

Report Number: 78-22/01T
Report Date: 4/17/78
Occurrence Date: 4/4/78
Facility: Salem Generating Station
Public Service Electric & Gas Company
Hancocks Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Reactor Coolant Low Flow Protection
Seismic Qualification Deficiency

CONDITIONS PRIOR TO OCCURRENCE:

N/A

DESCRIPTION OF OCCURRENCE:

During a review of seismic test data for NEMA 12 panel enclosures, it was found that a transmitter manufactured by Fischer and Porter, Model No. 10B2496, was used in a NEMA 12 enclosure for monitoring reactor coolant flow. This transmitter had a high output deviation during the seismic test which exceeded acceptable tolerances. This transmitter in the noted application provides a low flow signal to the solid state protection system for reactor trip. The transmitters' high output deviation during a seismic event could prevent it from performing its required function. This is only applicable if the reactor coolant low flow condition occurs in coincidence with a seismic event. Test reports indicate that the transmitter output returns to normal following the seismic disturbance.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE:

The Fischer and Porter 10B2496 transmitter experienced the high output deviation during the seismic test due to vibratory motion of the instrument mounting plate within the NEMA 12 enclosure. The sub-panel mounting plate was not stiff enough to adequately support the heavy 10B2496 transmitter. As a result, this transmitter was subjected to high vibration levels which caused its output to be offset in the upscale direction during the test. Subsequent inspection and calibration checks showed no damage or significant shift in transmitter accuracy.

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ANALYSIS OF OCCURRENCE:


Sufficient diversity exists for protection against loss of reactor coolant flow transients to overcome the failure of one protection system parameter. However, if the cause of a loss in reactor coolant flow is not electrical in nature, the reactor coolant low flow transmitters are especially important. With the previously described condition existing, the low reactor coolant flow reactor trip may not have been initiated during a seismic event if needed within the time limitations imposed by the Technical Specifications. Eventually, the overtemperature ΔT reactor trip and/or the low reactor coolant flow reactor trip (when the seismic disturbance had subsided) would be initiated.

CORRECTIVE ACTION:

The installation of a unistrut to stiffen the sub-panel mounting plate in the NEMA 12 panel and enlarging the instrument mounting bracket will correct the output deviation of the transmitter to within acceptable tolerances during a seismic event. Confirmatory seismic tests have been performed demonstrating this design. This change will be incorporated in accordance with DCR ED-0357. Panel modifications will be completed prior to the unit returning to service from the present outage.

FAILURE DATA:

N/A

Prepared by T. L. SpencerSORC Meeting No. 22-78

Manager - Salem Generating Station

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LICENSEE EVENT REPORT

CONTROL BLOCK:

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 N J S G S 1 2 0 0 - 0 0 0 0 0 0 - 0 0 3 4 1 1 1 1 4 5
 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During review of seismic test results for NEMA 12 enclosures, it was
 0 3 determined that Fischer & Porter 10B2496 transmitters utilized in reactor
 0 4 coolant low flow monitoring, had a high output deviation during seismic
 0 5 test. This high output deviation causes inoperability during seismic
 0 6 event.
 0 7
 0 8

0 9 I A 11 B 12 A 13 S U P P O R T 14 B 15 Z 16
 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 The high output deviation during seismic test was due to vibratory motion
 1 1 of the instrument mounting plate resulting in high transmitter vibration
 1 2 levels. Design change ED-357 has been initiated to a unistrut support
 1 3 to stiffen the sub-panel mounting plate. Installation will be complete
 1 4 prior to returning unit to service.

1 5 G 29 0 0 0 29 N/A 30 A 31 Seismic results review 32
 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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