

05-13-2011
APPROVED

OMI S0017.200 A28
APPROVED

TERMINAL COUNT DEMONSTRATION (LPS)

Element/End Item: **OV-103/104/105**
Flow/Usage: **ALL**
Facility: **PAD A/B**
Design Center Concurrence: **MSFC/JSC**
Category: **B**
OPR: **TCO**
TTL ORG: **OC**

**This document contains
HAZARDOUS operations.**

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1.0 INFORMATION

NOTE

Calibration Data Is Detected

A keyword search performed on this WAD indicates it may contain calibration data recordings. This keyword search is limited and variations other than the USA Writer's Handbook (USA008777) approved format for calibration data recording may not be detected. Calibration data recordings in deviations, attachments, or Pen & Inks will not be detected.

1.1 Objective

1. To demonstrate the sequence of Crew operations required to prepare for Shuttle Launch from Crew suiting through GLS cut-off (T-5 seconds.)
2. To evaluate Crew operations time lines established for the Shuttle Launch Terminal Count.
3. To evaluate the inter-agency interfaces required to support the Shuttle Launch Terminal Countdown.
4. To interface the Flight Crew and the Launch Test Team in a Launch dress rehearsal.
5. To demonstrate the Launch abort safing steps and recycle to T-20 minutes.

Call To Station

1. Verify Shuttle pretest setups complete.
2. Verify constraints to power up of the SSV have been verified complete.
3. Verify voice recordings. Annotate voice tapes with test documentation.
4. Verify personnel to support test are on-station.
5. Review Emergency Procedures and Emergency Power Down requirements. Verify all personnel have a copy of the Emergency Procedures.
6. Verify LPS preparations are complete, and LPS is ready to support Shuttle power up.
7. Obtain NASA Test Director or his designee approval to start testing.
8. Proceed with Shuttle power up (if required).

Shuttle Power Up

1. Perform Shuttle Standard Electrical Powerup per S9001.102 (Electrical Power, Cooling, Instrumentation)
 - A. Activate one GPC. Power Up and IPL.
 - B. Load G9/129/42.
 - C. Update MTU.
 - D. Perform MDM Readiness Test.
 - E. Activate MEC. (optional)
2. Perform SRB Elect Power Up and MDM Initialization (BSM06) per S9001.104 (BAE04)
3. Perform GPC/SRB MDM I/F Test per S9001 (BSM06)
4. Perform SRB/ET No-Go PIC Verification per (SAEB3).
5. Perform SRB OI Bus A/B PWR Down per S9001.104.

Shuttle Closeout Phase

1. Clean all Orbiter exterior cabin windows and reinstall protective window covers until just prior to Flight Crew arrival.
2. Remove Orbiter window covers. (opt)
3. Remove middeck vertical access platforms.
4. Perform biomed instrumentation cable installation and checkout.
5. Position seats to Launch position.
6. Install LIOH canisters in Crew compartment.
7. Crew module hatch closeout (simulated)

Shuttle System Activation

1. Activate SSME controller system. Perform SSME memory load for FRT II memory configuration on DCU A and B of SSME 1, 2, and 3.
2. Activate Orbiter IMU in standby mode. Perform warm-up per OMI V1123.
3. Load GNC-9 in GPC's. Form redundant set.
4. Load BFS in backup flight computer and verify BFS load.
5. MPS Preps
6. Perform Eastern Range Command Validation Checks.
7. Perform Flight Control System (RGA and Accelerometer) Power up per OMI V1123.
8. Perform Orbiter Gyro/Accelerometer Check per OMI V1123.
9. Perform Orbiter ASA/ATVC Activation per OMI V1123.
10. Perform DDU/Dedicated Display Power Up.
11. Select Orbiter IMU to operate. Perform attitude determination test per OMI V1123.
12. Remove cabin GSE protective covers. Prep cabin for Crew boarding (T-5:30).
13. Load COMSEC keys per S9001 (T-15 hours). Perform MILA/JSC I/F test (T-14 hours).

14. Perform COMM System Activation and CMD to Launch per V1117.
 - A. Astro COMM - 5 links
 - B. MCC A/G voice checks
 - C. Secondary system via panel switches and command to primary.
 - D. Deactivate S-band FM OI.
15. Perform Orbiter closeout switchlist .
16. Perform SRSS MLP GSE preparations for B1017.
17. Activate SS system and transfer control to SO.
18. Load Orbiter GMT liftoff time.

Final Launch Countdown Phase

1. Send Closeout Crew to OAA.
2. Verify SRM chamber pressure transducer bias calibration and load constraints (SWQ01).
3. Perform SRM chamber pressure simulation (SWQ01)
4. Closeout Crew at OAA, proceed with Flight Crew boarding.
5. Install LIOH canisters (SIM).
6. Perform LEH check, seat interface check and astrocomm umbilical check.
7. Orbiter RCS driver power - On (Crew function) (simulate).
8. Perform air-to-ground voice checks - Orbiter/MCC (T-1:30 hours).
9. Remove Crew compartment stands.
10. Orbiter G&N preflight alignment test (T-1:01 hours).
11. Remove hatch sill protector. (optional)
12. SRB rate gyro power up. (T-2 hours) (BAF10)
13. Perform SRB RGA test (T-1 hour 30 minutes).
14. Perform GMT/MTU synchronization.
15. Verify the ET/SRB shared FM trunks are dedicated to ET/SRB FDM outputs.
16. Connect cabin leak check GSE to Crew hatch. (SIM)
17. Close cabin relief and vent valves (SIM).
18. Disconnect cabin leak check GSE from Crew hatch. (SIM)
19. Orbiter Closeout Crew to road block. (Simulate - Go to fixed service structure and standby).
20. SRSS term count closed loop test. (T-50 minutes)

21. Perform Orbiter/MCC COMM checks.
22. Perform MDM BSR read (VASJ6).
23. Perform EIU GPC/BSR read (VWE01).
24. Vent Orbiter cabin (Crew function, simulated).
25. Perform PASS BFS data transfer.
26. Transition pass to OPS101 (T-20 minutes). Dump and verify flight GPC load.
27. Select BFS to "Run" and transition BFS to OPS101. (T-18 minutes).
28. MCC-H uplink BFS load (T-18 minutes) (optional)
29. Verify software generated SRM chamber pressure measurements are correct per new calibration constraints.
30. SRB AFT skirt GN₂ purge - On (simulate T-15 minutes).
31. Cabin vent valves closed (Crew function, simulated).
32. SRB DFI activation - Inhibit tape recorder forward motion. (T-15 minutes)
33. Start LPS ground Launch sequencer (T-9 minutes).
34. Range safety holdfire (T-7 minutes 00 seconds)
35. Retract Orbiter access arm (simulate).
36. APU pre-start (T-6 minutes.) (simulated)
37. Momentary range safety CDC hold (T-5 minutes 00 seconds)
38. Orbiter APU start - All three units (Crew function). (Simulate) (T-5 minutes).
39. Arm SRSS and SRB ignition S&A devices (T-5 minutes).
40. Terminate ET LOX replenish (T-4M55S) (simulate).
41. Orbiter fuel cells assume total main DC bus loads - Bus power transfer. (Simulate - fuel cell inactive) (T-3 minutes 30 seconds).

42. External tank LO₂ tank pressurization (T-2 minutes 55 seconds) (simulate)
43. Ground camera sequence start.
44. Momentary NTD CDC Hold (T-1 minute 57 seconds).
45. External tank LH₂ pressurization (T-1M57S) (simulate)
46. Select C&W system to "Ascent" position (Crew function).
47. Orbiter vent doors to Launch configuration (T-28 seconds)
48. SRB forward MDM lock.
49. HPU start (28 seconds) (simulate).
50. GLS go for main engine start (T-10 seconds) (simulate).
51. GLS cutoff (T-05 seconds).

******* End of Launch Sequence *******

Recycle/Securing

Recycle to T-20 minutes:

- A. Recycle OAA back to Orbiter hatch (simulate)
- B. Reconfigure GPC's programs to Pre-Launch (GNC-9) Mode.
- C. Safe SRB SRSS S&A devices.
- D. Reconfigure Orbiter cooling to GSE support (simulate)
- E. Reconfigure Orbiter PV&D doors to a Pre-Launch configuration (V1122).
- F. Terminate signal to sound suppression water.
- G. Disarm shuttle "Hold down" signal. Disarm SRB ignition circuit. (RS initiated)
- H. Ignition S&A devices to "SAF". SRSS inhibits to "On".
- I. Verify simulated SSME shutdown normal.
- J. Unlock SRB MDM's.
- K. Recycle to SSME purge Sequence 3 (simulate).
- L. WSB controllers and heaters - Off (simulate).
- M. Hydraulic circulation pumps - Off (simulate).
- N. Shutdown APU heaters and controllers.
- O. OI PCMMU to remote.
- P. Return Orbiter IMU's to gyro compass mode.
- Q. Power down SRB RGA's.
- R. IECM off

1.2 Special Instructions All Operations

1. DPS special instructions are contained in OMI V9001VL2.
2. **Requested Countdown Clock Holds**

Start Of CDC Operations To Start Of GLS At T-9 Minutes

A CDC hold may be requested by the Orbiter Test Conductor (OTC), Tank/Booster Test Conductor (TBC), LPS Test Conductor (LPS), Payload Test Conductor (PTC), Flight Crew (CDR, PLT), Flight Director (FLT), Support Test Manager (STM), Superintendent of Range Operations (SRO), Flight Control Officer (FCO), Range Safety Representative (RSR), GSFC STDN Station (MILA), and FLT med. The Flight Crew CDC hold will be requested through the OTC on Channel 212. The OTC, TBC, LPS, PTC, FLT, STM, SRO, FCO, RSR, MILA, and FLT Med CDC hold requests go directly to the NTD on Channel 232/212. The NTD will place the NTD CDC hold switch to "Hold position" to stop the CDC at the most advantageous time. In all cases, the hold requestor will give a description of the problem and a recommendation.

T-9 Minutes (start GLS) To T-31 Seconds

At start of GLS, all vehicle oriented systems personnel who are implementing Launch Commit Criteria will be active on channel 212 and will request holds through NTD. NTD will determine validity of hold request. OTC, TBC, PTC, LPS, FLT, STM, RSR, MILA and FLT med will request a hold by saying "NTD-(Station Call Sign): Hold countdown clock". NTD will place NTD CDC hold switch to "Hold position". The CDC will stop at the next GLS pre-planned hold point. The SRO/RSO will request a hold in the same manner. Pre-planned hold points in sequencer are:

T-9 minutes	- Start GLS
T-7:30 minutes	- OAA Retract
T-5 minutes	- APU Start
T-4 minutes	- Start purge Sequence 4
T-2:55 minutes	- Start prepress (LO ₂)
T-1:57 minutes	- Start prepress (LH ₂)
T-31 seconds	- Go for auto sequence start

3. Ground Launch Sequencer Cutoff

T-9 Minutes (start GLS) To T-31 Seconds

All Launch Commit Criteria monitors requiring an immediate "Cutoff" will be active on Channel 212. LCC monitors will request a "Cutoff" by saying "CGLS- (Station Call sign): Give cutoff". The CGLS will immediately press the CGLS cutoff PFP.

T-31 Seconds To T-0 Seconds

All Launch Commit Criteria monitors requiring an immediate "Cutoff" will be active on Channel 212. LCC monitors will request a "Cutoff" by saying "CGLS' give cutoff". CGLS will immediately press the CGLS cutoff PFP. In addition as a backup to the CGLS, the NTD, upon hearing "CGLS: Give cutoff" on Channel 212, will immediately place the NTD CDC hold switch to the "Hold position" after the vehicle is safed, the Requestor will identify himself (call sign), give description of problem, and make recommendations.

* CGLS GLS cutoff will result in the GLS recycling to T-20 minutes and holding.

** NTD Hold from T-31 seconds to T-0 seconds will result in the GLS recycling to T-20 minutes and holding.

SRO, FCO, and RSR hold from T-31 seconds to T-10 seconds will result in the GLS recycling to T-20 minutes and holding. No requests for cutoff will be made after expected SRB ignition, except if ignition does not occur. In all cases after initiating cutoff, CGLS will verify "Cutoff given" on Channel 212. For critical events during the last 31 seconds of the countdown, a 2 to 3 second delay is required for observer/monitor/panel operator reaction time between requests for "CGLS-Give cutoff" and obtaining a manual cutoff.

- 4.** FC/PRSD system regulators may be adjusted per engineering direction in order to maintain system operating pressures within limits as specified in operating steps of this procedure. Down stream vents may be cycled to provide flow/vent-down on regulators.

5. *FLT support of TCDT is optional. Disregard *FLT call sign in steps with multiple call signs, if *FLT not participating.
6. Emergency instructions are located in S0017.300.
7. The abbreviation "DD" in this procedure indicates "Data Dependant."
8. Flight control system specifics:

A. SPBK annunciations at LCC software activation

When the SPBK is at 1.6 deg the following EMON and GOAL notifications will occur:

EMON: SPBK posn FDBK CH 1-4 (V57H0201/202/203/204C1) and SPBK CMD 1 (V57K0240C1) will appear. Limits are 5 +/- 1 deg. Measurements can be deactivated and cleared from page.

GOAL: SPBK actr posn CH 1-4 (V57H0250/1/2/3A1) will appear on the LCC monitor display (SWB02). Limits are 2.45 to 7.55 deg and come from LCC GNC-26. These measurements will be bypassed and cleared from page.

Background: This condition exists when S0017 occurs prior to the PAD hydraulic operation since the SPBK OPF rollout position is currently 1.6 deg. The LCC software was designed at a time when the SPBK position was 5 deg for OPF rollout. This condition will be compensated for in a future software upgrade.

B. SPBK annunciations at OPS 1 transition

When the SPBK is at 1.6 deg the following EMON and GOAL notifications will occur:

EMON: SPBK CMD 1 (V57K0240C1) will appear. Limits are 5 +/- 1 deg. EMON notification will appear when measurement value changes from 1.6 to 5 deg at OPS 1 transition. Notification will not occur if deactivated at LCC software initiation (ref "A" above). Measurement can be deactivated and cleared from page.

GOAL: SPBK driver CH 1-4 will appear on the profile monitor display (VWB05). Limits are 0 to 2.00 MA and come from OMRS (general) [V79GEN.100](#) . Output will be approximately 4.0 MA and is result of the delta between the 5.0 CMD to the 1.6 deg position. Acknowledge condition and continue.

Background: reference background on "A" above.

- C. Flight control activation will precede hydraulic system configure to minimize the impact from an inadvertent circulation pump activation. The potential exists for an circulation pump switch to be placed in the on position rather than the intended GPC position during hydraulic system configure. For the same reason, the Flight Control System will remain active until the hydraulic securing at completion of TCDT.
 - D. Starting with STS-90 landing gear sensor circuit breakers will be closed during GN&C system activation. This allows the visibility and monitoring of the landing gear switches to be consistent with Launch countdown (LCD). The landing gear sensor circuit breakers are closed in LCD during the downlist format 42 time frame which is prior to GN&C system activation. A similar operation does not exist for TCDT.
9. S0017 is an integrated activity. S0017.100 and S0017.300 are part of the S0017 family series and are considered subtasks to S0017. Accordingly, all constraints for S0017 activities will be controlled by S0017.200.
 10. Because S0017.100 and S0017.300 are part of the S0017 family series, they do not require a Task Team Readiness and will be controlled by S0017.200.
 11. If lightning activity is forecast to be within 5 miles of Launch Pad, NTD and SPOC Safety shall implement the provisions of FSOP 6100 (lightning policy for major hazardous operations)and OMI S0018.100.
 12. Should an emergency condition develop requiring Flight Crew Egress/Escape, instructions in FLT Crew emergency egress/escape shall be implemented.
 13. T "Buys" on SIM steps can be ignored.

1.3 Operations List

Operation		Shop/ Cntl Rm Console	OPR	Haz (Y/N)	Duration (Hrs)	Page No.
No.	Title					
14	Reserved	NA/ NA	NA	N	0.0	1
15	Task Team Readiness	TCO/ ALL	TCO	N	0.5	3
16	TCDT Control Sequence	TCO/ ALL	TCO	Y	25.0	25
17	TCDT Securing	TCO/ ALL	TCO	Y	4.0	537
18	Recycle Control Sequence	TCO/ ALL	TCO	N	0.5	599
19	Orbiter Recycle	TCO/ ALL	TCO	N	0.5	649
20	SRB Recycle	TCO/ ALL	TCO	N	0.5	687
21	ET Recycle	TCO/ ALL	TCO	N	0.5	695
22	Support Recycle	STM/ ALL	TCO	N	0.5	699
23	MCCH Recycle	FLT/ NA	TCO	N	0.3	709
24	Crew Debriefing and Egress Control Sequence	NTD/ NTD	TCO	N	0.5	715
28	Hold Option - Unplanned Long Hold Between T-9 Minutes and T-5 Minutes	NTD/ ALL	TCO	N	0.5	723

2.0 SAFETY INFORMATION

2.1 Hazards

		Operation
1.	Residual hypergolic propellants in Orbiter.	16, 17
2.	Purging operations: GN ₂ /GHe.	16, 17
3.	Open loop RF radiation: Orbiter COMM system Orbiter NAVAIDS System SRB Tracking System.	16, 17
4.	High pressure gas storage.	16, 17
5.	Cycling of SRSS S and A devices.	16, 17
6.	PRSD GO ₂ usage O ₂ TK2 purge/pressurization T-0 system purge/pressurization.	16, 17
7.	Calls up hazardous portions of hazardous subtasks	16, 17, 21, 24

2.2 Safety Requirements

		Operation
Safety requirements pertinent to this TOP are contained in the Operations Instructions.		All

2.4 Reference Safety Documentation

Number	Rev	Title
KNPR 8715.3	LI	KSC Safety Practices Procedural Requirements
FSOP 6100	LI	USA Florida Safety Operating Plan

3.0 STAGING REQUIREMENTS

3.1 Required Engineering Documentation

3.1.2 Documents

OPERATION 16

Document No.	Rev	Title
JOB PLAN S0017/PWRA	(LI)	ODMS Support for TCDT
JOB PLAN M3203.5	(LI)	Configure FIREX for Dry Cycles for TCDT
JOB PLAN M3203.6	(LI)	Sound Suppression Valve Complex Closeout for TCDT

OPERATION 17

Document No.	Rev	Title
JOB PLAN S0017/PWRA	(LI)	ODMS Support for TCDT
JOB PLAN M3203.7	(LI)	Deactivate CCC Sound Suppression Lockout for TCDT
JOB PLAN M3203.8	(LI)	Configure FIREX for Normal Support Following TCDT
JOB PLAN M3203.9	(LI)	Secure Sound Suppression Valve Complex from TCDT Support
JOB PLAN M3203.10	(LI)	Configure Sound Suppression for Post TCDT PIC Test

OPERATION 22

Document No.	Rev	Title
JOB PLAN M3203.11	(LI)	Configure Sound Suppression for TCDT Recycle

3.2 Parts, Materials, Equipment, and Special Tools

3.2.8 Personal Protective Equipment

OPERATION 16	Nomenclature
	wrist stats

4.0 PLANNING REQUIREMENTS

OIR Required Yes [], No []

Mandatory attendees are listed as follows:

SYSTEM	CONTRACTOR	NASA
Boeing T/C	Required	Required
SRB HPU	Required	Required
ET/SRB EPD	Required	Required
ET INST	Required	Required
ETE	Required	Required
GSP	Required	Required
RSS	Required	Required
PEL	Required	Required
VITT	Required	Not Required
P/L PE	Required	Required
LPS (GEN)	Required	Required
GSS/GLS (LPS)	Required	Required
OBS	Required	Required
EPD	Required	Required
INS	Required	Required
COM	Required	Required
NAV	Required	Required
DPS	Required	Required
GNC	Required	Required
APU	Required	Required
HYD	Required	Required
ECL	Required	Required
MPS	Required	Required
SSME	Required	Required
DPSME	Required	Required
MEQ	Required	Required
PVD/ECS	Required	Required
LAA	Required	Required
PLEC	Required	Required
OMS/RCS	Required	Required
EFC	Required	Required
TPE/SE	Required	Required
STM	Required	Not Required
NTD	Not Required	Required

FCS	Required	Required
PRSD	Required	Required
OTC	Required	Not Required

Additional Section 4.0 information is contained in S0017.100.

Predecessors:

None

Successors:

None

Configuration Required:

None

4.4 Support Services, Commodities, and Equipment

Additional Support services can be found in S0017.100.

4.4.8 Support

GSS Organization	Operation/Step
PWR	15-54
CPNS	15-54
PNSA	15-54
CHVA	15-54
HVAA	15-54
CWSS	15-54
WSSA	15-54
HESA	15-54
CDPD	15-54
CWSS	16-100
PWRA	16-540
CWSS	16-743
WSSA	16-743
CWSS	16-744
CWSS	16-746
CWSS	16-747
CWSS	16-749
CWSS	16-750
CWSS	16-751
CWSS	16-752
CWSS	16-759
CWSS	16-763
CWSS	16-765
CWSS	16-768
CWSS	16-769
CWSS	16-771
WSSA	16-771
CDPD	16-772
WSSA	16-800
HESA	16-810
WSSA	16-824
WSSA	16-907
WSSA	16-908
WSSA	16-1080
STSA	16-1262
CWSS	16-1315
CWSS	16-1321
STSA	16-1340
CWSS	16-1455
CWSS	16-1456

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CHVA	16-1501
CWSS	16-1520
CWSS	16-1539
CWSS	16-1539
CWSS	16-1540
CWSS	16-1540
PWRA	17-98
CWSS	17-119
CWSS	17-122
CWSS	17-123
WSSA	17-124
CWSS	17-126
WSSA	17-126
WSSA	17-127
CWSS	17-129
CWSS	17-132
CWSS	17-133
CWSS	17-134
CWSS	17-136
CWSS	17-137
CWSS	17-138
WSSA	17-138
CWSS	17-139
WSSA	17-140
CWSS	17-140
CWSS	17-141
CWSS	17-142
WSSA	17-142
CWSS	17-143
CWSS	17-190
PWR	17-195
CPNS	17-195
PNSA	17-195
CWSS	17-195
WSSA	17-195
CHVA	17-195
HVAA	17-195
CWSS	22-1
CWSS	22-2
CWSS	22-3
CWSS	22-4
CWSS	22-5
WSSA	22-6
CWSS	22-6
CWSS	22-7

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CWSS	22-8
CWSS	22-10
CWSS	22-11
CWSS	22-13
CWSS	22-14
CWSS	22-15
CWSS	22-16
CDPD	24-22
STSA	24-30
STSA	24-33

ISC Organization

Operation/Step

LS	15-54
ELEC	15-54
AC	15-54
JSTC	16-371
LS	16-380
ELEC	16-381
LS	16-387
JSTC	16-824
JSTC	16-876
JSTC	16-1077
JSTC	16-1230
SLF	16-1274
JSTC	16-1444
FA	16-1457
FA	16-1503
ELEC	17-70
ELEC	17-195
LS	17-195
JSTC	17-195
AC	17-195
LS	24-29

COMM Organization

Operation/Step

COMM	15-54
TCOM	15-55
OISD	16-4
KNET	16-5
COMM	16-8
VCE	16-11
WB	16-79
VCE	16-81
WB	16-98
TCOM	16-158

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OISD	16-181
OISD	16-182
OISD	16-184
VCE	16-185
ATEL	16-247
ATEL	16-248
ATEL	16-293
OTV	16-302
COMM	16-310
OISD	16-338
ATEL	16-364
COMM	16-371
VCE	16-373
VCE	16-378
TCD	16-379
OTV	16-386
OISD	16-433
OTV	16-445
OTV	16-450
VCE	16-454
VCE	16-649
OTV	16-657
WB	16-657
OTV	16-658
WB	16-659
OTV	16-660
COMM	16-661
OTV	16-662
WB	16-662
COMM	16-725
VCE	16-726
COMM	16-727
COMM	16-728
COMM	16-733
COMM	16-734
OTV	16-799
OTV	16-811
VCE	16-824
COMM	16-824
PHOT	16-876
OTV	16-912
TCD	16-963
TCD	16-964
TCD	16-966
TCD	16-968

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TCD	16-1124
TCD	16-1125
TCD	16-1126
TCD	16-1127
TCD	16-1128
OTV	16-1242
OTV	16-1375
OISD	16-1377
OISD	16-1384
OTV	16-1448
WB	16-1448
OTV	16-1449
OTV	16-1450
ATEL	17-27
OISD	17-28
OISD	17-29
OTV	17-30
OISD	17-31
OISD	17-32
KNET	17-45
PHOT	17-115
TCOM	17-194
COMM	17-195
VCE	17-196
WB	17-196
ATEL	17-196
TCOM	17-196
OISD	17-196
PHOT	17-196
TCD	17-196
VCE	19-5
OTV	24-21
OTV	24-24
OTV	24-32

NPS Organization

Operation/Step

FIRE	15-54
SEC	15-54
FIRE	16-14
SEC	16-440
SEC	16-639
FIRE	16-641
SEC	16-641
SEC	16-642
FIRE	16-741

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FIRE	16-810
SEC	16-814
SEC	16-815
SEC	16-816
FIRE	16-823
SEC	16-901
SEC	16-909
SEC	16-916
SEC	16-917
SEC	16-918
SEC	16-1131
SEC	16-1236
SEC	16-1237
SEC	16-1238
SEC	17-107
FIRE	17-108
SEC	17-110
FIRE	17-145
FIRE	17-195
SEC	17-195
SEC	24-2
SEC	24-18
SEC	24-20
FIRE	24-21
SEC	24-27
FIRE	24-31

4.5 Supporting Subtasks

Subtask Number	Haz Ind	Subtask Title / Function to be Performed	Calling Op / Step
V3528.001		COMM AND TRACK STATION SETUP AND OPERATION - OPF (HB1/2)	16-12
V3528.002		COMM AND TRACK STATION SETUP AND OPERATION - OPF BAY 3	16-12
S9001.104		SHUTTLE POWER UP/POWER DOWN - VAB/PAD - EPD OPTIONS	16-18
V9001VL2		ORBITER POWER UP/POWER DOWN, DPS OPTIONS (LPS)	16-19
S9001.105		SHUTTLE POWER UP/DOWN - VAB/PAD - ECL OPTIONS	16-32
S9001.108		SHUTTLE POWER UP/POWER DOWN - VAB/PAD - COMM OPTIONS	16-71
A2700		GROUND SUPPORT COMMUNICATION SYSTEM VALIDATION	16-79 16-80 16-81
V9001VL2		ORBITER POWER UP/POWER DOWN, DPS OPTIONS (LPS)	16-84
S9001.108		SHUTTLE POWER UP/POWER DOWN - VAB/PAD - COMM OPTIONS	16-90
V1117	HAZ	COMMUNICATIONS LAUNCH CONFIGURATION CHECKOUT (LPS)	16-92
V1123.250		IMU PRE-POWER DATA DUMP	16-111
V1123.120		GNC SYSTEM POWER UP	16-112
V1123.130		SYSTEM SELF TEST	16-128
V1123.260		IMU POWER UP	16-130
V1117	HAZ	COMMUNICATIONS LAUNCH CONFIGURATION CHECKOUT (LPS)	16-185 16-186 16-197
V66-50009		INSTALLATION/REMOVAL AIRLOCK OUT VERTICAL ACCESS SET - CREW MODULE	16-284
V66-90002		EMERGENCY ALARMS AND LIGHTING, CREW COMPARTMENT, REMOVAL	16-307

V1122.003		PAD ECS LOCAL CONSOLE MONITORING AND ROUTINE ADJUSTMENTS	16-376
V1122.004		PAD ECS FR CONSOLE MONITORING AND ROUTINE ADJUSTMENTS	16-376 16-405
S9001.104		SHUTTLE POWER UP/POWER DOWN - VAB/PAD - EPD OPTIONS	16-470
V9001VL2		ORBITER POWER UP/POWER DOWN, DPS OPTIONS (LPS)	16-547
V1123.270		IMU OPERATE	16-694
S1004	HAZ	MPS LH2 SYSTEM AUTOMATIC LOAD AND DRAIN OPERATIONS (LPS)	16-1539 16-1540 16-1540
V1117	HAZ	COMMUNICATIONS LAUNCH CONFIGURATION CHECKOUT (LPS) COMM Powerdown	17-40
V1122.004		PAD ECS FR CONSOLE MONITORING AND ROUTINE ADJUSTMENTS	17-64 17-65
V1117	HAZ	COMMUNICATIONS LAUNCH CONFIGURATION CHECKOUT (LPS)	17-74 17-75
V66-00017		EMERGENCY ALARMS AND LIGHTING, CREW COMPARTMENT, INSTALLATION	17-82
G2158	HAZ	GOX VENT ARM (GVA) LPS SUPPORT OPERATIONS	17-116
S9001.104		SHUTTLE POWER UP/POWER DOWN - VAB/PAD - EPD OPTIONS	17-148
V9001.106		ORBITER POWER UP/DOWN - OPF - ISL OPTIONS	17-186 17-187
S9001.102		SHUTTLE POWER UP/DOWN - VAB/PAD - TCO PRIMARY OPERATIONS	17-188
S9001.104		SHUTTLE POWER UP/POWER DOWN - VAB/PAD - EPD OPTIONS	18-64 18-65
V9001VL2		ORBITER POWER UP/POWER DOWN, DPS OPTIONS (LPS)	18-130
V1123.290		IMU PREFLIGHT ALIGNMENT	18-138

V9058.002		SSME CONTROLLER NORMAL POWER UP AND DOWN	19-62
G2158	HAZ	GOX VENT ARM (GVA) LPS SUPPORT OPERATIONS	21-1
A5204		ASTRONAUT CREW SUPPORT AND TRANSFER	24-2
M2006		SLIDEWIRE EMERGENCY EGRESS SYSTEM VALIDATION	24-30
M3029	HAZ	SLIDEWIRE EMERGENCY EGRESS SYSTEM OPERATIONS	24-30

|

5.0 CONFIGURATION ACCOUNTING AND VERIFICATION

5.1 Specific OMRS Requirements Satisfied by this TOP

5.1.1 OMRS References

OMRS No.	Nomenclature	Ops/Step
S00E00.137-1	HEAT SHIELD WATER ACT. POST ABORT	16-1539
S00E00.137-1	HEAT SHIELD WATER ACT. POST ABORT	16-1540
S00E00.B90-1	ANTI GEYSER RQMTS AFTER ENG SHUTDOWN	16-1539
S00E00.B90-1	ANTI GEYSER RQMTS AFTER ENG SHUTDOWN	16-1540
S00E00.B95-1	LH2 TOPPING LINE DRAIN BACK	16-1539
S00E00.B95-1	LH2 TOPPING LINE DRAIN BACK	16-1540
V74CA0.050-A	S-BAND PM STRING 1 STDN HI	16-191
V74CA0.050-B	C&W VOLUME ADJUST	16-191
V74CA0.050-C	AUDIO CENTER 1 & 2 VERIFICATION	16-191
V74CA0.050-D	COMSEC 1 & 2 OPERATION	16-191
V74CA0.050-E	FM 1 & 2 OPERATION	16-191
V74CA0.050-F	UHF OPERATION	16-191
V74CA0.050-G	GCIL REDUNDANCY OPERATION	16-191
V74CA0.050-H	S-BAND PM STRING 1 MODES	16-191
V74CA0.051-A-1R	S-BAND PM STRING 2 STDN HI	16-249
V74CA0.051-B-1R	S-BAND PM STRING 2 MODES	16-249
V74CA0.051-C-1R	FRAME SYNC THRESHOLD COMPARE	16-249
V74CA0.051-D-1R	AGC LCC VERIFICATION	16-249
V74CA0.052-A-1R	S-BAND PM STRING 2 STDN HI	16-249
V74CA0.052-B-1R	S-BAND PM STRING 2 MODES	16-249
V74CA0.052-C-1R	FRAME SYNC THRESHOLD COMPARE	16-249
V74CA0.052-D-1R	AGC LCC VERIFICATION	16-249

5.2 General OMRS Requirements Applicable to this TOP

OMRS NO.	NOMENCLATURE/ EFFECTIVITY	SEQ-STEP (CAP)
-----	-----	-----
B55GEN.030	SRBTS GENERAL REQUIREMENTS	-
	L01 BAF;G	
V79GEN.100	ACTUATOR/HYD ACTIVATION CONSTRAINTS	-
	L01 VAF;G	

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OPERATION 14 Reserved

Shop: NA
Cntrl Rm Console: NA
OPR: NA
Zone: NA
Hazard (Y/N): N
Duration (Hrs): **0.0**

*** End of Operation 14 ***

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OPERATION 15 Task Team Readiness

Shop: **TCO**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

Prerequisite Operation Summary - Support

15-1

Verify Operation 1 - Support - Support Preparations

STM_____

15-2

Verify Operation 4 - Support - Photo Support

STM_____

15-3

Verify Operation 5 - Support - Launch Status Clocks

JTCR_____

NOTE

Prerequisite Operations 3, 6 and 7 are not a constraint to Call to Stations.
Completion verification will be prior to the operation being supported.

15-4

Verify Operation 3 - Support - Support Sound Suppression and FIREX
Water System Preps.

STM_____

15-5

Verify Operation 6 - Support - Communications Support.

STM_____

15-6

Verify Operation 7 - Support - FR2 TCDT Support Configuration - LPS.

Not Performed:_____

LPS_____

***** End of Prerequisite Operation Summary - Support *****

Prerequisite Operation Summary - Orbiter

15-7

Verify Operation 103 - Orbiter - Orbiter Configuration.

*PAD _____

15-8

Verify Operation 104 - Orbiter - C & T Station Preps

RCRT _____

15-9

Verify Operation 105 - Orbiter - COMM Antenna Coupler Installation

*PAD _____

15-10

Verify Operation 106 - Orbiter - Fiber Optic Uplink Monitor System
Activation.

PETG _____

15-11

Verify Operation 107 - Orbiter - Crew Compt Interior Inspection - Flight
Deck/Mid Deck.

Qv: _____

NOTE

The following Operations are not a constraint to Call to Stations. Completion verification will be prior to the operation being supported.

15-12

Verify Operation 102 - Orbiter - Astrovan Operational Clear Equipment Delivery.

***PAD** _____

15-13

Verify Operation 109 - Orbiter - GTOE Headset Equipment Delivery.

***PAD** _____

15-14

Verify Operation 111 - Orbiter - Switch guard Installation.

***PAD** _____

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15-15

Verify Operation 112 - Orbiter - GTOE Headset Installation (OIS Verif
by Astronaut Crew).

T: _____

15-16

Verify Operation 113 - Orbiter - FCS Initial Stowage.

*PAD _____

15-17

IF OV-103 or OV-104,

THEN Verify Operation 115 - Orbiter - C & T TACAN Signal Monitor
Setup

Not Performed: _____

RNRT _____

15-18

Verify Operation 117 - Orbiter - Antenna Coupler Engineering
Walkdown.

*PAD _____

*** End of Prerequisite Operation Summary - Orbiter ***

Prerequisite Operation Summary - ET/SRB

NOTE

The following Operations are not a constraint to Call to Stations. Completion verification will be prior to the operation being supported.

15-19

Verify Operation 124 - ET/SRB - ETVAS Preps

***PAD**_____

15-20

Verify Operation 202 - ET/SRB - Ignition and SRSS S&A Verification.

***PAD:**_____

15-21

Verify Operation 203 - ET/SRB - Eastern Range Circuits Patching.

Qv:_____

***** End of Prerequisite Operation Summary - ET/SRB *****

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Prerequisite Operation Summary - Integrated

15-22

Verify Operation 301 - Initial Operations/Facility Walkdown.

***PAD_____**

***** End of Prerequisite Operation Summary - Integrated *****

15-29 LPS JRPS 127

Verify RPS ready to support S0017 TCDT.

15-30 NTD LPS 232

Verify LPS ready to support TCDT.

TCID _____

Rev _____ Mod _____

Operating System _____

15-31 NTD 232

Annotate voice tape:

Document: S0017

Title: Terminal Count Demonstration (LPS)

Date: _____

Time: _____ GMT

Mission: _____

Pad: A

15-32 NTD *MIL

Verify MILA ready to support S0017.

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15-33 NTD OTC 232
 TBC
 STM
 *SCC
 LPS

Perform S0017 Call to Station and report test readiness status. Following is current revision level, date and dev packages for effective S0017 books for this TCDT.

Verify all active systems have correct revision available.

S0017.100 (Preps)

Rev _____ Date _____

Dev Pkg _____

S0017.200 (CTS/Cntl Seq)

Rev _____ Date _____

Dev Pkg _____

S0017.300 (Swlist/SYS OPS)

Rev _____ Date _____

Dev Pkg _____

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15-34 OTC NTD 232 SU17077
 NTD STM SU17079
 STM ENDO

Verify open loop frequency clearance for S-band for duration of S0017.
All frequencies are in MHz. (853-2436)

S-Band
2041.9
2106.4
2217.5
2287.5
2250.0

Record number _____

15-35 NTD CGLS 232

Set CDC to -24 hours 00 minutes.

Start counting at GMT _____

15-36 CGLS

HOME CMD KEY - PRESS
CONSOLE KYBD
CDTS -01:0000/00
 DD:HHMM SS
XMIT CMD KEY - PRESS

15-37

CGLS

HOME CMD KEY - PRESS
CONSOLE KYBD
CDTC ____/____.000 GMT
 HHMM SS.000
XMIT CMD - PRESS

15-38

CGLS

232

Countdown clock is at 01 day 00 hours 00 minutes 00 seconds

Automatic RCL Transfer Activation

15-39 OTC CTPE

Activate Automatic RCL RSYS Transfer.

15-40 CTPE

PFP
SAP27 PFPK - PRESS

15-41 CTPE

IF SAP27 PFPK1 DISPLAYS "ACT AUTO RCL XFER, "

THEN PERFORM THE FOLLOWING TO ACTIVATE AUTOMATIC
RCL RSYS TRANSFER:

SAP27
PFPK1 (ACT AUTO RCL XFER) - PRESS

Not Performed: _____

15-42 CTPE

VERIFY SAP27 PFPK1 DISPLAYS "INH AUTO RCL XFER. "

15-43 CTPE OTC 132

Automatic RCL RSYS Transfer Activation complete.

***** End of Automatic RCL Transfer Activation *****

Pseudo Init

15-44

CGLS

VERIFY 1 AVAILABLE CONCURRENCY

HOME CMD KEY - PRESS

CONSOLE KYBD

SLPP1

PERFORM PGM KEY - PRESS

(KSCA OR KSCB)

XMIT RESP KEY - PRESS

CONSOLE KYBD

SELECT - PSEUDO INIT

XMIT CURSOR KEY - PRESS

POSITION CURSOR TO ALL PSEUDOS

XMIT CURSOR KEY - PRESS

Cryo Safing Pseudo Init

NOTE

Perform this option if Page B Message indicates: "See Page A For Operator Input".

Cryo Safing Pseudo Init Not Performed: _____

15-45

CGLS

CRT

VERIFY PG-A MSG:

(N03IS511E) CRYO SAFING ENABLED IS ON. THIS INDICATES SCRUB/CRYO DRAIN IN PROGRESS.

15-46

CGLS

CONSOLE KYBD

ENTER "1" IF CRYO SAFING SUPPORT COMPLETED AND SLP50 NOT ACTIVE TO INITIALIZE (N03IS511E) TO OFF.

ENTER "2" TO LEAVE (N03IS511E) UNCHANGED

_____ (1 OR 2)
XMIT RESPONSE KEY - PRESS

CRT

VERIFY MSG INDICATING PSEUDO STATE

***** End of Cryo Safing Pseudo Init *****

15-47

CGLS

CRT

VERIFY ALL SELECTED BLOCKS INVERTED AND NO
EXCEPTIONS PG-A

CURSOR CNTL

TERMINATE

XMIT CURSOR KEY - PRESS

TERMINATE

XMIT CURSOR KEY - PRESS

15-48

CGLS

LPS

127

GLS Pseudo Init is complete.

Note in the LPS logs for future SLP50 configuration.

External Tank/SRB

15-52 TBC ALL 136

Verify your copy of S0017 is rev level ____.

15-53 TBC NTD 232

ET/SRB ready for S0017

Support

15-54 STM 116
 111
 NET 104

All support personnel report test readiness status:

QBSE	Structures ENG	
GYCC	Communications Controller	Support: COMM
JCFM	Instrumentation Test Conductor	
JBEP	Power Console	Support: PWR
JBPN	Pneumatics Console	Support: CPNS
		Support: PNSA
JBAC	HVAC Console	Support: CHVA
		Support: HVAA
JBFX	FIREX/Pot. Water Console	Support: CWSS
JBWC	SS Water Console	Support: WSSA
GBHE	Heavy Equipment	Support: HESA
VEEE	Elevator Controller	Support: CDPD
JSTC	ISC Test Conductor reports for:	
	*SCB Life Support	Support: LS
	JSEP Power Console	Support: ELEC
	JFIR Fire Console	Support: FIRE
	*SEC Security Console	Support: SEC
	JSAC HVAC Console	Support: AC
	JSDY Duty Office	

Terminate Routine Wire Frame Work

15-55 STM GYCC 111
 GYCC GYCB PTP (INFO)

Verify all routine work on wire frames terminated, warning lights activated, and exception access procedure in effect for Terminal Count Demonstration, S0017. Frames to be in controlled mode.

- | | |
|--------------------|-----------------------|
| 1. ACTC | Frame 91A |
| 2. Beach | Frame 58 |
| 3. BRRS | Frame 9 |
| 4. CD&SC | Frames 1, 40, WT |
| 5. DLTR#3 | FOT |
| 6. LACB | Frames 66, 74 |
| 7. LCC | Frames 51, 65 |
| 8. MILA | Frame 11 |
| 9. Pad A | Frame 57 |
| 10. Press Site | Frame 56 |
| 11. South Repeater | Frame 6 |
| 12. Tel IV | Frame 7 |
| 13. VAB | Frames 52, 53, 54, 55 |
| 14. VABR | Frame 50 |

Support: [TCOM](#)

15-56 STM CMQC 111

Verify Support - Prerequisite Operation Summary complete for all constraining Operations.

Qv: _____

15-57 STM

Provide Pad A weather monitoring for duration of test.

1. Warnings to be provided for probable lightning within 5 miles.

2. Cloud cover:

3. Visibility:

4. Winds 60 ft level

_____ (SS) _____ (peak)

_____ (Direction)

5. Ambient temperature

NOTE

No disruption of Meteorological Data without concurrence of test team.

15-58 STM JCFM 111

Verify digital recording of Meteorological Data for duration of test.

15-59 STM NTD 232

Support Prerequisite Operation 1 - Support Preparations complete. Ready to proceed with test.

15-60 NTD OTC 232
TBC
STM
***SCC**

Proceed with Operation 16.

***** End of Operation 15 *****

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OPERATION 16 TCDT Control Sequence

Shop: **TCO**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **Y**

Duration (Hrs): **25.0**

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

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16-1 CGLS NTD 232 SU17007
T-24H00M

CDC started at

_____ GMT

16-2 NTD PA

Countdown now in progress for Terminal Count Demonstration, S0017.

Issue NMAJORTEST Pseudo

16-3 NTD LPS

Issue NMAJORTEST pseudo to value of 0011 hexadecimal (17 decimal).
Report completion.

Inhibit Admin Paging

16-4 NTD STM 232
STM GYCC 111
GYCC JYCD 117
T-24H00M

Inhibit admin paging to Pad A.

Support: [OISD](#)

NOTE
Wireless Access Points (WAPS) must be deactivated prior to COMM Activation.

16-5	NTD	STM	232	SU17314
	STM	GYCC	111	
	GYCC	GNCC	PTP	

IF wireless Access Points (WAPS) are activated in Pad A Perimeter,

THEN deactivate Wireless Access Points (WAPS) in Pad A Perimeter for Oribiter Comm Activation.

Report completion.

Support: [KNET](#)

Not Performed: _____

16-6 **NTD** **PA**

Attention on Pad A:

Wireless LAN at Pad A will be deactivated. All Wireless LAN devices, including laptops, tablets, and PDAs must be removed from FSS/RSS.

Not Performed: _____

16-7	NTD	OTC	232
	OTC	*PAD	132
	*PAD	*ACM	NET 110

Display/Verify Wireless LAN Caution sign at ACM Monitor Shack on Pad Surface, OIC station in White Room, and OIC station in PCR. Pad Surface ACM start screening for wireless devices (laptops, tablets, PDAs, etc.).

COMM Support Preps

16-8 **OTC** **NTD** **232** **SU17009**
 NTD **STM**
 STM **GYCC** **111**

Verify Support Prerequisite Operation 6- Communications Support complete.

Support: **COMM**

16-9 **OTC** **NTD** **232** **SU17070**
 NTD **STM**
 STM **JYVJ** **111**

Verify Orbiter compatible COMSEC keys loaded by crypto in MILA, KFRL and C&T station 1/2 (as scheduled) COMSEC boxes.
(Phone 867-7670)

Record C&T Station Loaded: _____

16-10 **STM** **NTD** **232**
 NTD **OTC**

Request NIB access to Astro COMM channels for voice/tone check for JSC.

<p>NOTE If JSC is not participating, then perform Voice/Tone checks with MILA.</p>

16-11 **STM** **GYCC** **111**
 GYCC **GYCJ** **117**

Perform Voice/Tone checks with JSC or MILA on NIB only.

Report completion.

Support: **VCE**

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16-12

OTC

RCRT

SU17009

Perform COMSEC load verification per OMI
V3528.001 COMM and Track Station Setup and Operation - OPF
(HB1/2) (C&T 1) or OMI V3528.002 COMM and Track Station Setup
and Operation - OPF Bay 3 (C&T 2).

Report complete.

RT OMI Log No. _____

Operations/Safety Facility Walkdown

NOTE

Integrated Operation 302 - Operations/Safety/Facility Walkdown repeats the walk down performed in the Integrated Prerequisite Operation 301 Walkdown. If all discrepancies noted during the Prerequisite Operations Walkdown are cleared, this option may be not performed at the direction of the NTD.

Operations/Safety Facility Walkdown Not Performed: _____

16-13	NTD	OTC STM *SCC	232	SU17013 SU17078
--------------	------------	---	------------	----------------------------------

T-24H00M

Perform Integrated Operation 302 (S0017.100) - Operations/Safety Facility Walkdown (2 hours).

16-14	NTD	OTC STM *SCC	232
	OTC *PAD	*PAD PGSO	132
	*SCC STM	*PSE JSTC	NET 105 111
	JSTC	PSTM JFIR	NET 104 114

Have walkdown participants meet at _____ (record location) in 30 minutes.

Participants

- NASA Safety (optional)
- SPOC Safety (optional)
- Fire Inspector
- Quality Control
- GSE OPS (Cryo, hyper, ECS, MLP, PAD)
- GSS Facility Site Coordinator

Support: **FIRE**

Configure To G9 Simplex

16-19 OTC CDPS 132 SU17017

IF not already in G9 simplex,

THEN Configure GPC 1, 2, 3 or 4 to G9 simplex per
OMI [V9001VL2 Orbiter Power Up/Power Down, DPS Options \(LPS\)](#) .
Report completion.

RT OMI Log No. _____

Not Performed: _____

GMT/MET Update

16-20 OTC CDPS SU17019
T-23H30M

Perform GMT/MET update per "DPS Systems" (S0017.300 OP 40,
item 1) (15 minutes).

16-21 CDPS OTC

GMT/MET update complete.

DPS Launch Support Configuration

16-22 OTC CDPS SU17021
T-23H15M CISL

Perform Orbiter Operation 121 (S0017.100) - DPS Launch Support
Configuration. (15 minutes)

DPS Launch Support Configuration (Operation 121) - Complete

16-23 CDPS OTC
T-23H00M

Orbiter Operation 121 (S0017.100) - DPS Launch Support Configuration complete.

BFS GPC Load/Dump/Compare

16-24 OTC CDPS 132 SU17033
 CVFS
 LPS

T-23H00M

Load, dump and compare BFS program in GPC 5 per "DPS Systems" (S0017.300 OP 40, items 2 and 3) on Channel 152. (1 hour 30 minutes)

16-25 OTC CVFS 132
 LPS

IF BFS dump and compare (alternate method) using LPS retrieval method is required,

THEN Perform BFS retrieval and compare using LPS per "DPS Systems," (S0017.300 Operation 40 item 5) on Channel 152 (30 minutes).

Not Performed: _____

GSE/Orbiter Cooling Activation/Reconfiguration

16-26 OTC CECL SU17023

IF VAG60 is in auto mode,

THEN

CURSOR CNTL (VAG60)
AUTO
XMIT CURSOR KEY - PRESS

VERIFY VAG60 IN MANUAL MODE

Not Performed: _____

16-27 CECL CDR

PANEL ML31C
WASTE H2O
TK1 VLV SW - OPEN (15 SECONDS MAX)
UNTIL TB OP, RELEASE

16-28

CECL

CRT (VAG31, PG-B)
VERIFY
TK1 VLV
POP - ON

16-29

CECL CDR

PANEL ML86B

ROW B

MN B

WASTE H2O TK1 DRAIN CB - CLOSE

16-30

CECL CDR

PANEL ML31C

WASTE H2O

TK1 DRAIN VLV SW - OPEN (15 SECONDS MAX)
UNTIL TB OP, RELEASE

16-31

CECL

CRT (VAG31, PG-B)
VERIFY
TK1 DRAIN
POP - ON

16-32 OTC CECL 132
T-23H00M

Perform GSE/Orbiter cooling activation or reconfiguration per following table per OMI [S9001.105 Shuttle Power Up/Power Down \(LPS\)](#) on Channel 143. (30 minutes) Multiple Master Alarms may occur during ECL cooling reconfiguration.

Configuration Table

GCU's as required
FCL 1 Pump B (Cabin SW)
* (BYP/intch) *
FCL 2 Pump B (Cabin SW)
* (BYP/intch) *
WCL 2 Pump (Cabin SW)
Adjust flow to 1000 +/- 50 lbs/hr
AV Bay 1 fan B (Cabin SW)
AV Bay 2 fan A (Cabin SW)
AV Bay 3 fan B (Cabin SW)
Humidity Sep B
Cabin Fan A (Cabin SW)
IMU Fan B (Cabin SW)

16-33 CECL

CURSOR CNTL VAG60
AUTO
XMIT CURSOR KEY - PRESS

VERIFY VAG60 IN AUTO MODE

16-34 CECL

CONSOLE KYBD

SET V61K2866NL OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

SET N61IV011E OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-35 CECL OTC SU17023
T-22H30M

GSE/Orbiter Cooling Reconfiguration complete.

Pre-flight Volts Adjust

16-36 OTC CEPD 132 SU17027
T-22H30M

Adjust pre-flight voltage to reduce pre-flight to ESS bus load

16-37 CEPD

CRT (VWC17)

PF 1	(1D500)	ITCU VOLTAGE	_____	DD
PF 1	(1D500)	ITCU CURRENT	_____	DD
PF 2	(1D600)	ITCU VOLTAGE	_____	DD
PF 2	(1D600)	ITCU CURRENT	_____	DD

16-38 CEPD

IF PRE-FLIGHT VOLTAGES ARE NOT BETWEEN 29.0 AND 29.5 VDC,

THEN PERFORM:

CURSOR CNTL (VWC17)

USING UP/DOWN ADJUST CURSORS,

ADJUST PF1 AND PF2 ITCU VOLTS TO BETWEEN 29.0 AND 29.5 VDC

CRT (VWC17)

ADJUSTED VOLTS AND AMPS

PF1	(1D500)	ITCU VOLTAGE	_____	DD
PF1	(1D500)	ITCU CURRENT	_____	DD
PF2	(1D600)	ITCU VOLTAGE	_____	DD
PF2	(1D600)	ITCU CURRENT	_____	DD

Not Performed: _____

(Simulated) 1D500 Battery Backup Enable

16-39 CEPD QPDS 151

IF LISTED CB'S ARE NOT FOUND IN INDICATED
POSITION,

THEN PERFORM

(SIM) PANEL L24 (COMPT 9A)

CKT 17

CB 17 - ON

CKT 25

CB 25 - ON

Not Performed: _____

16-40 CEPD QPDS 151

(SIM) RACK 6840

BATTERY CHARGER (PANEL A3)

MAIN CB - ON

CONTROL AND MONITOR PANEL (A4)

INTERRUPT/NORMAL SW - NORMAL

16-41 CEPD

(SIM) CRT (VWC17)

PF-1 VOLTS _____ VDC BD

CRT (VWC01)

BATTERY BACKUP

1D500 HI-TP V _____ VDC BD

(Simulated) 1D600 Battery Backup Enable

16-42 CEPD QPDS 151

**IF LISTED CB'S ARE NOT IN INDICATED POSITION,
THEN PERFORM:**

(SIM) PANEL L24 (COMPT 9A)

CKT 19
CB 19 - ON
CKT 26
CB 26 - ON

Not Performed: _____

16-43 CEPD QPDS 151

(SIM) RACK 6841
BATTERY CHARGER (PANEL A3)
MAIN CB - ON

CONTROL AND MONITOR PANEL (A4)

16-44 CEPD

(SIM) CRT (VCW17)
PF-2 VOLTS _____ VDC BD

CRT (VWC01)
BATTERY BACKUP
1D600 HI-TP V _____ VDC BD

16-45 CEPD OTC

Pre-flight Battery Backup Enable complete.

16-50 LPS

Verify all redundant switches active.

16-51 LPS C4MC

Perform \$FEPCPR reinit and demand update on all active FEPs.
Terminate \$FEPCPR at demand update completion.

16-52	LPS	NTD	232
	NTD	OTC	
	OTC	ALL	132

Vehicle safing processor will be reset. Safing indicators and meters will cycle on/off. Disregard until safing step complete. Safing takes 1 minute to complete.

16-53 LPS C4MC

At VSB FEP, press reset (RST) switch on MVME 2604 panel.

Verify FR LED is on.

Verify FR Consumables

16-54 LPS

Verify Firing Room consumables.

Biomed Checkout

<p>NOTE</p> <p>Perform this option if Biomed Checkout required for S0017.</p>
--

Biomed Checkout Not Performed:_____

16-55 **NTD** **OTC** **232** SU17035
 CBSE

T-22H30M

Perform "Biomed Checkout" (S0017.300, OP 29) on OIS Channel 163 (30 minutes).

16-56 **OTC** ***PAD**

OETO required to support Biomed Checkout on OIS Channel 163.

16-57 **CBSE** **NTD** **232**
 NTD **OTC**
 OTC ***PAD** **132**

Biomed Checkout complete.

***** End of Biomed Checkout *****

GPS Key/COMSEC Unit Transport

NOTE

The KYK-26 (COM) and KYK-13 (GPS) units may be obtained and transported in parallel to optimize performance of this OMI.

KYK-13 Unit Transport

NOTE

Perform "KYK-13 Unit Transport" if the GPS Encryption Key is not currently loaded into each available GPS receiver.

KYK-13 Unit Transport Not Performed: _____

CAUTION

Do not zeroize KYK-13 units unless required to prohibit compromising encryption load.

16-58

OTC NTD
NTD STM
STM JYVJ

232

[SU17075](#)

Request COMSEC Account Manager (CAM) or Alternate COMSEC Account Manager (ACAM) to transport loaded KYK-13 unit from LCC to Orbiter mid-deck at Pad in secure transport case (30 minutes).
CAM/ACAM to report to site Pad Leader for Crew Compartment entry.
(Phone 867-7670/7679/7687)

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**16-59 OTC *PAD 132
 *PAD JYVJ**

COMSEC Account Manager (CAM) or Alternate COMSEC Account Manager is transporting KYK-13 unit to Pad and will require Crew Compartment entry. Certified SCO will also be required in Crew Compartment to GPS Encryption Key load.

16-60 *PAD OTC 132

The KYK-13 unit is in route to the Orbiter mid-deck in support of GPS Encryption Key load.

***** End of KYK-13 Unit Transport *****

KYK-26 Unit Transport

NOTE

Perform "KYK-26 Unit Transport" if the COMSEC Keys not loaded.

KYK-26 Unit Transport Not Performed: _____

CAUTION

Do not zeroize KYK-26 (COM) units unless required to prohibit compromising loaded units.

16-61 OTC NTD 232
NTD STM
STM JYVJ

T-22H00M

Request COMSEC Account Manager (CAM) or Alternate COMSEC Account Manager (ACAM) transport loaded KYK-26 unit from the LCC to Orbiter mid-deck at Pad in secure transport case (30 minutes). CAM/ACAM to report to Pad Leader for Crew Compartment entry. (Phone 867-7670/7679/7687)

16-62 OTC *PAD 132

COMSEC Account Manager (CAM) (or Alternate COMSEC Account Manager) is transporting KYK-26 unit to Pad and will require Crew Compartment entry. Certified SCO will also be required in Crew Compartment to COMSEC Encryption Key load.

16-63 *PAD OTC

KYK-26 unit is in route to Orbiter mid-deck.

***** End of COMSEC Keys *****

*****End of GPS Key/COMSEC Unit Transport *****

Operations/Safety Facility Walkdown Complete

16-64	*PAD	OTC	132	SU17013
	OTC	NTD	232	

IF Integrated Operation 302 (S0017.100) - Operations/Safety Facility Walkdown was performed,

THEN Integrated Operation 302 (S0017.100) - Operations/Safety Facility Walkdown complete

Not Performed: _____

16-65	PGSO	*PAD	
	*PAD	OTC	132
	OTC	NTD	232

T-22H00M

There (are/are no) discrepancies in Walkdown Discrepancy list, Operation 899 (S0017.300) to constrain TCDT.

16-66	OTC	CPVD	132
	CPVD	PPVE	

T-22H00M

Verify purge active to Orbiter compartments.

GPS Encryption Key Load

NOTE
Perform "GPS Encryption Key Load" if the GPS Encryption Key is not currently loaded into each available GPS receiver.

GPS Encryption Key Load Not Performed: _____

16-72	*PAD	OTC	132
	OTC	NTD	232
	NTD	STM	

COMSEC Account Manager (CAM/ACAM) has delivered KYK-13 unit to Orbiter mid-deck.

16-73	OTC	CNSE	132
	CNSE	JYVJ	

IF in support of vehicle OV-103 or OV-104,

THEN Perform the "Single String GPS Encryption Key Load" section per S0017.300 Operation 53 on OIS Channel 173.

Not Performed: _____

16-74	OTC	CNSE	132
	CNSE	JYVJ	

IF in support of vehicle OV-105,

THEN Perform the "3-String GPS Encryption Key Load" section per S0017.300 Operation 53 on OIS Channel 173.

Not Performed: _____

16-75 CNSE OTC

“GPS Encryption Key Load” is complete. CAM/ACAM released from support of GPS.

***** End of GPS Encryption Key Load *****

BFS GPC/Load/Dump/Compare Complete

16-76 CVFS OTC 132 SU17033
T-21H30M

BFS GPC/Load/Dump/Compare complete.

Load Soft TFL/PDI Formats

16-77 OTC CDPS 132 SU17039
T-21H30M
CISL

Load soft TFL/PDI formats per "DPS systems" (S0017.300 Operation 40 items 7 and 8) (15 minutes).

GND Support COMM System Valid (A2700)

16-78 STM NTD 232 SU17069
T-21H30M
NTD *MIL

Verify MILA ready to support COMM system validation.

16-79 STM GYCC 111
*MIL
GYCC GYVW PTP

Perform validation of multi-burst video test signal - MILA to CDSC, on-board TV-1 (MILA to JSC) per OMI A2700 (1 hr)

Support: WB

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16-80 NTD STM 232 SU17071
 *MIL
 LPS
 JRPS

IF SFLL is supporting,

THEN Perform LPS/MILA Circuit Validation per OMI [A2700 Ground Support COMM Sys Valid](#)

Not Performed: _____

16-81 NTD STM 232 SU17071
 *MIL
 LPS
 JRPS
STM GOIS 111
GOIS KFRL 777

IF KFRL is supporting,

THEN perform LPS/MILA/KFRL Circuit Validation per OMI [A2700 Ground Support COMM Sys Validation](#)

Support: [VCE](#)

Not Performed: _____

16-82 CDPS OTC 132
T-21H15M

PDI Configuration and Launch Format Loads complete.

Activate Launch OI Format

NOTE
Perform this option if ascent OI format is not 129.

Activate Launch OI Format Not Performed: _____

16-83 **OTC** **NTD** **232** [SU17045](#)
 NTD **TBC**
 PTC

Launch downlink format _____ will be activated.

16-84 **OTC** **CDPS** **132**

Activate Launch OI format per OMI [V9001VL2 Orbiter Power Up/Power Down, DPS Options \(LPS\)](#) .

16-85 **CDPS**

CRT (VAS59 PG-B)
LAUNCH OI FORMAT ACTIVE (CYAN)

16-86 **CDPS** **OTC** **132**
 OTC **NTD** **232**
 NTD **PTC**
 TBC

Launch OI format _____ activated.

***** End of Activate Launch OI Format *****

NOTE

Perform the following step just prior to COMM Switchlist Verification.

16-91 OTC CDR 132

PANEL MO39M
MIDDECK COMM CCU PWR SW - OFF

Connect cable SED36126942-311 to Panel MO39M MHA jack.

Connect cable SED36126942 - 311 to HIU SED36130206-303.

Connect HIU to Headset SED36122033-303.

Record

Cable S/N _____, HIU S/N _____, HDST S/N _____

COMM Switchlist Verification

16-92 OTC CCSE 132 SU17014

Perform COMM switchlist configuration per OMI
[V1117 Communications Launch Configuration Checkout \(LPS\)](#)
(30 minutes).

Report completion.

RT OMI Log No. _____

Redundant Set Formation

NOTE

In next two steps, downlist format will be 60 if required for payload support and 44 for all others (ref Orbiter Operation 121 - Orbiter DPS Launch Support Configuration, S0017.100).

16-96	OTC	NTD	232	SU17051
	NTD	TBC		
	OTC	ALL	132	
	TBC	ALL	136	

T-20H30M

DPS switching to G9 redundant set downlist ____ (44 or 60).
During RS formation downlist data and LDB polling will be invalid for approximately 15 minutes. Some zero filled data may momentarily appear in the downlist during transition.

16-97	NTD	OTC	232
	OTC	CDPS	132
		CDR	

Perform G9/RS DL FMT ____ (44 or 60) per S0017.300 "DPS Systems"
(Operation 40 item 11). (30 minutes)

GND Support COMM System Valid (A2700) Complete

16-98 GYVW GYCC PTP
 GYCC STM 111
 *MIL
 STM NTD 232

T-20H30M

Validation of multi-burst video test signal - MILA to CDSC, on-board TV-1 (MILA to JSC) per A2700 complete.

Support: [WB](#)

16-99 *MIL STM 111
 STM NTD 232

[SU17071](#)

LPS/MILA Circ Valid per A2700 complete.

16-100 JBFX STM 111
 STM NTD
 CMQC

Support Operation 3 (S0017.100) - Sound Suppression and FIREX Water Preps complete.

STM _____

Support: [CWSS](#)

ECLSS Reconfiguration Complete

16-101 CECL OTC 132
T-20H00M

[SU17037](#)

ECLSS Reconfiguration to Support Ingress complete.

SSR1 and SSR 2 Configure for TCDT

16-107 OTC CISL 132 [SU17025](#)

Perform SSR1 and SSR2 Configure for TCDT per OMI S0017.300 (Operation 52) on OIS Channel 145. (15 minutes)

16-108 CISL OTC 132
 OTC NTD 232

SSR1 and SSR2 Configure for TCDT complete.

MADS Configure for TCDT

NOTE

MEC Activation must be complete prior to the next step (OV-103 only).

16-109 OTC CISL 132

Perform MADS Configure for TCDT per OMI S0017.300 (Operation 52) on OIS Channel 145 (15 minutes).

16-110 CISL OTC 132 [SU17025](#)

MADS Configure for TCDT complete.

IMU Checkpoint Data Read

16-111 OTC CGNC 132 SU17052

IF IMU checkpoint and I-load data not verified by another TOP since MMU load for S0017,

THEN Perform IMU no-power checkpoint data dump per OMI [V1123.250 IMU Pre-Power Data Dump](#) . (25 minutes.)

RT OMI Log No. _____

Not Performed: _____

Orbiter GN&C Power Up and Switch Configure

NOTE

Following step performs systematic panel by panel switch configure of following GN&C systems:

AA, ADTA, ASA, ATVC, brakes, controllers, NWS, RJD logic, RGA, RMS, star tracker and switches.

NOTE

Following step will require an I/O reset. DPS can expect I/O errors to occur for items not powered up at this time.

16-112 **OTC** **COFC** **132** **SU17054**
 CGNC
 CDPS

T-20H00M

Perform GN&C system power up per OMI [V1123.120 GNC System Power Up](#) .
Report completion. (30 minutes) (CDR)

RT OMI Log No. _____

16-113 **COFC**

CURSOR CNTL (SAB19/SWB01)
COUNTDOWN - OPS MANAGER
XMIT CURSOR KEY - PRESS

16-114 **COFC**

CURSOR CNTL (SAB23/VSB100)
AEROSURFACE DRIVER CHECKS
XMIT CURSOR KEY - PRESS

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16-115

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

16-116

COFC

CRT (SAB23/VSB100)
VERIFY
AEROSURFACE DRIVER CHECKS SUCCESSFUL

16-117

COFC

CONSOLE KYBD (SAB23/VSB100)
PFK15 KEY - PRESS

Hydraulic System Configure

NOTE

Delay hydraulic system configure until flight control activation is complete.

Asterisk (*) denotes configuration different from Launch countdown configuration.

16-118
T-19H30M

OTC CHYD 132

[SU17056](#)

Perform HYD SYS configuration for switchlist. (COFC may substitute for CHYD)

16-119

CHYD CDR 132

PANEL L4

ROW O

AC1

BLR HYD BYPASS 1B
PH A CB - CLOSE
HYD QTY 1
PH B CB - CLOSE
BLR HYD BYPASS 3A
PH C CB - CLOSE

AC2

BLR HYD BYPASS 1A
PH A CB - CLOSE
HYD QTY 2
PH B CB - CLOSE
BLR HYD BYPASS 2B
PH C CB - CLOSE

AC3

BLR HYD BYPASS 2A
PH A CB - CLOSE
HYD QTY 3
PH B CB - CLOSE
BLR HYD BYPASS 3B
PH C CB - CLOSE

CAUTION

On Panel R2, care should be taken to place the HYD circ pump switches to the GPC position only to prevent damage to hardware.

16-120 CHYD PLT

PANEL R2

APU/HYD

HYD MAIN PUMP PRESS

- 1 SW - NORM
- 2 SW - NORM
- 3 SW - NORM

HYD CIRC PUMP

- 1 SW - GPC (GUARDED)
- 2 SW - GPC (GUARDED)
- 3 SW - GPC (GUARDED)

BOILER CNTLR/HTR

- 1 SW - OFF*
- 2 SW - OFF*
- 3 SW - OFF*

BOILER PWR

- 1 SW - OFF
- 2 SW - OFF
- 3 SW - OFF

BOILER N2 SUPPLY

- 1 SW - OFF
- 2 SW - OFF
- 3 SW - OFF

16-121 CHYD PLT

PANEL R4

HYDRAULICS

BRAKE HEATER

- A SW - OFF
- B SW - OFF
- C SW - OFF

16-122 CHYD MSS

PANEL A12

HYDRAULIC HEATER

RUDDER SPD BK

A SW - OFF

B SW - OFF

BODY FLAP

A SW - OFF

B SW - OFF

ELEVON

A SW - OFF

B SW - OFF

AFT FUSELAGE

A SW - OFF

B SW - OFF

HYD CIRC PUMP POWER

1 SW - MN A

2 SW - MN B

3 SW - MN C

16-123 CHYD MSS

PANEL MA73C

ROW F

AC 1

OPS INST HYD ACTR

PH C CB - CLOSE

AC 2

OPS INST HYD ACTR

PH C CB - CLOSE

16-124 CHYD OTC 132

SU17056

Hydraulic System Config for Switchlist complete.

Redundant Weight On Wheels (RWOW) Status

NOTE
The following two steps require brake and antiskid power.

NOTE
Perform next two steps if Downlist Format is 60.

16-125

COFC

APPL PG (VWB37 PG-B)
PFK5 KEY - PRESS (LDB READ)

Not Performed:_____

16-126

COFC

CRT (VWB37 PG-B)

BRAKES STATUS AND TEST SELECT

LANDING GEAR STATUS

VERIFY "RWOW" STATUS = ON/UP ARROW (U)

R NO WOW 1U 2U 3U 4U
NULL FAIL 1U 2U 3U 4U

Not Performed:_____

Landing Gear No WOW Status Checks

16-127

COFC

CRT (VWB37 PG-B)

BRAKE STATUS AND TEST SELECT
LANDING GEAR STATUS

NO WOW 1 $\frac{L}{ON}$ $\frac{N}{ON}$ $\frac{R}{ON}$
NO WOW 2 ON

GN&C System Self Tests

NOTE

Following are independent operations and may be performed in parallel, in any order, and in conjunction with IMU or star tracker operations.

NOTE

Downlist format 42 not required for countdown RJD single CMD test. Do not change to format 42 (per V1123 GN&C Countdown and Mission Support Testing (LPS)) unless this test must be used to verify RJD driver out discretes.

16-128 **OTC** **COFC** **132** **SU17058**
T-19H30M

Perform GN&C system self tests per OMI [V1123.130 System Self Test](#) .
Report completion.

1. ADTA Self Test (5 minutes)
2. Orbiter RGA Turnaround Null/Self Test (Ground Test)
 (10 minutes)
3. AA Turnaround Self Test (10 minutes)
4. RCS Trickle Current Single CMD Test (Normal Jets only)
 (15 minutes)

RT OMI Log No. _____

16-129 **CGNC** **OTC** **132** **SU17052**
T-19H30M

IF the IMU no-power checkpoint data read was performed,

THEN Report IMU No-Power Checkpoint Data Dump complete.

Not Performed: _____

IMU Power up

NOTE

The following step will require CECL to activate one IMU fan to support IMU operations.

16-130 **OTC** **CGNC** 132 SU17004
 CECL

T-19H30M

IF IMU's not powered up per another WAD,

THEN Perform Orbiter IMU Warm-Up/Standby operations per OMI
[V1123.260 IMU Power Up](#) . (30 minutes) (CDR - 5 minutes)

RT OMI Log No. _____

Not Performed: _____

IDP2 Re-assignment

16-131 **COFC**

```
CONSOLE KYBD  
  
C CO _DEU2G LDBA C12  
XMIT CMD KEY - PRESS  
  
ISSU N72IV101D 0  
XMIT CMD KEY - PRESS  
EXEC CMD KEY - PRESS
```

16-132 **COFC** **OTC** 132
 CDPS

Responsible console for IDP2 is now C12.

NOTE
“GPS Activation and Almanac Collection” and “NAVAIDS Activation and Self-Test” may be performed in parallel to optimize performance of this OMI.

GPS Activation and Almanac Collection

16-133 OTC CMQC 132

Verify Oribter Prerequisite Operation 105 (S0017.100) - COMM Antenna Coupler Installation is complete.

Qv: _____

16-134 NTD OTC 232 SU17076
OTC CNSE 132

T-19H30M

IF in support of vehicle OV-103 or OV-104,

THEN Perform “Single String GPS Activation and Almanac Collection” section per S0017.300 Operation 53 on OIS Channel 173.

Not Performed: _____

16-135 NTD OTC 232 SU17073
OTC CNSE 132

T-17H30M

IF in support of vehicle OV-105,

THEN Perform “3-String GPS Activation and Almanac Collection” section per S0017.300 Operation 53 on OIS Channel 173.

Not Performed: _____

16-136	CNSE	OTC	132	SU17076
	OTC	NTD	232	SU17073

T-16H15M

“GPS Activation and Almanac Collection” complete.

***** End of GPS Activation and Almanac Collection *****

ORB MET Initialization

16-137	OTC	CEPD	132	SU17024
		CDR		

T-17H45M

Perform Orbiter "MET (Mission Event Timer) Initialization and Switch/Circuit Breaker Configuration" (S0017.300 Operation 41) on Channel 151. (20 minutes)

16-138	CEPD	OTC	132	SU17024
--------	------	-----	-----	---------

MET Initialization and Switch/Circuit Breaker Configuration complete.

NAVAIDS Activation and Self-Test (OV-103/OV-104)

NOTE

Perform “NAVAIDS Activation and Self-Test (OV-103/OV-104)” if testing is in support of OV-103 or OV-104.

NAVAIDS Activation and Self-Test Not Performed: _____

16-139	CNSE	OTC	132
	OTC	NTD	232

T-17H30M

Ready to proceed with “NAVAIDS Activation and Self Test (OV-103/OV-104).”

16-140 OTC CMQC 132 SU17006

Verify Orbiter Prerequisite Operation 115 (S0017.100) - C&T TACAN
Signal Monitor Setup complete.

Qv: _____

16-141 OTC NTD 232 SU17072
 NTD STM SU17074
 STM FTAC 111
 H/L

T-17H30M

Provide the following support:

1. **Verify** TACAN station at KSC supporting, and personnel on
station to perform transponder switchover.
(phone 861-2049/0541)

2. **Report** which transponder is currently active.

Transponder _____ (1 or 2)

3. **Support** NAVAIDS Activation and Self-test (S0017.300
Operation 53) on OIS Channel 173.

16-142 NTD *SCC 232 SU17008
 *SCC *PSE NET 105 SU17082

T-17H30M

Request Safety clear all personnel from Orbiter NAVAIDS Antennas
(TACAN) (207 ft level FRCS room) and **install** barriers and danger signs.

Post Antenna Monitor

NOTE

Perform "Post Antenna Monitor" if safety signs cannot close out the 207 ft FRCS room and posting the antenna monitor is in support of OV-103 or OV-104 NAVAIDS activities only.

Post Antenna Monitor Not Performed: _____

16-143 OTC *PAD 132

Post antenna monitor on station and maintain 2 ft clear around TACAN antennas. NAVAIDS activation follows.

16-144 *PAD OTC 132

Antenna Monitor is on station.

16-145 CNSE OTC 132
OTC NTD 232
NTD *SCC
***SCC *PSE NET 105**

Monitor on station and 2 ft clear around TACAN antennas established.
Request Safety concurrence to proceed with NAVAIDS Activation and Self-Test.

***** End of Post Antenna Monitor *****

16-146	NTD	STM	232
	STM	GEMA	111

Initiate Launch & Landing site RF Surveillance

Monitoring locations: VAB, Pad A, EML

Frequency Range: 225-320 MHz (UHF)
416-417 MHz (SRSS)
960-1215 MHz (TACAN - OV-103/104 only)
2-2.4 GHz (S-Band)
5.6-5.9 GHz (SRBTS)

1. CCSE/CNSE/CBRS call GEMA (7-3434) to initiate any RF interference investigation.
2. GEMA report RF interference to Flight Systems only at request of CCSE/CNSE/CBRS.
3. GEMA coordinate mitigation of any media S-band incursions from the KSC Press Site with the KSC Spectrum Manager via telephone.

16-147 NTD PA

Attention on Pad A:

All personnel clear 2 ft area around Orbiter NAVAIDS antenna.

16-148 *PSE *SCC NET 105 SU17008
 *SCC NTD 232 SU17082
 NTD OTC

All personnel cleared from NAVAIDS antennas. Safety verifies concurrence to proceed with NAVAIDS activation. Antenna monitor on station or barriers and danger signs posted.

WARNING

RF Radiation is harmful.
Exposure may cause burns and cell, tissue, or organ structure damage.
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NOTE

Hazardous steps follow due to NAVAIDS activation.

16-149 NTD OTC 232 SU17301
 OTC CNSE 132
 CDPS
 CDR

T-17H15M

Perform “NAVAIDS Activation and Self-Test (OV-103/OV-104)” per S0017.300 Operation 53 on Channel 173.

TACAN Transponder is currently No. _____ (1 or 2)

**05-13-2011
APPROVED**

**OMI S0017.200 A28
APPROVED**

16-150	CNSE	OTC	132	SU17301
	OTC	NTD	232	

T-17H00M

“NAVAIDS Activation and Self-Test (OV-103/OV-104)” is complete.

16-151	NTD	STM	232	SU17072
	STM	FTAC	111	
			H/L	

TACAN ground station support may be released.
(phone 861-2049/0541).

Open NAVAIDS Control Area

NOTE

Perform "Open NAVAIDS Control Area" if control area was established for OV-103 or OV-104 activities and access is required to NAVAID antenna control area.

Open NAVAIDS Control Area Not Performed: _____

NOTE

Hazardous operations due to NAVAIDS activation complete.

16-152	NTD	*SCC	232
	*SCC	*PSE	NET 105

Request Safety concurrence to open NAVAIDS antenna control area.

16-153	*PSE	*SCC	NET 105
	*SCC	NTD	232
	NTD	OTC	

Safety concurs with opening NAVAIDS antenna control area for controlled work. Barriers and danger signs removed.

***** End of Open NAVAIDS Control Area *****

***** End of NAVAIDS Activation and Self-test (OV-103/OV-104) *****

NAVAIDS Activation and Self-Test (OV-105)

NOTE

Perform "NAVAIDS Activation and Self-Test (OV-105)" if testing is in support of OV-105 only (TACAN System removed).

NAVAIDS Activation and Self-Test Not Performed: _____

16-154 **CNSE** **OTC** **132** **SU17010**
OTC **NTD** **232**
T-17H30M

Ready to proceed with "NAVAIDS Activation and Self Test (OV-105)."

16-155 **NTD** **OTC** **232**
OTC **CNSE** **132**
 CDPS
 CDR
T-17H15M

Perform "NAVAIDS Activation and Self-Test (OV-105)" per S0017.300 Operation 53 on Channel 173.

16-156 **CNSE** **OTC** **132** **SU17010**
OTC **NTD** **232**
T-17H00M

"NAVAIDS Activation and Self-Test (OV-105)" is complete.

*****End of NAVAIDS Activation and Self-Test (OV-105) *****

16-157 **OTC** **CMQC** **132** **SU17012**

Verify Operation 117 (S0017.100) - Antenna Coupler Engineering Walkdown complete.

Qv: _____

Close Wire Frames

16-158 STM GYCC 111
 GYCC GYCB PTP (INFO)

Close the wire frames listed below:

- | | |
|--------------------|-----------------------|
| 1. ACTC | Frame 91A |
| 2. Beach | Frame 58 |
| 3. BRRS | Frame 9 |
| 4. CD&SC | Frames 1, 40, WT |
| 5. DLTR#3 | FOT |
| 6. LACB | Frames 66, 74 |
| 7. LCC | Frames 51, 65 |
| 8. MILA | Frame 11 |
| 9. Pad A | Frame 57 |
| 10. Press Site | Frame 56 |
| 11. South Repeater | Frame 6 |
| 12. Tel IV | Frame 7 |
| 13. VAB | Frames 52, 53, 54, 55 |
| 14. VABR | Frame 50 |

Support: [TCOM](#)

Clear for COMM Activation

16-159	OTC	CCSE	132	SU17016
		*PAD		
		NTD	232	
	NTD	*SCC		
	*SCC	*PSE	NET 105	

T-17H00M

Ready to clear for COMM Activation per OMI V1117.

16-160	OTC	NTD	232
	NTD	*SCC	
	*SCC	*PSE	NET 105

Clear all personnel 5 ft from S-band and UHF antennas.

Post barriers and RF sign on 193-ft level.

Request Safety concurrence to proceed with COMM activation.

16-161	NTD	PA
---------------	------------	-----------

Attention on Pad A:

All personnel stand 5 ft clear of Orbiter COMM system antennas for hazardous RF Radiation.

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APPROVED

16-162	*PSE	*SCC	NET 105	SU17016
	*SCC	NTD	232	SU17083
	NTD	OTC		

All personnel cleared, barriers and RF sign posted. You have Safety concurrence for COMM activation.

GTOE Headset Installation Complete

16-163 T-17H00M	CDR	OTC	132	SU17018
--------------------	-----	-----	-----	---------

Orbiter Prerequisite Operation 112 (S0017.100) - GTOE Headset Installation complete.

16-164	CDR	OTC	132	
--------	-----	-----	-----	--

Orbiter Prerequisite Operation 111 (S0017.100) - Switch guard Installation complete.

16-165 T-17H00M	CGNC	OTC	132	SU17004
--------------------	------	-----	-----	---------

IF IMU's are not powered up per another WAD,

THEN report IMU Warm-Up/Standby Operations complete.

Not Performed: _____

GNC LCC Monitor Activation

NOTE

Allow 1-2 minutes for next step to complete.

Perform the next step after completion of GN&C System Power Up, GN&C System Self Tests and IMU Power Up.

Reference section 1.2, Special Instructions, GNC system specifics, item A.

16-166
T-17H00M

COFC

CURSOR CNTL (SAB20/VSB79 PG-B)
ACTIVATE LCC MONITOR
XMIT CURSOR KEY - PRESS

NOTE

The following step will change the EMON limit for the speedbrake channel 1 position feedback from the default limit of 5 +/- 1 deg, to an adjusted limit of 3.5 deg to 6.0 deg. This is to account for a known bias of approximately -0.75 deg in the OV-105 speedbrake channel 1 position.

Perform the next step for OV-105 only and only after LCC Monitor Activation has been completed.

16-167

COFC

IF for OV-105
and after LCC Monitor Activation is complete,

THEN
CONSOLE KYBD
C EL V57H0201C1 3.5 6.0
XMIT CMD KEY - PRESS

Not Performed:_____

16-168

COFC

IF Final Actuator positioning has not been completed
and Speed Brake is still at approximately
1.6 degrees,

THEN

CONSOLE KYBD

- 1) C EL V57H0201C1 0.6 2.6
- 2) XMIT CMD KEY - **PRESS**
- 3) C EL V57H0202C1 0.6 2.6
- 4) XMIT CMD KEY - **PRESS**
- 5) C EL V57H0203C1 0.6 2.6
- 6) XMIT CMD KEY - **PRESS**
- 7) C EL V57H0204C1 0.6 2.6
- 8) XMIT CMD KEY - **PRESS**

Not Performed: _____

Activate IMU PWR Up LCC EMON

16-169

CGNC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

16-170

CGNC

CURSOR CNTL (SAB20/SWB02 PG-A)
A - IMU PWR UP
XMIT CURSOR KEY - PRESS

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APPROVED

Activate OMS TVC LCC Mon & EMON

16-171

COFC

CURSOR CNTL (SAB20/SWB02 PG-A)
A - OMS TVC
XMIT CURSOR KEY - PRESS

16-172

COFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (DEACT EMON SETUP)

GNC LCC Parameter Inhibit

NOTE

Following four steps deactivate aero surface position LCC monitoring since no hydraulic press is applied for CDDT.

16-173

COFC

APPL PAGE (SAB20/SWB02 PG-B)
PFK3 KEY - PRESS (ACT PARAM INH/ACT PG)

NOTE

Repeat next two steps as required for listed measurements.

<u>Table No.</u>	<u>FD</u>
8	V58H0802A1
8	V58H0803A1
8	V58H0804A1
8	V58H0805A1
8	V58H0852A1
9	V58H0853A1
9	V58H0854A1
9	V58H0855A1
9	V58H0902A1
9	V58H0903A1
9	V58H0904A1
9	V58H0905A1
9	V58H0952A1
9	V58H0953A1
9	V58H0954A1
9	V58H0955A1
12	V57H0250A1
12	V57H0251A1
12	V57H0252A1
12	V57H0253A1

16-174

COFC

CURSOR CNTL (SAB20/SWB02 PG-B)
PG-AHEAD
XMIT CURSOR KEY - PRESS

REPEAT UNTIL PAGE = TABLE NO.

16-175

COFC

CURSOR CNTL (SAB20/SWB02 PG-B)
(FD)
XMIT CURSOR KEY - PRESS
(MASK MEASUREMENT)

REPEAT FOR EACH FD LISTED

16-176

COFC

APPL PAGE (SAB20/SWB02 PG-B)
PFK5 KEY - PRESS (RETURN TO ACTIVITY PG)

GNC OPS101 Profile Mon Setup

16-177

COFC

CURSOR CNTL (SAB19/SWB01 PG-B)
COUNTDOWN - DETAIL
XMIT CURSOR KEY - PRESS

NOTE

Perform test bypass as applicable for current vehicle configuration.

Bypass all options for S0017.

16-178

COFC

CURSOR CNTL (VWB05 PG-B)
VERIFY/PERFORM BYPASS (INVERTED) ON ITEMS LISTED
XMIT CURSOR KEY - PRESS

ELEVON DRIVER CURRENT CHECK

AEROSURFACE PROFILE EVAL

MPS TVC PROFILE EVAL

SRB TVC PROFILE EVAL

SPEEDBRAKE CLOSURE CHECK

SRB TVC 2DP CHECK

SRB TVC LAUNCH POSN MONITOR

16-179

COFC

APPL PAGE (VWB05 PG-B)
PFK5 KEY - PRESS (WRITE BYPASSES)
PFK15 KEY - PRESS (TERM VWB05)

Preps For COMM System Activation

16-180

RCRT	OTC	132
OTC	NTD	232

T-16H45M

C&T station initialization (Pad Option Operations) complete per V3528.

Configure OIS-D To Multi-Channel Transmit

16-181 STM GYCC 111
 GYCC JYCD 117

T-16H45M

IF supporting from FR3,

THEN configure OIS-D communication in prime firing room consoles to multi-channel transmit capability. (30 minutes)

FR-3

AA-5 107-21
AA-6 104-41
AB-5 106-61
AB-6 107-61
AB-7 104-02
AB-8 105-02

Support: [OISD](#)

Not Performed: _____

16-182 STM GYCC 111
 GYCC JYCD 117

T-16H45M

IF supporting from FR4,

THEN configure OIS-D communication in prime firing room consoles to multi-channel transmit capability. (30 minutes)

FR-4

10496A3 104-55
10496A5 107-56
10496A13 107-36/106-75
10496A15 105-14
10496A17 104-75/106-01
10496A19 105-54

Support: [OISD](#)

Not Performed: _____

16-183 STM NTD 232

OIS-D will be configured to multi-channel transmit mode in prime firing room _____ consoles.

Consoles Configure To Multi-Channel Transmit Complete

16-184 JYCD GYCC 117
 GYCC STM 111
 STM NTD 232

Consoles in prime firing room _____ have been configured to multi-channel transmit capability.

Support: [OISD](#)

Orbiter COMM System Activation (CCMS)

16-185 NTD *MIL 232
 STM
 LPS
 STM GYCC 111
 GYCC GOIS 117
 GOIS KFRL 777

Verify ready to support COMM activation on OIS Channel 214 per [V1117](#) .

Support: [VCE](#)

WARNING

RF Radiation is harmful.
Exposure may cause burns and cell, tissue, or organ structure damage.

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NOTE

Hazardous steps follow due to S-Band and UHF COMM activation.

16-186	NTD	OTC	232	SU17020
		LPS		
		JRPS		
	OTC	CCSE	132	
		RCRE		
		CDR		
		PLT		
		MS1		
		MS2		

T-16H30M

Perform COMM System Activation per OMI [V1117 Communications Launch Configuration Checkout \(LPS\)](#) (Operation _____) on OIS Channel 214 (4 hours)

Freq Control No. _____

RT OMI Log No. _____

EIU Power Up

16-187 **OTC** **CCME** **132** [SU17028](#)
T-14H30M

Perform EIU Power Up per SSME System preps for TCDT (S0017.300 Operation 34) on OIS Channel 146. (15 minutes)

16-188 **OTC** **NTD** **232**
NTD **LPS**
JRPS

Request LPS and RPS support EIU power up on OIS Channel 146.

EIU Power Up Complete

16-189 **CCME** **OTC** **132** [SU17028](#)
T-14H15M

EIU Power Up complete. Ready to support COMM activation.

NOTE

For SIMO voice checks using OISD, NTD should be utilizing the 06311, 06312, and 06313 OIS Channels.

16-190 **CCSE** **OTC** **132**
OTC **NTD**

Using Audio PB on Console 10496A13-FR4 (or 0696A11-FR3), **perform** 2-way voice checks with CDR individually on the following channels:

- A/G 1
- A/G 2
- ICOM A
- ICOM B
- UHF

Using OIS-D, **perform** SIMO A/G 1, A/G 2 and UHF voice check.

COMM SYS Activation Complete

16-191 CCSE OTC 132 SU17020
 OTC NTD 232

T-12H30M

COMM system activation per V1117 complete.

OMRSR V74CA0.050-A
OMRSR V74CA0.050-B
OMRSR V74CA0.050-C
OMRSR V74CA0.050-D
OMRSR V74CA0.050-E
OMRSR V74CA0.050-F
OMRSR V74CA0.050-G
OMRSR V74CA0.050-H

16-192 OTC CDR 132

PANEL MO39M
MIDDECK COMM CCU PWR SW - OFF

Disconnect Middeck Headset, HIU and cable from Middeck MHA and route to Orbiter White Room for CCSE pickup. **Do not** disconnect cable between MHA and MO39M.

16-193 CCSE OTC 132

COMM System Activation complete, ready for EIU Power Down.

16-194 OTC CCME 132

Perform EIU Power Down per SSME system preps for TCDT (S0017.300 Operation 34) on OIS Channel 146. (15 minutes)

16-195 CCME OTC 132

EIU Power Down complete.

FCS Final Stowage

16-196 OTC *PAD 132 SU17034
T-13H15M

Perform FCS Final Stowage including parachute assemblies and seat cushions per FCS TPS. (2 Hours)

Record FCS TPS No. _____

COMM CMD to Launch Config - (CCMS)

16-197 NTD *MIL 232 SU17065
JRPS
OTC
LPS
OTC CCSE 132
RCRE
T-12H30M

Perform COMM CMD to Launch Config per OMI V1117 (Operation _____) on OIS Channel 214 (1 hr).

RT OMI Log No. _____

Activate EPD Exception Monitoring

16-198 OTC CEPD 132
T-12H30M
ACTIVATE EXCEPTION MONITORING FOR LCC REDLINES

CURSOR CNTL (SWC02)
LCC EMON - ACT
XMIT CURSOR KEY - PRESS

16-199 CEPD OTC 132
T-12H30M
EPDC LCC Exception Monitoring complete.

16-200 NTD OTC 232 SU17053
 PTC
 CPLE

Perform Payload Pre-Ascent Switch List Switch Verification.
(S0017.300 Operation 55) (15 minutes)

16-201 PTC NTD 232

Payload Pre-Ascent Switch List Switch Verification complete.

16-202 CPLE ASP 134 SU17303

PANEL A6U

PAYLOAD RETENTION

LOGIC POWER

SYS 1 SW - OFF

SYS 2 SW - OFF

PAYLOAD SELECT SW - MONITOR

PAYLOAD RETENTION LATCHES

1 SW - OFF

1 TB BP

2 SW - OFF

2 TB BP

3 SW - OFF

3 TB BP

4 SW - OFF

4 TB BP

5 SW - OFF

5 TB BP

READY FOR LATCH

1 TB BP

2 TB BP

3 TB BP

4 TB BP

5 TB BP

16-203 CPLE ASP 134

IF PANEL A8L (RMS and/or OBSS) INSTALLED,

THEN PERFORM

PANEL A8L

STARBOARD RMS (OBSS)

 DEPLOY/STOW SW - OFF

 TB STO (BP IF MPMs NOT INSTALLED;

 DPY IF OBSS DEPLOYED FOR PAYLOAD OPS)

RETENTION LATCHES

 RELEASE/LATCH SW - OFF

 TB LAT (BP IF OBSS AND MPMs NOT INSTALLED;

 REL IF OBSS NOT INSTALLED)

 READY FOR LATCH

 AFT TB GRAY (BP IF OBSS AND/OR MPMs NOT
 INSTALLED)

 MID TB GRAY (BP IF OBSS AND/OR MPMs NOT
 INSTALLED)

 FWD TB GRAY (BP IF OBSS AND/OR MPMs NOT
 INSTALLED)

HEATER

 A SW - OFF

 B SW - OFF

RMS SELECT SW - OFF

RMS POWER SW - OFF

PORT RMS

 DEPLOY/STOW SW - OFF

 TB STO (BP IF MPMs NOT INSTALLED;

 DPY IF RMS DEPLOYED FOR PAYLOAD OPS)

RETENTION LATCHES

 RELEASE/LATCH SW - OFF

 TB LAT (BP IF RMS AND MPMs NOT INSTALLED;

 REL IF RMS NOT INSTALLED)

PANEL A8L (Continued)

READY FOR LATCH

AFT TB GRAY (BP IF RMS AND/OR MPMs
NOT INSTALLED)

MID TB GRAY (BP IF RMS AND/OR MPMs
NOT INSTALLED)

FWD TB GRAY (BP IF RMS AND/OR MPMs
NOT INSTALLED)

HEATER

A SW - OFF

B SW - OFF

Not Performed: _____

NOTE

The following switch is located on RMS rotational hand controller, to right of Panel A8U.

16-204 CPLE ASP 134

IF RMS RHC INSTALLED,

THEN RMS RHC RATE SW - VERNIER

Not Performed: _____

16-205 CPLE ASP 134

IF PANEL A8U (RMS) INSTALLED,

THEN PERFORM

PANEL A8U

MODE MATRIX (ALL LITES OFF)

BRAKES SW - ON

TB OFF

SAFING SW - AUTO (CENTER)

TB BP

MODE

SELECT SW - TEST

ENTER PBI - AS IS

AUTO SEQ SW - (CENTER)

LITES (2) - OFF

SOFTWARE STOP TB GRAY

CAUTION/WARNING TONE VOLUME SW - AS IS

CAUTION/WARNING (ALL LITES OFF)

MASTER ALARM LITE - OFF

RATE

MIN TB OFF

HOLD TB OFF

SCALE TB GRAY

END EFFECTOR

MODE SW - OFF

MAN CONTR SW - (CENTER)

(ALL TB'S BP)

PANEL A8U (Continued)

BACKUP CONTROL

JOINT SW - SHOULDER YAW
PAYLOAD RELEASE SW - OFF
DIRECT DRIVE SW - (CENTER)

PARAMETER SW - PORT TEMP LED/ABE/ID
JOINT

SELECT SW - CRIT TEMP
SINGLE/DIRECT DRIVE SW - (CENTER)

LIGHTING/

ANNUN/NUM

BRIGHT SW - VAR (DOWN)
BRIGHT/VAR SW - LOW
PANEL/INST SW - OFF

SHOULDER BRACE RELEASE SW - (CENTER)
TB BP

Not Performed: _____

16-206 CPLE ASP 134

PANEL R12
VIDEO PROCESSING UNIT
VPU POWER SW - OFF

16-207 CPLE ASP 134

IF OPP IS INSTALLED IN PANEL R12,

THEN PERFORM:

PANEL R12U

OBSS SW POWER CB1 - OPEN
OBSS SW POWER SW - OFF

OBSS
S1 SW - (DOWN)
RSC PWR SW - OFF
ITVC ENA SW - OFF
SPEE PWR SW - OFF
S5 SW - (DOWN)
S6 SW - (DOWN)

Not Performed: _____

16-208 CPLE OTC 132

SU17303

SSP/PRLA Switch Configuration complete.

OMS/RCS SYS Config

16-209 OTC COOS 132 [SU17057](#)

Perform OMS/RCS system configuration and RSYS transfer on OIS Channel 157.

16-210 COOS PLT 132

PANEL O16

ROW E

MN C

RCS/OMS PRPLT QTY GAUGE CB - CLOSE

16-211 COOS PLT 132

PANEL O3

RCS/OMS PRESS SW - RCS HE X 10

RCS/OMS PRPLT QTY SW - OMS FUEL

16-212 COOS PS1 132

PANEL A14

RCS/OMS HEATERS

OMS

CRSFD LINES

A AUTO SW - A AUTO

B AUTO SW - B AUTO

16-213 COOS MS1 132

PANEL R14

ROW C

MN C

MANF ISOL

L5 ENABLE CB - CLOSE

R5 ENABLE CB - CLOSE

F5 ENABLE CB - CLOSE

NOTE

Asterisk (*) denotes configuration different from Launch Countdown configuration.

16-214 COOS MS1 132

PANEL MA73C

ROW H

AC1

FWD RCS VLV

PH A CB - OPEN*	MA73CC029
PH B CB - OPEN*	MA73CC030
PH C CB - OPEN*	MA73CC031

AC2

FWD RCS VLV

PH A CB - OPEN*	MA73CC032
PH B CB - OPEN*	MA73CC033
PH C CB - OPEN*	MA73CC034

AC3

FWD RCS VLV

PH A CB - OPEN*	MA73CC035
PH B CB - OPEN*	MA73CC036
PH C CB - OPEN*	MA73CC037

ROW I

AC 1

AFT POD VLV GP 1

PH A CB - OPEN*	MA73CC038
PH B CB - OPEN*	MA73CC039
PH C CB - OPEN*	MA73CC040

AFT POD VLV LOGIC GP

1/3 SW - ON	MA73CS015
-------------	-----------

AC 2

AFT POD VLV GP 2

PH A CB - OPEN*	MA73CC041
PH B CB - OPEN*	MA73CC042
PH C CB - OPEN*	MA73CC043

AFT POD VLV LOGIC GP

1/2 SW - ON	MA73CS016
-------------	-----------

PANEL MA73C (Continued)

AC 3
AFT POD VLV GP 3
PH A CB - OPEN* MA73CC044
PH B CB - OPEN* MA73CC045
PH C CB - OPEN* MA73CC046
AFT POD VLV LOGIC GP
2/3 SW - ON MA73CS017

RSYS Transfer

16-215 COOS

IF not terminated,

THEN terminate all OMS/RCS programs on C8.

Not Performed: _____

16-216 COOS OTC 132
OTC CTPE

Request TPE transfer OMS/RCS OXID vehicle FD's from C8 to C7.

16-217 CTPE

CURSOR CNTL (SAP10 INTG MENU DISPLAY)
RSYS TRANSFER
XMIT CURSOR KEY - PRESS

16-218 CTPE

CONSOLE KYBD (SAP30 PG-B)
PFK10 - PRESS (SELECT SDP13 MENU)

CURSOR CNTL (SDP13)
GROUP 79 OMS/RCS OXID ORB FD'S
XMIT CURSOR KEY - PRESS

16-219

CTPE

CURSOR CNTL (SDP15)
CONSOLE C7
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

CRT (REQUIRES APPROX 3 MINUTES)
RSYS TRANSFER BEGINNING - GRP79
RSYS TRANSFER COMPLETE - GRP79
RSYS TRANSFER BEGINNING - GRP80
RSYS TRANSFER COMPLETE - GRP80

16-220

CTPE

CONSOLE KYBD (SDP15)
PFK10 - PRESS (RETURN TO MENU)

CRT (SDP13)
VERIFY GROUPS 79 AND 80
CONSOLE IS C7

16-221

CTPE

CURSOR CNTL (SDP13)
TERM CONC
XMIT CURSOR KEY - PRESS

16-222

COOS

CONSOLE KYBD
VADL7
PERF PGM KEY - PRESS

CRT
VERIFY
VADL7, VADL8, VADL9, VADL0 ACTIVE

16-223

COOS OTC 132

[SU17057](#)

OMS/RCS Configuration complete.

FC/PRSD Preps For Switchlist

16-224 OTC CFCP 132 SU17059

Perform FC/PRSD preps for closeout switchlist (15 minutes).

16-225 CFCP CDR

PANEL O2

CRYO

O2 HTR ASSY TEMP SW - TK1 1

O2/H2 SW - TK 1

FUEL CELL STACK TEMP SW - 1

16-226 CFCP

IF ANY SENSOR INDICATES TRIPPED (INVERT RED),

THEN PERFORM

CRT (VWR05/VWR60 PG-B)

RECORD TRIPPED SENSORS

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Not Performed: _____

NOTE Reset any tripped sensors indicated in previous step.
--

16-227

CFCP

CURSOR CNTL (VWR60)
HTR CURRENT TRIP SNSR

1. RESET C2
XMIT CURSOR KEY - PRESS

Sub Step 1 Not Performed: _____

2. RESET D2
XMIT CURSOR KEY - PRESS

Sub Step 2 Not Performed: _____

3. RESET E2
XMIT CURSOR KEY - PRESS

Sub Step 3 Not Performed: _____

4. RESET F2
XMIT CURSOR KEY - PRESS

Sub Step 4 Not Performed: _____

5. RESET G2
XMIT CURSOR KEY - PRESS

Sub Step 5 Not Performed: _____

Not Performed: _____

16-228

CFCP

CRT (VWR05 PG-B)
CURR
VERIFY NO SNSRS INDICATE TRIPPED
(RED)

NOTE

Following step powers up FCMS. RPS/PC GOAL configure/recording is not required for this operation. PC GOAL FCMS data may not be available depending on RPS/CDS configuration.

16-229 CFCP CDR

PANEL ML86B

ROW E

MN A

FC PCM CB - CLOSED

16-230 CFCP OTC 132 [SU17059](#)

FC/PRSD Preps for Switchlist complete.

WWMS Preps For Switchlist

16-231 OTC CFCP 132 [SU17062](#)

Perform WWMS Preps for Switchlist (S0017.300 Operation 32) (30 minutes).

16-232 CFCP OTC 132

WWMS Preps for Switchlist complete.

Mech Configuration for Ascent Switchlist

16-233 OTC CDR 132 [SU17061](#)

Perform Mech System Configuration for Ascent Switchlist.

16-234 OTC CDR 132

PANEL 06

STAR TRACKER
DOOR CONTROL
 SYS 1 SW - OFF
 SYS 2 SW - OFF
POWER
 -Y SW - OFF
 -Z SW - OFF

16-235 OTC CDR 132

PANEL C3

AIR DATA
 PROBE STOW
 LEFT SW - INHIBIT
 RIGHT SW - INHIBIT
AIR DATA PROBE
 LEFT SW - STOW
 RIGHT SW - STOW

16-236 OTC CDR 132

PANEL R13L

PL BAY MECH PWR
 SYS 1 SW - OFF
 SYS 2 SW - OFF

PL BAY DOOR SW - STOP

PL BAY DOOR ENABLE/DISABLE
 SYS 1 SW - DISABLE
 SYS 2 SW - DISABLE

16-237 OTC CDR 132

PANEL R2

ET UMB DOOR
 MODE SW - GPC

MCA Configure For Ascent Switchlist

16-238 OTC ASP 132

PANEL MA73C

ROW A

MCA LOGIC

MN A

FWD 1 SW - ON

MID 1 SW - ON

MN B

FWD 2 SW - ON

MID 1 SW - ON

MID 2 SW - ON

MN C

FWD 3 SW - ON

MID 2 SW - ON

ROW B

MCA LOGIC

MN A

AFT 1 SW - ON

MID 3 SW - ON

MN B

AFT 2 SW - ON

MID 3 SW - ON

MID 4 SW - ON

MN C

AFT 3 SW - ON

MID 4 SW - ON

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APPROVED

PANEL MA73C (Continued)

ROW C

MCA LOGIC

MCA POWER AC1 3 PH

FWD 1 CB - CLOSE

MID 1 CB - CLOSE

MCA POWER AC2 3 PH

FWD 2 CB - CLOSE

MID 1 CB - CLOSE

MID 2 CB - CLOSE

MCA POWER AC3 3 PH

FWD 3 CB - CLOSE

MID 2 CB - CLOSE

ROW D

MCA LOGIC

MCA POWER AC1 3 PH

AFT 1 CB - CLOSE

MID 3 CB - CLOSE

MCA POWER AC2 3 PH

AFT 2 CB - CLOSE

MID 3 CB - CLOSE

MID 4 CB - CLOSE

MCA POWER AC3 3 PH

AFT 3 CB - CLOSE

MID 4 CB - CLOSE

*****End of MCA Configure For Ascent Switchlist *****

(SIM) SRGA Power Redundancy Verification

16-239 **CEPD** **OTC** **132** [SU17044](#)
T-12H00M

(SIM) Request concurrence to remove preflight source ESS Bus 3AB in support of SRGA Power Redundancy Test.

16-240 **OTC** **CEPD** **132**
 CMPS

(SIM) Perform SRGA Power Redundancy Test on OIS Channel 151.

16-241 **CEPD** **CMPS** **151**

(SIM) Verify MPS LO₂ feed 76X4196E
D/V OP RPC B on.

16-242 **CEPD**

(SIM) CURSOR CNTL (VWC17)
ESSENTIAL BUS SOURCE 3AB
PREFLT - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC17)

ESS BUS SOURCE 3AB
PREFLT IND OFF

16-243 **CEPD** **CMPS** **151**

(SIM) Verify MPS LO₂ feed 76X4196E
D/V OP RPC B on.

05-13-2011
APPROVED

OMI S0017.200 A28
APPROVED

16-244 **CEPD**

(**SIM**) CURSOR CNTL (VWC17)
ESSENTIAL BUS SOURCE 3AB
 PREFLT - ON
XMIT CURSOR KEY - PRESS

CRT (VWC17)

ESS BUS SOURCE 3AB
 PREFLT IND ON

16-245

CEPD OTC 132

[SU17044](#)

(**SIM**) SRGA Redundancy Test complete.

KMTS Configuration

16-246 LPS JRPS 127

Verify KMTS 0505A1 (A7,A8,A9) bit syncs in manual mode, source 1, 60 KB data.

Reconfigure ER Weather STA CKT

16-247 NTD STM 232
 STM GYCC 111
 GYCC GYAT 117

T-12H00M

Verify ER Weather Sta Ckt 032-1105/826-1105 to Firing Room 3/4 OSR Console A19 (Hot dial phone) is configured and perform voice checks.

Support: [ATEL](#)

16-248 GYAT GYCC 117
 GYCC STM 111
 STM NTD 232

T-11H30M

ER Weather STA CKT 032-1105/826-1105 has been verified to Firing Room 3/4 OSR Console A19 (Hot dial phone) and is operational.

Support: [ATEL](#)

COMM CMD to Launch Config Complete

16-249	CCSE	OTC	132	SU17065
	OTC	NTD	232	
	*MIL			

T-11H30M

COMM CMD to Launch Config per V1117 complete for high or low frequency.

1. **Verify** following requirements for high frequency:

OMRSR [V74CA0.051-A-1R](#)
OMRSR [V74CA0.051-B-1R](#)
OMRSR [V74CA0.051-C-1R](#)
OMRSR [V74CA0.051-D-1R](#)

Sub Step 1 Not Performed:_____

2. **Verify** following requirements for low frequency:

OMRSR [V74CA0.052-A-1R](#)
OMRSR [V74CA0.052-B-1R](#)
OMRSR [V74CA0.052-C-1R](#)
OMRSR [V74CA0.052-D-1R](#)

Sub Step 2 Not Performed:_____

16-253 CCSE OTC 132
 OTC NTD 232

Orbiter S-Band PM System is in receive only mode.

NOTE
Perform following six steps when Orbiter S-Band ELV conflict no longer exists.

16-254 NTD OTC 232
 *MIL
 OTC CCSE 132

Configure Orbiter S-Band PM system to T/R mode.

16-255 CCSE

CRT (VWA19, PG-B)
VERIFY
NSP
 BIT SYNC - LOCKED
 FRM SYNC - LOCKED

16-256 CCSE

CURSOR CNTL (VAA19, PG-B)
XPNDR XMIT/RCV
XMIT CURSOR KEY - PRESS

V74K3113U

PFP
XPNDR T/R PFPK - PRESS

CRT (VAA19, PG-B)
VERIFY
XPNDR
 XMIT/RCV - T/R

POWER OUT _____ WATTS BD

16-257 CCSE *MIL

Re-acquire 2-way lock.

16-258 CCSE

CRT (VAA19, PG-B)

VERIFY

NSP

BIT SYNC - LOCKED

FRM SYNC - LOCKED

XPNDR

AGC _____ Cnts BD

LOOP _____ kHz BD

16-259 CCSE OTC 132
 OTC NTD 232

Orbiter S-Band PM System is in T/R mode.

***** End of Contingency Orbiter S-Band Reconfiguration *****

Frequency Change Due To "On-Orbit" Operations

NOTE

Perform this option if a Frequency change is required due to "On-Orbit" operations.

Frequency Change Due to "On-Orbit" Operations Not Performed: _____

16-260 CCSE

CURSOR CNTL (VAA19, PG-B)
XPNDR FREQ
XMIT CURSOR KEY - PRESS

PF
FREQ _____ (HIGH, LOW) - PRESS

CRT (VAA19, PG-B)
VERIFY
XPNDR FREQ _____ (HIGH, LOW)

NOTE

Loss of Lock will occur until U/L Freq changed.

16-261 CCSE *MIL

Acquire 2-Way Lock with Data and Ranging On, _____ (High, Low)
Freq, plus Doppler Offset. Set RF Output for 200 watts.

NOTE

In following step, Loop Status Lock may be verified in either PM or PSK Mode.

16-262 CCSE RCRT

RACK 8216

PANEL A7 (D/L RCVR)

CHANNEL SW - _____ (2-HIGH, 1-LOW)

LOOP STATUS (PM OR PSK) LITE LOCKED

PANEL A9 (MON RCVR)

CHANNEL SW - _____ (4-HIGH, 3-LOW)

LOOP STATUS (PM OR PSK) LITE LOCKED

T:_____

16-263 CCSE RCRT

RACK 8217

PANEL A4 (MON TDM)

VERIFY FRAME SYNC LOCK LITE ON

PANEL A7 (D/L TDM)

VERIFY FRAME SYNC LOCK LITE ON

T:_____

16-264 CCSE

CRT (VAA19 PG-B)

VERIFY

BIT SYNC - LOCKED

FRM SYNC - LOCKED

***** End of Frequency Change due to "On-Orbit" Operations *****

16-265 NTD LPS 232 SU17026

VIA AWP01 configure OIA, OIS, GPCA, GPCS and PLDA FEPS to
PEND S2 192kbs and PLDS FEP to process S2 192kbs.

16-266 LPS C4MC 127

At AWP01 (PG-B) select OIA, OIS, GPCA, GPCS, and PLDA S2, 192kb,
L3, PEND. Execute options.

16-267 LPS C4MC 127

At AWP01 (PG-B)
Select PLDS S2, 192kb, L3
Execute options.

Lightning Monitoring GSE Removal

NOTE TPS number fill-in will be supplied each flow as it changes with each MLP.

NOTE Perform the next two steps if severe weather is not forecast prior to Closeout Crew arrival in Whiteroom.
--

16-268 OTC NTD 232 SU17308
 NTD STM
 STM JCFM 111

Perform GLMS Software Deactivation for the Crew Module per
applicable Maximo Work Order.
Report completion.

Time _____ Date _____

Not Performed: _____

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16-269	OTC	CEPD	132
	CEPD	OETO	151

Perform Lightning Monitoring Deactivation and Removal per
C72-1512-_____-_____-_____ Operation Deconfigure/Reconfigure Data
Gathering Equipment for TCDT (S0017) or Hatch Cycling (Contingency) -
Option A.

Report completion.

Not Performed:_____

***** End of Lightning Monitoring GSE Removal *****

Removal/Identification Of Switchguards

16-270 OTC *PAD 132 SU17063
 CDR

Ascent switchlist will begin in approximately 30 minutes. **Perform** Orbiter Operation 119 (S0017.100) - Removal/Identification of Switch guards in Support of Ascent Switchlist .

16-271 CDR *PAD 132
 OTC

Switch guard Removal and ID complete per Orbiter Operation 119 (S0017.100).

PIC Rack CB Configure/400 Hz PWR Activation

16-272 OTC CEPD 132 SU17048
 CMPS

T-11H15M

Perform PIC Rack CB Configuration and **(SIM)** 400 Hz Power Activation.

PIC Rack CB Configuration

16-273
T-11H15M

CEPD QPDS 151

IF on MLP-1,

THEN

MLP - Compartment 7A

RACK 6815

22D330 CB - ON (CLOSED) (Launch Release Sys A)

RACK 6814

22D170 CB - ON (CLOSED) (H2 Burn Sys A)

RACK 6820

22D260 CB - ON (CLOSED) (Launch Release Sys B)

RACK 6823

22D280 CB - ON (CLOSED) (H2 Burn Sys B)

Not Performed: _____

T: _____

16-274 CEPD QPDS 151

IF ON MLP-2 OR MLP-3,

THEN

MLP - Compartment 7A

REMOTE DISTRIBUTOR 66100

CB 5 - **ON/CLOSE (UP)** (Launch Release Sys A)

CB 6 - **ON/CLOSE (UP)** (H2 Burn Sys A)

REMOTE DISTRIBUTOR 66101

CB 5 - **ON/CLOSE (UP)** (Launch Release Sys B)

CB 6 - **ON/CLOSE (UP)** (H2 Burn Sys B)

Not Performed: _____

T: _____

(SIM) 400 Hz Power Activation

NOTE

In rack 6800 operations, CB nomenclature is listed for reference only.
Nomenclature is not visible when indicator lites are off.

16-275
T-11H15M

CEPD QPDS 151

(SIM) C72-0818 (400 HZ GROUND POWER)

(SIM) RACK 6800 (COMPT 21A)

PANEL A10

4 CB'S - ON (CLOSED)
(1T110, 1T111, 1T112, 1T113 POWER)

(SIM) PANEL A7

4 CB'S - ON (CLOSED)
(1T210, 1T211, 1T212, 1T213 POWER)

(SIM) PANEL P9 (COMPT 21A FAC AC)

1T100 CB4 - ON (CLOSED)
1T200 CB10 - ON (CLOSED)

T: _____
(SIM)

16-276

CEPD QPDS 151

IF FOR MLP 1 OR 2

THEN PERFORM

(SIM) DISC SW P9 (COMPT 9A, LOCATED ON WALL)

1T100 SW C4 - ON
1T200 SW C10 - ON

Not Performed: _____
(SIM)

T: _____
(SIM)

16-277 CEPD QPDS 151

IF FOR MLP 3

THEN PERFORM

(SIM) RACK 6824 (1T100)

MODE CONTROL

LOCAL/REMOTE SW - REMOTE

INPUT CB - ON

STANDBY/OPERATE SW - OPERATE

(SIM)

RACK 6825 (1T200)

MODE CONTROL

LOCAL/REMOTE SW - REMOTE

INPUT CB - ON

STANDBY/OPERATE SW - OPERATE

Not Performed: _____
(SIM)

T: _____
(SIM)

16-278

CEPD

(**SIM**) CURSOR CNTL (VWC01)
1T100 ON/OFF
XMIT CURSOR KEY - PRESS

CRT (VWC01)

1T100 ON/OFF IND ON
1T100 VOLTS PH A 109-118 VAC
1T100 VOLTS PH B 109-118 VAC
1T100 VOLTS PH C 109-118 VAC

16-279

CMPS

(**SIM**) CONSOLE KYBD
SET_GASK0154E - ON
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-280

CEPD

(**SIM**) CRT (VWC01)

1T100 BUS IND ON

16-281

CEPD

(**SIM**) CURSOR CNTL (VWC01)
1T200 ON/OFF
XMIT CURSOR KEY - PRESS

CRT (VWC01)

1T200 ON/OFF IND ON
1T200 BUS IND OFF
1T200 VOLTS PH A 109-118 VAC
1T200 VOLTS PH B 109-118 VAC
1T200 VOLTS PH C 109-118 VAC

16-282 CEPD OTC 132 SU17048

PIC Rack CB Configuration and (SIM) 400 Hz Systems Activation complete.

FCS Final Stowage Complete

16-283 OOCS OTC 132 SU17034
T-11H00M

Final Stowage including installation of parachute assemblies and seat cushions per FCS TPS complete.

Post FCS Final Stow Middeck Platform Reconfiguration

16-284 OTC *PAD 132
 *PAD OMTO

Reconfigure middeck platforms to the short beam, middle location single platform configuration per V66-50009 after completion of FCS final stowage.

16-285 OTC VITT 132 SU17038

Perform slidewire bunker communications verification of Hot Dial circuit Pad A - 826-1006/826-1047 between NTD console and Flight Crew helmet.

Notify RSS OIC monitor (Pad A 1-1151) before and after to reseal bunker.

Verify completion.

16-286 OTC CMQC 132 SU17036

Verify Orbiter Operation 113 (S0017.100) - FCS Stowage and Middeck Platform Reconfiguration complete.

Qv: _____

Shuttle Ascent Switchlist

NOTE

All other scheduled operations in Crew module are required to be completed prior to start of ascent switchlist.

Shuttle Ascent Switchlist (S0017.300 Operation 30) is divided into two sections. The first section contains flight deck panels and C&W setups. The second section contains middeck and AFT flight deck panels, airlock and waste management system.

From initiation of ascent switchlist until completion of Flight Crew Ingress operations, ASP shall perform switch/circuit breaker actions in Crew Compartment.

16-287

OTC

ALL

132

SU17064

All Orbiter Systems Engineers in Firing Room verify ready to support Shuttle Ascent Switchlist. **Report** any known changes in configuration.
*(COFC performs CAPU, CHYD and CGNC functions)

CCSE _____	*CAPU _____	CAFM _____
CNSE _____	*CHYD _____	CEPD _____
CISL _____	CPLE _____	CMPS _____
CSME _____	COFC _____	CDPS _____
*CGNC _____	CMPL _____	CFCP _____
CECL _____	CODS _____	CTPE _____
CCME _____	COOS _____	

MPS Valve Position Verification

NOTE

Following two steps verify the minimum MPS propellant system valve configuration required with MPS bypassed in GLS. Redundant set will require this valve configuration.

16-291

CMPS

SU17091

CRT (SAE12)
VERIFY LH2 PREVALVES:
PV4 OPEN
PV5 OPEN
PV6 OPEN

16-292

CMPL

CRT (SAE02)
VERIFY LO2 POGO VALVES:
PV20 OPEN
PV21 OPEN

FSS Elevator Phones To Hot Dial Mode

16-293	NTD	STM	232	SU17132
	STM	GYCC	111	
	GYCC	GYAT	117	
		GYQC	NET 107	

T-09H00M

Run command file to configure FSS elevator telephones to Hot Dial Mode and Comm Check with FR4 10496A15 (NTD). Tag phones for Hot Dial Mode with Firing Room 4. (30 minutes).

Support: [ATEL](#)

Ascent Switchlist Complete

16-294 OTC NTD 232 SU17064
T-09H00M

Shuttle Ascent Switchlist complete.

NOTE

Perform the following step immediately after completion of C/W setups in the ascent switchlist.

16-295 OTC CISL 132

Perform Instrumentation C/W Goal software changes per OMI V9001.106 (Operation 170/190). (15 minutes)

16-296 CISL OTC 132

Instrumentation C/W Goal Software Limit Changes complete.

Switchlist Post OPS

16-297 OTC ASP 132

Perform the following :

1. **Install** Ascent Cue Cards.
2. **PANEL O8**
Install SKD16101897-301 combined wicket tab on LH side of FWD RCS He Press A, Tank isolation 1/2 and manifold isolation 1 switches by connecting Velcro and straps.
3. **PANEL R2**
Install two SED33102379-315 wicket safety cap single Control Bus Power Main (switch retention device) on 1.0 x 4.0 blue pile (Velcro) centered on panel R2 forward.
4. **PANEL L2**
Verify one SED33119893-302 wicket safety cap single assembly installed on Anti-Skid Switch.

CDR/PLT Seat Adjust

16-298 OTC CEPD 132

Seat switches will be activated and ventilation fan power will be cycled in next step.

16-299 OTC ASP 132 [SU17093](#)
T-09H00M

Position CDR and PLT seats and verify operation of all Crew ventilation fans (30 minutes).

16-300 ASP OTC 132

CDR/PLT Seat Positioning and Ventilation Fan Verification complete.

Verify Minicam Hookup

NOTE

Perform following two steps if minicams will be used to view Flight Crew Ingress. One, two or no cameras may be installed at Flight Crew request.

Verify Minicam Hookup Not Performed: _____

16-301 OTC ASP 132 [SU17149](#)

Verify minicams hookup complete.

16-302 OTC JYVO 138

Verify acceptable picture on OTV cams _____ and _____ as installed.

Support: [OTV](#)

***** End of Verify Minicam Hookup *****

Switchlist Post Operations (COMM)

16-303 OTC CCSE 132 SU17095

Perform Ascent Switchlist Post Operations.

NOTE

Perform following step after completion of COMM CMD to Launch config
(T-11 Hours 30 Minutes) and switchlist (T-9 Hours 00 Minutes).

16-304
T-09H00M

CCSE

CRT (VAA19)
VERIFY
PM CONTROL CMD
ANTENNA SW 2 ON
PM QUAD SEL ULA
SWITCH SCAN GPC
FM HEMI SEL UPR (FM XMTR OFF)
SWITCH SCAN GPC

XPNDR-2 ON
MODE STDN LOW
FREQ _____ (HIGH OR LOW)

_____ LOOP STRESS (RECORD)

_____ AGC (RECORD)

_____ WATTS (RECORD)

NSP 2 ON
BIT SYNC LOCKED
FRM SYNC LOCKED
BITE GO
PRE AMP OFF
PRE AMP HTRS ON
PWR AMP OFF
STANDBY -1 OFF, -2 OFF

16-305 CCSE

CRT (VWA40)
VERIFY
COMSEC ENCRYPT-RCV
COMSEC FRAME SYNC-LOCKED

16-306 CCSE OTC 132

Switchlist Post Operations complete.

CM OIS Unit Removal

16-307 OTC *PAD 132 [SU17097](#)

Perform Crew Module Emergency Lighting/OIS Removal (1 of 2) per:

[JC V66-90002 Emergency Alarms and Lighting, Crew Compartment, Removal](#)

C/W EMON Activation

16-308 OTC CECL 132 [SU17099](#)

CMPS
COOS

T-09H00M

Perform C/W EMON activation (S0017.300 Operation 51) for your system. Report completion (15 minutes). (SIM for CMPS, COOS)

16-309 LPS C4MC 127

Perform \$FEPCPR, demand update all active FEPs.
Terminate \$FEPCPR at completion of demand update.

CM OIS Unit Removal Complete

16-310	CDR	OTC	132	SU17097
	OTC	NTD	232	
	NTD	STM		
	STM	GYCC	111	

Crew Module OIS units (1 of 2) and associated cables move to White room complete. The last unit will be removed by the Close-out Crew and stowed in the White room.

Support: [COMM](#)

RSYS Verification and CL RSYS Monitor Activation

16-311 OTC CTPE 132

VERIFY SYSTEM RSYS ARE AT THEIR HOME CONSOLES.

1. CURSOR CNTL (SAP10, PG-B)
 (INTG MENU DISPLAY)
 RSYS TRANSFER
 XMIT CURSOR KEY - PRESS
2. SAP30 PG-B
 REVIEW RSYS PAGE (1) TO VERIFY ALL SYSTEMS
 RSYS IS AT ITS HOME CONSOLE
3. SAP30 PG-B
 CONSOLE KYBD
 PFK-10 KEY - PRESS
4. REVIEW RSYS PAGE (2) TO VERIFY
 ALL SYSTEMS RSYS IS AT ITS HOME CONSOLE WITH
 THE EXCEPTION OF GROUPS 79 AND 80 WHICH
 SHOULD BE AT C7, AND GROUP 48 AT
 INTEGRATION/BACKUP.
5. CURSOR CNTL (SAP30 PG-B)
 TERM CONC
 XMIT CURSOR KEY - PRESS

Switch SCAN Activation

16-312 OTC CTPE 132 [SU17101](#)

Activate any change switch SCAN

16-313 CTPE

CURSOR CNTL (SAP10)
SWITCH SCAN
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAP28)
ANY CHANGE
XMIT CURSOR KEY - PRESS

NOTE

Check LPS log to confirm GLS pseudo init is complete prior to SLP50 activation.

16-314 NTD LPS 232 [SU17103](#)
T-08H30M

Activate SLP50/SA001

NOTE

CONC 1 through 4 must be occupied, and CONC 5 and 6 available.

16-315 LPS C4MC 127

IF CONC ALLOCATION IS NEEDED,

THEN PERFORM

HOME CMD KEY - PRESS

\$T

PERFORM PGM KEY - PRESS

Not Performed: _____

16-316 LPS C4MC 127

Verify next PGM will come up in concurrency 5.

16-317 LPS C4MC 127

PVO <FD>
XMIT CMD KEY - PRESS
N03IS510E
RECORD VALUE _____

N03IS511E
RECORD VALUE _____

NLHK0706X
RECORD VALUE _____

16-318 LPS C4MC 127

Verify pseudo values are off.

16-319 LPS C4MC 127

HOME CMD KEY - PRESS
SLP50
PERFORM PGM KEY - PRESS

16-320 LPS C4MC 127

Verify concurrency 6 available for SA001 activation.

16-321 C4MC

CRT (SLP50 PG-A)
VERIFY PROMPTS

1 - FOR TERMINAL COUNT

2 - CRYO DRAIN SUPPORT

16-322

C4MC

CURSOR CNTL (SLP50 PG-A)
1
XMIT RESPONSE KEY - PRESS
CRT
VERIFY - SELECTED TERMINAL COUNT

16-323

C4MC

Verify SA001 active in conc 6.

16-324

C4MC LPS 127

Programs active at MSTR:

SLP50
SA001

16-325

LPS C4MC 127

PFPK6 - (SA001 LEDS)
PFPK6 (TERMINATE SA001) - PRESS
PFPK5 (TERMINATE EXECUTE) - PRESS

16-326

LPS NTD 232
NTD OTC
TBC
OTC CTPE 132
TBC CLOX 136
CLHY

SLP50 CL RSYS/console crash PGM active.

SA001 LO₂/LH₂ Console Monitor has been terminated due to no Cryo load.

16-327 LPS C4MC 127

IF \$T WAS PREVIOUSLY USED TO OCCUPY INACTIVE
TCB'S

THEN PERFORM
HOME CMD KEY - PRESS
\$T
TERM PGM KEY - PRESS

Not Performed:_____

16-328 LPS CTPE 127

Inhibit Automatic RCL RSYS Transfer

16-329 CTPE

PFP
SAP27 PFPK - PRESS

16-330 CTPE

IF SAP27 PFPK1 DISPLAYS "INH AUTO RCL XFER"

THEN PERFORM
SAP27
PFPK1 (INH AUTO RCL XFER) - PRESS

Not Performed:_____

16-331 CTPE

Verify SAP27 PFPK1 displays
"ACT AUTO RCL XFER"

16-332 CTPE OTC 132

Automatic RCL RSYS Transfer Inhibit complete.

16-333 LPS

SLP50 (PG-5B)

Verify solid cursor blocks for RSYS of all systems at SYS consoles except
for FCP/PRSD.

NOTE

If RSYS for any system other than FCP/PRSD is not at the SYS console perform
the following three steps.

16-334 LPS CTPE 127

The following systems RSYS are not at their system console
_____. Request concurrence to correct
RSYS configuration.

Not Performed:_____

16-335 CTPE LPS 127

TPE concurs with LPS request to correct RSYS configuration.

Not Performed:_____

NOTE

For each system out of configuration, perform the following step.

16-336

LPS

SLP50 (PG-5B)
CURSOR CNTL
SYS _ XMIT CURSOR
VERIFY SOLID CURSOR BLOCK

Not Performed: _____

FR2 OIS-D Permission Set Activation

16-337 NTD CTC 232 [SU17131](#)

Verify ready to activate FR2 OIS-D permission set for Terminal Countdown Demonstration Test.

16-338 NTD STM 232
 STM GYCC 111
 GYCC JYCD 117

Activate FR2 OIS-D S0017 permission set option_____ for Terminal Countdown Demonstration Test.

Report completion.

Support: [OISD](#)

Option 1: **Front** console with 0234/0243/0240/0223 supporting Terminal Countdown demonstration test. The rest of FR2 per KICS.

Option 1 Not Performed: _____

Option 2: **Whole** FR2 supporting Terminal Countdown demonstration test. Report test.

Option 2 Not Performed: _____

Verify Safing Panel Config

16-339 NTD OTC 232 [SU17105](#)

Verify all consoles ready for LDB safing sequences to be loaded.

16-340 OTC CPVD 132
 CAPU
 CEPD
 COFC
 CTPE
 CMPS
 CMPL
 *CHPU

Verify your LDB safing panel configured for safing sequence load.
(*COFC will substitute for CAPU and CHPU)

16-341 OTC NTD 232

Ready for LDB Safing Sequence Load.

16-342 NTD LPS 232

AT LDBA AND LDBS FEPS - PRESS
RESET SW ON VEHICLE SAFING INTERRUPT PANEL.
VERIFY LITES 0-31 OFF.

16-347 LPS C4MC 127

CONSOLE KYBD
I DA LDBA
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CONSOLE KYBD
A DA LDBA
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

LDBA AND LDBS FEPS
VEHICLE SAFING INTERRUPT PANEL
 RESET PB - PRESS, REL
 LITES 0-31 OFF

***** End of Reset Safing Lights *****

16-348 LPS NTD 232
 NTD OTC

LDB Safing Reset complete.

16-349 LPS C4SE 127

Verify all PDM's set to read position.

LDB/FEP Safing Load

16-350 OTC CTPE 132 [SU17107](#)

Perform LDB Safing Load

16-351 CTPE LPS 127

Report current FEP configuration

FEP _____ = LDB-A Switch Position

FEP _____ = LDB-B Switch Position

16-352 **CTPE**

OC PG (\$SYS)
CURSOR CNTL LDBA
LDBA FEP REF DES _____
LDB CMD ENABLE SWITCH SHOULD BE IN _____ POSITION
FOR THIS TEST.

16-353 CTPE NTD 232

LDB CMD enable will go to enable on my mark:

5-4-3-2-1 mark.

NOTE

If any lites found on in next step, do not proceed with following steps without NTD/SPE concurrence.

16-354 LPS C4SE 127

LDB FEP
SAFING INTERRUPT PANELS
LITES 0-31 OFF

MSTR CONSOLE
VERIFY NO UNEXPECTED SYS MESSAGES

16-355 LPS NTD 232
NTD OTC
OTC CTPE 132

INTEG CONSOLE
LDB CMD ENABLE SW - (CENTER)

16-356 NTD ALL 232
132
136

LDB safing sequences will be loaded momentarily.

16-357

CTPE

CONSOLE KYBD
SLPP1
PERF PGM KEY - PRESS

_____ (KSCA OR KSCB)
XMIT RESP KEY - PRESS

CRT
VERIFY
SLPP1 ACTIVE

(SELECT APPL PG-B)

CRT
VERIFY
INTEGRATED MENU

16-358

CTPE

CURSOR CNTL
HARDWIRE SAFING
XMIT CURSOR KEY - PRESS

CRT
VERIFY
LDB-FEP SAFING SEQ

16-359

CTPE

LOAD FOLLOWING SAFING SEQUENCES

0 COMMAND LS HOLD/RECYCLE
ALL HYDRAULICS SAFING SEQ'S (2,3)
ALL MPS LOX SAFING SEQ'S (4,5,6,7)
ALL MPS LH2 SAFING SEQ'S (8,9,10,11,12,13)
14 FUEL CELL 1 OFF
16 FUEL CELL 2 OFF
18 FUEL CELL 3 OFF
ALL ORBITER VENT DOORS SAFING SEQ'S (20,21,22)
ALL MPS LOX SAFING SEQ'S (CONT) (23,24)

CURSOR CNTL
SELECT ALL SEQ'S
XMIT CURSOR KEY - PRESS

PFP
SLPP1 - PRESS

PFP (SLPP1)
PFPK1 (EXECUTE) - PRESS

CRT
VERIFY
CURSOR BLOCK SOLID
GREEN FOR ALL SELECTIONS MADE

CURSOR CNTL
TERMINATE
XMIT CURSOR KEY - PRESS

CURSOR CNTL
TERMINATE
XMIT CURSOR KEY - PRESS

CRT
VERIFY SLPP1 INACTIVE

16-360

CTPE

OC PG (\$ SYS)
CURSOR CNTL
LDBA
XMIT CURSOR KEY - PRESS

CRT
VERIFY GREEN ARROWS FOR ALL SEQ
SELECTED

NOTE

Next step will enable all LDB safing switches

NOTE

Switch position in the following step is the active LDB FEP.

16-361

CTPE

ON INTEGRATION SAFING PANEL
CMD ENABLE SW - _____ (LDB-A OR LDB-B)

Safing Load Complete

NOTE

If change occurs resulting in switch of active LDB FEPs, LPS must notify CTPE/CGLS of new active FEP and new active switch position.

16-362

CTPE	OTC	132
OTC	NTD	232
OTC	ALL	132

[SU17107](#)

LDB FEP safing sequences loaded and all safing switches enabled.

Redundant Switch Verification

16-363 LPS

Verify all redundant switches active.

FSS Elevator Phones To Hot Dial Complete

16-364 GYAT GYCC 117
GYQC
T-08H30M GYCC STM 111

FSS elevator telephones reconfigured to Hot Dial mode and COMM check with console FR4 10496A15 (NTD) complete. Phones tagged for Hot Dial mode with FR4.

Support: [ATEL](#)

T: _____ Qw: _____

16-365 STM NTD 232 [SU17132](#)

FSS elevator telephone Hot Dial mode COMM check complete.
(E/W elevator).

SRM EMON Activation

16-366 TBC CISL 136 [SU17130](#)

Perform SRM Case Temp EMON Activation (S0017.300 Operation 52).

16-367 CISL TBC 136

SRM Case Temp EMON Activation complete.

*****End of SRM EMON Activation *****

(SIM) Sep Camera Heater Activation

16-368 OTC CISL 132 [SU17050](#)

(SIM) Perform Sep Camera Heater Activation (S0017.300 Operation 52). (5 minutes).

16-369 CISL OTC 132

(SIM) Sep Camera Heater Activation complete.

***** End of (SIM) Sep Camera Heater Activation*****

Activate LCC Monitoring/LDB Redundancy Check

NOTE
LDB switching will occur in next step.

16-370 OTC CDPS 132 [SU17109](#)
T-07H15M

Perform LDB Redundancy Check and activate LCC monitoring per DPS systems (S0017.300 Operation 40, item 12).
Report completion (15 minutes).

Flight Crew Transfer Preps

16-371 **NTD** **STM** **232** [SU17134](#)
 STM **JSTC** **111**
 GYCC

T-06H30M

Perform A5204 Prerequisite Operation - Instructions For Crew Transfer
O&C to Pad.

Support: [JSTC](#)
Support: [COMM](#)

16-372 **STM** **NTD** **232**

Prerequisite Operations for A5204 complete.

NOTE Circuits to MSFC-HOSC are configured per scheduling message.

16-373 **NTD** **STM** **232** [SU17136](#)
 STM **GYCC** **111**
 GYCC **GYCJ** **117**

T-06H30M

Verify communications circuits to MSFC-HOSC are configured and
operational.

Support: [VCE](#)

NOTE Perform next step if Support Prerequisite Operation 7 (S0017.100) - FR2 S0017 Support Configuration performed.
--

16-374 **LPS** **NTD** **232** [SU17138](#)

Support Prerequisite Operation 7 (S0017.100) - FR2 S0017 Support
Configuration complete.

Not Performed: _____

(SIM) Inhibit HIM's

16-375 LPS C4MC 127

(SIM) Inhibit preselected RSS HIMS or LCG's on ground data bus 2/22 from polling by GS3A FEP via AWP01.

16-376 OTC PPVE 132
 CPVD

T-05H15M

Reduce cabin conditioned air temperature to 50 deg F (nominal) for Crew entry per OMI [V1122.003](#) (local) or [V1122.004](#) (remote). (PPVE Pad A: 1-6167)

16-377 OTC PPVE 132
 CPVD

Verify positive air flow in PCR.

Terminate OIS Voice Checks

16-378 STM GYCC 111
 GYCC GYCR 117

[SU17143](#)

T-05H00M

Do not perform voice checks for remainder of Terminal Count Demonstration.

Support: [VCE](#)

Holdtime Remaining Check

NOTE

Clock should stop at zero for T-3 hr hold. Clock should continue plus count for T-20 minute and T-9 minute holds. Do not reset for any hold that starts after T-9 minutes.

16-379	NTD	STM	232	SU17089
	STM	GYCC	111	
	GYCC	JTCR	117	

T-04H00M

Program "Holdtime remaining clock" (Timer No. 5) for following times:

1. T-3 hr hold ___ hours ___ minutes ___ seconds

Sub Step 1 Not Performed: _____

2. T-20 minutes hold ___ hours ___ minutes ___ seconds

Sub Step 2 Not Performed: _____

3. T-9 minutes hold ___ hours ___ minutes ___ seconds

Sub Step 3 Not Performed: _____

Support: TCD

PAV Delivery

16-380	STM	JSTC	111	SU17141
	JSTC	*SCB	NET 104	

Deliver following items:

1. 1 PAV per Flight Crew Member plus 1 to O&C and placed by elevator for use in Astronaut Crew Van.
2. 1 PAV per Flight Crew Member for Astronaut Closeout Crew and all remainder PAVs to Pad OPS Support Bldg (Rm 1055) at T-4 hours.
3. 14 ELSA's in Astronaut Crew Van.

Support: LS

16-381	NTD	STM	232
	STM	JSTC	111
	JSTC	JSEP	114

Verify FPL CILC inhibited and FPL 115kv loop closed.

Support: ELEC

SSME Controller Power Up

16-382	OTC	CCME	132	SU17090
		CMQC		

T-03H45M

IF SSME Controllers will be powered up to support TCDT,

THEN Perform SSME Controller Power Up per "SSME System Preps for TCDT" (S0017.300 Operation 34) on OIS Channel 146 (45 minutes).

Not Performed: _____

Lightning Monitoring GSE Removal

NOTE
TPS number fill-in will be supplied each flow as it changes with each MLP.

NOTE
Perform the next two steps if lightning monitoring GSE was not removed earlier.

16-383	OTC	NTD	232	SU17067
	NTD	STM		
	STM	JCFM	111	

Perform GLMS Software Deactivation for the Crew Module per applicable Maximo Work Order.
Report completion.

Time _____ Date _____

Not Performed: _____

16-384	OTC	CEPD	132
	CEPD	OETO	151

Perform Lightning Monitoring Deactivation and Removal per C72-1512-____ - ____ - ____ Operation Deconfigure/Reconfigure Data Gathering Equipment for TCDT (S0017) or Hatch Cycling (Contingency) - Option A.
Report completion.

Not Performed: _____

Assemble Closeout Crew

16-385
T-03H45M

OTC *PAD 132

[SU17092](#)

Assemble Closeout Crew at OPS building.

Closeout Crew Vehicles (Two Each)	
1	Closeout Crew Leader
2	Astronauts
1	Suit Tech
1	NASA Quality Control
2	Orbiter Mech Techs
1	SPOC Safety

16-386

NTD STM 232
STM JYVO 138
JYVR

(SIM) Provide video tracking and recording during ingress of Closeout Crew to Pad.

Support: [OTV](#)

PAV Delivery Complete

16-387 *SCB JSTC NET 104 SU17141
 JSTC STM 111

Following items delivered:

1. 1 PAV per Flight Crew Member plus 1 delivered to O&C and placed by elevator for use in Astronaut Crew Van.
2. 1 PAV per Flight Crew Member for Astronaut Closeout Crew and all remainder PAVs delivered to Pad OPS Support Building (Rm 1055) at T-4 hours.
3. 14 ELSA's in Astronaut van.

Support: [LS](#)

NOTE

Perform the following step at T-03H30M, or 30 minutes prior to the departure of the Closeout Crew for the Pad.
--

16-388 OTC ASP 132

Perform final switch verification prior to simulated Pad clear for tanking.

Orbiter PIC Tests

WARNING

Pyrotechnic devices may explode during handling or testing.

Personnel may suffer bodily injury or death.

Wear **wrist stats** during mating, demating, handling or testing of pyrotechnic devices and/or connectors.

WPYR003 10-11-2005

NOTE

Perform this option if ordnance not connected (ref S5009).

No port RMS/Starboard Boom PIC resistance testing shall be performed.

Orbiter PIC Tests Not Performed: _____

16-389	NTD	OTC	232	SU17094
		*SCC		

T-03H15M

Proceed with Orbiter/GSE PIC Resistance Test. Ordnance not connected.

16-390	OTC	CEPD	132
---------------	------------	-------------	------------

Ordnance is not connected. Power up GSE PIC racks and perform "Orbiter/GSE PIC Resistance Test" (S0017.300 Operation 44) on Channel 151. (15 minutes)

05-13-2011
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OMI S0017.200 A28
APPROVED

16-391	CEPD	OTC	132
	OTC	NTD	232

Orbiter/GSE PIC Resistance Test complete. GSE PIC racks will remain powered up.

***** End Of Orbiter PIC Tests ******

16-392	*PAD	OTC	132	SU17086
	OTC	NTD	232	

Orbiter Prerequisite Operation 102 (S0017.100) - Astrovan Operational Clear Equipment Delivery complete.

Control Area Clearing

16-393 **NTD** **OTC** **232**
 OTC ***PAD** **132**
 ***PAD** **PMTG**

T-3H15M

Clear nonessential personnel from base of FSS, OAA, and FSS 195-ft level.

Set up operational clear at base of FSS for Astrovan and escort vehicles. Area should be maintained using stanchions and rope.

Essential Personnel

Closeout Crew Van	
1	Closeout crew leader (Orbiter) to FSS
2	Astronauts (NASA) to FSS
1	Suit tech (other) to FSS
1	QC (NASA) to FSS
2	Mech Techs (Orbiter) to FSS
1	SPOC Safety

Astronaut Van	
1	Van driver (FO&S) to base of FSS
1	Suit tech (other) to base of FSS
A/R Flight Crew (NASA) to FSS (To support mission)	
2	Security (JBOSC) to base of FSS
2	Escorts (NASA)

Photo Crew (Documentary)	
5	Techs
1	Supv

16-394 *PAD *ACM NET 110 SU17088

Verify adequate area reserved for Astrovan operations and still allow Pad support vehicle traffic to pass by. Brief FSS OIC on pending Astrovan/Flight Crew Operations. FSS OIC will maintain operational clear. This clear will be in place until departure of Flight Crew post TCDT activities.

16-395 NTD PA
T-03H15M

Attention on Pad A:

All nonessential personnel clear

1. Base of FSS
2. OAA and FSS 195 ft level

16-396 *PAD OTC 132
 OTC NTD 232
 NTD *SCC

Astrovan operational clear at base of FSS has been set up. FSS OIC has been briefed.

16-397 OTC NTD 132
 NTD *SCC 232

Nonessential personnel are clear of local operational control area at OAA, FSS base, and 195 ft level of FSS.

16-398 NTD OTC 232
 STM
 OTC *PAD 132
 STM PSTM NET 104

Verify no welding activities in progress at Pad until Terminal Countdown demonstration complete.

Closeout Crew COMM Check

16-399 *PAD OTC 132 SU17092
 OTC NTD 232

T-03H15M

Closeout Crew assembled at OPS building.

NOTE

In case of OIS failure, Closeout Crew Leader (OVCC) will monitor radio net DIR 7 continuously until completion of Flight Crew activities at Pad.

16-400 OTC OVCC DIR 7

Perform COMM check on radio net DIR 7.

CDC Hold Prep

16-401 NTD CGLS 232

Set CDC to hold at T-3 Hours 00 Minutes.

16-402 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
CDTH -0300/00
XMIT CMD KEY - PRESS

16-403 CGLS NTD 232

CDC set to hold at T-3 Hours 00 Minutes at __hh__mm__ss GMT.

Announce Hold

16-404 NTD ALL PA
 232

CDC will hold at T-3 Hours 00 Minutes.

ECS Control To FR

16-405 OTC CPVD 132 SU17096

IF ECS is in Local control

THEN Transfer ECS room control to Firing room (remote) per
OMI V1122.004 .

Not Performed: _____

NOTE

Right hand vent doors 8 & 9 may need to be positioned from closed to purge position.

16-406 CPVD OTC 132
 OTC NTD 232

Vent doors _____ (are / are not) in normal purge position.

Vent Door Configuration

NOTE

Perform this option if vent doors are not in normal purge configuration.

Vent Door Configuration Not Performed: _____

WARNING

Movement of hardware or obstacles may cause pinching injuries.

Personnel may suffer injuries ranging from bruises, lacerations and broken bones to loss of hands or feet.

Keep all body parts clear of moving hardware/obstacles.

WCLH021 08-04-04

NOTE

Do not reposition vent doors until ascent switchlist is complete.

16-407

NTD

PA

Attention on Pad A:

All personnel stand clear of Orbiter vent doors.

16-408	NTD	OTC	232
	OTC	CPVD	132
	CPVD	OMTO	172

Position vent doors to normal purge configuration.

1. **Verify** S0017 Ascent Switchlist is complete.
2. **Request** vent door observer at RH Vent Door 8 and 9 (OIS 172)
3. **Verify** no RSYS messages displayed at bottom of CRT **OR** request TPE transfer RSYS to C6.
4. **Verify**
 - Downlink number is displayed in green.
 - Downlist number is displayed in green.
 - LDB arrow up green.
5. **Status** vent door command FD's as follows:

PFPK4 - **press** once
6. **Verify** message "CMD STATUS COMPLETE, NO CMD FD'S ARE ON" is displayed at bottom, center of VAM65A, PG-B after green light on PFPK4 goes off.
7. **Request** vent door observer verify vent door travel paths are clear.
8. **Position** vent door to purge configuration

LH & RH Vent Doors 1 and 2 - **purge**
LH & RH Vent Doors 3 - **closed**
LH & RH Vent Doors 5 - **closed**
LH & RH Vent Doors 6 - **closed**
LH & RH Vent Doors 8 and 9 - **purge**

16-409 CPVD OTC 132
 OTC NTD 232

Vent doors in normal purge configuration.

***** End Of Vent Door Configuration *****

Reset Orbiter Vent Door Commands

16-410 OTC CPVD 134 [SU17098](#)

Reset Orbiter vent door commands to off.

Vent Door Status Check

16-411 CPVD

IF ANY VENT DOOR COMMANDS ARE ON,

THEN PERFORM VENT DOOR COMMAND STATUS CHECK

PFPK(X) (VAM31(A)) - PRESS
PFPK6 (VENT DOORS) - PRESS

CRT (VDM10)
VERIFY
VENT DOOR DISPLAY

PFPK4 (STATUS CMD FD'S) - PRESS

CRT (VAM31 PG-A)
AFTER 1 MINUTE VERIFY:
CM STATUS COMPLETE (GREEN)

Not Performed: _____

16-412

CPVD

IF ANY CMDS DISPLAYED IN YELLOW ON PAGE-A,

THEN

PFP

PFPK1 (VENT CMD RESET) - PRESS

CRT

VERIFY (AFTER APPROX 30 SECONDS DELAY)

VDM10 (VENT DR DISPLAY ARROW UPDATING) .

Not Performed: _____

16-413

CPVD

OTC

132

Orbiter vent door commands are reset to off.

SSME Controller Power Up Complete

16-414

CCME

OTC

132

SU17090

IF SSME Controllers were powered up to support TCDT,

THEN report SSME Controller Power Up complete.

Not Performed: _____

MILA/GSFC/JSC Interface Test

NOTE

MILA will support JSC with data and command capabilities through LOS.

MILA and JSC COMSEC Unit Load must be complete prior to MILA/JSC interface test.

16-415

NTD

*FLT

232

SU17145

*MIL

T-03H00M

IF *FLT supporting TCDT,

THEN perform MILA/GSFC/JSC interface test (1 hr). Leave Astro
Comm A/G voice configured via MILA DMS.

Not Performed: _____

CRT Countdown Timer Setup and LDB Redundancy Check

16-416 OTC CDPS 132
T-03H00M

Setup onboard countdown timer and **perform** LDB Redundancy Check.

16-417 CDPS

CONSOLE KYBD
DEUE DEST GNC 1 LDBA
XMIT CMD KEY - PRESS

CONSOLE KYBD
DEUE SPEC 2 PRO
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT (VAS59 PG-B)
CRT 1 DISP ID = 0020

NOTE

Anticipated GMT of liftoff will be entered in next step.

16-418 CDPS

CONSOLE KYBD
DEUE ITEM 17 + + + EXEC
 HH MM SS

XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CONSOLE KYBD
DEUE RESUME
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-419

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
MDM BSR READ PROGRAM (VAS93)
XMIT CURSOR KEY - PRESS

PFK-2 KEY - PRESS

16-420

CDPS

CURSOR CNTL (VAS93 PG-B)
PORT 1
XMIT CURSOR KEY - PRESS

APPL PAGE (VAS93 PG-B)
PFK-5 KEY - PRESS

CRT (VAS93 PG-B)
NO UNEXPLAINED BSR'S

NOTE

LDB Switching in following steps will cause annunciation of LCC LPS-17.

16-421

CDPS

CONSOLE KYBD
GPCC LDBC
XMIT CMD KEY - PRESS

16-422

CDPS

CURSOR CNTL (\$GM)
POLL GSE ON LDB NO. 2
XMIT CURSOR KEY - PRESS

PFK-1 KEY - PRESS

16-423

CDPS

CRT (VAS59 PG-B)
LDB 2 POLLING ACTIVE

16-424

CDPS

CURSOR CNTL (VAS93 PG-B)
PORT 2
XMIT CURSOR KEY - PRESS

APPL PAGE (VAS93 PG-B)
PFK-5 KEY - PRESS

CRT (VAS93 PG-B)
NO UNEXPLAINED BSR'S

16-425

CDPS

APPL PAGE (VAS93 PG-B)
PFK-15 KEY - PRESS

16-426

CDPS

CONSOLE KYBD
GPCC LDBC
XMIT CMD KEY - PRESS

16-427

CDPS

CURSOR CNTL (\$GM)
POLL GSE ON LDB NO. 1
XMIT CURSOR KEY - PRESS

PFK-1 KEY - PRESS

16-428

CDPS

CRT (VAS59 PG-B)
LDB 1 POLLING ACTIVE

16-429

CDPS

CURSOR CNTL (VASP9 PG-B)
LAUNCH DATA BUS ANOMALY
XMIT CURSOR KEY - PRESS

CRT (VASP9 PG-B)
MESSAGE CLEARED

16-430

CDPS

OTC

132

CRT COUNTDOWN TIMER SETUP AND LDB REDUNDANCY
CHECK COMPLETE.

05-13-2011
 APPROVED

OMI S0017.200 A28
 APPROVED

*****T-3H00M Hold*****

16-431 NTD PA
232
 T-03H00M
 (HOLDING)

Countdown Clock (CDC) holding at T-03 Hours 00 Minutes.

Verify FR Consumables

16-432 LPS

Verify Firing Room consumables.

Disable External Paging To FR's

16-433 NTD STM 232
STM GYCC 111
GYCC JYCD 117
 T-03H00M
 (HOLDING)

Disable external paging to active and backup firing rooms for S0017.
Verify completion.

Support: [OISD](#)

Closeout Crew Proceed To Orbiter

16-434 NTD *SCC 232 SU17100

T-03H00M
(HOLDING)

Request SPOC Safety concurrence for Closeout Crew and vehicle to proceed to base of FSS.

16-435 *SCC NTD 232
 NTD OTC

Closeout Crew and vehicle cleared to proceed to base of FSS.

16-436 NTD OVCC DIR 7

Proceed to base of FSS elevator and report on DIR 7. Portable O₂ detector required for continuous monitoring of O₂ content in white room.

16-437 OVCC NTD DIR 7

Closeout Crew assembled at base of FSS.

16-438 NTD OVCC DIR 7 SU17100

Proceed to white room. **Report** on OIS Channel 132.

WEATHER Satellite Photo

NOTE
Perform next step 1 hour prior to scheduled weather briefing.

16-439 **NTD** **STM** **232** [SU17102](#)
 STM ***WEA** **231**

T-03H00M
(HOLDING)

IF Flight Crew Weather Briefing planned for this mission and MCC supporting TCDT,

THEN Satellite photo email to the Astronaut Crew Quarters.

Not Performed: _____

Trunking Radio Roadblocks Securing

NOTE
Perform this option if Eastern Range Support available to support Range Safety System testing.

Trunking Radio Roadblocks Securing Not Performed: _____

NOTE

Trunking Radio restrictions for Shuttle Countdown Demonstration Test.

1. All vehicle mounted trunking radios within the BDA must remain Off.
2. Hand held trunking radios may be used inside the BDA but outside of the Pad Perimeter.
3. Only DRS radios may be used inside the Pad Perimeter.

16-440 **NTD** ***SEC** **232** [SU17084](#)

Implement Security screening roadblocks at A5, A3 and A6. Security to verify that all vehicle mounted Trunking Radios entering the control area are turned Off and drivers briefed to leave them off for the duration of the Shuttle Range Safety System checkout.

Support: [SEC](#)

***** End of Trunking Radio Roadblocks Securing *****

(SIM) Go For Flight Crew Wake-up

16-441
T-03H00M
(HOLDING)

VITT NTD

(SIM) Verify go for Crew wake-up
(7-3904 recorded phone)

16-442

VITT NTD

(SIM) Verify Crew egress system satisfactory.

16-443

NTD OTC 232

(SIM) Crew wake up starting.

Closeout Crew In Whiteroom

16-444
T-03H00M
(HOLDING)

OVCC OTC 132
OTC NTD 232

Closeout Crew ready to enter Orbiter.

16-445

OTC JYVR 138

Start video recording of OTV camera 005.

Support: [OTV](#)

16-446

CECL OTC 132

Partial pressure of oxygen in Crew compartment satisfactory.

16-447	NTD	OTC	232
	OTC	CECL	132

Verify continuous monitoring of O₂ in cabin.

16-448	NTD	OTC	232
	OTC	OVCC	132

Proceed with ingress of Crew compartment. **Provide** two unwrapped ELSA's for ASP and NST.

16-449	OVCC	OTC	132
	OTC	NTD	232

ASP and NST entering Crew module at this time.

16-450	NTD	STM	232
	STM	JYVO	138
		JYVR	

(SIM) Terminate video tracking and recording of Closeout Crew.

Support: [OTV](#)

MILA/GSFC/JSC I/F Test Complete

16-451 *FLT NTD 232 SU17145

T-03H00M
(HOLDING)

*MIL

IF *FLT supporting TCDT,

THEN MILA/GSFC/JSC Interface Test complete.

Not Performed:_____

Command Handover to JSC

NOTE

KSC Astrocomm A/G voice is not available during command handover to JSC.

NOTE

If *FLT is supporting S0017 then perform command handover to JSC.

Command Handover Not Performed:_____

16-452 NTD *FLT 232
 *MIL

Perform command handover to JSC and configure KSC Astrocomm A/G 1 and 2 via JSC (5 minutes).

NOTE

Do not perform next step if S0007, Launch countdown, in progress at other Pad and countdown has progressed past T-12H or if TD 9118 patching already performed. Patch is required for S0017 holdfire test at T-01H10M.

16-457 TBC CMQC 136

Verify ET/SRB Operation 203 (S0017.100) - ER Circuits Patching complete.

Not Performed: _____

Qv: _____

ET OI Power up

NOTE

Perform next option if ET OI power is not active.
TPE can perform ET OI Power Up.

ET OI Power up Not Performed: _____

16-458 NTD TBC 232 SU17123
 TBC CMPS 136

T-03H00M
(HOLDING)

Perform ET OI Power up.

16-459 TBC OTC
 OTC CMPS 132

Request CMPS on OIS Channel 136 for ET OI power up.

16-460

CMPS

IF SAE12 NOT ACTIVE:

THEN

CONSOLE KYBD

SAE12

PERF PGM KEY - PRESS

Not Performed: _____

16-461

CMPL

IF SAE02 NOT ACTIVE:

THEN

CONSOLE KYBD

SAE02

PERF PGM KEY - PRESS

Not Performed: _____

16-462

CMPS

PFP (SAE12)

TURN ON ET PWR - PRESS

CRT

VERIFY ET OI PWR ON

16-463

CMPS	TBC	136
TBC	NTD	232

ET OI Powerup complete.

***** End of ET OI Powerup *****

16-464 OTC CGLS

IF Eastern Range is not supporting,
THEN verify Range Safety is bypassed in GLS.

Not Performed: _____

Clear SRB Forward Skirts

NOTE

Perform this option if Eastern Range is supporting. (S&A rotation will occur at T-4:55 Min).

Clear SRB Forward Skirts Not Performed: _____

16-465	TBC	NTD	232	SU17125
	NTD	*SCC		SU17153
	*SCC	*PSE	NET 105	

Request SPOC Safety clear SRB LH/RH FWD skirts of all personnel for SRSS S&A rotation. Install danger signs.

16-466 NTD PA

Attention on Pad A:

All personnel clear SRB LH/RH forward skirt area for SRSS S&A rotation.

16-467	*PSE	*SCC	NET 105
	*SCC	NTD	232
	NTD	TBC	

All personnel cleared from SRB LH/RH FWD skirts and danger signs installed. You have Safety concurrence to proceed with S&A Rotation at T-4:55 Min.

*** End of Clear SRB Forward Skirts ***

SRB Power Up

NOTE

Perform this option if SRB power not already up.

SRB Power-Up Not Performed: _____

16-468 **TBC** **136** **SU17126**
T-03H00M
(HOLDING)

All personnel supporting SRB power up, report test readiness status

CPWR LCC FR Lead PWR SYS ENGR
CBDP LCC FR SRB DPS ENGR
CMQC LCC FR SRB Quality Control

16-469 **NTD** **TBC** **232** **SU17127**
T-03H00M
(HOLDING)

Perform SRB power up.

16-470 **TBC** **CPWR** **136**
 CBDP

Go to Channel 176 and perform OMI [S9001.104 Shuttle Power Up/Power Down \(LPS\) - EPD Options](#) .

RT OMI Log No. _____

16-471 **CPWR** **TBC** **136**
 TBC **NTD** **232**

SRB OI Bus A&B Power Application complete.

***** End of SRB Power Up *****

05-13-2011
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OMI S0017.200 A28
APPROVED

16-472

CPWR

CURSOR CNTL (BDE08)
LCC
XMIT CURSOR KEY - PRESS

CRT
VERIFY
LCC GREEN

Separate SRB MDM Power Supplies

16-473 TBC CDPS 136

Separate SRB MDM power supplies.

16-474 CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
SRB MANUAL TEST SEL
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

16-475 CDPS

CURSOR CNTL (BSM06 PG-B)
SEPARATE MDM P/S
XMIT CURSOR KEY - PRESS

CRT (BSM06 PG-B)
ALL MDM P/S SEP SWITCHES ON

16-476 CDPS

PPF (BSM06)
TERMINATE KEY - PRESS

16-477 CDPS TBC 136

SRB MDM Power Separation complete.

SRB TVC Powerup

16-478 **TBC** **CAFC** **136** **SU17128**
T-03H00M
(HOLDING)

Perform SRB TVC Powerup.

16-479 **TBC** **OTC** **132**
OTC **CEPD**

Transfer MEC RSYS to C11 to support SRB TVC power up.

16-480 **CEPD**

CONSOLE KYBD
C CO MEC1 C11
XMIT CMD KEY - PRESS

C CO MEC2 C11
XMIT CMD KEY - PRESS

16-481 **CEPD** **OTC** **132**
OTC **TBC** **136**
TBC **CAFC**

MEC1 and MEC2 RSYS transferred to C11.

16-482 **CAFC**

CURSOR CNTL (SAB19/SWB01)
ATVC - OPS MAN
XMIT CURSOR KEY - PRESS

16-483 **CAFC**

CURSOR CNTL (SAB22/VWB35)
SRB TVC PWR UP
XMIT CURSOR KEY - PRESS

16-484

CAFC

CURSOR CNTL (SAB22/VWB35)
START TEST
XMIT CURSOR KEY - PRESS

16-485

CAFC

CRT (SAB22/VSB31)
VERIFY
INITIAL GNC SYSTEMS STATUS

16-486

CAFC

APPL PG (SAB22/VSB31)
PFK1 KEY - PRESS (CONTINUE)

16-487

CAFC

CRT (SAB22/VTB01)
VERIFY
FINAL GNC SYSTEM STATUS DISPLAYED

16-488

CAFC

APPL PG (SAB22/VTB01)
PFK1 KEY - PRESS (PERFORM POST POWER-UP TEST)

16-489

CAFC

CRT (SAB22/VWB35)
VERIFY
SRB TVC POWER UP COMPLETE WITHOUT ANOMALY

16-490

CAFC

APPL PG (SAB22/VWB35)
PFK15 KEY - PRESS (TERM SAB22)

AI Mode 1 With SRB

16-491

COFC

CURSOR CNTL (SAB19/SWB01)
COUNTDOWN - OPS MANAGER
XMIT CURSOR KEY - PRESS

16-492

COFC

CURSOR CNTL (SAB23/VSB100)
ORBITER/SRB AI MODE 1
XMIT CURSOR KEY - PRESS

16-493

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

16-494

COFC

CRT (SAB23/VSB100)
VERIFY
AI MODE 1 REQUEST COMPLETE

16-495

COFC

CURSOR CNTL (SAB23/VSB100)
SRB TVC POSITION TO DRIVER CHECKS
XMIT CURSOR KEY - PRESS

16-496

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

16-497

COFC

CRT (SAB23/VSB100)
VERIFY
SRB TVC POSN TO DRIVER CHECKS SUCCESSFUL

16-498

COFC

CONSOLE KYBD (SAB23/VSB100)
PFK15 KEY - PRESS

Activate SRB TVC LCC EMON

16-499

CAFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

16-500

CAFC

CURSOR CNTL (SAB20/SWB02 PG-A)
A - SRB TVC
XMIT CURSOR KEY - PRESS

16-501

CAFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (DEACT EMON SETUP)

16-502

CAFC

CONSOLE KYBD
C CO MEC1 C10
XMIT CMD KEY - PRESS
C CO MEC2 C10
XMIT CMD KEY - PRESS

16-503

CAFC	TBC	136
TBC	OTC	
OTC	CEPD	132

MEC RSYS has been reassigned to C10.

16-504

CAFC	TBC	136
-------------	------------	------------

[SU17128](#)

SRB TVC Power Up, Functional Check and LCC Activation complete.

SRB PIC Test

NOTE
Perform this option (SRB PIC No-Go Resistance Test) if ordnance not connected (ref S5009).

SRB PIC Test Not Performed: _____

16-505 **TBC** **NTD** **232** [SU17129](#)

Ready for SRB PIC Resistance Test.

16-506 **NTD** **TBC** **232**
TBC **CPWR** **136**

Perform SRB PIC No-Go Resistance Test (S0017.300 Operation 39) on Channel 176 (10 minutes).

16-507 **CPWR** **TBC** **136** [SU17129](#)
TBC **NTD** **232**

SRB PIC No-Go Resistance Test complete.

*****End of SRB PIC Test*****

Configure COMM and OIS COMM Check

16-508 **OTC** **CCSE** **132**

PROGRAMMABLE FUNCTION PANEL
VWA40 - PRESS

VERIFY
EMONS DISPLAYED
EMONS PFPK - PRESS
ACT CNT-DN EMON PFPK - PRESS

CRT VWA40 PG-B
VERIFY MESSAGE
CNT-DN EMON ACTIVATED
PFPK7 - PRESS
EXIT EMON OPTIONS PFPK - PRESS

16-509 **OTC** **CCSE** **132**

CURSOR CNTL (VWA40)
F/S MONITOR
XMIT CURSOR KEY - PRESS
VERIFY F/S MONITOR INVERT

16-510 **ASP**
T-03H00M
(HOLDING)

PANEL MO42F
MID DECK SPEAKER AUDIO
SPKR PWR SW - SPKR

16-511 **ASP**

PANEL R14
ROW A
MN B
AUDIO MID DECK SPKR CB - OPEN

16-512 **ASP**

**05-13-2011
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APPROVED**

Don COMM headset

16-513

ASP

PANEL A15
PS COMM CCU PWR SW - ON

ASP COMM Check

16-514 OTC ASP 212 SU17104

Perform COMM check with ASP on A/G 1 (OIS Channel 212), A/G 2 (6313/6333) and A/A (6311/6331).

Configure and Inspect CM For Flight Crew Ingress

16-515 OTC ASP 212
 NST

T-03H00M
(HOLDING)

Inspect Crew module for Flight Crew Ingress.
Report when Crew module ready.

16-516 ASP NST

Inspect and **prepare** seats for Flight Crew Ingress.
Remove from Crew module any items not required for Crew Ingress and Crew module closeout.

16-517 OTC ASP 212

IF GO₂ supply capabilities are not available for flight crew during TCDT,
THEN verify 1 each emergency breathing apparatus single bottle spare installed/configured under each middeck seat and 2 each EBAs installed/configured under flight deck seats 3 and 4 to supply temporary O₂ to Flight Crew.

Not Performed: _____

(SIM) Pot/Supply Water Drain

16-518 **OTC** **CFCP** **212**
 ASP
 OMTO

T-03H00M
(HOLDING)

(SIM) Perform pot/supply water TK-A drain.

16-519 **CFCP** **OTC** **132**

(SIM) Pot/Supply Water TK-A Drain is complete.

***** End of (SIM) Pot/Supply Water Drain *****

16-520 **OTC** **ASP** **212**

(SIM) PANEL ML26C
SPLY H₂O GN₂
TK A SPLY VLV - CLOSE
TK VENT VLV - VENT

LD Weather Update

16-521 **NTD** **STM** **232**
T-03H00M
(HOLDING)

[SU17106](#)

Request Cape Weather on OIS Channel 231 to support weather update for Launch.

16-522 **NTD** **LD**

Cape Weather on OIS Channel 231 with Launch weather update.

Establish NAVAIDS Control Area

NOTE

Perform "Establish NAVAIDS Control Area" section if NAVAIDS antenna control area clears are not already established and testing is in support of OV-103 or OV-104 only.

Establish NAVAIDS Control Area Not Performed: _____

16-523 **OTC** **NTD** **232** [SU17108](#)

Ready to perform NAVAIDS Activation Clearing.

16-524 **OTC** ***PAD** **132**
T-03H00M
(HOLDING)

IF antenna monitor required,

THEN NAVAIDS activation will be performed. Post antenna monitor on station (207 ft level, RSS).

Not Performed: _____

16-525 **NTD** ***SCC** **232** [SU17154](#)
***SCC** ***PSE** **NET 105**

- Clear all personnel from Orbiter NAVAIDS antennas (2 ft min) (RSS 207 ft level, FRCS room).
- Post antenna monitor or install barriers and danger signs across RSS 207 ft access door.
- Request SPOC safety concurrence to proceed.

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APPROVED

16-526 NTD PA

Attention on Pad A:

All personnel stand 2 ft clear of Orbiter NAVAIDS antennas at RSS
207 ft level (FRCS room).

16-527 *PSE *SCC NET 105 SU17108
 *SCC NTD 232 SU17154
 NTD OTC

All personnel cleared from NAVAIDS antennas. Safety verifies
concurrence to proceed with NAVAIDS activation. Antenna monitor on
station or barriers and danger signs posted.

***** End of Establish NAVAIDS Control Area *****

LIOH Canister Installation

NOTE

If installed, treadmill will be moved to allow access for LIOH canister operations. Treadmill will be reinstalled following LIOH canister installation. (Applicable only if PS1 and/or PS2 seats installed)

Inert LIOH canisters will be used for S0017.

16-528

CECL

CRT VAG60

PFPK1 (VAG60 TERMINATE) - PRESS

VERIFY VAG60 TERMINATES

16-529

CECL

CONSOLE KYBD

SET V61K2866NL OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

SET N61IV011E OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-530

OVCC OTC 132
OTC CECL
 CISL

SU17110

T-03H00M
(HOLDING)

Ready to install LIOH canisters.

16-535 OVCC OTC 132
 OTC CECL

Two inert LIOH canisters installed. Ready to activate cabin fan A.

16-536 OTC ASP 212

PANEL L1

CABIN FAN
A SW - ON

RECORD TIME _____GMT

***** End of LIOH Canister Installation *****

(SIM) Air Sample - Crew Module

16-537 ASP

(SIM) Perform closeout air sample of Crew module.

ODMS Configuration for Crew Ingress

16-538 NTD OTC 232
 OTC OVCC 132

T-03H00M
(HOLDING)

Verify portable O₂ meters (2 each) installed in WR and Orbiter Crew Module.

16-539	OVCC	OTC	132
	OTC	NTD	232
	NTD	*SCC	232

T-03H00M
(HOLDING)

Portable O₂ meters (2 each) installed in WR and Orbiter Crew Module.
Ready for ODMS Configuration for Crew Ingress.

16-540	NTD	STM	232	SU17312
	STM	JBEP	111	SU17313

T-03H00M
(HOLDING)

Perform Whiteroom and Crew Cabin ODMS Configuration for Crew
Ingress per [Doc: JOB PLAN S0017/PWRA \(LI\) ODMS Support for
TCDT](#)

Support: [PWRA](#)

Pre-Ingress Switch Reconfig

NOTE

Following systems required on OIS 212 to support pre-ingress switch reconfig:
CEPD, CECL, CPLE, CNSE, and CISL.

16-541	ASP	OTC	212	SU17111
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T-03H00M
(HOLDING)

Ready to proceed with pre-ingress switch reconfig.

16-542	OTC	CISL	212
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PCMMU switch will be changed to 1.
PCMMU BITE bits 5, 12, 13 and possibly 8 and 11 may show failed due to
BFS auto load of TFL 102 to 64KB formatter.

16-543	CISL	ASP	212
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PANEL C3

OI PCMMU
PWR SW - 1

PCM GSE Control Removal

16-544 OTC CISL 212 [SU17167](#)

Remove GSE control from PCM.

16-545 CISL

CRT (SAQ04/VWQ11)

PCMMU
SW SCAN -1

CURSOR CNTL (SAQ04/VWQ11)
PCM CONTROL
COMMAND - OFF
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

CRT (SAQ04/VWQ11)

PCMMU
COMMAND - OFF
BITE
 1 POWER - GOOD
 2 MTU - GOOD
OI DATA VALID

16-546 CISL OTC 212

PCM GSE Control Removal complete.

NOTE
Next step is required due to BFS auto reload of PCM format 102 following PCMMU power switch repositioning.

NOTE
Perform next step if ascent LDR TFL format is other than 102 (ref S0017.100 Operation 121).

16-547	OTC	CDPS	132
		CISL	
		JRPS	

Reload ascent LDR PCM format _____ per OMI [V9001VL2 Orbiter Power Up/Down, DPS Options \(LPS\)](#) . **Report** completion.

Not Performed: _____

CAUTION

ESS Bus Source Fuel Cell Switches must remain off and guarded for this test (if switches are placed on, fuel cell could be damaged).

16-548 **OTC** **ASP** **212**
T-03H00M
(HOLDING)

PANEL R1
(SIM)

POWER DISTRIBUTION

ESS BUS SOURCE

FC1 SW - OFF* (GUARDED)
FC2 SW - OFF* (GUARDED)
FC3 SW - OFF* (GUARDED)

AC BUS SNSR (THREE) - OFF, 1 SEC,
THEN AUTO TRIP

CRYO

FUEL CELL

READY FOR LOAD

1 TB BP*	R1A02DS011
2 TB BP*	R1A02DS012
3 TB BP*	R1A02DS013

COOLANT PUMP DELTA P

1 TB BP*	R1A02DS014
2 TB BP*	R1A02DS015
3 TB BP*	R1A02DS016

16-549 **OTC** **CEPD** **132**

CRT (SWC02/VWC17)

ESS

1BC SRC 1 RED
2CA SRC 2 RED
3AB SRC 3 RED

CRT (VWC16)

AC BUS SENSOR

AC 1 AUTO
AC 2 AUTO
AC 3 AUTO

16-550 OTC ASP 212

(SIM) PANEL R2

APU/HYD

APU FU TK VLV ENA

1A CB - OPEN *

1B CB - OPEN *

2A CB - OPEN *

2B CB - OPEN *

3A CB - OPEN *

3B CB - OPEN *

CAUTION

Next step is SIM only. After completion of the next step, do not leave select SW in Fuel Cell 1, 2 or 3 position or damage to Fuel Cells may occur.

16-551 OTC CEPD 212

ASP

(SIM) CRT (SWCO2/VWC17)

READ FC VOLTAGE AND CURRENT AND RECORD BELOW.

(SIM) PANEL F9

SELECT, READ AND REPORT FC VOLTAGE AND CURRENT AND RECORD BELOW.

PNL F9

FC 1 (SIM)

V _____

A _____

FC 2 (SIM)

V _____

A _____

FC 3 (SIM)

V _____

A _____

CRT

_____ +/- 2.25 VDC

_____ +/- 75 ADC

_____ +/- 2.25 VDC

_____ +/- 75 ADC

_____ +/- 2.25 VDC

_____ +/- 75 ADC

16-552 OTC ASP 212

(SIM) PANEL R1

POWER DISTRIBUTION

AC BUS SNSR

- 1 SW - OFF (1 SEC), THEN MONITOR
- 2 SW - OFF (1 SEC), THEN MONITOR
- 3 SW - OFF (1 SEC), THEN MONITOR

16-553 OTC CEPD 212

(SIM) CRT (SWC02/VWC17)

ESS

1BC SRC 1 RED

2CA SRC 2 RED

3AB SRC 3 RED

(SIM) CRT (VWC16)

AC BUS SENSOR

AC 1 MON

AC 2 MON

AC 3 MON

CAUTION

Following six circuit breakers shall remain open for this test. If closed, switches will be enabled that, if turned on, could cause damage to fuel cells.

16-554 OTC ASP 212

(SIM) PANEL O13

ROW A

ESS 1BC

MN A CONTR CB - OPEN *

ROW C

ESS 2CA

MN B CONTR CB - OPEN *

ROW E

ESS 3AB

MN C CONTR CB - OPEN *

16-555 OTC ASP 212

(SIM) PANEL O14

ROW B

MN A

MN C CONTR CB - OPEN *

16-556 OTC ASP 212

(SIM) PANEL O15

ROW B

MN B

MN A CONTR CB - OPEN *

16-557 OTC ASP 212

(SIM) PANEL O16

ROW B

MN C

MN B CONTR CB - OPEN *

ECLSS FCL 1 and 2 Payload Flow Position Verification

16-558 OTC CECL 212

Perform FCL 1 and 2 Payload Flow Position Verification.

NOTE

Master alarms will occur during following verification. ASP will reset as required.

16-559 CECL ASP 212

IF FCL 1 PROP VALVE IN INTCH POSITION,

THEN
PANEL L1

FLOW PROP VLV LOOP 1 SW - PAYLOAD HX,
HOLD (15 SECONDS MAX) UNTIL
FLOW PROP VLV LOOP 1 TB PL
FLOW PROP VLV LOOP 1 SW - REL

Not Performed: _____

16-560 CECL

CRT (VAG59 PG-B)
VERIFY FCL 1 FLOWRATES MEET LCC
REQUIREMENTS (PAYLOAD POSITION)

16-561 CECL ASP 212

PANEL L1

FLOW PROP VLV LOOP 1 SW - INTCHGR,
HOLD (15 SECONDS MAX) UNTIL
FLOW PROP VLV LOOP 1 TB ICH
FLOW PROP VLV LOOP 1 SW - REL

16-562

CECL

CRT (VAG59 PG-B)
VERIFY
FCL 1 FLOWRATES MEET LCC REQUIREMENTS (INTCHGR
POSITION)

16-563

CECL ASP 212

IF FCL 2 PROP VALVE IN INTCH POSITION,

THEN
PANEL L1

FLOW PROP VLV LOOP 2 SW - PAYLOAD HX
HOLD (15 SECONDS MAX) UNTIL
FLOW PROP VLV LOOP 2 TB PL
FLOW PROP VLV LOOP 2 SW - REL

Not Performed: _____

16-564

CECL

CRT (VAG59 PG-B)
VERIFY FCL 2 FLOWRATES MEET LCC REQUIREMENTS
(PAYLOAD POSITION)

16-565

CECL ASP 212

PANEL L1

FLOW PROP VLV LOOP 2 SW - INTCHGR,
HOLD (15 SECONDS MAX) UNTIL
FLOW PROP VLV LOOP 2 TB ICH
FLOW PROP VLV LOOP 2 SW - REL

16-566

CECL

CRT (VAG59 PG-B)
VERIFY FCL 2 FLOWRATES MEET LCC REQUIREMENTS
(INTCHGR POSITION)

ECLSS FCL 1 and 2 Payload Flow Position Verification Complete

16-567 OTC CECL 132

Verify ECLSS configured for H₂O loop 1A/2 CB opening.

16-568 OTC ASP 212

PANEL L4

ROW F

AC1

H2O LOOP PUMP

1A/2

PH A CB - OPEN

PH B CB - OPEN

PH C CB - OPEN

NAVAIDS Activation

NOTE

If *FLT not supporting TCDT, VITT will provide MSBLS and TACAN PB/TW information. TACAN support is only required to support OV-103 and OV-104.

16-569	NTD	*FLT	232	SU17112
	OTC	CNSE	212	

Perform the following:

1. **Provide/Record** MSBLS PB/TW Settings _____ (6 or 8)
2. **IF** for OV-103/OV-104 only,

THEN Provide/Record TACAN PB/TW settings for Launch

TACAN 1 _____

TACAN 2 _____

TACAN 3 _____

Sub Step 2 Not Performed: _____

3. **Report** settings to CNSE.

NOTE

Switching of the TACAN ground station transponder will result in momentary signal dropout. The TACAN ground station operator is to notify the STM on OIS channel 111 if switching occurs or becomes necessary.

Redundant TACAN transponder capability is mandatory for entry. This requirement can be satisfied by one ground station with dual string (DS) transponders or by two ground stations with single string (SS) transponder capability.

TACAN support is only required to support OV-103 and OV-104.

SLF NAVAIDS Activation

16-570	NTD	STM	232	SU17135
	STM	FTAC	111	
		FMLS		

(SIM) Perform the following:

1. **IF** for OV-103/OV-104 only,
THEN Verify TACAN status at KSC.

Sub Step 1 Not Performed: _____

2. **Start** MSBLS power up. (phone 861-2049/0541)

16-571	FTAC	STM	111
	STM	NTD	232
	NTD	OTC	
	OTC	CNSE	212

IF supporting vehicle OV-103 or OV-104,

THEN (SIM) Verify the following:

1. TACAN station at KSC _____ is/is not supporting.
2. Transponder status: _____ (DS/SS/None)

Not Performed: _____

16-572	LRD	ESCO	135
--------	-----	------	-----

IF supporting vehicle OV-103 or OV-104,

THEN (SIM) Verify TACAN at PAFB supporting.

Not Performed: _____

16-573	ESCO	LRD	135
	LRD	NTD	232
	NTD	OTC	
	OTC	CNSE	212

IF supporting vehicle OV-103 or OV-104,

THEN (SIM) TACAN station at PAFB _____ (is/is not) supporting. Transponder status is single string.

Not Performed: _____

16-574	NTD	OTC	232
	OTC	CNSE	212

IF supporting vehicle OV-103 or OV-104,

THEN (SIM) Required TACAN stations ready to support NAVAIDS activation.

Not Performed: _____

OV-103/OV-104 NAVAIDS Activation

NOTE

Perform OV-103/OV-104 NAVAIDS Activation for OV-103/OV-104 only.

OV-103/OV-104 NAVAIDS Activation Not Performed: _____

WARNING

RF Radiation is harmful.

Exposure may cause burns and cell, tissue, or organ structure damage.

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NOTE

Hazardous steps follow due to NAVAIDS activation.

16-575	NTD	OTC	232
	OTC	CNSE	212

Perform NAVAIDS activation on Channel 212. (10 minutes)

NOTE IDP RSYS is required for the GPS activation.

16-576 **CNSE OTC 132**
 OTC CDPS

Change responsible console for IDP to console C2. Expect I/O errors during GPS power up.

16-577 **CDPS**

```
CONSOLE KYBD
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C2 (X = IDP No.)
XMIT CMD KEY - PRESS

ISSU N72IV10YD #B002 (Y = IDP No. Minus 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY -PRESS
```

16-578 **CDPS OTC 132**
 OTC CNSE

Responsible console for IDP No. _____ now assigned to Console C2.

16-579

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VAA40
PERF PGM KEY - PRESS

PFP (C2)
VAA40 - PRESS
WARM START-PRESS
VWN42 - PRESS
(SELECT APPL PG-B)

16-580

CNSE ASP 212

PANEL 07

TACAN 1
MODE SW - GPC
CHANNEL TW - 059Y
ANT SEL SW - AUTO

TACAN 2
MODE SW - GPC
CHANNEL TW - 059Y
ANT SEL SW - AUTO

TACAN 3
MODE SW - GPC
CHANNEL TW - 059Y
ANT SEL SW - AUTO

GMT _____

16-581

CNSE

CURSOR CNTL (VWN42)
TACAN 1
UPR/LWR ANT - LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN 2
CONTROL WORD ISSUE
UPR/LWR ANT - LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN 3
UPR/LWR ANT - LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

16-582

CNSE

CRT (VWN42)
VERIFY
TACAN 1 SW STAT ON
TACAN 2 SW STAT ON
TACAN 3 SW STAT ON

TACAN 1 POWER STAT ON
TACAN 2 POWER STAT ON
TACAN 3 POWER STAT ON

16-583 CNSE ASP 212

PANEL 08

MLS

CHANNEL

1 TW - _____
2 TW - _____
3 TW - _____

16-584 CNSE ASP 212

PANEL 08

RADAR ALTIMETER

1 SW - ON
2 SW - ON

GMT _____

16-585 CNSE

CRT (VWN42)

RA 1 RALT SW STATUS - ON
RA 2 RALT SW STATUS - ON

RA 1 RALT READY - ON
RA 2 RALT READY - ON

RECORD

RALT 1 ALT _____ BD

RALT 2 ALT _____ BD

GPS Activation For Flight

16-586

CNSE

PFPK (C2)
VAA41 - PRESS
VWN42 - PRESS
(SELECT APPL PG B)

16-587

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VSN59
PERF PROG KEY - PRESS
(SELECT APPL PG B)

16-588 CNSE ASP 212

IF GPS PREAMPS ARE NOT POWERED AND IN SUPPORT OF
OV-103,

THEN PERFORM

PANEL A13

GPS

PRE AMPL

UC SW - MN C

LC SW - MN C

Not Performed: _____

16-589 CNSE ASP 212

IF GPS PREAMPS ARE NOT POWERED AND IN SUPPORT OF
OV-104,

THEN PERFORM

PANEL A13

GPS

PRE AMPL

UC SW - ON

LC SW - ON

Not Performed: _____

NOTE

GPS receiver mode will transition from Self-Test/INIT to NAV upon power-up.

16-590 CNSE ASP 212

PANEL A13

GPS

POWER SW - ON

16-591 CNSE

CRT (VWN42 PG-B)

VERIFY

RCVR MODE - NAV

HDR WD - FFFF

RPU FAIL - OFF

BAT LOW - OFF

NOTE

Prior to establishing 1-way I/O, wait approximately 1 minute after the receiver has been powered On. This is to give time for the receiver to complete its Power-On Self Test and then transition to NAV mode. This transition can be monitored by watching the receiver status measurement.

16-592 CNSE

CURSOR CNTL (VSN59 PG-B)

I/O ITEM 10+1

XMIT CURSOR KEY - PRESS

START TEST

XMIT CURSOR KEY - PRESS

PFK XB KEY - PRESS

(WHERE x = IDP ASSIGNED TO C2)

NOTE

GPS will automatically mode to INIT when the Item 10+2 is executed.

16-593

CNSE

CURSOR CNTL (VSN59)
I/O ITEM 10+2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

16-594

CNSE

CRT (VSN59 PG-B)
VERIFY
HEADER WD - EEEE
RCVR MODE - INIT

16-595

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV - GPS 2 - ITEM 18
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

16-596

CNSE

CRT (VSN59 PG-B)
PFK 7 KEY - PRESS (TERM NAV MONITORING)

16-597

CNSE

CRT (VSN59 PG-B)
VERIFY
RCVR MDE - NAV
HDR WD - FFFF

16-598

CNSE

CURSOR CNTL (VSN59)
SPEC RESUME
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

16-599

CNSE

CRT (VSN59 PG-B)
VERIFY
RESUME VERIFIED

16-600

CNSE

CURSOR CNTL (VSN59)
CRT RETURN TO DPS
XMIT CURSOR KEY - PRESS
PLACE CURSOR AT THE END OF:
C CO _DEUXG LDBA C12 (X = IDP NO.)
XMIT CMD KEY - PRESS
HOME CMD KEY - PRESS
ISSU N72IV10YD 0 (Y = IDP NO. MINUS 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-601

CNSE OTC 132
OTC CDPS

IDP assigned to Console C-2 returned to C12.

16-602

CNSE

CURSOR CNTL (VSN59)
TERMINATE
XMIT CURSOR KEY - PRESS

NOTE

Perform the appropriate sub-steps if in support of OV-103 or OV-104 and TACAN 1, 2 and/or 3 will not lock to TACAN ground station.

16-603

CNSE

ASP

212

IF TACAN WILL NOT LOCK TO TACAN GROUND STATION,

THEN

PANEL 07

1. TACAN 1
MODE SW - OFF
MODE SW - T/R
MODE SW - GPC

Sub Step 1 Not Performed: _____

2. TACAN 2
MODE SW - OFF
MODE SW - T/R
MODE SW - GPC

Sub Step 2 Not Performed: _____

3. TACAN 3
MODE SW - OFF
MODE SW - T/R
MODE SW - GPC

Sub Step 3 Not Performed: _____

Entire Step Not Performed: _____

16-604

CNSE

IF TACAN MODE(S) SW WERE CYCLED,

THEN PERFORM THE FOLLOWING:

1. CURSOR CNTL (VWN42)
TAC 1
CNTLWD ISSU
XMIT CURSOR KEY - PRESS
FOLLOW SOFTWARE DIRECTIONS TO SELECT:
MODE - T/R
CHANNEL MODE - Y
CHANNEL - 59
EXEC CMD KEY - PRESS
S/T OFF
EXECUTE
UPR/LWR ANT - LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

Sub Step 1 Not Performed: _____

2. CURSOR CNTL (VWN42)
TAC 2
CNTLWD ISSU
XMIT CURSOR KEY - PRESS
FOLLOW SOFTWARE DIRECTIONS TO SELECT:
MODE - T/R
CHANNEL MODE - Y
CHANNEL - 59
EXEC CMD KEY - PRESS
S/T OFF
EXECUTE
UPR/LWR ANT - LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

Sub Step 2 Not Performed: _____

3. CURSOR CNTL (VWN42)
TAC 3
CNTLWD ISSU
XMIT CURSOR KEY - PRESS
FOLLOW SOFTWARE DIRECTIONS TO SELECT:
MODE - T/R
CHANNEL MODE - Y
CHANNEL - 59
EXEC CMD KEY - PRESS
S/T OFF
EXECUTE
UPR/LWR ANT - LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

Sub Step 3 Not Performed: _____

NOTE

TACANs may exhibit multipath behavior. If multipath behavior is observed, TACANs may be taken to upper or lower antenna at CNSE discretion. Final antenna selection will be recorded. The following step may be left open until the T-20 minute Hold.

16-605

CNSE

IF TACAN 1 DOES NOT LOCK IN RANGE OR BEARING,

THEN

CURSOR CNTL (VWN42)
UPR/LWR ANT-_____ (UPR/LWR)
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed: _____

NOTE

TACANs may exhibit multipath behavior. If multipath behavior is observed, TACANs may be taken to upper or lower antenna at CNSE discretion. Final antenna selection will be recorded. The following step may be left open until the T-20 minute Hold.

16-606

CNSE

IF TACAN 2 DOES NOT LOCK IN RANGE OR BEARING,

THEN

CURSOR CNTL (VWN42)

UPR/LWR ANT-_____ (UPR/LWR)

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

Not Performed:_____

NOTE

TACANs may exhibit multipath behavior. If multipath behavior is observed, TACANs may be taken to upper or lower antenna at CNSE discretion. Final antenna selection will be recorded. The following step may be left open until the T-20 minute Hold.

16-607

CNSE

IF TACAN 3 DOES NOT LOCK IN RANGE OR BEARING,

THEN

CURSOR CNTL (VWN42)

UPR/LWR ANT-_____ (UPR/LWR)

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

Not Performed:_____

16-608

CNSE

CRT (VWN42)

VERIFY

TACAN 1 RNG VALID GO
TACAN 2 RNG VALID GO
TACAN 3 RNG VALID GO
TACAN 1 BRNG VALID GO
TACAN 2 BRNG VALID GO
TACAN 3 BRNG VALID GO

HARD COPY GMT _____

16-609

CNSE

ASP

212

IF TACAN THUMBWHEELS ARE TO BE SET TO CHANNEL
OTHER THAN 059Y,

THEN

PANEL 07

TACAN 1
CHANNEL TW - _____

TACAN 2
CHANNEL TW - _____

TACAN 3
CHANNEL TW - _____

Not Performed: _____

***** End of OV-103/OV-104 NAVAIDS Activation *****

OV-105 NAVAIDS Activation

NOTE Perform OV-105 NAVAIDS Activation if in support of OV-105.

OV-105 NAVAIDS Activation Not Performed: _____

16-610	NTD	OTC	232
	OTC	CNSE	212

Perform NAVAIDS activation on Channel 212. (10 minutes)

NOTE IDP RSYS is required for the GPS activation.

16-611	CNSE	OTC	132
	OTC	CDPS	

Change responsible console for IDP to console C2. Expect I/O errors during GPS power up.

16-612	CDPS		
---------------	-------------	--	--

```
CONSOLE KYBD
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C2 (X = IDP No.)
XMIT CMD KEY - PRESS

ISSU N72IV10YD #B002 (Y = IDP No. Minus 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY -PRESS
```

16-613	CDPS	OTC	132
	OTC	CNSE	

Responsible console for IDP No. _____ now assigned to Console C2.

16-614 CNSE ASP 212

PANEL O7
 GPS 1
 PRE AMPL
 UPPER SW - ON
 LOWER SW - ON

 GPS 2
 PRE AMPL
 UPPER SW - ON
 LOWER SW - ON

 GPS 3
 PRE AMPL
 UPPER SW - ON
 LOWER SW - ON

16-615 CNSE

CONSOLE KYBD (C2)
 HOME CMD KEY - PRESS
VAA40
 PERF PGM KEY - PRESS

PFP (C2)
VAA40 - PRESS
WARM START - PRESS
VWN43 - PRESS
(SELECT APPL PG-B)

16-616 CNSE ASP 212

PANEL O8
MLS
 CHANNEL
 1 TW - _____
 2 TW - _____
 3 TW - _____

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16-617 CNSE ASP 212

PANEL O8
RADAR ALTIMETER
1 SW - ON
2 SW - ON

GMT _____

16-618 CNSE

CRT (VWN43)
R ALT
1 SW ST ON
2 SW ST ON
1 READY GO
2 READY GO

RECORD

R ALT
1 ALT _____ BD
2 ALT _____ BD

NOTE

GPS receiver mode will transition from Self-Test/INIT to NAV upon power-up.

16-619 **CNSE** **ASP** **212**

PANEL O7
GPS 1
POWER SW - ON

16-620 **CNSE**

CRT (VWN43 PG-B)
VERIFY
GPS 1
RPC A - ON

16-621 **CNSE** **ASP** **212**

PANEL O7
GPS 2
POWER SW - ON

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APPROVED

16-622

CNSE

CRT (VWN43 PG-B)

VERIFY

GPS 2

RPC B - ON

16-623

CNSE

ASP

212

PANEL O7

GPS 3

POWER SW - ON

16-624

CNSE

CRT (VWN43 PG-B)

VERIFY

GPS 3

RPC C - ON

NOTE

Prior to establishing 1-way I/O, wait approximately 1 minute after last receiver has been powered On. This is to give time for the receiver to complete its Power-On Self Test and then transition to NAV mode. This transition can be monitored by watching the receiver status measurement.

16-625

CNSE

CURSOR CNTL (VSN59 PG-B)
I/O ITEM 10+1
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS
PFK XB KEY - PRESS
(WHERE X = IDP ASSIGNED TO C2)

NOTE

GPS will automatically mode to INIT when the Item 10+2 is executed.

16-626

CNSE

CURSOR CNTL (VSN59 PG-B)
I/O ITEM 10+2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

16-627

CNSE

CRT (VSN59 PG-B)
GPS X (X = 1, 2 & 3)
RCVR MODE - INIT
HDR WD - EEEE

16-628

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

16-629

CNSE

CRT (VWN43 PG-B)
VERIFY
GPS X (X = 1, 2 & 3)
MDE - NAV
HDR - FFFF

16-630

CNSE

CRT (VSN59 PG-B)
PFK 7 KEY - PRESS (TERM NAV MONITORING)

16-631

CNSE

CURSOR CNTL (VSN59)
SPEC RESUME
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

16-632

CNSE

CRT (VSN59 PG-B)
VERIFY
RESUME VERIFIED

16-633

CNSE

CURSOR CNTL (VSN59)
CRT RETURN TO DPS
XMIT CURSOR KEY - PRESS

PLACE CURSOR AT THE END OF:

C CO _DEUXG LDBA C12 (X = IDP NO.)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD 0 (Y = IDP No. Minus 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-634

CNSE OTC 132
OTC CDPS

IDP assigned to Console C2 returned to C12.

16-635

CNSE

CURSOR CNTL (VSN59)
TERMINATE
XMIT CURSOR KEY - PRESS

*****End of OV-105 NAVAIDS Activation*****

16-636

CNSE OTC 132
OTC NTD 232

SU17112

NAVAIDS Activation complete.

Trunking Radio Restrictions

NOTE
Perform this option if required to support Range Safety System testing.

Trunking Radio Restrictions Not Performed: _____

16-637	NTD OTC	OTC *PAD *ACM	232	SU17150
---------------	--------------------------	--	------------	----------------

Notify OIC to report to the Pad Leader's desk to pick up DRS radios to be signed out to essential personnel at the Pad Security Gate per NTD approval.

16-638	NTD	OTC *SCC *PSE	232 NET 105
---------------	------------	--	----------------------------------

Position an OIC with a DRS radio at the Pad Gate. No trunking radios are allowed into the Pad for the duration of the SRSS Test.

16-639	NTD	*SEC	232
---------------	------------	-------------	------------

Perform lockout of turnstiles at Pad A for the duration of the Shuttle Range Safety System checkout.

Support: [SEC](#)

16-640 NTD PA

Attention on LC 39:

All trunking radios within the Pad perimeter and all vehicle mounted trunking radios within BDA of the Pad must be turned off at this time. DRS radios are available from the Pad Leader. Only DRS radios are authorized within the Pad Perimeter.

16-641 NTD JFIR 232
 *SEC

Notify Fire/Rescue, EMS, and Security to switch to handheld radio use only inside the BDA for the duration of the Shuttle Range Safety System checkout.

Support: FIRE
Support: SEC

16-642 NTD *SEC 232

Verify Security screening roadblocks are active at A5, A3 and A6. Security to verify that all vehicle mounted trunking radios entering the control area are turned Off and drivers briefed to leave them off for the duration of the Shuttle Range Safety System checkout.

Support: SEC

***** End of Trunking Radio Restrictions *****

(OVERVIEW 2) (Continued)

LATCH STATUS

SEL 1

LATCH 1
SYS 1 - _____
SYS 2 - _____

LATCH 2
SYS 1 - _____
SYS 2 - _____

LATCH 3
SYS 1 - _____
SYS 2 - _____

LATCH 4
SYS 1 - _____
SYS 2 - _____

LATCH 5
SYS 1 - _____
SYS 2 - _____

SEL 2

LATCH 1
SYS 1 - _____
SYS 2 - _____

LATCH 2
SYS 1 - _____
SYS 2 - _____

LATCH 3
SYS 1 - _____
SYS 2 - _____

LATCH 4
SYS 1 - _____
SYS 2 - _____

LATCH 5
SYS 1 - _____
SYS 2 - _____

(OVERVIEW 2) (Continued)

SEL 3
LATCH 1
SYS 1 - _____
SYS 2 - _____
LATCH 2
SYS 1 - _____
SYS 2 - _____
LATCH 3
SYS 1 - _____
SYS 2 - _____
LATCH 4
SYS 1 - _____
SYS 2 - _____
LATCH 5
SYS 1 - _____
SYS 2 - _____

16-645 CPLE ASP 212

PANEL A6U

PAYLOAD RETENTION

PAYLOAD SELECT SW - _____

PAYLOAD RETENTION LATCHES

1 TB _____
2 TB _____
3 TB _____
4 TB _____
5 TB _____

READY TO LATCH

1 TB _____
2 TB _____
3 TB _____
4 TB _____
5 TB _____

16-646

CPLE

CRT (OVRVIEW2)
VERIFY PRLA SYSTEM MEETS REQUIREMENTS.

(OVERVIEW 2)

PAYLOAD SELECT

SW POS - _____

LATCH STATUS

SEL 1

LATCH 1

SYS 1 - _____

SYS 2 - _____

LATCH 2

SYS 1 - _____

SYS 2 - _____

LATCH 3

SYS 1 - _____

SYS 2 - _____

LATCH 4

SYS 1 - _____

SYS 2 - _____

LATCH 5

SYS 1 - _____

SYS 2 - _____

(OVERVIEW 2) (Continued)

SEL 2
LATCH 1
SYS 1 - _____
SYS 2 - _____
LATCH 2
SYS 1 - _____
SYS 2 - _____
LATCH 3
SYS 1 - _____
SYS 2 - _____
LATCH 4
SYS 1 - _____
SYS 2 - _____
LATCH 5
SYS 1 - _____
SYS 2 - _____

SEL 3
LATCH 1
SYS 1 - _____
SYS 2 - _____
LATCH 2
SYS 1 - _____
SYS 2 - _____
LATCH 3
SYS 1 - _____
SYS 2 - _____
LATCH 4
SYS 1 - _____
SYS 2 - _____
LATCH 5
SYS 1 - _____
SYS 2 - _____

16-647 CPLE OTC 212
 ASP

PRLA System Status Verification and Switch Configuration For Flight complete.

***** End of Reposition PRLA Payload Select Switch *****

FEP Demand Update

16-648 LPS C4MC 127
T-03H00M
(HOLDING)

Perform \$FEPCPR, demand update all active FEPs.
Terminate \$FEPCPR at completion of demand update.

JSC OIS COMM Check Complete

16-649 GYCL GYCC 117 SU17147
 GYCC STM 111
 STM NTD 232
 NTD *MIL
 *FLT

T-03H00M
(HOLDING)

IF *FLT supporting TCDT,

THEN COMM checks with JSC on OIS Channel 211 (UHF), 212 (A/G 1) and 213 (A/G 2) complete.

Support: [VCE](#)

Not Performed: _____

(SIM) LRD COMM and Status Checks

16-650 **LRD** **GOM**
 LF1 **BGOM**
 WGOM
 LSO
 ***DCD**

T-03H00M
(HOLDING)

(SIM) Standby for landing site communications checks and initial landing site verifications.

Verify Flight Control Team Status

NOTE
Perform next two steps if *FLT supporting TCDT.

Verify Flight Control Team Status Not Performed: _____

16-651 **NTD** ***FLT** **232** **SU17085**
T-03H00M
(HOLDING)
L-04H30M

Verify Flight Control Team on station.

Variable Ascent Parameter U/L Load

16-652 **NTD** ***FLT** **SU17114**

Proceed with transmission of variable ascent parameters.

***** End of Verify Flight Control Team Status *****

Clear C/W Memory

16-653 OTC ASP 212 SU17115
T-03H00M
(HOLDING)

Status and clear C/W memory per the following steps.

16-654 OTC ASP 212
 CISL

PANEL R13U

CAUTION/WARNING

PARAM STATUS SW - INHIBITED,
HOLD.

RECORD MATRIX LITES ON:

RECORD IN FIGURE 16-5, P-3

PARAM STATUS SW - RELEASE

16-655 OTC ASP 212

PANEL R13U

CAUTION/WARNING

MEMORY SW - READ, HOLD

RECORD MATRIX LITES ON:

RECORD IN FIGURE 16-5, P-5

MEMORY SW - CLEAR, RELEASE

MEMORY SW - READ, HOLD

RECORD MATRIX LITES ON:

RECORD IN FIGURE 16-5, P-4

MEMORY SW - RELEASE

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APPROVED

16-656 OTC ASP 212

PANEL F7

CAUTION/WARNING ANNUNCIATOR PANEL
REPORT ANNUNCIATOR ON LITES:

RECORD IN FIGURE 16-5, P-1

Flight Crew Weather Briefing

NOTE

Perform next six steps **only** if weather briefing is planned for this mission and MCC supporting TCDT. VITT will inform NTD/OTC of option.

Flight Crew Weather Briefing Not Performed: _____

16-657	*FLT	NTD	232	SU17137
	NTD	STM		SU17133
	STM	GYCC	111	SU17305
		JYVO	138	
	GYCC	GYVW	PTP	

T-03H00M
(HOLDING)
(L-3H55M)

Implement televised weather display to following locations. Weather briefing audio to be on OIS Channel 231.

1. Flight Crew Quarters O&C Room 3267, monitors 2033 and 2034. (Circuit nos. 6TVM2080 and 6TVM2087)
2. FR3 OSR (SW 1 input 187 to output 383).
3. ER/ROCC forecast facility, Room 146. (Circuit nos. either 6TVC2079 or 6TVC2083)
4. FR4 OSR (User selects input MISC 187)

Support: [OTV](#)
Support: [WB](#)

16-658 **STM** **JYVO** **138**

Verify JSC Weather briefing feed on OTV switcher source 187.

Support: [OTV](#)

16-659 GYVW GYCC PTP

Video for Weather briefing in Crew quarters and to ER is ready.

Support: [WB](#)

16-660 JYVO GYCC PTP

Video for Weather briefing to FR3/4 OSR and Flight Crew quarters is ready.

Support: [OTV](#)

16-661 GYCC STM 111
 STM NTD 232
 NTD *FLT
 LD

Video system ready for Flight Crew Weather briefing.

Support: [COMM](#)

16-662 *FLT NTD 232
 NTD STM
 STM JYVO 138
 GYCC 111
 GYCC GYVW PTP

T-03H00M
(HOLDING)

Weather briefing complete. Support released.

Support: [OTV](#)
Support: [WB](#)

***** End of Flight Crew Weather Briefing *****

MCCH Abort Advisory Checks

NOTE

If *FLT is supporting TCDT, perform MCCH Abort Advisory Checks.

MCCH Abort Advisory Checks Not Performed: _____

NOTE

Do not perform Abort Advisory Check while COMM command to Launch config in progress.

16-667	NTD	OTC	232	SU17046
		*MIL		
	OTC	ASP CISL	212	

Standby for Abort Advisory Checks.

16-668	NTD	*FLT	232
--------	-----	------	-----

Verify system armed and ready to perform Abort Advisory Check on OIS Channel 212.

16-669	NTD	*MIL	232
--------	-----	------	-----

Verify configured to support FLT Abort Advisory Checks.

16-670	NTD	*FLT	232
--------	-----	------	-----

Perform FLT Abort Advisory Checks on OIS Channel 212.

NOTE

Next 12 steps verify MCC Flight Director console.

16-671 ***FLT**

 Transmit DSM 4054 (abort A/B - On)

16-672 **ASP**

 PANEL F6
 ABORT LITE ON

16-673 ***FLT**

 Transmit DSM 4053 (Abort B off)

16-674 **ASP**

 PANEL F6
 ABORT LITE ON

16-675 ***FLT**

 Transmit DSM 4051 (Abort A off)

16-676 **ASP**

 PANEL F6
 ABORT LITE OFF

16-677 *FLT

 Transmit DSM 4054 (Abort A/B on)

16-678 ASP

 PANEL F6
 ABORT LITE ON

16-679 *FLT

 Transmit DSM 4051 (Abort A off)

16-680 ASP

 PANEL F6
 ABORT LITE ON

16-681 *FLT

 Transmit DSM 4053 (Abort B off)

16-682 ASP

 PANEL F6
 ABORT LITE OFF

NOTE
Next six steps verify MCC Flight Dynamics Officer console.

16-683

***FLT**

Transmit DSM 4054 (Abort A/B on)

16-684

ASP

PANEL F6
ABORT LITE ON

16-685

***FLT**

Transmit DSM 4051 (Abort A off)

16-686

ASP

PANEL F6
ABORT LITE ON

16-687

***FLT**

Transmit DSM 4053 (Abort B off)

16-688

ASP

PANEL F6
ABORT LITE OFF

16-689

***FLT** **NTD** **232**
NTD **OTC**

[SU17046](#)

Abort Advisory Checks complete.

*****End of MCCH Abort Advisory Checks*****

SSME Preps and Purge Activation

16-690 OTC CSME 212 SU17116
 CCME
 CMQC

Perform SSME preps and purge activation per SSME system preps for TCDT (S0017.300 OP 34) on Channel 146.

IMUs To Operate

NOTE

SPEC 104 is required on CRT 2 for IMU operations and will be called by CGNC.

During IMU ATT DET, do not perform TCS-S or ECP's.

IDP2 To C11

16-691 OTC CDPS 212
T-03H00M
(HOLDING)

Change responsible console for IDP2 to C11.

16-692 CDPS

CONSOLE KYBD
C CO _DEU2G LDBA C11
XMIT CMD KEY - PRESS

16-693 CDPS

CONSOLE KYBD
ISSU N72IV101D #B00B
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-694 OTC CGNC 212 SU17117
T-03H00M
(HOLDING)

Perform OMI [V1123.270 IMU Operate](#) , and attitude determination.
(30 Minutes)

RT OMI Log No. _____

Activate IMU Operate LCC EMON

16-695

CGNC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

16-696

CGNC

CURSOR CNTL (SAB20/SWB02 PG-A)
A-IMU OPERATE
XMIT CURSOR KEY - PRESS

16-697

CGNC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (DEACT EMON SETUP)

Initiate IMU ATT DET and PFA Auto Sequence

NOTE

The next two steps will initiate an auto sequence start for the following:

IMU PPOS	at T-2 hr 04 minutes
IMU ATT DET	at T-1 hr 57 minutes
IMU PFA	at T-1 hr 47 minutes

PFK 14B (VABM1/VWB19) will deactivate auto sequence. PFK 14B is available anytime after auto sequence is activated.

16-698

CGNC

APPL PAGE (VABM1/VWB19 PG-A)
PFK4 - PRESS (DISK FILES SECT 4)
PFK8 - PRESS (CLEAR DISK FILE SECTOR)
PFK9 - PRESS (INHIBIT WRITE/CLEAR PAGE)

16-699

CGNC

CURSOR CNTL (VABM1/VWB19 PG-B)
ATT DET/PFA AUTO SEQ
XMIT CURSOR KEY - PRESS

NOTE

DPS will perform Fault Summ Page Clear following GNC I/O resets for moding IMU's to operate.

Fault Summ Page Clear

16-700 **OTC** **CDPS** **132**

Perform Fault Summary Page Review and Clear.
Report completion.

16-701 **CDPS**

CURSOR CNTL (SAS01 PG-B)
FAULT SUMMARY PAGE DISPLAY (VASE2)
XMIT CURSOR KEY - PRESS

CRT (SAS01 PG-B)
VERIFY NO UNEXPLAINED FAULT MESSAGES

APPL PAGE (SAS01 PG-B)
PFK2 KEY - PRESS

16-702 **CDPS**

CONSOLE KYBD
DEUE DEST,GN,1,LDBA
XMIT CMD KEY - PRESS

DEUE SPEC 99 PRO
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT (VAS59 PG-B)
DEU 1 DISP ID = 990

16-703 **CDPS**

CONSOLE KYBD
DEUE RESUME
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

MDM Discrettes Read Check

16-704 **OTC** **CDPS** **132**
T-03H00M
(HOLDING)

Perform T-3H BT4 snapshot on Command Decoder, flight critical and Payload MDMs to status discrete outputs.

16-705 **CDPS**

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

16-706 **CDPS**

CURSOR CNTL (SAS01 PG-B)
MDM DISCRETE OUTPUT CK (VAS94)
XMIT CURSOR KEY - PRESS

16-707 **CDPS**

PFK2 KEY - PRESS

16-708 **CDPS**

CURSOR CNTL (VAS94 PG-B)
T-3HR SNAPSHOT
XMIT CURSOR KEY - PRESS

NOTE

Perform next step upon receipt of original copy.

16-709 CDPS

APPL PAGE (VAS94 PG-B)
PFK15 KEY - PRESS

16-710 CDPS

RETRIEVE BT4 ORIGINAL COPY WITH T-3HR MISCOMPARES
FROM CONSOLE PRINTER. ANNOTATE PAGE NUMBERS ON
COPY AND DELIVER TO TPE.

16-711 CDPS OTC 132

T-3H snapshot on Command Decoder, Flight critical and Payload MDMS
complete.

16-712 CTPE

BT4 TO BE DISTRIBUTED TO ALL FR SYSTEMS AS
FOLLOWS:

- C2/C10 - TWO COPIES FOR CCSE AND CEPD TO
REVIEW
- C3/4 - ONE COPY FOR CMPS TO REVIEW
- C5/6 - FIVE COPIES FOR CPVD, CAFM, CPLE, CECL
AND CFCP TO REVIEW
- C7/8 - THREE COPIES FOR COOS, CHYD AND CAPU
TO REVIEW
- C9 - ONE COPY FOR CISL TO REVIEW
- C11/12 - FOUR COPIES FOR COFC, CGNC, CDPS AND
CCME TO REVIEW
- INTEG - ONE COPY FOR CTPE TO REVIEW

TPE WILL PRODUCE SEVENTEEN COPIES AND DISTRIBUTE.

16-713

CGSS

CONSOLE KEYBOARD
KBD ENABLE KEY - PRESS
VERIFY LITE ON.
FRONT KEY - PRESS
SELECT 'TEXT ATTRIBUTES'
SELECT CYAN COLOR.

16-714

CGSS

CONSOLE KEYBOARD
ENTER VAJ14
PERF PGN KEY - PRESS
SELECT APP PG-B - VAJ14
OAA SAFING PANEL
VERIFY ALL SWITCHES OFF

Switch OIS CMD Channel (Orbiter)

16-715 NTD OTC 232 SU17118
T-03H00M
(HOLDING)

All Orbiter Test Team Personnel switch to CMD Channel 212 active.

16-716 OTC ALL 132

All Orbiter personnel switch to command Channel 212 and standby for COMM check. **Continue** to sidetone Channel 132 for duration of count.

Orbiter OIS COMM Check

16-717 OTC ALL 212 SU17234

Perform COMM check on OIS Channel 212. (* COFC will substitute)

CCSE	_____	CISL	_____
CNSE	_____	CEPD	_____
CPLE	_____	CGNC	_____
CAFM	_____	COFC	_____
CMPL	_____	*CHYD	_____
CMPS	_____	*CAPU	_____
CSME	_____	CODS	_____
CECL	_____	CCME	_____
CPVD	_____	CGLS	_____
CFCP	_____	CDPS	_____
CGSS	_____	CVFS	_____
COOS	_____	CTPE	_____
		CMQC	_____
		OVCC	_____

MDM Discrete Output Verification

16-718 OTC ALL 212 SU17119

All systems listed below are to review MDM discrete outputs and miscompares in listing delivered to them. Verbal OK on MDM discrete configuration must be received from each system by end of hold at T-3 hours.

(*COFC will substitute)

CCSE _____	CISL _____
CAFM _____	CEPD _____
CPLE _____	COFC _____
CMPS _____	*CAPU _____
CECL _____	*CHYD _____
CPVD _____	CGNC _____
COOS _____	CCME _____
CFCP _____	CDPS _____

JSC BT4 Coordination

NOTE

Perform JSC BT4 coordination if MCCH is supporting S0017.

JSC BT4 Coordination Not Performed: _____

16-719 CTPE

Communicate BT4 deltas to JSC MOD DPS representative via OIS or FAX to FAX number (281) 483-3663.

16-720 CTPE OTC 212
 OTC NTD 232

BT4 deltas have been communicated to JSC.

16-721 *FLT

Review transmitted BT4 deltas. Coordinate any issues with responsible JSC engineering and KSC OPE/TPE.

16-722	*FLT	NTD	232
	NTD	OTC	
	OTC	CTPE	132

*FLT review of MDM BT4 data is complete.

*** End of JSC BT4 Coordination ***

NOTE

Perform next step if analysis of MDM discrete output shows FDs that are not in correct state for a TCDT T-3 hour configuration (there will be many explained miscompares for TCDT that do not have to be listed below).

16-723	CTPE	ALL	132
--------	------	-----	-----

IF review of the MDM discrete output reveals any unexplained TCDT T-3 hour miscompares,

THEN list miscompares below and (if necessary) **set** commands to proper state via system GOAL software or Console Command Processor using the syntax: Set (FD) (On or Off) - XMIT CMD/EXEC CMD):

<u>MSID</u>	<u>Nomen</u>	<u>System</u>	<u>State</u>	<u>State Commanded To</u>

All miscompares must be understood and explained. Any unexplained miscompares must be documented in PRACA. If any miscompares must be set or reset, this may be done after obtaining concurrence from the owner system, SPE and FLT. Changes to FDs are documented by listing the new state in the "State Commanded To" column. If any miscompares are understood and are to be left as-is for the remainder of TCDT, then enter "N/R" (Not Required) in the "State Commanded To" column for that FD.

Not Performed: _____

(SIM) LRD COMM Checks

NOTE
Perform COMM checks at L minus 3 Hours 30 Minutes.

16-724

LRD LSO LF1

(SIM) KSC ready to configure for convoy COMM checks.

16-725

LRD STM 135
STM GYCC 111

T-03H00M
(HOLDING)

(SIM) Verify ready for convoy COMM checks on UHF 259.7 MHz,
convoy commander and cooling nets.

Support: [COMM](#)

16-726

GYCC GYRM NET 107

(SIM) Verify Technician on standby at convoy commander vehicle to
support COMM checks.

Support: [VCE](#)

16-727

GYCC *VCE COMM COORD NET
***VCT**

(SIM) Verify UHF, Convoy Commander and cooling nets configured for
convoy COMM checks.

Support: [COMM](#)

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16-728	GYCC	STM	111
	STM	LRD	135

(SIM) Ready to support COMM checks.

Support: [COMM](#)

16-729	LRD	NTD	232
	NTD	OTC	

(SIM) Ready for convoy COMM checks. **Request** concurrence for NIB COMM checks on Orbiter UHF 259.7 MHz.

16-730	LRD	LSO	LF1
	LF1		

(SIM) Ready to perform convoy COMM checks on UHF with Houston COMM Tech (*VCT) and on Convoy Commander and cooling nets with Houston voice (*VCE).

16-731 LRD *VCT UHF
 NCC

(SIM) Perform UHF/OMNI voice checks on 259.7 MHz.

16-732 LRD *VCE CCN
 NCC

(SIM) Perform KSC Convoy Commander and cooling net COMM checks.

16-733 LRD LSO LF1
 STM 135
 GYCC 111

(SIM) Convoy radio checks on UHF, Convoy Commander and cooling nets with JSC complete.

Support: [COMM](#)

16-734 GYCC *VCE COMM COORD NET
 *VCE *GC

(SIM) KSC convoy COMM checks complete.

Support: [COMM](#)

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16-739

COOS

(SIM) CRT (VAD90)
VERIFY VALVES CONFIGURED FOR FLIGHT

16-740

COOS

(SIM) OMS/RCS crossfeed valves configured for flight .

Pad FIREX Configuration

16-741 NTD JFIR 232 SU17139
 *SCC

Verify fire/rescue support in district to support FIREX outage.

Support: FIRE

16-742 NTD OTC 232
 TBC
 *SCC

FSS FIREX drainback is about to begin. Verify no Class C (Hyper OPS) are in progress.

NOTE

No class C hazardous operations may be performed at the Pad until FSS and RSS FIREX is returned to service.

NOTE

This OMI will control MLP and FSS FIREX water systems configuration for test duration. No outage is required for these systems to be configured to meet test requirements.

16-743 NTD STM 232 SU17140
 STM JBFX 111

Configure for dry cycle water operations per Doc: JOB PLAN M3203.5 (LI) Configure FIREX for Dry Cycles for TCDT .

Support: CWSS
Support: WSSA

Transfer Control of Sound Suppression System CCC To FR

16-744
T-03H00M
(Holding)

STM JBWC 111

Verify Sound Suppression Water System has been configured to Support.

Support: [CWSS](#)

16-745

STM NTD 232
NTD OTC
OTC CGSS 132

[SU17148](#)
[SU17144](#)

CCC ready to transfer control of Sound Suppression Water to Firing Room.

Request CGSS contact JBWC on Channel 123.

16-746

STM JBWC 111

Transfer control of Sound Suppression Water System to Firing Room control.

Support: [CWSS](#)

16-747

JBWC CGSS 123

Verify ready for control transfer.

Support: [CWSS](#)

16-748

CGSS

CURSOR CNTL (VAJ14)
 VAJ12 - ON
VERIFY

1. TANK LEVEL:
 Upper - GREATER THAN 100 FEET
 Lower - LESS THAN 50 FT.

2. GN2 PRESS
 PT 1 GREATER THAN 1200 PSI, LESS THAN 1700 PSI
 PT 2 GREATER THAN 1200 PSI, LESS THAN 1700 PSI

			<u>CMD</u>	<u>MEAS</u>
3.	CCC LOCKOUT	ON	- -	X -
4.	CCC ENABLE CMD	OFF		X -
5.	CCC ENABLED IND	ON	- -	X -
6.	FR ENABLED IND	OFF	- -	-
			<u>CMD</u>	<u>MEAS</u>
7.	SS SOL PWR BUS ON CMD	OFF		X X
8.	SS SOL PWR BUS OFF CMD	OFF		- -
9.	SS FR CMD BUS PWR ON CMD	OFF		
10.	PRE L/O VENT VLV OPEN CMD	OFF		- -
11.	PRE L/O VLVS OPEN CMD IND	OFF		-
12.	PRE L/O VLVS CLOSE CMD IND	ON	- -	X -

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- | | | | | |
|-----|---|-----|---|---|
| 13. | POST L/O VENT
VLV OPEN CMD | OFF | - | - |
| 14. | POST L/O VLVS
OPEN CMD IND | OFF | - | - |
| 15. | POST L/O VLVS
CLOSED CMD IND | ON | - | X |
| 16. | VV5,6,7,8,9,10
GRAPHIC BLOCKS - SOLID GREEN | | | |
| 17. | PREV25,26,27 AND POST V28,29,30
BLOCKS - SOLID GREEN | | | |
| 18. | STATUS ARROW - CYCLING | | | |

16-749 CGSS JBWC

Ready for transfer of Sound Suppression control to Firing Room.

Support: CWSS

16-750 JBWC CGSS 123

Stand by for control transfer.

Support: CWSS

NOTE

CCC will transfer control of Sound Suppression System to Firing Room by performing next step.

16-751

JBWC

PERFORM THE FOLLOWING (SCREEN P2A/P2B) :

1. VERIFY:

<u>INDICATOR</u>	<u>STATE</u>
SS CCC ENABLE	ON
SS FR-OFF/CCC-ON	ON
SS FR ENABLE	OFF
SS FR-ON/CCC-OFF	OFF

2. ISSUE SS CONTROL TRANSFER CCC TO FR COMMAND

3. VERIFY:

<u>INDICATOR</u>	<u>STATE</u>
SS CCC ENABLE	OFF
SS FR-OFF/CCC-ON	OFF
SS FR ENABLE	ON
SS FR-ON/CCC-OFF	ON

Support: [CWSS](#)

16-752

JBWC CGSS 123
JBWC STM 111

Sound Suppression System transferred to Firing Room control.

Proceed with FR verification.

Support: [CWSS](#)

16-753 CGSS

VERIFY SOUND SUPPRESSION CONTROL TRANSFER
COMPLETE BY OBSERVING VAJ14 SKELETON STATUS AS
FOLLOWS:

CONTROL
CCC OFF
FR ON

16-754	CGSS	OTC	132	SU17148
	OTC	NTD	232	SU17144

Transfer of Sound Suppression System CCC to Firing Room complete.

Emergency Egress Flame Detection System Initiation

16-755 CGSS SU17120

CURSOR CNTL (VAJ14)
VAJ15 - ON

16-756 CGSS

CRT (VAJ15)

VERIFY
ALL TEMPERATURE DETECTORS LESS THAN 120 DEG F.
ALL FLAME DETECTORS OFF.

16-757	CGSS	OTC	132	SU17120
	OTC	NTD	232	

Emergency Egress Flame Detection System monitoring activated.

16-758 OTC CGSS 132

Monitor Sound Suppression and Emergency Egress Flame Detection System per Orbiter, Operation 120 (S0017.100) - Sound Suppression/Emergency Egress Flame Detection Monitor.

NOTE

The transfer of control of Orbiter FIREX systems from CCC to Firing Room will be a simulated operation.

(SIM) Transfer Control of Orbiter FIREX Systems - CCC To FR

16-759 JBFX STM 111

(SIM) Ready to support FIREX transfer to Firing Room.

Support: [CWSS](#)

16-760 STM NTD 232
 NTD OTC
 OTC CMPL 132

(SIM) CCC ready to transfer control of Orbiter FIREX systems to Firing Room. **Request** CMPL contact JBFX on Channel 123.

16-761 STM NTD 232

(SIM) We are now transferring control of Orbiter FIREX systems to Firing Room.

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16-762

CMPL

(SIM) PERFORM FOLLOWING:

CONSOLE KYBD
SAE02
PERF PGM KEY - PRESS

CURSOR CONTROL (SAE02)
SSME WATER SPRAY
XMIT CURSOR KEY - PRESS

CRT (SAE02)
SSME WATER SPRAY SYSTEM
VERIFY "CONTROL DISABLED"
DISPLAYED

16-763

CMPL JBFX 123

(SIM) Ready for Orbiter FIREX systems control transfer to Firing Room.

Support: [CWSS](#)

NOTE

CCC will transfer control of Orbiter FIREX systems to Firing Room by performing next step.

16-764

JBFX

(SIM) PERFORM THE FOLLOWING (SCREEN P2A/P2B) :

1. (SIM) VERIFY:

<u>INDICATOR</u>	<u>STATE</u>
FX CCC ENABLE	ON
FX FR-OFF/CCC-ON	ON
FX FR ENABLE	OFF
FX FR-ON/CCC-OFF	OFF

2. (SIM) ISSUE FX CONTROL TRANSFER CCC TO FR
COMMAND

3. (SIM) VERIFY:

<u>INDICATOR</u>	<u>STATE</u>
FX CCC ENABLE	OFF
FX FR-OFF/CCC-ON	OFF
FX FR ENABLE	ON
FX FR-ON/CCC-OFF	ON

16-765

JBFX	CMPL	123
	STM	111
STM	NTD	232
NTD	OTC	

(SIM) Orbiter FIREX systems control transferred to Firing Room control.

Support: [CWSS](#)

16-766 OTC CMPL 132

(SIM) Verify Orbiter FIREX systems control transfer complete (by observing SAE02 skeleton status as follows):

Verify "Control Enabled" displayed

16-767 CMPL OTC 132
 OTC NTD 232

(SIM) Orbiter FIREX system control now at MPS console (C3). CMPL now has control of T-0 umbilical, ORB skin spray and SSME heat shield waters. CMPL will not initiate any flow except through NTD/OTC direction.

16-768 JBFX STM 111 SU17221
 STM NTD 232 SU17140
 *SCC

RSS FIREX water systems are isolated and FSS FIREX water systems are drained.

Support: [CWSS](#)

16-769 NTD STM 232
 STM JBFX 111

Have JBFX report to NTD on Channel 232 for COMM check and briefing, monitor channel 232 and flow FIREX water (not under FR control) where directed by NTD Emergency Instructions (FIREX areas are listed in Support Emergency Instructions).

Support: [CWSS](#)

16-770 CSME OTC 132 SU17116

SSME Preps and Purge Activation complete.

Sound Suppression Water Valve Operation

16-771
T-03H00M
(HOLDING)

STM JBWC 111

SU17146

Remove padlocks and open hydraulic locking valves on all 48 in. valves and reinstall padlocks per [Doc: JOB PLAN M3203.6 \(LI\) Sound Suppression Valve Complex Closeout for TCDT](#) .

Support: CWSS
Support: WSSA

Essential Personnel For Sound Suppression Water Valve Operation	
	SPOC
Super/ENG	2
SYS Techs	2

16-772

STM VEEE DIR 2

SU17142

Verify Elevator Technician on standby at FSS for Crew ingress.

Support: CDPD

Terminate VARAI

16-773
T-03H00M
(HOLDING)

CFCP OTC 132
OTC CTPE

CFCP will monitor PRSD tank heater status for remainder of countdown. Terminate VARAI (CL inhibited, EM active).

16-774

CTPE

CRT (VARAI PG-A)
PFK1 - PRESS TWO TIMES
PFK2 - PRESS

VERIFY TERMINATION MSG

16-775 **CTPE** **OTC** **132**
T-03H00M
(HOLDING)

VARAI is terminated.

RSYS Transfer to C6

16-776 **CTPE**

Transfer RSYS to C6 for
RSYS Group 48 FC/PRSD RCL FDs via Integration RSYS Transfer
Software (SAP30).

16-777 **CTPE** **LPS** **127**

SLP50 (PG-5B)
Verify solid cursor block for
FCP/PRSD RSYS at SYS console.

16-778 **LPS** **CTPE** **127**

RSYS is at System console for FCP/PRSD.

***** End of RSYS Transfer to C6 *****

BFS Met Selection

16-779 OTC ASP 212

AFT KYBD (BFS KYBD)
SPEC 0
PRO

CRT 4
BFS MEMORY

16-780 OTC ASP 212

AFT KYBD (BFS KYBD)
ITEM 40
EXEC

CRT 4
MET 40 *

16-781 OTC ASP 212

AFT KYBD (BFS KYBD)
SPEC 99
PRO
RESUME

****End of BFS Met Selection ****

16-787 NTD *ACM DIR 8

Terminate tour access to FSS/RSS at this time until Flight Crew training is complete.

SRB RGA Powerup and Torque Test

16-788 TBC CAFC 136 [SU17157](#)
T-03H00M
(COUNTING)

Perform SRB RGA power up and torque test.

16-789 CAFC

CURSOR CNTL (SAB19/SWB01)
SRB RGA - OPS MAN
XMIT CURSOR KEY - PRESS

16-790 CAFC

CURSOR CNTL (BAF05/BWF01)
SRGA PWR UP WITH TQ
ALL SRGA'S
XMIT CURSOR KEY - PRESS

16-791 CAFC

CURSOR CNTL (BAF05/BWF01)
START TEST
XMIT CURSOR KEY - PRESS

NOTE

The SRGA torque test is delayed approx 5 minutes. from the time the last SRGA is turned on.

16-792

CAFC

CRT (BAF05/BWF01)
VERIFY
ALL SRB RGA'S POWERED UP WITHOUT
ERROR.

16-793

CAFC

CRT (BAF05/BWF01)
VERIFY
SRB RGA TORQUE TEST COMPLETE
WITHOUT ERROR.

16-794

CAFC

APPL PAGE (BAF05/BWF01)
PFK15 KEY - PRESS (TERM BAF05)

Activate SRB RGA LCC EMON

16-795

CAFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

16-796

CAFC

CURSOR CNTL (SAB20/SWB02 PG-A)
A - SRB RGA
XMIT CURSOR KEY - PRESS

16-797

CAFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (DEACT EMON SETUP)

16-798

CAFC	TBC	136
TBC	NTD	232

[SU17157](#)

SRB RGA Powerup, Torque Test and LCC Activation complete.

16-799

NTD	STM	232
STM	JYVR	138

[SU17222](#)

T-03H00M
(COUNTING)

Start video recording of OTV camera 073.

Support: [OTV](#)

Sound Suppression Water Valves Configured

16-800

JBWC	STM	111
------	-----	-----

[SU17146](#)

Hydraulic locking valves open, padlocks reinstalled.

Support: [WSSA](#)

Configure BAT04

16-801 TBC CHPU 136

Configure BAT04 for S0017.

16-802 CHPU

IF BAT04 NOT ACTIVE,

THEN

HOME CMD KEY - PRESS

CONSOLE KYBD

BAT04

PERF PGM KEY - PRESS

Not Performed: _____

16-803 CHPU

CRT (BAT04)

NOTE DISPLAY FILLED

16-804 CHPU

CURSOR CNTL (BAT04)

C/D MODE

XMIT CURSOR KEY - PRESS (UNTIL LNH)

16-805 CHPU TBC 136

BAT04 is configured for S0017.

16-811	NTD	STM	232	SU17160
	STM	JYVO	138	SU17225
		JYVR		

T-02H55M

FLT Crew departing O&C enroute to Launch Pad. Video track and record through ingress.

Support: OTV

16-812	NTD	ALL	212
			136
			232

FLT Crew departing O&C enroute to the Launch Pad. All Console Operators monitor your system's performance and notify NTD immediately of any problems/trends that could affect Flight Crew or Closeout Crew Safety.

(SIM) COLA Identification

16-813	NTD	SRO	232	SU17161
--------	-----	-----	-----	---------

IF ER is supporting TCDT,

THEN (SIM) Identify any collision avoidance (COLA's) times for this Launch window or Launch period.

COLA 1 _____Z to _____Z

COLA 2 _____Z to _____Z

COLA 3 _____Z to _____Z

Not Performed: _____

Clear Astrovan Through Pad Gate

16-814 NTD *SEC 232 SU17160

Clear Astrovan and Security escort personnel to Pad gate.

Support: SEC

16-815 *SEC NTD 232

Astrovan and Security escort personnel cleared to Pad gate.

Support: SEC

16-816 NTD *AVN DIR 7

Astrovan cleared to Pad surface.

Support: SEC

(SIM) Ice/Debris Inspection Report

NOTE

CICE will report any OMRS violations, IPR conditions or detrimental environmental conditions on CMD channel.

16-817 CICE NTD 232
T-02H45M

(SIM) Notify Launch Director and Launch Managers that Ice Team ready to give ice/debris report.

16-818 CICE NTD 232

(SIM) Detailed engineering report of ice/debris inspection will now be given on Channel 245.

Launch Commit Criteria Verification

16-819	NTD	OTC	232	SU17169
		TBC		
		PTC		
		STM		
		*FLT	(If supporting TCDT)	
		*MIL		
		SRO	(If supporting TCDT)	
		LPS		
		CSPE		

T-02H45M

Verify no violation of Launch Commit Criteria

Payload Launch Commit Criteria

16-820	PTC	SLES	134
T-02H45M			

Verify your system meets Launch Commit Criteria.

Orbiter Launch Commit Criteria

16-821 OTC ALL 212
T-02H45M

Verify your system meets Launch Commit Criteria requirements for Crew boarding phase at T-2H30M.

CAFM _____	CAPU _____
CPLE _____	CHYD _____
CCSE _____	CISL _____
CNSE _____	CEPD _____
CMPL _____	COFC _____
CMPS _____	CGNC _____
CSME _____	CDPS _____
CECL _____	CODS _____
CFCP _____	CCME _____
CPVD _____	
CGSS _____	
COOS _____	

ET/SRB Launch Commit Criteria

16-822 TBC ALL 136
T-02H45M

Verify your system meets Launch Commit Criteria requirements.

CISL _____	CPWR _____
CBDP _____	CHPU _____
CMEC _____	CBRS _____ (if supporting TCDDT)

Support Launch Commit Criteria

16-823
T-02H45M

JSTC JFIR 114

(SIM) Verify your system meets Launch Commit Criteria requirements.

Support: [FIRE](#)

16-824

STM JSTC 111

GYCC
JBFX

T-02H45M

GYCC GOIS 117

(SIM) Verify your system meets Launch Commit Criteria requirements.

Support: [JSTC](#)
Support: [VCE](#)
Support: [WSSA](#)
Support: [COMM](#)

Report LCC Status

16-825

OTC NTD 232

TBC
PTC
STM
LPS

*FLT (If supporting TCDT)

*MIL
SRO (If supporting TCDT)

CSPE

T-02H40M

Launch Commit Criteria status is:
(Report LCC Status)

(SIM) LRD COMM and Status Checks

16-826	LRD	GOM	LFP-1
	LF-1	BGOM	
		WGOM	
		LSO	
		*DCD	

T-02H40M

(SIM) Standby for landing site communications check and initial landing site verifications ready for Launch.

NOTE

Landing sites and landing aids status to be updated once every 8 hours during mission.

1. Weather conditions.
2. Landing constraints and runway status.
3. Convoy and GSE status.
4. Verify landing sites pre-operations are on schedule to support lift-off time.

SRB Tracking System (SRBTS) Checkout

NOTE
Perform SRB Tracking System (SRBTS) Checkout if FCA support is available.

SRB Tracking System (SRBTS) Checkout Not Performed: _____

16-827	TBC NTD	NTD SRO	232	SU17232
---------------	--------------------------	--------------------------	------------	-------------------------

Verify ER Beacon Readout (FCA) van on station at UCS-7 (Pad A).

16-828	SRO NTD	NTD TBC	232	SU17231
---------------	--------------------------	--------------------------	------------	-------------------------

ER Beacon Readout (FCA) van ready to support SRBTS checkout.

16-829	NTD TBC	TBC CBRS	232 136
---------------	--------------------------	---------------------------	--------------------------

Power up SRB tracking system.

16-830	CBRS
---------------	-------------

CURSOR CNTL (SWRB2)
LH TRANSPONDER INST ON
XMIT CURSOR KEY - PRESS
RH TRANSPONDER INST ON
XMIT CURSOR KEY - PRESS

16-831

CBRS

CRT (SWRB2)
LH AND RH TRANSPONDER VOLT
BETWEEN 24-38.4V

LH AND RH TRANSPONDER CURR
LESS THAN 0.2 AMP

16-832

CBRS

CRT (SWRB2)
RECORD:
LH TRANSPONDER CURR _____ AMPS

RH TRANSPONDER CURR _____ AMPS

16-833

CBRS

CURSOR CNTL (SWRB2)
LH TRANSPONDER INST ON AND TRAN ON
XMIT CURSOR KEY - PRESS
RH TRANSPONDER INST ON AND TRAN ON
XMIT CURSOR KEY - PRESS

16-834

CBRS

CRT (SWRB2)
LH AND RH TRANSPONDER VOLT
BETWEEN 24-38.4V

LH AND RH TRANSPONDER CURR
HAS INCREASED 0.5+/-0.2 AMPS
FROM PRE-POWER ON VALUE.

RECORD:

LH TRANSPONDER CURR _____ AMPS

RH TRANSPONDER CURR _____ AMPS

16-835

CBRS

Allow 3 minutes warm up prior to range interrogation.

OMRS (general) [B55GEN.030](#)

16-836

CBRS	TBC	136
TBC	NTD	232
NTD	SRO	

SRBTS power up complete. Ready for ER Beacon Readout (FCA) van
checkout of SRBTS. CBRS request SRO support on OIS Channel 175.

16-837 SRO CBRS 175

LH SRBTS interrogation has started and vehicle is responding.

16-838 CBRS

CRT (SWRB2)
LH TRANSPONDER CURRENT
LESS THAN 1.1 AMP

16-839 SRO CBRS 175

LH SRBTS interrogation complete. RH SRBTS interrogation has started
and the vehicle is responding.

16-840 CBRS

CRT (SWRB2)
RH TRANSPONDER CURRENT
LESS THAN 1.1 AMPS

16-841 SRO CBRS 175

RH SRBTS testing complete. Faxing data to Firing Room 4 (861-0472)

16-842 CBRS

Record beacon data:

	<u>LH</u>	<u>RH</u>
Van/Radar used		
Van Location		
Power Output(XX.)		
Sensitivity(XX.)		
ANT Pol		
Pulse Upper(.X) Lower(.X)		
Pulse Code(.XX)		
Delay(.XX)		
Jitter		
Recovery Time(XX.)		
Pulse Width(.XX)		
High 1000 Prf Interr Freq(.X)		
High 1000 Prf Trans Freq(.X)		
Low 160 Prf Interr Freq(.X)		
Low 160 Prf TransFreq(.X)		
Time		
Compatibility		

16-843 CBRS SRO 175

C-band beacon test data is satisfactory. ER Beacon Readout (FCA) van support can be released.

16-844 **CBRS**

CURSOR CNTL (SWRB2)
LH TRANSPONDER INST ON & TRAN OFF
XMIT CURSOR KEY - PRESS
RH TRANSPONDER INST ON & TRAN OFF
XMIT CURSOR KEY - PRESS

16-845 **CBRS**

CRT (SWRB2)
LH AND RH TRANSPONDER VOLT
BETWEEN 24-38.4V

LH AND RH TRANSPONDER CURR
LESS THAN 0.2 AMP

16-846 **CBRS**

CURSOR CNTL (SWRB2)
LH TRANSPONDER INST OFF AND TRAN OFF
XMIT CURSOR KEY - PRESS
RH TRANSPONDER INST OFF AND TRAN OFF
XMIT CURSOR KEY - PRESS

16-847 **CBRS**

CRT (SWRB2)
RECORD:
LH TRANSPONDER BATT CURR
_____ LESS THAN 0.04 AMPS

RH TRANSPONDER BATT CURR
_____ LESS THAN 0.04 AMPS

05-13-2011
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OMI S0017.200 A28
APPROVED

16-848	SRO	CBRS	175	SU17231
	CBRS	TBC	136	
	TBC	NTD	232	

SRBTS ER Beacon Readout (FCA) Checks are complete.

***** End of SRB Tracking System (SRBTS) Checkout *****

SRSS Power Up and Checks

NOTE

Perform SRSS power up and checks if Eastern Range is supporting.

SRSS Power Up and Checks Not Performed: _____

SRSS MLP GSE Powerup

16-849	TBC	CBRS	136
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Apply SRSS MLP GSE power

16-850

CBRS

IF EASTERN RANGE IS SUPPORTING SRSS FREQUENCY
CLEARANCE,

THEN PERFORM FOLLOWING:

CURSOR CNTL (SWRB3)

BSR01

XMIT CURSOR KEY - PRESS

POWER ON SYS A AND B WITH A PRIME

XMIT CURSOR KEY - PRESS

Not Performed:_____

16-851

CBRS

IF EASTERN RANGE IS NOT SUPPORTING WITH SRSS
FREQUENCY CLEARANCE,

THEN PERFORM FOLLOWING:

CURSOR CNTL (BWR10)

SYSTEM A MOD ON - ON

SYSTEM B MOD ON - ON

CRT

SYSTEM A AND B MOD VOLTS 28 +/-2

SYSTEM A AND B MOD CURRENT

LESS THAN 1 AMP

Not Performed:_____

16-852

CBRS

CURSOR CNTL (BWR10)

HOLDFIRE EMON ACT

XMIT CURSOR KEY - PRESS

16-853 CBRS TBC 136

SRSS MLP GSE Powerup complete.

Range Safety System Holdfire Checks

16-854 NTD SRO 232 [SU17233](#)
 TBC
 CBRS 136

Perform Range Safety system holdfire checks on Channel 175.

16-855 **CBRS**

SRSS HOLDFIRE PANEL
S1 - LAUNCH PROCEED
S2 - OFF

16-856 **CBRS**

SRSS HOLDFIRE PANEL
UPPER/LOWER LAUNCH PROCEED GREEN
UPPER/LOWER HOLD OFF
UPPER/LOWER AFETR HOLD OFF

16-857 CBRS SFCO 175

SFCO PANEL
PROCEED/HOLD SW - HOLD

16-858 CBRS SFCO 175
 FCO
 SRO

Verify hold indication

16-859 CBRS SFCO 175

SFCO PANEL
PROCEED/HOLD SW - PROCEED

16-860 CBRS SFCO 175
FCO
SRO

Verify proceed indication

16-861 CBRS FCO 175

FCO PANEL
PROCEED/HOLD SW - HOLD

16-862 CBRS SFCO 175
FCO
SRO
CBRS

Verify hold indication

16-863 CBRS FCO 175

FCO PANEL
PROCEED/HOLD SW - PROCEED

16-864 CBRS SFCO 175
FCO
SRO

Verify proceed indication

16-865 CBRS SRO 175

SRO PANEL
PROCEED/HOLD SW - HOLD

16-866 CBRS SFCO 175
FCO
SRO
CBRS

Verify hold indication

16-867 CBRS SRO 175

SRO PANEL
PROCEED/HOLD SW - PROCEED

16-868 CBRS SFCO 175
FCO
SRO
CBRS

Verify proceed indication

16-869 CBRS

SRSS HOLDFIRE PANEL
S1 - HOLD

16-870 CBRS SFCO 175
FCO
SRO
CBRS

Verify hold indication

16-871 CBRS

SRSS HOLDFIRE PANEL
S1 - PROCEED

16-872 CBRS SFCO 175
 FCO
 SRO
 CBRS

Verify proceed indication

16-873 CBRS

SRSS HOLDFIRE PANEL
S2 - BYPASS

16-874 CBRS TBC 136 SU17233
 CBRS SRO 175
 SRO NTD 232

Range Safety holdfire checks complete.

16-875 NTD SRO 232

Perform Range Safety hot dial phone verification. Report completion.

End of SRSS Power Up and Checks

(SIM) Personnel Within Launch Impact Area on Station

16-876	JPHO	STM	111
	JSTC		
	GYCC		
	STM	NTD	232

T-02H40M

(SIM) All support personnel required within Launch impact area on station.

Support: [PHOT](#)
Support: [JSTC](#)

Crew Compt Ready For Ingress

16-877	ASP	OTC	212
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T-02H40M

Crew Compartment ready for Crew ingress.

16-878	NTD	JRPS	232
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Verify lock on KFRL CMD verify and KFRL 192 KB data.

KMTS Secondary Support

NOTE

Perform next two steps if KMTS secondary is supporting TCDT.

KMTS Secondary Support Not Performed: _____

16-879 LPS JRPS 127

Configure JSC OD data to secondary KMTS system.

16-880 LPS JRPS 127

Verify KMTS 0505A2 (A5, KMTS B link) reading 192 kb and is locked on signal.

***** End of KMTS Secondary Support *****

16-881 LPS C4SE 127

Configure VSB to source 2, 192 kb data and verify successful operation. Return to source 1 upon completion. **Verify** FR LED is on.

16-882 LPS

Verify RPS P/B configured to supply 60KB RF data to source 2 of ME 1/2/3 FEP's, and signal present on FEP scopes.

Re-Boot SPA/Clear Spooler

16-883	LPS	NTD	232
	NTD	OTC	
		TBC	
		PTC	
	NTD		PA

SPA will be re-booted to clear spooler. SPA will be out of operation approx 5 minutes.

16-884	LPS	CPDR	
--------	-----	------	--

Perform spooler clear operation.

16-885	LPS	NTD	232
	NTD	OTC	
		TBC	
		PTC	
	NTD		PA

T-02H25M

SPA spooler clear complete. SPA is available for normal retrieval operations.

Control Logic Inhibit

16-886 **NTD** **OTC** **232** [SU17159](#)
 OTC **CGLS** **212**

Perform program SAP92 for S0017 reactive control logic inhibit, RCL status, command issuance, status DP/DA. (30 minutes)

16-887 **CGLS**

VERIFY 1 AVAILABLE CONCURRENCY AND 2 CONSECUTIVE OC TASKS.

CONSOLE KYBD
HOME CMD KEY - PRESS
SAP92
PERF PGM KEY - PRESS

PF1
SAP92 - PRESS

PF11
STATUS CMD ISSU - PRESS

16-888 **CGLS**

PF12
STATUS DP/DA - PRESS

NOTE

Press form feed on printer to ensure all output is received.

16-889

CGLS

PFPK5
S0017 RCL INHB - PRESS

PFPK6
S0017 RCL STATUS - PRESS

RETRIEVE OUTPUT FROM CONSOLE PRINTER AND REVIEW
FOR PROPER CONFIGURATION.

16-890

CGLS

PFK15 - PRESS (TERMINATE SAP92)

16-891

CGLS	OTC	212
OTC	NTD	232

Implementation of SAP92 complete.

(SIM) ET Liquid Level Sensor Checks During Replenish

NOTE

LOX and LH₂ must both be in stable replenish before liquid level sensor check can be run.

16-892	NTD	OTC	232	SU17178
		TBC		
T-02H30M	OTC	CMPS	212	

(SIM) Perform ET liquid level sensor checks during replenish per S1004 (15 minutes)

ER CMD Test Freq Clearance

16-893	SRO	NTD	232	SU17310
	NTD	STM		

IF ER is supporting TCDT,

THEN Verify 416.5 MHz open loop freq clears for ER CMD system preps.

Not Performed: _____

SRB MDM Countdown Verification

NOTE

Delay SRB MDM Countdown verification until after resuming the count at T-3 Hours.

16-894	NTD	TBC	232	SU17180
	TBC	CBDP	136	

T-02H30M

Perform SRB MDM countdown verification (15 minutes).

NOTE
SRB MDM I/O errors can occur during MDM P/S separation.

16-895

CBDP

CURSOR CNTL (SAS05/SDS04 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS05/SDS07 PG-B)
SRB MANUAL TEST SELECT
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

CURSOR CNTL (BSM06/BDM08 PG-B)
COUNTDOWN TEST
XMIT CURSOR KEY - PRESS

16-896

CBDP

CRT (BSM06 PG-B)
VERIFY ALL ENTRIES TO TEST
STATUS DISPLAY 'OK' GREEN

16-897

CBDP

PFM (BSM06)
SYSTEM STATUS - PRESS

CRT (BSM06 PG-B)

ALL MDM P/S SEP SW A AND B - ON

16-898

CBDP

PFM (BSM06)
TERMINATE - PRESS

16-899

CBDP TBC 136
TBC NTD 232

SU17180

SRB MDM Countdown Verification complete.

16-900 NTD TBC 232
 TBC RSRT 136

IF RANGE SAFETY OPEN LOOP CHECKOUT IS REQUIRED,

THEN PERFORM FUNCTIONAL RF TEST OF RSS RACK 8234
TO SUPPORT RANGE SAFETY OPEN LOOP CHECKOUT.

1. RACK 8234 PANEL A8
PATCH/VERIFY THE FOLLOWING:

J2 - J18
J3 - J19
J4 - J20
J5 - J21
J6 - J22
J7 - J23
J8 - J24
J10 - J26
J11 - J27
J12 - J28
J13 - J29
J14 - J30
J15 - J31
J16 - J32
50 OHM LOAD J1 AND J17
2. RACK 8234 PANEL A12
(Circuit Breakers)
CB 1 - ON
CB 2 - ON
CB 3 - ON
CB 4 - ON
CB 6 - ON
3. RACK 8234 PANEL A1 (AUDIO PNL)
POWER 1 AND 2 - ON
LINE SELECTOR 1 AND 2 - POSITION 1
VOLUME 1 AND 2 - 9 O'CLOCK (AS REQ'D)
4. RACK 8234 PANEL A2A and A2B (Digital Recorders)
POWER - ON
LOAD RECORDERS WITH DIGITAL TAPES

5. RACK 8234 PANEL A9 & A11 (IRD PANELS)
IRD PWR - ON

6. RF SIGNAL GENERATOR SETUP
(EXTERNAL TEST EQUIP)

FREQUENCY - 416.5 MHZ
MODULATION - NONE
OUTPUT LEVEL - (-70 DBM)
CAL NO. _____

7. RACK 8229 PANEL A7
REMOVE/VERIFY U-LINE J14 TO J15 PATCH

8. CONNECT RF OUTPUT OF SIGNAL GENERATOR TO
8229A7J15

9. RACK 8234
RECORD AGC METER READINGS

PANEL A9 IRD AGC _____ V GREATER THAN 2 VOLTS

PANEL A11 IRD AGC _____ V GREATER THAN 2 VOLTS

10. RACK 8229 PANEL A7
DISCONNECT RF OUTPUT OF SIGNAL
GENERATOR FROM 8229A7J15.

11. PATCH U-LINE BETWEEN J14 AND J15

12. RACK 8234
PANEL A4
NICOLET RECORDER:
DOUBLE CLICK VISION ICON.
VERIFY MONITORING SOFTWARE STARTS.

Entire Step Not Performed: _____

T: _____

Astrovan At Pad

16-901 *AVN NTD DIR 7 SU17162
 NTD OTC 232
 *SCC
 *PAC (if supporting TCDT)

T-02H30M

Astrovan at Pad surface.
(SIM) Escort vehicle returning to A/B-11 roadblock.

Support: SEC

Flight Crew At FSS

16-902 NST-2

NASA Suit Tech will arrive at FSS elevator/Pad level with Flight Crew with following items:

1. 4 Ascent checklist/tethers
2. 4 Ascent pocket checklist/tethers
3. 2 Ref data book/tethers
4. 2 Ascent flip card books/backings/tethers
5. 2 Ascent ADI cue cards
6. Helmet/CCA/gloves (for each Crew Member)

16-903 FLT SU17164
 CREW
 NST-1

Flight Crew and NST-1 and Mech Tech proceed to FSS 195 ft level.

16-904 NTD OTC 232 SU17163
 OTC OVCC 212

T-02H30M

Proceed with Crew ingress operations when Crew arrives.

(SIM) Astrovan - Depart Pad

16-909 *AVN NTD DIR 7
 NTD *SCC 232
 STM

T-02H25M

Astrovan has cleared Pad surface to the Pad gate. (SIM) Proceeding to A/B-11 roadblock.

Support: [SEC](#)

FLT Crew Ingress

16-910 OVCC OTC 212

T-02H25M

Flight Crew has arrived at Orbiter. Crew ingress in work at this time.

16-911 OTC ALL 212

T-02H25M

Flight Crew ingress proceeding at this time. Monitor console displays.

16-912 NTD STM 232
 STM JYVO 138
 JYVR

T-02H25M

Terminate Flight Crew tracking and video recording. OTV cameras and video recorders are released to previously assigned usage. OTV camera 005 to monitor Crew Hatch.

[SU17225](#)

Support: [OTV](#)

Flight Crew Aided Ingress

CAUTION

Prior to connecting helmet COMM lead to HIU, COMM CCU power to MO39M or A11 must be verified Off or damage to equipment may occur.

NOTE

During Ingress, suit fans will be powered up, COMM switches on L5 and R6 will be turned On, seats will be adjusted and COMM checks will be performed with OTC, NTD, and *FLT.

16-913
T-02H25M

OTC

Record Ingress time for applicable Crew Members:

CDR _____ GMT

PLT _____ GMT

MS1 _____ GMT

MS2 _____ GMT

MS3 _____ GMT

MS4 _____ GMT

MS5 _____ GMT

GMT and MET Delta Adjust

NOTE

Following IMU and GMT delta adjust operations are time and sequence critical. IMUs must be in term/idle for GMT/MET adjust.

16-914 CGNC OTC 212 [SU17182](#)

Ready for GMT delta adjust.

NOTE

OIS FEP may give a "No-Go" indication for 1-3 seconds during delta adjust.

NOTE

GMT adjust must not be done while IMU pre-flight cal, ATT DET or gyro compass align are in work.

16-915 OTC CDPS 212
 CISL

T-02H20M

Perform GMT and MET adjustment per DPS systems (S0017.300 Operation 40, item 13) on Channel 152 (10 minutes).

(SIM) Verify Astrovan Position

16-916 *AVN NTD DIR 7
T-02H15M

(SIM) Astrovan and Security escort cleared back to A/B-11 roadblock.

Support: [SEC](#)

16-917 NTD *SCC 232
*SCC *SEC DIR 7

(SIM) Verify Astrovan and Security escort have cleared back to A/B-11 roadblock.

Support: [SEC](#)

16-918 *SEC *SCC DIR 7
*SCC NTD 232

(SIM) FLT Crew van and Security escort vehicle have cleared back to A/B-11 roadblock.

Support: [SEC](#)

ET Liquid Level Sensor Checks Complete

16-919 CMPS OTC 212 [SU17178](#)
OTC NTD 232
TBC

T-02H15M

(SIM) ET Liquid Level Sensor Checks During Replenish complete per S1004.

Post Ingress SW Reconfiguration

NOTE

Next three steps must be complete before proceeding with post ingress switch reconfig (simulated RJD driver switch activations).

RCS CMD Status Test

16-920
T-02H15M

COFC

[SU17184](#)

CURSOR CNTL (SAB19/SWB01)
COUNTDOWN - OPS MANAGER
XMIT CURSOR KEY - PRESS

16-921
T-02H15M

COFC

CURSOR CNTL (SAB23/VSB100)
RJD COMMAND STATUS CHECKS
XMIT CURSOR KEY - PRESS

16-922
T-02H15M

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

16-923

COFC

CRT (SAB23/VSB100)
VERIFY
RJD COMMAND STATUS CHECKS REQUEST COMPLETE

16-924
T-02H15M

COFC

CONSOLE KYBD (SAB23/VSB100)
PFK15 KEY - PRESS

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16-925
T-02H10M

COFC OTC 212

SU17184

RCS command status check complete. Ready for post ingress switch reconfiguration.

NOTE

CDR/PLT seat aided ingress must be complete before proceeding with next step.

Middeck Flight Crew seat aided ingress proceeds in parallel with post ingress SW reconfiguration.

16-926
T-02H10M

ASP OTC 212

SU17186

(SIM) Proceeding with post ingress switch reconfiguration and switch guard removal per the checklist.

16-927

ASP

(SIM) PANEL O14

ROW F

RJDA 1A
L2/R2 MANF
DRIVER SW - OFF*
RJDA 2A
L4/R4 MANF
DRIVER SW - OFF*
RJDF 1B
F1 MANF
DRIVER SW - OFF*
L OMS ENG VLV SW - OFF*

16-928

ASP

(SIM) PANEL O15

ROW F

RJDA 1B
L1/R1 MANF
DRIVER SW - OFF*
RJDF 1A
F2 MANF
DRIVER SW - OFF*

NOTE
RJD MANF L5/F5/R5 driver switch to "On" will be performed "On-Orbit"

16-929

ASP

(SIM) Remove RJD MANF L5/F5/R5 driver switch guard.

16-930

ASP

(SIM) PANEL O16

ROW F

RJDA 2B

L3/R3 MANF

DRIVER SW - OFF*

RJDF 2A

F3 MANF

DRIVER SW - OFF*

RJDF 2B

F4 MANF

DRIVER SW - OFF*

R OMS ENG VALVE SW - OFF*

16-931

ASP

OTC

212

PANEL O6

GENERAL PURPOSE COMPUTER

OUTPUT

5 SW - BACKUP

Caution and Warning Volume Adjust

16-932 ASP OTC 212
 OTC CISL

T-02H10M

C&W alarm volume will be adjusted, master alarm will be intentionally tripped (param 099).

NOTE

Crew will adjust COMM volume as required for satisfactory COMM/master alarm level.

16-933 ASP

PANEL R13U

CAUTION/WARNING

PARAMETER SELECT T/W'S - 099

PARAM SW - INHIBIT, RELEASE

PARAM SW - ENABLE, RELEASE

VERIFY C&W MASTER ALARM

16-934 FLT
 CREW

HIU

Adjust COMM volume as required for satisfactory COMM/master alarm level.

16-935

CDR
ASP

PANEL F2
MASTER ALARM PB - PRESS, RELEASE
MASTER ALARM LITE OFF

PANEL R13U
CAUTION/WARNING
PARAMETER SELECT TW'S - 120

16-936

ASP OTC 212

C&W volume adjust complete.

16-937
T-02H10M

ASP OTC 212

[SU17186](#)

Post ingress switch reconfiguration complete.

IRAMS Activation For IMU Gyrocompass Align

16-938
T-02H10M

OTC CGNC 212

Perform IRAMS PAPAS Invocation.

16-939

CGNC

ACTIVATE IRAMS ON SDC.

IMU Platform Positioning For Gyrocompass Align

16-940 **CDPS** **OTC** **212** **SU17182**
T-02H10M

GMT and MET adjust complete. Ready for IMU platform positioning.

16-941 **CGNC**
T-02H04M

CRT (VABM1, VSB78 PG-B)
VERIFY PLATFORM POSITIONING IN PROGRESS

GLS Initialization

<p>NOTE Refer to GLS mask and bypass list (attached by CGLS to S0017.300 Operation 46) for functions not required for TCDT.</p>
--

16-942 **OTC** **CGLS** **212** **SU17188**
T-02H00M

Perform GLS initialization (S0017.300 Operation 46).

16-943 **CGLS** **OTC** **212**

FEP dual interrupt notification will be activated momentarily and may cause re-annunciation of error messages at system's consoles for interrupt monitored parameters currently out of GLS limits.

16-944 **CGLS**

CONSOLE KYBD
SAP10
TERM
XMIT CURSOR KEY - PRESS
SYS TERM (LEAVING SW SCAN ACT)
XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS
VERIFY SAP10 AND SAP27 TERMINATE

SRB Igniter/Field Joint Heater Activation

16-945 NTD TBC 232 SU17190
 TBC CPWR 136

Perform SRB Igniter and Field Joint Heater Power Application.

CAUTION

RSRM Igniter Heater temperatures shall not exceed 125 degrees F and current shall not exceed 4.9 amps AC or proper seal capabilities of all ignition system seals may not occur.

Field Joint Heater temperatures shall not exceed 123 degrees F and current shall not exceed 19.5 amps AC or proper seal capabilities of all field joint o-ring seals may not occur.

16-946 **CPWR**

CURSOR CNTL (SDC01)
SRB OPTIONS JOINT HEATERS
XMIT CURSOR KEY - PRESS

CRT
VERIFY
DISPLAY SKELETON BDE11 DISPLAYED

16-947 **CPWR**

CURSOR CNTL (BDE11)
AUTO SEQ - ALL
XMIT CURSOR KEY - PRESS

CRT
VERIFY
ALL HTR PWR ON
ALL AUTO SEQ ACT

16-948	CPWR	TBC	136
	TBC	NTD	232

SRB Igniter and Field Joint Heater Power Application complete.

(SIM) Retrieval Area - Status Check

16-949	LRD	BRD	135
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T-02H00M

(SIM) Report status in retrieval area:

1. Ships on station
2. SRB impact area clear of other vessels
3. Weather status

16-950	LRD	SRO	135
--------	-----	-----	-----

T-02H00M

IF ER is supporting TCDT,

THEN (SIM) SRB impact area clear (or not clear) of vessels other than required retrieval ships.

Not Performed: _____

(SIM) OAA Accumulator Forced Charge

16-951
T-02H00M

OTC CGSS 212

(SIM) Perform OAA accumulator forced charge.

16-952
T-02H00M

CGSS

(SIM) PFP (VAJ02)
VAJ07 OAA ACCUM - PRESS
OAA ACCUM EXECUTE - PRESS

CRT
VERIFY OAA ACCUM TOP AND BOTTOM
LITES ON, THEN OFF.

16-953

CGSS OTC 212

(SIM) OAA Accumulator Forced Charge complete.

(SIM) SRB HPU Gas Generator Heater On

16-954 **NTD** **TBC** **232** **SU17192**
TBC **CHPU** **136**
T-02H00M

(SIM) Turn on SRB HPU gas gen heaters. Report completion.

16-955 **CHPU**
T-02H00M
(SIM) CURSOR CNTL (BAT04)
VEHICLE
GAS GENERATOR - AUT

16-956 **CHPU**
T-02H00M
(SIM) CRT (BAT04)

VERIFY ALL FOUR GAS GENERATOR BED TEMPERATURES
INCREASING.
(MINIMUM OF 2 DEG PER MINUTE AVERAGE RISE IN
1 HOUR)

16-957 **CHPU** **TBC** **136**
TBC **NTD** **232**

(SIM) SRB HPU gas generator heaters On.

16-958 **TBC** **CHPU** **136**
T-02H00M
(SIM) DURING REMAINDER OF COUNT UNTIL T-1 MINUTE,
CHPU TO MONITOR ADJUST ALL GG TEMPS AT 190 TO 248
DEG F BY ON/OFF HTR CMD 1 AND/OR 2 (CURSOR CNTL).

(SIM) Close VAB High Bay and Transfer Aisle Doors

16-959 STM VCMP 111

T-02H00M

(SIM) Close all VAB high bay and transfer aisle doors (Q3011, Q3016).

Report completion. (1 hour)

Biomed Console Setup

NOTE

Next step performed only when biomed data available.

16-960 OTC CBSE 212

Verify reception of biomed data.

V67V0100A
V67V0200A

Not Performed: _____

SRM Chamber Pressure Verification

NOTE

Perform this option if all six SRM Chamber Pressure measurements are functional and in a standard configuration for Flight.

16-961 **TBC** **CISL** **136** [SU17201](#)

Perform SRM Chamber Pressure Verification (OMI S0017.300, Operation 52) on OIS Channel 145. (15 minutes)

Not Performed: _____

NOTE

The following signal test will be performed. Only "First motion" is simulated.

If neither *FLT or ER are supporting S0017, first motion signal test will not be performed.

First Motion Signal Test

16-962 **STM** **SRO** **111** [SU17194](#)
T-02H00M

IF ER is supporting TCDT,

THEN Verify ready to receive first motion signal at T-01H55M by countdown clock.

Not Performed: _____

NOTE
Perform the next two steps if either ER or *FLT are supporting S0017.

16-963 STM GYCC 111
 GYCC JTCR 117

Verify first motion system configured to receive Pad A first motion signal.

Support: [TCD](#)

Not Performed: _____

16-964 STM GYCC 111
 GYCC JTCR 117

Send and distribute simulated first motion signal at T-1Hour 55 Minutes by clock.

Support: [TCD](#)

Not Performed: _____

IMU ATT DET

NOTE
Launch polynomial uplinks can be performed during IMU ATT DET and preflight alignment. Downlist dumps can be performed during ATT DET and preflight alignment during non-critical periods when loss of downlist can be tolerated.

16-965
T-01H57M

CGNC

[SU17196](#)

CRT (VABM1, VSB35 PG-B)
VERIFY IMU ATTITUDE DETERMINATION
IN PROGRESS

First Motion Signal

NOTE

Perform this option if first motion signal test was performed.

First Motion Signal Not Performed: _____

16-966
T-01H55M

JTCR

Simulated First motion signal - Execute

Support: [TCD](#)

16-967
T-01H55M

STM SRO 111

IF ER is supporting S0017,

THEN Verify first motion signal received by all stations required.

Not Performed: _____

16-968

STM GYCC 111
GYCC JTCR 117

Release first motion signal and reconfigure first motion distribution system to relay signal from Pad.

Support: [TCD](#)

16-969

STM NTD 232

First Motion Signal Test complete.

***** End of First Motion Signal *****

(SIM) LRD Checks

16-970 LRD EMS
 *DCD 135
 ROC

T-01H55M

(SIM) Verify ready to support RTLS Rescue/Medical Operations.

ER SRSS Verif Test

16-971 NTD SRO 232

T-01H50M

IF ER is supporting TCDT,

THEN (SIM) Perform ER SRSS Verification test. Report completion.

Not Performed: _____

IMU Gyrocompass Align

16-972
T-01H47M

CGNC

SU17199

CRT (VABM1, VSB35 PG-B)
VERIFY IMU GYROCOMPASS ALIGN IN PROGRESS

(SIM) Fuel Cell Purge

16-973 OTC CFCP 212

(SIM) Perform Fuel Cell Purge on OIS Channel 153 (10 minutes).

16-974 CFCP OTC 212

(SIM) Fuel Cell Purge is complete.

16-975
T-01H35M COOS

CRT (VWD73)

VERIFY

LOMS ENG VLV OFF*
ROMS ENG VLV OFF*

V43S4575E1
V43S5575E1

Ascent Mini Camera Power Up for Flight Deck

NOTE

Perform following two steps if ascent mini camera is installed on the Flight Deck.

Ascent Mini Camera Power Up for Flight Deck Not Performed: _____

16-976
T-01H35M ASP OTC 212

Ready for Ascent Camera Power Up.

16-977
T-01H35M OTC ASP 212

PANEL O19
TV PWR SW - ON

***** End of Ascent Mini Camera Power Up for Flight Deck *****

Ascent Mini Camera Power Up for Middeck

NOTE

Perform following two steps if ascent mini camera is installed in the Middeck.

Ascent Mini Camera Power Up for Middeck Not Performed: _____

16-978
T-01H35M

ASP OTC 212

Ready for Ascent Camera Power Up.

16-979
T-01H35M

OTC ASP 212

PANEL MO58F
TV PWR SW - ON

***** End of Ascent Mini Camera Power Up for Middeck *****

Crew Module Closeout Operations

16-980 **OTC** **ALL** **212** [SU17166](#)
T-01H35M

Verify all systems ready for Crew Module Closeout.

16-981 **OTC** **ASP** **212**
T-01H35M **OVCC**

Close out Crew Module for TCDT.

Inspect Crew Module for any non-flight items.

Remove and report additional items found.

All Orbiters Flight Deck TIR Items

1. CDR/PLT HUD covers (2) (G070-011260-001)
(should be removed during Crew Module setup)
2. CDR/PLT RHC covers (2)
3. **(SIM)** CDR L4 panel protective covers (3)
4. **(SIM)** RCS driver and OMS engine switchguards (5) and RCS and OMS engine locks (4)
5. **(SIM)** A-11 red metal protective covers (2 pieces, may be connected together by a cable)
6. **(SIM)** A-15 red metal protective cover (1)
7. Large AFT Flight deck soft cover (1) shop aid
8. **(SIM)** CCTV monitor cover (1) G070-011312-004

9. (SIM) W9 and W10 stand on covers (1 EA)
10. (SIM) RMS RHC cover (1)
11. MDU covers (10) G070-300306-001 place in protective container.
12. (SIM) AFD1 MDU cover (1) SA-2K7-021.

Middeck TIR Items

13. Bumper pad assembly (1) on escape pole magazine
14. Emergency Life Support Apparatus (ELSA) (12) check Whiteroom wall locker (should be 12 ea)
15. (SIM) Middeck Hard Covers (5)
(P/N G070-011231-001 Lower LH section WMC)
(P/N G070-011232-001 Upper RH section WMC)
(P/N G070-011233-012 MA75J Access Door)
(P/N G070-011233-015 Lower Av Bay 3B)
(P/N G070-011350-001 MA73C panel)
16. (SIM) Flight ladder support leg assemblies (2) G076-500308-001.

ASP Non Flight Items

17. ASP strap in camera bag with inventory list.
18. Grandson of ASP bag with inventory list
19. ASP VLHS headset (1).
20. ASP HIU headset and cables.
21. Foam camera wedges (2).

Suit Technician Non-Flight Items

22. Flight data file plastic stowage bags (1 per Crew Member)
23. PRC-112 radio (1) JSC Suit Technician
24. Suit Technician strap-in checklist (wrist 2 ea)
25. Teflon cookie sheets (2) (Suit Tech Aid)

16-982

ASP

Inspect middeck for non flight items (not listed in previous step).
Report any items and remove them from the Crew module.

16-983

ASP

OTC

212

Crew Module/Middeck Inspection complete. All non-flight items have been removed to support TCDT.

LCC Astro COMM Check

16-984 **OTC** **CDR** **A/G1** [SU17165](#)

T-01H35M

Verify each member of FLT Crew ready to proceed with LCC Astro COMM checks.

16-985 **OTC** **ALL** **212**

Any conversation on OIS Channel 212 during voice checks will be heard by Crew. Channel should remain silent except for emergency calls.

16-986 **OTC** **FLT
CREW** **212**

During Astro COMM checks adjust appropriate volume control (A/G 1, A/G 2, ICOM A, ICOM B, A/A) for comfort. Do not change audio station switch configuration.

16-987 **OTC** **212**

Perform two-way COMM check with each member of FLT Crew on A/G 1 (OIS Channel 212).

16-988 **OTC**

ASTRO COMM-OIS INTERFACE PANEL
A/G 2 SW - ACTIVE
VERIFY A/G 2 ACTIVE LITE ON

16-989 **OTC** **213**

Perform two-way COMM check with each member of FLT Crew on A/G 2 (OIS Channel 213).

16-990 **OTC**

ASTRO COMM-OIS INTERFACE PANEL
A/G 2 SW - MONITOR
VERIFY A/G 2 MONITOR LITE ON
ICOM A SW - ACTIVE
VERIFY ICOM A ACTIVE LITE ON

16-991 OTC 214

Perform two-way COMM check with each member of FLT Crew on ICOM A (OIS Channel 214).

16-992 OTC

ASTRO COMM-OIS INTERFACE PANEL
ICOM A SW - OFF
VERIFY ICOM A ACTIVE LITE OFF
ICOM B SW - ACTIVE
VERIFY ICOM B ACTIVE LITE ON

16-993 OTC 215

Perform two-way COMM check with each member of FLT Crew on ICOM B (OIS Channel 215).

16-994 OTC

ASTRO COMM-OIS INTERFACE PANEL
ICOM B SW - OFF
VERIFY ICOM B ACTIVE LITE OFF
UHF SW - ACTIVE
VERIFY UHF ACTIVE LITE ON

16-995 OTC 211

Perform two-way COMM check with each member of FLT Crew on A/A (OIS Channel 211).

16-996 OTC

ASTRO COMM - OIS INTERFACE PANEL
UHF SW - MONITOR
VERIFY UHF ACTIVE LITE - OFF
VERIFY UHF MONITOR LITE - ON

16-997 OTC CDR 212
 OTC NTD 232

T-01H30M

LCC Astro COMM Checks complete.

MCC A/G Voice Checks

NOTE

A/G voice checks may be performed by NTD or *FLT (If *FLT supporting TCDT).

16-998 OTC ALL 212

A/G voice checks will follow.

16-999 NTD *FLT 232
T-01H30M

Conduct MCC A/G voice checks

16-1000 NTD CDR A/G1
***FLT PLT**

Configure for A/G 1 voice check

16-1001 CDR

PANEL O5

LEFT AUDIO
A/G
2 SW - OFF
A/A SW - OFF

16-1002 PLT

PANEL O9

RIGHT AUDIO
A/G
2 SW - OFF
A/A SW - OFF

16-1003 NTD A/G1
***FLT**

Perform 2-way COMM check with CDR and PLT on A/G 1.

16-1004 NTD CDR A/G1
 *FLT

Configure for A/G 2 voice check

16-1005 CDR

PANEL O5

LEFT AUDIO
A/G
2 SW - T/R
1 SW - OFF

16-1006 PLT

PANEL O9

RIGHT AUDIO
A/G
2 SW - T/R
1 SW - OFF

16-1007 NTD A/G2
 *FLT

Perform 2-way COMM check with CDR, PLT on A/G 2.

16-1008 NTD CDR A/G2
 *FLT

For you and PLT, configure for A/A voice check.

16-1009 CDR

PANEL O5

LEFT AUDIO
A/A SW - T/R
A/G
2 SW - OFF

16-1010

PLT

PANEL O9

RIGHT AUDIO

A/A SW - T/R

A/G

2 SW - OFF

16-1011

NTD

UHF

*FLT

Perform 2-way COMM check with CDR, PLT on A/A.

16-1012

NTD

CDR

UHF

*FLT

Configure for SIMO voice check.

16-1013

CDR

PANEL O5

LEFT AUDIO

A/G

1 SW - T/R

2 SW - T/R

16-1014

PLT

PANEL O9

RIGHT AUDIO

A/G

1 SW - T/R

2 SW - T/R

16-1015

NTD

UHF

*FLT

A/G1

Perform 2-way COMM check with each member of FLT Crew on A/G and A/A SIMO.

Verify D/L voice on A/G 1, A/G 2 and UHF.

(SIM) Landing Site Support Status

NOTE Any deltas from initial status at T-2H40M should be reported.
--

16-1020 **LSO** **LRD** **135**
LF1

T-01H30M

(SIM) Report KSC landing site support status.

16-1021 **CISL** **TBC** **136**

[SU17201](#)

SRM Chamber Pressure Verification (S0017.300, Operation 52)
complete.

(SIM) ER CMD Carrier Test

16-1022 **NTD** **SRO** **232**
T-01H20M

IF ER is supporting TCDT,

THEN (SIM) Perform ER open loop automatic command carrier control validation tests.

Report completion.

Not Performed: _____

(SIM) KSC Convoy Prep

16-1023 **NCC** **LRD** **135**
 CCN
T-01H20M

(SIM) KSC convoy ready to proceed with landing/convoy operations (S0028)

ASP/NST1 - Egress From Crew Module

16-1024 **OTC** **ASP** **212**
 NST1
 OVCC
T-01H20M

(SIM) Egress Crew Module.

(SIM) Disconnect COMM (ASP)

16-1025 **ASP**

(SIM) Disconnect COMM at PS station

NOTE

Next step will terminate COMM between ASP and Firing Room. ASP will advise OTC before proceeding.

16-1026 **ASP**

(SIM) PANEL A15

PS COMM CCU PWR SW - OFF
DISCONNECT COMM CABLE

16-1027 **ASP**

(SIM) Remove HIU, cable and headset from Crew Module. Retain in event of scrub recycle. (Items to be sent to bonded storage area after Launch)

16-1028 **ASP**

(SIM) Verify ASP bag contains all items brought into white room.

16-1029 **ASP**
OVCC

(SIM) Ground Crew and Closeout Crew egress white room with all items removed from Crew module.

Launch Polynomial/Target Update

NOTE

Perform Launch polynomial/target update if Launch polynomial update or Launch target loads are required and JSC supporting TCDT.

Launch polynomial updates can be performed any time prior to BFS one shot transfer.

Launch Polynomial/Target Update Not Performed:_____

16-1030 *FLT NTD 232 [SU17203](#)
T-01H20M

Launch polynomial or target update required.

16-1031 NTD *FLT 232

Configure for two stage command manual execute.

16-1032 NTD CVFS 232

Configure console software to receive uplink.

16-1033 CVFS

CURSOR CNTL (SAS10 PG-B)
FSW DISPLAY SELECT MENU (SDS13)
XMIT CURSOR KEY - PRESS

16-1034 CVFS

CURSOR CNTL (SAS10 PG-B)
UPLINK MONITOR (VWS14)
XMIT CURSOR KEY - PRESS

16-1035 CVFS NTD 232
NTD *FLT

Ready to receive uplink.

NOTE
Perform next two steps if Launch polynomial uplink is required.

16-1036 NTD *FLT 232

Perform and verify Launch Polynomial Uplink.

Not Performed: _____

16-1037 *FLT NTD 232
 CVFS

Launch Polynomial Uplink complete.

Not Performed: _____

NOTE
Perform next two steps if Launch designed to establish rendezvous conditions.

16-1038 NTD *FLT 232

Proceed with transmission of Launch target commands.

Not Performed: _____

16-1039 *FLT NTD 232

Launch Target Uplink complete.

Not Performed: _____

16-1040 NTD *FLT 232

Reconfigure for two stage command auto compare and execute.

16-1041 NTD *FLT 232

Downlist dump to begin momentarily. **Verify** ready to receive dump data.

16-1042 CVFS NTD 232
 NTD OTC
 TBC
 PTC
 LPS

A momentary loss of downlist will occur. **Verify** ready for downlist loss.

NOTE If IMU ATT DET or preflt alignment is in progress, perform next step to get GNC concurrence prior to initiating GPC downlist dump.

16-1043 CVFS NTD 232
 NTD OTC
 OTC CGNC 132

Verify ready for GPC downlist dump. Downlist data will be lost for 2 to 3 seconds.

Not Performed:_____

NOTE Annunciation of LCC DPS-29 is expected during DL Dump.

16-1044 NTD CVFS 232

Proceed with GPC downlist dump.

16-1045

CVFS

CURSOR CNTL (VWS14 PG-B)
GUIDANCE POLYNOMIAL OR LAUNCH TARGETING
XMIT CURSOR KEY - PRESS

16-1046

CVFS

APPLICATION PAGE (VWS14 PG-B)
PFK7 KEY - PRESS (DOWNLIST DUMP)

16-1047

CVFS

PPF (VWS14)
START DUMP KEY - PRESS

16-1048

CVFS NTD 232

Downlist dump complete.

16-1049

NTD *FLT 232

Verify downlist dump data received.

16-1050

*FLT NTD 232
NTD CVFS

MCCH I-Load or Target Load Verification complete.

NOTE

Perform the following step and the previous four steps if FLT cannot verify the DOLILU downlist dump data.

16-1051

CVFS

PPF (VWS14)
DOWNLIST DUMP KEY - PRESS

Not Performed: _____

16-1052 CVFS

PFP (VWS14)
RETURN KEY - PRESS

16-1053 CVFS

APPLICATION PAGE (VWS14 PG-B)
PFK15 KEY - PRESS (TERMINATE)

16-1054 CVFS

APPLICATION PAGE (SAS10 PG-B)
PFK2 KEY - PRESS

16-1055 CVFS NTD 232 SU17203

G9 Launch Polynomial/Target Update complete.

*****End of Launch Polynomial/Target Update*****

16-1056 ASP OTC 212 SU17166

Crew Module closed out for TCDT. Ready for hatch closure.

Ingress/Egress Hatch Cycle

16-1057 OTC OVCC 212 SU17170

CAFM

T-01H20M

Perform ingress/egress hatch cycle, limit switch check and leak check per Orbiter Operation 118 (S0017.100).

16-1058 OTC OVCC 212

During hatch cycle, **verify** portable O₂ meters installed instead of fixed sensors.

(SIM) SLF NAVAIDS Supporting

16-1061 STM FMLS 111
 FTAC
 FSTM NET 104

T-01H10M

(SIM) Verify TACAN (OV-103/OV-104 only) and MSBLS ready to support. (phone 861-2049/0541)

Hatch - Closed

16-1062 OVCC OTC 132 SU17170
 OTC CECL

T-01H10M

Hatch closed and latched. Microswitch check complete. Continuing with hatch opening per Orbiter Operation 118.

Cabin Leak Check

16-1063 OTC CDR 212

Perform Cabin Leak Check per your checklist.

16-1064 CDR

PANEL L2

CABIN VENT
VENT ISOL SW - OPEN UNTIL L2A1S3
VENT ISOL TB OP L2A1DS3
VENT TB CL L2A1DS4

16-1065 CECL

CRT (VAG29 PG-B)
VERIFY
CAB VENT - PCL ISOL - POP V61X204E1

16-1073

CPWR

CURSOR CNTL (BDE11)
AUTO SEQ - ALL
XMIT CURSOR KEY - PRESS

CRT
VERIFY
ALL HTR PWR ON
ALL AUTO SEQ ACT

NOTE

All SRB joint/igniter heaters should be on secondary power at this time.

16-1074

CPWR

TBC

136

Igniter/joint heater power switched to secondary.

16-1075

NTD

*SCC

232

*SCC

*PSE

DIR 7

T-01H00M

(SIM) Verify EOD personnel on site at A/B-11 roadblock.

16-1076

*PSE

*SCC

DIR 7

*SCC

NTD

232

(SIM) EOD personnel on site at A/B-11 roadblock.

16-1077

STM

PSTM

111

JSTC

T-01H00M

(SIM) Support personnel for post Launch inspection/safing will assemble at OSB II by T-30 minutes (30 minutes).

Support: [JSTC](#)

16-1078 NCC LRD 135
 LRD LSO

IF adverse weather is predicted prior to Orbiter tow into OPF Bay.

THEN (SIM) Local conditions dictate SSME rain drain be performed post landing (S0028).

Not Performed: _____

16-1079 LRD ROC 135
 EMS
 STM

(SIM) Verify landing personnel will be on site in 30 minutes to support pre-deployment briefing.

16-1080 STM JBWC 111

Request water system valve observers report on station per following schedule:

SS Valve Complex 2 Techs
PTCR RM 210 1 Tech

Support: [WSSA](#)

16-1081 VCMP STM 111

(SIM) All VAB high bay and transfer aisle doors closed.

NOTE
All time callouts in this OMI will be in minutes and seconds from this point.

NOTE
PLDS FEP may lose sync and drop to No Go during HI PWR/FM activation.

S-Band SYS HI PWR/FM Activation - *FLT SUPPORTING

NOTE
IF *FLT is supporting S0017, TCDT, then perform “S-Band Sys HI PWR/FM Activation- *FLT Supporting.”

Not Performed: _____

16-1082	NTD	OTC	232	SU17212
	OTC	CCSE	212	
	CCSE	RCRT	155	

T-55M00S

Support S-band to high power on Channel 232.

16-1083	NTD	*MIL	232
---------	-----	------	-----

Perform S-band system to high power/FM activation.

16-1084	NTD	*FLT	232
---------	-----	------	-----

Transmit DSM 4752
(PA 2 STBY on)

16-1085	CCSE
---------	------

CRT (VWA40)
PWR AMP
STANDBY 2 - ON

RECORD _____ GMT

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16-1086	NTD	*FLT	232	
	Transmit	DSM 4750 (PA 1 STBY on)		V74K3075U
16-1087		CCSE		
	CRT (VWA40)			
	PWR AMP			
	STANDBY 1 - ON			
16-1088	NTD	*FLT	232	
	Transmit	DSM 4724 (preamp 2 on)		V74K3073U
16-1089		CCSE		
	CRT (VWA40)			
	VERIFY			
	PREAMP-2 ON			V74X4777E
16-1090	NTD	*FLT	232	
	Transmit	DSM 4756 (S-band PWR AMPL OPR-2 on)		V74K3065U
16-1091		CCSE		
	CRT (VWA40)			V74X4785E
	VERIFY			
	PWR AMP-2 ON			

16-1092 NTD *FLT 232

Transmit DSM 4780 (S-band FM system-power 1 - On) V74K3145U

16-1093 CCSE

CRT (VWA40) V74X6120E

FM SYSTEM

VERIFY

XMTR-1 ON

_____ WATTS (RECORD) V74X4801E

SP SRCE-ME DATA

16-1094 NTD *MIL 232

Verify:

FM carrier + ME modulation

16-1095 NTD RCRT 232

Verify following:

1. 8232 A4 (NB OI RCVR)
Carrier Ind lite on

2. 8223 A6 (patch panel)
Patch S-band FM OI video 1 (J237) to WBTS line 2 J19
(C&T No. 1) or J26 (C&T No. 2)

T: _____

S-Band SYS HI PWR/FM Activation - *FLT NOT SUPPORTING

NOTE
If *FLT not supporting S0017, TCDT, then perform "S-Band SYS HI PWR/FM Activation - *FLT NOT SUPPORTING."

Not Performed: _____

16-1099	NTD	OTC	232
	OTC	CCSE	212
	CCSE	RCRT	155

T-55M00S

Support S-band to high power on Channel 232.

16-1100	NTD	*MIL	232
---------	------------	-------------	------------

Perform S-band system to high power/FM activation.

16-1101	NTD	CCSE	232
---------	------------	-------------	------------

CURSOR CNTL (VAA19, PG-B)
PWR AMP
XMIT CURSOR KEY - PRESS

PFP
PWR AMP 2 STBY - PRESS

RECORD _____ GMT

16-1102	CCSE
---------	-------------

CRT (VAA19)
PWR AMP
STANDBY 2 - ON

16-1103 **NTD** **CCSE** **232**

CURSOR CNTL (VAA19, PG-B)
PWR AMP
XMIT CURSOR KEY - PRESS

PFP
PWR AMP 1 STBY - PRESS

16-1104 **CCSE**

CRT (VAA19)
PWR AMP
STANDBY 1 - ON

16-1105 **NTD** **CCSE** **232**

CURSOR CNTL (VAA19, PG-B)
PRE AMP
XMIT CURSOR KEY - PRESS

PFP
PRE AMP 2 ON - PRESS

16-1106 **CCSE**

CRT (VAA19)
VERIFY
PREAMP-2 ON

V74X4777E

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16-1107 NTD CCSE 232

CURSOR CNTL (VAA19, PG-B)
PWR AMP
XMIT CURSOR KEY - PRESS

PFP
PWR AMP 2 OPERATE - PRESS

16-1108 CCSE

CRT (VAA19) V74X4785E
VERIFY
PWR AMP-2 ON

16-1109 NTD CCSE 232

CURSOR CNTL (VAA19, PG-B)
OI XMTR
XMIT CURSOR KEY - PRESS

PFP
XMTR 1 ON - PRESS

16-1110 CCSE

CRT (VAA19) V74X6120E
VERIFY
OI XMTR-1 ON
_____ WATTS (RECORD) V74X4801E
FM SP SRCE-ME DATA

16-1111 NTD *MIL 232

Verify:
FM carrier + ME modulation

16-1112 NTD RCRT 232

Verify following:

1. 8232 A4 (NB OI RCVR)
 Carrier Ind lite on

2. 8223 A6 (patch panel)
 Patch S-band FM OI video 1 (J237) to WBTS line 2 J19 (C&T
 No. 1) or J26 (C&T No. 2)

T: _____

NOTE

S-band PA 2 will not output until STDN high mode is commanded and 2 minute warmup complete.

Do not proceed before 2 minutes have elapsed since PA 2 standby command was issued.

16-1113 NTD CCSE 232

CURSOR CNTL (VAA19, PG-B)
XPNDR MODE
XMIT CURSOR KEY - PRESS

PFP
STDN HIGH - PRESS

16-1114 CCSE

CRT (VAA19)
VERIFY
XPNDR
MODE - STDN HI V74X4788E
 _____ LOOP STRS BD
 _____ CNTS AGC BD
PWR AMP
 _____ WATTS 90 MIN V74E4513A

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16-1115

CCSE

CRT (VAA19)
VERIFY
NSP
BIT SYNC - LOCKED
FRM SYNC - LOCKED

***** End of S-Band HI Power/FM Activation - *FLT NOT Supporting *****

16-1116

CCSE
NTD

NTD
*MIL
RCRT
OTC

232

[SU17212](#)

S-band system to high power/FM activation complete. FEP RF source verification can be performed.

16-1117 NTD JRPS 232

Verify following:

1. ME data from MILA being recorded on MAG tape.
2. S-band FM data patched to FR feed.
Verify frame sync lock on Main Engine 60 KBS data.

RF FEP Source Verification

NOTE

During FEP RF source verification, Main Engine data will be momentarily invalid, with associated FEPs in No Go. ME modulation must have been applied to S-band FM SIG by *FLT/CCSE before proceeding with next step.

16-1118 NTD OTC 232 [SU17214](#)
 LPS
 JRPS
 *MIL
 OTC CCME 212

T-55M00S

Perform RF FEP source verification (S0017.300 Operation 42) on Channel 128 (15 minutes). Report completion.

16-1119 LPS JRPS 127

Configure KMTS 0505A1 (A1,A2,A3) bit syncs to source 2 (Manual mode, source 2, 60 kb.)

Launch Window Information Update

NOTE
Perform this option for variable window missions requiring L-1H30M update.

Launch Window Information Update Not Performed: _____

16-1120 *FLT NTD 232
 NTD CGLS
 SRO
 LRD

(SIM) Launch window information update:

Window Opens _____ GMT

Pane 1 Inplane _____ GMT

Preferred Launch _____ GMT

Window Closes _____ GMT

Launch T-0 At Preferred Launch Time

Preferred Pane 1 Close _____ GMT

Preferred Pane 2 Open _____ GMT

Pane 2 Inplane _____ GMT

Preferred LOX Drainback _____ minutes _____ seconds

Launch T-0 At Window Open Time

Window Open Pane 1 Close _____ GMT

Window Open Pane 2 Open _____ GMT

Pane 2 Inplane _____ GMT

Window Open LOX Drainback _____ minutes _____ seconds

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16-1121 LRD SCO 135

(SIM) Preferred Launch time is _____ GMT. Update preferred retrieval ship coordinates.

16-1122 SCO LRD 135

(SIM) Updated preferred retrieval ship coordinates are as follows:

RH SRB_____

LH SRB_____

16-1123 *FLT NTD 232
 NTD SRO

The Weather Balloon System is no longer mandatory.

***** End of Launch Window Information Update *****

Timer Configuration

Timer No. 1 Window Remaining

NOTE

Timer No. 1 is set to the value of the window.

16-1124 CGLS JTCR 178

Setup window remaining timer No. 1 to following time: (phone 1-2290)

Timer No. 1 ___:___:___ (window open)

___:___:___ (preferred)

Support: [TCD](#)

16-1125 JTCR

For timer No. 1, at the T-9 minutes. holding point:

Active OVRD switch - On

Counthold switch - Off

When timer No. 5 decrements to zero:

Activate counthold switch - Auto

Support: [TCD](#)

NOTE

Timer No. 1 will decrement when holds occur after the planned hold at T-9/00 has been exhausted.

Timer No. 2 LOX Drain Back Elapsed Hold Time

16-1126 CGLS JTCR 178

Set LOX drain back hold timer No. 2 to +0:00.

Support: [TCD](#)

NOTE

Timer No. 2 counts at any hold after T-5 minutes. and counting.

16-1127 CGLS JTCR 178

Verify timer No. 2 in remote and in counting up mode.

Support: [TCD](#)

Timer No. 5 Hold Time Remaining

NOTE

The times are to reflect the planned hold duration. After T-9 minutes planned hold expires, Timer No. 5 will accumulate time at any additional hold.

16-1128 CGLS JTCR 178

Verify hold time remaining (Timer No. 5)

Set to following times:

T-20 minute hold ___:___:___ (Hold time remaining)

T-9 minute hold time remaining: ___:___:___ (Window open)

___:___:___ (preferred)

Support: [TCD](#)

Activate CMD Issuance For Hold Timer

16-1129

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
A CM TMDS
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-1130

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
A CM GCDKTIM2E
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-1131
T-50M00S

NTD *SEC 232

(SIM) Perform final CCF sweep and secure roadblock A/B-10.

Support: [SEC](#)

(SIM) Acid Deposition Weather Briefing

NOTE Perform this option if weather conditions have changed since last briefing.
--

(SIM) Acid Deposition Weather Briefing Not Performed: _____

16-1132	STM	CBSE	163
		NTD	232
	NTD	*SCC	

T-50M00S

(SIM) Verify ready for acid deposition weather briefing.

16-1133	STM	EEC	231
----------------	------------	------------	------------

T-50M00S

(SIM) Perform acid deposition WEATHER briefing.

***** End of (SIM) Acid Deposition Weather Briefing *****

Terminal Count SRSS Closed Loop Test

NOTE

Perform terminal count SRSS closed loop test if the Eastern Range is supporting SRSS frequency clearance.

Terminal Count SRSS Closed Loop Test Not Performed: _____

16-1134
T-50M00S

TBC LPS 127

Request LPS on OIS Channel 175 to support CBRS for SRSS test.

16-1135

NTD SRO 232
RSR

Verify ready to support terminal count closed loop test.

16-1136

NTD TBC 232
TBC CBRS 136

[SU17218](#)

Perform terminal count SRSS closed loop test (SSRB4).

16-1137 CBRS RSRT 175

START RANGE SAFETY DIGITAL RECORDERS AS FOLLOWS:

RACK 8234
PANEL A2

LEFT RECORDER - PRESS RECORD AND PLAY
SIMULTANEOUSLY
RIGHT RECORDER - PRESS RECORD AND PLAY
SIMULTANEOUSLY

T: _____

16-1138 CBRS LPS 175
 LPS C2MC 127

Place P/P-2 units 1 and 2 on-line for CBRS.

16-1139 CBRS TBC 136
 TBC NTD 232
 NTD PA

Attention in FR _____:

SPA required for range safety retrieval. All Console Operators are requested to refrain from calling up SPA retrievals until range safety checks reported complete.

16-1140 CBRS LPS 175
 LPS CPDR 127

Request three TCB's available in SPA for terminal count closed loop test.

16-1141

CBRS

CURSOR CNTL (SWRB2)
DCDR IND A
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SWRB2)
AGC VOLT A
XMIT CURSOR KEY - PRESS

CRT (SWRB2)
OMI = S0017

16-1142

CBRS

CURSOR CNTL (SWRB3)
SSRB4
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SWBR3)
SPA ON
XMIT CURSOR KEY - PRESS

16-1143

CBRS CBP1 175

Verify reception of arm commands. (Should be four pulses)

16-1144

CBRS CBP1 175

Verify reception of fire commands. (Should be four pulses)

SRSS Data Retrieval

16-1145	CBRS	LPS	175
	LPS	CLDB	127

IF arm and fire commands are not verified on printer plotters,

THEN Perform SRSS data retrieval on LDBM system for time duration provided by CBRS. Report completion.

Arm Start _____

Fire Stop _____

Not Performed: _____

16-1150 CBRS

CURSOR CNTL (BWR10)
RF SYSTEM SELECT
XMIT CURSOR KEY - PRESS
RECORD SYSTEM SELECTED

A_____ B_____

16-1151 CBRS TBC 136
TBC NTD 232
NTD SRO

ER range safety carrier no longer required. Range vehicle systems captured by closed loop signal.

16-1152 CBRS LPS 175
LPS NTD 232

SPA support for SRSS test no longer required.

16-1153 NTD PA

Attention in FR _____:

SPA no longer required for range Safety retrieval. SPA now available for normal retrieval OPS.

16-1154 CBRS TBC 136 SU17218
TBC NTD 232
NTD *SCC
***SCC *PSE DIR 7**

SRSS Closed Loop Test complete. S&A devices in safe position.

*****End of Terminal Count SRSS Closed Loop Test*****

16-1155

LPS

AWP01 (PG-B)
Select Switch PLDS to S3
Xmit Cursor
Verify PLDS S3, Go Mode
Select Switch PLDS to S2
Xmit Cursor
Verify PLDS S2, Go Mode

PLDS FEP Table Reload

NOTE

Perform next eight steps after SKR Data Checkout complete.

16-1156

NTD

LPS

232

Inhibit data activation on PLDS FEP, reload with \$FEPCPR tables.
Report completion.

16-1157

LPS

C4MC

127

I RS PLDA

16-1158

LPS

C4MC

127

I DA PLDS

16-1159

LPS

C4MC

127

\$FLAI PLDS FEP with check pointed tables. (\$FLAI PLDS,,CKPT)

16-1160 LPS C4MC 127

AWP01 (PG-B)
Select PLDS to S2
Xmit Cursor

16-1161 LPS C4MC 127

A DA PLDS

16-1162 LPS C4MC 127

A RS PLDA

16-1163 LPS C4MC 127

AWP01 (PG-B)
Select Lockout
Xmit Cursor

16-1164 LPS NTD 232

Data processing has resumed. PLDS FEP reloaded with checkpointed tables and returned to RF source.

(SIM) Initial Cabin Leak Check Complete

16-1165 CECL OTC 212 [SU17171](#)

Simulated Crew Module Pressurization Initial Cabin 2 psid Leak Check complete. **Proceed** with Cabin Vent Redundancy Check.

Cabin Vent Redundancy Configuration

16-1166 OTC CDR 212 [SU17172](#)
T-45M00S

Perform cabin vent redundancy configuration per your checklist.

16-1167 CDR

PANEL L2

CABIN VENT	
VENT ISOL SW - CLOSE, UNTIL	L2A1S3
VENT ISOL TB CL	L2A1DS3
VENT SW - OPEN, UNTIL	L2A1S4
VENT TB OP	L2A1DS4

16-1168 CDR OTC 212
OTC CECL

Cabin Vent Redundancy Configuration complete.

GLS Mainline Activation

16-1169
T-45M00S

OTC CGLS 212

[SU17216](#)

Perform GLS mainline activation.

16-1170

CGLS

(SELECT APPL PG-3B)

CRT
MS/ML DISPLAY

16-1171

CGLS

CURSOR CNTL
INITIATE MAINLINE
XMIT CURSOR KEY - PRESS

NOTE
Select GLS presequencer bypasses as applicable from following list and perform next step.

16-1172

CGLS

(SELECT APPL PG-4B)

CURSOR CNTL
GLS FUNCTIONS TO BYPASS
XMIT CURSOR KEY - PRESS

<u>FUNCTION</u>	<u>BYPASS</u>
BRS LIMIT CHANGE	_____
ONE SHOT DATA TRANSFER	_____
T-20 MINUTE AUTO HOLD	_____
OPS TRANSITION	_____
SEND GMTLO	_____
GPC DUMP AND COMPARE	_____
SLPA0, SLPA1 PERFORMS	_____
RF SWITCH SELECT	___ x ___
SINGLE SHOT VERIFY	_____
T-9 MINUTE AUTO HOLD	_____
BYPASS ALL	_____

Not Performed:_____

**05-13-2011
APPROVED**

**OMI S0017.200 A28
APPROVED**

16-1173

CGLS

PFP (SGPO2)
KEY 7 - PRESS
SGPO2 - PRESS
PROCEED - PRESS

CRT (SGPO2)
GLS MAINLINE ACTIVE MESSAGE

16-1174

CGLS

PFP
KEY 7 - PRESS

CRT
VERIFY SGPO2 ACTIVE IN TASK 4

16-1175

CGLS OTC 212

GLS Mainline Activation complete.

DPS LDB Redundancy Check and LCD Seq Activation

16-1176
T-45M00S

OTC CDPS 212

Perform DPS LDB Redundancy Check and Launch Countdown Sequence Activation.

16-1177

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
MDM BSR READ PROGRAM (VAS93)
XMIT CURSOR KEY - PRESS

PFK-2 KEY - PRESS

16-1178

CDPS

CURSOR CNTL (VAS93 PG-B)
PORT 1
XMIT CURSOR KEY - PRESS

APPL PAGE (VAS93 PG-B)
PFK-5 KEY - PRESS

CRT (VAS93 PG-B)
NO UNEXPLAINED BSR'S

NOTE

LDB Switching in following steps will cause annunciation of LCC LPS-17.

16-1179

CDPS

CONSOLE KYBD
GPCC LDBC
XMIT CMD KEY - PRESS

16-1180

CDPS

CURSOR CNTL (\$GM)
POLL GSE ON LDB NO. 2
XMIT CURSOR KEY - PRESS

PFK-1 KEY - PRESS

16-1181

CDPS

CRT (VAS59 PG-B)
LDB 2 POLLING ACTIVE

16-1182

CDPS

CURSOR CNTL (VAS93 PG-B)
PORT 2
XMIT CURSOR KEY - PRESS

APPL PAGE (VAS93 PG-B)
PFK-5 KEY - PRESS

CRT (VAS93 PG-B)
NO UNEXPLAINED BSR'S

16-1183

CDPS

APPL PAGE (VAS93 PG-B)
PFK-15 KEY - PRESS

16-1184

CDPS

CONSOLE KYBD
GPCC LDBC
XMIT CMD KEY - PRESS

16-1185

CDPS

CURSOR CNTL (\$GM)
POLL GSE ON LDB NO. 1
XMIT CURSOR KEY - PRESS

PFK-1 KEY - PRESS

16-1186

CDPS

CRT (VAS59 PG-B)
LDB 1 POLLING ACTIVE

16-1187

CDPS

CURSOR CNTL (VASP9 PG-B)
LAUNCH DATA BUS ANOMALY
XMIT CURSOR KEY - PRESS

CRT (VASP9 PG-B)
MESSAGE CLEARED

16-1188

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS INIT DISPLAY (SAS01)
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
TERMINATE OPS MGR 5 (SAS25)
XMIT CURSOR KEY - PRESS

PFK-2 KEY - PRESS

16-1189

CDPS

CONSOLE KYBD
VASJ6
PERF PGM KEY - PRESS

16-1190 **CDPS**

CRT (VASJ6 PG-B)
VERIFY ALL FC AND PL BSR'S ARE ZERO

16-1191 **CDPS**

APPL PAGE (VASJ6 PG-B)
PFK1 KEY - PRESS (BSR READS CONTINUE)
PFK1 KEY - PRESS (NO NBAT UPDATE)

CRT (VASJ6 PG-B)
VERIFY MSG:
WAITING FOR GO FOR ONESHOT

16-1192 **CDPS** **OTC** **212**

DPS LDB Redundancy Check and Launch Countdown Sequence
Activation complete.

GLS Pre-Sequencing

16-1193 **CGLS**
T-40M00S

PFP
KEY 7 - PRESS

CRT
VERIFY SGPR2 ACTIVE IN TASK 5

16-1194 **CGLS** **OTC** **212**
T-40M00S

GLS Pre-Sequencing has started.

Triage Site Determination

16-1195 NTD CBSE 232

(SIM) Determine preferred triage site for remainder of Launch period and report determination.

Site	Location
2	A/B-5 Roadblock
8	B-4 Roadblock
3	Pad A Parking Lot
4	Pad B Parking Lot
9	NW of Pad B
5	Beach road north of Pad B
6	Beach road south of Pad A

(SIM) Whiteroom Closeout

16-1196 OTC OVCC 212
T-40M00S

(SIM) Closeout Whiteroom. **Verify** Orbiter ECS air damper closed and chamber ECS air damper open. **Report** completion.

Final Cabin Leak Check Complete

16-1197 CECL OTC 212 SU17172
T-40M00S

Simulated Crew Module Pressurization, Cabin Vent Redundancy Check,
and Simulated Final Cabin 2 psid Leak Check complete.

Launch Director/Flight Director Launch/RTLS Weather Briefing

16-1198 NTD STM 232 SU17174
 STM *WEA 231
T-40M00S

(SIM) Request range Weather on OIS Channel 231 to support Weather
briefing.

16-1199 LD NTD 232
 NTD *FLT

(SIM) Ready for Launch/RTLS Weather briefing on OIS Channel 231.

16-1200 *FLT NTD 232

Launch Director/Flight Director Launch/RTLS Weather briefing
complete. There ___ (are/are no) Launch/RTLS weather constraints.

Cabin Vent

16-1201 **OTC** **CECL** **212** [SU17173](#)
T-40M00S

CRT (VAG29 PG-B)
RECORD
DP/DT _____ 0 +/- 0.01 PSI/MIN

16-1202 **CECL** **OTC** **212**
OTC **CHGD**

Ready for cabin vent; air will be venting into Orbiter payload bay and AFT.

16-1203 **OTC** **CDR** **212**
T-40M00S

PERFORM CABIN VENT PER YOUR CHECKLIST.

PANEL L2

CABIN VENT

VENT ISOL SW - OPEN, UNTIL L2A1S3
VENT ISOL TB OP L2A1DS3

16-1204 **CECL**

CRT (VAG29 PG-B)
CAB VENT - POP
CAB ISOL - POP V61X2005E1

16-1205 **CDR**

PANEL O1

(SIM) CABIN PRESS DECREASING

16-1206 **CDR** **OTC** **212**

Cabin vent open.

16-1207 **OTC** **CECL** **212**

STANDBY TO GIVE PRO WORDS "CLOSE CABIN VENT" ON CHANNEL 212 IF DECREASE IN PPO2 BELOW BASELINE IS OBSERVED ON CRT (VAG29 PG-B)

PASS/BFS Transfer Prep

16-1208
T-32M00S

OTC CDR 212

[SU17175](#)

Perform PASS/BFS Transfer Prep per your checklist.

16-1209

CDR

PANEL C2
LEFT CRT SEL SW - 3

16-1210

CDR

L KYBD
RESUME

CRT 3
GPC MEMORY

16-1211

CDR

PANEL O6
GENERAL PURPOSE COMPUTER
MODE
5 SW - STBY
5 TB RUN

16-1212

CDR

PANEL C3
BFC CRT
SELECT SW - 3+1
DISPLAY SW - ON

16-1213 CDR

CRT 3 (BFS)
BFS MEMORY

16-1214 CDR

L KYBD
ITEM 25 EXEC

CRT 3
25*

16-1215 CDR

PANEL C2
LEFT CRT SEL SW - 1

16-1216 CDR OTC 212

PASS/BFS Transfer Prep complete.

(SIM) SLF NAVAID Status

16-1217 LRD *SLF 135

(SIM) Verify Weather aircraft confirms KSC and PAFB TACAN (OV-103 and OV-104 only) and KSC MSBLS operating and ready to support Launch.

16-1218 LRD LSO 135
LF1

(SIM) KSC and PAFB TACAN (OV-103 and OV-104 only) and KSC MSBLS operating and ready to support Launch.

(SIM) OMS GN₂ Press

16-1219
T-30M00S

OTC CDR 212

[SU17177](#)

(SIM) Perform OMS GN₂ press per your checklist.

16-1220

CDR

PANEL C3

OMS ENG

LEFT SW - OFF*

C3A01S001

RIGHT SW - OFF*

C3A01S002

16-1221

COOS

CRT (VWD42/VWD41)

LOME/ROME

CYAN*

16-1222

COOS

CRT (VWD72)

LOME ARM VALVE (1AL) CLOSED

ROME ARM VALVE (1AR) CLOSED

PURGE VALVES (LP1, LP2) CLOSED

PURGE VALVES (RP1, RP2) CLOSED

LT AND RT OMS ENG REG OUT PRESS

40-90 PSIA*

16-1223

CDR OTC 212

(SIM) OMS GN₂ Press complete.

(SIM) WSB GN₂ Supply Activation

16-1224 **OTC** **PLT** **212**
T-30M00S

(SIM) Perform WSB GN₂ Supply Activation per your checklist.

NOTE

In the following step, asterisk (*) indicates configuration different from Launch countdown configuration.

16-1225 **PLT**
T-30M00S

PANEL R2
APU/HYD
BOILER N₂ SUPPLY
1 SW - OFF*
2 SW - OFF*
3 SW - OFF*

16-1226 **CHYD**

CRT (VWF19)
VERIFY
WSB GN₂ REG OUT PRESS 1-2-3;
39-44 PSIA

CRT (VWF43)
VERIFY
N₂ SUPPLY OFF 1-2-3; OFF

16-1227 **PLT** **OTC** **212**

(SIM) WSB GN₂ Supply Activation complete.

(SIM) Assemble Post Launch Inspection/Safing Teams (-30M)

16-1228
T-30M00S

NTD PA

(SIM) Post Launch Inspection/Safing Teams report to assembly area at OSB II.

16-1229
T-30M00S

OTC *PAD 132

(SIM) Notify Post Launch Inspection/Safing Personnel to assemble at OSB II.

16-1230
T-30M00S

**PSTM STM
JSTC 111**

(SIM) All Support Personnel required for Post Launch Safing/Inspection assembled at OSB II.

Support: [JSTC](#)

MEC Pre-Flt BITE

16-1231
T-29M00S

OTC CEPD 212

[SU17179](#)

Perform MEC Pre-Flt BITE.

16-1232

CEPD

CURSOR CNTL (MEC/PIC AUTO TEST MENU)
LAUNCH PREFLT BITE
XMIT CURSOR KEY - PRESS

16-1233

CEPD

PFP (VSC24)
CONTINUE - PRESS

CRT (VSC24)
PORT 1 SUCCESSFUL
PORT 3 SUCCESSFUL

NOTE

Make hardcopy before next terminating step clears screen.

16-1234

CEPD

PFP (VSC24)
TERMINATE - PRESS

GLS Limit Change Complete

16-1235
T-26M00S

CGLS OTC 212

IF ER/range safety is supporting TCDT,

THEN GLS Limit Change and Dual Notification for BRS complete (auto).

Not Performed:_____

(SIM) Nonessential Personnel Clear of LDA

16-1236 **NTD** ***SEC** **232**

(SIM) Report when all nonessential personnel have cleared Launch danger area.

Support: [SEC](#)

16-1237 **NTD** ***SEC** **232**
T-26M00S

(SIM) Secure roadblocks Barricade 49, A-5, A-3, A-6 and go harddown on A/B-11 and A/B-15.

Support: [SEC](#)

16-1238 ***SEC** **NTD** **232**
 NTD ***SCC**

(SIM) Nonessential personnel clear of LDA and CCF.

Support: [SEC](#)

16-1239 **OVCC** **OTC** **212**
 OTC **NTD** **232**

(SIM) White room configuration for Closeout complete. Final closeout verification in work.

Clear Closeout Crew From Pad

16-1240	OVCC	OTC	212
	OTC	NTD	232
	NTD	*SCC	

T-25M00S

(SIM) White room secured. All personnel clearing back to roadblock. Flight Crew Rescue Locker equipment replaced and locker secured (latched and pinned). Slidewire baskets in position. All Closeout Crew tools accounted for.

16-1241	NTD	OTC	232
	OTC	OVCC	212

(SIM) Perform clearing of Closeout Crew from FSS. Position FSS elevators at Pad surface level doors closed position and power switch in "Off" position (Red button depressed)

16-1242	NTD	STM	232
	STM	JYVO	138

T-25M00S

(SIM) Provide video tracking of Closeout Crew-Pad to OSB II.

Support: [OTV](#)

SIMO A/G Voice Check and Ascent Crew Data Update

NOTE

SIMO A/G voice checks/data update may be performed by NTD or by *FLT (If supporting TCDT).

16-1243
T-25M00S

OTC CDR 212

Standby to perform SIMO A/G and UHF voice check with *FLT.

16-1244
T-25M00S

NTD *FLT 232

Perform SIMO voice checks and ascent Crew data update.

16-1245

***FLT NTD 232**
NTD OTC

SIMO A/G Voice Checks complete.

NOTE
RTLS and TAL ALT setting will be supplied by VITT if *FLT not supporting TCDT.

NOTE
Perform next step only if requested by *FLT.

**16-1246 *FLT CDR
 PLT**

Reading out RTLS and TAL ALT setting and runway.

RTLS Altimeter _____

RTLS Runway _____

TAL Altimeter _____

TAL Runway _____

Not Performed: _____

CDC Hold Prep

**16-1247 NTD ALL 232
 PA
 212**

T-22M00S

CDC will hold at T-20 minutes.

PASS - BFS Transfer (DEU Equiv)

16-1248
T-22M00S

CGLS

SU17181

CRT (PG-5B)
VERIFY "ONE SHOT REQ SENT" INVERT GREEN

16-1249

CDPS

CRT (VASJ6 PG-B)
VERIFY ONE-SHOT COMPLETE
MILESTONE IN INVERT GREEN
VERIFY MSG:
WAITING FOR GO TO TRANSITION

16-1250

CGLS

CRT
VERIFY "ONE SHOT XFER COMPLETE" INVERT GREEN

Report Cabin Press

16-1251

CECL OTC 212

SU17173

Cabin vent complete. Ready for cabin press reading.

16-1252

CECL

CRT (VAG29 PG-B)
REPORT
CABIN PRESS _____ PSIA
15.65 PSIA MAX (OV-105)
15.5 PSIA MAX (OV-104)
15.6 PSIA MAX (OV-103)

V61P2405A1

16-1253 OTC CDR 212

REPORT CABIN PRESSURIZATION PER YOUR CHECKLIST.

CRT READING _____ PSIA

PANEL O1A1 _____ PSIA

PANEL C2
LEFT CRT SELECT SW - 3
CRT 3
MAJ FUNCT SW - SM
LEFT KYBD (BFS)
SYS SUMM
CRT 3
BFS SM SYS SUMM 1
CRT 3

RESTORE GNC BFS OPS DISPLAY.
(BFS MEMORY DISPLAY IF PRE-OPS 1,
BFS LAUNCH TRAJ1 DISPLAY IF POST OPS 1)

PANEL C2
CRT3
MAJ FUNC SW - GNC
LEFT CRT SELECT SW - 1
CRT 3
BFS MEMORY (IF OPS 0)
LAUNCH TRAJ (IF OPS 1)

Close Vent Valves

NOTE
Vent valve closing may occur earlier or later at CECL direction.

16-1254 **OTC** **CECL** **212** [SU17183](#)
T-21M00S

Verify ready for cabin vent valve closing.

16-1255
T-21M00S

OTC **CDR**

Perform close vent valves per your checklist.

16-1256

CDR

PANEL L2

CABIN VENT

VENT ISOL SW - CLOSE, UNTIL

L2A1S3

VENT ISOL TB CL

L2A1DS3

VENT SW - CLOSE, UNTIL

L2A1S4

VENT TB CL

L2A1DS4

16-1257

CECL

CRT (VAG29 PG-B)

CAB VENT PCL

V61X2005E1

CAB ISOL PCL

V61X2045E1

16-1258

CDR

OTC

212

Vent valves closed.

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APPROVED

OMI S0017.200 A28
APPROVED

16-1264 OTC *ACM 132

Notify personnel in AFT and any personnel entering AFT that MPS solenoids will cycle intermittently during remainder of S0017 until safing complete.

16-1265 CGLS

Verify two concurrencies available in backup console for mainline interrupt activation.

16-1266 NTD OTC 232
 212
 *PAD 132

T-20M00S
(HOLDING)
L-35M00S

Send SCO's to White room.

NOTE
Perform next two steps if RSS is in mate position.

16-1267 CPVD OTC 212 SU17151
 OTC *PAD 132

Orbiter vent doors will be cycled during Terminal Count Sequence and again after recycle.

1. **Place** two vent door monitors on the RSS 130-ft level at the right and left vent doors 8 and 9, Channel 172. R/H Monitor to remain on station for vent door reconfiguration after Recycle.

NOTE
Perform next substep for OV-105, or if access allows.

2. **Place** one vent door monitor on the RSS 207-ft level at left and right vent doors 1 and 2, Channel 172.

Sub Step 2 Not Performed: _____

Entire Step Not Performed: _____

16-1268 NTD *SCC 232
 *SCC *PSE DIR 7

Configuration of the RSS 207-ft level for OV-103 and OV-104 is either the FRCS Room is cleared for NAV AIDS or a 2-ft NAV AIDS clear is in place with an Antenna Monitor. For all vehicles, if access allows, PVD will require a Vent Door observer.

Verify RSS 207-ft level FRCS Room is clear of all non-essential personnel.

Not Performed: _____

Set CDC Start Time

16-1269 **CGLS** **NTD** **232**
T-20M00S
(HOLDING)

CDC to start at __: ____/____
DD HHMM SS

NOTE

Perform the next step if BRS has been system bypassed and ER holdfire switches are to be tested.

16-1270 **CGLS**

ISSU N03IS331D 1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed: _____

NOTE

If adverse weather conditions require the right AFT vent doors 8 and 9 to remain closed until commanded open by the RSLs, perform to preclude a possible breakout condition due to vent door timing concerns for those doors going from closed to open prior to the RSLs check at T-7 seconds.

16-1271 **NTD** **CGLS** **232**

Perform S0007.500 Operation 124 Orbiter vent door override for
R AFT VNT 8 & 9 IND 1
R AFT VNT 8 & 9 IND 2

Not Performed: _____

BYPASS SSME SOP

16-1272 NTD CGLS 232

IF any SSME is unable to support this test,

THEN Perform S0007.500 Operation 124 Bypass SSME SOP.

Not Performed: _____

(SIM) LRD Status Check

16-1273 LRD *WCX 135
T-20M00S
(HOLDING)

(SIM) Verify RTLS runway 15 or 33.

16-1274 LRD LSO 135
LF1 STM
STM JSTC 111
FSTM
JSTC FSTC NET 104
FSAM

(SIM) In the event of RTLS, Landing will be on Runway _____
(15 Or 33).

Support: [SLF](#)

16-1275 LRD NCC NET CCN

(SIM) In event of RTLS abort, Landing will be on runway _____
(15 Or 33).

16-1276 NCC LRD NET CCN

(SIM) Convoy prepared to move to deployment site.

Console Program Assignments

16-1277	NTD	OTC TBC PTC LPS	232	SU17185
---------	-----	--------------------------	-----	---------

T-20M00S
(HOLDING)

Verify FR console software activation configured properly for T-20 minutes (Only programs listed may be active).

Orbiter Programs

16-1278	OTC	ALL	212
---------	-----	-----	-----

All Orbiter systems verify program software. Report only if any discrepancies.

16-1279		CHYD	
---------	--	------	--

Verify programs
VWF19 active in C8
VWF43 active in C8

16-1280		CAPU	
---------	--	------	--

Verify programs
VWF48 active in C8
VWF57 active in C8

16-1281		CSME	
---------	--	------	--

Verify program
VAE38A active in C3

16-1282		CMPL	
---------	--	------	--

Verify program
SAE02 active in C3

16-1283 **CMPS**

Verify programs
VAE18 active in C4
SAE12 active in C4

NOTE

Asterisk (*) denotes configuration different from Launch count configuration.

16-1284 **CMPS**

CRT (VAE18)

VERIFY MPS/SSME
750 PSI PNEU
SYSTEMS ARE AMBIENT *
AND ALL EIGHT SWITCHES
ARE CLOSED. *

16-1285 **CECL**

Verify programs
VAG59 active in C5
VAG29 active in C5

16-1286 **CPVD**

Verify programs
VAM01 active in C6
VAM31 active in C6

16-1287 **CGSS**

Verify programs
VAJ14 active in C7

16-1288

CAFM

Verify programs
VAK20 active in C5
VAK21 active in C5

16-1289

CPLE

Verify PC GOAL program
Overview 2 active in C5 position

16-1290

CFCP

Verify programs
VWR05 active in C6
VAG12/31 (as required)
VWR70 active in C6
VWR04 active in C6

16-1291

CHGD

Verify program
SAQ06/VWQ01 active in C9

16-1292

COOS

Verify programs
VAD17 active in C7
VADL8 active in C7
VADL9 active in C7
VADL0 active in C7

16-1293

CCSE

Verify programs
VWA40 active in C2

16-1294 **CNSE**

Verify programs
VAA40 active in C2
VAA41 active in C2

16-1295 **CISL**

Verify programs
SAQ04 active in C9
VAQ29 active in C9

16-1296 **CEPD**

Verify programs
SWC02 active in C10
VWC17 active in C10
VWC10 active in C10

16-1297 **COFC**

Verify programs
SAB19 active in C11
SAB20 active in C11
SAB21 active in C11
VABM1 active in C11

16-1298 **CDPS**

Verify programs
SAS01 active in C12
VASP9 active in C12
VAS59 active in C12
VASB9 active in C12
VASJ6 active in C12

16-1299 **CCME**

Verify program
VWE01A active in C12

NOTE

Verify one of the following two groups of programs based on RDM/SpaceHab mission requirements.

16-1300

CGLS

Verify programs

SLP03 active in INTG

SLP02 active in INTG

SLP01 active in INTG

SGPO2 active in INTG

SGPR2 active in INTG

Not Performed:_____

16-1301

CGLS

Verify programs

SLP81 active in INTG

SLP02 active in INTG

SLP01 active in INTG

SGPO2 active in INTG

SGPR2 active in INTG

Not Performed:_____

16-1302

CTPE

Verify two available concurrencies in B/U.

Verify programs

SLPBO active in B/U

SLPCO active in B/U

SEP03 active in B/U

SEP03 active in B/U

SRB/ET Programs

16-1303 TBC ALL 136

All SRB/ET systems verify program software. Report only if any discrepancies.

16-1304 CBRS

IF supporting TCDT,

THEN Verify programs
SARB4 active in C2
SWRB2 active in C2

Not Performed: _____

16-1305 CHPU

Verify program
BAT04 active in C8

16-1306 CPWR

Verify program
BWE08 active in C10
BWE11 active in C10
TW495 active in C10

16-1307 TBC CMEC 136

Verify ready to pick up at T-20 minutes.

Payload Programs

16-1308
T-20M00S
(HOLDING)

PTC SLES

IF Payload Console Programs are active,
THEN Verify C1 console programs active

Not Performed: _____

16-1309

PTC NTD 232

FR C1 console software configured.

LPS Programs

16-1310

LPS

Verify programs:

\$HWMON (TCB1) ACTIVE IN MSTR
AA008/AWP02 (TCB2) ACTIVE IN MSTR
AA009/AWP01 (TCB4) ACTIVE IN MSTR
SLP50 (TCB5) ACTIVE IN MSTR

16-1311

CDPS

Verify two consecutive OC task concurrencies available to perform GPC dump.

Tape Switch PDR Sub-SYS

16-1319 LPS CPDR

IF NORMAL TAPE SWITCH HAS NOT OCCURRED WITHIN
30 MINUTES,

THEN PERFORM TAPE SWITCH AT PDR SUBSYSTEM

PDR INFOTON KYBD
#INRC, T (X)
RTN KEY - PRESS

Not Performed: _____

16-1320 NTD FCO 212

IF ER is supporting TCDT,

THEN Perform Communication verification check (OIS Channel 212).

Not Performed: _____

16-1321 NTD CGSS 212
 CHGD
 JBFX

Verify active on Channel 212 and monitor Channel 232 for remainder of count.

Support: [CWSS](#)

Payload Signal Processor (PSP) Power Down

NOTE

Perform next four steps if Payload Signal Processor (PSP) is powered up. Powering down PSP is required to be performed in GNC9.

Payload Signal Processor (PSP) Power Down Not Performed: _____

16-1322 OTC CDR 212
 CDPS

PSP will be powered down. Alert will occur.

16-1323 NTD OTC 232
 *FLT
 PTC
OTC CCSE 212

Support PSP deactivation on Channel 232.

16-1324 NTD *FLT 232
 CCSE

TRANSMIT DSM 4801 (P/L SYSTEM OFF)

VAA06
VERIFY
PSP OFF
PL INTER OFF

16-1325 CCSE NTD 232
 NTD *FLT

PSP Deactivation complete.

*** End Of Payload Signal Processor (PSP) Power Down ***

(SIM) LRD Status Checks

16-1326 LRD GOM
 LF1 WGOM
 BGOM
 LSO

T-20M00S
(HOLDING)

(SIM) Ready for landing site verification. **Verify** landing sites prepared for Launch.

16-1327 LRD STM 135
 STM FSTM 111

(SIM) **Verify** support systems at KSC Shuttle Landing Facility ready for Launch.

16-1328 LRD BRD 135

(SIM) **Verify** booster retrieval forces on station and ready for Launch.

T-20 Minute Briefing

16-1331

NTD

232

SU17191

212

T-20M00S
(HOLDING)

Perform following:

1. The Launch window:

Opens at _____ GMT

Closes at _____ GMT

LO₂ drainback hold time is _____ M _____ S

and is based on _____
(Engine performance, engine start box temperatures, ET certification requirements)

The Launch window and LO₂ drainback hold times will be updated and provided to the team during the T-9 minute Hold.

There is/is not a Launch window cutout within the Launch window.

There are/are no Collision Avoidance timeframes within the Launch window.

2. **PLT:**

At T-5 minutes, perform APU start upon command of OTC only.

3. **CDR:**

The Pad Egress system is/is not in nominal configuration.

The evacuation helipad is _____.

4. Firing Room Launch Team:
After T-20 minutes, all problems or trends that require a Countdown Clock Hold will be reported to the NTD on Channel 212, together with a recommendation.

For all manual Holds after T-5 minutes, the Countdown Clock will continue until T-31 seconds unless the recommendation to hold at the next milestone is necessary.

After T-31 seconds, only Cutoff is available and will result in a Recycle to T-20 minutes. For a Cutoff, prowords "CGLS Give Cutoff" will be used.

5. The GLS milestones are:

T-9M00S	GLS Sequence Start
T-7M30S	OAA Retract
T-5M00S	APU Start
T-4M00S	Purge Sequence 4
T-2M55S	LO ₂ Pressurization
T-1M57S	LH ₂ Term Replenish
T-31S	Go for Auto Sequence Start

6. **SPE:**
Any comments for Crew.

***** End of T-20 Minute Briefing *****

Activate Profile Monitor

16-1335

COFC

CURSOR CNTL (SAB19/SWB01)
COUNTDOWN - DETAIL
EXEC CMD KEY - PRESS

16-1336

COFC

CURSOR CNTL (VWB05 PG-B)
(ON ITEMS BELOW)
XMIT CURSOR KEY - PRESS

AEROSURFACE PROFILE EVAL
MPS TVC PROFILE EVAL

16-1337

COFC

APPL PG-B (SAB21/VWB05)
PFK5 KEY - PRESS (WRITE BYPASSES)
PFK1 KEY - PRESS (START)

16-1342

CMQC

Verify support available for:

1. HYD Pre-APU check (S0017.300 Operation 38)
(OIS Channel 171) (T-5Minutes)
2. Recorder activation (S0017.300 Operation 52)
(OIS Channel 145) (T-9Minutes holding)

Qv: _____

Resume Count

NOTE

CGLS will monitor LPS and GPC countdown time. If delta of greater than 2 seconds develops, CGLS will notify NTD and CDPS.

16-1343

CGLS

212

T-20M00S
(HOLDING)

CDC will start on my mark: 3-2-1 mark

16-1344

NTD

PA

T-20M00S
(COUNTING)

T-20 Minutes and counting

_____ GMT

(SIM) HGDSA, HGDSB and HUMS Confidence Check

16-1345 CHGD

(SIM) Perform HGDSA, HGDSB and HUMS Confidence Checks.

OPS Transition

NOTE

Elevons will move to Launch position after OPS 101 transition.

NOTE

If body flap position not within +/- 1.5 degrees of commanded position (0 degrees) upon entry to OPS 101, body flap fail indication will be displayed to Crew. Upon hydraulic pressurization body flap will be automatically driven by flight software back within +/- 0.7 degrees of commanded position and fail indication will be automatically reset.

16-1346
T-20M00S
(COUNTING)

CDPS

SU17193

CRT (VASJ6 PG-B)

VERIFY

"TRANSITION CPLT"

MILESTONE - INVERT GREEN

16-1347 CDPS OTC 212

PASS OPS Transition complete. DPS ready for BFS transition to OPS 101.

BFS To OPS 1

16-1348
T-18M00S

OTC CDR 212

[SU17195](#)

Clear PASS Fault Summ (SPEC 99 PRO) and take BFS to OPS 1 per your checklist.

16-1349

CDR OTC 212

BFS OPS 1 Transition complete.

16-1350
T-18M00S

CGLS

Verify SLPAO and SLPA1 active in backup console.

NOTE
Dump will require approx 10 minutes.

16-1351

CDPS

CRT (VASJ6 PG-B)
T-20 MINUTE DUMP IN PROGRESS

Alternate TAL Site Selection (Contingency)

NOTE
If *FLT not supporting TCDT, VITT will provide TAL site information.

16-1352

*FLT PLT 212

IF alternate TAL site selection required,

THEN Perform alternate TAL site selection for TAL site _____ (1-5)
during horiz sit configuration.

Not Performed: _____

Horizontal Situation Configuration

16-1353 OTC PLT 212 SU17197
T-16M30S

Perform Horizontal Situation Configuration per your checklist.
(Note: Can take up to 2 minutes).

16-1354 PLT OTC 212

Horizontal Situation Configuration complete.

Contingency Abort Yaw Steer (PASS)

16-1355 OTC CDR 212 SU17198

Configure Contingency Abort Yaw Steer per your checklist.

16-1356 CDR OTC 212

Contingency Abort Yaw Steer Configuration complete.

Ready For BFS Uplink

16-1357 CVFS

CRT (VASB9 PG-B)

BFS TRACKING PASS
FC STRG 1-4 CYAN
NSP STAT GOOD

BFS Pre-Flight Uplink Loading

NOTE

Perform next three steps if *FLT supporting TCDT and BFS uplink loading required.

BFS Pre-Flight Uplink Loading Not Performed:_____

16-1358 CVFS NTD 212

Ready for BFS uplink

16-1359 NTD *FLT 212
T-16M00S

Perform BFS Preflight Uplink Loading.

16-1360 *FLT NTD 212

BFS Preflight Uplink Load complete.

***** End Of BFS Pre-Flight Uplink Loading *****

(SIM) MPS He Reconfiguration

16-1361
T-16M00S

OTC PLT 212

SU17200

(SIM) Perform MPS He reconfiguration.

NOTE

Asterisk (*) denotes configuration different from Launch Count Configuration.

16-1362

PLT

(SIM) PANEL R2

MPS

He ISOLATION A

LEFT SW - CLOSE *

CTR SW - CLOSE *

RIGHT SW - CLOSE *

He ISOLATION B

LEFT SW - CLOSE *

CTR SW - CLOSE *

RIGHT SW - CLOSE *

PNEUMATICS

He ISOL SW - CLOSE *

16-1363

PLT OTC 212

(SIM) MPS He Reconfig complete.

16-1364
T-15M00S

CMPS

(SIM) CRT (VAE18 PG-B)

VERIFY

FOLLOWING OPEN POWERS ARE ON, SWITCH SCANS
INDICATE OPEN:

ENG 1,2,3 REG ISOL A&B
MPS REG ISOL 1 AND 2

SSME REG A AND B OUT
PRESSURES 730-785 PSIA.

MPS REG OUT AND ACCUMULATOR
PRESSURES 715-790 PSIA.

(SIM) SRB AFT Skirt GN₂ Purge Activation

16-1365
T-15M00S

TBC CHPU 136

[SU17204](#)

(SIM) Initiate SRB AFT skirt GN₂ purge for both left and right SRBs.

16-1366

CHPU

(SIM) CONSOLE KEYBOARD C-8

TYPE C_RA_GHYP8014A_10
PRESS XMIT CMD

TYPE C_RA_GHYP8015A_10
PRESS XMIT CMD

NOTE

Either high or low flow may be used to satisfy the inerting purge requirement.
High flow is preferred. Low flow is acceptable if high flow is unavailable.
Nominal flow pressure for high flow configuration is 90 psig minimum.
Nominal flow pressure for low flow configuration is 30 psig minimum.

16-1367

CHPU

(SIM) IF SRB AFT SKIRT HIGH FLOW PURGE IS
AVAILABLE AND PURGE IS NOT CURRENTLY ACTIVE IN LOW
FLOW,

THEN

CURSOR CNTL (BAT04)

SRB AFT SKIRT GN2 PURGE

DC PWR PRI - ON

DC PWR SEC - ON

VERIFY GN2 SUP OPN

MAIN VALVE (OUTER) PRI - OPN

MAIN VALVE (OUTER) SEC - OPN

ADJUST SET POINT TO 70 +/-5

HEATER CMD - ON

DELAY FOR CONTROLLER SELF CHECK

ADJUST SET POINT TO 95 +/-10

Not Performed:_____

16-1368

CHPU

(SIM) IF SRB AFT SKIRT HIGH FLOW PURGE IS
UNAVAILABLE AND PURGE IS NOT CURRENTLY ACTIVE IN
LOW FLOW,

THEN

CURSOR CNTL (BAT04)

SRB AFT SKIRT GN2 PURGE

DC PWR PRI - ON

DC PWR SEC - ON

VERIFY GN2 SUP OPN

LOW VALVE (INNER) PRI - OPN

LOW VALVE (INNER) SEC - OPN

ADJUST SET POINT TO 70 +/-5

HEATER CMD - ON

DELAY FOR CONTROLLER SELF CHECK

ADJUST SET POINT TO 95 +/-10

Not Performed: _____

16-1369

CHPU

(SIM) CURSOR CNTL (BAT04)

SRB AFT SKIRT GN2 PURGE

RECORD FLOW CONFIGURATION _____ (HIGH/LOW)

RECORD UPPER FLOW PRESS _____ PSIG

RECORD LOWER FLOW PRESS _____ PSIG

VERIFY HEATER SET POINT 95 +/-10

VERIFY FLOW PRESS IS 30 PSIG MINIMUM (EITHER UPPER
OR LOWER MAY BE USED TO SATISFY THE REQUIREMENT)

16-1370

CHPU

TBC

136

[SU17204](#)

(SIM) SRB AFT Skirt GN₂ Purge Activation complete.

*** End of (SIM) SRB AFT Skirt GN₂ Purge Activation ***

Config BAT04 For LCD

16-1371
T-15M00S

CHPU

CONFIGURE BAT04 FOR LAUNCH COUNTDOWN.

16-1372

CHPU

CURSOR CNTL (BAT04)
C/D MDE
XMIT CURSOR KEY - PRESS UNTIL - LNH

Launch Area Clear Verif (T-15M)

16-1373

*PSE *SCC DIR 7
*SCC NTD 212
 *PAC

(SIM) Closeout Crew at roadblock A/B-11.

16-1374

*SCC NTD 212

(SIM) all nonessential personnel have cleared Launch danger area except those personnel located by specific list at forward observer sites.

16-1375

NTD STM 212
STM JYVO 138

T-15M00S

(SIM) **Terminate** video tracking of Closeout Crew.

Support: [OTV](#)

16-1376

NTD SRO 212

T-15M00S

IF ER is supporting TCDT,

THEN Report (SIM) KSC area clear for Launch.

Not Performed: _____

Deactivate Pad OIS

16-1377	NTD	STM	212
	STM	GYCC	111
	GYCC	JYCD	117

T-15M00S

(SIM) Deactivate Pad OIS-D. Verify completion.

Support: [OISD](#)

16-1378	OTC	JRPS	212
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T-13M00S

[SU17224](#)

(SIM) Start BMU display recorders.

(SIM) Fuel Cell Prelaunch Conditioning

NOTE
ECL monitor heat load impact in next step.

NOTE
FCP conditioning loads must be applied for 10 minutes (minimum) immediately preceding APU start.

16-1379 OTC CEPD 212 SU17205
 CFCP
 CECL

(SIM) Adjust fuel cell loads to between 250 and 290 amps.

NOTE
Individual fuel cell currents are allowed to be less than 250 amps each, assuming total fuel cell power is not less than 23 kw.

16-1380 CFCP
 CECL

(SIM) MONITOR FUEL CELL PERFORMANCE USING FOLLOWING CRITERIA:

VOLTAGE	28.325 VOLTS MIN (REF FIG V45CH0.010-1)
CURRENT	250-290 AMPS
TOTAL FC POWER	23 KW MIN
STACK COOL OUT TEMP	(REF FIG V45CH0.010-2)
COND EXIT TEMP	140-160 DEG F
COOLANT RET TEMP	40-140 DEG F
COOLANT PRESSURE	65 +/- 10 PSIA

Announce Hold Time

16-1381 NTD ALL 212
PA

T-12M00S

CDC will hold at T-9 minutes.

(SIM) Contingency Support Operations Ready For Launch

16-1382 LRD *DCD 135
ROC
EMS

T-12M00S

(SIM) Verify contingency support operations ready for Launch.
Emergency aircraft and personnel on station.

Read EIU BSR's

16-1383 CCME

T-10M00S

PFP (VWE01A)
GPC BSR READ - PRESS

16-1384 JYCD GYCC 117
GYCC STM 111
STM NTD 212

T-10M00S

(SIM) OIS-D deactivated to Pad.

Support: [OISD](#)

Single Shot Verif

16-1385
T-09M30S

CGLS

SU17206

(SELECT APPL PG-6B)

CRT
VERIFY
SINGLE SHOT FAILURES DISPLAY

NOTE

Perform next two steps if errors occur.

16-1386

CGLS

APPL PG-6B
HARD COPY KEY - PRESS
PFK15 KEY - PRESS

REPEAT PREVIOUS STEP UNTIL MSG
'VERIFY CYCLE COMPLETE' APPEARS ON PG-6B

Not Performed: _____

16-1387

CGLS

PFP
TERM VFY'S - PRESS

CRT
VERIFY INTEGRATED MENU

Not Performed: _____

16-1392

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS INIT DISPLAY
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
ACTIVATE OPS MGR 5 (SAS25)
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

Final Launch Window Determination

NOTE

Perform this option at L-39M for rendezvous mission with short duration window.

Final Launch Window Determination Not Performed: _____

16-1393
T-09M00S
(HOLDING)

NTD *FLT 212

(SIM) Ready for window determination discussion with LD on OIS 231.

16-1394
T-09M00S
(HOLDING)

LD NTD 231
*FLT

(SIM) Launch time opening will be _____ (Window open or Preferred Launch time).

16-1395

NTD *FLT 212

(SIM) Provide update to LOX drainback hold time and Launch/RTLS weather constraints.

LOX drainback hold time (performance)

_____ minutes _____ seconds

05-13-2011
APPROVED

OMI S0017.200 A28
APPROVED

16-1396 NTD OTC 212
 TBC
 PTC
 LPS
 *MIL
 STM
 *SCC
 SPE
 LRD
 SRO
 CDR

T-09M00S
(HOLDING)
L-37M00S

(SIM) Final Launch window opening will be _____GMT (Window open or preferred Launch time) and will close at _____GMT.
There is/is not a Launch window cutout:

During the cutout period, Launch will not be attempted.

LOX drain back hold time is ____min____seconds and based on Engine (Startbox/Performance/GOX Certification).

**** End Of Final Launch Window Determination ****

16-1397 NTD CGLS 212

Set CDC to start at ____:____/____.
 DD :HHMM/SS

Update hold time remaining clock.

05-13-2011
APPROVED

OMI S0017.200 A28
APPROVED

16-1398 LRD BRD 135

IF preferred Launch time selected,

THEN Perform

(SIM) Preferred Launch time selected. Updated ship coordinates are:

RH SRB _____

LH SRB _____

Deploy retrieval ships to new coordinates and report completion.

Not Performed: _____

16-1399 NTD

(SIM) **Evaluate** Avian Radar and/or cameras for bird density and consistency. **Determine** low (0-3), moderate (4-8) or high (9+) bird day. **Evaluate** threat in zone of interest around and above vehicle.

PASS G1 Launch Target Uplink Loading

NOTE

Perform this option if PASS Launch target uplink loading is required.

PASS G1 Launch Target Uplink Loading Not Performed:_____

16-1400 *FLT NTD 212 [SU17209](#)

G1 Launch target uplink loading required.

16-1401 NTD *FLT 212

Perform PASS Target Uplink Loading.

**16-1402 *FLT NTD 212
 CVFS**

PASS Target Uplink Loading complete.

***** End of PASS G1 Launch Target Uplink Loading *****

BFS G1 Launch Target Uplink

NOTE

Perform this option if a BFS G1 Launch Target Uplink is required to support rendezvous.

BFS G1 Launch Target Uplink Not Performed: _____

16-1403 NTD *FLT [SU17211](#)

Proceed with transmission of BFS G1 Launch Target Update.

16-1404 *FLT NTD
 CVFS

BFS G1 Launch Target Update complete.

***** End Of BFS G1 Launch Target Uplink *****

05-13-2011
APPROVED

OMI S0017.200 A28
APPROVED

16-1409 LPS JSDC 127
 JRPS

Verify ready to resume count.

16-1410 LPS C4MC 127

Perform \$FEPCPR demand update on all active FEPS.
Terminate \$FEPCPR at demand update completion.

Ascent Crew Data Update (T-09M)

16-1411 *FLT CDR 212 SU17213
 PLT
 NTD
NTD OTC
 STM

T-09M00S
(HOLDING)

IF requested by *FLT,

THEN Perform

Reading out RTLS ALT setting/ascent data and runway.

Not Performed: _____

(SIM) PVD/ECS PLB Flow Reduction

NOTE

Perform next two steps if PLB purge flow rate greater than 170 lb/minutes.

(SIM) PVD/ECS PLB Flow Reduction Not Performed: _____

16-1412
T-09M00S
(HOLDING)
L-17M00S

CPVD

(SIM) Reduce PLB purge flowrate for Launch.

16-1413

CPVD

(SIM) PERFORM THE FOLLOWING:

1. CURSOR CNTL (VAM31/VAM01)
EXPD FLOW
XMIT CURSOR KEY-PRESS

FLOW SET PT TARGET F (PLB)
XMIT CURSOR KEY-PRESS
2. USING PFK KEYS ADJUST PLB FLOW
RATE TO 170 +/- 10 LB/MINUTE
3. CURSOR CNTL
FLOW SET PT TARGET F (PLB)
EXEC CMD KEY-PRESS

EXPD FLOW
DISARM CMD KEY-PRESS
4. CRT
VERIFY PLB FLOW RATE
STABILIZES AT 170 +/- 10 LB/MINUTES.

***** End Of (SIM) PVD/ECS PLB Flow Reduction *****

16-1414 CPVD

(SIM) VERIFY (VAM09)

LH VENT DOOR NO. 6 - CLOSED

RH VENT DOOR NO. 6 - CLOSED

16-1415 CPVD OTC 212

(SIM) Payload bay purge flowrate set for Launch.

16-1416 OTC PLT 212

Clear Hardware Caution and Warning Memory.

Verify no unexpected errors.

16-1417 PLT

PANEL C3

CAUTION/WARNING

MEMORY SW - CLEAR

16-1418 PLT OTC 212

Hardware Caution and Warning Memory Clear complete.

Launch Status Check

16-1423	NTD	OTC	212	SU17215
		TBC		
		PTC		
		LPS		
		*FLT	(If supporting TCDT)	
		*MIL		
		STM		
		*SCC		
		LRD		
		SPE		
		SRO	(If supporting TCDT)	
		CDR		

T-09M00S
(HOLDING)

Verify ready to resume count and GO for Launch.

16-1424	NTD	LD	212
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Launch team ready to proceed.

Space Shuttle Operations Manager Launch Readiness Check

16-1425 *OM MMT SSPO

Verify ready to resume Count and Go for Launch:

Lockheed Martin Space Systems Company
Manager, ET Project
ATK Launch Systems Inc
Manager, RSRB Project
Pratt & Whitney-Rocketdyne
Manager, SSME Project
Director, Engineering (MSFC)
Deputy Manager SSP, MSFC
Program Director, Hamilton Sundstrand
Manager, EVA Office
United Space Alliance
Director, Engineering (JSC)
Manager, Orbiter Project
Director, Mission Operations (at JSC)
Director, Space Life Sciences
Director, Flight Crew Operations
Manager, ISS Program
Commander, 45th Space Wing
Director, Engineering (KSC)
Director, Shuttle Processing
Manager, Space Shuttle Systems Engineering and Integration Office
Manager, Space Shuttle Flight Operations and Integration
Manager, Space Shuttle Safety and Mission Assurance

16-1426 LD 212

Verify KSC Chief Processing Engineer's team (FR2 and ESA) has no constraint to Launch.

16-1427 LD SF 212

Verify KSC Shuttle Safety and Mission Assurance has no constraint to Launch.

16-1428 LD PLM 212

Verify KSC Payload Launch Manager has no constraint to Launch.

16-1429 LD *WEA 212

Verify range weather forecast meets Launch weather criteria.

16-1430 LD *OM 212

Verify NSTS operation manager's concurrence to proceed with Launch.

16-1431 LD NTD 212

Proceed with countdown.

**Countdown Reentry Point
(For Integ Console Failure Between T-9 Minutes and T-5 Minutes)**

Lock Out GLS Activation Of MPS Heatshield Water

NOTE

Next four steps prevent inadvertent activation of MPS heat shield water.

16-1432

CGLS

HOME CMD KEY - PRESS
CONSOLE KYBD
I CMD GWDKLU27E
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-1433

CGLS

HOME CMD KEY - PRESS
CONSOLE KYBD
I CMD GWDKLU28E
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-1434

CGLS

CONSOLE KYBD
I CMD GWDKLU29E
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-1435

CGLS

CONSOLE KYBD
I CMD GWDKLU71E
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

16-1436

CGLS

INTEGRATED SCHEDULER
PFPK3 CONTINGENCY - PRESS
VERIFY SAP90/SDP03 DISPLAY WITH
CURSOR TARGETS AVAILABLE FOR G1 LS CMDS

BYP LO2 OVBD BLEED VLV CL A - XMIT CURSOR
VERIFY CMD YELLOW
EXEC CMD - PRESS
VERIFY CMD GREEN

BYP LO2 OVBD BLEED VLV CL B - XMIT CURSOR
VERIFY CMD YELLOW
EXEC CMD - PRESS
VERIFY CMD GREEN

TERMINATE - XMIT CURSOR
VERIFY INTG MENU

16-1437

CGLS

TERM ALL OC TASKS AND GLS LOOKUPS AT INTG BEFORE
CDC IS RESUMED.

16-1438

CGLS

CONSOLE KYBD (INTG)
HOME CMD KEY - PRESS
A SH
XMIT CMD KEY - PRESS

16-1439

CGLS

CONSOLE KYBD (BKUP)
HOME CMD KEY - PRESS
A SH
XMIT CMD KEY - PRESS

**05-13-2011
APPROVED**

**OMI S0017.200 A28
APPROVED**

16-1440

CGLS

TAKE PRINTER OFF LINE.
(FOR INTG CONSOLE)

16-1441

CGLS

TAKE PRINTER OFF LINE.
(FOR BKUP CONSOLE)

Clock Start In 4 Minutes

16-1442 **NTD** **ALL** **212**
T-09M00S
(HOLDING)
L-13M00S

Countdown clock will start in 4 minutes.

(SIM) RTLS Runway Verif

16-1443 **LRD** ***WCX** **135** **SU17213**

(SIM) Verify RTLS landing will be on runway ____.

NOTE Perform next step if runway designation has changed from initial call.

16-1444 **LRD** **LSO** **LF1**
LRD **NCC** **CCN**
LRD **STM** **212**
STM **JSTC** **111**
JSTC **FSTM**
JSTC **FSTC** **NET 104**
FSAM

T-09M00S
(HOLDING)
L-13M00S

(SIM) In event of RTLS abort landing will be on runway
_____ SLF (15 or 33).

Support: **JSTC**

Not Performed: _____

(SIM) HGDSA, HGDSB and HUMS Confidence Checks - Complete

16-1445 CHGD

(SIM) HGDSA, HGDSB and HUMS Confidence Checks complete. No anomalies noted.

16-1446 CPVD OTC 132
OTC NTD 232

IF RSS is in mate position,

THEN Report Vent door monitors are on station.

Not Performed: _____

16-1447 NTD PA

Attention on Pad A:

All personnel stand clear of Orbiter vent doors. Vent doors will be cycled during Terminal Count Sequence.

(SIM) Start Video Recording

NOTE
Perform next three steps 1 minute prior to pickup of count.

16-1448 **JYVO** **GYVW** **138**
T-09M00S
(HOLDING)

(SIM) Reconfigure CDSC 32X32 switcher. **Verify** completion.

<u>OutPut No.</u>	<u>Select to Input No.</u>
8 (C2083-ER AE/AO)	7 (M2038-TV-1)

Support: [OTV](#)
Support: [WB](#)

16-1449 **JYVS** **JYVO** **138**
T-09M00S
(HOLDING)

(SIM) Contact EEC personnel (853-8279/8242) for initial positioning of VAB roof OTV camera 080. **Transmit** video to CDSC via 6TVM2038 (TVCC No. 1 output 462).

Support: [OTV](#)

NOTE
Coverage will be formation and development of ignition cloud that forms northeast of Pad. EEC personnel will observe OTV camera 080 in ROCC. Cargo COMM to extend circuit to ROCC.

16-1450 **JYVO** **JYVR** **138**
T-09M00S
(HOLDING)

(SIM) Start video recording of OTV camera 080

Support: [OTV](#)

16-1451 OTC ALL 212
L-12M00S

Discontinue all non-mandatory LDB traffic for remainder of count.

SRB Igniter Heater Power Off

16-1452 TBC CPWR 136
T-09M00S
(L-10M00S)

Remove SRB igniter heater power.

16-1453 CPWR

CURSOR CNTL (BWE11)
AUTO SEQ - IGN
XMIT CURSOR KEY - PRESS

CRT
VERIFY
LH/RH IGN HTR CURRENT
LESS THAN 0.5 AMPAC

16-1454 CPWR TBC 136

Igniter Heater Power Removal complete.

FIREX Pump To OP Press

NOTE
Perform next step 1 minute prior to CDC start.

16-1455 **STM** **JBFX** **111** [SU17226](#)
T-09M00S
(HOLDING)

(SIM) Bring up any two pump station diesel driven FIREX water pumps.

Support: [CWSS](#)

16-1456 **JBFX** **STM** **111**

(SIM) Two diesel engines have started and FIREX water pumps are supporting.

Support: [CWSS](#)

16-1457 **STM** **JSTC** **111**
JSTC **GSFA** **114**

(SIM) Configure MLP Fire Detection System to Launch Mode at T-6M.
Report Completion.

Support: [FA](#)

16-1458 **NTD** **ALL** **212**
T-09M00S
(HOLDING)
L-10M00S

Countdown clock will resume in 1 minute. Mark.

Resume Count

16-1459

CGLS

TERM ALL OC TASKS AND GLS LOOKUPS AT INTG BEFORE
CDC IS RESUMED.

16-1460

NTD

ALL

212
PA

SU17219

T-9 minutes and counting.

16-1461

NTD

ALL

212

IF extended hold required,

THEN Perform hold option - Unplanned long hold between T-9 minutes
and T-5 minutes (Operation 28) (Prior to APU start).

Not Performed: _____

GLS Auto Sequence Start

16-1462

CGLS

212

SU17239

T-09M00S
COUNTING

GLS auto sequence has been initiated.

16-1463

CGLS

VERIFY DOWNLISTED GMTLO TBO
<V90W8380C1> IS +/- 2 SEC OF PLANNED LIFTOFF
TIME.

16-1464

LPS

C2MC

127

(SIM) Place all P/P units on-line.

(SIM) Stored Program Pre-launch Commands

NOTE

If hold occurs after transmittal of BFS SPC load, *FLT will transmit SPC buffer clear and new BFS SPC load based on updated liftoff time if required.

16-1465
T-08M00S

***FLT**

SU17241

IF *FLT supporting TCDT,

THEN

(SIM) Transmit stored program pre-launch commands. (BFS SPC Load)

Not Performed:_____

16-1466
T-08M00S

***FLT**

IF *FLT supporting TCDT,

THEN

(SIM) Verify two-stage buffer auto compare and execute.

Not Performed:_____

(SIM) Fuel Cell/Essential Bus Source On

CAUTION

ESS Bus source fuel cell switches must remain off and guarded for this test (if switches are placed on, fuel cells will be damaged).

16-1467
T-08M00S

OTC PLT 212

SU17243

(SIM) Connect Essential Busses to Fuel Cells per your checklist.

16-1468

PLT

PANEL R1

POWER DISTRIBUTION

ESS BUS SOURCE

VERIFY:

FC1 SW - OFF* (GUARDED)

FC2 SW - OFF* (GUARDED)

FC3 SW - OFF* (GUARDED)

Orbiter Access Arm Retraction

16-1469
T-07M30S

CGLS ALL 212

(SIM) GLS is Go for Orbiter Access Arm retract (auto).

Range Safety Hold SRO

NOTE
Perform range safety hold SRO if ER/SRO supporting TCDT.

Range Safety Hold SRO Not Performed: _____

16-1470 NTD SRO 212

(CCAS)
Holdfire SW - Hold

16-1471 CGLS NTD 212
NTD SRO

Holdfire indicator on.

*****End of Range Safety Hold SRO*****

16-1472 OTC JRPS 212
T-06M20S

(SIM) Start APU display recorders.

(SIM) APU Pre-start

CAUTION

During the period of energization of fuel tank isolation valves, CAPU is to continuously monitor valve temperatures. APU fuel tank isolation valve temperatures shall not exceed 220 deg F or damage to APU will occur.

16-1473 OTC PLT 212
T-06M15S

SU17246

(SIM) Perform APU pre-start.

16-1474 PLT

PANEL R2
APU/HYD

1. BOILER N2 SUPPLY (VERIFY)
 - 1 SW - OFF*
 - 2 SW - OFF*
 - 3 SW - OFF*

2. BOILER PWR (VERIFY)
 - 1 SW - OFF*
 - 2 SW - OFF*
 - 3 SW - OFF*

3. BOILER CNTLR/HTR (VERIFY)
 - 1 SW - OFF*
 - 2 SW - OFF*
 - 3 SW - OFF*

4. HYD CIRC PUMPS (VERIFY)
 - 1 SW - GPC
 - 2 SW - GPC
 - 3 SW - GPC

5. APU FU TK VLV ENA (VERIFY)
 - 1A CB - OPEN*
 - 1B CB - OPEN*
 - 2A CB - OPEN*
 - 2B CB - OPEN*
 - 3A CB - OPEN*
 - 3B CB - OPEN*

6. APU FUEL TK VLV (VERIFY)
 - 1 SW - CLOSE
 - 2 SW - CLOSE
 - 3 SW - CLOSE

7. APU AUTO SHUT DOWN (VERIFY)
 - 1 SW - ENABLE
 - 2 SW - ENABLE
 - 3 SW - ENABLE

8. APU SPEED SELECT (VERIFY)
 - 1 SW - NORM
 - 2 SW - NORM
 - 3 SW - NORM

9. APU OPERATE (VERIFY)
 - 1 SW - OFF
 - 2 SW - OFF
 - 3 SW - OFF

10. HYD MAIN PUMP PRESS
 - 1 SW - LOW
 - 2 SW - LOW
 - 3 SW - LOW

11. APU CNTLR PWR (VERIFY)
 - 1 SW - OFF*
 - 2 SW - OFF*
 - 3 SW - OFF*

12. APU FUEL TK VLV (VERIFY)
 - 1 SW - CLOSE*
 - 2 SW - CLOSE*
 - 3 SW - CLOSE*

13. READY TO START (VERIFY)
 - 1 TB BP*
 - 2 TB BP*
 - 3 TB BP*

16-1475 PLT OTC 212

APU's configured for start.

HYD Pre-APU Start Check (T-6 Minutes)

16-1476 CHYD

Perform HYD pre-APU start checks per "Hydraulic System" (S0017.300 Operation 38).

16-1477 CAPU

(SIM) Perform APU pre-start check.

Eastern Range Supporting TCDT

NOTE
Perform this option if eastern range supporting TCDT.

Eastern Range Supporting TCDT Not Performed: _____

16-1478 **CGLS** **NTD** **212** [SU17300](#)
T-05M00S
(HOLDING)

CDC and GLS holding at T-5 minutes due to SRO hold.

16-1479 **NTD** **SRO** **212**

Holdfire switch - Proceed

16-1480 **SRO** **NTD** **212**

Range hold system in proceed mode.

16-1481 **NTD** **CGLS** **212**

On your mark, resume countdown.

16-1482 **CGLS** **212**

3-2-1 MARK

***** End Of Eastern Range Supporting TCDT *****

NOTE

This is the re-entry point for the unplanned long hold between T-9 and T-5 minutes.

(SIM) APU Start

16-1483 CGLS OTC 212

T-05M00S
(COUNTING)

(SIM) GLS is Go for APU start.

16-1484 OTC PLT 212

T-05M00S

SU17248

(SIM) Perform APU start.

16-1485 PLT

PANEL R2

APU/HYD

APU OPERATE

1 SW - OFF*

2 SW - OFF*

3 SW - OFF*

16-1486 PLT

(SIM) PANEL F8 (MCDS)

MDU DISPLAY (MEDS)

HYDRAULIC

PRESSURE

1 500-1000 PSIA*

2 500-1000 PSIA*

3 500-1000 PSIA*

16-1487

PLT

PANEL R2

APU/HYD

READY TO START

1 TB BP

2 TB BP

3 TB BP

HYD MAIN PUMP PRESS

1 SW - NORM

2 SW - NORM

3 SW - NORM

16-1488

PLT

(SIM) PANEL F8 (MCDS)

MDU DISPLAY (MEDS)

HYDRAULIC

PRESSURE

1 2800-3400 PSIA*

2 2800-3400 PSIA*

3 2800-3400 PSIA*

16-1489

PLT

PANEL R2

APU/HYD

HYD CIRC PUMP

1 SW - OFF

2 SW - OFF

3 SW - OFF

16-1490

CDR

(SIM) PANEL F7

HYD PRESS LITE OFF

16-1491

PLT

OTC

212

(SIM) APU start complete.

Hydraulic Post APU Start Check (T-5 Minutes)

16-1492

CHYD

Perform Hydraulic post-APU start checks per "Hydraulic System" (S0017.300 Operation 38).

16-1493

CAPU

(SIM) Perform APU post start checks.

Heater Reconfiguration

16-1494
T-05M00S

OTC

CDR

212

SU17250

Reconfigure Heaters.

16-1495

CDR

PANEL L2

FLASH EVAP

FEEDLINE HTR

A SUPPLY SW - OFF

L2A1S23

B SUPPLY SW - OFF

L2A1S24

16-1496

CECL

CRT (VAG29 PG-B)

V63S1861E1

FES FL HTR A/B - FF/FF

V63S1866E1

16-1497

CDR

OTC

212

Heater reconfiguration complete.

16-1498

CDR

PANEL C2

LEFT CRT SEL SW - 3

16-1499

CDR

L KYBD

SYS SUMM

CRT 3 (BFS)

SM SYS SUMM 1

16-1500

T-05M00S

*SCC ALL NET 105

(SIM) Maintain silence on net 105 until negative RTLS verified.

16-1501

STM JBAC 111

(SIM) Activate cooling tower spray system.

Support: [CHVA](#)

16-1502

T-05M00S

STM JCFM 111

(SIM) Start Launch Data Recorders.

16-1503

GSFA JSTC 114
JSTC STM 111

(SIM) MLP Fire Detection System configuration is in Launch Mode.

Support: [FA](#)

SRB Joint Heater Alarm/LCC Inhibit

16-1504

CPWR

T-05M00S

PFP (BWE11)
PFPK 5 KEY - PRESS

LED 5
VERIFY
ALARM INH

PFPK 3 KEY - PRESS

LED 3
VERIFY
LCC MONITOR INH

(SIM) Terminate LOX Replenish

16-1505

CGLS

T-04M55S

(SIM) Terminate LOX replenish.

16-1506

CSME

(SIM) CRT (VAE38)
VERIFY E-1, E-2, AND E-3
MFV CURRENT INDICATES 0

NOTE
Perform next two steps if the T-9 minutes hold was extended or the countdown clock was held after T-9 minutes.

16-1507 NTD *FLT 212

(SIM) Provide update to LOX drainback hold time (performance):

_____minutes _____seconds

Not Performed: _____

16-1508 NTD ALL 212

(SIM) Hold time remaining is:

_____minutes _____seconds

Not Performed: _____

SSME Purge Sequence 4

16-1509
T-04M00S

CGLS 212

GLS is Go for SSME Purge Sequence 4 (auto)

(SIM) LO₂ Pressurization

16-1510
T-02M55S

CGLS 212

GLS is Go for ET LO₂ pressurization (auto)

(SIM) SSME Purge Termination

16-1511

CSME

(SIM) Verify GN₂ PRG terminates

16-1512
T-02M45S

NTD

NTD hold SW - Hold

16-1513

CGLS NTD 212

GLS indicates hold SW - On
Countdown clock will hold at T-01 Minute 57 Seconds

Clear Caution and Warning Memory

16-1514
T-02M30S

OTC PLT 212

[SU17254](#)

Clear caution and warning memory.
Verify no unexpected errors.

16-1515

PLT

PANEL C2
CRT 3 MAJ FUNC SW - GNC

R KYBD (BFS)
FAULT SUMM

R KYBD (BFS)
SPEC 99

PRO (CLEAR FSP)

RESUME
SYS SUMM

CRT 3
GNC SYS SUMM 1 (BFS)

16-1516
T-02M30S

PLT

PANEL C2A2
R CRT SEL SW - 2

R KYBD
FAULT SUMM

R KYBD

SPEC 99
PRO (CLEAR FSP)

RESUME

CRT 2
GNC SYS SUMM 1

PANEL C2
R CRT SEL SW - 3

16-1517
T-02M30S

PLT

PANEL C3
CAUTION/WARNING
MEMORY SW - CLEAR

16-1518
T-02M30S

PLT OTC 212

Caution and warning clear complete.

16-1519
T-02M10S

OTC FLT 212
CREW

[SU17256](#)

Close and lock your visors and initiate O₂ flow.

16-1520
T-02M00S

JBWC

Call up screen LFA/LFB and display through T-0.

Support: [CWSS](#)

16-1521
T-01M57S
(HOLDING)

CGLS

212

[SU17258](#)

Countdown Clock (CDC) and GLS holding due to NTD hold at T-1 Minute 57 Seconds GLS milestone.

16-1522

NTD

CGLS

212

Verify ready to resume Count.

16-1523

NTD

ALL

212

Attention all personnel:
The Countdown Clock will resume momentarily.

16-1524
T-01M57S
(HOLDING)

NTD

CGLS

212

Resume CDC on your mark.

3-2-1-mark

(SIM) LH₂ Tank Pressurization

16-1525
T-01M57S
(COUNTING)

CGLS ALL 212

GLS is Go for ET LH₂ pressurization (auto).

16-1526

NTD 212

One minute 30 seconds.

16-1527

NTD 212

One minute.

16-1528

NTD LD 212

(SIM) Recommend _____ (Hold or No-Hold) based on bird conditions in zone of interest.

SRB Joint Heater Deactivation

16-1529
T-01M00S

CGLS

Turn off SRB field joint AC source (auto).

NOTE

Any cutoff initiated between T-31 seconds (RSLs start) and T-6.6 seconds will result in an onboard "RSLs hold".

GLS S/W will command an onboard recycle for any cutoff.

GLS Go For Auto Seq Start

16-1530
T-00M31S

CGLS 212

SU17260

GLS is Go for auto seq start (auto).

Arm Cutoff

16-1531 **CGLS**

PFPK3 (SLP01) - PRESS
PFPK5 (CUTOFF) - PRESS
VERIFY CUTOFF ARMED

ORB Vent Door Seq Start

16-1532 **CPVD**
T-00M28S

Orbiter Vent Doors Launch Configuration Sequencing start .

16-1533 **NTD** **212**
T-00M25S

Twenty-five

16-1534 **NTD** **212**
T-00M20S

Twenty

16-1535 **NTD** **212**
T-00M15S

Fifteen

16-1536 **NTD** **212**
T-00M10S

Ten

GLS Go For Main Engine Start

16-1537
T-00M10S

CGLS

212

GLS is Go For Main Engine Start (auto).

NOTE

CGLS will execute next step on clock. Time critical callout.

16-1538
T-00M05S

CGLS

[SU17262](#)

PFP
EXEC CUTOFF - PRESS

NOTE

Proceed to RSLs abort.

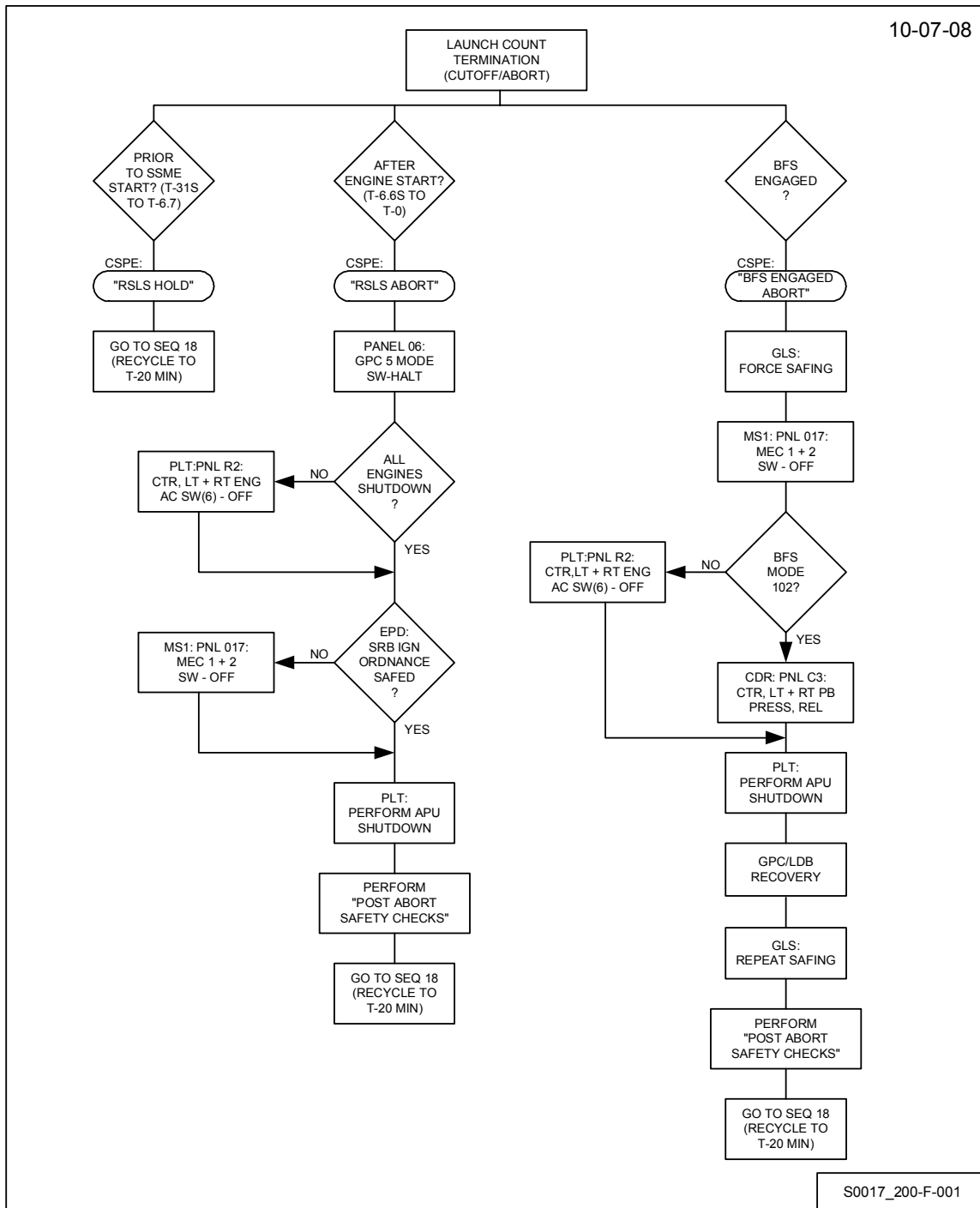


Figure 16-1 - Abort Flow Chart
(For Reference Only)

RSLs Abort Safing

NOTE

Perform RSLs Abort Safing anytime after SSME 3 start command is issued (T-6.6 seconds) by the RSLs and a RSLs abort occurs.

RSLs Abort Safing Not Performed: _____

NOTE

RSLs Abort Criteria:

- (A) Cutoff after Engine start sequence initiated, and prior to SRB ignition.
- (B) PASS GPC's in MM 101
- (C) LDB integrity/polling maintained
- (D) BFS not engaged (but may have moded to 102)

16-1539

NTD

PERFORM RSLs ABORT SAFING OPERATIONS AS FOLLOWS:

1. **CGLS NTD 212**
CUTOFF

THE RSLs ABORT FLAG IS ON

GLS SAFING (IN PROGRESS/NOT RUNNING)

2. **CGLS NTD 212**
IF INVALID DATA/CMD PATH FAILURE IS DETECTED,

THEN

(PASS) / (BFS) / (OI) INVALID (LDB DOWN)

Not Performed: _____
SS2

3. **CGLS NTD 212**

BFS _____ PASS _____ LDB _____

4. **SPE NTD 212**
PERFORM RSLs ABORT.

GLS SAFING _____
(IN PROGRESS/NOT RUNNING)

NOTE

Perform next three sub steps if the GLS is not running and vehicle has not lifted off.

5. **SPE CGLS 212**
FORCE ABORT SAFING TO CONTINUE.

Not Performed: _____
SS5

6. **CGLS**
PFPK5 (RS ABORT) - PRESS
PFPK6 (RS ABORT EXEC) - PRESS

Not Performed: _____
SS6

7. **CGLS NTD 212**
GLS SAFING IS/IS NOT IN PROGRESS.

Not Performed: _____
SS7

NOTE

Perform next substep as soon as possible after an RSLs Abort has been declared.

8. **JBFX**
Verify all Launch Cooling Spray valves opened and issue close all command (Screen LFA/LFB) to terminate MLP Side 1 Launch Cooling Spray and FSS Launch Cooling Sprays. **Verify** valves closed.

Support: [CWSS](#)

NOTE
Go to SS23 if all three engines are in Post Shutdown Standby.

15. CGLS NTD 212

HOLDING FOR ENGINE STATUS.

Not Performed: _____
SS15

NOTE
If GLS cannot verify Post Shutdown/Standby with MCC < 50 psia, Safing will not continue until a CCME and CSME Go is given based on 60KB/OTV data/OI data.

16. NTD CSME 212
CCME

REPORT ENGINE STATUS :

E1 : _____

E2 : _____

E3 : _____

Not Performed: _____
SS16

NOTE
Go to Substep 17 to shut down any engine for a command path failure.

Go to Substep 18 if all three engines are in Post Shutdown Standby and if GLS Safing is not in progress, and downlist data is invalid.

Go to Substep 23 if all three engines are in Post Shutdown Standby, and if GLS Safing is in progress, and downlist data is valid.

SSME Command Path Failure

NOTE

Perform next five substeps for Main Engine command path failure.

Conditions indicating a command path failure:

Engine phase - Mainstage

OTV - Engine running

or

EIU PRI and SEC port - Bypassed

OTV - Engine running

17. **CSME NTD 212**
 CCME
 NTD PLT

THERE HAS BEEN AN SSME COMMAND PATH FAILURE.
HAVE PLT PERFORM (E-1 CENTER, E-2 LEFT OR E-3
RIGHT) ENGINE CONTROLLER SHUTDOWN.

A. CENTER ENGINE 1 POWERDOWN

PANEL R2

MPS

ENGINE PWR

CTR AC1 SW - OFF

CTR AC2 SW - OFF

Not Performed: _____
SS17A

DELAY 2 SECONDS

B. LEFT ENGINE 2 POWERDOWN

PANEL R2

MPS

ENGINE PWR

LEFT AC2 SW - OFF

LEFT AC3 SW - OFF

Not Performed: _____
SS17B

DELAY 2 SECONDS

C. RIGHT ENGINE 3 POWERDOWN

PANEL R2

MPS

ENGINE PWR

RIGHT AC3 SW - OFF

RIGHT AC1 SW - OFF

Not Performed: _____
SS17C

Entire Substep Not Performed: _____
SS17

18. CSME NTD 212
ALL ENGINES SHUT DOWN.
HYDRAULICS NO LONGER REQUIRED.

Not Performed: _____
SS18

19. NTD CGLS 212
ALL ENGINES SHUTDOWN.
GLS FORCE ENGINE SAFING.

Not Performed: _____
SS19

20. CGLS
PFPK5 (FORCE ENG SAFING) - PRESS

Not Performed: _____
SS20

21. CGLS NTD 212
GLS SAFING IS/IS NOT IN PROGRESS

Not Performed: _____
SS21

*** End of SSME Command Path Failure ***

27. NTD PLT 212
 (SIM) PERFORM APU SHUTDOWN
28. PLT NTD 212
 (SIM) APU SHUTDOWN COMPLETE.
29. LPS
 VERIFY GS (1,2,3) FEP DATA VALIDITY.

NOTE

For a loss of OI data, LOX will proceed directly to drain following terminal count safing.

30. CLOX NTD 212
 (SIM) INITIATING LOX DRAIN.

Not Performed: _____
 SS30

Data and Ground Command Availability Checklist

NOTE Perform next three substeps for a suspected command/data path integrity failure.

31. **NTD** **LPS** **212**
REPORT FEP DATA VALIDITY.

OI _____
GPC _____
LDB _____
GS (1,2,3) _____

Not Performed: _____
SS31

32. **NTD** **CDPS** **212**
REPORT GPC DOWNLIST/LDB STATUS.

Not Performed: _____
SS32

33. **NTD** **CISL** **212**
REPORT PCMMU STATUS, SWITCH POSITION, AND COMMAND
STATUS.

Not Performed: _____
SS33

PCMMU Data Recovery

NOTE Perform next three sub steps for a suspected PCMMU Failure.
--

34. **CISL** **NTD** **212**
Ready for switch to alternate PCMMU.

Not Performed: _____
SS34

40. **CMPS 212**
(SIM) START LH2 TOPPING LINE DRAIN PER OMI S1004
POST IGNITION SAFING.
41. **NTD CMPL 212**
(SIM) FIRE DETECTOR STATUS
(TRIPPED/NOT TRIPPED) :
- NO.
- 44 PRI (LH2 DISC) _____
44 SEC (LH2 DISC) _____
45 PRI (LH2 DISC) _____
45 SEC (LH2 DISC) _____
42. **CGLS NTD 212**
(SIM) FIRE DETECTOR STATUS
(TRIPPED/NOT TRIPPED) :
- NO.
- 35 PRI (LH2 TSM) _____
35 SEC (LH2 TSM) _____
36 PRI (LT AFT) _____
36 SEC (LT AFT) _____
37 PRI (RT AFT) _____
37 SEC (RT AFT) _____
38 PRI (HT SHIELD) _____
38 SEC (HT SHIELD) _____
39 PRI (HT SHIELD) _____
39 SEC (HT SHIELD) _____
43. **NTD CMPL 212**
(SIM) REPORT WATER DELUGE STATUS
- HEAT SHIELD _____ (ON/OFF)
- SKIN _____ (ON/OFF)
- T-0 _____ (ON/OFF)
44. **CGLS NTD 212**
GLS PRIMARY SAFING COMPLETE. READY TO TRANSITION
TO G9.

45. **CHGD**
CONTINUE MONITORING AFT FUSELAGE UNTIL LO2/LH2
DRAIN COMPLETE
46. **NTD CLHY 212**
REPORT LEAK DETECTION STATUS:
(REPORT ANY MAJOR LEAKS)
47. **CSME NTD 212**
CCME
NTD PLT
POWER UP ANY SSME THAT WAS POWERED DOWN TO EFFECT
SHUTDOWN. **HAVE** PLT PERFORM (E-1 CENTER, E-2
LEFT, OR E-3 RIGHT) ENGINE CONTROLLER POWER UP.
- A. CENTER ENGINE 1 POWER UP
PANEL R2
MPS
ENGINE PWR
CTR AC1 SW - ON
CTR AC2 SW - ON
- Not Performed:** _____
SS47A
- B. LEFT ENGINE 2 POWER UP
PANEL R2
MPS
ENGINE PWR
LEFT AC2 SW - ON
LEFT AC3 SW - ON
- Not Performed:** _____
SS47B
- C. RIGHT ENGINE 3 POWER UP
PANEL R2
MPS
ENGINE PWR
RIGHT AC3 SW - ON
RIGHT AC1 SW - ON
- Not Performed:** _____
SS47C
- Entire Substep Not Performed:** _____
SS47

48. **CPRP NTD 212**
 (SIM) CRITICAL MPS SAFING COMPLETE.
 LH2 ET TANK VENTED TO AMBIENT PER OMI S1004.
- MPS LH2 TOPPING LINE DRAIN IS COMPLETE
- MPS LO2 BLEED PATH HAS BEEN ESTABLISHED
OR LOX DRAIN INITIATED
- OMRSR [S00E00.B90-1](#)
OMRSR [S00E00.B95-1](#)
49. **NTD CGSS 212**
 VERIFY OAA EXTENDED AND LOCKED.
- REPORT** STATUS OF EMERGENCY EGRESS TEMPERATURE AND
FLAME DETECTORS.
50. **CMPL NTD 212**
 (SIM) MPS/SSME PARAMETERS INDICATE THAT NO
PROPELLANT LEAKAGE/FIRE EXISTS.
- REQUEST** CONCURRENCE TO TERMINATE SSME HEAT SHIELD
FIREX WATER FLOW.
51. **CMPL**
 (SIM) PFP (SAE02)
1. SSME HS CLOSED - PRESS
 2. **VERIFY** ALL PFPK LIGHTS OFF.

52. **CMPL NTD 212**
 (SIM) POST ABORT SSME HEAT SHIELD FIREX WATER
 FLOW HAS BEEN TERMINATED.
53. **NTD ALL 212**
 AN RSLs ABORT HAS OCCURRED. PRELIMINARY SAFING
 IS COMPLETE. ALL SYSTEMS STANDBY FOR POST ABORT
 SAFETY CHECKS PAGE _____.

***** End of RSLs Abort Safing *****

BFS Engaged Abort Safing

NOTE

Perform this option if a GLS Go for ET LOX Press (T-2 min 55 sec) and a BFS Engage occurs.

BFS Engaged Abort Safing Not Performed: _____

WARNING

BFS may initiate SRB separation at T-0 Plus 100 seconds when BFS is in Major Mode 102, and MEC 1 or MEC 2 power is ON.

Personnel may suffer serious injury or death.

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NOTE

BFS engage abort criteria:

- (A) PASS GPC's in S/W halt
- (B) TSM's remain connected
- (C) GPC/LDB polling has terminated
- (D) BFS may have moded to MM102

16-1540

NTD

PERFORM BFS ENGAGE ABORT SAFING OPERATIONS AS FOLLOWS :

1. **CGLS NTD 212**
CUTOFF

BFS ENGAGED INDICATION.

BFS IN _____, PASS AND LDB INVALID.

GLS SAFING NOT RUNNING.

2. **SPE NTD 212**
 PERFORM BFS ENGAGE ABORT.
 GLS SAFING PASS DOWNLIST DATA AND LDB COMMANDING
 ARE NOT AVAILABLE.

3. **SPE CGLS 212**
 FORCE ABORT SAFING

4. **CGLS**
 PFPK5 RS ABORT SAFING
 PFPK6 EXEC RS ABORT SFNG

5. **CGLS NTD 212**
 GLS SAFING IS/IS NOT IN PROGRESS

6. **NTD MS1 212**
 PERFORM SRB SAFING

PANEL 017

ROW D

MEC

1 SW - OFF

2 SW - OFF

NOTE

Perform next substep as soon as possible after a BFS Engage Abort has been declared.

7. **JBFX**
Verify all Launch Cooling Spray valves opened and issue close all command (screen LFA/LFB) to terminate MLP Side 1 Launch Cooling Spray and FSS Launch Cooling Sprays. **Verify** valves closed.

Support: [CWSS](#)

NOTE

Perform next four substeps if GLS safing is not in progress.

8. **CLOX**
CLHY
Initiate breakout pending at C3/C4 consoles.

Not Performed: _____
SS8

9. **NTD CGSS 212**
EXTEND ORBITER ACCESS ARM.

Not Performed: _____
SS9

10. **NTD CECL 212**
ESTABLISH ORBITER COOLING FLOW

Not Performed: _____
SS10

11. **NTD CEPD 212**
POWER DOWN GROUND PIC RACKS

Not Performed: _____
SS11

12. NTD CDR 212

IF BFS MODE IS 102,

THEN PERFORM
PANEL C3
MAIN ENGINE
SHUTDOWN

CTR PB - PRESS, RELEASE
(DELAY 2 SECONDS)

LEFT PB - PRESS, RELEASE
(DELAY 2 SECONDS)

RIGHT PB - PRESS, RELEASE

VERIFY THREE ENGINE STATUS LIGHTS RED

Not Performed: _____
SS12

SSME Command Path Failure

NOTE

Perform next substep if BFS mode is 101 or any engine is running.

Conditions indicating a command path failure:

Engine phase - Mainstage

OTV - Engine running

or

EIU BFS PRI and SEC port - Bypassed

OTV - Engine running

13. **CSME NTD 212**
 CCME
 NTD PLT

THERE HAS BEEN AN SSME COMMAND PATH FAILURE.
HAVE PLT PERFORM (E-1 CENTER, E-2 LEFT OR E-3
RIGHT) ENGINE CONTROLLER SHUTDOWN:

- A.** CENTER ENGINE 1 POWERDOWN:

PANEL R2

MPS

ENGINE PWR

CTR AC1 SW - OFF

CTR AC2 SW - OFF

Not Performed: _____
SS13A

DELAY 2 SECONDS

- B.** LEFT ENGINE 2 POWERDOWN:

PANEL R2

MPS

ENGINE PWR

LEFT AC2 SW - OFF

LEFT AC3 SW - OFF

Not Performed: _____
SS13B

DELAY 2 SECONDS

C. RIGHT ENGINE 3 POWERDOWN:

PANEL R2

MPS

ENGINE PWR

RIGHT AC3 SW - OFF

RIGHT AC1 SW - OFF

Not Performed: _____
SS13C

Entire Sub Step Not Performed: _____
SS13

14. CSME NTD

ALL SSME'S ARE SHUT DOWN.
HYDRAULICS ARE NO LONGER REQUIRED.

15. NTD CGLS 212

ALL ENGINES SHUTDOWN.
GLS FORCE ENGINE SAFING

16. CGLS

PFPK5 (FORCE ENG SAFING) - PRESS

17. CGLS NTD 212

GLS SAFING IS/IS NOT IN PROGRESS

Not Performed: _____
SS17

18. CLOX
CLHY

IF GLS Post Engine Shutdown Safing is not in progress,

THEN **Initiate** breakout at C3/C4 Consoles after CSME verifies engine shutdown.

Not Performed: _____
SS18

19. CGLS NTD 212

GLS IS GO FOR APU SHUTDOWN.

20. NTD PLT 212

(SIM) PERFORM APU SHUTDOWN.

21. PLT NTD 212

(SIM) APU SHUTDOWN COMPLETE.

22. NTD CLOX 212
CMPL

(SIM) INITIATE LOX DRAIN PREPS.

23. NTD CISL 212

REPORT PCMMU STATUS, SWITCH POSITION, AND COMMAND STATUS.

PCMMU Data Recovery

NOTE

Perform the next three sub steps for a suspected PCMMU failure.

24. CISL NTD 212

Ready for switch to alternate PCMMU.

Not Performed: _____
SS24

25. NTD CDR 212

PANEL C3

OI PCMMU

POWER SW - 1 OR 2 (ALTERNATE PCMMU)

Not Performed: _____
SS25

26. NTD CISL 212

Report PCMMU/OI status.

Not Performed: _____
SS26

(SIM) SSME Heat Shield Water Activation

NOTE

GLS initiates SSME H/S FIREX water during primary Post Abort Safing. Next step is performed to back up GLS and ready the system for valve closure.

27. CMPL

(SIM) PFP (SAE02)

- A. SAE02 - PRESS
- B. SSME HEAT SHIELD - PRESS
- C. SSME HS OPEN - PRESS
- D. **VERIFY** BOTH SSME HS OPEN
PFPK LIGHTS ON

OMRSR [S00E00.137-1](#)

28. JBFX NTD 212

ALL LAUNCH COOLING SPRAYS HAVE BEEN TERMINATED.

Support: [CWSS](#)

GPC Recovery

29. NTD CDPS 212
 CDPS CDR

PERFORM GPC RECOVERY.

PANEL C3

BFC CRT

DISPLAY SW - OFF

PANEL O6

IPL SOURCE SW - MMU 1
GENERAL PURPOSE COMPUTER
MODE

1-5 SWITCHES - HALT
POWER

1-5 SWITCHES - OFF
POWER

1 SW - ON

INITIAL PROGRAM LOAD
1 PB - PRESS, REL
MODE

1 TB IPL, THEN BP
MODE

1 SW - STBY

1 TB RUN (WITHIN 2 MINUTES)

MODE

1 SW - RUN

IPL SOURCE SW - OFF

30. CDPS NTD 212
 GPC RECOVERY COMPLETE.

31. CGLS NTD 212
 GLS GROUND SYSTEMS SAFING COMPLETE.

32. **CLOX NTD 212**
 LOX SYSTEM CONFIGURED FOR DRAIN INITIATION.

NOTE

LOX fill and drain valve cycling does not need to hold for completion of GPC Recovery.

NOTE

LO₂ outboard fill and drain valve (PV9) will be opened before the inboard fill and drain valve (PV10) to preclude pressure surges and possible water hammer damage to flight and GSE hardware.

33. **CMPL NTD 212**
 NTD PLT
 (SIM) PANEL R4
 PROPELLANT FILL/DRAIN
 LO2 OUTBD SW - OPEN
- DELAY** 10 SECONDS TO ALLOW VALVE TO OPEN.
- (SIM) PANEL R4**
 PROPELLANT FILL/DRAIN
 LO2 INBD SW - OPEN

34. **CLOX NTD 212**
 LOX DRAIN INITIATED. CONTINUE WITH LDB RECOVERY.

LDB Recovery

35. **NTD CDPS 212**
 CONTINUE WITH LDB RECOVERY.
36. **CDPS CDR 212**
 CRT 1 (PASS OPS 0)
 SPEC 1 PRO (CALL DPS UTILITY)
 ITEM 50 EXEC (GSE POLL ENA)
37. **CDPS CDR 212**
 GROUND WILL CONFIGURE G9 NBAT AND PERFORM OPS9
 TRANSITION VIA DEU EQUIVALENT.

38. **CDPS**
CONSOLE KYBD
DEUE DEST,GN,1,LDBA
XMIT CMD KEY - PRESS
DEUE RESUME
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT (VAS59 PG-B)
CRT 1 DISP ID = 1

39. **CDPS**
CONSOLE KYBD
DEUE ITEM 1 +9 EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE ITEM 3 +0 +0 +0 EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE ITEM 8 +1 +1 +1 EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE ITEM 17 +1 +1 +1 EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE OPS 901 PRO
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT (VAS59 PG-B)
GPC1, GNC9, DL FMT 44 ACTIVE
ALL FC, PL & LDB BUSSES COMMANDED
LDB POLLING ACTIVE

40. **CDPS NTD 212**
GPC 1 IN G9 AND LDB POLLING ENABLED.

41. **NTD LPS 212**
REPORT FEP DATA VALIDITY

OI _____
GPC _____
LDB _____
GS (1, 2, 3) _____

NOTE

GLS safing will be repeated after polling established to complete safing of vehicle systems.

42. **SPE CGLS 212**
REPEAT GLS SAFING.

PFPK1 (REPEAT SAFING) - PRESS
PFPK6 (EXECUTE SAFING) - PRESS

43. **CGLS NTD 212**
GLS SAFING IS IN PROGRESS.

44. **CGLS 212**
IF GLS HANGS AT ENGINE STATUS,

THEN PERFORM:
PFPK5 (FORCE ENG SAFING) - PRESS

Not Performed: _____
SS44

45. **CLOX NTD 212**
(SIM) LOX SYSTEM IS NOW IN STABLE LOW PRESSURE
DRAIN WITH DRAIN FLOW REDUCTION.

46. **CMPS**
(SIM) START LH2 TOPPING LINE DRAIN PER OMI S1004
POST IGNITION SAFING.
47. **NTD CMPL 212**
(SIM) MPS FIRE DETECTOR STATUS:
(TRIPPED/NOT TRIPPED)
NO.

44 PRI (LH2 DISC) _____
44 SEC (LH2 DISC) _____
45 PRI (LH2 DISC) _____
45 SEC (LH2 DISC) _____
48. **CGLS NTD 212**
(SIM) MPS FIRE DETECTOR STATUS:
(TRIPPED/NOT TRIPPED)
NO.

35 PRI (LH2 TSM) _____
35 SEC (LH2 TSM) _____
36 PRI (LT AFT) _____
36 SEC (LT AFT) _____
37 PRI (RT AFT) _____
37 SEC (RT AFT) _____
38 PRI (HT SHIELD) _____
38 SEC (HT SHIELD) _____
39 PRI (HT SHIELD) _____
39 SEC (HT SHIELD) _____
49. **CMPL NTD 212**
(SIM) REPORT WATER DELUGE STATUS:

HEAT SHIELD _____ (ON/OFF)

SKIN _____ (ON/OFF)

T-0 _____ (ON/OFF)
50. **CGLS NTD 212**
GLS PRIMARY SAFING COMPLETE. (SECOND PASS)

54. **CPRP NTD 212**
CRITICAL MPS SAFING COMPLETE. LH2 ET TANK VENTED
TO AMBIENT PER OMI [S1004](#) .

MPS LH2 TOPPING LINE DRAIN IS COMPLETE.

LOX DRAIN INITIATED.

OMRSR [S00E00.B90-1](#)
OMRSR [S00E00.B95-1](#)
55. **NTD CGSS 212**
VERIFY OAA EXTEND AND LOCKED.

REPORT STATUS OF EMERGENCY EGRESS TEMPERATURE AND
FLAME DETECTORS.
56. **CMPL NTD 212**
(SIM) MPS/SSME PARIMETERS INDICATE THAT NO
PROPELLANT LEAKAGE/FIRE EXISTS.

REQUEST CONCURRENCE TO TERMINATE SSME HEAT SHIELD
FIREX WATER FLOW.
57. **CMPL**
(SIM) PFP (SAE02)

A. SSME HS CLOSED - PRESS

B. **VERIFY** ALL PFPK LIGHTS OFF.
58. **CMPL NTD 212**
(SIM) POST ABORT SSME HEAT SHIELD FIREX WATER
FLOW HAS BEEN TERMINATED.
59. **NTD ALL 212**
A BFS ENGAGED ABORT HAS OCCURRED. PRELIMINARY
SAFING COMPLETE. ALL SYSTEMS STANDBY FOR POST
ABORT SAFETY CHECKS PAGE _____ .

***** End of BFS Engaged Abort Safing *****

5. CGLS NTD 212
BFS _____ PASS _____ LDB _____

6. CSPE NTD 212
WE HAVE AN LPS/RSLs HOLD

GLS SAFING _____ (IN PROGRESS/NOT RUNNING)

NOTE

Perform next three substeps if GLS safing is not running

7. CSPE CGLS 212
FORCE HOLD SAFING TO CONTINUE.

Not Performed: _____
SS7

8. CGLS
PFPK3 (RS HOLD) - PRESS
PFPK6 (RS HOLD EXEC) - PRESS

Not Performed: _____
SS8

9. CGLS NTD 212
GLS SAFING IS/IS NOT IN PROGRESS.

Not Performed: _____
SS9

NOTE

Perform next two substeps if SRB ignition PICS are Charged (not Safed), or if present state is unknown due to invalid data.

15. NTD MS1 212
PERFORM SRB SAFING
PANEL O17

ROW D

MEC

1 SW - OFF

2 SW - OFF

Not Performed: _____
SS15

16. MS1 NTD 212
MEC POWER DOWN COMPLETE

Not Performed: _____
SS16

16-1542 NTD ALL 212
Perform Operation 18.

SU17267

***** End of LPS/RSLS Hold Safing *****

Post Abort Safety Checks

NOTE

Perform Post Abort Safety Checks following the Abort Safing for:

1. RSLs Abort.
2. BFS Engage Abort.

Post Abort Safety Checks Not Performed: _____

16-1543

NTD

Perform Post Abort Safety Checks.

1. **NTD CISL 212**
Verify Orbiter OI PCM data valid.
2. **NTD CDPS 212**
Verify Orbiter downlist data valid.
Verify LDB polling active.
3. **NTD CCME 212**
Verify engine data valid and engine command paths are good.
4. **NTD CSME 212**
Verify all engine pressures and temperatures appear normal.
5. **NTD CSME 212**
Verify no engine leak indications.
6. **NTD CMPL 212**
(SIM) **Verify** no indication of fire on FD 36, 37, 38, 39 at AFT Orbiter area.
7. **NTD CMPL 212**
(SIM) **Verify** LOX bleed path established or LOX Drain initiated.

8. **NTD CLHY 212**
Verify no unexpected fire detectors tripped.

9. **NTD CLHY 212**
Verify no significant leaks on MLP, cross country lines, TSM, storage area or ET vent system.

10. **NTD CLHY 212**
Verify LH₂ tank pressure is stable.

11. **NTD CLOX 212**
(SIM) Verify OTV indicates no fire or leaks on cross country lines, storage area, MLP or TSM.

12. **NTD CLOX 212**
(SIM) Verify ET LOX tank pressure is stable.

13. **NTD CPVD 212**
Verify GN₂ purge interface pressures are nominal and vent doors in normal purge configuration.

14. **NTD CHGD 212**
Verify no indication of hydrogen leaks in AFT fuselage.

15. **NTD CHGD 212**
Verify no indication of oxygen leaks in AFT fuselage.

16. **NTD CHGD 212**
Verify ET/IT O₂ concentration less than 10,000 ppm.

17. **NTD CGSS 212**
Verify no indications of fire on Crew escape route.

18. **NTD CAPU 212**
Verify APU's are shutdown and no leakage indications.

19. **NTD CHPU 212**
Verify HPU's are shutdown and no leakage indications. HPU run time not to exceed 160 seconds.

20. **NTD CPWR 212**
Verify SRB ignition S&A's Safe.

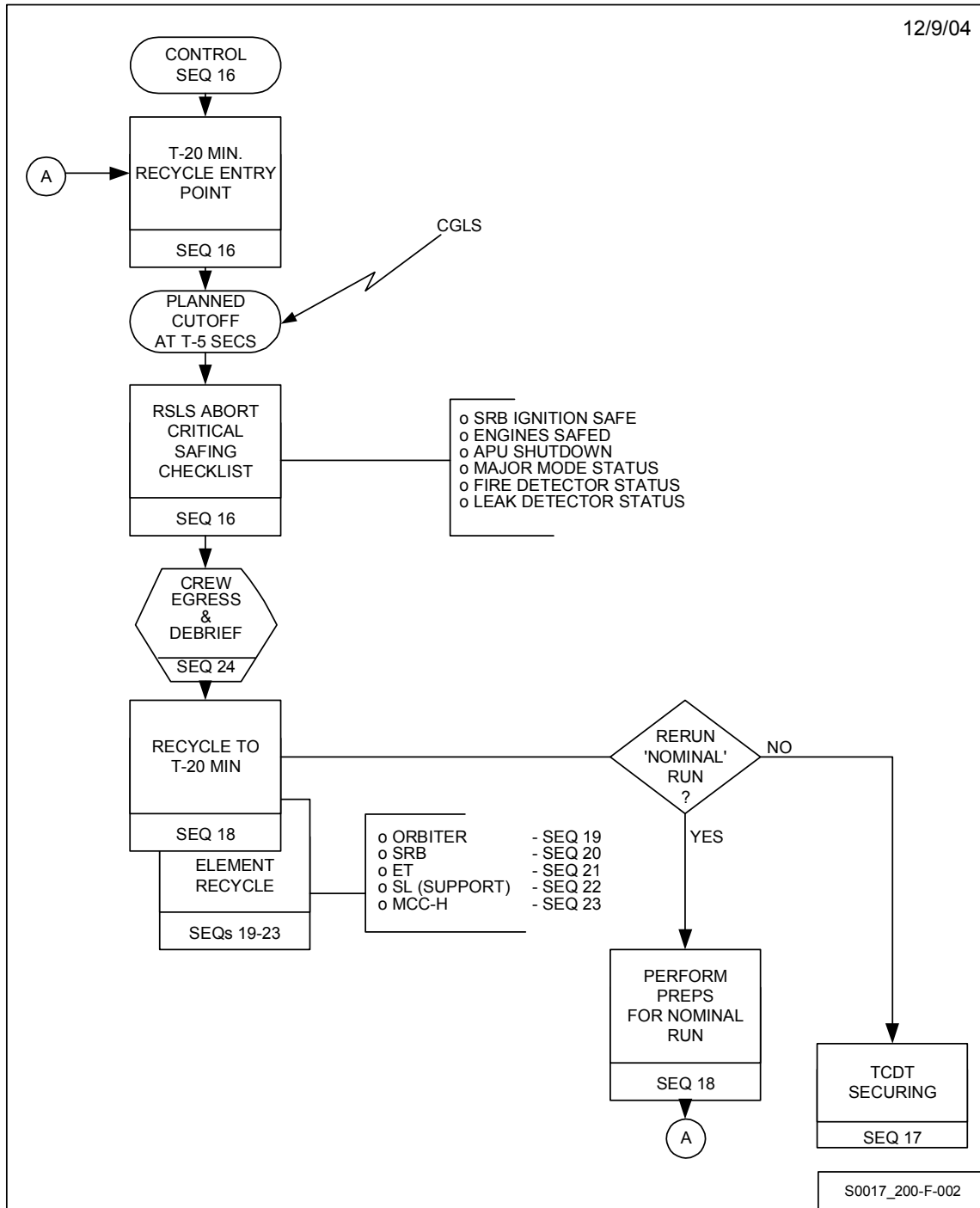
21. **NTD CEPD 212**
 If cutoff occurred, verify ground PIC rack powered down.

22. **NTD COOS 212**
 Verify all OX/Fuel Tank pressures and temps are stable.

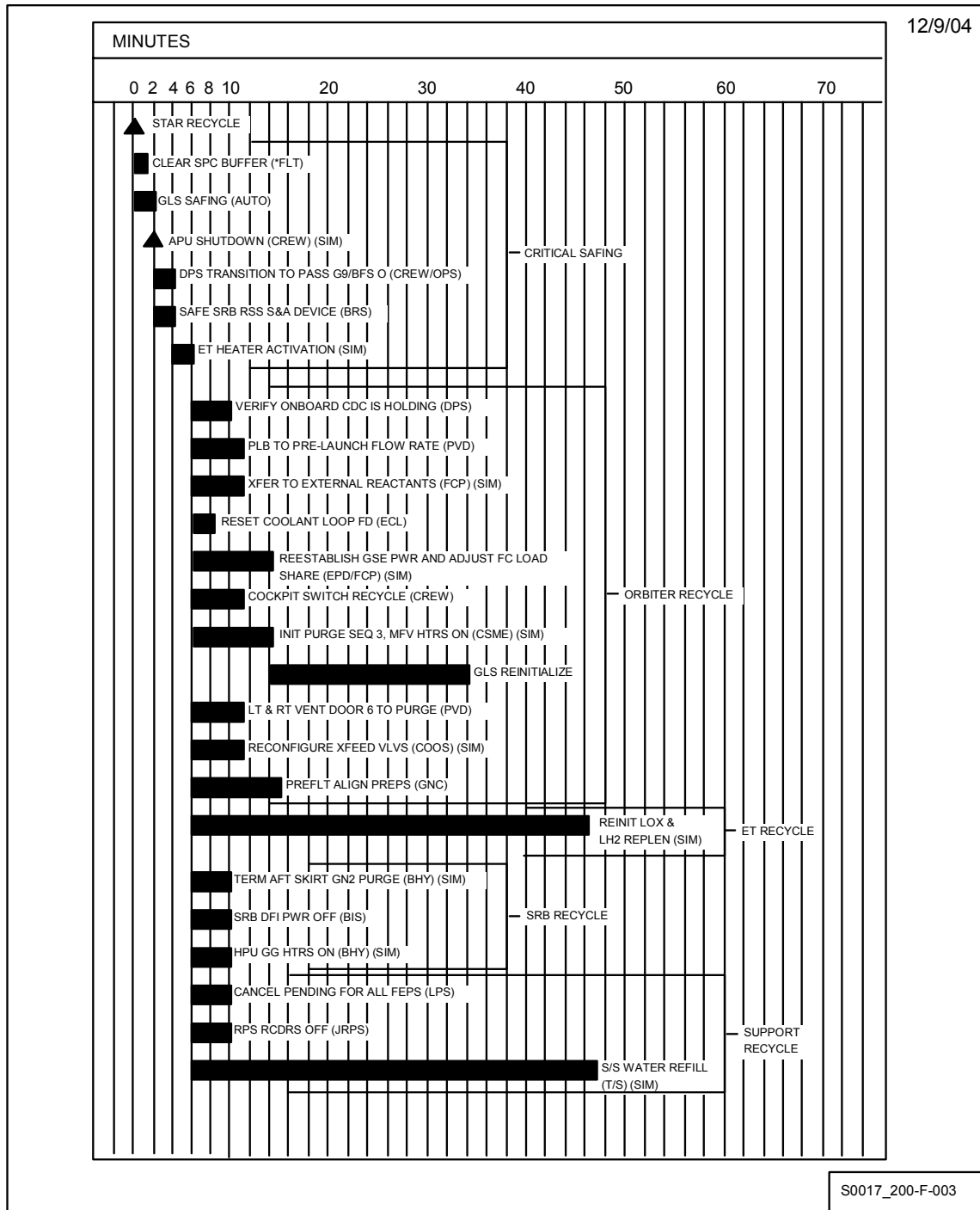
23. **NTD CBRS 212**
 Verify Range Safety Inhibits On.

24. **NTD ALL 212**
 Abort Safety Checks complete. Proceed to "Recycle - Control Sequence"
 (Operation 18).

***** End of Post Abort Safety Checks *****



**Figure 16-2 - Cutoff/Recycle/Securing Flow Chart
(For Reference Only)**



**Figure 16-3 - Recycle Option: Barchart for 20 minute Recycle
 (For Reference Only)**

01-22-07

P-1: PANEL F7		DATE/TIME _____	SEQ	STEP
O2 PRESS	H2 PRESS	FUEL CELL REACT	FUEL CELL STACK TEMP	FUEL CELL PUMP
CABIN ATM	O2 HEATER TEMP	MAIN BUS UNDERVOLT	AC VOLTAGE	AC OVERLOAD
FREON LOOP	AV BAY / CABIN AIR	IMU	FWD RCS	RCS JET
H2O LOOP	RGA / ACCEL	AIR DATA	LEFT RCS	RIGHT RCS
SPARE	LEFT RHC	RIGHT / AFT RHC	LEFT OMS	RIGHT OMS
PAYLOAD WARNING	GPC	FCS SATURATION	OMS KIT	OMS TVC
PAYLOAD CAUTION	PRIMARY C/W	FCS CHANNEL	MPS	SPARE
BACKUP C/W ALARM	APU TEMP	APU OVERSPEED	APU UNDERSPEED	HYD PRESS

NO LIGHTS ON F7 _____

P-2	ENABLED SEQ										STEP
	0	1	2	3	4	5	6	7	8	9	
00	000	001	002	003	004	005	006	007	008	009	
01	010	011	012	013	014	015	016	017	018	019	
02	020	021	022	023	024	025	026	027	028	029	
03	030	031	032	033	034	035	036	037	038	039	
04	040	041	042	043	044	045	046	047	048	049	
05	050	051	052	053	054	055	056	057	058	059	
06	060	061	062	063	064	065	066	067	068	069	
07	070	071	072	073	074	075	076	077	078	079	
08	080	081	082	083	084	085	086	087	088	089	
09	090	091	092	093	094	095	096	097	098	099	
10	100	101	102	103	104	105	106	107	108	109	
11	110	111	112	113	114	115	116	117	118	119	

P-3	INHIBITED SEQ										STEP
	0	1	2	3	4	5	6	7	8	9	
00	000	001	002	003	004	005	006	007	008	009	
01	010	011	012	013	014	015	016	017	018	019	
02	020	021	022	023	024	025	026	027	028	029	
03	030	031	032	033	034	035	036	037	038	039	
04	040	041	042	043	044	045	046	047	048	049	
05	050	051	052	053	054	055	056	057	058	059	
06	060	061	062	063	064	065	066	067	068	069	
07	070	071	072	073	074	075	076	077	078	079	
08	080	081	082	083	084	085	086	087	088	089	
09	090	091	092	093	094	095	096	097	098	099	
10	100	101	102	103	104	105	106	107	108	109	
11	110	111	112	113	114	115	116	117	118	119	

P-4	TRIPPED SEQ										STEP
	0	1	2	3	4	5	6	7	8	9	
00	000	001	002	003	004	005	006	007	008	009	
01	010	011	012	013	014	015	016	017	018	019	
02	020	021	022	023	024	025	026	027	028	029	
03	030	031	032	033	034	035	036	037	038	039	
04	040	041	042	043	044	045	046	047	048	049	
05	050	051	052	053	054	055	056	057	058	059	
06	060	061	062	063	064	065	066	067	068	069	
07	070	071	072	073	074	075	076	077	078	079	
08	080	081	082	083	084	085	086	087	088	089	
09	090	091	092	093	094	095	096	097	098	099	
10	100	101	102	103	104	105	106	107	108	109	
11	110	111	112	113	114	115	116	117	118	119	

P-5	MEMORY TRIPPED SEQ										STEP
	0	1	2	3	4	5	6	7	8	9	
00	000	001	002	003	004	005	006	007	008	009	
01	010	011	012	013	014	015	016	017	018	019	
02	020	021	022	023	024	025	026	027	028	029	
03	030	031	032	033	034	035	036	037	038	039	
04	040	041	042	043	044	045	046	047	048	049	
05	050	051	052	053	054	055	056	057	058	059	
06	060	061	062	063	064	065	066	067	068	069	
07	070	071	072	073	074	075	076	077	078	079	
08	080	081	082	083	084	085	086	087	088	089	
09	090	091	092	093	094	095	096	097	098	099	
10	100	101	102	103	104	105	106	107	108	109	
11	110	111	112	113	114	115	116	117	118	119	

S0017_200-F-004

**Figure 16-5 - C&W Parameters
(For Reference Only)**

*** End of Operation 16 ***

05-13-2011
APPROVED

OMI S0017.200 A28
APPROVED

OPERATION 17 TCDT Securing

Shop: **TCO**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **Y**

Duration (Hrs): **4.0**

17-1	NTD	OTC TBC PTC LPS STM	232	SU17237 SU17238
------	-----	---------------------------------	-----	--------------------

Perform systems securing on your channel. NTD channel is now Channel 232.

OIS Unit Installation

17-2	OTC	*PAD *FCM	212
------	-----	--------------	-----

IF OIS units are not already installed,

THEN Install OIS units in Crew Compartment.

Not Performed: _____

T: _____

Release FR2

17-3	NTD	LPS	232
------	-----	-----	-----

IF supporting,

THEN release FR2 from S0017 support.

Not Performed: _____

17-4 OTC ALL 212

All Orbiter personnel return to Channel 132.

17-5 OTC ALL 132

Command channel check
(*COFC will substitute)

*CHYD	___	CISL	___
CAPU	___	CEPD	___
CSME	___	CGNC	___
CMPS	___	COFC	___
CMPL	___	CMQC	___
CECL	___	CCME	___
CPVD	___	CODS	___
CAFM	___	CDPS	___
CGSS	___	CTPE	___
CFCP	___	*PAD	___
CHGD	___	CDR	___
COOS	___	PLT	___
CNSE	___		
CCSE	___		
CPLE	___		

DPS LCD Seq Securing

17-6 OTC CDPS 132 SU17240

Perform LCD Seq securing.

17-7 CDPS

IF VASJ6 IS ACTIVE,

THEN PERFORM

PPF (VASJ6)

TERMINATE - PRESS

Not Performed: _____

17-8 CDPS

IF LCC MONITORING IS ACTIVE,

THEN PERFORM

CURSOR CNTL (VASP9 PG-B)

RETURN TO HOST

XMIT CURSOR KEY - PRESS

CURSOR CNTL (VASP9 PG-B)

INHIBIT LCC MONITORING

XMIT CURSOR KEY - PRESS

Not Performed: _____

17-9 CDPS

APPL PAGE (VASP9 PG-B)

PFK15 KEY - PRESS

PFK15 KEY - PRESS

17-10

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS INIT DISPLAY (SAS01)
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
ACTIVATE OPS MGR 1 (SAS07)
XMIT CURSOR KEY - PRESS

17-11

CDPS

IF SAS25 IS NOT ACTIVE,

THEN PERFORM

CURSOR CNTL (SAS01 PG-B)
ACTIVATE OPS MGR 5 (SAS25)
XMIT CURSOR KEY - PRESS

Not Performed: _____

17-12

CDPS

APPL PAGE (SAS01 PG-B)
PFK2 KEY - PRESS

17-13

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

17-14

CDPS

CURSOR CNTL (SAS01 PG-B)
DEACTIVATE DPS EMONS (VASE1)
XMIT CURSOR KEY - PRESS

CRT (SA PAGE)
DPS EMONS DEACT

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17-20 CDPS OTC 132 [SU17240](#)

LCD Seq securing complete.

17-21 OTC *PAD 132
*PAD PMTG

Remove and store Astrovan - Operational Clear Equipment.

FCP Securing

17-22 CFCP CDR 132

PANEL ML86B

ROW E

MN A

FC PCM CB - OPEN

*** End of FCP Securing ***

Activate VARAI

17-23 CFCP OTC 132
 OTC CTPE

CFCP leaving station. Request activation of VARAI.

17-24 CTPE

Transfer RSYS to B/U console for RSYS Group 48 FC/PRSD RCL FDs via Integration RSYS Transfer Software (SAP30).

17-25 CTPE

B/U Console

1. CONSOLE KYBD
 HOME CMD KEY - PRESS
2. VARAI
 PERF PGM KEY - PRESS
3. CRT PAGE A (VARAI)
 VERIFY
 VARAI ACTIVATION MSG
 YELLOW UPDATE ARROW IS TOGGLING
4. CRT PAGE B (VARAI)
 VERIFY INFORMATION DISPLAYED IN GREEN AND
 YELLOW.

17-26 CTPE OTC 132

VARAI is activated.

Reconfigure FSS Phones

17-27 STM GYCC 111
 GYCC GYAT 117

Perform the following:

Run command file to restore FSS elevator telephones from Hot Dial Mode, 1-6831 (NTD), to 911 JCCC.

Remove Hot Dial Mode tags.

Report completion.

Support: [ATEL](#)

T: _____

Enable External Paging to CR's

17-28 NTD STM 232
 STM GYCC 111
 GYCC JYCD 117

IF external paging to active and/or backup control rooms disabled,

THEN Enable following:

1. External paging to active control room for S0017.
Report completion.

Sub Step 1 Not Performed: _____

2. External paging to backup control room for S0017.
Report completion.

Sub Step 2 Not Performed: _____

Support: [OISD](#)

Activate Admin Paging

17-29	STM	GYCC	111	SU17292
	GYCC	JYCD	117	

Activate admin paging to Pad A. **Report** completion.

Support: [OISD](#)

Stop Video Recording

17-30	STM	JYVR	138
-------	-----	------	-----

Stop video recording of OTV camera 005 .

Support: [OTV](#)

Configure OIS-D COMM

17-31 STM GYCC 111
 GYCC JYCD 117

IF supporting from FR3

THEN

Configure OIS-D communications in prime firing room consoles AA-5, AA-6, AB-5, AB-6, AB-7 and AB-8 to single channel transmit capability. **Report** completion.

FR-3

AA-5 107-21
AA-6 104-41
AB-5 106-61
AB-6 107-61
AB-7 104-02
AB-8 105-02

Support: [OISD](#)

Not Performed: _____

17-32 STM GYCC 111
 GYCC JYCD 117

IF supporting from FR4,

THEN **configure** OIS-D communications in prime firing room consoles 10496A3 (ALD), 10496A5 (LD), 10496A13 (STD), 10496A15 (ANTD), 10496A17 (CNTD), 10496A19 (LRD), to single transmit capability.

Report completion.

FR-4

10496A3	104-55
10496A5	107-56
10496A13	107-36/106-75
10496A15	105-14
10496A17	104-75/106-01
10496A19	105-54

Support: [OISD](#)

Not Performed: _____

LPS Data Back to Hardline

17-33 NTD LPS 232 [SU17307](#)

Switch PLDS and VSB to hardline data, source 1.

17-34 LPS C4MC 127

VIA AWP01 (Pg-B)
Switch PLDS to S1, 128 KB data

17-35 NTD LPS 232

Place P/P 1 and P/P 2 units off line.

17-36 LPS JRPS 127

IF KMTS secondary is supporting TCDT,

THEN **Configure** hardline OI data to secondary KMTS system.

Not Performed: _____

17-37 LPS JRPS 127

IF KMTS secondary is supporting TCDT,

THEN **Verify** KMTS 0505A2 (A5, KMTS B link) reading 128 KB and is locked on signal.

Not Performed: _____

17-38 LPS JRPS 127

Configure KMTS 0505A1 (A1,A2,A3) bit syncs to Manual Mode, source 1, 60 KB.

17-39 LPS C4SE 127

Switch VSB to hardline data, source 1 via touch screen.
Verify FR LED is on.

COMM Powerdown

17-40 OTC CCSE 132 SU17272
 CDR

Perform OMI V1117 "COMM Powerdown" on OIS Channel 155.
(30 minutes)

RT OMI Log No. _____

17-41 OTC NTD 232
 JRPS
 LPS
 *MIL

Require JRPS, LPS and MILA support COMM Power Down on
Channel 155.

GTOE Headset Removal

17-42 OTC *PAD 132 SU17274

Perform S0017.300 Orbiter Operation 63 - GTOE headset removal.

17-43 CCSE OTC 132
 OTC NTD 232

COMM Powerdown complete.

17-44 NTD *MIL 232 SU17276

MILA is released from S0017 support.

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17-45 NTD STM 232 SU17315
 STM GYCC 111
 GYCC GNCC PTP

IF required,

THEN activate Wireless Access Points (WAPS) in Pad A Perimeter.

Support: KNET

Not Performed: _____

17-46 NTD PA

Attention on Pad A:

Wireless LAN at Pad A is being re-activated. Approved wireless devices may be used at this time.

Not Performed: _____

17-47 NTD OTC 232
 OTC *PAD 132
 *PAD *ACM NET 110

Remove Wireless LAN Caution sign at ACM Monitor Shack on Pad Surface, OIC station in White Room, and OIC station in PCR. Pad Surface ACM end screening for wireless devices (laptops, tablets, PDAs, etc.).

NAVAIDS Securing

17-48 OTC CNSE 132 [SU17242](#)

Perform NAVAIDS securing per S0017.300 Operation 31 on OIS Channel 173.

17-49 CNSE OTC 132 [SU17242](#)

NAVAIDS securing complete.

17-50 NTD STM 232
 STM GEMA 111

Terminate Launch and Landing site RF Surveillance at all monitoring locations.
RF Surveillance support is released.

Open RSS 193 & 207 Ft Level Control Area

NOTE

Hazardous operations due to COMM/NAVAIDS securing complete.

17-51 **OTC** **NTD** **232**
 NTD ***SCC**
 ***SCC** ***PSE** **DIR 7**

COMM and NAVAIDS securing complete.

Request SPOC Safety open the following area(s) for controlled work:

1. RSS 193-ft Level
2. RSS 207-ft Level

17-52 ***PSE** ***SCC** **DIR 7** [SU17302](#)
 ***SCC** **NTD** **232**
 NTD **OTC**
 OTC ***PAD** **132**

You have Safety concurrence to open the following area(s) for controlled work:

1. RSS 193-ft Level
2. RSS 207-ft Level

***** End of Open RSS 193 & 207 Ft Level Control Area *****

MPS/SSME Securing

17-53 OTC CMPS 132 [SU17244](#)
 CSME

Secure MPS/SSME per:
S0017.300 Orbiter Operation 59 - MPS/SSME securing.

17-54 OTC CCME 132

Secure SSME controllers per:
S0017.300 Orbiter Operation 59 - CCME Securing.

INS System Securing

17-55 OTC CISL 132 [SU17245](#)

Perform INS System securing per: Instrumentation Systems
(S0017.300, Operation 52). (10 minutes)

17-56 CISL OTC 132

INS System securing complete.

PCMMU to Panel Control

NOTE

Perform PCMMU to Panel Control if PCM is not already in panel control.

PCMMU to Panel Control Not Performed: _____

17-57 OTC CISL 132

Verify ready for Panel Control.

17-58 OTC PLT 132

PANEL C3

OI PCMMU

FORMAT SW - FIXED

PWR SW - 1

17-59 CISL

CRT (SAQ04/VWQ11)

VERIFY

PCMMU

SW SCAN - 1

17-60 CISL

CURSOR CNTL (SAQ04/VWQ11)

PCMMU CONTROL COMMAND - OFF

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

17-61 CISL

CRT (SAQ04/VWQ11)

VERIFY

PCMMU BITE

POWER - GOOD

MTU - GOOD

***** End of PCMMU to Panel Control *****

Mid/AFT MCA Power Down

17-62 OTC CAFM 132 SU17247
 CPVD

Verify no requirement for MID or AFT MCA power.

17-63 OTC MS1 132

PANEL MA73C

ROW A

MCA LOGIC

MN A

FWD 1 SW - ON MA73CS001
MID 1 SW - OFF MA73CS002

MN B

FWD 2 SW - ON MA73CS005
MID 1 SW - OFF MA73CS006
MID 2 SW - OFF MA73CS007

MN C

FWD 3 SW - ON MA73CS011
MID 2 SW - OFF MA73CS012

ROW B

MCA LOGIC

MN A

AFT 1 SW - ON MA73CS004
MID 3 SW - OFF MA73CS003

MN B

AFT 2 SW - ON MA73CS010
MID 3 SW - OFF MA73CS008
MID 4 SW - OFF MA73CS009

MN C

AFT 3 SW - ON MA73CS014
MID 4 SW - OFF MA73CS013

PANEL MA73C (Continued)

ROW C

MCA LOGIC

MCA POWER AC1 3 PH

FWD 1 CB - OPEN

MA73CC001

MID 1 CB - OPEN

MA73CC002

MCA POWER AC2 3 PH

FWD 2 CB - OPEN

MA73CC005

MID 1 CB - OPEN

MA73CC006

MID 2 CB - OPEN

MA73CC007

MCA POWER AC3 3 PH

FWD 3 CB - OPEN

MA73CC011

MID 2 CB - OPEN

MA73CC012

ROW D

MCA LOGIC

MCA POWER AC1 3 PH

AFT 1 CB - OPEN

MA73CC004

MID 3 CB - OPEN

MA73CC003

MCA POWER AC2 3 PH

AFT 2 CB - OPEN

MA73CC010

MID 3 CB - OPEN

MA73CC008

MID 4 CB - OPEN

MA73CC009

MCA POWER AC3 3 PH

AFT 3 CB - OPEN

MA73CC014

MID 4 CB - OPEN

MA73CC013

17-64

OTC

CPVD
PPVM

132

Return cabin air temperature to nominal range per OMI [V1122.004](#) .

GNC Securing

NOTE

Delay Flight Control Power Down (part of GNC securing) until HYD securing is complete.

17-68	OTC	COFC	132	SU17253
		CGNC		
	OTC	TBC	136	

Perform system securing per GNC securing (S0017.300 Operation 36).

17-69	COFC	OTC	132
-------	------	-----	-----

GNC securing complete.

17-70	NTD	STM	232
	STM	JSTC	111
	JSTC	JSEP	114

Activate FPL CILC at C3 console and terminate FPL 115KV closed loop.

Support: [ELEC](#)

Stow S-band Couplers

17-74 OTC *PAD 132 SU17278

IF COMM couplers are not required for future testing,

THEN Place COMM S-band Antenna Couplers (197 ft level RSS) in stow position per OMI V1117 :

S-Band Left Quad
S-Band Upper Hemi
S-Band Right Quad

RT OMI log No. _____

Not Performed: _____

17-75 OTC *PAD 132

IF GPS 1 and GPS 3 couplers are installed (OV-105 only),

THEN Remove GPS 1 and GPS 3 Couplers (RSS 207 ft level) per OMI V1117 :

RT OMI log No. _____

Not Performed: _____

Switchguard Installation

17-79 OTC CDR 132 [SU17263](#)
 *PAD

Perform Orbiter Operation 61 (S0017.300) - Switchguard installation.

17-80 CSME OTC 132 [SU17244](#)
 CMPS

SSME and MPS securing at C3 and C4 is complete per:
Operation 59 (S0017.300).

17-81 CCME OTC 132

CCME securing at C12 is complete per:
Operation 59 (S0017.300).

Install CM Emergency Lighting

17-82 OTC *PAD 132 [SU17277](#)

Perform crew module emergency lighting installation per:

[JC V66-00017 Emergency Alarms and lighting, Crew Compartment, Installation](#)

17-83 *PAD OTC 132

Crew module emergency lighting installation complete.

Crew Module Platform/Cover Installation

17-84 OTC *PAD 132 [SU17270](#)

Perform Operation 60 (S0017.300) - Crew Module Platform and Protective Cover Installation.

17-89 OTC CDR 132

IF CABIN FAN ACTIVE VIA CABIN SWITCH,

THEN

PANEL L1

CABIN FAN

A SW - OFF

OTC RECORD TIME: _____

Not Performed: _____

17-90 OTC CECL 132

IF CABIN FAN ACTIVE VIA LPS,

THEN

CURSOR CNTL (VAG59)

ACTIVE CABIN FAN

XMIT CURSOR KEY - PRESS

VERIFY CABIN FANS OFF

OTC RECORD TIME: _____

Not Performed: _____

17-91 OTC CDR 132

PANEL F2

RESET MASTER ALARM

17-92 OTC OOCs 132

Remove two inert LIOH canisters per

Record FCS TPS No. _____

17-93 OTC OOCS 132
 OTC CECL

LIOH canisters removed, ready to activate cabin fan.

17-94 OTC CECL 132

CURSOR CNTL (VAG59)
CABIN FAN B
XMIT CURSOR KEY - PRESS

OTC RECORD TIME: _____

17-95 OTC CECL 132
 CTPE

CURSOR CNTL (VAG60)
AUTO
XMIT CURSOR KEY - PRESS

CRT
VERIFY VAG60 IN AUTO MODE

Lightning Monitoring GSE Re-installation

17-96 OTC CEPD 132 SU17309
 CEPD OETO 151

Perform Lightning Monitoring Activation and Installation per C72-1512-____-____-____ Operation De-configure/Reconfigure Data Gathering Equipment for TCDT (S0017) or Hatch Cycling (Contingency) - Option B.
Report completion.

17-97 OTC NTD 232
 NTD STM
 STM JCFM 111

Perform GLMS Software Activation for the Crew Module per applicable Maximo Work Order.
Report completion.

Time: _____ Date: _____

***** End of Lightning Monitoring GSE Installation *****

17-98 NTD STM 232 SU17314
 STM JBEP 111

Reconfigure Whiteroom and Crew Cabin ODMS system for normal support per [Doc: JOB PLAN S0017/PWRA \(LI\) ODMS Support for TCDT](#) . **Report** complete.

Support: [PWRA](#)

17-99 NTD OTC 232
 *SCC
 OTC OVCC 132

ODMS configuration to normal is complete. Portable O₂ meters (2 each) installed in WR and Orbiter Crew Module are no longer required.

SRB RSS Securing

NOTE

Perform SRB RSS securing if Eastern Range support is available.

SRB RSS Securing Not Performed: _____

17-100 **TBC** **CBRS** **136** [SU17284](#)

Secure Range Safety Systems.

17-101 **CBRS**

CURSOR CNTL (SWRB2)

LH A PWR OFF - OFF

LH B PWR OFF - OFF

RH A PWR OFF - OFF

RH B PWR OFF - OFF

CURSOR CNTL (SWRB2)

DCDR IND I

AGC VOLT I

17-102 **CBRS**

CURSOR CNTL (SWRB2)

LH RSS BATT CURR _____ <0.01 AMP

RH RSS BATT CURR _____ <0.01 AMP

LH RCVY BATT CURR _____ <0.04 AMP

RH RCVY BATT CURR _____ <0.04 AMP

17-103

CBRS

CURSOR CNTL (BWR10)
HOLDFIRE E-MON INH
XMIT CURSOR KEY - PRESS

17-104

CBRS

CURSOR CNTL (SWRB3)
BSR01
XMIT CURSOR KEY - PRESS

CURSOR CNTL
POWER OFF SYS A&B
XMIT CURSOR KEY - PRESS

17-105

CBRS

CURSOR CNTL (SWRB2)
E-MON INH
XMIT CURSOR KEY - PRESS

17-106

CBRS	TBC	136
TBC	NTD	232

SRSS power off.

Remove Trunking Radio Restrictions

NOTE

Perform this option if Trunking Radio Restrictions were in place.

Remove Trunking Radio Restrictions Not Performed: _____

17-107 NTD *SEC 232 SU17295

Drop security screening roadblocks for Trunking Radios at A5, A3 and A6. Shuttle Range Safety System checkout complete.

Support: SEC

17-108 NTD JFIR 232
 *SCC

Notify Fire/Rescue, EMS, and Security that the restrictions on Trunking Radio use are no longer in effect.

Support: FIRE

17-109 NTD *ACM DIR 8

SRSS test is complete. Trunking Radios are now allowed into the Pad. Return DRS radios back to Pad Leader's desk with signout sheet.

17-110 NTD *SEC 232

Unlock turnstiles at Pad A.

Support: SEC

***** End of Remove Trunking Radio Restrictions *****

17-111	CBRS	TBC	136	SU17299
	TBC	NTD	232	
	NTD	*SCC		
	*SCC	*PSE	DIR 7	

Perform the following:

1. SRSS SRB S&A's in safe position.
SRSS SYS powered down and SRBTS powered down.
2. IF FWD skirts were cleared,

THEN request Safety remove safety signs from SRB LH/RH FWD skirts.

Sub Step 2 Not Performed: _____

17-112	NTD	SRO	232
--------	-----	-----	-----

IF Eastern Range is supporting,

THEN Report:
SRSS SRB S&A's in safe position.
SRSS SYS powered down and SRBTS powered down.
SRO support is released.

Not Performed: _____

17-113	*PSE	*SCC	DIR 7
	*SCC	NTD	232
	NTD	TBC	

IF Eastern Range is supporting,

THEN Report:
Safety signs removed from SRB LH/RH FWD skirts.

Not Performed: _____

<p style="text-align: center;">NOTE Hazardous steps due to S&A rotation complete.</p>
--

***** End of SRB RSS Securing *****

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17-114 NTD *SCC 232
 *SCC *PSE DIR 7

IF Trunking Radio Restrictions have been removed,

THEN Return Pad Safety Operations to Net 105.

Not Performed: _____

17-115 STM JPHO 111

Place ECCS mode one to the off position.

Support: PHOT

(SIM) GOX Vent Arm/hood Securing

17-116 NTD TBC 232 SU17285
 TBC CMEC 136

(SIM) Perform GVA Firing room securing per OMI G2158 .
Report completion

17-117 CMEC TBC 136
 TBC NTD 232

(SIM) GVA Firing room securing per OMI G2158 complete.

Transfer Control Of Sound Suppression System - FR To CCC

NOTE

Perform Transfer Control Of Sound Suppression System - FR to CCC if Sound Suppression System has not been previously transferred from Control Room to CCC.

Transfer Control of Sound Suppression System - FR to CCC Not Performed:_____

17-118 **OTC** **NTD** **232** [SU17257](#)

FR ready to transfer control of SS water to CCC.
Request CGSS contact JBWC on Channel 123.

17-119 **NTD** **STM** **232**
 STM **JBWC** **111**

Verify ready to receive control of sound suppression water.

Support: [CWSS](#)

17-120 **OTC** **CGSS** **132**

Transfer control of Sound Suppression from FR to CCC.
Report completion.

NOTE

FR will return control of Sound Suppression System to CCC by performing following step.

17-121 **CGSS**

CURSOR CNTL (VAJ14)
CCC ENB
XMIT CURSOR KEY - PRESS (TWICE)

CRT (VAJ14)
CONTROL
CCC ON
FR OFF

17-122 CGSS JBWC 123

Firing Room transfer of Sound Suppression control to CCC complete.

Support: [CWSS](#)

17-123 STM JBWC 111

Verify transfer of Sound Suppression Control to CCC.

Support: [CWSS](#)

17-124 JBWC

VERIFY (SCREEN P2A/P2B) :

<u>INDICATOR</u>	<u>STATE</u>
SS CCC ENABLE	ON
SS FR-OFF/CCC-ON	ON
SS FR ENABLE	OFF
SS FR-ON/CCC-OFF	OFF

Support: [WSSA](#)

17-125 CGSS OTC 132
OTC NTD 232

[SU17257](#)

Firing Room transfer of Sound Suppression control to CCC complete.

*** End of Transfer Control Of Sound Suppression System - FR to CCC ***

17-126

JBWC

Deactivate Sound Suppression Open Command Lockout per [Doc: JOB PLAN M3203.7 \(LI\) Deactivate CCC Sound Suppression Lockout for TCDT](#) .

Support: [CWSS](#)
Support: [WSSA](#)

17-127

JBWC

STM

111
123

Sound Suppression Open Command Lockout has been deactivated.

Support: [WSSA](#)

NOTE

The transfer of control of Orbiter FIREX systems from Firing Room to CCC will be a simulated operation.

Transfer Control Of Orbiter- FIREX Systems - FR To CCC

17-128

OTC

NTD

232

[SU17283](#)

(SIM) FR ready to transfer control of Orbiter FIREX systems to CCC.
Request CMPL contact JBFX on Channel 123.

17-129

NTD

STM

232

STM

JBFX

111

(SIM) **Verify** ready to receive control of Orbiter FIREX systems.

Support: [CWSS](#)

17-130

OTC

CMPL

132

(SIM) **Transfer** control of Orbiter FIREX systems from FR to CCC.
Report completion.

NOTE

FR will return control of Orbiter FIREX systems to CCC by performing next step.

17-131 **CMPL**

(**SIM**) CURSOR CNTL (SAE02) - FIREX WATER
DISPLAY

POSITION CURSOR TO BLOCK -
TRANSFER FIREX CONTROL TO CCC.

XMIT CURSOR KEY - PRESS ONCE

VERIFY:

CNTL XFER TO CCC IND - ON*
*ON FOR DURATION OF COMMAND ONLY

17-132 **CMPL JBFX 123**

(**SIM**) Firing room transfer of Orbiter FIREX systems control to CCC
complete.

Support: [CWSS](#)

17-133 **JBFX**

(**SIM**) VERIFY (SCREEN P2A/P2B) :

<u>INDICATOR</u>	<u>STATE</u>
FX CCC ENABLE	ON
FX FR-OFF/CCC-ON	ON
FX FR ENABLE	OFF
FX FR-ON/CCC-OFF	OFF

Support: [CWSS](#)

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17-134 **JBFX** **CMPL** **123**
 STM **111**

(SIM) CCC has control of Orbiter FIREX systems.

Support: [CWSS](#)

17-135 **CMPL** **OTC** **132**
 OTC **NTD** **232**

(SIM) Firing room transfer of Orbiter FIREX systems control to CCC complete.

***** End of Transfer Control Of Orbiter FIREX Systems - FR To CCC *****

FIREX Systems Securing

17-136 **JBFX**

[SU17293](#)

IF any of the following valves are open,

THEN issue the LAUNCH COOLING SPRAYS CLOSE ALL command (Screen LFA/LFB):

V480 V35
V32 V65
V33 V18
V34

Support: [CWSS](#)

17-137 **JBFX**

Verify the following valves are closed (Screen LFA/LFB):

Valve

V480

V32

V33

V34

V35

V65

V18

Support: [CWSS](#)

17-138 **STM JBFX 111**

Reconfigure FIREX system on FSS, RSS, GO₂ and MLP for normal support per [Doc: JOB PLAN M3203.8 \(LI\) Configure FIREX for Normal Support Following TCDT](#) .

Support: [CWSS](#)

Support: [WSSA](#)

17-139 **JBFX STM 111 [SU17290](#)**
STM NTD [SU17283](#)

FSS, RSS, GO₂ and MLP FIREX systems configured for normal support.

Support: [CWSS](#)

Sound Suppression System Securing

17-140 STM JBWC 111 SU17294

IF MLP/PIC PAD I/F and first motion distribution system test are not following S0017,

THEN Secure Sound Suppression water system per [Doc: JOB PLAN M3203.9 \(LI\) Secure Sound Suppression Valve Complex from TCDT Support](#) .

Support: [WSSA](#)
Support: [CWSS](#)

Not Performed: _____

17-141 JBWC STM 111
 STM NTD 232

IF MLP/PIC PAD I/F and first motion distribution system test are not following S0017,

THEN Report Sound Suppression water system securing complete.

Support: [CWSS](#)

Not Performed: _____

NOTE
Perform next two steps to configure MLP/SS water system for MLP/PIC PAD I/F and first motion distribution system checks if scheduled.

17-142 STM JBWC 111

Configure SS water system to support MLP/PIC PAD I/F and first motion distribution system checks per [Doc: JOB PLAN M3203.10 \(LI\) Configure Sound Suppression for Post TCDT PIC Test](#) .

Support: [CWSS](#)
Support: [WSSA](#)

Not Performed: _____

17-143 JBWC STM 111
 STM NTD 232

SS Water System is configured to support MLP/PIC PAD I/F and First Motion Distribution System test.

Support: [CWSS](#)

Not Performed: _____

17-144 NTD OTC 232 [SU17293](#)
 TBC
 *SCC
 OTC *PAD 132

FSS and RSS FIREX has been returned to normal support configuration. The system is now available to support class C (Hyper) operations.

17-145 NTD *SCC 232 [SU17291](#)
 STM
 JFIR

Fire and emergency medical support for FIREX isolation may be released at this time.

Support: [FIRE](#)

Deactivate SRB Joint Heaters

NOTE

Perform this option if SRB joint heaters are not powered down.

Deactivate SRB Joint Heaters Not Performed: _____

17-149 TBC CPWR 136

Deactivate SRB joint heaters.

17-150 CPWR

CONSOLE KYBD (BWE11)
PFK15 KEY - PRESS

17-151 CPWR

CONSOLE KYBD (BWE11)
PFK15 KEY - PRESS (SECOND TIME)

***** End Of Deactivate SRB Joint Heaters *****

(SIM) SRB AFT Skirt GN₂ Purge Termination

17-152 TBC CHPU 136

(SIM) Terminate SRB AFT Skirt GN₂ Purge.

17-153 CHPU

**(SIM) CURSOR CNTL (BAT04)
SRB AFT SKIRT PURGE**

(HEATER)
CMD - OF

(VALVING)
(MAIN)
PRI - CL
SEC - CL

(VALVING)
LOW
PRI - CL
SEC - CL
DC PWR
PRI - OF
SEC - OF

**17-154 CHPU TBC 136
 TBC NTD 232
 NTD *SCC**

(SIM) SRB AFT Skirt GN₂ Purge has been terminated.

17-160 LPS C4MC

CONSOLE KYBD
I, DA, LDBA
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CONSOLE KYBD
\$TERM LDBS AND LDBA
\$CLAI LDBA AND LDBS

CONSOLE KYBD
A, DA, LDBA
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

17-161 LPS NTD 232

LDBA and LDBS FEP reload complete.

17-162 LPS C4MC 127

Perform \$FEPCPR, Reinit and Demand Update all active FEPs.

Terminate \$FEPCPR at completion of Demand Update.

17-163 LPS NTD 232
 NTD OTC 232
 TBC

Vehicle safing processor will be reset.
Safing indicators and meters will cycle on and off, please disregard until this safing step complete. This step takes 1 minute to complete cycle.

17-164 LPS C4MC 127

At VSB FEP (XX83)
Press reset (RST) on MVME 2064 panel. **Verify** FR LED is on.

17-165 NTD LPS 232

Issue nmajortest pseudo to value of hexadecimal 0000 (0 decimal).
Report completion.

17-166 LPS CPDR

Perform \$\$\$POOL Reset Assign RP.

17-167 NTD CTPE 232

Reset Countdown clock to baseline.

17-168 CTPE

CONSOLE KYBD
CDTS -99:2359/59
XMIT CMD KEY - PRESS

MDM Status/Reset

17-169 OTC CDPS 132 [SU17281](#)

Perform BITE test 4 on F/C and PYLD MDM's per VAS94.
Deliver output to CTPE.

17-170 **CDPS**

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
MDM DISCRETE OUTPUT CK
XMIT CURSOR KEY - PRESS

17-171 **CDPS**

PFK2 KEY - PRESS

17-172 **CDPS**

CURSOR CNTL (VAS94 PG-B)
ALL MDM'S
XMIT CURSOR KEY - PRESS

17-173 **CDPS**

IF AFTER RECEIPT OF DECODE COMPLETE MESSAGE,

THEN PERFORM:

APPL PAGE (VAS94 PG-B)
PFK15 KEY - PRESS

17-174 CTPE OTC 132

IF MDM's do not require reset,

THEN Report

MDM's do not require reset.

Not Performed: _____

MDM Master Reset

NOTE

Perform "MDM Master Reset" option if BT4 analysis indicates MDM master reset is required.

Do not perform Master Reset on FF1, FF2, or FF3 if IMUs are in Operate.
Master Reset to LF1 will result in loss of cooling if not in Panel control.

MDM Master Reset Not Performed: _____

17-175 CTPE OTC 132
 OTC CDPS
 ALL

Master reset required for the following MDM's:

17-176

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
MDM RAW READ PROGRAM (VSSD5)
XMIT CURSOR KEY - PRESS

PFK 2 KEY - PRESS

17-177

CDPS

APPL PAGE (VSSD5 PG-B)
PFK1 KEY - PRESS

17-178

CDPS

CURSOR CNTL (VSSD5 PG-B)
MDM SELECTION - _____ (RECORD)
XMIT CURSOR KEY - PRESS

REPEAT CURSOR SELECTION FOR ALL
MDM'S TO BE RESET

17-179

CDPS

PFK (VSSD5)
EXECUTE KEY - PRESS

CRT (VSSD5 PG-B)
"MDM MASTER RESET COMPLETED
SUCCESSFULLY"

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17-180

CDPS

APPL PAGE (VSSD5 PG-B)
PFK15 KEY - PRESS

17-181

CDPS OTC 132
OTC CTPE

MDM Master Reset complete.

***** End of MDM Master Reset *****

NOTE

Perform next two steps if a manual reset of individual discretetes must be performed instead of the MDM Master Reset option above. This manual reset option is used when other testing (example: parallel IMU operations) would be disrupted by an MDM Master Reset.

List all FDs manually reset below other than the expected and usual "RJDA/F JET XXX CMD A", "SPI DATA VALID FLAG" and "GCIL UPLINK PARALLEL CMD BIT AX" FDs. If a system cannot explain why a particular FD is in a state that does require reset, the discrepancy must be documented in PRACA. CTPE and OPE will coordinate with the FD owner system before any reset takes place. FDs that the RSYS, TPE and OPE agree can be left as-is until the next Orbiter power down, do not have to be listed below.

NOTE

In next step FD = individual discrete CMD to be reset.
Repeat as required for all FD's to be reset.

17-182

CTPE

CONSOLE KYBD
SET FD OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

<u>MSID</u>	<u>Nomen</u>	<u>System</u>	<u>State</u>	<u>State Commanded To</u>

Not Performed: _____

17-183 CTPE OTC 132 SU17281

MDM status/reset complete.

Not Performed: _____

G9 Simplex

NOTE

Do not perform next two steps if powering down Orbiter or if redundant set required for other operations.

NOTE

If IMU Cal is in progress wait until complete prior to performing next two steps.

NOTE

OI and GPC formats for use in next two steps will be determined by test team based on vehicle operations being supported.

17-184 OTC ALL 132
 OTC NTD 232
 NTD TBC
 PTC

DPS will be switching to G9 Simplex, format ____/____.
Momentary data loss will occur.
Master alarm will occur.

Not Performed: _____

17-185 OTC CDPS 132

Configure to G9 Simplex, format ____/____ per:
"DPS systems" (S0017.300 Operation 40 item 16).
Report complete.

Not Performed: _____

Caution and Warning Reconfigure

NOTE

The following will only be performed if vehicle will remain powered up for vehicle processing following completion of S0017.

Caution and Warning Reconfigure Not Performed: _____

17-186 OTC CISL 145

Perform C&W Deactivation per OMI [V9001.106](#) , Op 150.

17-187 OTC CISL 145

Perform C&W Activation (PAD) per OMI [V9001.106](#) , Op 130

***** End of Caution and Warning Reconfigure *****

Shuttle Powerdown

17-188 NTD OTC 232
 TBC
 PTC
 LPS

IF Shuttle Power down required,

THEN Perform Shuttle power down per OMI [S9001.102](#) .

RT OMI log No. _____

Not Performed: _____

17-189 NTD ALL 232

S0017, except Post Operations/Reconfiguration, complete.

Test Reconfiguration

17-190 NTD JBFX 232
 STM

JBFX released from monitoring 232 for S0017.

Support: [CWSS](#)

17-191 *PAD OTC 132 [SU17270](#)

Orbiter Operation 60 (S0017.300) - Crew Module Platform and Protective Cover Installation complete.

17-192 *PAD OTC 132 [SU17263](#)

Orbiter Operation 61 (S0017.300) - Switchguard Installation complete.

17-193 *PAD OTC 132 [SU17274](#)

Orbiter Operation 63 (S0017.300) - GTOE Headset Removal complete.

Post Operation Instructions Complete

Open Wire Frames For Work

17-194 STM GYCC 111
 GYCC GYCB PTP (INFO)

Wire frames listed below are to remain in controlled mode.
All other frames may be opened for normal work.

1. BRRS Frame 9
2. CD&SC Frames 1, 40 and WT
3. DLTR#3 FOT
4. LCC Frames 51, 65
5. PAD A Frame 57
6. VAB Frames 52, 53, 54 55
7. VABR Frame 50

Support: [TCOM](#)

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17-195	STM	JSTC	111
		GYCC	
		JBPN	
		JBWC	
		JBFX	
		JBAC	
		JBEP	
		JCFM	
		FMLS	
		GBHE	
		VEEE	NET 104
		QBSE	
	JSTC	JSEP	114
		*SCB	
		JFIR	
		*SEC	
		JSDY	
		JSAC	

S0017 complete. **Return** to normal configuration.

Support: [PWR](#)
Support: [CPNS](#)
Support: [PNSA](#)
Support: [CWSS](#)
Support: [WSSA](#)
Support: [CHVA](#)
Support: [HVAA](#)
Support: [ELEC](#)
Support: [LS](#)
Support: [FIRE](#)
Support: [SEC](#)
Support: [JSTC](#)
Support: [AC](#)
Support: [COMM](#)

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17-196	STM	GYCC	111
	GYCC	GYCR	117
		JYCD	
		GYCB	
		GYVW	
		GYCD	
		GYAT	
		GYQC	
		JPHO	
		JTCR	
		KFRL	

Test complete. **Terminate** voice recordings for S0017.
Support is released.

Support: [VCE](#)
Support: [WB](#)
Support: [ATEL](#)
Support: [TCOM](#)
Support: [OISD](#)
Support: [PHOT](#)
Support: [TCD](#)

*** End of Operation 17 ***

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OPERATION 18 Recycle Control Sequence

Shop: TCO

Cntrl Rm Console: ALL

OPR: TCO

Zone: NA

Hazard (Y/N): N

Duration (Hrs): 0.5

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

This is a Contingency Operation. Perform only if recycle is required.

Recycle Control Operation Not Performed: _____

**Recycle to T-20 Minutes from Hold/ Cutoff
Between T-20 Minutes (OPS 101 Transition) and T-zero (SRB Ignition)**

NOTE

Following critical recycle operations must be completed prior to performing non-critical recycle actions:

1. GLS Safing
2. MCC-H Recycle
3. APU Shutdown (SIM)
4. ECL Heater Reconfig
5. Cutoff Safing Switchlist
6. OAA Extend and Lock (SIM)
7. Payload Safing (If Req'd)
8. G1 To G9 Transition
9. Post Cutoff Safety Checks
10. S&A Safing
11. PCMMU To Remote
12. Reconfigure Cabin and MPS/HYD Switches
13. Scrub/Recycle Decision
14. ET Drain/Recovery Decision

GLS Safing

NOTE

Perform next two steps if GLS Safing is not in progress.

18-1 NTD CGLS 212

PFPK5 (CUTOFF) - PRESS
VFY PFPK5 LIGHT YELLOW

Not Performed:_____

18-2 CGLS

PFPK6 (EXECUTE CUTOFF) - PRESS
VFY SAFING IN PROGRESS

Not Performed:_____

NOTE

GLS safing will automatically be initiated at Cutoff.
Specific operations are dependent upon Cutoff time and are delineated at end of
this Operation.

18-3 CGLS NTD 212

GLS Safing has started. (monitor PG-3B for errors).

MCCH Recycle

18-4 *FLT

IF count passed T-9 minutes

THEN Perform "MCCH Recycle" (Operation 23)

Not Performed: _____

APU Shutdown (SIM)

NOTE

Perform APU Shutdown if APU's are operating.

APU Shutdown (SIM) Not Performed: _____

18-5 CGLS OTC 212

GLS go for APU shutdown.

18-6 OTC PLT 212

(SIM) Perform APU shutdown

Not Performed: _____

18-7 PLT

PANEL R2 (SIM)

APU/HYD

APU OPERATE

1 SW - OFF

2 SW - OFF

3 SW - OFF

Not Performed: _____

18-8

PLT

CRT
SYS SUMM 2
APU 1 SPEED < 5 PCT
APU 2 SPEED < 5 PCT
APU 3 SPEED < 5 PCT

Not Performed: _____

18-9

PLT

PANEL R2 (SIM)

APU/HYD
APU FUEL TK VLV (SIM)
1 SW - CLOSE
2 SW - CLOSE
3 SW - CLOSE

Not Performed: _____

18-10

PLT

PANEL R2 (SIM)

APU/HYD
APU CNTRL PWR
1 SW - OFF
2 SW - OFF
3 SW - OFF

Not Performed: _____

18-11

PLT

PANEL R2 (SIM)

APU/HYD

HYD MAIN PUMP PRESS

1 SW - NORM

2 SW - NORM

3 SW - NORM

Not Performed: _____

CAUTION

APU shutdown to circ Pump start elapsed time shall not exceed 15 minutes or damage to hardware could occur.

18-12

PLT

PANEL R2 (SIM)

APU/HYD

HYD CIRC PUMP

1 SW - GPC

2 SW - GPC

3 SW - GPC

Not Performed: _____

18-13

CHYD

CRT (VWF19) (SIM)
VERIFY

HYD CIRC PUMPS 1-2-3 RESTARTED
HYD CIRC PUMPS 1-2-3 100 - 600 PSIA
ME PR LN TEMP 1-2-3 60 DEG F (MIN)

CRT (VWF43)
VERIFY

1 CIRC AUTO A ON
2 CIRC AUTO B ON
3 CIRC AUTO C ON

Not Performed: _____

18-14

PLT OTC 212
OTC NTD

(SIM) APU shutdown complete.

Not Performed: _____

***** End of APU Shutdown (SIM) *****

NOTE

For a loss of OI Data after LOX term replenish, LOX will proceed directly to drain following terminal count safing.

18-15

CLOX NTD 212

(SIM) Initiating LOX drain.

Not Performed: _____

Data and Ground Command Availability Checklist

18-16 NTD LPS 212

Report FEP Data Validity

OI _____
GPC _____
LDB _____
GS (1,2,3) _____

18-17 NTD CDPS 212

Report GPC downlist/LDB status.

18-18 NTD CISL 212

Verify PCMMU data is good.

PCMMU Data Recovery

NOTE
Perform PCMMU Data Recovery if the OI or GPC data is BAD during previous step.

PCMMU Data Recovery Not Performed: _____

18-19 CISL NTD 212

Recommend PCMMU Swap.

18-20 CISL

CURSOR CNTL (SAQ04/VWQ11)
PCM CONTROL
PCMMU - OFF
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

18-21 CISL

CRT (SAQ04/VWQ11)
VERIFY
PCMMU
COMMAND - OFF

18-22 CISL NTD 212

Ready for switch to PCMMU 2.

18-23 NTD CDR 212

PANEL C3
OI PCMMU
POWER SW - 2

18-28 OTC CAPU 212

IF APU heater ground commands were removed (T-10 seconds)

THEN (SIM) Perform APU heater activation.

Not Performed: _____

18-29 CAPU

CRT (VAF34)
VERIFY

APU READY

APU 1 - OFF	V46X0125E1
APU 2 - OFF	V46X0225E1
APU 3 - OFF	V46X0325E1

APU OPERATE

APU 1 - OFF	V46S0126E1
	V46S1127E1
APU 2 - OFF	V46S0226E1
	V46S1227E1
APU 3 - OFF	V46S0326E1
	V46S1327E1

ISO VLVS

1A/2A/3A - CB CYAN	V46X0115E1
	V46X0134EL
1B/2B/3B - CB CYAN	V46X0215EL
	V46X0234EL
	V46X0315EL
	V46X0334EL

TURBINE SPEED

APU 1 - 0 PCT	V46R0135A1
APU 2 - 0 PCT	V46R0235A1
APU 3 - 0 PCT	V46R0335A1

CNTRL PWR

APU 1 - OFF	V46S0124E1
APU 2 - OFF	V46S0224E1
APU 3 - OFF	V46S0324E1

APU Pre-Start Only

NOTE

Perform next three steps only if APU pre-start only was performed.

APU Pre-Start Only Not Performed: _____

18-30 OTC PLT 212

IF APU fuel tank isolation valves were opened

THEN PERFORM:
PANEL R2 (SIM)

APU/HYD
APU FUEL TANK VALVE
1 SW - CLOSE
2 SW - CLOSE
3 SW - CLOSE

18-31 OTC PLT 212

PANEL R2 (SIM)

APU/HYD
APU CNTL PWR
1 SW - OFF
2 SW - OFF
3 SW - OFF

18-32 OTC PLT 212

PANEL R2

APU/HYD
HYD MAIN PUMP PRESS
1 SW - NORM
2 SW - NORM
3 SW - NORM

***** End of APU Pre-Start Only *****

ECL HTR Reconfiguration

NOTE

Perform this option if countdown proceeded past T-5 minutes.

ECL HTR Reconfiguration Not Performed:_____

18-33 OTC CDR 212

Reconfigure heaters.

18-34 CDR

PANEL L2

FLASH EVAPR

FEEDLINE HTR

A SUPPLY SW - 2

B SUPPLY SW - 2

18-35 CDR OTC 212

HTR Reconfiguration complete.

****End of ECL HTR Reconfiguration ****

Cutoff Safing Switchlist

18-36 OTC CDR 212

PANEL F6

FLT CNTLR PWR SW - OFF

18-37 OTC PLT 212

(SIM) PANEL R1

POWER DISTRIBUTION

ESS BUS SOURCE

FC 1 SW - OFF (GUARDED)

FC 2 SW - OFF (GUARDED)

FC 3 SW - OFF (GUARDED)

18-38 OTC PLT 212

PANEL F8

FLT CNTLR PWR SW - OFF

18-39 OTC CGSS 212

(SIM) Verify OAA extended, locked and configured for retract.

PCMMU Configuration Determination

18-40 OTC CGLS 212

Confirm GLS command active PCMMU 1 or 2 to GSE Power Control successful.

PCMMU Reconfiguration

NOTE

Perform PCMMU Reconfiguration if GLS did not command PCMMU to GSE control or valid OI cannot be verified.

PCMMU Reconfiguration Not Performed: _____

18-41 OTC CISL 212

PCMMU not configured for remote by GLS. Configure OI system for remote operations.

18-42 CISL

CRT (SAQ04/VWQ11)
VERIFY
OI DATA VALID
PCMMU
SW SCAN _____

18-43

CISL

CRT (SAQ04/VWQ11)
CURSOR CNTL
PCM CNTL
PCM_____ (1 OR 2) CMD ON
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

CRT (SAQ04/VWQ11)
VERIFY
PCMMU
COMMAND ON
BITE
1 POWER GOOD
2 MTU GOOD
OI DATA VALID

18-44

CISL

OTC

212

PCMMU Reconfiguration is complete.

***** End of PCMMU Reconfiguration *****

NOTE
Perform next two steps after PCMMU reconfiguration is complete.

18-45 **OTC CDR 212**

PANEL C3

OI PCMMU
POWER SW - OFF

18-46 **CISL**

CRT (SAQ04/VWQ11)
VERIFY
PCMMU
COMMAND ON
BITE
1 POWER GOOD
2 MTU GOOD
OI DATA VALID

Not Performed: _____

***** End Of PCMMU Configuration Determination *****

G1 To G9 Transition

NOTE
Perform this option if PASS is not already in G9.

G1 to G9 Transition Not Performed: _____

18-47 **CGLS** **OTC** **212**
 OTC **NTD**

GLS primary safing complete. Ready for G9 transition

18-48 ***FLT** **NTD** **212**

BFS SPC buffer clear. Ready for G9 transition.

NOTE
If LOX drain is in progress, G1 to G9 transition may not occur until stable drain has been achieved and CLOX selects drain using low range transducers per OMI S1003 or CLOX will lose visibility of ET LO₂ tank pressure..

18-49 **NTD** **CMPL** **212**
 CLOX
 CLHY

Verify configured for G1 to G9 GPC OPS transition.

18-50 **NTD** **ALL** **212**

Console operators discontinue all LDB commands and reads during PASS OPS transition.

18-51

CHPU

(SIM) IF GAS GENERATOR HEATER CONTROL IS NOT IN
MANUAL MODE,

THEN PERFORM
CURSOR CNTL (BAT04)
GAS GENRTR - MAN

CRT
VERIFY

AUTO - OPEN BLOCK
MAN - CLOSED BLOCK

Not Performed: _____

18-52

NTD OTC 212
OTC CDPS

Perform PASS transition to GNC9

18-53

CDPS

CURSOR CNTL (VASP9, PG-B)
RETURN TO HOST
XMIT CURSOR KEY - PRESS

CURSOR CNTL (VASP9, PG-B)
INHIBIT LCC MONITORING
XMIT CURSOR KEY - PRESS

18-54 CDPS

IF BFS is in OPS 101 or RUN mode and crew is unavailable to support transition,

THEN Secure BFS using "Remote BFS Deactivation" option in S0007.500 prior to G9 recycle.

Not Performed: _____

18-55 CDPS

IF VASJ6 NOT ACTIVE

THEN PERFORM

CURSOR CNTL (SAS01 PG-B)
DPS INIT DISPLAY (SAS01)
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
TERMINATE OPS MGR 5 (SAS25)
XMIT CURSOR KEY - PRESS
PFK2 KEY - PRESS

Not Performed: _____

18-56 CDPS

IF VASJ6 NOT ACTIVE

THEN PERFORM

CONSOLE KYBD
VASJ6
PERF PGM KEY - PRESS

Not Performed: _____

NOTE

G9 Recycle is performed by sequencer VASJ6. If BFS is active in OPS 101, VASJ6 will first prompt CDR to perform a BFS recycle to OPS 0 standby.

Once BFS Recycle is complete, program will transition PASS to G9 via IDP equivalent. PASS G9 transition takes approximately 90 seconds.

18-57

CDPS

PF (VASJ6)
COUNTDOWN RECYCLE - PRESS

18-58

CDPS

CRT (VASJ6 PG-B)

FOLLOW COUNTDOWN
RECYCLE PROMPTS

18-59

CDPS

CONSOLE CRT (VASJ6 PG-B)

VERIFY MESSAGE:
RECYCLE COMPLETE

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18-60 CDPS OTC 212

DPS is configured to GNC9 DL format

_____.(44 or 60)

18-61 OTC NTD 212
 NTD TBC
 ALL

PASS OPS transition to G9 complete.

*****End of G1 to G9 Transition *****

18-62 CBHY

(SIM) CURSOR CNTL (BAT04)
GAS GENRTR - AUTO

CRT
VERIFY

AUTO - CLOSED BLOCK
MAN - OPEN BLOCK

Post Cutoff Safety Checks

NOTE

Do not perform Post Cutoff Safety Checks if previously performed for an abort.

Perform Post Cutoff Safety Checks if a cut-off occurs after APU start.

Post Cutoff Safety Checks Not Performed: _____

18-63

NTD

Perform Post Cutoff Safety Checks

1. **NTD CISL 212**
 Verify Orbiter OI PCM data valid.
2. **NTD CDPS 212**
 Verify Orbiter downlist data valid.
 Verify LDB polling active.
3. **NTD CCME 212**
 Verify engine data valid and engine command paths good.
4. **NTD CSME 212**
 Verify all engines shutdown and all engine pressures and temperatures appear normal.
5. **NTD CSME 212**
 Verify no engine leak indications.
6. **NTD CMPL 212**
 Verify no indication of fire at AFT Orbiter area. (FD 36, 37, 38, 39).
7. **NTD CMPL 212**
 Verify LOX bleed path established or ET LOX emergency drain initiated.
8. **NTD CLHY 212**
 (SIM) Verify no unexpected fire detectors tripped.

9. **NTD CLHY 212**
 (SIM) Verify no significant leaks on MLP, Cross Country lines, TSM,
 Storage area or ET vent lines.

10. **NTD CLHY 212**
 (SIM) Verify LH₂ tank pressure stable.

11. **NTD CLOX 212**
 (SIM) Verify OTV indicates no fire or leaks on cross country lines,
 storage area, MLP or TSM.

12. **NTD CLOX 212**
 (SIM) Verify ET LOX tank pressure stable.

13. **NTD CPVD 212**
 Verify GN₂ purge interface pressures are nominal and vent doors in
 normal purge configuration.

14. **NTD CHGD 212**
 Verify no indication of hydrogen leaks in AFT fuselage.

15. **NTD CHGD 212**
 Verify no indication of oxygen leaks in AFT fuselage.

16. **NTD CHGD 212**
 Verify ET/IT O₂ concentration less than 10,000 ppm..

17. **NTD CGSS 212**
 Verify no indications of fire on crew escape route.

18. **NTD CAPU 212**
 Verify APU's shutdown and no leakage indications.

19. **NTD CHPU 212**
 Verify HPU's shutdown and no leakage indications.

20. **NTD CPWR 212**
 (SIM) Verify SRB ignition S&A's safe

21. **NTD CEPD 212**
If cutoff occurred after T-21 seconds, verify ground PIC rack powered down.

22. **NTD COOS 212**
Verify all OX/Fuel tank pressures and temps stable..

23. **NTD CBRS 212**
If ER is supporting, verify Range Safety inhibits are on.

24. **NTD ALL 212**
Post Cutoff Safety Checks are complete.

***** End of Post Cutoff Safety Checks *****

NOTE Perform next six steps if SRB IGN S&A's are armed.

18-67 NTD CPWR 212

Perform Ignition S&A safing.

Not Performed: _____

18-68 CPWR

CURSOR CNTL (SDC01)
SRB OPTIONS IGN SAF/ARM
XMIT CURSOR KEY - PRESS

CRT
VERIFY SWC01 TERMINATED AND BDE07 IS DISPLAYED

Not Performed: _____

18-69 CPWR

CURSOR CNTL (BDE07)
SAFE LEFT AND RIGHT
XMIT CURSOR KEY - PRESS

CRT
VERIFY
BSE06 GPC FORMAT OR VALIDITY FREQ ERROR

Not Performed: _____

18-70 CPWR

PFP (BSE06)
CONTINUE - PRESS

Not Performed: _____

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18-71 CPWR

CONSOLE KYBD (BWE07)
PFK15 - PRESS

CRT
VERIFY BWE07 TERMINATES AND SDC01
IS DISPLAYED

Not Performed: _____

18-72 CPWR NTD 212

Ignition S&A safing is complete.

Not Performed: _____

*** End of S&A Post Cutoff Safety Contingency ***

RSS S&A Safing

NOTE
Perform next five steps if count passed T-5M and if Eastern Range is supporting TCDT.

- | | | | |
|--|-----------------------------|-----------------------------|------------|
| 18-73 | NTD | RSR | 212 |
| <p>Post Cutoff Safety Checks complete.
Fire and leak detector status satisfactory.</p> <p>Request concurrence to proceed with SRB S&A safing.</p> <p style="text-align: right;">Not Performed: _____</p> | | | |
| 18-74 | NTD | OTC | 212 |
| <p>Perform SRB RSS S&A Safing (Post G9 recycle).</p> <p style="text-align: right;">Not Performed: _____</p> | | | |
| 18-75 | OTC | CDPS
CEPD | 212 |
| <p>IDP equivalents and MEC Critical CMD's will be issued momentarily.</p> <p style="text-align: right;">Not Performed: _____</p> | | | |
| 18-76 | OTC | CGLS | 212 |
| <p>Perform SRB RSS S&A Safing (Post G9 recycle).</p> <p style="text-align: right;">Not Performed: _____</p> | | | |
| 18-77 | CGLS
OTC
NTD | OTC
NTD
*SCC | 212 |
| <p>SRB RSS S&A safed and MEC Critical CMD's disabled.</p> <p style="text-align: right;">Not Performed: _____</p> | | | |

***** End of RSS S&A Safing *****

18-78 CTPE

CONSOLE KYBD
STP05
PERF PGM KEY - PRESS

18-79 OTC CEPD 212
CFCP

IF fuel cell loads have been adjusted to high range

THEN

(SIM) Perform Ground Power Connect and FC Load Share Adjust.
Report completion.

Not Performed: _____

Reconfigure Cabin and MPS/HYD Switches

18-80 OTC CREW 212

IF count passed T-2 minutes,

THEN Open LEH visors.

Not Performed: _____

18-81 OTC PLT 212

(SIM) Perform MPS Helium Reconfiguration per your checklist.

18-82 PLT

(SIM)
PANEL R2
MPS
HE ISOLATION A
LEFT SW - GPC
CTR SW - GPC
RIGHT SW - GPC

HE ISOLATION B
LEFT SW - GPC
CTR SW - GPC
RIGHT SW - GPC

PNEUMATICS
HE ISOL SW - GPC

18-83 PLT OTC 212

(SIM) MPS Helium Reconfiguration complete.

NOTE

If reconfigure from PLT initiated drain after GPC/LDB recovery is required, then perform following six steps.

NOTE

LO₂ fill and drain valve (PV9/10) open commands will be reapplied and switches will be repositioned to GND to provide LPS control of the valves during the remainder of drain.

18-84 NTD OTC 212
OTC CMPL

(SIM) Reconfigure for normal LOX drain.

Not Performed: _____

18-85 CMPL

CRT (SAE02)
VERIFY
PV9 OUTBOARD FILL AND DRAIN VALVE OPEN
PV10 INBOARD FILL AND DRAIN VALVE OPEN

Not Performed: _____

18-86 CMPL

CONSOLE KYBD

SET_V41K1518XL_ON (PV9 OP CMD)
SET_V41K1518NL_ON (PV9 GRND OP CMD)
SET_V41K1501XL_ON (PV10 OP CMD A)
SET_V41K1502XL_ON (PV10 OP CMD B)
SET_V41K1503NL_ON (PV10 GRND OP CMD)
SET_V41K1515XL_OFF (PV9 CLSD CMD)
SET_V41K1512XL_OFF (PV10 CLSD CMD)

XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed: _____

18-87 CMPL

CONSOLE KYBD

CBTU_BT4_V41K1515XL,1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

(BT4MASK 0080) VERIFY V41K1515XL OFF

CBTU_BT4_V41K1512XL,1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

(BT4 MASK 0200) VERIFY V41K1512XL OFF

Not Performed:_____

18-88 CMPL OTC 212
OTC PLT

(SIM)
PANEL R4
PROPELLANT FILL/DRAIN
LO₂ OUTBD SW - GND
LO₂ INBD SW - GND

Not Performed:_____

18-89 CMPL OTC 212
CLOX
OTC NTD

MPS is configured for normal LOX drain.

Not Performed:_____

NOTE Do not perform the next step if LOX drain has been initiated.
--

18-90 NTD CLOX 212

(SIM) Proceed with LOX Propellant drain per OMI S1003.

Not Performed:_____

Critical Safing Complete

18-91 OTC NTD 212 SU17269

Critical Safing complete.

DTV Power Down

18-92 OTC PLT 212

PANEL R1
PL AUX SW - OFF

(SIM) ET Heater Activation

NOTE

Perform next three steps as soon as practical during Scrub Recycle.

18-93 TBC CPWR 136

(SIM) Reactivate Bi-Pod heaters.

18-94 CPWR

(SIM) PFP (TW495)

PFP KEY 4
BP HTR P-UP - PRESS

PFP KEY 5
EXEC BP HTR P-UP - PRESS

CRT (TD490)
VERIFY
ALL HEATERS ON

18-95 CPWR TBC 136
TBC NTD 212

(SIM) ET heaters have been activated.

18-96 OTC CPVD 212

Configure Orbiter vent doors to adverse weather configuration.

18-97 CPVD

CURSOR CNTL (VAM09A)
COMMAND RIGHT HAND VENT DOORS 8 & 9
TO CLOSED POSITION

18-98 CPVD OTC 212

Vent doors returned to adverse weather configuration.

Crew Debriefing and Egress Training

18-99 NTD OTC 212
STM
*SCC

Perform Operation 24 - Crew Debriefing and Egress Control Sequence.

18-100 NTD ALL 212

Crew debriefing and egress complete.

PSP Activation

NOTE

Perform PSP activation if P/L PSP contingency commands must be sent via LDB.

PSP Activation Not Performed: _____

18-101 OTC CCSE 212

Perform PSP activation.

18-102 CCSE

Perform following:

1. ACTIVATE PROGRAM VAA06

2. CURSOR CNTL (VAA06)
 CMD PROCESSING
 XMIT CURSOR KEY - PRESS

 VERIFY VAA24 DISPLAYED

3. CURSOR CNTL (VAA24)

 CMD MODE - LDBA
 XMIT CURSOR KEY - PRESS

 VERIFY MODE LDBA ON

 TERMINATE AND RETURN
 XMIT CURSOR KEY - PRESS

18-103 CCSE

CURSOR CNTL (VAA06)
POWER SEL - PSP
XMIT CURSOR KEY - PRESS

POWER SYS - ____ (1 OR 2)
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

PSP COMMAND OUTPUT - PL UMB

CRT (VAA06)
VERIFY

PSP ____ (1 OR 2) ON
INTRG OFF
P/L UMB CMDS IND ON

**18-104 CCSE OTC 212
CDPS**

PSP power up complete.
Request CDPS perform PSP I/O reset for PSP ____ (1 or 2).

18-105 CDPS

CONSOLE KYBD
DEUE SPEC 62 PRO
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT (VAS59 PG-B)
CRT 1 DISP ID = 0620

18-106 CDPS

CONSOLE KYBD
DEUE ITEM ____ (6-PSP1, OR 7-PSP2) EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE RESUME
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

**18-107 CDPS OTC 212
CCSE**

PSP I/O reset complete.

18-108 CCSE

CRT (VAA06)
VERIFY
PSP INIT ON

PSP STATUS WORDS
8984 A829
0810 FFFF
FFFF

NOTE

In next four steps X = PSP Config ID desired (1-5).

**18-109 CCSE OTC 212
CTPE**

CONFIGURE C2 FOR PSP COMMANDING VIA LDB FEP (PSP
ID-X)

ENTER: "C CO _PSPX LDBA C2"
XMIT CMD KEY - PRESS

VERIFY COMMAND SUCCESSFUL

18-110 CCSE

ENTER: "CPLD PL DATA VIA PSP X"
XMIT CMD KEY - PRESS
VERIFY PROMPT TO ENTER DATA WORDS

ENTER: ";"
XMIT RESP KEY - PRESS
VERIFY PROMPT TO SELECT CHOICES

ENTER: "EX"
XMIT RESP KEY - PRESS
VERIFY MESSAGE INDICATING
CMD SUCCESSFUL

18-111 CCSE

CRT (VAA06)
VERIFY

PSP INIT OFF
CMD ID X

RECORD PSP STATUS: # _____ # _____
_____ # _____

18-112 CCSE OTC 212
CTPE

CONFIGURE C1 FOR PSP COMMANDING VIA LDB (PSP)
ID-X FEP

ENTER: "C CO _PSP X LDBA C1"
XMIT COMMAND KEY - PRESS
VERIFY MESSAGE INDICATING COMMAND SUCCESSFUL

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18-113	CCSE	OTC	212
	OTC	PTC	

PSP powered on and configured for Payload Contingency Commands via LDB.

***** End of PSP Activation *****

Element Recycle

18-114 NTD OTC 212
 TBC
 STM
 LPS
 JRPS
 PTC

Perform Recycle to T-20 minutes status per following operations:

<u>Element</u>	<u>Operation Title/Number</u>
Orbiter	Orbiter Recycle - Operation 19
SRB	SRB Recycle - Operation 20
ET	ET Recycle - Operation21
Support	Support Recycle - Operation22

18-115 NTD ALL 212

All test team personnel return to your normal command channel.
Orbiter personnel remain on OIS Channel 212. NTD to OIS 232.

18-116 OTC NTD 232

Orbiter Recycle Operation 19 - complete.

18-117 TBC NTD 232

SRB and ET Recycle Operations 20 and 21 - complete.

18-118 STM NTD 232

Support Recycle Operation 22 - complete.

*****End Of Element Recycle *****

18-119 NTD PTC 212
 LPS
 JRPS

Verify Recycle complete.

Terminal Count Re-Run Preps

NOTE

If a nominal terminal count re-run is to be performed due to an unplanned cutoff, continue with this operation, otherwise proceed to "TCDT securing" (Operation 17).

Perform Terminal Count Re-Run Preps if terminal count (T-20 minutes) was interrupted by an unplanned cutoff and decision to re-run has been made.

Terminal Count Re-run Preps Not Performed: _____

18-120 NTD OTC 212
 TBC
 PTC
 LPS
 *FLT (If supporting TCDT)
 *MIL
 STM
 *SCC
 LRD
 SPE
 SRO (If supporting TCDT)
 CDR

New T-Zero will be :

_____ GMT

Countdown Clocks will pick up at T-20 minutes and Counting at:

_____ GMT

18-121 OTC CDR 212

PANEL F6

FLT CNTLR POWER SW - ON

18-122 OTC PLT 212

PANEL F8

FLT CNTLR POWER SW - ON

PCMMU To Panel Control

18-123 OTC CISL 212

PCMMU switch will be changed to 1.
PCMMU BITE bits 5, 12, 13 and possibly 8 and 11 may show failed due to
BFS auto load of TFL 102 to 64KB formatter.

18-124 OTC PLT 212

PANEL C3

OI PCMMU

PWR SW - 1

18-125 OTC CISL 212

Ready for PCMMU to Panel Control

18-126 CISL

CRT (SAQ04/VWQ11)

VERIFY

PCMMU

SW SCAN 1

18-127

CISL

CURSOR CNTL (SAQ04/VWQ11)
PCM CONTROL
COMMAND - OFF

XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

18-128

CISL

CRT (SAQ04/VWQ11)
VERIFY

PCMMU
COMMAND OFF
BITE
1 POWER GOOD
2 MTU GOOD
OI DATA VALID

18-129

CISL

OTC

212

PCMMU to panel control complete.

NOTE

Next step is required due to BFS auto reload of PCM format 102 following PCMMU power switch repositioning.

Perform next step if ascent LDR TFL format is other than 102 (ref S0017.100 Orbiter Operation 121).

18-130

OTC

CDPS

132

Reload Ascent LDR PCM format : _____ per
OMI [V9001VL2](#)
Report completion.

Not Performed: _____

*****End Of PCMMU To Panel Control *****

IMU Preflight Align Rerun Decision

NOTE
CGNC is backup to JSC/MER for IMU performance.

18-131 NTD *FLT 232
 OTC
 CGNC

Verify if IMU performance requires preflight align or IMU's can remain in GC Align 1 or Inertial.

*****End of IMU Preflight Align Rerun Decision *****

IMU Preflight Align

18-137 NTD OTC 232
 OTC CGNC 212

Perform IMU Preflight Align.

New T-0 will be : _____ GMT.
(75 Minutes minimum)

NOTE

Proceed with ATT DET at 45 minutes prior to OPS 101 Transition.
Begin Preflight Align at 40 minutes prior to OPS 101 Transition.

18-138

CGNC

Proceed with OMI [V1123.290 IMU Preflight Alignment](#) .
Report completion.

ATT DET (T-0 - 75M): _____ GMT

PFA (T-0 - 70M); _____ GMT

RT OMI Log No.: _____

*****End Of IMU Preflight Align Rerun Complete *****

PASS/BFS One Shot Data Transfer

NOTE

If required, PASS/BFS One-Shot data transfer must occur prior to OPS 101 transition.

A BFS One Shot data transfer must be performed only in event any of the following has occurred since Recycle to G9:

1. A Launch Polynomial Update.
2. An SRM Chamber Pressure Calibration Update.
3. An IMU Preflight Calibration.
4. A Reload Of BFS GPC.
5. OMS B Crossfeed Bypass

Do not perform PASS/BFS one shot data transfer if none of the above criteria are met.

PASS/BFS One Shot Data Transfer Not Performed: _____

18-139

OTC CDPS 212
 CDR

L-42M

Perform PASS/BFS Transfer Prep per the T-32 min. point in your checklist.

18-140

CDPS

CRT (VASJ6 PG-B)
ONE SHOT ENABLED - INVERT GREEN

18-141

CDPS

PFP (VASJ6)
ONE-SHOT SELECT - PRESS

18-142

CDPS

CRT (VASJ6 PG-B)
ONE-SHOT COMPLETE
MILESTONE IN INVERT GREEN

*****End Of PASS/BFS One Shot Data Transfer Complete *****

Terminal Count Re-Run Preps Complete

NOTE

Return to T-20 Minute Recycle Entry Point per Operation 16 - "TCDT Control Sequence" for Terminal Count Rerun.

18-143 **OTC** **NTD** **212**
 TBC

Terminal Count Re-Run Preps complete.

*****End Of Terminal Count Re-Run Preps*****

18-144 Recycle control sequence complete.

***** End of Operation 18 *****

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OPERATION 19 Orbiter Recycle

Shop: **TCO**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

Orbiter Recycle Control Section 1

NOTE

This section contains Test Conductor control steps for Orbiter Subsystems Recycle to T-20 minute configuration (Section 1).

19-1 OTC ALL 212

All Orbiter personnel perform subsystem recycle operations per: "Orbiter Recycle" (Operation 19) Section 2.

JSC Supporting TCDT

NOTE

Perform next nine steps after Flight Crew Egress.

Perform nine steps if JSC supporting TCDT.

JSC Supporting TCDT Not Performed: _____

19-2 CCSE NTD 232

Ready to transition commanding to KSC.

19-3 NTD *FLT 232

Request JSC support until MILA transition to KSC commanding and voice complete.

Configure for KSC Commanding via KFRL

NOTE
Perform Configure for KSC Commanding via KFRL if KFRL supporting.

Configure for KSC Commanding via KFRL Not Performed: _____

19-4 NTD *MIL 232

Verify KFRL Command Interfaces.

19-5 NTD *MIL 232
 KFRL

Support: [VCE](#)

1. **KFRL**
Verify Reception of 72KBPS from Uplink FEP

- 2 **KFRL**
Verify Configured to Encrypt Uplink

3. *MIL
Verify Reception of 72KBPS from KFRL.

4. *MIL
Configure to Uplink KSC Commands

5. *MIL
 KFRL
Configure for A/G1 and A/G2 U/L and D/L operations

19-6 *MIL NTD 232

MILA configured for KSC Commanding via KFRL and A/G Voice Operations.

***** End of Configure for KSC Commanding via KFRL *****

Configure for KSC Commanding via SFL

NOTE
Perform Configure for KSC Commanding via SFL if SFL supporting.

Configure for KSC Commanding via SFL Not Performed: _____

19-7 NTD *MIL 232

Perform following:

- 1. Verify** reception of 72 KBPS from Uplink FEP.
- 2. Configured** to Encrypt Uplink.
- 3. Configure** to Uplink KSC commands.
- 4. Configure** for A/G 1 and A/G 2 U/L and D/L operations.

19-8 *MIL NTD 232

MILA configured for KSC commanding via SFL and A/G Voice Operations.

***** End of Configure for KSC Commanding via SFL *****

19-9 NTD CCSE

CRT (VWA40)
VERIFY

NSP - BIT + FRAME LOCK

19-10 NTD *FLT 232

MILA transition to KSC commanding and voice operations complete.

*****End Of JSC Supporting TCDT *****

19-11 NTD CCSE 232
 *MIL

Configure to low power.

19-12 NTD CCSE 232

CURSOR CNTL (VAA19, PG-B)

XPNDR MODE
XMIT CURSOR KEY - PRESS

PFP
STDN LO - PRESS

19-13 CCSE

CRT (VAA19)
VERIFY

MODE - STDN LO

19-14 CCSE

CURSOR CNTL (VAA19, PG-B)

PWR AMP
XMIT CURSOR KEY - PRESS

PFP
PWR AMP 1/2 STBY OFF - PRESS

19-15 CCSE

CURSOR CNTL (VAA19, PG-B)

PWR AMP
XMIT CURSOR KEY - PRESS

PFP
PWR AMP 1/2 OFF - PRESS

19-22 CSME OTC 212

Recycle to T-20 Minutes Configuration complete.

19-23 CMPS OTC 212
CMPL

Recycle to T-20 Minutes Configuration complete.

19-24 CDPS OTC 212

Recycle to T-20 Minutes Configuration complete.

19-25 CAPU OTC 212

(SIM) APU cooldown complete.
Recycle to T-20 Minutes Configuration complete.

19-26 CISL OTC 212

Recycle to T-20 Minutes Configuration complete.

19-27 CECL

CONSOLE KYBD

SET V61K2711YL OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-28 CECL OTC 212

Recycle to T-20 Minutes Configuration complete.

19-29 CFCP OTC 212

(SIM) Recycle to T-20 Minutes Configuration complete.

19-30 CEPD OTC 212

Recycle to T-20 Minutes Configuration complete.

19-31 CGLS OTC 212

Recycle/Secure GLS complete.

1. Recycle to T-20 minutes configuration complete.

Sub Step 1 Not Performed: _____

2. GLS Securing complete.

Sub Step 2 Not Performed: _____

19-32 OTC NTD 232

Orbiter Recycle To T-20 Minutes Configuration complete.

NOTE

Return To "Recycle Control Sequence" (Operation 18).

*****End of Orbiter Recycle Control Section 1 *****

Orbiter Subsystem Recycle Section 2

Flight Control Recycle

ECP AI Mode 1: Match CMDS to POSN

19-33 **COFC**

CURSOR CNTL (SAB19/SWB01)
COUNTDOWN - OPS MANAGER
XMIT CURSOR KEY - PRESS

19-34 **COFC**

CURSOR CNTL (SAB23/VSB100)
ORBITER/SRB AI MODE 1
XMIT CURSOR KEY - PRESS

19-35 **COFC**

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

19-36 **COFC**

CRT (SAB23/VSB100)
VERIFY
AI MODE 1 REQUEST COMPLETE

19-37 **COFC**

CONSOLE KYBD (SAB23/VSB100)
PFK15 KEY - PRESS

Deactivate Profile Monitor

19-38 COFC

APPL PG-B (SAB21/VWB05)
PFK6 KEY - PRESS (ACTIVATE BYPASS PG)
PFK8 KEY - PRESS (CLEAR ALL BYPASSES)
PFK15 KEY - PRESS (TERMINATE)

19-39 COFC OTC 212

Flight Control Recycle to T-20 Minute Configuration complete.

*****End of Deactivate Profile Monitor *****

MPS/MPL Recycle

19-40 CMPS

IF FLT SOFTWARE OPENED INTERCONNECT VALVES -
(E1 AND E3 OUT VALVES AND E2 IN VALVE)

THEN PERFORM
CURSOR CNTL (VAE18)

LV60 E1C INTER CNT OUT VLV - CLOSE
LV61 E2L INTER CNT IN VLV - CLOSE
LV64 E3R INTER CNT OUT VLV - CLOSE

Not Performed: _____

19-41 CMPS

CRT (VAE18)
VERIFY:

ALL INTERCNT VALVES LV59-64 CLOSED

*****End of MPS/MPL Recycle *****

E2L Crossover Valve MDM CMD Removal

NOTE

If count proceeded past T-6.6 seconds, SSME start, perform this option to turn off - Left Engine Crossover Valve MDM Command.

E2L Crossover Valve MDM CMD Removal Not Performed: _____

NOTE

The bit mask value is the last four digits of the SSRN number which is displayed on status FD page.

19-42

CMPS

CONSOLE KYBD

S_FD_V41K1613XL
XMIT CMD KEY - PRESS

CRT
RECORD LAST FOUR DIGITS OF:

SSRN (BIT MASK VALUE) : _____

19-43

CMPS

CONSOLE KYBD
CBTU_BT4_V41K1613XL,1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT
RECORD HEX VALUE FOR:

COMMAND STATUS WORD: _____ HEX VALUE

19-44

CMPS

CONSOLE KYBD
\$CALC
PERF PGM KEY - PRESS

NOTE

Perform "Logical and" of Hex value and Bit Mask value as follows.

"Logical and" symbol (ref \$CALC PGM) shall be typed between # (Hex value) and # (Bit Mask value) in next step.

19-45

CMPS

CONSOLE KYBD (\$CALC)
#(HEX VALUE) #(BIT MASK VALUE)
XMIT RESP KEY - PRESS

CRT
RECORD:DECIMAL RESULTS _____

(COMMAND IS **ON** IF "LOGICAL AND" RESULT EQUALS BIT
MASK VALUE,
COMMAND IS **OFF** IF RESULT EQUALS 0)

VERIFY COMMAND ON

19-46

CMPS

CONSOLE KYBD
SET_V41K1613XL_OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-47

CMPS

CONSOLE KYBD
CBTU_BT4_V41K1613XL,1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT
RECORD HEX VALUE FOR:

COMMAND STATUS WORD: _____ HEX VALUE

NOTE

Perform "Logical And" of Hex value and Bit Mask value as follows.

"Logical And" symbol (ref \$CALC PGM) shall be typed between
(Hex value) and # (Bit Mask value) in next step.

19-48

CMPS

CONSOLE KYBD (\$CALC)
#(HEX VALUE) #(BIT MASK VALUE)
XMIT RESP KEY - PRESS

CRT
RECORD RESULTS: _____

(COMMAND IS **ON** IF "LOGICAL AND" RESULT EQUALS BIT
MASK VALUE,
COMMAND IS **OFF** IF RESULT EQUALS 0)

VERIFY COMMAND OFF

19-49

CMPS

CURSOR CNTL
\$CALC - **TERMINATE**

*****End Of E2L Crossover Valve MDM CMD Removal *****

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LH₂ ET Ullage Press Xducer Configuration

19-50

CMPS

IF ULLAGE PRESSURE SWITCH OUT OCCURRED,

THEN

CURSOR CNTL (SAE12)

LH₂ ULLAGE PRESSURE TRANSDUCER NO. 4 POSITION
XMIT CURSOR KEY - PRESS

CRT (SAE12)

VERIFY

ULLAGE PRESSURE
TRANSDUCER NO. 4 CHANGES TO
TRANSDUCER NO. 1, 2 OR 3

Not Performed: _____

***End Of LH₂ ET Ullage Press Xducer Configuration ***

LH₂ System Reconfig

19-51

CMPS

CONSOLE KYBD (C4)

VAE20

PERF PGM KEY - PRESS

PFK4 KEY - PRESS

NOTE

If count proceeded past T-6.6 seconds, the LH₂ 4-in. disc, LO₂/LH₂ prevalves, and LO₂ OVBD bleed VLV close powers will be applied.

19-52

CMPS

CURSOR CNTL (VAE20)

IF ENERGIZED,

THEN DEENERGIZE THE FOLLOWING:

LV19 (PV4 CL PWR)

LV21 (PV5 CL PWR)

LV23 (PV6 CL PWR)

LV51 (PD3 CL PWR)

Not Performed: _____

19-53

CMPS

CURSOR CNTL (VAE20)

TERMINATE BLOCK

XMIT CURSOR KEY - PRESS

19-54

CMPS

CONSOLE KYBD (C4)
EMON PG

VERIFY/CLEAR ALL EXPECTED MPS EMONS

*****End Of LH₂ System Reconfig *****

LO₂ System Reconfig

19-55

CMPL

CONSOLE KYBD
VAE19
PERF PGM KEY - PRESS

NOTE

Valve cycle error message will occur during LV76 deenergization. This is an expected message.

19-56

CMPL

CURSOR CNTL (VAE19)
IF ENERGIZED,

THEN DEENERGIZE THE FOLLOWING:

LV76 (PV19 CL PWR)
LV13/80 (PV1 CL PWR)
LV15/81 (PV2 CL PWR)
LV17/82 (PV3 CL PWR)

Not Performed:_____

19-57

CMPL

CURSOR CNTL (VAE19)
TERMINATE BLOCK
XMIT CURSOR KEY - PRESS

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19-58

CMPL

CONSOLE KYBD (C3)

EMON PG

VERIFY/CLEAR ALL EXPECTED MPS EMONS

19-59

CMPS
CMPL

OTC

212

MPS/MPL Recycle To T-20 Minutes Configuration complete.

*****End Of LO₂ System Reconfig *****

SSME Recycle

19-60 CSME

(SIM) CRT
VERIFY GN2 PURGE INITIATED.

19-61 CSME

CURSOR CNTL (VAE38A) - GN2 DISPLAY

PRI REG OUT VLV OVR CMD - OFF
SEC REG OUT VLV OVR CMD - OFF

PRI CONT VLV OVR CMD - OFF
SEC CONT VLV OVR CMD - OFF

PRI VENT VLV OVR CMD - OFF
SEC VENT VLV OVR CMD - OFF

*****End Of SSME Recycle *****

19-65

CSME

IF COUNT WILL BE RESUMED AND SSME'S NOT IN PSN3

THEN PERFORM

CURSOR CNTL (VAE38A)

PSN3 A - ISSUE (S/P - PSN3)

Not Performed: _____

19-66

CCME

IF ENGINE STATUS LITES ARE ON

THEN PERFORM

PFP (VWE01A)

CLEAR ENG STATUS LITES - PRESS

Not Performed: _____

19-67

CSME OTC 212

SSME Recycle to T-20 Minutes Configuration complete.

Sound Suppression System Recycle (CGSS)

19-68 OTC CGSS 212

Perform Sound Suppression System Recycle.

19-69 CGSS

IF SOUND SUPPRESSION FR COMMAND BUS IS ON,

THEN :

CURSOR CNTL (VAJ14)

CMD BUS

XMIT CURSOR KEY - PRESS (TWICE)

Not Performed: _____

19-70 OTC CGSS 212

IF Countdown went past 28 seconds, and recycle to T-20 minutes is to be followed by an additional countdown,

THEN support Sound Suppression System Recycle (Operation 22) on Channel 123.

Not Performed: _____

19-71 CGSS OTC 212

Sound Suppression System Recycle (CGSS) complete.

*****End Of Sound Suppression System Recycle (CGSS) *****

GLS Recycle

19-72

CGLS

IF A SECOND ATTEMPT AT T-0 IS TO BE MADE,

THEN

PERFORM "GLS RECYCLE TO T-20 MINUTES" (S0017.300
OPERATION 54).

Not Performed: _____

19-73

CGLS OTC 212

IF a second attempt at T-0 is to be made,

THEN Report

GLS Recycle To T-20 Minutes Configuration complete.

Not Performed: _____

19-78 CGLS

CRT (APPL PG2B)

PFP (LCC CONTROL)
PFPK4 - PRESS

19-79 CGLS

IF SLPA1 active at BKUP

THEN PERFORM
CURSOR CNTL (APPL PG2B)

TERM MIP 2
XMIT CURSOR KEY - PRESS

Not Performed:_____

19-80 CGLS

CURSOR CNTL (APPL PG2B)

GLS LIMIT CHANGE
XMIT CURSOR KEY - PRESS

19-81 CGLS

CRT (APP PG2B)

GLS DUAL INT NOTIFICATION DISPLAY

19-82 CGLS

CURSOR CNTL (APPL PG2B)

INHIBIT GLOBAL DUAL INTERRUPT
XMIT CURSOR KEY - PRESS

19-83 CGLS

CURSOR CNTL (APPL PG2B)

LIMITS TO SYS FOR ALL
XMIT CURSOR KEY - PRESS

19-84 CGLS

PFP (INTG MENU)
PFPK1 - PRESS

19-85 CGLS

CURSOR CNTL

PSEUDO INIT
XMIT CURSOR KEY - PRESS

19-86 CGLS

CURSOR CNTL

ALL PSEUDOS AND DISK FILES
XMIT CURSOR KEY - PRESS

NOTE

If Page B MSG says: "See page A for operator input" perform the next two steps.

19-87 CGLS

VERIFY PG-A MSG:
(N03IS511E) CRYO SAFING ENABLED IS ON.

THIS INDICATED SCRUB/CRYO DRAIN IN PROGRESS.

Not Performed: _____

19-88

CGLS

CRT (SLP02 PG-A)

VERIFY

ENTER "1" IF CRYO SAFING SUPPORT COMPLETED AND
SLP50 NOT ACTIVE TO INITIALIZE N03IS511E TO OFF

ENTER "2" TO LEAVE N03IS511E UNCHANGED.

_____ (1 OR 2)

XMIT RESP KEY - PRESS

VERIFY MSG INDICATING PSEUDO STATE.

Not Performed: _____

19-89

CGLS

CRT

VERIFY ALL BOXES INVERT

19-90

CGLS

PFP

TERM PGM - PRESS

NOTE

In next step, set following FD's off

FD

GLOK2031E	(A75080 ET HE prepress Shutoff VLV)
GLOK3071E	(A75080 ET HE prepress SOV CL sec)
GLHK4541E	(A75610 ET press SOV CL CMD PRI)
GLHK4591E	(A75610 ET press SOV CL CMD sec)

19-91

CGLS

CONSOLE KYBD

SET <FD> OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT
VERIFY CMDS SUCCESSFUL

19-92

CGLS

HOME CMD KEY - PRESS

CONSOLE KYBD
A CMD GWDKLU27E
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-93

CGLS

HOME CMD KEY - PRESS

CONSOLE KYBD
A CMD GWDKLU28E
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-98

CGLS

CONSOLE KYBD

SET N03IS008E OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-99

CGLS

CONSOLE KYBD

SET N03IS009E OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-100

CGLS

CONSOLE KYBD

SET N03IS010E OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-101

CGLS

CONSOLE KYBD

SET NLHK0109X OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-102

CGLS

CONSOLE KYBD

SET N03IS500E OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

19-103

CGLS

CDTS -20/00
XMIT CMD KEY - PRESS

19-104

CGLS LPS 127

PFP (SLP50)
PFPK1 KEY - PRESS (TERMINATE)
PFPK6 KEY - PRESS (EXEC TERM PROGRAM)

VERIFY PROGRAM HAS TERMINATED.

19-105

CGLS

CONSOLE KYBD (INTG)
HOME CMD KEY - PRESS
I SH
XMIT CMD KEY - PRESS

19-106

CGLS

CONSOLE KYBD (BKUP)
HOME CMD KEY - PRESS
I SH
XMIT CMD KEY - PRESS

19-107

CGLS

TERM GLS SOFTWARE.

19-108

CGLS

CONSOLE KYBD (STP05 PG-B)
PFK15 - PRESS

19-109 CGLS OTC 212

Systems back in control, and GLS is terminated.
Limits in FEP's remain as GLS had set them.

19-110 CGLS

ON THE INTEGRATION SAFING PANEL
CMD ENABLE SWITCH - OFF

19-111 CTPE

Perform Intergration software activation using SAP10 with the ANY
CHANGE Software (SAP28) in the 6th concurrency.

Verify programs
SAP10 active in INTG
SAP27 active in INTG
SAP29 active in INTG
SAP29 active in INTG
SAP29 active in INTG
SAP28 active in INTG

19-112 CTPE

Perform Backup software activation using SAP10 (Monitor Only).

Verify programs
SAP10 active in BKUP
SAP29 active in BKUP
SAP29 active in BKUP
VAG60 (Manual Mode only) active in BKUP

***End Of GLS Securing ***

DPS Recycle

19-113 CDPS

CONSOLE KYBD

HOME CMD KEY - PRESS

ISSU N72IV101D #B00B
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

HOME CMD KEY - PRESS

C CO _DEU2G LDBA C11
XMIT CMD KEY - PRESS

19-114 CDPS

CRT (VAS59)

LA1 ON
LF1 ON

NOTE

LDB switching will occur during CMD decoder BSR read.

19-115 CDPS

CURSOR CNTL (SAS01 PG-B)

DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
MDM BSR READ PROGRAM (VAS93)
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

19-116

CDPS

CURSOR CNTL (VAS93 PG-B)

PORT 1

XMIT CURSOR KEY - PRESS

NOTE

Power transient bit (BSR=X8000) may be set in BSR if count
went past T-10 seconds.

19-117

CDPS

APPL PAGE (VAS93 PG-B)

PFK5 KEY - PRESS

(FOLLOW PROGRAM PROMPTS)

19-118

CDPS

HOME CMD KEY - PRESS

CONSOLE KYBD

GPCC LDBC

XMIT CMD KEY - PRESS

19-119

CDPS

CURSOR CNTL (\$GM)

POLL GSE ON LDB NO. 2

XMIT CURSOR KEY - PRESS

PFK1 KEY - PRESS

19-120

CDPS

CURSOR CNTL (VAS93 PG-B)

PORT 2
XMIT CURSOR KEY - PRESS

PFK5 KEY - PRESS

(FOLLOW PROGRAM PROMPTS)

19-121

CDPS

APPL PAGE (VAS93 PG-B)
PFK15 KEY - PRESS

19-122

CDPS

HOME CMD KEY - PRESS

CONSOLE KYBD
GPCC LDBC
XMIT CMD KEY - PRESS

19-123

CDPS

CURSOR CNTL (\$GM)

POLL GSE ON LDB NO. 1
XMIT CURSOR KEY - PRESS

PFK1 KEY - PRESS

CRT (VAS59 PG-B)
POLLING ACTIVE ON LDB 1

19-124

CDPS

APPL PAGE (VASJ6)

PFK1 KEY - PRESS (RECYCLE CPLT CONT)

PFK1 KEY - PRESS (BSR CONTINUE)

PFK1 KEY - PRESS (NBAT CONTINUE)

19-125

CDPS

IF ANOTHER COUNTDOWN ATTEMPT WILL BE MADE

THEN PERFORM

CURSOR CNTL (VASP9 PG-B)

ACTIVATE LCC MONITORING

XMIT CURSOR KEY - PRESS

APPL PAGE (VASP9 PG-B)

PFK1 KEY - PRESS

Not Performed: _____

19-126

CDPS

OTC

212

DPS Recycle to T-20 Minute Configuration complete.

*****End Of IDP 2 Assignment To C11 *****

*****End of DPS Recycle *****

*****End of Flight Control Recycle *****

EPD Recycle

Ground PIC Rack Power Up

NOTE

Do not perform Ground PIC Rack Power Up unless GLS powered PIC racks down (after T-21 seconds) and another Launch attempt will be made.

Ground PIC Rack Power Up Not Performed: _____

19-127

CEPD

CURSOR CNTL (VWC10)

GND SYS - ON
XMIT CURSOR KEY - PRESS

19-128

CEPD

CRT (VWC10)

GND AND CPA POWER - H2 BURN AND LR VOLTAGES ARE
GREATER THAN 26 VDC.

19-129

CEPD

CRT (VWC10)

ALL TSM, HDP, LANYARD, H2 BURN AND ETVAS PIC CAP
VOLTS LESS THAN 1.5 VDC.

*****End Of Ground PIC Rack Power Up *****

19-130

CEPD OTC 212

EPD Recycle complete.

*****End Of EPD Recycle *****

Instrumentation Recycle

19-131

CISL

IF MCCH HAS NOT PERFORMED RECYCLE,

THEN PERFORM

(SIM) CURSOR CNTL (SAQ04/VWQ14)

PCM PWR - OFF

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

CURSOR CNTL

WB/ACIP - OFF

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

Not Performed: _____

19-132

CISL

JRPS

IF MCCH HAS NOT PERFORMED RECYCLE,

THEN REPORT

(SIM) Recording of MADS data is no longer required.

Not Performed: _____

19-133

CISL

OTC

212

Instrumentation Recycle complete.

*****End Of Instrumentation Recycle *****

***** End of Operation 19 *****

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OPERATION 20 SRB Recycle

Shop: **TCO**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

Steps involving CRIT 1, 1R and/or 1S items are contained in the following Operation.

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20-1 NTD TBC 232

Perform SRB T-20 Minute Recycle.

20-2 CPWR TBC 136

CRT (BWE08)

ALL PIC VOLTS 0 +/- 1.5 VDC
LH/RH IGN S&A - SAFE

20-3 TBC CPWR 136

(SIM) Reactivate SRB joint heaters.

20-4 TBC CHPU 136

(SIM) IF SRB AFT skirt GN₂ purge is On
AND thermal conditioning is not required,

THEN terminate SRB AFT skirt GN₂ purge.
Report completion.

Not Performed: _____

20-5

CHPU

(SIM) IF PREVIOUS STEP PERFORMED,

THEN PERFORM:

CURSOR CNTL (BAT04)
SRB AFT SKIRT GN₂ PURGE
(HEATER)
CMD - OF
(VALVING)
(MAIN)
PRI - CL
SEC - CL
LOW
PRI - CL
SEC - CL
DC PWR
PRI - OF
SEC - OF

CRT (BAT04)
SRB AFT SKIRT GN₂ PURGE
PURGE OFF

Not Performed: _____

20-6

TBC CHPU 136

(SIM) IF thermal conditioning is required,

THEN configure SRB AFT skirt GN₂ purge to low flow rate.

Report completion.

Not Performed: _____

20-7

CHPU

(SIM) IF PREVIOUS STEP PERFORMED,

THEN PERFORM:

CURSOR CNTL (BAT04)
SRB AFT SKIRT GN₂ PURGE
(VALVING)
(LOW)
PRI - OP
SEC - OP
(MAIN)
PRI - CL
SEC - CL
(HEATER)
CMD - ON

CRT
SRB AFT SKIRT GN₂ PURGE
(TEMPERATURE/PRESSURE)
PRG
ON

Not Performed:_____

20-8

CHPU

(SIM) CONSOLE KEYBOARD C-8

TYPE C_RA_GHYP8014A
PRESS XMIT CMD

TYPE C_RA_GHYP8015A
PRESS XMIT CMD

20-9

TBC CHPU 136

(SIM) Perform SRB HPU Gas Generator Heater Power On.

20-10

CHPU

(**SIM**) CURSOR CNTL (BAT04)
VEHICLE
GAS GENRTR
AUT (BLOCK)
XMIT CURSOR KEY - PRESS

20-11

CHPU TBC 136

(**SIM**) SRB HPU gas generator heater power On.

SRB MDM Recycle

20-12

TBC CBDP 136

Perform SRB MDM Recycle.

20-13

CBDP

CURSOR CNTL (SAS05/SDS04)

SYSTEM SELECT
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS05/SDS07)
SRB MANUAL TEST SELECT
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

NOTE

LL1 and LR1 active port BSR will = X3000 if count went below T-55 seconds.
LL2 and LR2 active port BSR will = X3000 if count went below T-13 seconds.

If GLS recycle results in unlock command issued to an EMDM that is already unlocked, the active post BSR will = X1000.

Non-EMDM BSR will = X0000

20-14

CBDP

CURSOR CNTL (BSM06/BDM08)

BSR READ PORT 1&2
XMIT CURSOR KEY - PRESS

20-15

CBDP

PFP (BSM06)
CONTINUE - PRESS

20-16

CBDP

CURSOR CNTL (BSM06)

LOCK STATUS TEST
XMIT CURSOR KEY - PRESS

CRT
VERIFY ALL MDMS UNLOCKED

20-17

CBDP

APPL PAGE (BSM06 PG-B)
PFK-5 - PRESS

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20-18

CBDP

PFP (BSM06)
TERMINATE - PRESS

20-19

CBDP TBC 136

SRB MDM Recycle complete.

*****End Of SRB MDM Recycle *****

***** End of Operation 20 *****

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OPERATION 21 ET Recycle

Shop: **TCO**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

This is a contingency Operation. Perform only if recycle required.

Operation Not Performed: _____

21-1 TBC CMEC 136

(SIM) Extend GVA and configure to support per OMI [G2158](#) .

21-2 CLHY CLHF

Monitor (SIM) GH₂ leakage in following places (GAW02):

LD23 - ET GND UMB CAR PL, less than 44,000 PPM GLHR7047A

LD25 - ET GND UMB car PL, less than 44,000 PPM GLHR7049A

LD28 - T-0 UMB LH₂ TSM, less than 44,000 PPM GLHR7057A

LD32 - T-0 UMB LH₂ TSM, less than 44,000 PPM GLHR7067A

LD56 - LH₂ fill in PRG box, less than 44,000 PPM GLHR7078A

LD57 - LH₂ fill in PRG box, less than 44,000 PPM GLHR7079A

LD29 - LH₂ TSM, bottom, less than 10,000 PPM GLHR7058A

LD30 - LH₂ TSM, top, less than 10,000 PPM GLHR7047A

NOTE

Perform next four steps if subsequent Terminal Countdown runs will be performed (no scrub declared).

21-3 CLHY TBC 136

(SIM) Recovery from Terminal Count to Replenish complete.

Not Performed: _____

21-4 CLOX TBC 136

(SIM) LOX at flight level.

Not Performed: _____

21-5 CLHY TBC 136

(SIM) LH₂ at flight level.

Not Performed: _____

21-6 TBC NTD 212

(SIM) ET LOX and LH₂ at flight level. ET ready to resume count at T-20 minutes. ET Recycle complete.

Not Performed: _____

21-7 TBC NTD 212

ET recycle complete.

***** End of Operation 21 *****

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OPERATION 22 Support Recycle

Shop: **STM**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

FIREX water, Sound Suppression and CDC System Recycles are required if count went past 28 seconds and recycle to T-20 minutes is to be followed by an additional countdown.

Water Systems Recycle

NOTE

If recycle to T-20 minutes is to be followed by an additional countdown, then perform Water Systems Recycle.

Water Systems Recycle Not Performed: _____

NOTE

Perform next three steps to verify transfer of control of Sound Suppression System from Firing Room to CCC.

Sound Suppression Control Transfer Verification - CCC to FR

22-1 STM JBWC 111

Verify SS Control Transfer - FR To CCC - complete

Support: [CWSS](#)

22-2 JBWC

VERIFY (SCREEN P2A/P2B) :

<u>INDICATOR</u>		<u>STATE</u>
SS	CCC ENABLE	ON
SS	FR-OFF/CCC-ON	ON
SS	FR ENABLE	OFF
SS	FR-ON/CCC-OFF	OFF

Support: [CWSS](#)

22-5

JBFX

Verify the following valves are closed (Screen LFA/LFB):

Valve

V480

V32

V33

V34

V35

V65

V18

Support: CWSS

22-6

JBWC

Reconfigure Sound Suppression System per [Doc: JOB PLAN M3203.11 \(LI\) Configure Sound Suppression for TCDT Recycle](#) .

Support: WSSA

Support: CWSS

22-7

JBWC

STM

111

Sound suppression and FIREX water systems reconfiguration complete.

Support: CWSS

Transfer Control of Sound Suppression System - CCC to Firing Room

NOTE

Perform this option if Sound Suppression Control was transferred to the CCC and is to be returned to the Firing Room.

Transfer Control of Sound Suppression System - CCC to Firing Room Not Performed: _____

22-8 STM JBWC 111

Verify Sound Suppression water system has been configured to Support.

Support: [CWSS](#)

22-9 STM NTD 232
 NTD OTC
 OTC CGSS 132

CCC ready to transfer control of Sound Suppression water to Firing Room.

Request CGSS contact JBWC on Channel 123.

22-10 STM JBWC 111

Transfer control of Sound Suppression water system to Firing Room control.

Support: [CWSS](#)

22-11 JBWC CGSS 123

Verify ready for control transfer.

Support: [CWSS](#)

22-12 CGSS

CURSOR CNTL (VAJ14)
VAJ12 - ON
VERIFY

1. TANK LEVEL LESS THAN 50 FT.
2. GN₂ PRESS
 PT 1 GREATER THAN 1200 PSI, LESS THAN 1700 PSI
 PT 2 GREATER THAN 1200 PSI, LESS THAN 1700 PSI
3. CCC LOCKOUT ON CMD MEAS
 — — X —
4. CCC ENABLE CMD OFF X —
5. CCC ENABLED IND ON — — X —
6. FR ENABLED IND OFF — — —
7. SS SOL PWR BUS OFF X X
 ON CMD
8. SS SOL PWR BUS OFF — —
 OFF CMD

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				<u>CMD</u>	<u>MEAS</u>
9.	SS FR CMD BUS PWR ON CMD	OFF			
10.	PRE L/O VENT VLV OPEN CMD	OFF		—	—
11.	PRE L/O VLVS OPEN CMD IND	OFF			—
12.	PRE L/O VLVS CLOSE CMD IND	ON		—	X —
13.	POST L/O VENT VLV OPEN CMD	OFF			— —
14.	POST L/O VLVS OPEN CMD IND	OFF		—	— —
15.	POST L/O VLVS CLOSE CMD IND	ON		—	— X —
16.	VV5, 6, 7, 8, 9, 10 GRAPHIC BLOCKS - SOLID GREEN				
17.	PREV25, 26, 27, POST V28, 29, 30 BLOCKS - SOLID GREEN				
18.	STATUS ARROW - CYCLING				

22-13 CGSS JBWC 123

Ready for transfer of Sound Suppression control to Firing Room.

Support: CWSS

22-14 JBWC CGSS 123

Stand by for control transfer.

Support: CWSS

NOTE

CCC will transfer control of Sound Suppression System to Firing Room by performing next step.

22-15

JBWC

PERFORM THE FOLLOWING (SCREEN P2A/P2B)

1. VERIFY

INDICATOR		STATE
SS	CCC ENABLE	ON
SS	FR-OFF/CCC-ON	ON
SS	FR ENABLE	OFF
SS	FR-ON/CCC-OFF	OFF

2. ISSUE SS CONTROL TRANSFER CCC TO FR COMMAND

3. VERIFY

INDICATOR		STATE
SS	CCC ENABLE	OFF
SS	FR-OFF/CCC-ON	OFF
SS	FR ENABLE	ON
SS	FR-ON/CCC-OFF	ON

Support: [CWSS](#)

22-16

JBWC **CGSS** **123**
 STM **111**

Sound Suppression System transferred to Firing Room control.

Proceed with Firing Room verification.

Support: [CWSS](#)

22-17 CGSS

VERIFY SOUND SUPPRESSION CONTROL TRANSFER
COMPLETE BY OBSERVING VAJ14 SKELETON STATUS AS
FOLLOWS :

CONTROL
CCC OFF
FR ON

22-18 CGSS OTC 132
OTC NTD 232

Transfer of Sound Suppression System CCC to Firing Room complete.

***** End of Transfer of Sound Suppression System - CCC To Firing Room *****

***** End of Water Systems Recycle *****

22-19 LPS JRPS 127

(SIM) Stop all display recorders.

22-20 LPS

Cancel pending for all FEPs.

22-21 LPS C4MC 127

CURSOR CNTL (AWP01 PG-B)

T-20M RECYCLE TARGET
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

22-22 LPS C4MC

Verify FEP pending not active for following FEPS:

GPCA
OIA
ME1
ME2
ME3
PLDA
GPCS
OIS

22-23 LPS C4MC

Via AWP01 **switch** PLDS to S1 HL Data

22-24 JRPS LPS 127
 LPS STM 111

T-20Minutes Recycle complete.

22-25 STM NTD 232

Support Recycle complete.

*** End of Operation 22 ***

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OPERATION 23 MCCH Recycle

Shop: **FLT**
Cntrl Rm Console: **NA**
OPR: **TCO**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **0.3**

NOTE

Perform this operation if *FLT supporting TCDT.

This is a Contingency Operation. Perform only if recycle required and countdown progressed past T-9 minutes.

Operation Not Performed: _____

23-1

*FLT

IF BFS SPC load has occurred and GPC-5 mode switch not in halt

THEN Perform

(SIM) XMIT BFS SPC buffer clear (1000010).

Not Performed: _____

NOTE

Perform remainder of Operation if recorders are running (after T-09M00S).

OI and MADS Recorder Recycle to 20 Minutes

23-2

*FLT

(SIM) **PERFORM** THE FOLLOWING:

XMIT DSM 4618
(MADS RCDR PWR ON)

XMIT DSM 4600
(MADS SYSTEM OFF)

VERIFY TAPE MOTION STOPPED

XMIT DSM 4619
(MADS RCDR PWR OFF)

Not Performed: _____

23-3

CISL

(SIM) CRT (SAQ04)
VERIFY

TAPE MOTION OFF ON MADS RECORDER.

Not Performed: _____

23-4

CISL JRPS

(SIM) MADS realtime recording no longer required.

Not Performed: _____

23-5

*FLT

(SIM) PERFORM THE FOLLOWING:

1. TRANSMIT DSM 9252
(HALT SSR 1)
2. TRANSMIT DSM 9352
(HALT SSR2)

Not Performed: _____

23-6

CISL

(SIM) CRT (SAQ04/SWQ01)
VERIFY
SSR 1 MODE STBY
SSR 2 MODE STBY

Not Performed: _____

23-7

***FLT**

(**SIM**) TRANSMIT DSM 9243
(SSR 1 UNPROTECT)

Not Performed:_____

23-8

***FLT**

(**SIM**) **PERFORM** THE FOLLOWING:

1. TRANSMIT DSM 9244
(SSR 1 ERASE ENABLE)
2. TRANSMIT DSM 9245
(SSR 1 ERASE EXECUTE)

Not Performed:_____

23-9

***FLT**

(**SIM**) TRANSMIT DSM 9343
(SSR 2 UNPROTECT)

Not Performed:_____

23-10

***FLT**

(**SIM**) **PERFORM** THE FOLLOWING:

1. TRANSMIT DSM 9344
(SSR 2 ERASE ENABLE)
2. TRANSMIT DSM 9345
(SSR 2 ERASE EXECUTE)

Not Performed:_____

****End of OI and MADS Recorder Recycle To T-20 Minutes ****

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23-11 *FLT CISL

Recorder Recycle to T-20 Minutes complete.

Not Performed: _____

MCCH Recycle Complete

23-12 *FLT NTD

MCCH Recycle to T-20 Minutes complete.

23-13 *FLT NTD

MCCH Recycle complete.

*** End of Operation 23 ***

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OPERATION 24 Crew Debriefing and Egress Control Sequence

Shop: **NTD**

Cntrl Rm Console: **NTD**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

Following five steps will terminate voice communications with crew.
Verification can be obtained on OIS.

24-6 OTC ASP 212

Power down COMM panels prior to disconnecting CCA'S per following steps.

24-7 OTC ASP 212

PANEL L5
LEFT COMM POWER SW - OFF

24-8 OTC ASP 212

PANEL R6
RIGHT COMM POWER SW - OFF

24-9 OTC ASP 212

PANEL A11
MS COMM CCU PWR SW - OFF

24-10 OTC ASP 212

PANEL MO39M
MID DECK COMM CCU PWR SW - OFF

24-11 OTC ASP 212

PANEL R1

POWER DISTRIBUTION
PAYLOAD
CABIN SW - OFF

24-12 OTC ASP 212

IF POWER DOWN OF ASCENT MINI CAMERA AND V10
RECORDER, INSTALLED IN THE MS1 FDF SADDLE BAG IS
REQUIRED,

**THEN PERFORM
PANEL 019**

TV
TV POWER SW - OFF

V10 RECORDER
DEACTIVATE V10 RECORDER

Not Performed: _____

24-13 OTC OVCC 212

Have SCO's ingress Crew Compartment when Flight Crew clear of
Orbiter.

24-14 OVCC OTC 212 SU17273
 OTC NTD
 NTD *PAC (if supporting TCDT)

Flight Crew Egress Complete.

Launch Team Debriefing

24-15 NTD 212 SU17271

Conduct post run debriefing.

24-16 NTD ALL 212

Post run debrief complete.

Egress Training Complete

24-17 OVCC OTC 212
 OTC NTD 232

Crew egress training complete. Flight Crew ready to depart.

24-18 NTD *AVN DIR 7

Proceed to PAD surface to pick up flight crew.

Support: [SEC](#)

24-19 NTD *SCC 232
 *SCC *PSE DIR 7

Astrovan proceeding to Pad surface to pick up Flight Crew.

24-20 *AVN NTD DIR 7

Astrovan and Flight Crew departing Pad surface.

Support: [SEC](#)

24-21 NTD STM 232
 STM JYVO 138
 JYVR
 JSTC 111
 JSTC JFIR 114

Flight Crew is departing Pad and returning to O&C bldg.
Video track and record.

Support: [OTV](#)
Support: [FIRE](#)

24-22 STM VEEE 111

Release elevator technician support. Crew egress complete.

Support: [CDPD](#)

24-23 *PAC NTD 212

IF Personnel Accountability Console is manned for TCDT,

THEN Request permission to secure *PAC operations.

Not Performed: _____

24-24 NTD STM 232
 STM JYVR 138

Stop video recording of OTV camera 073.

Support: [OTV](#)

24-25 NTD OTC 232
 TBC
 STM
 OTC *PAD 132

Open base of FSS, FSS 195 ft Lvl and OAA for controlled work.

24-26 *PAD OTC 132
 OTC NTD 232
 NTD *SCC

Operational Clears at base of FSS, FSS 195 ft level and OAA have been dropped.

Flight Crew Departure

24-27 *AVN NTD DIR 7

Astrovan and Flight Crew departing Pad and returning to O&C bldg.

Support: [SEC](#)

24-28 OTC OVCC 212

Return LAPS/PAVS to Forward Shop for pickup by Life Support.

24-29 OVCC OTC 212
 OTC NTD 232
 NTD STM
 STM JSTC 111
 JSTC *SCB NET 104

LAPS and PAVS in Forward Shop and ready for pickup.

Support: [LS](#)

24-30 NTD STM 212
 STM QBSE DIR 2

Reconfigure and reactivate slidewire baskets per OMI [M2006](#) and
OMI [M3029](#) .

Support: [STSA](#)

24-31 *AVN NTD DIR 7
 NTD JFIR 232

Astrovan and Flight Crew has arrived at O&C.

Support: [FIRE](#)

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24-32	NTD	STM	232
	STM	JYVO	138

Terminate Flight Crew tracking and video recording. Support is released.

Support: [OTV](#)

24-33	QBSE	STM	DIR 2
	STM	NTD	232
	NTD	*SCC	

Slidewire basket reconfigured for normal service.

Support: [STSA](#)

NOTE

Return to "Recycle Control Operation" (Operation 18) for continuation.

*** End of Operation 24 ***

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**OPERATION 28 Hold Option - Unplanned Long Hold Between T-9
Minutes and T-5 Minutes**

Shop: **NTD**

Cntrl Rm Console: **ALL**

OPR: **TCO**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

This is a contingency operation. Perform if required between T-9 minutes (GLS auto seq initialization) and T-5 minutes (prior to APU start).

Operation Not Performed: _____

28-1 NTD ALL 232

T-_____ minutes and holding.

Configure for long duration hold at this point.

28-2 **CGLS**

Verify Onboard CDC stopped in response to hold flag. V90W8380C1

(SIM) Extend Orbiter Access Arm

<p>NOTE Perform this option if Orbiter Access Arm Extension will be performed.</p>

(SIM) Extend Orbiter Access Arm Not Performed:_____

28-3 NTD CGSS 212

Extend Orbiter Access Arm.

28-4 **CGSS**

(SIM) PFP (VAJ02)
PFPK-1 VAJ04 CRIT EXT - PRESS
PFPK-5 CRIT EXT EXECUTE - PRESS

28-5 CGSS NTD 212

Orbiter Access Arm extended and locked.

28-6 CGSS

(SIM) PFP (VAJ02)
PFPK-6 - PRESS
PFPK-3 VAJ07 OAA ACCUM - PRESS
PFPK-5 OAA ACCUM EXEC - PRESS

28-7 CGSS

(SIM) CONSOLE KYBD
SET GGOR1101E OFF (WHITEROOM O₂ PUMP)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

*** End of Extend Orbiter Access Arm ***

(SIM) Close ISO Valves

28-8 OTC PLT 212

IF APU ISO VALVES OPEN,

THEN PERFORM

(SIM) PANEL R2

APU/HYD

APU FUEL TK VLV

1 SW - CLOSE

2 SW - CLOSE

3 SW - CLOSE

Not Performed: _____

Configure To Resume Countdown

NOTE

Delay at this point until ready to resume countdown.

If holding due to integration console failure, return to countdown reentry point in T-9 minutes hold.

Do not perform Configure To Resume Countdown if scrub or recycle is called while holding at T-5 minutes.

Configure to Resume Countdown Not Performed: _____

28-12 NTD CGLS 212

Set CDC to start counting at: _____ GMT.

28-13 NTD OTC 212
 TBC
 STM
 *FLT
 PTC
 *MIL
 LPS

Configure to resume countdown at: _____ GMT.

28-17

CGSS

(SIM) CURSOR CNTL (VAJ14)
VAJ10 - SELECT
B12 - RESET PRI EXT PILOTV
B14 - RESET SEC EXT PILOTV
PFK15 - PRESS

28-18

CGSS

(SIM) CONSOLE KYBD
SET GGOR1101E ON (WHITEROOM O₂ PUMP OFF)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

*** End of OAA Retract ***

28-19

CGSS NTD 212

OAA retracted and reconfigured for extend.

Clock Start In 4 Minutes

28-20 **NTD** **ALL** **212**
232

T-05M00S
(HOLDING)
L-09M00S

Countdown clock will start in 4 minutes.

*****End Of Clock Start in 4 Minutes *****

Recorder Activation

28-21 **NTD** ***FLT** **212**
CISL
JRPS

T-05M00S
(HOLDING)
L-09M00S

(SIM) Perform SSR and MADS Activation for Hold Option No. 1
(S0017.300 Operation 52) on Channel 145.

28-22 **CISL** **NTD** **212**

(SIM) OI Recorders activated.

*****End Of Recorder Activation *****

Clock Start In 3 Minutes

28-23 **NTD** **ALL** **212**
232

T-05M00S
(HOLDING)
L-08M00S

Countdown clock will start in 3 minutes.

*****End Of Clock Start in 3 Minutes *****

(SIM) Stored Program Commands

NOTE

Perform following two steps if *FLT supporting TCDT.

(SIM) Stored Program Commands Not Performed: _____

NOTE

If hold occurs after transmittal of BFS SPC load, *FLT will transmit SPC buffer clear and new BFS SPC load based on updated liftoff time, if required.

28-26
T-05M00S
(HOLDING)

NTD *FLT 212

(SIM) Transmit stored program Pre-Launch commands.

28-27

***FLT**

(SIM) Verify two-stage buffer auto compare and execute.

***** End Of (SIM) Stored Program Commands *****

NOTE

Return to "TCDT Control Operation" (Operation 16) at T-5 minutes.

Configure To Resume Countdown Complete

28-31 NTD ALL 232

Hold Option-Unplanned Long Hold Between T-9 Minutes and
T-5 Minutes complete.

****End of (SIM) Open ISO Valves *****

***** End of Operation 28 *****

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Role:	Signed by:	Date (GMT): Reason for signing:
OMD	Klos Elizabeth C United Space Alliance LLC 93250 Mail:USK-187 Phone:321/861-3352 Documentum User Name : klosec	05/18/2011 14:07: Concur with approval
NTD-NASA	Spaulding Jeffrey G Nasa Ksc Mail: Phone: Documentum User Name : Spaulding Jeffrey G	05/18/2011 14:14:09 Concur with approval
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TSM-GSS	Dorn Deborah L United Space Alliance LLC 95620 Mail:USK-043 Phone:321/861-4484 Documentum User Name : dorndl	05/19/2011 11:08:01 Concur with approval
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