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440 Albert Street, suite E016
239-2696 rm 303
commanders@spacesim.org

minute:second or time alone is in seconds

Crew preloaded
T- 20
End of First Hold of shuttle launch procedure

T- 19:59
Load Flight Plan into Shuttle Computer (not GNC)

T- 19:00
Load Orbital Programs

T- 16:00
Main Propulsion System Pressurised
(read off as you do it)

T – 9:00
Second Hold (stop clock)

T- 8:59
Countdown is resumed, event timer set.

T –7:00
Crew Access Arm retracted (automatic by systems)

T – 6:30
Calibrate Habitat Orbital Intersection of Shuttle

T – 6:00
APU Start Sequence Begun

T – 5:00
APU are Started

T – 4:30
External Power supply Deactivated

T – 3:45
All Aerodynamic surfaces placed in take-off positions (Automatic)

T – 3:00
Main Engines are Gimballed to Launch Position (automatic)

T – 2:55
External Oxygen tank vents close (automatic)

T – 2:00
APU autoshutdown switch set to inhibit

T – 1:57
External Hydrogen Tank vents close (automatic)

T – 1:30
Initialize Habitat Thruster Systems

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T – 3 seconds
Main Engine Start

T – 0
SRBs are ignited

T + 3
SRBs fully ignited

T + 6
Clear launch tower
Ground Control confirms proper shuttle engine functionality

T + 11
Shuttle Rolls to correct heading (automatic)

T + 30
Shuttle Roll Complete
Ground Control Confirms shuttle crew status nominal

T + 2:00
Ground Control directs that attitude direction controllers are set to local horizontal and vertical
SRBs separated (automatic)

T + 3:00
Habitat Thurster Burn Complete Habitat now at Lower Orbit for Intersection with Gallileo

T + 4:20
Ground Crew reports to safe return to landing site no longer possible

T + 6:00
Shuttle begins shallow dive for external tank separation

T + 8:30
Main Engine Shutdown, external tank separation (automatic)

T + 9:00
Orbit Insertion Burn occurs (automatic)

T + 10:00
Intialize Habitat Internal Power

T + 10:30
ADIs set to internal

T + 11:00
Crew must enter program to circularise orbit

T + 12:24
Circularization burn is complete

T + 14:30
Ground Crew instructs APU autoshutdown is enabled
APUs shutdown

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T + 15:40
Ground Control instructs reprograming of third CRT screen

T + 16:50
Ground control instructs external tank umbilical doors be closed

T + 17:30
Confirm Habitat Internal Power Primary and Secondary

T+ 17:50
Initialize Environmental Systems: Oxygen, Nitrogen flooding.

T+ 19:00
Confirmed: Umbilical doors closed (must be latched)

T+ 19:30 (46:34 shuttle MET)
Reprogram CRT

T + 19:56 (47:00 shuttle MET)
Ground crew instructs payload door open sequence

T + 20:56 (48:00 shuttle MET)
Payload doors closing commences

T + 24:56 (52:00 shuttle MET)
Radiators deployed

T+ 26:26 (53:30 shuttle MET)
Deploy main antenna

T + 27:56 (55:00 shuttle MET)
Launch Sequence Complete

T + 30:00
Intialize Habitat Autodocking Computer
Habitat Thursters adjusted for Galileo Rondevous

T + 35:00
Rondevous complete.
Extend Habitat Umbilical

T+ 35:30
Confirm ubilical pressure.
Open Shuttle doors.

T + 35:45
Open Habitat Airlock. MC to confirm pressure readiness

T + 37:00
Astronauts Enter Habitat.

T + 38:00
Start Orbital Navigation Program and advance to correct mission time.
Carry out P1.5.3

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Astros confirm entry, give OK for airlock closing.

T + 40:35
Shuttle Doors Closed.
Umbilical Retracted.

T + 41:00
Shuttle requests landing comms
Astronaut Commander takes Control of Command Deck.
Other Astros do sweep of Habitat to Confirm condition: Doors sealed, air leaks, environmental stability.
Confirmation of preloaded supply arrival.
Astro Commander and one astronaut Power up Command Deck. Initialize appropriate Control Panel Switches (insert once control panel finished).
Command Deck Cameras Opened.

T + 42:00 (01:00 shuttle MET)
Re-entry prep begins

T + 42:10 (01:10 shuttle MET)
Stow KU band antenna (20 sec)

T + 43:30 (02:30 shuttle MET)
Stow radiators (26 sec)

T + 44:20 (03:20 shuttle MET)
Latch radiators (26 sec)

T + 45:00
Cameras Opened in non-command Deck Rooms by another astronaut.
Initialize Camera Operations in Mission Control (Stonehenge)

T + 46:00 (05:00 shuttle MET)
Close payload doors (63 sec)

T + 47:00 (06:00 shuttle MET)
DAP to manual
Rotate Shuttle to do-orbit burn attitude

T + 48:00 (07:00 shuttle MET)
Confirm Stonehenge Functionality
Astronauts Confirm Visual Link, confirm computer powerup, running of CMES system: EECOM GNC, INCO, etc.
Prepare for de-orbit burn (actual burn happens automatically

T + 49:00
Astronauts Confirm Status of Habitat with Mission Control. Correct any data errors.
Rotate shuttle to re-entry attitude once de-orbit burn complete

T + 49:20
Mission Control initializes AYSE drive TTC collider.

T + 50:00
Astronauts fire thrusters and leave Low Earth Orbit for AYSE Drive Rendezvous (P1.5.4.1)
1 minute thruster burn at 10.00 m/s/s

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T+ 51:00
Mission Control Confirms status of 3DMI on AYSE drive

T + 52:00
Gravitic Projection Devices (GPDs) diverted power from TTC

T + 60:00
Habitat Reaches Rendezvous Orbit
Use thrusters to equalize Vo ref and Vhab-ref to circularize orbit.

T + 60:00
AYSE drive Tachyon Computer Link formed with Habitat. Habitat systems routed through AYSE drive
AYSE drive autodock procedure with hab initialized.

T + 61:00
Habitat Stabilisation Gel pressure confirmed. Reserve Gel injected if needed.

T + 64:00
Habitat docks with AYSE drive P1.5.4.1 steps 11-14

T + 65:00
GNC route initialized by Astronauts. Mission Control Confirms
P1.5.4.2

T + 70:00
AYSE TTC activated. GPDs activated and set to 50 m/s/s.
AYSE drive now enroute to destination planet.
P1.5.4.2 steps 1-17

T + 75:00
AYSE TTC and GPD systems checked
AYSE GDPs to 200.00 m/s/s until turnaround point.
P1.5.4.2 steps 18-20; P1.5.5; P1.5.6

T + 72:00 (35:00 shuttle MET, approximate time)
Shuttle re-entry interface
Shuttle comms lost

T + 80:00 (40:00 shuttle MET, approximate time)
Shuttle leaves re-entry interface
Shuttle comms re-established
Approach MET begun

T + 81:00 (01:00 shuttle MET)
HUD activated
Steer to intercept HAC
Begin landing checklist
Approach to leave HAC at FL250 @ 290KIAS 17^{o} glide slope
Arm gear at 2000', reduce glide slope and slow to 250KIAS
Drop gear once below 1000' and stabilize glide slope at final approach angle
Touch down at 180KIAS
Deploy air brakes