**Scenario 1: Exiting Through Airlock While External Enviroment Pressure is Less than Internal Cabin Pressure in Auto Mode**

**Scenario Description**

* This scenario is intended to test the reliabilty of the system in performing a task which will be an extremely common use case. The system must pass all checkpoints in correctly allowing somebody to exit their vessel through the airlock and leave the vessel and airlock in the correct state. This being the cabin pressure not changing, the airlock being sealed at the end of the script and the airlock's pressure being equal to the cabin. The system must be able to complete these tasks in auto mode for the purposes of this use case. The script used to test the programs response to this use case is called "TestAirlockAutoInToOutExternalLessThanInternal".

**Version Control**

|  |  |  |  |
| --- | --- | --- | --- |
| Version # | Date | Author | Description |
| 0.1 | 11/12/2022 | Matthew Scavone | Constructed FATTests and made updates to AirlockTests and Airlock. |

**Test Scripts**

The following scripts will cover this scenario:

* TestAirlockAutoInToOutExternalLessThanInternal

**Use Case**

* Exiting the space craft through the airlock when the system is in auto mode and the enviroment pressure is less than the cabin pressure.

**Script 1: TestAirlockAutoInToOutExternalLessThanInternal**

***Script Description***

* when user wants to exit the craft through the airlock while the system is in AUTO mode and the exterior enviroment pressure is less than the internal cabin pressure then the system should execute without any errors and should end in the SEALED state with the cabin pressure remaining unchanged and the airlock pressure being equal to the cabin pressure.

***Testing Requirements***

This test script covers the following specific testing requirements:

* exterior pressure < internal pressure
* system in AUTO mode
* both doors end closed
* airlock ends the script in the SEALED state
* cabin pressure remains unchanged
* airlock pressure ends equal to cabin pressure

***Setup***

* Steps 1-3 in the script steps are setup steps according to the Master Test Template. These are setting the interior and exterior pressures to values that abide by the guidelines (exterior pressure lower than interior and toggling operation mode to auto).

***Test Data***

|  |  |
| --- | --- |
| Data | Value |
| enviromentSensor | new PressureSensor(10) |
| lockSensor | new PressureSensor(1) |
| cabinSensor | new PressureSensor(13) |
| outerDoor | new Door(enviromentSensor, lockSensor, DoorState.CLOSED) |
| innerDoor | new Door(cabinSensor, lockSensor, DoorState.CLOSED) |
| airlock | new AirLock(outerDoor, innerDoor, lockSensor) |

***Teardown***

* To return the system to its inital state you will need to run the SX and SI commands again, setting the pressure to 1.0 both times. You will also need to run TM in order to toggle the operation mode back to it's default of MANUAL. EI will also need to be input into the main menu to reset the lock sensor back to the inital state of 1.0 pressure.

***Script Steps***

|  |  |  |  |
| --- | --- | --- | --- |
| **Step #** | **Test Action** | **Expected Results** | **Pass/ Fail** |
| 1 | Enter SX in the main menu, set the external pressure to 10. | Program throws no errors and prints airlock stats with Exterior PressureSensor equaling 10. | Pass |
| 2 | Enter SI in the main menu, set the internal pressure to 13. | Program throws no errors and prints airlock stats with Interior PressureSensor equaling 13. | Pass |
| 3 | Enter TM in the main menu toggling operation mode to AUTO. | Program throws no errors and prints airlock stats with the operation mode set to AUTO. | Pass |
| 4 | Enter OI in the main menu opening the inner door. | Program throws no errors and prints airlock stats with state set to UNSEALED and interior door state set to OPEN. Lock's sensor should now be set to 13, the pressure of the internal cabin, and the internal cabins pressure should remain unchanged. | Pass |
| 5 | Enter OX in the main menu opening the outer door. | Program throws no errors and prints airlock stats with state set to UNSEALED and outer door state set to OPEN. Inner door state should now be CLOSED and the pressure of lock sensor should be 10, equal to the enviroment. Enviroment pressure should remain unchanged. | Pass |
| 6 | Enter CX in the main menu closing the outer door. | Program throws no errors and prints airlock stats with state set to SEALED. Both doors should now be CLOSED, lock sensor pressure should be equalised with the internal cabin (13) and the internal cabin pressure should remain unchanged at 13. Exterior Pressure should also remain unchanged at 10. | Pass |

**1.**



**2.**



**3.**



**4.**



**5.**



**6.**



***Test Execution***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date/Time | Tester | Test ID | Test Phase | Status |
| 11/12/2022 | Matthew Scavone | TestAirlockAutoInToOutExternalLessThanInternal1 | System Test 1 | Pass |