National Aeronautics and Space Administration

Station Spacewalk Game

Manual

Getting Started

The Station Spacewalk Game allows the player to take on the role of an astronaut tasked with completing several missions around the International Space Station. The game can be played in a Web browser or downloaded and installed as an application.

The game's Web site provides details:

http://www.nasa.gov/multimedia/3d_resources/station_spacewalk_game.html

System Requirements

Minimum System Requirements

- Windows XP, Vista, or 7; or Mac OS X 10.3 or newer
- 2 GHz processor
- 1 GB RAM
- Dedicated 3D graphics card with 256 MB RAM
- DirectX 9 (Windows only)
- Sound card

Web Player Requirements

- Internet Explorer 7 or higher, or Firefox 3.0 or higher, or Safari 4.0 or higher
- Unity Web Player plug-in (free download at http://unity3d.com)

**Stand-alone Requirements**

- 175 MB of hard drive space for installation

Player Profiles

When the game starts, the player will need to enter a name. This allows the game to keep track of statistics, such as which missions have been completed, between game sessions. The next time the player begins the game, he need only enter the same name to build upon his previous progress. Names are case-sensitive.
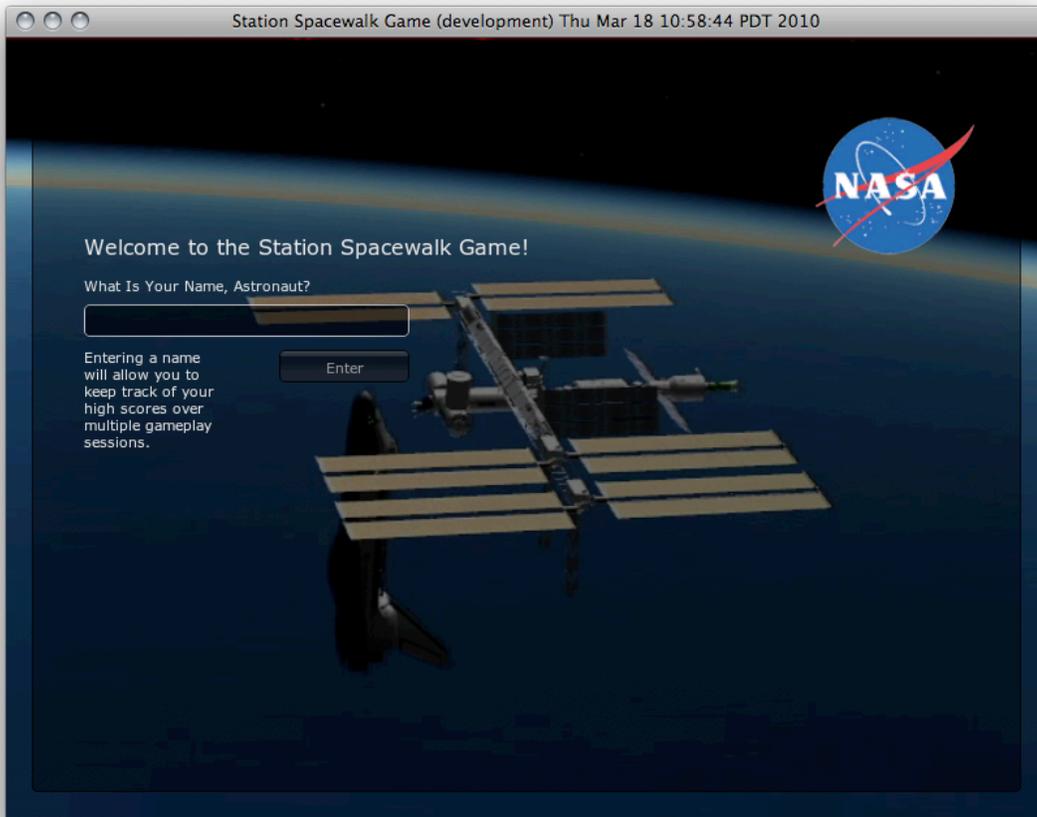
Once the player has logged in, he will see the mission selection screen with his career statistics on the left and a list of missions on the right.
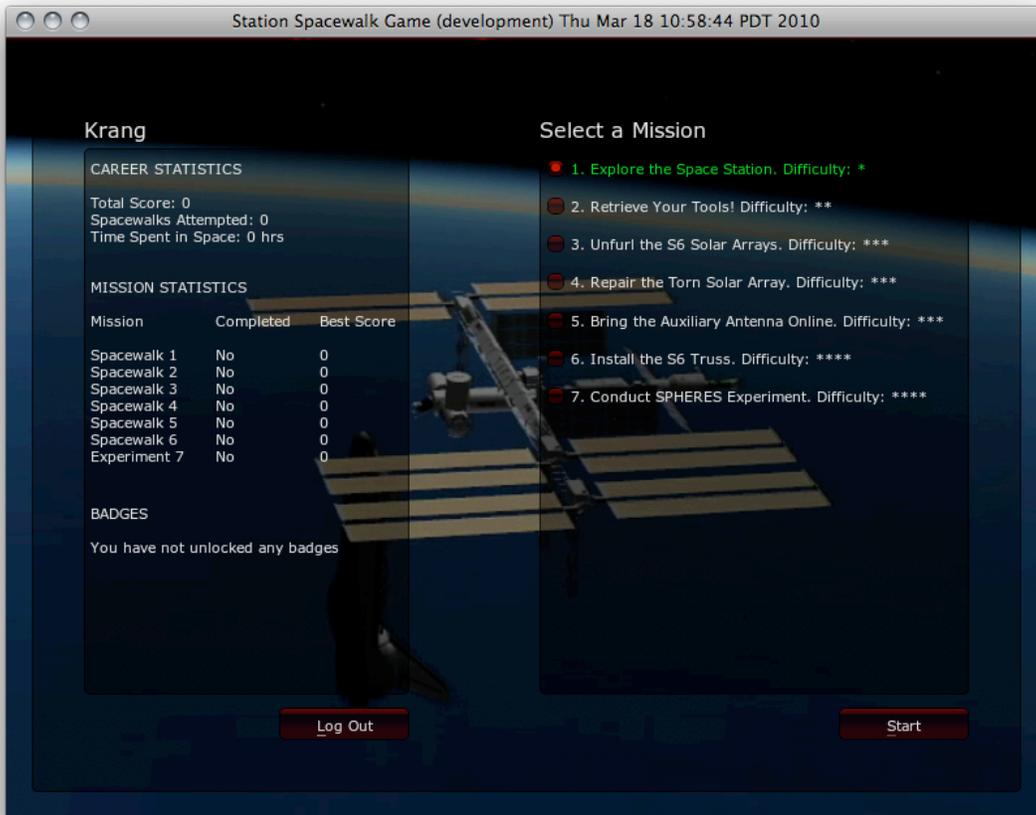
The player must select the mission that he wants to play and press Start. Mission 1 is a good choice for getting the hang of the controls.

Overview of the Missions

1. Explore the Space Station.

This is the only mission where the player has an unlimited oxygen supply. This mission is ideal for earning the Station Explorer badge and learning about the ISS, not to mention getting the hang of the controls.

2. Retrieve Your Tools!

The object of this mission is to collect drifting tools. While each tool collected will replenish some of the player's oxygen supply, he will not get very many if he does not move efficiently. This mission stresses the need to conserve energy while spacewalking and provides the opportunity to learn about some of the tools that astronauts use to work on the ISS.

3. Unfurl the S6 Solar Arrays.

This mission is based on STS-119. The objective is to deploy the solar arrays of the newly installed Starboard 6 truss. [Chronologically, this mission follows Mission 6: Install the S6 Truss]

4. Repair the Torn Solar Array.

This mission takes the player to the other side of the Station. The player must ride the Canadarm2 over to the Port truss segments to repair a tear in a solar array.

5. Bring the Auxiliary Antenna Online.

The goal of this mission is to restore space-to-ground communication for the ISS. With the Module Information feature enabled, the player will have the opportunity to read about Space Communications and Navigation.

6. Install the S6 Truss.

This mission is based on the installation of the Starboard 6 truss segment completed during STS-119. The S6 truss supports a set of solar array wings that provide additional power to the ISS.

7. Conduct SPHERES Experiment.

This mission puts the player in remote control of a small satellite inside the Station's U.S. Destiny Laboratory. With Module Information enabled, the player may move the satellite right up to the camera to learn about the SPHERES experiment.

Controls

The game is intended to be played with the mouse and keyboard but it is fully keyboard accessible.

Basic Controls

The game provides a first-person perspective of an astronaut. It is possible to look around by moving the **Mouse** or using the **I, J, K, L** keys.

Movement is controlled with the **W, A, S, D** keys or the **Arrow** keys. Remember that the astronaut is moving in microgravity: once he starts to move in a given direction, he will continue to move in that direction until the player applies an equal and opposite force (or until the player presses **Z**).

The **Z** key will instantly stop the astronaut.

Any time the player is playing a mission, he may press **Esc** to pause the game and review the complete list of controls.
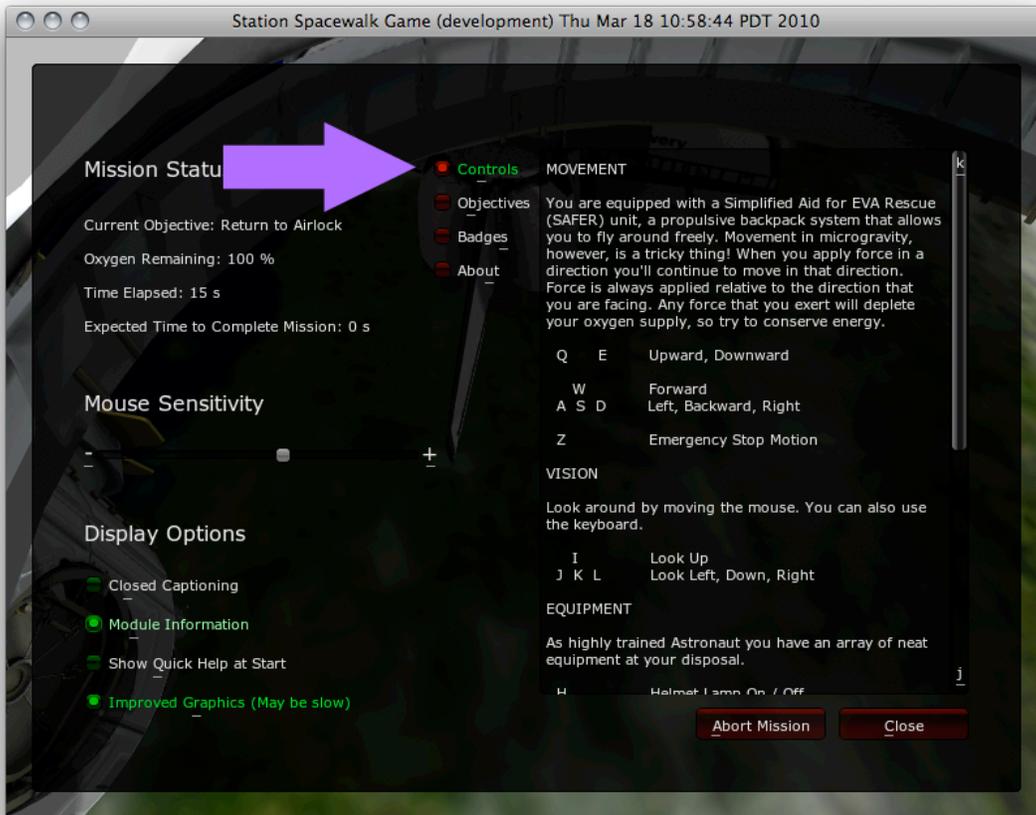
Other Controls

Eventually the player will need to learn some additional controls. Certain missions will require the player to interact with objects or use different tools.

When the player is able to interact with an object, his crosshairs will change color from red to white. The player may press **Enter, Space,** or click the **Left Mouse** button to interact.

Sometimes the player will need to have a specific tool equipped to interact with an object. The player may press **T** to cycle through his available tools. Many missions do not require tools at all.

What Now?

If the player is playing a mission but is not sure what he is supposed to do next, there are a few ways to get back on track.

The player may review his objectives in the Escape Menu. The player's current objective is given on the left; mission objectives are detailed on the right.

Station Spacewalk Game (development) Thu Mar 18 10:58:44 PDT 2010

Mission Status

Current Objective: Move to S5

Oxygen Remaining: 99 %

Time Elapsed: 2 s

Expected Time to Complete Mission: 300 s

Mouse Sensitivity

– +

Display Options

◯ Closed Captioning

◉ Module Information

◉ Show Quick Help at Start

◯ Improved Graphics (May be slow)

Controls
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Install the S6 truss.

First locate and move to the S5 — or Starboard 5 — truss segment. As you make your way there, the station's robotic arm will bring the S6 truss segment in line with S5 in preparation for installation.

Once you are at the work area to monitor clearances, the robotic arm will move the S6 truss segment to 15 centimeters (about 6 inches) from S5. You'll need to take two measurements to verify that the truss segment is aligned.

After the robotic arm moves the S6 truss segment into its final position, you'll need to use your Pistol Grip Tool to bolt it into place.

Objectives:

Locate and move to S5 while the robotic arm gets S6 into position. (100 points)

Use your laser tool to measure the distance between S5 and S6. (100 points)

Bolt the S6 Truss into place. (100 points)

Completing the mission quickly while using as little oxygen as possible will improve your score.

Abort Mission   Close

Important locations are often marked on the minimap. If the player is still lost, he may press **G** to bring up a 3D arrow that will point him in the right direction.
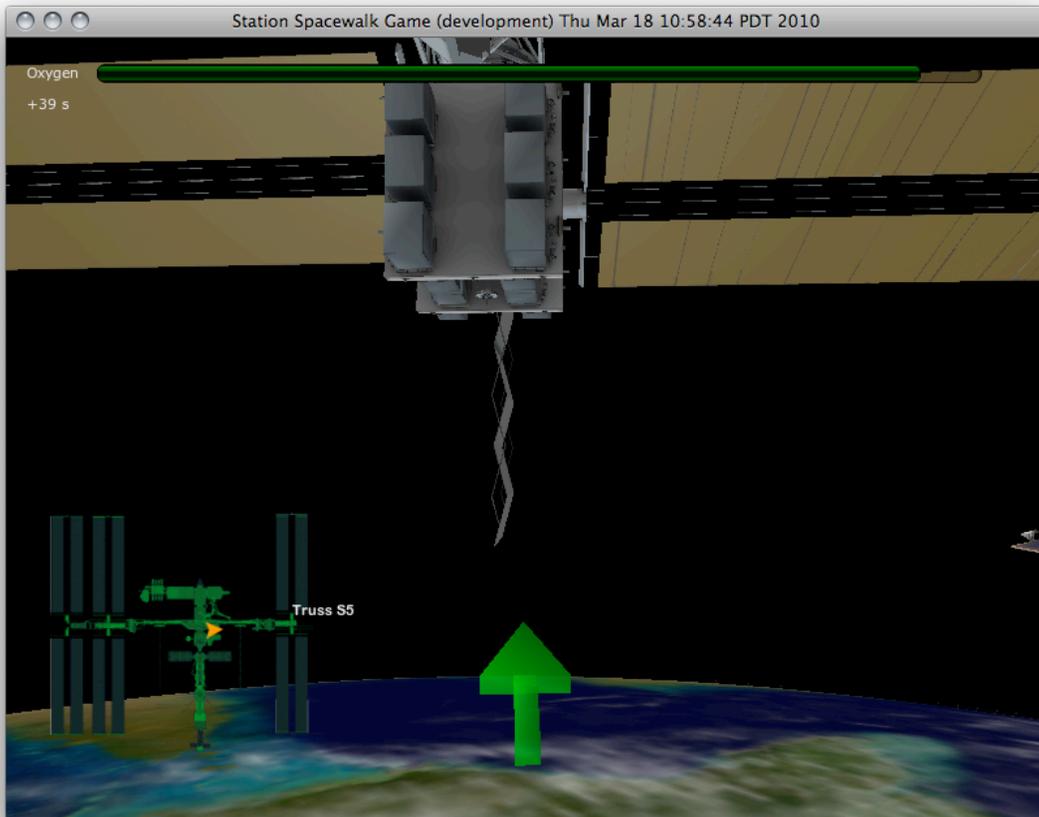
Finally, if the mission has a Mission Briefing component, then the player may press **P** to replay the briefing.

Scoring

A player's profile tracks a number of persistent statistics such as completion status and best score for each of the missions. The profile also tracks progress toward unlocking badge rewards, which are earned by fulfilling certain requirements.

Points

Point scores are awarded for completing (or partially completing) missions. A mission is completed when all of its objectives have been completed. In case a mission ends or is aborted short of completion, the player earns points for the objectives that he did complete.

When the player ends a mission in the Station Spacewalk Game, whether by running out of oxygen, aborting it, or completing it, he is scored according to three criteria: time elapsed, oxygen remaining, and objectives completed.

Objectives are typically worth 100 points apiece. While the player always receives the points from completing objectives, the time bonus and oxygen bonus are awarded only if the entire mission is completed.
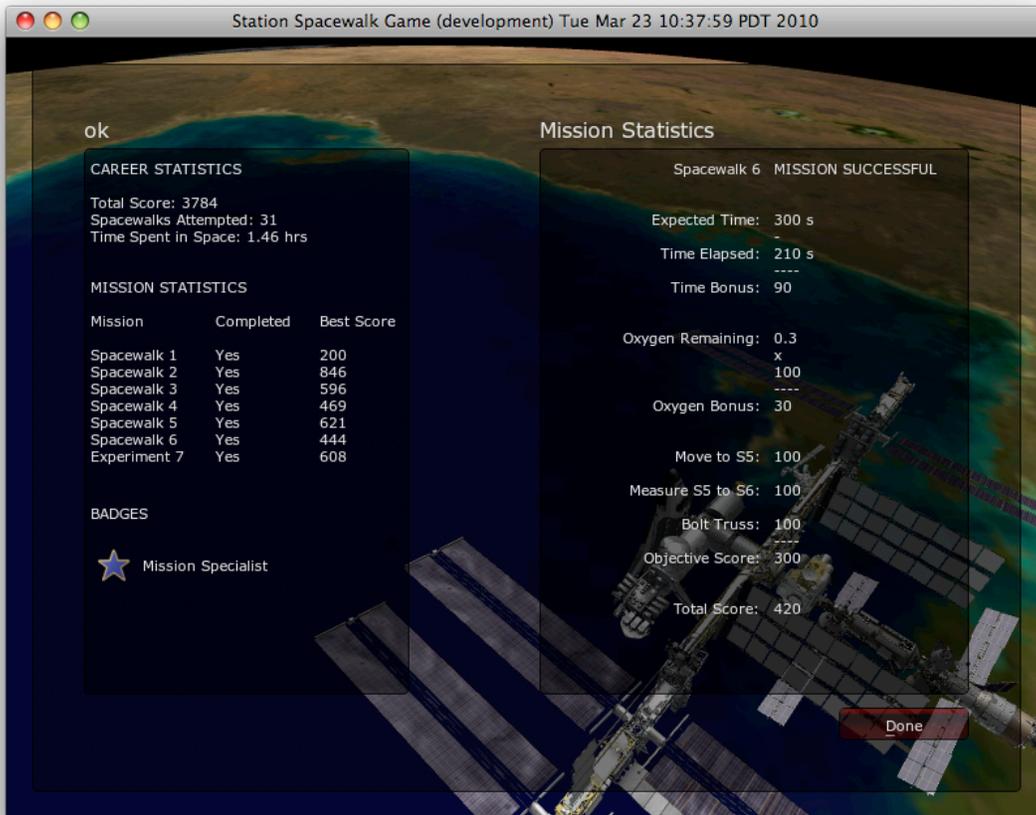
Badges

Badges are earned by achieving certain greater objectives, such as completing all of the game's missions. They also highlight educational features.

For instance, the Station Explorer badge requires the player to visit each part of the ISS with the Module Information feature enabled. The Tool Collector badge requires the player to collect one of each type of tool in Mission 2.

The player may view his progress toward badges in the Escape Menu.

Station Spacewalk Game (development) Thu Mar 18 10:58:44 PDT 2010

Mission Status

Current Objective:

Oxygen Remaining: 100 %

Time Elapsed: 15 s

Expected Time to Complete Mission: 0 s

Mouse Sensitivity

−   +

Display Options

○ Closed Captioning

● Module Information

○ Show Quick Help at Start

● Improved Graphics (May be slow)

Controls
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Badges
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As you play the Station Spacewalk Game you can earn badges for doing certain things. The requirements and your progress toward them are detailed below. Badges are displayed with your player statistics during mission selection.

STATION EXPLORER

Visit all of the named modules with Module Information enabled.

```
[ ]   Unity Node 1
[X]   Quest Joint Airlock
[ ]   U.S. Destiny Laboratory
[ ]   Tranquility Node 3
[ ]   Cupola Module
[ ]   Harmony Node 2
[ ]   Columbus Module
[ ]   Kibo Japanese Experiment Module
[ ]   Zarya Module
[ ]   Zvezda Service Module
[ ]   Multi-Purpose Logistics Module
[ ]   P1 Truss
[ ]   P3/P4 Truss
[ ]   P5 Truss
[ ]   P6 Truss
[ ]   S0 Truss
[ ]   S1 Truss
[ ]   S3/S4 Truss
[ ]   S5 Truss
[ ]   S6 Truss
```

Abort Mission   Close

Educational Features

The Station Spacewalk Game has educational components. The player may learn about the International Space Station as he plays any of the missions, especially the first mission where there are no time constraints to limit exploration.
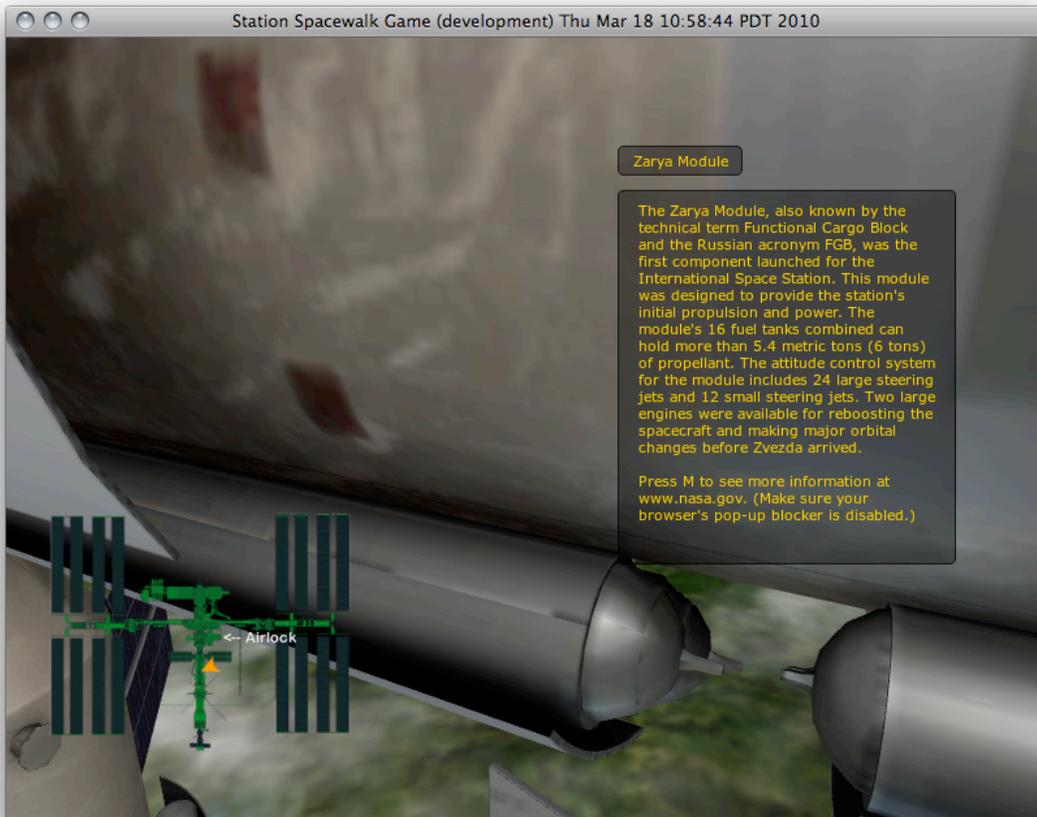
Module Information

This feature is on by default and it can be toggled in the Escape Menu.
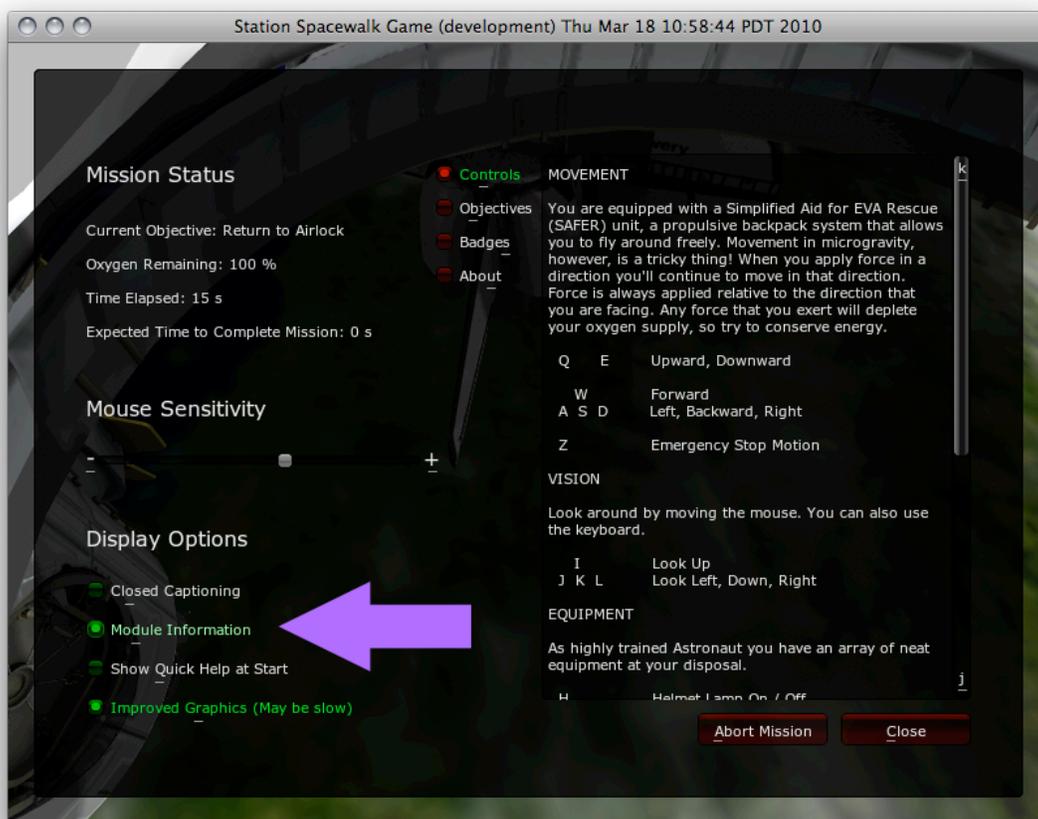
Module Information provides two levels of detail for the parts of the ISS: labels and descriptions. Station parts are labeled as in this picture.

To see the detailed description, the player must fly up to the label. When the player is close enough, the description appears.

Pressing the **M** key when viewing the detailed info will pause the game and open a NASA Web page with even more information.

Tool Descriptions

Mission 2 requires the player to collect various tools that are floating around the Space Station. The player may grab a tool to hear a brief description of the tool and its use in space. The tools include: a pistol grip tool, a wrench, a ratchet, a hammer, a grease gun, a helmet, a tether, a multimeter, a communication tool, and an infrared camera.

Worksheets

Accompanying the Station Spacewalk Game are worksheets that meet the National Science Education Standards written by the National Research Council and address the Science and Technology standards for grades 5–8 for: Understandings about Science and Technology.

Worksheets can be downloaded from:

http://www.nasa.gov/multimedia/3d_resources/station_spacewalk_game_edu.html