



# Space Shuttle Mission 2007



Designed By: Michael Swannick

## Mission Checklist

### STS-117

#### Crew Members

Commander - Frederick Sturckow | Pilot - Lee Archambault

#### Mission Specialist

James Reilly II | John D. Olivas | Patrick Forrester | Steven Swanson

#### Mission Highlights

Carried out by Atlantis on June 8, 2007. Original launch was delayed by 3 months due to hail damage to the external fuel tank. A fourth spacewalk was added as damage to the port OMS needed some attention. STS-117 continued the construction of ISS by adding the starboard S3/S4 truss segment, which incorporates two new solar arrays. The truss segment is actually made of two different parts, one that rotates around the other. This provides the capability to let the solar arrays follow the sun. The truss segment weighs about 35578lbs. After undocking from the ISS, Atlantis will bring astronaut Sunita Williams back to Earth after 195 days in space.

#### Payload

Starboard S3/S4 truss segment.

A Hydrogen Vent Valve that will be installed on the Destiny lab module.

Almost 1000 lbs. of cargo in middeck consisting of contingency water container for transferring water to the station, a tool for removing S3 launch restraints and audio interface hardware to troubleshoot shuttle to station communication difficulties experienced during the last two missions.

External Airlock with Androgynous Peripheral docking System (APDS). The external airlock, with docking system, provides an airtight, internal tunnel between the two spacecraft after docking.

#### Flight Summary

Launchpad: Kennedy Space Center (KSC) 39A | Orbit: 134NM | Inclination: 51.6 | Orbits: 219

Duration: 13 Days, 20 Hours, 11 Minutes, 34 Seconds | Landing: Edwards Air Force Base



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## PRE-LAUNCH CHECKLIST

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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
1	T-00:01:50:00				Astronauts Enter The Shuttle
2	T-00:01:40:00	Overhead Left Panel	O5	* Set Left Audio XMIT/ICOM MODE To VOX/VOX * Set Left Audio A/G (1 & 2) To T/R * Set Left Audio A/A To T/R * Set Left Audio ICOM (A & B) To T/R * Set Left Audio (AUD) Power Switch To AUD/TONE	Activates Commander Communications
3	T-00:01:35:00	Overhead Right Panel	O9	* Set Right Audio XMIT/ICOM MODE To VOX/VOX * Set Right Audio A/G (1 & 2) To T/R * Set Right Audio A/A To T/R * Set Right Audio ICOM (A & B) To T/R * Set Right Audio (AUD) Power Switch To AUD/TONE	Activates Pilot Communications
5	T-00:01:20:00	Front Left Panel	F6	* Check ABORT Light (DIM/BRIGHT/DIM) For 8 Seconds	Abort Advisory Check
6	T-00:01:10:00				Flight Control Confirms With Commander That The Side Hatch Is Closed & Locked
7	T-00:01:05:10	Left Panel Front Left Panel	L2 F2	* Set CABIN VENT ISOL To CLOSE * Set CABIN VENT To CLOSE * Press MASTER ALARM	Cabin Leak Check Cancel Master Alarm Sound
8	T-00:00:51:00				Pilot Confirms IMU Alignment
9	T-00:00:50:00	Right Panel Overhead Aft Panel Center Panel	R2 O14 O16 C3	* Check BOILER CNTLR/HTR (1/2/3) Are On - A * Set BOILER N2 Supply (1/2/3) To ON * Set L OMS ENG VLV Is ON * Set R OMS ENG VLV Is ON * Set OMS ENG (LEFT & RIGHT) Are Set To ARM/PRESS	Confirm Boiler Power On
10	T-00:00:45:00	Left Panel	L2	* Set CABIN VENT/VENT To OPEN	Open Cabin Vent
11	T-00:00:42:00	Center Panel	C3 C2	* Set BFC CRT DISPLAY To ON * Confirm BFC CRT SELECT Is At (3+1) * Enter ITEM 25 EXEC (Use Left Keypad)	Enable Backup Flight System (BFS) And Execute Computer Data Transfer To BFS Copy Primary Avionics SW To BFS
12	T-00:00:36:40	Left Panel Overhead Low Panel	L2 O1	* Set CABIN VENT To CLOSE * Set CABIN VENT ISOL To OPEN * Check CABIN dP/dT Gauge For Possible Depressurization	Cabin Leak Check - Continued
13	T-00:00:33:20	Left Panel	L2	* Set CABIN VENT ISOL To Close * Check CABIN VENT Is CLOSED	Cabin Pressurization Check Complete
14	T-00:00:30:00	Center Panel	C2	* Enter OPS 101 PRO (Use Right Keypad) * Enter SPEC 99 PRO (Use Right Keypad) * Press RESUME (Use Right Keypad)	Load OPS 1 - Planned 10 Minute Hold Load First Stage SW Into Primary Avionics System
15	T-00:00:29:00	Center Panel	C2	* Enter OPS 101 PRO (Use Left Keypad)	Load OPS 1 Into The BFS
16	T-00:00:26:00	Right Panel	R2	* Set He ISOLATION A (LEFT/CRT/RIGHT) To Open * Set He ISOLATION B (LEFT/CRT/RIGHT) To Open * Set PNEUMATICS He ISOL To Open * Set 6 ENGINE POWER Switches (LEFT/CTR/RIGHT) To ON	Begin The Main Propulsion System (MPS) Helium (He) Pressurization
17	T-00:00:15:00	Front Left Panel Center Panel	F6 C3	* Check ABORT Light ON/OFF For 8 Seconds * Set CAUTION/WARNING MEMORY To CLEAR	Final Test Of The ABORT System Clear C/W Memory
18	T-00:00:09:00	Center Panel	C3	* Set Timer Thumbwheels To 0900 * Set TIMER Switch To SET * Check EVENT TIMER MODE Is DOWN	Enable Countdown From Nine (9) Minutes
605	T-00:00:09:00	Center Panel Front Center Panel	C3 F7	* Set EVENT TIMER CONTROL To START * Confirm EVENT TIMER Display Continues The Countdown	Start The Nine (9) Minute Countdown
19	T-00:00:08:00	Right Panel	R1 R2	* Set ESS BUS SOURCE (MN B/C, MN C/A, MN A/B) To ON * Check APU FUEL TK VLV (1/2/3) Are CLOSED * Check APU AUTO SHUT DOWN (1/2/3) Are Enable * Check HYD MAIN PUMP PRESS (1/2/3) Are LOW * Check APU SPEED SELECT (1/2/3) Are NORM * Set HYD CIRC PUMP (1/2/3) Set To GPC * Set APU CNTLR PWR (1/2/3) To ON	Enable Fuel Cells The Crew Access Arm Is Retracting APU Prestart Check Is Underway
20	T-00:00:05:10	Right Panel Front Center Panel Right Panel Front Center Panel Front Left Panel Right Panel	R2 F7 R2 F7 F2 R2	* Set APU FUEL TK VLV (1/2/3) To Open * Check APU/HYD READY TO START (1/2/3) Repeaters-(White) * Set APU OPERATE (1/2/3) To START/RUN * Check HYDRAULIC (APU) Pressure 900psi (Use MFD #2) * Set HYD MAIN PUMP PRESS (1/2/3) To NORM * Check HYDRAULIC (APU) Pressure 3000psi (Use MFD #2) * Press MASTER ALARM (If Required) * Set HYD CIRC PUMP (1/2/3) Set To OFF	APU Start The Master Alarm May Sound Until APU Pressure Reaches 3000 PSI. (Silence Alarm)
21	T-00:00:04:30 T-00:00:04:10	Left Panel	L2	* Set FLASH EVAP FEEDLINE HTR A & B SUPPLY To OFF	The Shuttle Is On Internal Power. Turn Off Flash Evaporator Feed Line & Heater Supply APU Check Complete
22	T-00:00:03:45 T-00:00:03:05				Start Hydraulic Check, Aero Surfaces Are Moved, A Gimbal Check Is Performed Hydraulic Check Complete
23	T-00:00:02:55				External Tank Liquid Oxygen (LOX) Vents Are Closing & The External Tank Begins To Pressurize. External Tank Cap Is Retracted.
24	T-00:00:02:00	Right Panel Center Panel	R2 R1 C3	* Set APU AUTO SHUT DOWN (1/2/3) To INHIBIT * Set AC BUS SNSR (1/2/3) To MONITOR * Set CAUTION/WARNING MEMORY To CLEAR	APU Power - Inhibit



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
25	T-00:00:01:40				Liquid Hydrogen External Tanks Closed
25	T-00:00:01:20				Go For Launch Announcement
25	T-00:00:01:00				One Minute Countdown Announcement
25	T-00:00:00:30				Thirty Seconds Countdown Announcement
26	T-00:00:00:15				The Shuttles Main Engines Will Ignite At T-00:00:00:05. A Staggered Start Of The Main Engines Will Commence In 120 millisecond Intervals. The Two SRB's Will Ignite At T-00:00:00:00, Followed By An Almost Instantaneous Liftoff. Once The Shuttle Clears The Tower, It Will Complete A Roll Maneuver.
26	T-00:00:00:00				Shuttle Liftoff

## Commence Ascent Checklist



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	NOTES
27	T+00:00:00:30 T+00:00:01:05				Main Engines Throttle Down To 65% Main Engines Throttle Up To 104%
28	T+00:00:02:00 T+00:00:02:05	Front Center Panel	F7	* Check Pressure Pc<50 (MFD / CRT 1)	Standby For SRB Separation SRB Separation
600	T+00:00:02:10				An OMS Assist Burn Is Now Performed To Add Additional Boost
602	T+00:00:03:00	Overhead Low Panel	O1	* Check FREON - EVAP OUT TEMP Gauge Shows Below 60 Degrees	Check Flash Evaporator Is Operational
29	T+00:00:04:20				Negative Return
601	T+00:00:05:19				The Shuttle Performs A Roll-To-Heads-Up
30	T+00:00:06:56				Single Engine Press To MECO
31	Mission Dep.	Front Center Panel	F7	* Check MAIN ENGINE STATUS Lights (Left/CTR/Right) Are Red	Engines Throttle Down In Preparation For Main Engine Cutoff (MECO)
32	Mission Dep.			* Check MAIN ENGINE STATUS Lights (Left/CTR/Right) Are Red	External Tank Separation
34	Mission Dep.	Left Panel Center Panel Right Panel  Front Left Panel Front Right Panel Center Panel	L1 L2 C3 R1  F6 F8 C3	* Set FLASH EVAP CONTROLLER PRI A & PRI B To ON * Set FLASH EVAP FEEDLINE HTR A SUPPLY & B SUPPLY To 1 * Set BFC CRT DISPLAY To OFF * Set AC BUS SNSR (1/2/3) To AUTO TRIP * Set O2 TK 1 (B) & O2 TK 2 (B) HEATERS To AUTO * Set H2 TK 1 (B) & H2 TK 2 (B) HEATERS To AUTO * Check FLT CNTLR POWER Is OFF * Check FLT CNTLR POWER Is OFF * Check ORBIRAL DAP - CONTROL Is Set To AUTO	Remaining MPS Propellants Are Dumped Automatically.  Main Engines Are Gimballed Down During The Dump
35	Mission Dep.	Center Panel	C3	* Enter OPS 105 PRO (Use Left Keypad)	Prepare To Circularize Orbit
36	Mission Dep.	Center Panel  Overhead Aft Panel  Center Panel	C3 C2  O14 O16 C3	* Confirm DAP (Digital Auto Pilot) Switches Are Set To AUTO * Enter ITEM 22 EXEC (Use Right Keypad) * Enter ITEM 27 EXEC (Use Right Keypad) * Enter ITEM 23 EXEC (Use Right Keypad) * Confirm L OMS ENG VLV Is ON * Confirm R OMS ENG VLV Is ON * Confirm OMS ENG (LEFT & RIGHT) Are Set To ARM/PRESS	Circularize Orbit
37	Mission Dep.	Right Panel	R2  R4	* Set 6 ENGINE POWER Switches (LEFT/CTR/RIGHT) To OFF * Set He ISOL A (LEFT/CTR/RIGHT) To GPC * Set He ISOL B (LEFT/CTR/RIGHT) To GPC * Set PNEUMATICS He ISOL To GPC * Set H2 PRESS LINE VENT To OPEN	Propellant Dump Complete
38	Mission Dep.	Right Panel	R2  R4	* Set ET UMBILICAL DOOR - MODE GPC To GPC/MAN * Set CENTERLINE LATCH To STOW * Set LEFT & RIGHT Door To CLOSE * Check Talkback Shows CLOSE * Set LEFT & RIGHT LATCH To LATCH * Check Talkback Shows CLOSED & LATCHED * Set LEFT & RIGHT DOOR To OFF * Set LEFT & RIGHT LATCH To OFF * Set HYD MAIN PUMP PRESS (1/2/3) To LOW * Set APU OPERATE - START/RUN (1/2/3) To OFF * Set APU FUEL TK VLV (1/2/3) To CLOSE * Set APU CNTLR PWR (1/2/3) To OFF * Set BOILER PWR (1/2/3) To OFF * Set BOILER N2 SUPPLY (1/2/3) To OFF * Set HYD CIRC PUMP (1/2/3) To GPC * Set H2 PRESS LINE VENT To GND	Close & Latch The ET Umbilical Doors. APU Shutdown
39	Mission Dep.	Center Panel	C2	* Press EXEC - Confirms ready for OMS burn (Use Right Keypad)	Confirm OMS Burn
40	Mission Dep.	Right Panel Center Panel	R4 C3	* Set PROPELLANT FILL/DRAIN LH 2 OUTBD & INBD To OPEN * Set OMS ENG LEFT & RIGHT To OFF	Liquid He Manual Dump
41	Mission Dep.	Overhead Aft Panel  Right Panel	O17  R4	* Set ATVC (1/2/3/4) To OFF * Set Engine Interface Units - EIU (L-C / C-R / R-L) To OFF * Set MEC (1 & 2) To OFF * Set MPS/TVC ISOL VLV - (SYS 1, SYS 2, SYS 3) To CLOSE	Turn Off Main Engine Controllers
42	Mission Dep.	Right Panel  Center Panel Front Left Panel	R4  C3 F6	* Set PROPELLANT FILL/DRAIN - LH2 OUTBD To GND * Check PROPELLANT FILL/DRAIN - LH2 INBD To OPEN * ORBITAL DAP/MANUAL MODE - ROTATION YAW, VERN=ON * Set FLIGHT CNTLR POWER To ON * Rotate The Shuttle To Zero Attitude (Pitch/Roll)   (Joystick - RHC)	Set Liquid H2 Outboard Fill & Drain Valve To Ground Control Set Attitude Manually Enable Vernier RCS Enable Manual Control Of The RCS Align All ADI Needles
43	Mission Dep.	Right Panel Aft Right Panel	R4 A12	* Set HYDRAULICS - BRAKE HEATERS (A/B/C) To AUTO * Set APU HEATER - GAS GEN/FUEL PUMPS (1/2/3) To A AUTO * Set APU HEATER - LUBE OIL LINES (1/2/3) To A AUTO * Set TANK/FUEL LINE/H2O (SYS 1A, SYS 2A, SYS 3A) To AUTO * Set HYDRAULIC HEATER - RUDDER SPD BRK To A AUTO * Set HYDRAULIC HEATER - BODY FLAP To A AUTO * Set HYDRAULIC HEATER - ELEVON To A AUTO * Set HYDRAULIC HEATER - AFT FUSELAGE To A AUTO	Thermal Condition The Shuttle
44	Mission Dep.	Aft Left Panel	A14	*Set RCS/OMS HEATERS - FWD RCS To A AUTO * Set RCS/OMS HEATERS - LEFT POD To A AUTO * Set RCS/OMS HEATERS - RIGHT POD To A AUTO * Set RCS/OMS HEATERS - FWD RCS JET (1/2/3/4/5) To AUTO	Activate Various Heater Systems





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44	Mission Dep.	Aft Left Panel  Left Panel	A14  A8L L1	* Set RCS/OMS HEATERS - AFT RCS JET (1/2/3/4/5) To AUTO * Set RCS/OMS HEATERS - OMS CRSFD LINES To A AUTO * Set PORT RMS HEATER To AUTO A * Set TOPPING EVAP HEATER - NOZZLE (L & R) To A AUTO * Set TOPPING EVAP HEATER - DUCT Selector To A/B * Set HI LOAD EVAP - HI LOAD DUCT HTR Selector To A/B	Activate Various Heater Systems
45	Mission Dep.	Left Panel  Overhead Aft Panel	L2  L1  O14 O15 O16  O15	* Set O2 SYS 2 SUPPLY To CLOSE * Set N2 SYS 2 SUPPLY To CLOSE * Set N2 SYS 2 REG INLET To CLOSE * Set H2O LOOP 2 BYPASS - MODE To AUTO * Set H2O PUMP - LOOP 1 To OFF   H2O PUMP - LOOP 2 To GPC * Set RGA 1 To OFF * Set RGA 2 & 4 To OFF * Set RGA 3 To OFF * Set ACCEL 3 To OFF * Set ACCEL 4 To OFF	
46	Mission Dep.	Overhead Left Panel Right Aft Panel  Overhead Left Panel	O6 R11L  O6	* Set GENERAL PURPOSE COMPUTER - MODE 5 To HALT * Check MAJ FUNC Set To GNC * Enter OPS 201 PRO (AFT Keypad) * Set MAJ FUNC To SM * Press GPC/CRT (AFT Keypad) * Enter 4 EXEC (AFT Keypad) * Enter OPS 201 PRO (AFT Keypad) * Set GENERAL PURPOSE COMPUTER - MODE 3 To HALT	Configure Computers For Orbit Switch To On-Orbit SW Mode Load GPC 1/2/3 With GNC SW GPC 3 Preserves Independent Source Data GPC 4 Contains System Management Data GPC 5 Retains The Backup Flight System
47	Mission Dep.	Left Panel	L1  L2	* Set RAD CONTROLLER - (LOOP 1 & LOOP 2) To AUTO A * Set RAD CONTROLLER - BYPASS MODE (1 & 2) To AUTO * Set FREON LOOP ISOLATION - MODE To AUTO	Activate Radiator Cooling
48	Mission Dep.	Right Aft Panel	R11L  R13L	* Confirm MAJOR FUNC Is Set To SM * Enter OPS 202 PRO (AFT Keypad) * Enter ITEM 3 EXEC * Enter ITEM 1 EXEC * Set PL BAY DOOR (SYS 1 & SYS 2) To ENABLE * Set PL BAY DOOR To OPEN * Confirm PL BAY DOOR Talkbacks Show DEP	Open Payload Doors PL BAY DOOR SPEC Display Enable Auto Mode Enable AC Power  Opening Both PL Doors Takes 3 Minutes Indicating Both PL Doors Are Open
49	Mission Dep.	Right Aft Panel	R13L	* Set PL BAY MECH PWR (SYS 1 & SYS 2) To ON * Set RADIATOR LATCH (SYS A & SYS B) To RELEASE * Check RADIATOR LATCH SYS Talkbacks Indicate REL * Set RADIATOR CONTROL (SYS A & SYS B) To DEPLOY * Check RADIATOR CONTROL SYS Talkbacks Indicate DEP	Deploy Radiators Indicating That The Radiators Are Ready For DEP. Deploying Both Radiators Takes 30 Seconds. Indicating Both Radiators Are Deployed.
50	Mission Dep.	Right Aft Panel	R13L  R11L	* Set RADIATOR LATCH (SYS A & SYS B) To OFF * Set RADIATOR CONTROL (SYS A & SYS B) To OFF * Set PL BAY DOOR To STOP * Set PL BAY MECH PWR (SYS 1 & SYS 2) To OFF * Set PL BAY DOOR (SYS 1 & SYS 2) To DISABLE * Enter ITEM 2 EXEC (AFT Keypad)	Disable All Power To PL Doors And Radiators.  Disable AC Power To The Doors
51	Mission Dep.	Right Aft Panel	R11U	* Set FUEL CELL - PURGE HEATER To GPC * Set H2O LINE HTR & H2O RELIEF HTR To A AUTO * Confirm PURGE VALVES (1/2/3) Are On GPC * Confirm STARTUP HEATER (1/2/3) Are Set To ENABLE * Set GPC PURGE SEQ To START - Press START For 3 Seconds * Confirm GPC PURGE SEQ START Talkback Is WHITE	Initiate Fuel Cell Purge
52	Mission Dep.	Right Aft Panel  Left Panel	R11L  L1	* Enter SPEC 69 PRO (AFT Keypad) * Enter SPEC 88 PRO (AFT Keypad) * Set FLASH EVAP CONTROLLER (PRI A & PRI B) To OFF * Set FLASH EVAP CONTROLLER - SEC To OFF * Set HILOAD EVAP To OFF	Check Purge Process On The SPEC Display Check Coolant Loops  Secure The Flash Evaporator
53	Mission Dep.	Overhead Left Panel  Right Aft Panel	O6  R11L	* Set STAR TRACKER POWER (-Y & -Z) To ON * Set DOOR CONTROL (SYS 1 & SYS 2) To OPEN * Check DOOR CONTROL (SYS 1 & SYS 2) Talkbacks Are OP * Set DOOR CONTROL (SYS 1 & SYS 2) To OFF * Set MAJ FUNC To GNC * Enter SPEC 22 PRO (AFT Keypad) * Enter ITEM 3 EXEC (AFT Keypad) * Enter ITEM 4 EXEC (AFT Keypad)	Deploy & Activate The Star Trackers  Indicating The ST Doors Are Open
54	Mission Dep.	Right Aft Panel	R11L	* Check MAJ FUNC To GNC * Enter SPEC 21 PRO (AFT Keypad) * Enter ITEM 16 EXEC (AFT Keypad)	Initiate IMU Alignment
55	Mission Dep.	Overhead Center Panel	O7	* Set GPS 1 POWER To ON * Set GPS 1 PRE AMPL UPPER To ON * Set GPS 1 PRE AMPL LOWER To ON * Set GPS 2 POWER To ON * Set GPS 2 PRE AMPL UPPER To ON * Set GPS 2 PRE AMPL LOWER To ON * Set GPS 3 POWER To ON * Set GPS 3 PRE AMPL UPPER To ON * Set GPS 3 PRE AMPL LOWER To ON	Activate Global Positioning System (GPS) Activate GPS 1  Activate GPS 2  Activate GPS 3



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	NOTES
55	Mission Dep.	Right Aft Panel	R11L	* Set DUMP ISOL VLV To OPEN	
59	Mission Dep.	Right Aft Panel	R11L	* Check MAJ FUNC To GNC	Deploy KU Antenna Indicates Status For All THC/RHC (Joysticks). KU Antenna Deployment Takes 15 Seconds Indicates KU Antenna Is Deployed
			R11L	* Enter SPEC 25 PRO (AFT Keypad)	
			R13L	* Set KU ANTENNA To DEPLOY	
			R13L	* Check KU ANTENNA Talkback For DEP	
		Aft Right Panel	AIU	* Set KU ANTENNA To GND	Enable KU Antenna
		Right Aft Panel	AIU	* Set KU BAND POWER To STBY	
			R11L	* Check MAJ FUNC To GNC	
			R11L	* Enter SPEC 33 PRO (AFT Keypad)	
			R11L	* Enter ITEM 2 EXEC (AFT Keypad)	
60	Mission Dep.				Shuttle Is Configured & Ready For Mission

Commence On-Orbit Mission



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
1100	Mission Dep.				The RMS Is Powered Up And Checked
1101	Mission Dep.	Aft Left Panel	A8L	* Set RMS POWER To PRIMARY * Set RMS SELECT To PORT * Set The PORT RMS DEPLOY To DEPLOY	Power Up & Deploy The RMS
1102	Mission Dep.	Aft Left Panel	A8L	* Set The PORT RMS DEPLOY To OFF * Set The PORT RMS Latch To RELEASE * Set The PORT RMS Latch To OFF * Hold The RMS SHOULDER BRACE RELEASE Toward PORT	RMS Deployed  Wait Until Talkback Indicates REL Press Until Talkback Indicator Turns White
1103	Mission Dep.	Right Aft Panel  Aft Left Panel	R11L  A8U	* Set MAJ FUNC To SM * Enter SPEC 94 PRO (Aft Keypad) * Set MODE Rotary Switch To SINGLE * Press ENTER Just Below The MODE Rotary Switch * Set BRAKES Switch To OFF	Continue RMS Preparation
1104	Mission Dep.	Aft Left Panel	A8U	* Set The PARAMETER Rotary Switch To JOINT ANGLE * Set The JOINT Rotary Switch To SHOULDER/PITCH * Press & Hold The SINGLE DIRECT DRIVE In The + Position * Set The JOINT Rotary Switch To ELBOW * Press & Hold The SINGLE DIRECT DRIVE In The - Position * Set The MODE Rotary Switch To MANUAL ORB UNL * Press ENTER Just Below The MODE Rotary Switch	Move RMS Out Of Reach Limit  Confirm Digital Readout Indicates +3 Degrees  Confirm Digital Readout Indicates -3 Degrees
1105	Mission Dep.	Aft Right Panel	A6U	* Set FLT CNTLR POWER To ON	Gain Manual RMS RHC/THC Control
1106	Mission Dep.	Aft Left Panel  Front Left Panel	A8L A8U F6	* Set RMS POWER To OFF * Set RMS BRAKES To ON * Set FLT CNTLR POWER To ON	Turn Off RMS Power For Later Use.
1107	Mission Dep.				This Ends The Activation And Checkout Of The RMS. Next Event
1115	Mission Dep.	Center Panel   Overhead Aft Panel  Center Panel	C2  C3 O14 O16 C2	* Set MAJOR FUNC To GNC For CRT #2 * Enter OPS 202 PRO (Right Keypad) * Enter ITEM 22 EXEC (Right Keypad) * Enter ITEM 27 EXEC (Right Keypad) * Enter ITEM 23 EXEC (Right Keypad) * Set OMS ENG (Left & Right) To ARM/PRESS * Confirm L OMS ENG VLV Is ON * Confirm R OMS ENG VLV Is ON * Press EXEC - (Right Keypad) Confirms ready for OMS burn	The First Planned NC Burn Has Been Scratched So This One will Be Designated As NC Burn 2.  Only Enter Ops 202 If Not Already Entered
1116	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	Burn Complete - Disable OMS
1117	Mission Dep.	Front Left Panel	F6	* Rotate Shuttle To Proper Attitude (Pitch/Roll)   Joystick - RHC)	<u>Maneuver Shuttle To Correct Attitude</u> Target Attitude: Roll=0, Pitch=0, Yaw=0
1118	Mission Dep.	Aft Left Panel   Aft Right Panel Aft Left Panel	A8L   A6U A8U	* Set RMS POWER To PRIMARY * Set RMS SELECT To STBD * Set The STARBOARD RMS DEPLOY To DEPLOY * Set The STARBOARD RMS DEPLOY To OFF * Set RMS To PORT * Set RMS BRAKES To OFF * Set FLT CNTLR POWER To ON * Set END EFFECTOR   MODE To AUTO	Begin Shuttle Inspection With The OBSS. Gain Manual Control Of The RMS.
1119	Mission Dep.	Aft Left Panel	A8L	* Use The RMS To Grapple The OBBS	You Have Full Manual Control Of The RMS Arm. Align The End Effector With The OBSS Forward End Grapple Fixture. Grapple The OBSS When The RMS Is In Position Press Enter <u>POSITION - P Y R</u> P: -090.0   Y: 000.0   R: 000.0  <u>POSITION - X Y Z</u> X: 0550   Y: 0099   Z: 0464  <u>JOINT ANGLE</u> YAW: -085.9 SHOULDER: 092.9 ELBOW: -131.4 WRIST PITCH: -051.1 WRIST YAW: 000.0 WRIST ROLL: 086.0
1120	Mission Dep.	Aft Left Panel	A8L	* Set RMS SELECT To STBD * Set The STARBOARD RMS Latch To RELEASE	Unlatch The OBSS
1121	Mission Dep.	Aft Left Panel	A8L	* Set The STARBOARD RMS Latch To OFF * Set RMS SELECT To PORT	Disable Latches & Regain RMS Control.
1122	Mission Dep.	Aft Left Panel	A8L	* Use The RMS To Inspect The Shuttle's Tiles	The Far End On The OBSS Contains A Laser 1Dynamic Range Imager (LDRI), A Laser Camera system (LCS), And An Intensified Television Camera (ITVC). Move The OBSS End Below The Shuttle And Thoroughly Inspect The Underside For Damage To The heat Shield.





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1123	Mission Dep.	Aft Left Panel	A8L	* Use The RMS To Return The OBSS To Its Latched Position.	The Tile Inspection Takes A Lot Of Time. To Keep Things Simple, We Consider The Tile Inspection Complete. Return The OBSS Back To Its Latched Position. Use The Same Coordinates As COMM 1119
1124	Mission Dep.	Aft Left Panel	A8L	* Set RMS SELECT To STBD * Set The STARBOARD RMS Latch To LATCH	The OBSS Is In The Latch Position, Latch The OBSS.
1125	Mission Dep.	Aft Left Panel	A8L	* Set The STARBOARD RMS Latch To OFF * Set RMS SELECT To PORT * Release The OBSS - Press Backspace	Set The Starboard RMS Latch To Off.  Release The OBSS
1127	Mission Dep.	Aft Left Panel	A8L	* Stow The RMS	Return The RMS To Its Latched Position.
1128	Mission Dep.	Aft Left Panel	A8L	* Set RMS POWER To OFF * Set RMS BRAKES To ON	Heatshield Inspection Complete Next Event
		Front Left Panel	F6	* Set FLT CNTLR POWER To ON	
1130	Mission Dep.	Right Aft Panel	R11L	* Set MAJOR FUNC To GNC * Enter SPEC 22 PRO (Aft Keypad) * Enter ITEM 5 EXEC (Aft Keypad) * Enter ITEM 6 EXEC (Aft Keypad) * Enter ITEM 11+1 EXEC (Aft Keypad) * Enter ITEM 12+1 EXEC (Aft Keypad)	Activate Star Trackers     Target = International Space Station (ISS)
1131	Mission Dep.	Aft Right Panel	A1U	* Set KU BAND   POWER To ON	Activate KU Band Radar
		Right Aft Panel	R11L	* Set KU BAND   Rotary Switch To AUTO TRACK * Enter SPEC 33 PRO (Aft Keypad) * Enter ITEM 1 EXEC (Aft Keypad)	
1132	Mission Dep.	Aft Right Panel	A6L	* SYSTEM POWER (MN A & MN B) To ON * PSU POWER (MN A & MN B) To ON	Power Up The APDS
1133	Mission Dep.	Aft Left Panel	A7L	* Set CONTROL PANEL POWER (A - B - C) To ON * Set HEATERS DCU POWER (H1 - H2/DCU - H3/DCU) To ON * Set APDS POWER (ABS - BDS - CDS) To ON	Activate APDS Power Panel
1134	Mission Dep.	Aft Left Panel	A7L	* APDS Control Commands   Press POWER ON * APDS Control Commands   Press APDS CIRC PROT OFF * APDS Control Commands   Press RING OUT	Extend APDS Capture Ring
1135	Mission Dep.	Center Panel	C2	* Enter ITEM 22 EXEC (Right Keypad) * Enter ITEM 27 EXEC (Right Keypad) * Enter ITEM 23 EXEC (Right Keypad)	Perform NC Burn
			C3	* Set OMS ENG (Left & Right) To ARM/PRESS	
			C2	* Press EXEC - (Right Keypad) Confirms ready for OMS burn	
1136	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	NC Burn Complete. Next Event
1140	Mission Dep.	Center Panel	C2	* Enter ITEM 22 EXEC (Right Keypad) * Enter ITEM 27 EXEC (Right Keypad) * Enter ITEM 23 EXEC (Right Keypad)	Perform NC Burn
			C3	* Set OMS ENG (Left & Right) To ARM/PRESS	
			C2	* Press EXEC - (Right Keypad) Confirms ready for OMS burn	
1141	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	NC Burn Complete. Next Event
1145	Mission Dep.	Center Panel	C2	* Enter ITEM 22 EXEC (Right Keypad) * Enter ITEM 27 EXEC (Right Keypad) * Enter ITEM 23 EXEC (Right Keypad)	The Final Burn Is A Terminal Initiation (TI) Burn
			C3	* Set OMS ENG (Left & Right) To ARM/PRESS	
			C2	* Press EXEC - (Right Keypad) Confirms ready for OMS burn	
1146	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	Final TI Burn Complete.
1148	Mission Dep.	Aft Left Panel	A2	* Use RCS Thrusters To Close On The ISS	The ISS Is Approximately 45,000 Feet Away. Use The RCS Thrusters To Translate The Shuttle Up/Down Until The Yellow Reticules Overlap The White Cross Hairs. Always Maintain The Following Attitude ROLL=0 PITCH=0 YAW=90 When The Reticules Are Centered, The Hubble Telescope Is Right In Front Of The Shuttle. If You Are Impatient, Use Next Event
1150	Mission Dep.	Aft Left Panel	A2	* Use RCS Thrusters To Position The Shuttle	The ISS Is In Visual Range. Bring The Shuttle In Front Of, And About 600ft From ISS. The Shuttle Will Now Perform A Back Flip Maneuver That Allows ISS To Take Images Of The Shuttle's Heat Shield.
1151	Mission Dep.	Aft Left Panel	A2	* Use RCS Thrusters To Set The Closing Rate To Zero	Bring The Closing Rate Between The Shuttle And The ISS To Zero.
1152	Mission Dep.	Front Left Panel	F6	* Use RCS Thrusters To Pitch The Shuttle Up To 180 Degrees	Slowly Pitch The Shuttle Up To 180 Degrees Pitch Angle.  The Correct Attitude Roll ROLL=180 PITCH=180 YAW=90





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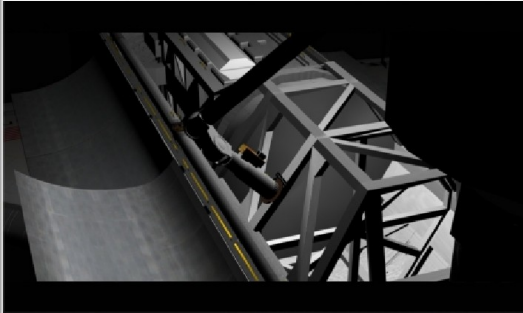
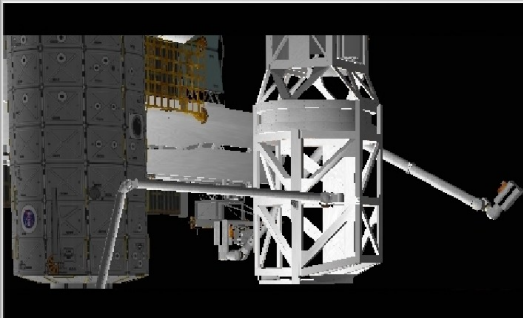


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1153	Mission Dep.	Front Left Panel	F6	* Use RCS Thrusters To Pitch The Shuttle Up	Continue To Pitch The Shuttle Up Until You Complete The 180 Degree Maneuver. Digital Images Are Being Taken By The ISS Crew For Later Inspection By Ground Control.  The Correct Alignment ROLL=0 PITCH=0 YAW=90
1160	Mission Dep.	Aft Left Panel  Aft Right Panel	A7U  A6U	* Set VIDEO INPUT To PL 1 * Set VIDEO OUTPUT To MON 1 * Set PAYLOAD BAY FLOOD   DOCKING To BRIGHT * Set FLT CNTLR POWER To ON * Set SENSE To -Z * Set MANUAL MODE   TRANSLATION To Y ( LOW Z)	Carefully Translate The Shuttle Below The Destiny Lab And Dock With The PMA. Docking Will Be Fully Automatic Once The Shuttle's APDS Gets Close To Unity
1161	Mission Dep.				Contact, Active Damping Is Performed
1162	Mission Dep.				The Ring Aligned Command Is Issued & The Electromechanical Dampers Are Deactivated. An Automatic Ring In Command Activates The Fixers To Rigidize The System.
1163	Mission Dep.	Aft Left Panel	A7L	* APDS Control Commands   Press POWER OFF * Set CONTROL PANEL POWER (A - B - C) To OFF * Set HEATERS DCU POWER (H1 - H2/DCU - H3/DCU) To OFF * Set APDS POWER (ABS - BDS - CDS) To OFF	Docking Complete, Disable The APDS
1164	Mission Dep.				After ODS Preparation, The Hatches Are Opened & The ISS And Shuttle Crews Finally Meet. Next Event
1170	Mission Dep.	Aft Right Panel Aft Left Panel	A6U A8L A8U	* Set FLT CNTLR POWER To ON * Set RMS POWER To PRIMARY * Set RMS BRAKES To OFF	Assign RHC/THC Control To The RMS
1171	Mission Dep.	Aft Left Panel	A8L	* Use The RMS To Grapple The S3/S4 Truss Segment 	Grapple The S3/S4 Truss Using The Forward Grapple Fixture.  When The RMS Is In Position Press Enter <a href="#">POSITION - P Y R</a> P: -090.0   Y: 045.0   R: -090.0  <a href="#">POSITION - X Y Z</a> X: 0674   Y: 0062   Z: 0462  <a href="#">JOINT ANGLE</a> YAW: -056.5 SHOULDER: 076.4 ELBOW: -119.1 WRIST PITCH: -087.2 WRIST YAW: 023.0 WRIST ROLL: 155.0
1172	Mission Dep.	Center Panel Aft Right Panel	C3 A6U	* PAYLOAD SAFING Switches (1-2-3-4-5) To NORM * PAYLOAD RETENTION   LOGIC POWER (SYS 1) To ON * PAYLOAD SELECT Rotary Switch To 2 * PAYLOAD RETENSION LATCHES (1-2-3-4-5) To RELEASE	Release The S3/S4 Truss Segment From The Payload Bay.
1173	Mission Dep.	Aft Right Panel	A6U	* PAYLOAD RETENSION LATCHES (1-2-3-4-5) To OFF * PAYLOAD RETENTION   LOGIC POWER (SYS 1) To OFF	Set All Retention Latches To Off.
1174	Mission Dep.			* Use The RMS To Position The S3/S4 Truss Segment 	Move The S3/S4 Truss Segment In The Handover To ISS RMS Position.  <a href="#">POSITION - P Y R</a> P: 180.0   Y: -045.0   R: 090.0  <a href="#">POSITION - X Y Z</a> X: 0714   Y: 0207   Z: 0689  <a href="#">JOINT ANGLE</a> YAW: -051.6 SHOULDER: 076.5 ELBOW: -079.4 WRIST PITCH: 003.4 WRIST YAW: -083.2 WRIST ROLL: 090.6
1175	Mission Dep.				The ISS RMS Will Now Capture The S3/S4 Truss Segment.
1176	Mission Dep.				The ISS RMS Has Grappled The S3/S4 Truss Segment.
1177	Mission Dep.	Aft Left Panel	A8L	* Release The S3/S4 Truss Segment - Press Backspace	Release The Truss Segment From The Shuttle RMS.



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1178	Mission Dep.	Aft Left Panel	A8L	* Stow The RMS	Return The RMS To Its Latched Position.
1179	Mission Dep.				The ISS RMS Will Hold The S3/S4 Truss In The Parked Position While The Crew Sleeps. Next Event
1180	Mission Dep.				The ISS RMS Will Now Attach The S3/S4 Truss Segment To The ISS.
1181	Mission Dep.				Automatic Latches Attach The S3/S4 To The ISS. The ISS Will Now Release The Truss Segment And Move To A Park Position.
1182	Mission Dep.			* EV1	EV1 Just Emerged From The ISS Quest Airlock. Move EV1 To The Nadir Side Of The S1/S3 Connection.
1183	Mission Dep.			* EV1 & EV2	EV1 Will Perform Electrical Connections Between The S1/S4 Truss Segments. Meanwhile EV2 Emerges From The Airlock. Move EV2 To The End Of The S3/S4 Truss Where The Solar Array Blanket Boxes Are Located.
1184	Mission Dep.			* EV1 & EV2	While EV2 Releases The Forward And Aft Solar Array Blanket Boxes , EV1 Finishes Work At The Nadir Attachment Point By Removing A Thermal Shroud From A Computer. Move EV1 To The Zenith Side Of The Attachment Point To Continue With The Electrical Connections.
1185	Mission Dep.			* EV1 & EV2	Move EV2 To The Photovoltaic Radiator To Remove The Launch Restraints On The Radiator In Preparation For Deployment.
1186	Mission Dep.			* EV1 & EV2	EV1 Is Finished Work With The Electrical Connections. Move EV1 To The Forward Solar Array Blanket Box For Unstowing.
1187	Mission Dep.			* EV1 & EV2	EV2 Finished Work On The Photovoltaic Radiator. Move EV2 To The Aft Solar Array Blanket Box For Unstowing.
1188	Mission Dep.			* EV1 & EV2	Move EV1 To The Alpha Rotary Joint On The S3 Truss Segment.
1189	Mission Dep.			* EV1 & EV2	EV1 Will Now Install Two Of Four Drive Lock Assemblies On The Alpha Rotary Joint. EV2 Finishes Work On the Far End Of S3/S4 Joint By Removing The Thermal Shrouds From The Forward And Aft Sequential Shunt Units And Electronics/Environmental Control Units (ECU). Move EV2 To The S3/S4 Connection Point.
1190	Mission Dep.			* EV1 & EV2	EV2 Will Now Deploy The Four Alpha Joint Interface Structure Struts. Upon Completing Work On The Four Alpha Joint Interface Structure Struts, EV1 & EV2 Will Begin To Remove The Launch Locks From The Solar Alpha Rotary Joint. Meanwhile The Photovoltaic Radiator Is Deployed.
1191	Mission Dep.			* EV1 & EV2	This Concludes The First Spacewalk. Move EV1 Into The ISS Airlock.
1192	Mission Dep.			* EV2	Move EV2 Into The ISS Airlock.
1193	Mission Dep.				The First Solar Array On The S4 Truss Segment Is Now Deployed .
1194	Mission Dep.				The Second Solar Array On The S4 Truss Segment Is Now Deployed.
1195	Mission Dep.				The second Spacewalk Is Up Next. Next Event
1200	Mission Dep.				Before The Second Spacewalk Takes Place, The P6 2B Solar Array Is Retracted 50%.
1201	Mission Dep.			* EV3	The Retraction Of The P6 2B Solar Array Is Successful. EV3 Emerges From The Airlock. Move EV3 Over To The Zenith Side Of The Solar Alpha Rotary Joint.
1202	Mission Dep.			* EV3 & EV4	EV3 Will Start The Installation Of Drive Lock Assembly 3, While EV4 Emerges From The Airlock. Move EV4 To The Nadir Side Of The Solar Alpha Rotary Joint.



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1203	Mission Dep.			* EV3 & EV4	EV4 Will Continue To Remove Launch Locks And Outer Launch Restraints Off The S3 Truss Segment. EV3 Will Assist EV4 When Completing The Installation Of The Drive Lock Assembly. Next Event
1205	Mission Dep.			* EV3 & EV4	This Concludes The Second Spacewalk. Move EV3 Into The ISS Airlock.
1206	Mission Dep.			* EV4	Move EV4 Into The ISS Airlock.
1207	Mission Dep.				The Third Spacewalk Is Up Next. Next Event
1210	Mission Dep.			* EV2	The Third Spacewalk Objectives Have Been Changed, As A Protruding Insulation Blanket Has Been Spotted On The Port OMS Pod Of The Shuttle. Flight Control Extends The Mission By Two Days And Adds An Additional Spacewalk. EV2 Emerges From The Airlock Carrying A Foot Restraint And Repairs For The Blanket. Move EV2 To The Center Of The Shuttle's Payload Bay.
1211	Mission Dep.			* EV1 & EV2	EV1 Emerges From The Airlock. Move EV1 To The Port Side Of The Destiny Laboratory.
1212	Mission Dep.			* EV1 & EV2	EV1 Will Now Install A Hydrogen Vent Valve. Move The Shuttle's RMS End Effector Close To EV2 To Attach The Foot Restraint.
1213	Mission Dep.			* EV1 & EV2	Move The Shuttle RMS With EV2 To The OMS Pod For Repairs.
1214	Mission Dep.			* EV1 & EV2	EV2 Performs Orbital Surgery On The OMS Pod, Using A Medical Stapler And Stainless Steel Pins. Meanwhile EV1 Is Finished With The Valve Installation. Move EV1 To The ISS Airlock.
1215	Mission Dep.			* EV2	EV2 Completes The Repairs. Move The Shuttle's RMS To The Center Of The Shuttle Payload Bay So EV2 Can Dismount.
1216	Mission Dep.			* EV2	Move EV2 To The ISS Airlock.
1217	Mission Dep.				This Concludes The Third Spacewalk Next Event
1220	Mission Dep.				Before The Fourth Spacewalk, The P6 2B Solar Array Is Fully retracted.
1221	Mission Dep.			* EV3	Retraction Operation Is Successful. EV3 Emerges From The ISS Airlock. Move EV3 Over To The Zenith side Of The Solar Alpha Rotary Joint.
1222	Mission Dep.			* EV3 & EV4	EV3 Starts The Installation Of Drive Lock Assembly 4 And Verifies Lock Assembly 2, As Two Motors Have Probably Been Wired Backwards. EV4 Emerges From The ISS Airlock. Move EV4 To The Nadir Side Of The Solar Alpha Rotary Joint.
1223	Mission Dep.			* EV3 & EV4	EV4 Emerges From The ISS Airlock. Move EV4 To The Nadir Side Of The Solar Alpha Rotary Joint. EV4 Will Remove The Solar Alpha Rotary Joint Restraints, Assisted By EV3. EV3 & EV4 Will Then Carry Out The Final Objective Of The Fourth Spacewalk By Installing The S3/S4 Truss. The Astronauts Will work Here For Several Hours. Next Event
1225	Mission Dep.			* EV3 & EV4	Move EV3 To The ISS Airlock
1226	Mission Dep.			* EV4	Move EV4 To The ISS Airlock
1227	Mission Dep.				After Material And Oxygen Transfer, A Sleep Period And Exchange Of ISS Personnel, The Shuttle Now Prepares To Undock With The Space Station. Next Event
1260	Mission Dep.	Aft Right Panel  Aft Left Panel	A6L  A7L	*VESTIBULE DEPRESS VALVE   (SYS 1) VENT ISOL To OPEN *VESTIBULE DEPRESS VALVE   (SYS 2) VENT ISOL To OPEN *VESTIBULE DEPRESS VALVE   (SYS 1) VENT To OPEN *VESTIBULE DEPRESS VALVE   (SYS 2) VENT To OPEN * Set CONTROL PANEL POWER (A - B - C) To ON	After Closure Of All Hatches, The Docking Vestibule Is Depressurized.



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1260	Mission Dep.	Aft Left Panel	A7L	* Set HEATERS CDU POWER (H1 - H2/DCU - H3/DCU) To ON * Set APDS POWER (ABS - BDS - CDS) To ON * APDS Control Commands   Press POWER ON * APDS Control Commands   Press APDS CIRC PROT OFF	After Closure Of All Hatches, The Docking Vestibule Is Depressurized.
1261	Mission Dep.	Aft Left Panel	A7L	* APDS STATUS Press UNDOCK COMPLETE (Lower Left)	Initiate Undock Sequence
1262	Mission Dep.	Aft Left Panel Front Left Panel Aft Left Panel  Aft Right Panel	A8L F6 A7L  A6L	* Set RMS POWER To OFF * Set FLT CNTLR POWER To ON * APDS Control Commands   Press POWER OFF * Set CONTROL PANEL POWER (A - B - C) = OFF * Set HEATERS CDU POWER (H1 - H2/DCU - H3/DCU) = OFF * Set APDS POWER (ABS - BDS - CDS) = OFF * Docking System Power   System Power (MN A & MN B) = OFF * Docking System Power   PSU Power ( MN A & MN B) = OFF	Disable RMS And Enable RCS Controls  Deactivate APDS
1263	Mission Dep.	Center Panel  Overhead Aft Panel  Center Panel	C2  C3 O14 O16 C2	* Enter ITEM 22 EXEC (Right Keypad) * Enter ITEM 27 EXEC (Right Keypad) * Enter ITEM 23 EXEC (Right Keypad) * Set OMS ENG (Left & Right) To ARM/PRESS * Confirm L OMS ENG VLV Is ON * Confirm R OMS ENG VLV Is ON * Press EXEC - (Right Keypad) Confirms ready for OMS burn	Perform An OMS Separation Burn
1264	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	Burn Complete - Disable OMS
1266	Mission Dep.	Aft Left Panel  Aft Right Panel Aft Left Panel	A8L A8U A6U A8L	* Set RMS POWER To PRIMARY * Set RMS BRAKES To OFF * Set FLT CNTLR POWER To ON * Use The RMS To Grapple The OBSS 	A Final Heat Shield Inspection Is Performed Using The OBSS. Gain Manual Control Of The RMS. When The RMS Is In Position Press Enter  <u>POSITION - P Y R</u> P: -090.0   Y: 000.0   R: 000.0  <u>POSITION - X Y Z</u> X: 0550   Y: 0099   Z: 0464  <u>JOINT ANGLE</u> YAW: -085.9 SHOULDER: 092.9 ELBOW: -131.4 WRIST PITCH: -051.1 WRIST YAW: 000.0 WRIST ROLL: 086.0
1267	Mission Dep.	Aft Left Panel	A8L	* Set RMS SELECT To STBD * Set The STARBOARD RMS Latch To RELEASE	Unlatch The OBSS
1268	Mission Dep.	Aft Left Panel	A8L	* Set The STARBOARD RMS Latch To OFF * Set RMS SELECT To PORT	Disable Latches & Regain RMS Control.
1269	Mission Dep.	Aft Left Panel	A8L	* Use The RMS To Inspect The Shuttle's Tiles	The Far End On The OBSS Contains A Laser Dynamic Range Imager (LDRI), A Laser Camera system (LCS), And An Intensified Television Camera (ITVC). Move The OBSS End Below The Shuttle And Thoroughly Inspect The Underside For Damage To The heat Shield.
1270	Mission Dep.	Aft Left Panel	A8L	* Use The RMS To Return The OBSS To Its Latched Position.  Note: Use COMM 1266 For Correct Coordinates	The Tile Inspection Takes A Lot Of Time. To Keep Things Simple, We Consider The Tile Inspection Complete. Return The OBSS Back To Its Latched Position.
1271	Mission Dep.	Aft Left Panel	A8L	* Set RMS SELECT To STBD * Set The STARBOARD RMS Latch To LATCH	The OBSS Is In The Latch Position, Latch The OBSS.
1272	Mission Dep.	Aft Left Panel	A8L	* Set The STARBOARD RMS Latch To OFF * Set RMS SELECT To PORT * Release The OBSS - Press Backspace	Set The Starboard RMS Latch To Off.  Release The OBSS
1274	Mission Dep.	Aft Left Panel	A8L	* Stow The RMS	Return The RMS To Its Latched Position.
1275	Mission Dep.	Aft Left Panel Front Left Panel	A8L F6	* Set RMS POWER To OFF * Set RMS BRAKES To ON * Set FLT CNTLR POWER To ON	That Completes The Heat Shield Checkout That Concludes STS-117 On Orbit Mission Next Event

## Commence Deorbit & Landing





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1000	Mission Dep.	Left Panel	L1	* Set RAD CONTROLLER - OUT TEMP To HIGH * Set RAD CONTROLLER (LOOP 1 & LOOP 2) To OFF * Set RAD CONTROLLER - BYPASS MODE (1 & 2) To MAN * Confirm RAD FLOW BYPASS VALVE Talkbacks Display (BYP) * Confirm The HI LOAD EVAP ENABLE Is Set To OFF * Set FLASH EVAP CONTROLLER (PRI A & PRI B) To ON * Set FLASH EVAP CONTROLLER - SEC   GPC To ON	Trap Cold Freon In The Bay Radiators  If The Rad Bypass Valve Talkbacks Do Not Display (BYP), Set The Manual Rad Flow Bypass Switches 1 & 2 To Bypass.
1001	Mission Dep.	Right Aft Panel  Aft Right Panel Right Aft Panel	R11L  A1U R13L  R11L	* Set The MAJ FUNC Switch To GNC * Enter SPEC 33 PRO (AFT Keypad) * Enter ITEM 2 EXEC (AFT Keypad) * Enter ITEM 1 EXEC (AFT Keypad) * Set KU BAND POWER To OFF * Set KU Antenna To STOW * When KU Antenna Talkback Shows STO, Set KU Antenna To GND * Enter SPEC 22 PRO (Aft Keypad) * Enter ITEM 9 EXEC (Aft Keypad) * Enter ITEM 10 EXEC (Aft Keypad)	Deactivate & Stow The KU Antenna  <b>NOTE:</b> Rendezvous Navigation Has Been Used It Must Be Disabled.  Confirm On CRT 4 There Are No Asterisks Besides The Following Entries. RNDZ NAV ENA 1 KU ANT ENA 2
1002	Mission Dep.	Right Aft Panel	R13L	* Set PL BAY MECH PWR (SYS 1 & SYS 2) To ON * Set RADIATOR CONTROL (SYS A & SYS B) To STOW * Set LATCH CONTROL (SYS A & SYS B) To LATCH * Set LATCH CONTROL (SYS A & SYS B) To OFF * Set RADIATOR CONTROL (SYS A & SYS B) To OFF * Set PL BAY MECH PWR (SYS 1 & SYS 2) To OFF	Stow The Radiators  Wait Until The RADIATOR CONTROL Talkbacks Show STO Before Setting The LATCH CONTROLS SYS 1 & SYS 2 To LATCH. Wait Until Latch Control Talkbacks Show LAT Before Turning Off ALL Radiators.
1003	Mission Dep.	Overhead Left Panel Center Panel  Right Panel	O6 C3  R2	* Set GENERAL PURPOSE COMPUTER - MODE 5 To STBY * Set The BFC/CRT - Display To ON * Confirm The BFC/CRT SELECT Is Set To (3+1) * Confirm BOILER CNTLR/HTR Switches (1/2/3) Are ON * Set HYD CIRC PUMP Switches (1/2/3) To OFF	Activate Backup Flight System
1004	Mission Dep.	Overhead Aft Panel   Right Aft Panel	O14 O15 O16  O15 R11L	* Set RGA 1 To ON * Set RGA (2 & 4) To ON * Set RGA 3 To ON * Set ACCEL 3 To ON * Set ACCEL 4 To ON * Set SUPPLY H2O - Crossover Valve To OPEN	Gyro Assemblies & Accelerators
1090	Mission Dep.	Aft Left Panel	A8L	* Set RMS POWER To PRIMARY * Set RMS SELECT To STBD * Set STARBOARD RMS (DEPLOY/OFF/STOW) To STOW * Set STARBOARD RMS (DEPLOY/OFF/STOW) To OFF	Stow The OBSS Boom  Wait Until Talkbacks Indicate (STO)
1091	Mission Dep.	Aft Left Panel  Aft Right Panel	A8L  A6U A8U	* Set RMS POWER To PRIMARY * Set RMS SELECT To PORT * Set FLT CNTLR POWER To ON * Set RMS BRAKES To OFF * Set The MODE Rotary Selector To SINGLE * Press ENTER Just Below The MODE Rotary Selector * Set The PARAMETER Rotary Selector To JOINT ANGLE * Set The JOINT Rotary Selector As Required * Depress The SINGLE/DIRECT DRIVE (+/-) Spring Switch	Stow The RMS  Return All Joint Angles To Their Stowed Position.  By Returning All Joint Angles To Zero, You Will Eventually Reach The RMS Latch Position.
1092	Mission Dep.	Aft Left Panel   Front Left Panel	A8L   F6	* Port RMS   Retention Latches   Ready For Latch Talkbacks (White) * Set PORT RMS (RELEASE/OFF/LATCH) To LATCH * Set PORT RMS (RELEASE/OFF/LATCH) To OFF * Set PORT RMS (DEPLOY/OFF/STOW) To STOW * Set PORT RMS (DEPLOY/OFF/STOW) To OFF * Set RMS POWER To OFF * Set FLT CNTLR POWER To ON	Latch The RMS  Wait Until Talkbacks Indicate (LAT)  Wait Until Talkbacks Indicate (STO)
1093	Mission Dep.	Aft Left Panel	A7U	* Set All PAYLOAD BAY FLOOD Lights To OFF	Turn Off All Payload Bay Flood Lights
1006	Mission Dep.	Right Aft Panel	R11L  R13L  R11L	* Set MAJ FUNC Switch To SM * If Required, Enter OPS 202 PRO (AFT Keypad) * Enter ITEM 1 EXEC (AFT Keypad) * If Not Already Enabled, Enter ITEM 3 EXEC (AFT Keypad) * Set PL BAY DOOR (SYS 1 & SYS 2) To ENABLE * Set PL BAY DOOR To CLOSE * Set PL BAY DOOR To STOP * Set PL BAY DOOR (SYS 1 & SYS 2) To DISABLE * Enter ITEM 2 EXEC (AFT Keypad)	Close Payload Bay Doors  Wait Until The PL BAY DOOR Talkback Shows CL.
1008	Mission Dep.	Right Aft Panel   Overhead Left Panel Right Aft Panel	R11L   O6 R11L	* Set MAJ FUNC To GNC * Press GPC/CRT (AFT Keypad) * Enter 4 EXEC (AFT Keypad) * Enter OPS 201 PRO (AFT Keypad) * Set GENERAL PURPOSE COMPUTER - MODE 3 To RUN * Enter OPS 301 PRO (AFT Keypad)	Reconfigure GNC's For Deorbit
1009	Mission Dep.	Overhead Left Panel	O6	* STAR TRACKER DOOR CONTROL (SYS 1 & SYS 2) To CLOSE * STAR TRACKER DOOR CONTROL (SYS 1 & SYS 2) To OFF * Set The STAR TRACKER POWER Switches (-Y & -Z) To OFF	Close Star Tracker Doors Wait Until STAR TRACKER DOOR POSITION Talkback Shows CL.
1010	Mission Dep.	Right Panel	R4	* Check HYDRAULICS BRAKE HEATER (A/B/C) Set To AUTO	Final Switch Configuration Check



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	NOTES
1010	Mission Dep.	Overhead Aft Panel  Center Panel  Left Panel        Aft Right Panel	O15 O14 O16 C3  L2  L1  L2   A12	* Set BRAKES MN B To ON * Set BRAKES MN A To ON * Set BRAKES MN C To ON * ORBITAL DAP / MANUAL MODE / ROTATION - ROLL To PRI * Check ORBITAL DAP / CONTROL To AUTO * Confirm ANTI SKID - Set To ON * Confirm NOSE WHEEL STEERING - Set To 1 * Confirm ENTRY MODE - Set To AUTO * Set FLASH EVAP CONTROLLER (PRI A & PRI B) To GPC * Set FLASH EVAP CONTROLLER SEC To GPC * FREON LOOP ISOLATION - MODE To OFF * Set O2 SYS 2 SUPPLY To OPEN * Set N2 SYS 2 SUPPLY To OPEN * Set N2 SYS 2 REG INLET To OPEN * Set O2/N2 CNTLR VLV SYS 1 To OPEN * Set APU HEATER - GAS GEN/FUEL PUMP (1/2/3) To OFF * Set APU HEATER - LUBE OIL LINE (1/2/3) To OFF * Set All TANK/FUEL LINE/H2O SYS Switches To OFF * HYDRAULIC HEATER - RUDDER SPD BRK (A & B) To OFF * HYDRAULIC HEATER - BODY FLAP (A & B) To OFF * HYDRAULIC HEATER - ELEVON (A & B) To OFF * HYDRAULIC HEATER - AFT FUSELAGE (A & B) To OFF	Final Switch Configuration Check
1012	Mission Dep.	Right Panel	R2	* Set He ISOLATION A LEFT/CENTER/RIGHT To OPEN * Set He ISOLATION B LEFT/CENTER/RIGHT To OPEN * Set PNEUMATICS L ENG He XOVR To OPEN * Set PNEUMATICS He ISOL To OPEN * Set LEFT He INTERCONNECT To - IN OPEN * Set CENTER & RIGHT INTERCONNECT To - OUT OPEN	Main Propulsion System / Helium Release
1013	Mission Dep.	Right Aft Panel	R11L	* Confirm MAJ FUNC Set To GNC * Enter SPEC 21 PRO (AFT Keypad) * Enter ITEM 16 EXEC	Final IMU Alignment
1014	Mission Dep.	Center Panel Right Panel       Center Panel	C2 R2      C2	* Enter ITEM 34 EXEC (Right Keypad) * Set BOILER N2 SUPPLY (1/2/3) To ON * Set BOILER PWR (1/2/3) To ON * Set APU FUEL TK VLV (1/2/3) To OPEN * Set APU CNTLR PWR (1/2/3) To ON * Set APU AUTO SHUT DOWN (1/2/3) Set To INHIBIT * Confirm HYD MAIN PUMP PRESS (1/2/3) Set To LOW * Confirm APU SPEED SELECT Set To NORM * Confirm APU/HYD Ready To Start Talkbacks Are WHITE * Confirm GIMBAL CK 34 On CRT 2 Is Complete (No Asterisk) * Enter OPS 302 PRO (Right Keypad)	Perform OMS Gimbal      If there's an asterisk next to GMBL CK 34 It means the gimbal check is incomplete. You must wait for the asterisk to Disappear.
1015	Mission Dep.	Center Panel	C2	* Confirm (CRT 1, CRT 3, CRT 2) Are Set To MAJ FUNC GNC * Enter SPEC 50 PRO (Left Keypad) * Enter SPEC 51 PRO (Right Keypad) * Enter ITEM 44 EXEC (Right Keypad)	Horizontal Situation & Override Displays
1016	Mission Dep.	Center Panel Right Panel	C2 R2	* Press RESUME (Right Keypad) * Set APU OPERATE - START/RUN For APU 1	
1017	Mission Dep.	Center Panel   Overhead Aft  Center Panel	F7 C2  O14 O16 C3 C2	* Check CRT 1 Confirm Display Of OPS MODE 3021 * ITEM 22 EXEC (Right Keypad) * ITEM 27 EXEC (Right Keypad) * ITEM 23 EXEC (Right Keypad) * Confirm L OMS ENG VLV Is ON * Confirm R OMS ENG VLV Is ON * Set OMS ENG (LEFT & RIGHT) To ARM/PRESS * Press EXEC - (Right Keypad) Confirms ready for OMS burn	Perform Deorbit Burn
1018	Mission Dep.	Center Panel Overhead Aft Panel	C3 O14 O16	* Set OMS ENG (LEFT & RIGHT) To OFF * Set L OMS ENG VLV To OFF * Set R OMS ENG VLV To OFF	Deorbit Burn Complete
1020	Mission Dep.	Center Panel Front Left Panel	C2 F6	* Enter OPS 303 PRO (Right Keypad) * Position The Shuttle To The Correct Attitude	<u>Correct Attitude Hint</u> Align All ADI Needles
1022	Mission Dep.	Center Panel  Right Panel  Overhead Aft Panel Right Panel Center Panel	C2  R2  O17 R1 C2	* Enter ITEM 36 EXEC (Right Keypad) * Enter ITEM 37 EXEC (Right Keypad) * Set APU OPERATE - START/RUN For APU (2 & 3) * Set HYD MAIN PUMP PRESS (1/2/3) To NORM * Set ATVC - (1/2/3/4) To ON * Set AC BUS SNSR (1/2/3) To MONITOR * Enter ITEM 39 EXEC (Right Keypad)	Dump RCS Propellant  Pressure Should Rise To 3000 psi
1023	Mission Dep.	Center Panel  Overhead Right Panel  Center Panel	C2  O8  C2	* Enter ITEM 38 EXEC (Right Keypad) * Enter ITEM 40 EXEC (Right Keypad) * Set FWD RCS - He PRESS (A & B) To CLOSE * Set TANK ISOLATION (1/2 & 3/4/5) To CLOSE * Set MANIFOLD ISOLATION (1/2/3/4/5) To CLOSE * Enter OPS 304 PRO (Right Keypad)	Wait Until The Cycle Completes



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## DEORBIT & LANDING CHECKLIST

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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	NOTES
1024	Mission Dep.	Front Left Panel Front Right Panel	F6 F8	* Set Commander ATTITUDE INRTL To LVLH * Set Pilot ATTITUDE INRTL To LVLH	
1025	Mission Dep.	Front Right Panel	F4	* Check PITCH & ROLL/YAW Set To AUTO	
1026	Mission Dep.				The Shuttle Will Perform Roll Reversals
1027	Mission Dep.	Left Panel	L1	* Set RAD CONTROLLER - OUT TEMP To NORM * Set RAD CONTROLLER (LOOP 1 & LOOP 2) To AUTO A * Set RAD CONTROLLER - BYPASS MODE (1 & 2) To AUTO	
1080	Mission Dep.	Right Panel Left Panel	R4 L1	* Set MPS/TVC/ISOL/VLV (SYS1, SYS2, SYS3) To OPEN * Set NH3 BOILER - NH3 CONTROLLER (A & B) To PRI/GPC	Hydraulics / Brake Heater
1028	Mission Dep.	Center Panel Front Left Panel Front Right Panel Overhead Right Panel	C3 F6 F8 O8	* Set AIR DATA PROBE (Left & Right) To DEPLOY HEAT * Set AIR DATA To LEFT * Set AIR DATA To RIGHT * Set RADAR ALTIMETERS (1 & 2) To ON	Deploy Air Data Probes
1029	Mission Dep.	Front Left Panel Front Right Panel Front Left Panel	F3 F3 F2	* Set HUD POWER To ON (Commander) * Set HUD POWER To ON (Pilot) * Set PITCH & ROLL/YAW To CSS (Commander)	Commander & Pilot HUD Power
1031	Mission Dep.	Overhead Right Panel	O8	* Set MLS (1/2/3) Switches To ON * Set MLS Thumbwheel To (111)	Auto Software Transition To OPS 305 Microwave Scan Beam Landing System
1033	Mission Dep.	HUD Display Window		* Press LANDING GEAR ARM (Twice)	Arm The Landing Gear
1034	Mission Dep.	HUD Display Window		* Press LANDING GEAR DOWN (Twice)	Deploy Landing Gear
1035	Mission Dep.	HUD Display Window		* Press SHUTE ARM (Twice) * Press DEPLOY SHUTE (Twice) * Press CHUTE JETT (Twice)	Touchdown: Gently Push The Nose Down Until The Nose Wheel Touches The Runway. Use The Rudder To Steer. Apply Wheel Brakes.
1036	Mission Dep.	HUD Display Window		* Press CHUTE JETT (Twice)	Release Brake Shute
1037	Mission Dep.				End Of Mission

### Commence Shutdown



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## SHUTDOWN CHECKLIST

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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	NOTES
	Mission Dep.	Left Panel  Right Panel  Front Left Panel Front Right Panel Front Left Panel Front Right Panel	L2  R2  R1 F6 F8 F3 F3	* SPD BK - MAN (Full FWD) * NWS - OFF * APU Auto Shutdown (1/2/3) - ENABLE * APU Speed Select (1/2/3) - NORM * AC BUS SNSR (1/2/3) - AUTO TRIP * Commander FLT CNTLR POWER - OFF * Pilot FLT CNTLR POWER - OFF * Commander HUD POWER - OFF * Pilot HUD POWER - OFF	
	Mission Dep.	Center Panel	C3	(PERFORMED IF ELS) * MSTR MADS - OFF (DoD ELS, MCC call DoD OSC on NCC)	Note: MCC Will Report Go/No-Go To DOFF Suits. (Post Safety Assessment)
	Mission Dep.	Center Panel Overhead Aft Panel	C3 O14  O15  O16  O14  O15  O16  O14 O16	* OMS ENG (Left & Right) - OFF * RJDA 1A DRIVER (L2/R2 MANF) - OFF * RJDA 2A DRIVER (L4/R4 MANF) - OFF * RJDF 1B DRIVER (F1 MANF) - OFF * RJDA 1B DRIVER (L1/R1 MANF) - OFF * RJDF 1A DRIVER (F2 MANF) - OFF * RJDA 2B DRIVER (L1/R1 MANF) - OFF * RJDF 2A DRIVER (F1 MANF) - OFF * RJDF 2B DRIVER (F1 MANF) - OFF * RJDA 1A LOGIC (L2/R2 MANF) - OFF * RJDA 2A LOGIC (L4/R4 MANF) - OFF * RJDF 1B LOGIC (F1 MANF) - OFF * RJDA 1B LOGIC (L1/R1 MANF) - OFF * RJDF 1A LOGIC (F2 MANF) - OFF * RJDA 2B LOGIC (L1/R1 MANF) - OFF * RJDF 2A LOGIC (F1 MANF) - OFF * RJDF 2B LOGIC (F1 MANF) - OFF * L OMS ENG VLV - OFF * R OMS ENG VLV - OFF	RMS OMS Safing (RDJs)
	Mission Dep.	Overhead Aft Panel	O15 O16 F2 F3 F4	(NOT PERFORMED IF ELS) * MNB - DRAG CHUTE SYS 2 - op * MNC - DRAG CHUTE SYS 1 - op * DRAG SHUTE - LT OFF * DRAG SHUTE - LT OFF * DRAG SHUTE - LT OFF	Drag Chute Safing
	Mission Dep.	Center Panel	C3	* AIR DATA PROBE (Left & Right) - DEPLOY	Deactivate Air Data Probe HTRS
	Mission Dep.	Right Aft Panel Aft Right Panel Front Left Panel Front Right Panel Aft Right Panel Right Aft Panel	R14 A12 F6 F8 A12 R14	(NOT PERFORMED IF ELS) * ESS 1BC LDG GEAR / ARM/DN - RESET CL * LG ARM/DN RESET - Set Switch To The RESET Position * LDG GEAR - LT OFF * LDG GEAR - LT OFF * LG ARM/DN RESET - Set Switch To The Down Position * ESS 1BC LDG GEAR / ARM/DN - RESET OP	Landing Gear Safing
	Mission Dep.	Right Panel	R2	* ET UMBILICAT DOOR / MODE - GCP/MAN * ET UMBILICAT DOOR / RIGHT LATCH - RELEASE * ET UMBILICAT DOOR / RIGHT LATCH - OFF * ET UMBILICAT DOOR / LEFT LATCH - RELEASE * ET UMBILICAT DOOR / LEFT LATCH - OFF * ET UMBILICAT DOOR / MODE - GCP	ET Umbilical Door Opening
	Mission Dep.	Front Right Panel Front Left Panel Right Panel Center Panel	F4 F8 R2 C3 R2	* BODY FLAP - MAN * FLT CNTLR PWR - ON * HYD MAIN PUMP PRESS #1 - LO * Run Full Load Test * HYD MAIN PUMP PRESS #1 - NORM * HYD MAIN PUMP PRESS #3 - LO * Repeat Load Test * HYD MAIN PUMP PRESS #3 - NORM	Hydraulic Load Test  A Minimum Of Two Operating Hydraulic Systems Are Required For This Test
	Mission Dep.	Center Panel  Front Right Panel Center Panel Right Panel  Center Panel  Right Panel  Center Panel	C3 C2  F4 C3 R4  C2  R4  C2	* BFC CRT DISPLAY - ON * Enter Item OPS 000 PRO (Right Keypad) * Enter Item OPS 901 PRO (Right Keypad) * BODY FLAP - MAN * BODY FLAP - DOWN * HYDRAULICS - MPS/TVC ISOL VLV (SYS 1, SYS 2, SYS 3) OPEN * Enter ITEM 8 EXEC (Right Keypad) * Enter ITEM 1 +0 2 EXEC (Right Keypad) * Enter ITEM 5 EXEC (Right Keypad) * HYDRAULICS - MPS/TVC ISOL VLV (SYS 1, SYS 2, SYS 3) CLOSE * Enter ITEM 23 EXEC (Right Keypad) * Enter ITEM 1 EXEC (Right Keypad) * Enter ITEM 29+1 EXEC (Right Keypad) * Enter ITEM 30+8 EXEC (Right Keypad) * Enter ITEM 31 EXEC (Right Keypad) * Enter ITEM 32 EXEC (Right Keypad)	DPS Transition GNC 9 (If Pass)





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## SHUTDOWN CHECKLIST

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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
	Mission Dep.	Overhead Left Panel Left Panel	O1 L1	* Confirm FREON EVAP OUT TEMP >40 degrees * RADIATORS / RAD CONTROLLER - OUT TEMP - HI * H2O PUMP LOOP 1 - ON	Radiator Reconfiguration
	Mission Dep.	Right Panel	R4 R2	* HYDRAULICS - MPS/TVC ISOL VLV (SYS 1, SYS 2, SYS 3) - CLOSE * BOILER PWR (1/2/3) - OFF * BOILER N2 SUPPLY (1/2/3) - OFF * APU OPERATE (1/2/3) - OFF * APU FUEL TK VLV (1/2/3) - CLOSE * APU CNTLR PWR (1/2/3) - OFF	APU/HYD Shutdown
	Mission Dep.	Right Panel	R2	* He ISOLATION (A & B) - CLOSE * PNEUMATICS / L ENG He XOVR - CLOSE	Post Landing MPS Reconfiguration
	Mission Dep.	Left Panel	L2	* Set O2 SYS SUPPLY 1 - CLOSE * Set O2 SYS SUPPLY 2 - CLOSE * Confirm O2 EMER Talkback Indicates CL	PCS Deactivation
	Mission Dep.	Aft Left Panel  Overhead Center Panel	A13  O7	* GPS POWER (1 & 2) - OFF * GPS PRE AMPL UN - OFF * GPS PRE AMPL LC - OFF * GPS POWER (GPS 1, GPS 2, GPS 3) - OFF * GPS PRE AMPL UPPER (GPS 1, GPS 2, GPS 3) - OFF * GPS PRE AMPL LOWER (GPS 1, GPS 2, GPS 3) - OFF	GPS Power Down
	Mission Dep.	Center Panel	O2	* Enter ITEM 8 EXEC (Right Keypad) * Enter ITEM 1+03 EXEC (Right Keypad) * Enter ITEM 2 EXEC (Right Keypad) * Enter ITEM 5 EXEC (Right Keypad)	Vent Door Purge Positioning (PASS)
	Mission Dep.	Overhead Center Panel	O7 O8        O7	* MASTER RCS CROSSFEED - OFF * LEFT OMS / He PRESS/VAPOR ISOL (A & B) - GPC * RIGHT OMS / He PRESS/VAPOR ISOL (A & B) - GPC * LEFT OMS CROSSFEED (A & B) - OPEN/CLOSE * RIGHT OMS CROSSFEED (A & B) - OPEN/CLOSE * LEFT OMS TANK ISOLATION (A & B) - CLOSE/OPEN/GPC * RIGHT OMS TANK ISOLATION (A & B) - CLOSE/OPEN/GPC * LEFT OMS CROSSFEED (A & B) - OPEN/GPC * FWD RCS / He PRESS (A & B) - CLOSE/GPC * FWD RCS TANK ISOLATION (1/2 & 3/4/5) - CLOSE * FWD RCS MANIFOLD ISOLATION (1/2/3/4/5) - CLOSE * FWD RCS MANIFOLD ISOLATION (1/2/3/4/5) - OPEN/GPC * LEFT OMS / He PRESS/VAPOR ISOL (A & B) - CLOSE/GPC * RIGHT OMS / He PRESS/VAPOR ISOL (A & B) - CLOSE/GPC * LEFT MANIFOLD ISOLATION (1/2/3/4/5) - CLOSE * RIGHT MANIFOLD ISOLATION (1/2/3/4/5) - CLOSE * LEFT MANIFOLD ISOLATION (1/2/3/4/5) - OPEN/GPC * RIGHT MANIFOLD ISOLATION (1/2/3/4/5) - OPEN/GPC * LEFT RCS TANK ISOLATION (1/2 & A 3/4/5 B) - CLOSE * RIGHT RCS TANK ISOLATION (1/2 & A 3/4/5 B) - CLOSE * LEFT & RIGHT RCS CROSSFEED - OPEN/CLOSE/GPC	RCS, OMS Valve Test  Open, Then Close Open, Then Close Close, Then Open, Then GPC Close, Then Open, Then GPC Open, Then GPC Close, Then GPC  Open, Then GPC Close, Then GPC Close, Then GPC  Open, Then GPC Open, Then GPC  Open, Then Close, Then GPC
	Mission Dep.	Overhead Center Panel	O7	* LEFT RCS TANK ISOLATION (1/2 & A 3/4/5 B) - OPEN/GPC * RIGHT RCS TANK ISOLATION (1/2 & A 3/4/5 B) - OPEN/GPC	Open, Then GPC Open, Then GPC
	Mission Dep.	Overhead Left Panel	O6	* GPC MODE (1/2/3/4/5) - STBY/HALT	STBY, Then Halt
	Mission Dep.			IF LANDING AT (KSC, EDW, NOR)  <u>HATCH OPENING PROCEDURE</u> * Pull G SUIT Controller Clip - (If Inflated) * Lap Belt & Chute - Release * Egress Seat - (Helmet Required If ELS) * Unstow - 'Return To Houston' Bags - (Except ELS)	Hatch Opening
	Mission Dep.			IF YOU ARE NOT LANDING AT (KSC, EDW, NOR)  <u>HATCH OPENING PROCEDURE</u> * Tabs/Visor - CLOSE * Green Apple - PULL * Open Hatch/Deploy Slide Per Decal	Hatch Opening
	Mission Dep.			<u>ORBITER UNAIDED EGRESS</u> * Egress Orbiter * Hand Carry Landing Site Data Book * If ELS - (Reference ELS POST LANDING Procedures)	Orbiter Egress