Scenario 1:
Pass Through Airlock with Outside Environment Pressure Greater than Cabin Pressure

Scenario Description

When a user wants to pass through the airlock from the outside environment, and the Airlock is in Automatic mode, and with both doors already closed. The airlock must safely open the outer door, followed by opening the inner door and completing the action by closing the inner door.

Version Control

Version #	Date	Author	Description
0.1	01/01/2006	Corie Rhodes	Initial Draft
1.0	01/10/2006	Corie Rhodes	Initial Version

Test Scripts

The following scripts will cover this scenario:

- **1.1 FATLowerEnvironmentPressure** - Test the airlock in auto mode to ensure a user can pass through the airlock when the environment pressure is less than the cabin pressure.
- **1.2 FATGreaterEnvironmentPressure** - Test the airlock in auto mode to ensure a user can pass through the airlock when the environment pressure is greater than the cabin pressure.
- **1.3 FATManualModeGreaterEnvironmentPressure** - Test the airlock in manual mode to ensure a user can pass through the airlock when the environment pressure is greater than the cabin pressure.
- **1.4 FATManualModeLowerEnvironmentPressure** - Test the airlock in manual mode to ensure a user can pass through the airlock when the environment pressure is less than the cabin pressure.

Use Case

- A user passes through the Airlock.

Script 1.2: Auto Mode - Environment Pressure Greater than Cabin Pressure

Script Description

The test will follow the following steps:

1. Open the Outer Door
2. Open the Inner Door
3. Close the Inner Door

Testing Requirements

This test script covers the following specific testing requirements:

- The environment pressure should be greater than the cabin pressure
- The Airlock should be in Automatic mode
- The test should begin with both doors closed
- The Airlock should finish the test in a SEALED state
- The cabin pressure should be unchanged
- The Airlock pressure should be the same as the cabin pressure

Setup

1. Airlock must exist, with both doors closed and be in auto mode.
2. Environment pressure must be lower than the cabin pressure.

Test Data

Data	Value
Lock Sensor	lockSensor: 1.0
Inner Door External Sensor	innerDoorExternalSensor: 1.0
Outer Door External Sensor	outerDoorExternalSensor: 2.5
Airlock Outer Door State	airLock.isOuterDoorClosed: true

Airlock Inner Door State	airLock.isInnerDoorClosed: true
Airlock State	airLock.isSealed: true
Airlock Mode	airLock.isInAutoMode: true

Teardown

- Make sure airlock has both doors in a ‘CLOSED’ state, the airlock is in auto mode and that the airlock state is ‘SEALED’.
- Make sure cabin pressure is unchanged and that airlock pressure is the same as the cabin pressure.

Script Steps

Step #	Test Action	Expected Results	Pass/ Fail
1	Toggle operation mode (Enter “tm”)	Airlock mode is set to Automatic.	Pass
2	Open external door (Enter “ox”)	External door is opened, airlock set to “UNSEALED”.	Pass
3	Open external door (Enter “oi”)	External door is closed and the internal door is opened. Airlock remains in “UNSEALED” state.	Pass
4	Close internal door (Enter “ci”)	Inner door closed and airlock set to “SEALED” state. Airlock pressure is the same as the cabin pressure.	Pass

Test Execution

Date/Time	Tester	Test ID	Test Phase	Status
08/12/2022	Corie Rhodes	corierhodes1	System Cycle 1	Passed

Screenshots

corierhodes1:

```
Airlock: state: SEALED, mode: MANUAL
Exterior PressureSensor: pressure: 2.5 bar
Lock PressureSensor: pressure: 1.0 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 2.5 bar, internal pressure: 1.0 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

When the program starts, the airlock is in manual mode, both doors are closed and the airlock is set to SEALED.

```
Airlock: state: SEALED, mode: AUTO
Exterior PressureSensor: pressure: 2.5 bar
Lock PressureSensor: pressure: 1.0 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 2.5 bar, internal pressure: 1.0 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

The user enters “tm” which toggles the airlock to auto mode.

```
Airlock: state: UNSEALED, mode: AUTO
Exterior PressureSensor: pressure: 2.5 bar
Lock PressureSensor: pressure: 2.5 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: OPEN, external pressure: 2.5 bar, internal pressure: 2.5 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 2.5 bar
```

The user then enters “ox” which triggers the airlock to equalize the airlock pressure with the external pressure and opens the external door.

```
Airlock: state: UNSEALED, mode: AUTO
Exterior PressureSensor: pressure: 2.5 bar
Lock PressureSensor: pressure: 1.0 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 2.5 bar, internal pressure: 1.0 bar,
Interior Door: state: OPEN, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

The user then enters “oi” which triggers the airlock to close the internal door, equalize the airlock pressure with the internal pressure and opens the internal door.

```
Airlock: state: SEALED, mode: AUTO
Exterior PressureSensor: pressure: 2.5 bar
Lock PressureSensor: pressure: 1.0 bar
Interior PressureSensor: pressure: 1.0 bar
Exterior Door: state: CLOSED, external pressure: 2.5 bar, internal pressure: 1.0 bar,
Interior Door: state: CLOSED, external pressure: 1.0 bar, internal pressure: 1.0 bar
```

The user then enters “ci” which triggers the airlock to close the internal door. Leaving the airlock in a state which has both doors closed, sealed and the lock sensor pressure is the same as the internal pressure.