

'P6:EPS:Bottom Right Corner'

√DDCU 2B Output Pwr + Channel 2B Output Power < 3 kW

'DDCU Z14B'

√Output Pwr < 3 kW

'DDCU Z13B'

√Output Pwr < 3 kW

> NOTE
> This procedure assumes that MDM N1-2 is Primary and MDM N1-1 is Secondary.

Node 1 Fwd 2. ACTIVATE ALL NODE 1 LIGHTS

Node 1 General Lighting Pb - On

√All Node 1 Interior Lights (eight) - Full Bright Endcone

CAUTION
Crew can only work two hours in the Node without the IMV and the Cabin Fan operating.

3. <u>DEACTIVATE NODE 1 - FGB VENTILATION</u>

PCS Node 1: ECLSS: Aft Port IMV Fan

Node 1 Aft Port IMV Fan

'Node 1 Aft Port IMV Fan'

cmd Off **Execute**

√Status - Off

√Speed, rpm is decreasing

FGB: ECLSS

FGB ECLSS

FGB Dock Adapter PEV - Cl

Node 1 PEV - Cl

4. <u>CONFIGURE AFT PORT IMV VALVE CLOSED</u>

Node 1: ECLSS: Aft Stbd IMV Vlv

Nod1 Aft Port IMV Vlv

'RPCM N14B C RPC 05'

√Close Cmd - Ena

sel RPC Commands

cmd Close **Execute**

√Position - Cl

'Nod1 Aft Port IMV Vlv'

√Stat - Off

√Ena Stat - Off

sel Vlv Commands

cmd On **Execute**

√Op - Not Op

√Cl - Cl

√Stat - Cl

√Ena Stat - On

sel Vlv Commands

cmd Close **Execute**

√Stat - In

Trans wait 20 seconds, then

√Stat - Cl

5. DEACTIVATE NODE 1 CABIN FAN
   Node 1: ECLSS: Cab Fan
   Nod1 Cab Fan
   'Nod1 Cab Fan'

   sel Fan Commands
   cmd Off **Execute**
   √Stat - Off
   √Lim Stat - Inh
   √Spd - Decreasing

   'RPCM N14B B RPC 17'

   sel RPC Commands
   cmd Open **Execute**
   √Position - Op

6. DEACTIVATE SMOKE DETECTOR 1
   Node 1: ECLSS: SD1
   Nod1 SD 1
   'Nod1 SD 1'

   sel SD Commands
   cmd Mon Inh **Execute**
   √Mon Stat - Not Mon

   'RPCM N14B C RPC 03'

   sel RPC Commands
   cmd Open **Execute**
   √Position - Op

7. INHIBIT NCS AUTORETRY
   EPS: Z1 CONNECTOR PATCH PANEL RECONFIG
   Z1 CONNECTOR PATCH PANEL RECONFIG
   'Primary NCS'

   cmd Auto Retry - Inhibit

   √Auto Retry - Inh

8. COMMAND N1-1 TO DIAGNOSTICS

   NOTE
   Expect PCS FDA message 'CDH MDM N1-2 Detected RT Fail MDM N1-1 - PMA1'.

   'N1-1 MDM'

cmd Auth Xtion Diagnostic State - Ena
cmd Diagnostic State - Transition

'Secondary NCS'

√Frame Count: 'Not Incrementing'

9. <u>REMOVE POWER FROM SDO CARD AND N1-1 MDM</u>
'N1-1 MDM'

cmd RPCM N1RS1 A RPC 05 - Open
√Position - Op
cmd RPCM N1RS1 A RPC 11 **-** Open
√Position - Op

10. <u>DISABLE RT DEVICES I/O ON EPS BUSES</u>
'UB EPS_N1-14'

cmd RPCM_N1RS1_A_Inh
cmd RPCM_N1RS1_B_Inh
cmd RPCM_N1RS1_C_Inh

√RT Inhibit 20, 19, 18 (three) - Inh

'LB SYS LAB 1'

cmd RPCM_N14B_A_Inh
cmd RPCM_N14B_B_Inh
cmd RPCM_N14B_C_Inh

√RT Inhibit 20, 19, 18 (three) - Inh

11. <u>COMMAND FGB RACU 6 OFF</u>
'FGB EPS'

cmd RACU 6 - Off
√RACU 6 Power - Off
√RACU 6 Input Current < 2.0 A
√RACU 6 Output Voltage ~0.0 V

12. <u>COMMAND DDCU Z1-4B CONVERTER OFF</u>
'4B Power Control'

cmd DDCU Z14B Converter - Off Arm
cmd DDCU Z14B Converter - Off
√Current < 0.5 A
√Voltage ~0.0 V

Notify EV, Go for Patch Panel A1 Reconfig.

On Crew GO

13. <u>COMMAND DDCU Z1-4B CONVERTER ON</u>
    ‘4B Power Control’

    cmd DDCU Z14B Converter - Off Arm
    cmd DDCU Z14B Converter - Off
    √Current < 0.5 A
    √Voltage ~123.0 V

14. <u>VERIFY N1-1 TRANSITION TO STANDBY</u>

NOTE
MDM may take up to 5 minutes to warmup and go through POST.

    ‘Secondary NCS’

    √Major State - Standby

15. <u>COMMAND N1-1 MDM TO SECONDARY</u>
    ‘N1-1 MDM’

    cmd Secondary State - Transition

    ‘Secondary NCS’

    √Major State - Secondary

16. <u>ENABLE RT DEVICES I/O ON RACU 6 EPS BUSES</u>

```
*********************************************
*  If N1-2 power down will be delayed       *
*                                           *
*       ‘Primary NCS’                       *
*                                           *
*       cmd Auto Retry - Ena                *
*     √Auto Retry - Ena                     *
*********************************************
```

    ‘UB EPS N1 14’

    cmd RPCM_N1RS1_A - Ena
    cmd RPCM_N1RS1_B - Ena
    cmd RPCM_N1RS1_C - Ena

    √RT Inhibited 20, 19, 18 (three) - blank

'LB SYS LAB 1'

cmd RPCM_N14B_A - Ena
cmd RPCM_N14B_B - Ena
cmd RPCM_N14B_C - Ena

√RT Inhibited 20, 19, 18 (three) - blank

17. PROVIDE POWER TO MDM SDO CARD
'N1-1 MDM'

cmd RPC 5 - Close
√Position - Cl

18. NODE 1 AFT PORT IMV VLV OPENING
Node 1: ECLSS: FDIR
Node 1 FDIR Details

√N1_1 MDM IMV FDIR Stat - Ena
√N1_2 MDM IMV FDIR Stat - Ena

Node 1: ECLSS: AFT PORT IMV VLV
Node 1 Fwd Stbd IMV
'RPCM N14B C RPC 05'

sel RPC Commands
cmd Close **Execute**
√Position - Cl

'Node 1 Aft Port IMV Vlv'

sel Vlv Commands
cmd On **Execute**
cmd Open **Execute**
√Stat - In Transition
Wait 20 seconds.
√Stat - Op

19. CONFIGURE IMV AFT PORT FAN ON
Node 1: ECLSS
NODE 1: ECLSS

sel Node_1_Aft_Port_IMV_Fan
sel RPC Commands

cmd RPC Position - Close **Execute**
√RPC Position - Close

NODE 1: Aft Port IMV Fan

cmd On **Execute**
√Status - In Transition

Wait 15 seconds.

√Status - On
√Speed, rpm: 7462 --- 9500

20. ACTIVATE NODE 1 CABIN FAN
Node 1: ECLSS: Cab Fan
Nod1 Cab Fan
'RPCM N14B B RPC 17'

sel RPC Commands
cmd Close **Execute**
√Position - Cl

'Nod1 Cab Fan'
sel Fan Commands
cmd On **Execute**
√Stat - On
√Lim Stat - Ena

21. SMOKE DETECTOR SD 1 ACTIVATION
Node 1: ECLSS: SD1
Nod1 SD 1
'RPCM N14B C RPC 03'

sel RPC Commands
cmd Close **Execute**
√Position - Cl

'Nod1 SD 1'

sel SD Commands
cmd Mon Ena **Execute**
√Act Bit In Prog - True

Wait 3 seconds, then
√Act Bit In Prog - False
√Act Bit Fail - Operational
√Obscuration: 0% Contam
√Scatter: 0% obs/m
√Mon Stat - Mon

22. SMOKE DETECTOR 2 DEACTIVATION

PCS Node 1: ECLSS: SD2

Nod1 SD 2

'Nod1 SD 2'

sel SD Commands
cmd Mon Inh **Execute**
√Mon Stat - Not Mon

'RPCM N13B A RPC 16'

sel RPC Commands
cmd Open **Execute**
√Position - Op

23. REACTIVATE EARLY COMM HEATERS

> NOTE
> The Early Comm equipment is powered by the Stbd CBM RPCs.

EPS: Z1 CONNECTOR PATCH PANEL RECONFIG

Z1 CONNECTOR PATCH PANEL RECONFIG

'ECOMM Heaters'

sel RPC [X] [X] = 6 13 5

cmd RPC [X] - Close
√Position - Cl

Repeat

24. INHIBIT NCS AUTORETRY

'Secondary NCS'

cmd Auto Retry - Inh
√Auto Retry - Inh

25. CONFIGURE DECK AFT IMV VALVE CLOSED

Node 1: ECLSS: Deck Aft IMV Vlv

Nod1 Deck Aft IMV Vlv

'RPCM N13B RPC 15'

√Close Cmd - Ena
sel RPC Commands
cmd Close **Execute**
√Position - Cl

'Nod1 Deck Aft IMV Vlv'

√Stat - Off
√Ena Stat - Off

sel Vlv Commands
cmd On **Execute**
√Op - Not Op
√Cl - Cl
√Stat - Cl
√Ena Stat - On

sel Vlv Commands
cmd Close **Execute**
√Stat - In Trans
Wait 20 seconds, then
√Stat - Cl

26. COMMAND N1-2 TO DIAGNOSTICS

NOTE
1. Expect 'Disconnect' message on PCS.
2. Possible PDI DECOM Fail message.

'N1-2 MDM'

cmd Auth Xtion Diagnostic State - Ena
cmd Diagnostic State - Trasnsition

Wait 20 seconds for transition.

NOTE
Perform step 18 if no comm with **MCC-H**.
If not crew performed, INCO will perform step 18.

27. TELEMETRY RECOVERY ON OIU

CRT SM 212 OIU

BUS 4 BC - ITEM 15 EXEC (*)
BUS 3 RT - ITEM 10 EXEC (*)
Change OIU N1 Phys Dev to N1-1 - ITEM 18 +4 EXEC

Wait 1 minute from diagnostic command.
CRT Reload OIU Format 2 - ITEM 1 +2 EXEC

28. TELEMETRY RECOVERY ON PCS

PCS On PCS attached to UOP (PDIP) N1-1 port

sel icon to open PCS CDS Main Control Panel Window
√status box - yellow
sel 'Connect to MDM'
√status box - green
Verify 'connected to MDM' indicated

Home page will display when load complete (~1 minute).

NOTE
Expect PCS FDA 'CDH MDM N1-1 Detected RT Fail MDM N1-2 - PMA1'.

Node 1: C&DH: MDM N1-1
Primary NCS MDM Node1
'MDM Major State'

√State - Primary

```
*****************************************
*  If State not Primary or no N1-1 TLM  *
*                                       *
*      √MCC
*****************************************
```

29. REMOVE POWER FROM N1-2 MDM AT RPC

PCS EPS: Z1 CONNECTOR PATCH PANEL RECONFIG
Z1 CONNECTOR PATCH PANEL RECONFIG

NOTE
Expect PCS FDA (LED and message only) when MDM power removed.

'N1-2 MDM'

sel RPC 03
cmd RPCM N1RS2 C RPC 3 - Open
√Position - Op

cmd RPCM N1RS2 C RPC 13 - Open
√Position - Op

30. DISABLE RT DEVICES I/O ON EPS BUSES

'UB EPS_N1 23'

cmd PCU_1 - Inh
cmd N1RS2_A - Inh
cmd N1RS2_B - Inh
cmd N1RS2_C - Inh

√RT Inhibit 18, 19, 20 (three) - Inh

'LB SYS LAB 2'

cmd Inhib_RPCM_N13B_A - Inh
cmd Inhib_RPCM_N13B_B - Inh
cmd Inhib_RPCM_N13B_C - Inh

√RT Inhibit 20, 19, 18 (three) - Inh

31. <u>COMMAND FGB RACU 5 OFF</u>
'FGB EPS'

cmd RACU 5 - Off
√RACU 5 Converter - Off
√RACU 5 Input Current < 2.0 A
√RACU 5 Output Voltage ~0.0 V

32. <u>COMMAND DDCU Z1-3B CONVERTER OFF</u>
'2B Power Control'

cmd DDCU Z13B Converter - Off
√Output Voltage ~0.0 V
√Current < 0.5 A

Notify EV, Go for Patch Panel A2 Reconfig.

On Crew GO
33. <u>COMMAND DDCU Z1-3B CONVERTER ON</u>
'2B Power Control'

cmd DDCU Z13B Converter - On
√Output Voltage ~123 V
√Current < 0.5 A

34. <u>VERIFY N1-2 IN STANDBY</u>

<u>NOTE</u>
MDM may take up to 5 minutes to warmup and go through POST.

'Secondary NCS'

√Major State - Standby

****
* If State not Standby, *
* *
√**MCC-H**
****

35. COMMAND N1-1 TO STANDBY

NOTE
Expect PDI DECOM fail message. After commanding N1-1 to Standby it could take as long as 3 minutes for N1-2 to become Primary.

PCS Node 1: C&DH: MDM N1-1
Primary NCS MDM Node1
'MDM Major State'

sel Commands
00:05:00 **cmd** Prim_NCS_Xsitn_Stby_State **Execute**

36. TELEMETRY RECOVERY ON PCS AND OIU

CRT SM 212 OIU

BUS 3 BC - ITEM 11 EXEC(*)
BUS 4 RT - ITEM 14 EXEC(*)
Change OIU N1 Phys Dev to N1-2 - ITEM 18 +3 EXEC

Wait 1 minute from command to standby.

NOTE
Expect PDI DECOM Fail message.

Reload OIU FORMAT - ITEM 1 +2 EXEC

37. TELEMETRY RECOVERY ON PCS

PCS On PCS attached to PDIP N1-2 port

sel icon to open PCS CDS Main Control Panel Window
√status box - yellow
sel 'Connect to MDM'
√status box - green
Verify 'connected to MDM' indicated

PCS Node 1: C&DH: MDM N1-2
Primary NCS MDM Node1
'MDM Major State'

√State - Primary

38. COMMAND N1-1 MDM TO SECONDARY
'N1-1 MDM'

cmd Secondary State - Transition

'Secondary NCS'

√Major State - Secondary

39. <u>ENABLE RT DEVICES I/O ON EPS BUSES</u>
'UB EPS_N1-23'

√RT Inhibited 20, 19, 18 (three) - blank

'LB SYS LAB 2'

√RT Inhibited 20, 19, 18 (three) - blank

40. <u>NODE 1 DECK AFT IMV VLV OPENING</u>
PCS Node 1: ECLSS: FDIR
[Node 1 FDIR Details]

√N1_1 MDM IMV FDIR Stat - Ena
√N1_2 MDM IMV FDIR Stat - Ena

Node 1: ECLSS: DECK AFT IMV VLV
[Node 1 Fwd Stbd IMV]
'RPCM N13B C RPC 13'

sel RPC Commands
cmd Close **Execute**
√Position - Cl

'Node 1 Aft Port IMV Vlv'

sel Vlv Commands
cmd On **Execute**
cmd Open **Execute**
√Stat - In Transition
Wait 20 seconds.
√Stat - Op

41. <u>SMOKE DETECTOR SD 2 ACTIVATION</u>
Node 1: ECLSS: SD2
[Nod1 SD 2]
'RPCM N13B A RPC 16'

sel RPC Commands
cmd Close **Execute**
√Position - Cl

'Nod1 SD 2'

sel SD Commands
cmd Mon Ena **Execute**
√Act Bit In Prog - True

Wait at least 3 seconds, then
√Act Bit In Prog - False
√Act Bit Fail - Operational
√Obscuration ~0% Contam
√Scatter ~0% obs/m
√Mon Stat - Mon

Node 1: ECLSS: FDIR
Nod1 FDIR Details

sel Commands
cmd N1_1_MDM Fire Isol Ena **Execute**
√Stat - Ena
cmd N1_2_MDM Fire Isol Ena **Execute**
√Stat - Ena
sel Commands
cmd N1_1_MDM IMV FDIR Ena **Execute**
√Stat - Ena
cmd N1_2_MDM IMV FDIR Ena **Execute**
√Stat - Ena

42. ENABLE N1-1 MDM NCS AUTO RETRY
'Secondary NCS'

cmd Auto Retry - Ena
√Auto Retry - Ena

43. PROVIDE POWER TO MDM N1-2 SDO CARD
'N1-2 MDM'

cmd RPCM N1RS2 C RPC 3 - Close
√Position - Cl

NOTE
Perform following steps if no comm with **MCC-H**.
If not crew performed, **MCC-H** can complete the procedure.

44. VERIFY RPCM POWER BUS CONNECTIVITY

PCS Node 1: EPS

√N1RS1 A, B, C (three) - Active (blue buttons)
√N1RS2 A, B, C (three) - Active (blue buttons)
√N13B A, B, C (three) - Active (blue buttons)
√N14B A, B, C (three) - Active (blue buttons)

Z1: EPS

√Z13B A, B (two) - Active (blue buttons)
√Z14B A, B (two) - Active (blue buttons)

```
*****************************************
*  If any RPCM not active, √MCC-H   *
*****************************************
```

45. <u>ENABLE NODE 1 A HEATERS TO BACK-UP</u>
Node 1: TCS
Node 1: TCS
'NODE 1'

sel Nod1 Htr[X]A [X] = 1 2 3 4 5 6 7 8 9

sel Htr Commands (right side)
cmd Htr[X]A Ena Bkup **Execute**
√Nod1 Htr[X]A Availbty - Ena Bkup

Repeat

46. <u>COMMAND PMA1 B HEATERS TO ENABLED BACKUP</u>
Node 1: TCS
Node1:TCS
'PMA1'

sel PMA1 Htr[X]B [X] = 1 2 3 5

sel Htr Commands (right side)
cmd Htr[X]A Ena Bkup **Execute**
√Nod1 Htr[X]A Availbty - Ena Bkup

Repeat

<u>NOTE</u>
The PMA 1 and Node 1 Heater set points will be commanded by **MCC-H**.

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