



# Space Shuttle Mission 2007



Designed By: Michael Swannick

## Mission Checklist

### STS-116

#### Crew Members

Commander - Mark Polansky | Pilot - William Oefelein

#### Mission Specialist

Nicholas Patrick | Robert Curbeam | Christer Fuglesang | Joan Higginbotham | Sunita Williams

#### Mission Highlights

Carried out by Discovery on December 09, 2006. During this mission, the STS-116 crew continued the construction of the ISS outpost adding the P5 spacer truss segment during the first of four space walks. The next two space-walks rewired the ISS power system, preparing it for supporting the ISS final configuration and for the arrival of future, additional science modules. A fourth space-walk was added to allow the crew to retract the solar arrays which have folded improperly. Discovery also delivered a new crew member and more than two tons of equipment and supplies to the station, most of which were held in the SPACEHAB cargo module. STS-116 also returned to Earth almost two tons of items no longer needed on the station.

#### Payload

Port 5 (P5) truss segment.

Integrated Cargo Carrier (ICC). The ICC will hold three bundled Service Module Debris Panels (SMDP) and an adaptor, STP-H2, a payload which deploys three satellites, 15 Adjustable Mass Plates (AMPs) and an International Space Station Passive Flight Releasable Attachment Mechanism (ICC PFRAM).

Logistics Single Module (SPACEHAB LSM). The SPACEHAB Logistics Single Module provides cargo launch and return transportation.

Micro-electromechanical System Based PICOSAT Inspector (MEPSI). The MEPSI satellite is actually two tethered satellites, one with a camera and one with a propulsion system. It will be launched from the STP-H2.

Radar Fence Transportation (RAFT). RAFT is a student experiment from the United States Naval Academy that uses pico-satellites to test the Space Surveillance Radar Fence and experimental communications transponders. It will be launched from the STP-H2.

Atmospheric Neutral Density Experiment (ANDE). ANDE consists of two microsatellites launched from the Shuttle

Payload bay that will measure the density and composition of the low Earth orbit (LEO) atmosphere while being tracked from the ground. The data will be used to better predict the movement of objects in orbit. The two satellites are the size of a basketball and launched in a Integrated Cargo Unit that later splits up and frees the two satellites. It will be launched from the STP-H2.

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

#### Flight Summary

Launchpad: Kennedy Space Center (KSC) 39B | Orbit: 122NM | Inclination: 51.6 | Orbits: 188

Duration: 12 Days, 20 Hours, 45 Minutes, 0 Seconds | Landing: Kennedy Space Center (KSC)



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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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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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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.				Shuttle Configuration In About 2:47 Minutes. Next Event
1101	Mission Dep.	Right Panel	R1	* Set Power Distribution (PRI MN B-PRI FC 3-PRI MN C) To OFF	Power Up The Spacehab Module.
1102	Mission Dep.	Center Panel	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	First In A Series Of Rendezvous Burns Only Enter Ops 202 If Not Already Entered
		Overhead Aft Panel	C3 O14 O16 C2		
1103	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	First NC Burn Complete - Disable OMS Next Event
1105	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
1106	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
1107	Mission Dep.	Right Aft Panel	R11L	* Set MAJ FUNC To SM * Enter SPEC 94 PRO (Aft Keypad)	Continue RMS Preparation
		Aft Left Panel	A8U	* Set MODE Rotary Switch To SINGLE * Press ENTER Just Below The MODE Rotary Switch * Set BRAKES Switch To OFF	
1108	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
1109	Mission Dep.	Aft Right Panel	A6U	* Set FLT CNTLR POWER To ON	Gain Manual RMS RHC/THC Control
1110	Mission Dep.	Aft Left Panel	A8L	* Set RMS POWER To OFF	Turn Off RMS Power For Later Use.
		Aft Left Panel	A8U	* Set RMS BRAKES To ON	
		Front Left Panel	F6	* Set FLT CNTLR POWER To ON	
1111	Mission Dep.				This Ends The Activation And Checkout Of The RMS. Next Event
1115	Mission Dep.	Center Panel	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 * Press EXEC - (Right Keypad) Confirms ready for OMS burn	Second NC Burn
1116	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	Second NC 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	A8L	* 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.
		Aft Right Panel	A6U		
		Aft Left Panel	A8U		
1119	Mission Dep.	Aft Left Panel	A8L	* Use The RMS To Grapple The OBSS	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





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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
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 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.
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 Front Left Panel	A8L F6	* Set RMS POWER To OFF * Set RMS BRAKES To ON * Set FLT CNTLR POWER To ON	Heatshield Inspection Complete Next Event
1130	Mission Dep.	Center Panel	C2 C3 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 * Press EXEC - (Right Keypad) Confirms ready for OMS burn	Perform A Normal Plane Change (NPC) Burn.
1131	Mission Dep.	Center Panel Right Aft Panel	C3 R11L	* Set OMS ENG (Left & Right) To OFF * 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)	NPC Burn Complete Activate Star Trackers  Target = International Space Station (ISS)
1132	Mission Dep.	Right Aft Panel	R11L	* Press RESUME (Aft Keypad)	Star Trackers Are Configured Resume Closes Star Tracker Display Next Event
1133	Mission Dep.	Center Panel	C2 C3 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 * Press EXEC - (Right Keypad) Confirms ready for OMS burn	Third NC Burn
1134	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	Third NC Burn Complete. Next Event
1135	Mission Dep.	Center Panel	C2 C3 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 * Press EXEC - (Right Keypad) Confirms ready for OMS burn	Final NC Burn
1136	Mission Dep.	Center Panel	C3	* Set OMS ENG (Left & Right) To OFF	Final NC Burn Complete.
1137	Mission Dep.	Aft Right Panel Right Aft Panel	A1U R11L	* Set KU BAND   POWER To ON * Set KU BAND   Rotary Switch To AUTO TRACK * Enter SPEC 33 PRO (Aft Keypad) * Enter ITEM 1 EXEC (Aft Keypad)	Activate KU Band Radar
1138	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
1139	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
1140	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
1141	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





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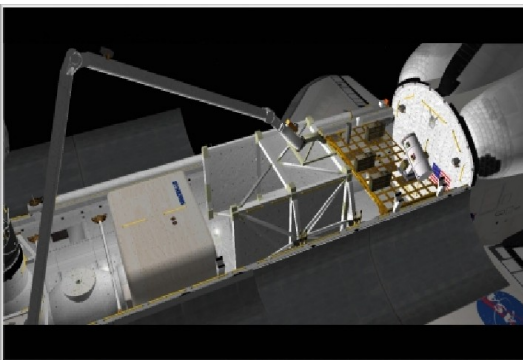


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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
1150	Mission Dep.	Aft Left Panel	A2	* Use RCS Thrusters To Position The Shuttle	The ISS Is In Visual Range. Bring The Shuttle In Front Of, And About 600ft From ISS. The Shuttle Will Now Perform 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
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 P5 Truss Segment 	Grapple The P5 Truss Using The Forward Grapple Fixture. When The RMS Is In Position Press Enter  <u>POSITION - P Y R</u> P: -045.0   Y: 000.0   R: 000.0  <u>POSITION - X Y Z</u> X: 0920   Y: -0003   Z: 0492  <u>JOINT ANGLE</u> YAW: -016.8 SHOULDER: 064.1 ELBOW: -094.5 WRIST PITCH: -015.8 WRIST YAW: 011.8 WRIST ROLL: 012.0
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 P5 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.



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
1174	Mission Dep.	<a href="#">Aft Left Panel</a>	A8L	* Use The RMS To Position The P5 Truss Segment 	Move The P5 Truss Segment In The Handover To ISS RMS Position.  <a href="#">POSITION - P Y R</a> P: -045.0   Y: 000.0   R: 000.0  <a href="#">POSITION - X Y Z</a> X: 0590   Y: -0579   Z: 0604  <a href="#">JOINT ANGLE</a> YAW: 088.0 SHOULDER: 032.7 ELBOW: -017.9 WRIST PITCH: -102.7 WRIST YAW: -044.9 WRIST ROLL: -087.2
1175	Mission Dep.				The ISS RMS Will Now Capture The P5 Truss Segment.
1176	Mission Dep.				The ISS RMS Has Grappled The P5 Truss Segment.
1177	Mission Dep.	<a href="#">Aft Left Panel</a>	A8L	* Release The P5 Truss Segment - Press Backspace	Release The Truss Segment From The Shuttle RMS.
1178	Mission Dep.	<a href="#">Aft Left Panel</a>	A8L	* Stow The RMS	Return The RMS To Its Latched Position.
1179	Mission Dep.				The ISS RMS Will Hold The P5 Truss In The Parked Position While The Crew Sleeps. Next Event
1180	Mission Dep.				The ISS RMS Will Now Move The P5 Truss Segment To A Soft-Dock Position.
1181	Mission Dep.			* EV1	EV1 Just Emerged From The ISS Quest Airlock. Move EV1 To The P5 Truss Segment.
1182	Mission Dep.			* EV2	EV2 Just Emerged From The ISS Quest Airlock. Move EV2 To The P5 Truss Segment.
1183	Mission Dep.			* EV1 & EV2	EV1 & EV2 Will Now Remove The Locks That Secured The P5 Hardware During Launch. They Will Then Guide The ISS RMS To A Soft-Lock Position Of The P5 Truss.
1184	Mission Dep.			* EV1 & EV2	The P5 Truss Segment Is Now Aligned. The Astronauts Will Bolt The P5 Truss Segment To The ISS P4 Truss.
1185	Mission Dep.			* EV1 & EV2	EV1 & EV2 Stow The Photovoltaic Radiator Grapple Fixture (PVRGF) On The Keel Of The Truss Segment.
1186	Mission Dep.			* EV1 & EV2	EV1 & EV2 Will Now Replace A Faulty Camera On The Starboard S1 Truss.
1187	Mission Dep.			* EV1 & EV2	While EV1 Removes The Old Camera, Move EV2 To The Airlock To Retrieve A New One.
1188	Mission Dep.			* EV1 & EV2	EV2 Returns To The Starboard S1 Truss With The New Camera.
1189	Mission Dep.			* EV1 & EV2	The Astronauts Replace The Old Camera.
1190	Mission Dep.			* EV1 & EV2	Replacement Complete, Move EV1 Into The ISS Airlock.
1191	Mission Dep.			* EV2	Move EV2 Into The ISS Airlock.
1192	Mission Dep.				This Concludes The First Spacewalk. The ISS RMS Is Moved Into The Stow Position In Preparation For The Mobile Base System (MBS) Relocation.
1193	Mission Dep.				The Mobile Base System (MBS) Travels To A New Position In Preparation For The Second Spacewalk.
1194	Mission Dep.				The Mobile Base System (MBS) Is Now In Place And The Preparation For The Second Spacewalk Are Finished. Next Event
1200	Mission Dep.			* EV1	The Objective Of The Second Spacewalk Is To Reconfigure The ISS Power. EV1 Just Emerged From The ISS Quest Airlock. Move EV1 To The S0 Truss.
1201	Mission Dep.			* EV1 & EV2	EV2 Just Emerged From The ISS Quest Airlock. Move EV1 To The S0 Truss.
1202	Mission Dep.			* EV1 & EV2	The ISS Power Reconfiguration Requires That All Power From Channel 2/3 Be Shut Down. A Lengthy Power Down Procedure Has Been Executed From The Ground While The Crew Prepared For The Spacewalk. Power Down Will Take Approximately 1:30 Hours. Next Event



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
1205	Mission Dep.			* EV1 & EV2	In Preparation For The STS-117 Mission, Two Crew And Equipment Translation Aid Carts (CETA) Will Be Moved From Their Current Locations On The S1 Truss To The S0 Truss. Move EV2 To The Outermost CETA-2 Cart.
1206	Mission Dep.			* EV1 & EV2	ISS RMS Will Now Move The CETA-2 Cart Where EV2 Will Mount A Foot Restraint At The End Of The Arm.
1207	Mission Dep.			* EV1 & EV2	EV2 Is Now Moved To The CETA-2 Cart Where It Will Be Detached From The Rail. Meanwhile, Move EV1 To The New CETA-2 Location On The S0 Truss.
1208	Mission Dep.			* EV1 & EV2	The ISS Arm Is Now Moved To The New CETA-2 Position.
1209	Mission Dep.			* EV1 & EV2	While The CETA-2 Cart Is Reattached To The Rail By EV1, EV2 Is Moved Back To The CETA-1 Cart.
1210	Mission Dep.			* EV1 & EV2	EV2 Detaches The CETA-1 Cart From The ISS Rail. Move EV1 To The New CETA-1 Location On The S0 Truss.
1211	Mission Dep.			* EV1 & EV2	EV2 Dismounts From The ISS Arm. Before The ISS Arm Is Moved To A Stow Position, A Thermal Cover Is Installed On The RMS End Effectors Force Mount Sensors
1212	Mission Dep.			* EV1 & EV2	CETA Cart Relocation Is Complete. EV1 Is Now Required To Reconfigure Power To The Z1 Truss Electrical Patch Panel 6. Move EV1 To The Starboard Side Of The Z1 Truss Segment.
1213	Mission Dep.			* EV1 & EV2	While EV1 Reconfigures Z1 Truss Power. EV2 Cleans Up All Work Sites. That Completes The Second Spacewalk. Move EV2 Into The Airlock.
1214	Mission Dep.			* EV1	Move EV1 Into The Airlock.
1215	Mission Dep.				The Second Spacewalk Has Been Completed With Unprecedented Success. Next Event
1220	Mission Dep.			* EV1	The Third Spacewalk Is Basically A Repeat Of A Previous Reconfiguration Activity. The Channel 1/4 Side Of The Stations Electrical Power Will Be Reconfigured And Routed Through The Main Bus Switching Unit. The ISS Power Reconfiguration Requires That All Power From Channel 1/4 Be Shut Down. A Lengthy Power Down Procedure Has Been Executed From The Ground While The Crew Prepared For The Spacewalk. Move EV1 To The S0 Truss Segment.
1221	Mission Dep.			* EV1 & EV2	EV1 Will Reconfigure The Starboard Avionics And The S1-4B And S0-1A DC Converters, Disconnect The Secondary Power Lab 4A dc Converters, Route The S0/N1 Power Cable.
1221	Mission Dep.			* EV1 & EV2	EV1 Will Also Reconfigure The Bus Bypass Jumper. Meanwhile, Move EV2 To The Z1 Truss Segment Where Circuit Interrupt Devices Will Be Removed And The Other Half Of The Z1 truss Electrical Patch 5 Will Be Reconfigured.
1222	Mission Dep.			* EV1 & EV2	Estimated Time for The First Task Is 1:30 Hours. Next Event
1225	Mission Dep.			* EV1 & EV2	Next Task Is To Mount The Service Module Debris Panel (SMDP). The SMDP Is Mounted On The Integrated Cargo Carrier (ICC) In The Shuttle Bay Where It Will Be Assembled And Then Mounted On The Pressurized Mating Adapter (PMA) 3 On The ISS. Move EV1 To The ICC To Begin Assembling The SMDP.
1226	Mission Dep.			* EV1 & EV2	While EV1 Assembles The SMDP, Move EV2 To The ISS Airlock To Pick Up A Foot Restraint From The Airlock Toolbox.
1227	Mission Dep.			* EV1 & EV2	Move EV2 To The Central Part Of The Destiny Lab Module Facing The Shuttle Bay, And Attach To The End Effector.



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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
1228	Mission Dep.			* EV1 & EV2	Move The Shuttle's RMS End Effector Close To EV2 For Mounting.
1229	Mission Dep.			* EV1 & EV2	Move The RMS With EV2 To The ICC In The Shuttle Payload Bay.
1230	Mission Dep.			* EV1 & EV2	EV1 & EV1 Assembly The SMDP.
1231	Mission Dep.			* EV1 & EV2	The SMDP Will Be Stowed On The Unity Nodes Pressurized Mating Adapter (PMA). Move EV1 To PMA 3.
1232	Mission Dep.			* EV1 & EV2	Move The RMS With EV2 To The Far Side Of The PMA 3, Carrying The SMDP
1233	Mission Dep.			* EV1 & EV2	The SMDP Is Mounted On A Grapple Fixture On PMA 3.
1234	Mission Dep.			* EV1 & EV2	SMDP Mounting Is Complete. Move EV1 To The Z1 Truss For Final Reconfiguration Of The Z1 Patch Panel. Meanwhile EV2 Cleans Up The SMDP Work Site And Climbs Off The RMS End Effector.
1235	Mission Dep.			* EV1 & EV2	Move EV2 To The Unity Node PMA 1/Zvezda Connection To Reconfigure The Russian Power Feeds From The U.S. Segment.
1236	Mission Dep.			* EV1 & EV2	Move EV1 To The Unity Node PMA 1/Zvezda Connection To Assist EV2.
1237	Mission Dep.			* EV1 & EV2	Electrical Power Reconfiguration In Progress.
1238	Mission Dep.			* EV1 & EV2	The Final Task For The Third Spacewalk Is To Mount An Adjustable Grapple Bar (AGB) On A Flex Hose Rotary Coupler (FHRC) On The Airlocks External Storage Platform-2. Move EV1 & EV2 To The ISS Quest Airlock.
1239	Mission Dep.			* EV1 & EV2	EV1 Fetches The AGB. Move EV1 & EV2 To The FHRC Stowed On The ISS External Storage Platform.
1240	Mission Dep.			* EV1 & EV2	EV1 & EV2 Are Attaching The Adjustable Grapple Bar To The FHRC.
1241	Mission Dep.			* EV1 & EV2	This Concludes The Third Spacewalk, Return Both Astronauts To The ISS Airlock
1242	Mission Dep.			* EV1 & EV2	The Third Spacewalk Was Meant To Be The For This Mission. However, Problems Arise When Trying To Retract The Port P6 4B Solar Array. Next Event
1245	Mission Dep.			* EV1	Yesterday's Attempt To Retract The P6 4B Solar Arrays Did Not Succeed So This Unscheduled Spacewalk Should Fix The Issues. Move EV1 To The P6 4B Solar Array Mast.
1246	Mission Dep.			* EV1 & EV2	Move EV2 To The P6 4B Solar Array To Assist EV1 With Repair.
1247	Mission Dep.			* EV1 & EV2	The Astronauts Are Attempting To Fix The Issues Which Prevent The Solar Array From retracting.
1248	Mission Dep.			* EV1 & EV2	Finally The P6 4B Solar Array Is retracting.
1249	Mission Dep.			* EV1 & EV2	This Concludes The Final Spacewalk. Return The Astronauts To The ISS Airlock.
1250	Mission Dep.	Aft Left Panel	A8L	* Stow The RMS	Return The RMS To Its Latched Position.
1251	Mission Dep.				This Completes All ISS Objectives. 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 * 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





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## STS-116 MISSION CHECKLIST

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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	PANEL AREA & NOTES
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
1265	Mission Dep.	Front Left Panel	F6	* Use RCS Bursts To Translate The Shuttle	Rotate The Shuttle To The Following Attitude ROLL=0 PITCH=0 YAW=90
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 OBBS  	A Final Heat Shield Inspection Is Performed Using The OBBS. 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.  <b>Note: Use COMM 1266 For Correct Coordinates</b>	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	A8L	* Set RMS POWER To OFF * Set RMS BRAKES To ON * Set FLT CNTLR POWER To ON	That Completes The Heat Shield Checkout
1280	Mission Dep.	Front Left Panel Left Aft Panel	F6 L12	* STANDARD SWITCH PANEL   Set PSAT POWER To ON	Next Event The First Micro Satellite To Be Released Is The Micro-electro-mechanical System Based PICOSAT Inspector (MEPSI). Enable Satellite Launcher Power
1281	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PLOAD1 RELEASE To ON	Release The MEPSI Satellite
1282	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PSAT POWER To OFF	End The Release Sequence
1283	Mission Dep.				The Next Micro Satellite To Be Released Is The Radar Fence Transponder (RAFT). Launch Is Still 90 Miles Away. Next Event
1285	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PSAT POWER To ON	Release The RAFT Satellite.
1286	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PLOAD2 RELEASE To ON	RAFT Satellite Released
1287	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PSAT POWER To OFF	Disable PICOSAT Launcher Power
1288	Mission Dep.				The Final Micro Satellite To Be Released Is The Atmospheric Neutral Density Experiment (ANDE). Next Event
1290	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PSAT POWER To ON	Release The ANDE Satellite.
1291	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PLOAD3 RELEASE To ON	ANDE Satellite Released.
1292	Mission Dep.	Left Aft Panel	L12	* STANDARD SWITCH PANEL   Set PSAT POWER To OFF	Disable PICOSAT Launcher Power
1293	Mission Dep.				That Concludes STS-116 On Orbit Mission Next Event - Deorbit & Landing



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## DEORBIT & LANDING CHECKLIST

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COMM	MET	PANEL SECTION	PANEL	PROCEDURE	NOTES
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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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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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