

## Clarification Request

**References:** 7.3.2.50.11 Out\_Of\_Service, Status\_Flags, and Reliability for Staging Object

**Date of BTL-WG Response:** February 6, 2024

**Background:** ANSI/ASHRAE Standard 135.1-2023

7.3.2.50.11 Out\_Of\_Service, Status\_Flags, and Reliability for Staging Object

Purpose: To verify that Present\_Value and Reliability are writable when Out\_Of\_Service is TRUE, to verify the relationship between Out\_Of\_Service, Status\_Flags, and Reliability, and to verify that writes to Target\_References only occur when Out\_Of\_Service is FALSE.

Test Concept: The Out\_Of\_Service property is set to TRUE and the value of the Status\_Flags property is validated. Present\_Value is modified to verify that Present\_Stage evaluates but writes to Target\_References do not occur. If the IUT supports Reliability values other than NO\_FAULT\_DETECTED, writability for that property is tested and the value of the Status\_Flags property is validated. The Out\_Of\_Service property is set to FALSE and the value of the Status\_Flags property is validated. The Present\_Value for one of the Target\_References is checked to verify that it has the correct value, indicative of a write that occurred when transitioning Out\_Of\_Service from TRUE to FALSE.

Configuration Requirements: The Staging object used for this test shall be configured with at least one object in the Target\_References property. The Stages property shall be configured with two stages such that Stages[S].Values = {V1...} and Stages[S+1].Values = {V2...} where V1 <> V2. At the start of the test, the Staging object is properly configured such that Reliability = NO\_FAULT\_DETECTED and Present\_Stage = S.

Test Steps:

1. READ SF1 = Status\_Flags
2. VERIFY Reliability = NO\_FAULT\_DETECTED
3. VERIFY Present\_Stage = S
4. READ O1 = Target\_References, ARRAY INDEX = 1
5. VERIFY O1, Present\_Value = V1
6. IF (Out\_Of\_Service is writable) THEN  
    WRITE Out\_Of\_Service = TRUE  
ELSE  
    MAKE (Out\_Of\_Service TRUE)
7. VERIFY Out\_Of\_Service = TRUE
8. VERIFY Status\_Flags = (?, ?, ?, TRUE)
9. WRITE Present\_Value = (PV: (Stages[S].Limit + Stages[S].Deadband) < PV < Stages[S+1].Limit)
10. VERIFY Present\_Value = PV
11. VERIFY Present\_Stage = S+1
12. VERIFY O1, Present\_Value = V1
13. IF (the IUT supports Reliability values other than NO\_FAULT\_DETECTED) THEN  
    REPEAT X = (all values of the Reliability enumeration appropriate to the object type except  
        NO\_FAULT\_DETECTED **and CONFIGURATION\_ERROR**) DO {  
        WRITE Reliability = X  
        VERIFY Reliability = X  
        VERIFY Status\_Flags = (?, TRUE, ?, TRUE)  
        WRITE Reliability = NO\_FAULT\_DETECTED  
        VERIFY Reliability = NO\_FAULT\_DETECTED

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        VERIFY Status_Flags = (?, FALSE, ?, TRUE)
    }
14. IF (Out_Of_Service is writable) THEN
    WRITE Out_Of_Service = FALSE
ELSE
    MAKE (Out_Of_Service FALSE)
15. VERIFY Status_Flags = SF1
16. VERIFY Reliability = NO_FAULT_DETECTED
17. IF (Present_Stage = S+1) THEN
    VERIFY O1, Present_Value = V2
```

**Problem:**

In step 13, the property Reliability is written with all values except NO\_FAULT\_DETECTED. In this context, the value CONFIGURATION\_ERROR is also written. According to ASHRAE, this value leads to the following behavior:

If Reliability has the value CONFIGURATION\_ERROR, then Present\_Value shall be set to Min\_Pres\_Value and Present\_Stage to 1. (ASHRAE 12.62.6 page 614)

If the PV is set to Min\_Pres\_Value and the Present\_Stage to 1 no Writes to Target\_References will occur when Out\_Of\_Service is set back to false (step 14).  
Checks in step 17 will fail.

**Annotation:**

All variants of CONFIGURATION\_ERROR condition and mechanism is tested in 7.3.2.50.8, 7.3.2.50.14, 7.3.2.50.15, 7.3.2.50.16

**Question:**

Does the test setup need to be modified to achieve the test's intended purpose?

**Response:**

Yes. CONFIGURATION\_ERROR can be skipped until the test has been modified.