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DRYWELL COOLER DRAIN FLOW RATE FUNCTIONAL TEST

1.0 PURPOSE

To provide a detailed instruction for station personnel to perform a functional test of the Drywell Cooler Drain Flow Switches 1T47-FS029A and B to satisfy the requirements of Reference 11.1.

2.0 RESPONSIBILITY

The I&C Engineer shall be responsible for ensuring the proper implementation of this procedure.

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3.0 DISCUSSION

- 3.1 Flow switches 1T47-FS029A and B measure the volume of water condensed in the Drywell by unit coolers 1T47-UC017A and B. A high flow through these flow switches is indicative of high drywell humidity which may be the result of a primary nuclear process barrier leak. Alarms are provided on panel 1H11*PNL-VC2 in the Main Control Room to provide early indication of a small steam leak in the Primary Containment.
- 3.2 Flow switches 1T47-FS029A and B are Magnetrol flow sensitive disk type instruments. Fluid flow displaces a piston and that movement is proportional to the rate of fluid flow. Magnetic interaction with the piston stem actuates the alarm switch.
- 3.3 The following annunciators, located on panel 1H11*PNL-VC2, alarm during the performance of this procedure:

| <u>Annunciator No.</u> | <u>Description</u> |
|------------------------|------------------------------|
| 3055 (C-1 on 2B) | DRYWELL UNIT CLR-17A FLOW HI |
| 3056 (C-2 on 2B) | DRYWELL UNIT CLR-17B FLOW HI |

- 3.4 The fluid used in the performance of this procedure will eventually drain into the Drywell Floor Drain Tank, 1G11*TK057. Because of this the following annunciators may alarm during the performance of this procedure:

| <u>Annunciator No.</u> | <u>Description</u> | <u>Location</u> |
|------------------------|---------------------------------|-----------------|
| 0012 (D-7 on A7) | DW FLOOR DRN TK | 1H11*PNL602 |
| 0423 (E-10 on 209C) | RW SUMPS TROUBLE | 1H11*MCB01 |
| 4826 (A-2 on ZC) | DRYWELL FLOOR DRAIN TK LEVEL HI | 1G11-PNL47 |

- 3.5 Table of Contents.

- 8.1 Functional Test of Flow Switch 1T47-FS029A
8.2 Functional Test of Flow Switch 1T47-FS029B

4.0 PRECAUTIONS

- 4.1 Steps indicated in this procedure for each instrument shall be performed in sequence.
- 4.2 The Watch Engineer shall be notified whenever a procedural step cannot be completed as stated, or if any other problem develops during the test.
- 4.3 The use of portable radio frequency generating communications equipment in the Main Control Room, Radwaste Control Room, Relay Room, Emergency Switchgear Room, and Diesel Generator Room is prohibited.

5.0 PREREQUISITES

- 5.1 Obtain approval to perform this procedure from the Watch Engineer in accordance with the Surveillance Program, SP 12.016.01.
- 5.2 Coordinate testing with the NSO.
- 5.3 Obtain an RWP, if required.
- 5.4 This procedure may be performed during all plant operating conditions. However this procedure is not required to be performed when the Drywell is inerted.

6.0 LIMITATIONS AND ACTIONS

- 6.1 If the instrumentation being tested does not respond as specified in this procedure, then the LCOs of Reference 11.2 apply.

7.0 MATERIALS OR TEST EQUIPMENT

- 7.1 Polyethylene tubing (tygon) or equivalent.
- 7.2 Demineralized water source.

8.0 PROCEDURE

INITIALS/DATE

8.1 Functional Test of Flow Switch IT47-FS029A.

8.1.1 Verify that all prerequisites have been satisfied.

_____ /

8.1.2 Establish communications between flow switch IT47-FS029A, located on elevation 63 feet in the drywell, and the main control room.

_____ /

8.1.3 Inform the NSO of the intent to perform a functional test of flow switch IT47-FS029A.

_____ /

8.1.4 Record the present time. The time is recorded to help determine the length of time the instrument was out of service.

_____ /

Time _____

8.1.5 At the IT47-UC17A (CLC-6D) drip tray, locate the drain hole to the flow switch and insert about one foot of polyethylene tubing into the drain. Drain is inside the door adjacent to FN11A.

_____ /

8.1.6 Connect the demineralized water source to the polyethylene tubing.

_____ /

8.1.7 Verify that annunciator no. 3055 (C-1 on 2B), DRYWELL UNIT CLR-17A FLOW HI, located on panel IH11*PNL-VC2, is clear.

_____ /

NOTE: Allow the flow switch at least 3 minutes to respond to changes in flow.

- 8.1.8 Allow the demineralized water to flow into flow switch IT47-FS029A until annunciator no. 3055 (C-1 on 2B), DRYWELL UNIT CLR-17A FLOW HI, located on panel IH11*PNL-VC2, alarms. The flow should be at a rate sufficient enough to trip the flow switch. (The flow switch should trip at approximately 1.3 GPM.) /
- 8.1.9 Isolate the demineralized water source. /
- 8.1.10 After at least three minutes verify annunciator no. 3055 (C-1 on 2B), DRYWELL UNIT CLR-17A FLOW HI, located on panel IH11*PNL-VC2, is clear. /
- 8.1.11 Disconnect the demineralized water source and the polyethylene tubing from the drip tray of IT47-UC17A (CLC-6D). /
- 8.1.12 Record the present time. The time is recorded to help determine the length of time the instrument was out of service. /
Time _____
- 8.1.13 Inform the NSO that testing of flow switch IT47-FS029A is complete. /
- 8.2 Functional Test of Flow Switch IT47-FS029B.
 - 8.2.1 Verify that all prerequisites have been satisfied. /
 - 8.2.2 Establish communications between flow switch IT47-FS029B, located on elevation 63 feet in the drywell, and the main control room. /
 - 8.2.3 Inform the NSO of the intent to perform a functional test of flow switch IT47-FS029B. /
 - 8.2.4 Record the present time. The time is recorded to help determine the length of time the instrument was out of service. /
Time _____
 - 8.2.5 At the IT47-UC17B (CLC-7B) drip tray, locate the drain hole to the flow switch and insert about one foot of polyethylene tubing into the drain. Drain is inside the door adjacent to FN12A. /

- 8.2.6 Connect the demineralized water source to the polyethylene tubing. /
- 8.2.7 Verify that annunciator no. 3056 (C-2 on 2B), DRYWELL UNIT CLR-17B FLOW HI, located on panel 1H11*PNL-VC2, is clear. /
- NOTE: Allow the flow switch at least 3 minutes to respond to changes in flow.
- 8.2.8 Allow the demineralized water to flow into flow switch 1T47-FS029B until annunciator no. 3056 (C-2 on 2B), DRYWELL UNIT CLR-17B FLOW HI, located on panel 1H11*PNL-VC2, alarms. The flow should be at a rate sufficient enough to trip the flow switch. (The flow switch should trip at approximately 1.3 GPM.) /
- 8.2.9 Isolate the demineralized water source. /
- 8.2.10 After at least three minutes verify annunciator no. 3056 (C-2 on 2B), DRYWELL UNIT CLR-17B FLOW HI, located on panel 1H11*PNL-VC2, is clear. /
- 8.2.11 Disconnect the demineralized water source and the polyethylene tubing from the drip tray of 1T47-UC17B (CLC-7B). /
- 8.2.12 Record the present time. The time is recorded to help determine the length of time the instrument was out of service. /
- Time _____
- 8.2.13 Inform the NSO that testing of flow switch 1T47-FS029B is complete. /

9.0 ACCEPTANCE CRITERIA

- 9.1 The flow switches and annunciators trip and reset as noted in the procedure.

10.0 FINAL CONDITIONS

- 10.1 Submit all test results in accordance with the Surveillance Program, SP 12.016.01.

11.0 REFERENCES

- 11.1 Technical Specifications, Section 4.4.3.1.C.
- 11.2 Technical Specifications, Section 3.4.3.1.C.

11.3 FB-23B, Flow Diagram System IT47 Primary Containment Air Cooling System.

11.4 ESK-10ANV03, S&W Elementary Diagram, 1H11*PNL-VC2 Annunciators.

11.5 Magnetrol Flow Switch Instruction Manual, Model F503-A, SR2 No. 1472-1.

12.0 APPENDICES

N/A