**Scenario 4: Entering Through Airlock While External Enviroment Pressure is Less than Internal Cabin Pressure in Manual 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 correctly allowing somebody to Enter 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 manual mode for the purposes of this use case. The script used to test the programs response to this use case is called "TestAirlockManualOutToInExternalLessThanInternal".

**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:

* TestAirlockManualOutToInExternalLessThanInternal

**Use Case**

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

**Script 1: TestAirlockManualOutToInExternalLessThanInternal**

***Script Description***

* when user wants to enter the craft through the airlock while the system is in MANUAL 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 MANUAL 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 1-2 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).

***Test Data***

|  |  |
| --- | --- |
| Data | Value |
| enviromentSensor | new PressureSensor(10) |
| lockSensor | new PressureSensor(1) |
| cabinSensor | new PressureSensor(12) |
| 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. 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 12. | Program throws no errors and prints airlock stats with Interior PressureSensor equaling 12. | Pass |
| 3 | Enter EX in the main menu. | Program throws no errors and prints airlock stats with the airlock's pressure equalised to the external enviroment pressure(10). | Pass |
| 4 | 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. The exterior enviroments pressure should remain unchanged. | Pass |
| 5 | Enter CX in the main menu closing the outer door. | Program throws no errors and prints airlock stats with state set to SEALED with the outer door set to CLOSED. | Pass |
| 6 | Enter EI in the main menu. | Program throws no errors prints airlock stats with the airlock pressure equalised to the interior pressure (12). | Pass |
| 7 | Enter OI in the main menu opening the inner door. | Program throws no errors and prints airlock stats with state set to UNSEALED and inner door state set to OPEN. Cabin pressure should remain unchanged. | Pass |
| 8 | Enter CI in the main menu closing the inner 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 (12) and the internal cabin pressure should remain unchanged at 12. Exterior Pressure should also remain unchanged at 10. | Pass |

**1.**



**2.**



**3.**



**4.**



**5.**



**6.**



**7.**



**8.**



***Test Execution***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date/Time | Tester | Test ID | Test Phase | Status |
| 11/12/2022 | Matthew Scavone | TestAirlockManualOutToInExternalLessThanInternal1 | System Test 1 | Pass |