

Pre-Launch Checklist

| COM | TIME | PROCEDURE |
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| 1 | T-00:05:00 | <p><u>Launch HOLD</u></p> <p>CABIN DOOR to LATCH</p> <p>ENVIRONMENTAL SYSTEM O₂ SYS to OPEN</p> <p>ENVIRONMENTAL SYSTEM N₂ SYS to OPEN</p> <p>ENVIRONMENTAL SYSTEM H₂O LOOP to OPEN</p> <p>Key in ITEM Select A Key in DPS Select 1 (OPS 1) Key in EXEC</p> <p>BOILER CNTRL POWER (1/2/3) to ON</p> <p>BOILER CNTRL HTR (1/2/3) to ON</p> <p>BOILER N₂ SUPPLY (1/2/3) to OPEN</p> <p>Key in DPS Select 2 (OPS 2) Key in EXEC</p> |

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| <p>1 cont.</p> | | <p>PNEUMATIC He ISOL (LEFT/CENTER/RIGHT) to OPEN</p> <p>APU FUEL TNK VLV (1/2/3) to CLOSE</p> <p>APU SHUTDOWN 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) to GPC</p> <p>APU MAIN POWER to ON</p> <p>APU CNTRL POWER (1/2/3) to ON</p> <p>APU MSTR VLV to OPEN</p> <p>APU FUEL TNK VLV (1/2/3) to OPEN</p> <p>APU /HYDRAULICS (1/2/3) to RUN</p> <p>HYD MAIN PUMP PRESSURE (1/2/3) to NORMAL</p> <p>HYD CIRC PUMP (1/2/3) to OFF</p> <p>Confirm central HUD is on and in <u>Orbit Earth</u> Mode.</p> |
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| <p>1 cont.</p> | | <ul style="list-style-type: none"> • <i>If needed</i> Select 0 (toggle until <u>Orbit Earth</u> HUD is visible) <p>STAR TRACKER to ON</p> <p><i>C - <u>Request Go/ No Go for launch</u></i></p> <p>Initiate Launch Clock Restart when <u>Go</u> order received</p> <p>MAIN ENGINE POWER (LEFT/CENTER/RIGHT) to ENABLE</p> <p>N₂ CNTRL LEFT VLV (1/2) to ENABLE</p> <p>N₂ CNTRL RIGHT VLV (1/2) to ENABLE</p> |
| <p>2</p> | <p>T-00:04:00</p> | <p>PRIMARY SYSTEM RADAR to ON</p> <p>RATE GYRO ASSEMBLY (RG1/ RG2-3/ RG4) to ON</p> <p>INTERNAL SHUTTLE SYSTEM PWR (BAT A / BAT B) to ON</p> |

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| 2 Cont. | | INTERNAL SHUTTLE SYSTEM POWER - INT PWR TRANSFER to ON |
| 3 | T-00:03:00 | Key in DPS Select 3 (OPS 3) GLOBAL POSITIONING SYSTEM (GPS- 1/GPS-2/GPS-3) to ON |
| 4 | T-00:02:00 | APU SHUTDWN to INHIBIT <i>Verify</i> SRB JETTISON is GPC <i>Verify</i> EXT TANK JETTISON is GPC |
| 5 | T-00:01:00 | AC BUS SENSOR to AUTO INTERNAL SHUTTLE SYSTEM POWER - EXT PWR DISCONNECT to ON |
| 6 | T-00:00:04 | Key in EXEC |
| 7 | T-00:00:00 | |

Ascent Checklist

| COM | MET | PROCEDURE |
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| 8 | T+00:00:20 | Switch Left MFD back to Surface Mode Key in 9 |
| 9 | T+00:00:44 | |
| 10 | T+00:01:10 | |
| 11 | T+00:02:05 | <i>SRB Separation</i> FREON LOOP to OPEN H2O HX to OPEN AIR HX to OPEN |
| 12 | T+00:03:00 | |
| 13 | T+00:04:20 | |
| 14 | T+00:05:00 | INTERNAL SHUTTLE SYSTEM PWR (BAT A / BAT B) to STANDBY |
| 15 | T+00:08:00 | |
| 16 | T+00:08:55 | <i>Main Engine Cutoff (MECO)</i> |

Orbit Insertion Checklist (Post MECO)

| COM | MET | Procedure |
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| 17 | T+00:09:00 | FWD RCS He TANK ISOL (A/B) to OPEN AFT RCS LEFT He TANK ISOL (A/B) to OPEN AFT RCS RIGHT He TANK ISOL (A/B) to OPEN |
| 18 | T+00:09:20 | <i>Confirm</i> N ₂ CNTRL VLV LEFT (1/2) are ENABLEd <i>Confirm</i> N ₂ CNTRL VLV RIGHT (1/2) are ENABLEd |
| 19 | T+00:09:30 | FLT CNTRL PWR to INHIBIT ENGINE DAP to AUTO |
| 20 | T+00:09:45 | MAIN ENGINE POWER (LEFT/CENTER/RIGHT) to OFF |
| 21 | T+00:10:00 | HYD MAIN PUMP PRESSURE (1/2/3) to LOW APU SHUTDWN to ENABLE APU/HYDRAULICS (1/2/3) to OFF APU FUEL TNK VLV (1/2/3) to CLOSE |

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| 21 cont. | | <p>APU MSTR VLV to CLOSE</p> <p>APU CNTRL POWER (1/2/3) to OFF</p> <p>APU MAIN POWER to OFF</p> <p>HYD CIRC PUMP (1/2/3) to GPC</p> |
| 22 | T+00:10:30 | <p>DUMP ISOL VLV to OPEN</p> <p>H2 RECIRC VLV to OPEN</p> <p>H2 OUTBOARD VLV to OPEN</p> <p>H2 INBOARD VLV to OPEN</p> <p>PNEUMATIC He ISOL (LEFT/CENTER/RIGHT) to GPC</p> <p>O₂ VENT LINE to OPEN</p> <p>O₂ OUTBOARD VLV to OPEN</p> <p>O₂ INBOARD VLV to OPEN</p> |
| 23 | T+00:11:00 <u>approximate</u> | <p><i>Advise Mission Control when OMS Burn Initiated</i></p> <p>BOILER N₂ SUPPLY (1/2/3) to CLOSE</p> <p>BOILER CNTRL HEATER (1/2/3) to OFF</p> <p>BOILER CNTRL POWER (1/2/3) to OFF</p> |

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| 24 | T+00:12:00 <u>approximate</u> | <p>H₂ INBOARD VLV to CLOSE</p> <p>H₂ OUTBOARD VLV to CLOSE</p> <p>H₂ RECIRC VLV to CLOSE</p> <p>O₂ INBOARD to CLOSE</p> <p>O₂ OUTBOARD VLV to CLOSE</p> <p>O₂ VENT LINE to CLOSE</p> <p>DUMP ISOL VLV to CLOSE</p> |
| 25 | T+00:14:00 <u>approximate</u> | <p>AIR HX to GPC</p> <p>H₂O HX to GPC</p> <p>FREON LOOP to GPC</p> |
| 26 | T+00:15:10 <u>approximate</u> | <p><i>Advise Mission Control when OMS Burn Complete</i></p> <p>N₂ CNTRL VLV LEFT (1/2) to DISABLE</p> <p>N₂ CNTRL VLV RIGHT (1/2) to DISABLE</p> <p>AC BUS SENSOR to AUTO</p> |
| 27 | Mission Dependent | <p>Confirm central HUD is on and set to <u>Orbit Earth</u> mode.</p> <ul style="list-style-type: none"> • If needed Select 0 (toggle until <u>Orbit Earth</u> HUD is visible) <p>H₂ RECIRC VLV to GPC</p> |

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| 27 Cont. | | <p>H₂ OUTBOARD VLV to GPC</p> <p>H₂ INBOARD VLV to GPC</p> <p>O₂ VENT LINE to GPC</p> <p>O₂ OUTBOARD VLV to GPC</p> <p>O₂ INBOARD VLV to GPC</p> <p>ENGINE DAP to MANUAL</p> <p>FLT CNTRL POWER to ENABLE</p> <p>RATE GYRO ASSEMBLY (RG1/ RG2-3/ RG4) to OFF</p> <p>Orient the shuttle to a zero attitude while using the <u>Kill Rotation</u> command (key 4) to stabilize the maneuver.</p> |
| 28 | Mission Dependent | <p>PAYLOAD BAY POWER to ON</p> <p>PAYLOAD BAY DOOR to OPEN</p> <p>RADIATORS to DEPLOY</p> <p>Ku ANTENNA to DEPLOY</p> |

De-Orbit Checklist

| COM | MET | Procedure |
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| 29 | Mission Dependent | STAR TRACKER to OFF Ku ANTENNA to STOW RADIATORS to STOW PAYLOAD BAY DOOR to CLOSE PAYLOAD BAY POWER to OFF |
| 30 | Mission Dependent | BOILER CNTRL POWER (1/2/3) to ON BOILER CNTRL HEATER (1/2/3) to ON BOILER N ₂ SUPPLY (1/2/3) to OPEN |
| 31 | Mission Dependent | <i>Position The Shuttle to The Correct Attitude – Retrograde</i> Key in 6 – Retrograde |
| 32 | Mission Dependent | DUMP ISOL VLV to OPEN PNEUMATIC He ISOL (LEFT/CENTER/RIGHT) to OPEN |

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| 33 | Mission Dependent | APU MAIN POWER to ON APU CNTRL POWER (1/2/3) to ON APU MSTR VLV to OPEN APU FUEL TNK VLV (1/2/3) to OPEN APU SHUTDWN to INHIBIT APU/HYDRAULICS (1/2/3) to RUN HYD MAIN PUMP PRESSURE (1/2/3) to LOW APU SPEED SELECT (1/2/3) to NORMAL HYD CIRC PUMP (1/2/3) to OFF |
| 34 | Mission Dependent | PNEUMATIC He ISOL (LEFT/CENTER/RIGHT) to CLOSE DUMP ISOL VLV to CLOSE |

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| 35 | Mission Dependent | <p>N₂ CNTRL VLV LEFT (1/2) to ENABLE</p> <p>N₂ CNTRL VLV RIGHT (1/2) to ENABLE</p> <p>Engine Throttle to Maximum</p> <p>Engine Throttle to OFF</p> <p>N₂ CNTRL VLV LEFT (1/2) to DISABLE</p> <p>N₂ CNTRL VLV RIGHT (1/2) to DISABLE</p> |
| 36 | Mission Dependent | <p><i>Position The Shuttle to The Correct Attitude – Prograde</i></p> <p>Key in 7 – Prograde</p> |
| 37 | Mission Dependent | <p>RE-ENTRY SYS CHECK to ON</p> <p>HYD MAIN PUMP PRESSURE (1/2/3) to NORMAL</p> |
| 38 | Mission Dependent | <p>FWD RCS He TANK ISOL (A/B) to CLOSE</p> <p>AFT RCS LEFT He TANK ISOL (A/B) to CLOSE</p> <p>AFT RCS RIGHT He TANK ISOL (A/B) to CLOSE</p> |
| 39 | Mission Dependent | |

Landing Checklist

| COM | Altitude | Procedure |
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| 40 | 35 k | <i>Disengage RCS mode</i> Key in D LANDING SYS to ARM LANDING SYS CHECK to ON LANDING SYSTEM RADAR to ON |
| 41 | 28 k | <i>(Lift takes affect)</i> |
| 42 | 25 k | <i>P – <u>Announce: Kennedy VOR is Acquired</u></i> <i>P – <u>Announce Runway 15/33 ILS is Acquired</u></i> |
| 43 | 2.5 k | GEAR to DEPLOY |
| 44 | 0.5 k (500 m) | SPEED BRAKE to DEPLOY |
| 45 | Touchdown | DROGUE CHUTE to DEPLOY |
| 46 | | |
| 47 | | <i>End of Mission</i> |