

Pre-Launch Checklist

COM	TIME	PROCEDURE
1	T -HOLD STAND BY	CABIN DOOR to CLOSE CABIN DOOR LCK to LATCH <i>Confirm</i> BAY DOOR to CLOSE <i>Confirm</i> BAY DOOR LCK to LATCH <i>Confirm</i> GEAR to UP <i>Confirm</i> GEAR to DISABLE <i>Confirm</i> CHUTE to DISARM <i>Confirm</i> SPEED BRAKE to OFF <i>Confirm</i> FIRE SUPPRESSION (AV BAY 1/ AV BAY 2/ AV BAY 3) to SAFE START LAUNCH CLOCK
2	T-00:10:00	Key in ITM Select A Key in DPS Select 1 (OPS 1) Key in EXE BOILER CNTRL PWR (1/2/3) to ON BOILER CNTRL HTR (1/2/3) to ON BOILER N ₂ SUPPLY (1/2/3) to ON OMS ENGINEVLV (LEFT / RIGHT) to ON OMS ENGINE (LEFT / RIGHT) to ARM

3	T-00:09:00	<p>Key in DPS Select 2 (OPS 2) Key in EXE</p> <p>Check CABIN PRESSURE gauge for possible depressurization (nominal is 760 torr)</p>
4	T-00:08:00	<p>He ISOLATION A (LEFT/CNTR/RIGHT) to OPEN</p> <p>He ISOLATION B (LEFT/CNTR/RIGHT) to OPEN</p> <p>PNEUMATIC He ISOL (LEFT/CNTR/RIGHT) to OPEN</p> <p>MAIN ENGINE POWER (LEFT/CNTR/RIGHT) to ON</p>
5	T-00:07:00	<p>APU FUEL TNK VLV (1/2/3) to CLOSE</p> <p>APU TK VLV to CLOSED</p> <p>APU SHTDWN to ENABLE</p> <p>HYD MAIN PUMP PRESSURE (1/2/3) to LOW</p> <p>APU SPEED SELECT (1/2/3) to NORMAL</p> <p>HYD CIRC PUMP (1/2/3) set to GPC</p> <p>APU PWR to ON</p> <p>APU CNTRL POWER (1/2/3) to ON</p>

6	T-00:06:00	<p>APU TK VLV to OPEN</p> <p>APU FUEL TNK VLV (1/2/3) to OPEN</p> <p>APU /HYDRAULICS (1/2/3) to START/RUN</p> <p>HYD MAIN PUMP PRESSURE (1/2/3) to NORMAL</p> <p>HYD CIRC PUMP (1/2/3) to OFF</p>
7	T-00:05:00	<p><u>Launch HOLD</u></p> <p>INTERNAL SHUTTLE SYSTEM POWER (BAT A / BAT B) to ENABLE</p> <p><i>Confirm central HUD is on and in <u>Orbit Earth Mode</u>:</i></p> <p><i>If needed Select 0 (toggle until Orbit Earth HUD is visible)</i></p> <p>STAR TRKR to ON</p> <p><i>Request Go / No Go for launch</i></p> <p>Initiate Launch Clock Restart when Go order received</p>
8	T-00:04:00	<p><i>Initiate Radar /Monitor System</i></p> <p>Key in – ON</p> <p>RATE GYRO ASSEMBLY (RG1 / RG2-3/ RG4) to ON</p>

9	T-00:03:00	Key in DPS Select 3 (OPS 3)
10	T-00:02:00	APU SHTDWN to INHIBIT
11	T-00:01:00	AC BUS SNSR to AUTO
12	T-00:00:04	Key in EXE
13	T-00:00:00	Liftoff

Ascent Checklist

COM	MET	PROCEDURE
14	T+00:00:20	Switch Left MFD back to Surface Mode Key in 9
15	T+00:00:44	
16	T+00:01:10	
17	T+00:02:05	<i>SRB Separation</i>
18	T+00:03:00	<i>Check (Freon) EVAP OUT TEMP gauge shows below 60 degrees</i>
19	T+00:04:20	
20	T+00:08:00	
21	T+00:08:55	<i>Main Engine Cutoff (MECO)</i>

Orbit Insertion Checklist (Post MECO)

COM	MET	Procedure
22	T+00:09:00	FWD RCS He TANK ISOL (A/B) to OPEN FWD RCS He MANIFOLD ISOL (1/2/3) to OPEN
23	T+00:09:15	OMS ENGINE VLV (LEFT) to ON OMS ENGINE VLV (RIGHT) to ON OMS ENGINE (LEFT/RIGHT) to ARM
24	T+00:09:30	FLT CNTLR PWR to INHIBIT ENGINE DAP to AUTO
25	T+00:09:45	MAIN ENGINE POWER (LEFT/CNTR/RIGHT) to OFF
26	T+00:10:00	He ISOLATION A (LEFT/CNTR/RIGHT) to GPC He ISOLATION B (LEFT/CNTR/RIGHT) to GPC PNEUMATIC He ISOL to GPC H ₂ SYSTEM LINE VENT to OPEN
27	T+00:10:30	HYD MAIN PUMP PRESSURE (1/2/3) to LOW APU / HYDRAULICS (1/2/3) to OFF APU FUEL TNK VLV (1/2/3) to CLOSE

		<p>APU TK VLV to CLOSED</p> <p>APU CNTRL POWER (1/2/3) to OFF</p> <p>APU PWR to OFF</p> <p>BOILER CNTRL PWR (1/2/3) to OFF</p> <p>BOILER N₂ SUPPLY (1/2/3) to OFF</p> <p>HYD CIRC PUMP (1/2/3) to GPC</p> <p>H₂ SYSTEM LINE VENT to GPC</p>
28	T+00:11:00 approximate	<p><i>Advised Mission Control when OMS Burn Initiated</i></p>
29	T+00:15:10 approximate	<p><i>Advised Mission Control when OMS Burn Complete</i></p> <p>OMS ENGINE (LEFT/RIGHT) to OFF</p> <p>AC BUS SNSR to MONITOR</p>
30	Mission Dependent	<p>Confirm central HUD is on and switched to “Orbit Earth Mode”: If needed Select 0 (toggle until Orbit HUD is visible)</p> <p>H₂ SYSTEM OUTBRD VLV to GPC</p> <p>H₂ SYSTEM INBRD VLV to GPC</p> <p>ENG DAP to MANUAL</p> <p>FLT CNTRLR POWER to ENABLE</p> <p>RATE GYRO ASSEMBLY (RG1/ RG2-3/ RG4)</p>

		<p>to OFF</p> <p>**Rotate The Shuttle To Zero Attitude, kill rotation to stabilize. Attitude must be zero in both the horizontal and vertical planes.</p> <p>Key in 4 – Kill rotation</p>
31	Mission Dependent	<p>THERMAL CONDITIONING SYSTEM HYD / FUEL to AUTO</p> <p>THERMAL CONDITIONING SYSTEM ENV to AUTO</p> <p>THERMAL CONDITIONING SYSTEM POD / JET to AUTO</p>
32	Mission Dependent	<p>ENVIRONMENTAL SYSTEM O₂ SYS2 to CLOSE</p> <p>ENVIRONMENTAL SYSTEM N₂ SYS2 to CLOSE</p> <p>ENVIRONMENTAL SYSTEM H₂O LOOP to OFF</p>
33	Mission Dependent	<p>BAY DOOR LCK to RELEASE</p> <p>BAY DOOR to OPEN</p> <p><i>Initiate Payload Bay Door, KU Antenna and Radiator Open Program</i></p> <p>Key in PBD</p> <p>Key in OPEN</p> <p><i>Confirm payload bay door is open</i></p>

34	Mission Dependent	GLOBAL POSITIONING SYSTEM (GPS1/ GPS2/ GPS3) to ON <i>De-select HUD</i> Key in IO
35	Mission Dependent	<i>Set MFD CRT Display Left and Right to OFF</i> Key in CRT Key in SPC (sets pad to red) Key in Red-CRT Key in SPC (sets pad to blue) <i>Shuttle is Configured & Ready For Mission</i>

De-Orbit Checklist

COM	MET	Procedure
36	Mission Dependent	<p><i>Run <u>De-orbit system check</u></i></p> <p>Key in RSD</p> <p><i>MFD CRT Display Left and Right to ON</i></p> <p>Key in CRT</p> <p>Key in SPC (sets pad to red)</p> <p>Key in red-CRT</p> <p>Key in SPC (sets pad to blue)</p> <p><i>Confirm Mission Commander MFD on and in SRFC mode</i></p> <p><i>Confirm Pilot MFD on and in Orbit Mode</i></p>
37	Mission Dependent	<p>STAR TRKR to OFF</p> <p>BAY DOOR to CLOSE</p> <p><i>Initiate Payload Bay Door, KU Antenna and Radiator Close Program</i></p> <p>Key in PBD</p> <p>Key in CLOSE</p> <p><i>Confirm Bay door is closed</i></p> <p>BAY DOOR LCK to LATCH</p>
38	Mission Dependent	<p><i>Initiate HUD – place in surface mode</i></p> <p>Key in IO</p> <p>Select 0 (Toggle until surface HUD)</p> <p>BOILER CNTRL HTR (1/2/3) to ON</p> <p>HYD CIRC PUMP (1/2/3) to OFF</p>

39	Mission Dependent	<i>Position The Shuttle To The Correct Attitude - Retrograde</i> Key in 6 – Retrograde
40	Mission Dependent	THERMAL CONDITIONING SYSTEM HYD / FUEL to AUTO ENG DAP to MANUAL ENVIRONMENTAL SYSTEM O ₂ SYS2 SUPPLY to OPEN ENVIRONMENTAL SYSTEM N ₂ SYS2 SUPPLY to OPEN
41	Mission Dependent	He ISOLATION A (LEFT/CNTR/RIGHT) to OPEN He ISOLATION B (LEFT/CNTR/RIGHT) to OPEN PNEUMATIC He ISOL (LEFT/CNTR/RIGHT) to OPEN
42	Mission Dependent	BOILER N ₂ SUPPLY (1/2/3) to ON BOILER CNTRL PWR (1/2/3) to ON APU TK VLV to OPEN APU FUEL TNK VLV (1/2/3) to OPEN APU PWR to ON APU CNTRL POWER (1/2/3) to ON APU SHTDWN to INHIBIT HYD MAIN PUMP PRESSURE (1/2/3) to LOW APU SPEED SELECT (1/2/3) to NORMAL

		<p>APU/HYDRAULICS (1/2/3) to START/RUN</p> <p>DUMP ISOL VLV to OPEN</p>
43	Mission Dependent	<p><i>Confirm</i> OMS ENGINE VLV (LEFT) is ON</p> <p><i>Confirm</i> OMS ENGINE VLV (RIGHT) is ON</p> <p>OMS ENGINE (LEFT/RIGHT) to ARM</p> <p>Engine Throttle to Maximum</p>
44	Mission Dependent	<p>Engine Throttle to OFF</p> <p>OMS ENGINE (LEFT/RIGHT) to OFF</p> <p>OMS ENGINE VLV (LEFT) to OFF</p> <p>OMS ENGINE VLV (RIGHT) to OFF</p>
45	Mission Dependent	<p><i>Position The Shuttle To The Correct Attitude – Prograde</i></p> <p>Key in 7 – Prograde</p>
46	Mission Dependent	<p>HYD MAIN PUMP PRESSURE (1/2/3) to NORMAL</p>
47	Mission Dependent	<p>FWD RCS He TANK ISOL (A/B) to CLOSE</p> <p>FWD RCS He MANIFOLD ISOL (1/2/3) to CLOSE</p> <p>DUMP ISOL VLV to CLOSED</p>
48	Mission Dependent	<p><i>Shuttle is Ready for Landing Procedure</i></p>

Landing Checklist

COM	Altitude	Procedure
49	35 k	<i>Disengage RCS mode</i> Key in SPC (sets pad to red) Key in Red-9 <i>Run <u>Landing System Check</u></i> Key in LSD <i>INITIATE <u>Landing System Radar</u></i> Key in LSR Key in ON
50	28 k	<i>(Lift takes affect)</i>
51	25 k	THERMAL CONDITIONING SYSTEM HYD / FUEL to AUTO
52	3 k	<i>Power Up Landing Gear</i> GEAR to ARM
53	2.5 k	GEAR to DOWN
54	0.5 k (500 m)	SPEED BRAKE to DEPLOY
55	Touchdown	CHUTE to DEPLOY
56		<i>End of Mission</i>