Landing Challenge Checklist

While practicing for the Landing Challenge, select "Atlantis Landing Preparation" in Orbiter to practice the approach to the Kennedy Space Center.

During the Competition Landing Challenge, the Mission Commander will simply fly the shuttle, while the Pilot/Flight Controller will activate all commands and perform all the necessary call outs. During practice, it may be helpful to set up the keyboard in front of the Pilot/Flight Controller while the joystick is placed in front of the Commander. Refer to the Landing Information document for any assistance with landing procedures and telemetry.

Remember that one of the three landings during the competition will be instrument only. For the Mercury division, the Commander will only see the HSI and Surface Earth MFDs while the Pilot/Flight controller will have a full view of the Orbiter screen. For Apollo, both the Commander and Pilot/Flight Controller will only see the HSI and Surface Earth MFDs. While practicing an instrument only landing it may be helpful to cover the orbiter screen except for the HSI and Surface Earth MFDs.

Remember that the HSI will need to be programed (refer to the Landing Information document)

CLASSROOM KEY BOARD CONTROLS

Note: These commands correspond to macro pad commands in the simulator (See schematic at the end of this document)

RCS control - Use mouse to turn off RCS in upper left corner of Orbiter or use the keyboard **CTRL** with the **/** key on the **NUM pad**

Gear Control – Use the **G** key on the keyboard

Speed Brake - **CTRL** with the **B** key on the keyboard

> The timing and use of the speed brake is at the discretion of the Mission Commander. It may be used any time during the landing approach and can be used repeatedly, if so requested by the Commander.

Left wheel brake - (comma- hold down to activate) 

Right wheel brake - (period- hold down to activate) 

Trim control - [**Insert]** key will trim down and the [**Delete**] key will trim up

Landing Check List - Classroom

COM	ALTITUDE	PROCEDURE	Notes
1	35,000 meters	Announce Initial Altitude and Speed Perform landing system check HSI status check **RCS system to off**	Landing System Check - On the pilot's main screen confirm that all flights systems are operational and within normal parameters. Horizontal Situation Indicator (HSI) status check The RCS system **MUST** be turned off for terrestrial flight controls to take over and allow for their operation. **(Select on Orbiter in top left of screen with mouse or use [CTRL / NUM]**
2	28,000 meters	Confirm transition to aerodynamic control Confirm when VOR acquired	Announce Current Altitude and Speed Lift effect is first encountered, and flight control systems should now be responding fully When the VOR is acquired, the following information needs to be identified • Frequency – 112.70 MHz • Location (KSCX – Kennedy Space Center) • Mode – FROM or TO • Bearing to destination (BRG in degrees) • Distance to NAV selected (DST in Kilometers)
3	25,000 meters	Confirm NASA 862	Begin announcing altitude, air speed and distance (DST) to KSCX, every 5,000 meters of altitude. Radar System should pick up the NASA Chase plane ID - NASA 862
4	Mission Dependent	Confirm when ILS acquired	When the ILS is acquired, the following information needs to be identified • Frequency –134.20 MHz • Runway (RWY 33 or 15 Cape Canaveral) • Mode – FROM or TO • Bearing (BRG in degrees) • Distance to NAV selected (DST in Kilometers)

5	10,000 meters		When the Orbiter reaches 10,000 meters in altitude the altitude, air speed and distance (DST) to runway 33 or 15 should be announced at every 1,000 meters of altitude.
		PAPI Status	Precision Approach Path Indicator (PAPI) status should be announced once identified and approach status
		VASI Status	Visual Approach Slope Indicator (VASI) status should be announced once identified and approach status
6	2,500 meters	**Gear to Down**	Confirm when gear has been deployed **(G key on keyboard)**
7	500 meters	**Speed Brake to Deploy**	Confirm when speed brake has been deployed To operate speed brake use [**CTRL] B on the keyboard** The speed brake will slow down the descent or help stop the shuttle after landing. This must be considered before activation. Its use may be indicated by the pilot at any time and can be delayed until touchdown by order of the Mission Commander.
8	Touchdown	Chute to Deploy	At touchdown the brakes can be used to slow down the orbiter after landing as well as gently steer it to one side or the other on the runway. **Left Wheel Brake (comma key)**  **Right Wheel Brake (period key)**  **NOTE: The brakes are push and hold commands. They will only be active while the button is pressed.**

Landing Check List - Simulator

COM	ALTITUDE	PROCEDURE
1	35,000 meters	Announce Initial Altitude and Speed Perform landing system check HSI status check **RCS system to off**
2	28,000 meters	Confirm transition to aerodynamic control Confirm when VOR acquired
3	25,000 meters	Confirm NASA 862
4	Mission Dependent	Confirm when ILS acquired
5	10,000 meters	PAPI Status VASI Status
6	2,500 meters	**Gear to Down**
7	500 meters	**Speed Brake to Deploy**
8	Touchdown	Chute to Deploy

Landing Simulator Macro Board

CRT	**A**	**Speed Brake**	**C**
I/O RESET	**D**	**E**	**Gear Down**
ITEM	**1**	**2**	**3**
EXEC	**4**	**5**	**6**
DPS	**7**	**8**	**RCS Off**
SPEC	**Left Wheel Brake**	**Chute Deploy**	**Right Wheel Brake**