

Procedure. Ref.: SVT_OPM_5100 (1,1) CHANGE TO FULL SAFE MODE

Procedure Title: Change to FULL SAFE Mode

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Purpose of Procedure:

This procedure executes the mode change to FULL SAFE Mode. The procedure is written to cover all transitions into FULL SAFE MODE from all other possible modes. The current state of OM and the High Voltages is checked at the start of the procedure and the relevant steps are then followed.

Note: During SVT it is not foreseen to operate the High Voltages.

This procedure is foreseen to be used during the OM SVT.

Initial State: OM ON in INITIAL, IDLE, INTER SAFE, SCIENCE or ENGINEERING

Final State: OM ON and FULL SAFE.

Step	Time	Activity/Remarks	Command	TM Verification
1		Assess the current State of OM and the High Voltages.		<u>AND: H100</u> H5395 "OM STATE" = H5405 "ICU STATE" = H5450 "DPU STATE" = H5145 "HV ENABLED" =
2		Select appropriate step based on: OM STATE TM_H5395 and HV ENABLED TM_H5145: H5395=INITIAL,H5145=DISABLED- Goto Step 3 H5395=IDLE, SCIENCE or ENGINEERING, H5145=ENABLED- Goto Step 4 H5395=IDLE, SCIENCE or ENGINEERING, H5145=DISABLED- Goto Step 5 H5395=INTER SAFE, H5145=ENABLED- Goto Step 6 H5395=INTER SAFE, H5145=DISABLED- Goto Step 7		
3		VERIFY STATE OF OM OM is in either INITIAL Mode with HV OFF.		<u>AND: H100</u> H5395 "OM STATE" = H5145 "HV ENABLED" = ENABLED
3.1		CHANGE TO ICU MODE 1 - FULL SAFE	<u>H9001</u> GOTO SAFE H0550 "MODIFIER" = FULL H0650 "TRANSITION PARA" = 0	
3.2		Wait up to 20 seconds. Check TM status		<u>AND: H100</u> H5395 "OM STATE" = SAFE H5405 "ICU STATE" = OPERATIONAL H5450 "DPU STATE" = BOOT

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Step	Time	Activity/Remarks	Command	TM Verification
3.3		If OM A is ON Verify OM-1 Secondary Rails are ON. Verify 28 V power consumption.		<u>AND: H100</u> P1107 "LCL STA OM-A" = CLOSE P1135 "LCL STA OM-B" = OPEN H5255 "SECONDARY V STAT" = ENABLED H5280 "CURRENT +25 SV" = 16 to 23 mA H5285 "CURRENT +15 SV" = 39 to 54 mA H5290 "CURRENT +11 SV" = 87 to 96 mA H5295 "CURRENT +5.3 SV" = 393 to 541 mA H5300 "CURRENT -5.3 SV" = 368 to 506 mA H5305 "CURRENT -15 SV" = 43 to 60 mA H5310 "CURRENT +28 UV" = 2350 mA
3.4		If OM B is ON Verify OM-1 Secondary Rails are ON. Verify 28 V power consumption.		<u>AND: H100</u> P1107 "LCL STA OM-A" = OPEN P1135 "LCL STA OM-B" = CLOSE H5255 "SECONDARY V STAT" = ENABLED H5280 "CURRENT +25 SV" = 15 to 22 mA H5285 "CURRENT +15 SV" = 36 to 50 mA H5290 "CURRENT +11 SV" = 77 to 107 mA H5295 "CURRENT +5.3 SV" = 391 to 539 mA H5300 "CURRENT -5.3 SV" = 360 to 495 mA H5305 "CURRENT -15 SV" = 41 to 58 mA H5310 "CURRENT +28 UV" = 2350 mA
3.5		Go to Step END OF PROCEDURE		
4		VERIFY STATE OF OM OM is in either IDLE, SCIENCE or ENGINEERING Mode with HV ON.		<u>AND: H100</u> H5395 "OM STATE" = H5145 "HV ENABLED" = ENABLED
4.1		CHANGE TO ICU MODE 1 - FULL SAFE	<u>H9001</u> GOTO SAFE H0550 "MODIFIER" = FULL H0650 "TRANSITION PARA" = 0	
4.2		Wait up to 20 seconds for Mode Change Event Packet 92100 (PK Dump 1016 OM4) Check TM status		<u>AND: H911</u> HU700 "DETECTOR EVENT" = CATHODE OK
4.3		Wait up to 20 seconds for Mode Change Event Packet 92100 (PK Dump 1016 OM4) Check TM status		<u>AND: H911</u> HU700 "DETECTOR EVENT" = MCP1 OK
4.4		Wait up to 100 seconds for Mode Change Event Packet 92100 (PK Dump 1016 OM4) Check TM status		<u>AND: H911</u> HU700 "DETECTOR EVENT" = MCP23 OK
4.5		Wait up to 40 seconds for 0,1 or 2 Filter Wheel Event Packets 92600 (PK Dump 1096 OM4) Check TM status		<u>AND: H911</u> HU010 "TMPSU EVENT" = FW @ REQ POS

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Step	Time	Activity/Remarks	Command	TM Verification
4.6		Confirm OM In SAFE Mode Check TM status		<u>AND: H100</u> H5395 "OM STATE" = SAFE H5405 "ICU STATE" = OPERATIONAL H5450 "DPU STATE" = DPUOS
4.7		Go to Step END OF PROCEDURE		
5		VERIFY STATE OF OM OM is in either IDLE, SCIENCE or ENGINEERING Mode with HV OFF		<u>AND: H100</u> H5395 "OM STATE" = H5145 "HV ENABLED" = DISABLED
5.1		CHANGE TO ICU MODE 1 - FULL SAFE	<u>H9001</u> GOTO SAFE H0550 "MODIFIER" = FULL H0650 "TRANSITION PARA" = 0	
5.2		Wait up to 20 seconds for Filter Wheel Event Packets 92600 (PK Dump 1096 OM4) Check TM status		<u>AND: H911</u> HU010 "TMPSU EVENT" = FW @ REQ POS
5.3		Wait up to 20 seconds for another wheel event packet. This ONLY occurs if the Filter Wheel has not yet been to datum, Packet 92600 (PK Dump 1096 OM4) Check TM status		<u>AND: H911</u> HU010 "TMPSU EVENT" = FW @ REQ POS
5.4		Confirm OM In SAFE Mode Check TM status		<u>AND: H100</u> H5395 "OM STATE" = SAFE H5405 "ICU STATE" = OPERATIONAL H5450 "DPU STATE" = DPUOS
5.5		Go to Step END OF PROCEDURE		
6		VERIFY STATE OF OM OM is in INTER SAFE Mode with HV ON		<u>AND: H100</u> H5395 "OM STATE" = INTER SAFE H5145 "HV ENABLED" = ENABLED
6.1		CHANGE TO ICU MODE 1 - FULL SAFE	<u>H9001</u> GOTO SAFE H0550 "MODIFIER" = FULL H0650 "TRANSITION PARA" = 0	
6.2		Wait up to 20 seconds for Mode Change Event Packet 92100 (PK Dump 1016 OM4) Check TM status		<u>AND: H911</u> HU700 "DETECTOR EVENT" = MCP1 OK
6.3		Wait up to 100 seconds for Mode Change Event Packet 92100 (PK Dump 1016 OM4) Check TM status		<u>AND: H911</u> HU700 "DETECTOR EVENT" = MCP23 OK
6.4		Wait up to 40 seconds for 0,1 or 2 Filter Wheel Event Packets 92600 (PK Dump 1096 OM4) Check TM status		<u>AND: H911</u> HU010 "TMPSU EVENT" = FW @ REQ POS

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Step	Time	Activity/Remarks	Command	TM Verification
6.5		Confirm OM In SAFE Mode Check TM status		<u>AND: H100</u> H5395 "OM STATE" = SAFE H5405 "ICU STATE" = OPERATIONAL H5450 "DPU STATE" = DPUOS
6.6		Go to Step END OF PROCEDURE		
7		VERIFY STATE OF OM OM is in INTER SAFE Mode with HV OFF		<u>AND: H100</u> H5395 "OM STATE" = INTER SAFE H5145 "HV ENABLED" = DISABLED
7.1		CHANGE TO ICU MODE 1 - FULL SAFE	<u>H9001</u> GOTO SAFE H0550 "MODIFIER" = FULL H0650 "TRANSITION PARA" = 0	
7.2		Wait up to 40 seconds for 0,1 or 2 Filter Wheel Event Packets 92600 (PK Dump 1096 OM4) Check TM status		<u>AND: H911</u> HU010 "TMPSU EVENT" =FW @ REQ POS
7.3		Confirm OM In SAFE Mode Check TM status		<u>AND: H100</u> H5395 "OM STATE" = SAFE H5405 "ICU STATE" = OPERATIONAL H5450 "DPU STATE" = DPUOS
7.4		Go to Step END OF PROCEDURE		
8		END OF PROCEDURE		