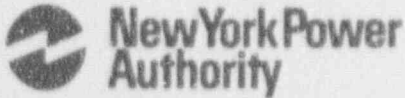


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Radford J. Converse  
Resident Manager

February 4, 1992  
JAFP-92-0120

United States Nuclear Regulatory Commission  
Document Control Desk  
Mail Station P1-137  
Washington, D.C. 20555

SUBJECT: DOCKET NO. 50-333  
LICENSEE EVENT REPORT: 92-002-00 - MOV Deficiencies  
Related to Generic Letter  
89-10 Testing

Dear Sir:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) and 10 CFR 50.73(a)(2)(v)(B), (C), and (D).

Questions concerning this report may be addressed to Mr. W. Verne Childs at (315) 349-6071.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'R. Converse'.

RADFORD J. CONVERSE

RJC:WVC:lar

Enclosure

cc: USNRC, Region I  
USNRC Resident Inspector  
INPO Records Center

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT: If more space is required, use additional NRC Form 3664's (17)

INTERIM REPORT

EIIS Codes are in []

Description

The plant was shutdown and in the cold condition for maintenance and preparing to conduct refueling.

One of the significant maintenance tasks includes in-place testing of selected motor operated valves in safety-related systems to verify that the valves are capable of being placed in the proper position for the systems to perform their safety functions. This testing is being conducted to satisfy the requirements of NRC Generic Letter 89-10.

Prior to in-place testing, an evaluation is performed to determine the most limiting conditions that could exist for both normal and abnormal events that are within the plant design basis. The evaluation considers such factors as worst case differential pressure, operator terminal voltage under degraded voltage conditions, and component design limitations. The result of the evaluation is a determination of the minimum thrust required to operate the valve under the most limiting conditions and the maximum thrust available to preclude component damage.

During operation of the valve (for testing) the actual thrust developed is determined from strain gages mounted on the valve and/or valve operator. The maximum thrust developed by the valve operator is controlled (limited) by torque switches which interrupt (stop) valve operation by opening the valve operator motor controller contactor at a predetermined torque switch setting. The minimum thrust developed is a function of motor operator characteristics such as valve stem thread characteristics, coefficient of friction, torque spring stiffness, and torque switch setting. Ideally, the thrust applied to the valve stem would be in close correlation with the torque applied to the stem nut. Thus proper selection of torque switch setting and other motor operator design features can result in control of valve stem thrust within the acceptable range to assure valve operation while limiting thrust to prevent valve and/or valve operator damage.

Several factors can result in inadequate torque (and thus thrust) being provided by the motor operator and several factors can interfere with conversion of the torque (on the valve stem nut) to thrust on the valve stem. These factors include (but are not limited to) inadequate lubrication of stem nut and/or valve stem threads, improper torque spring stiffness and improper torque switch setting. In general, testing which reveals inadequate thrust application with a specified torque switch setting is an indication of the presence of one or more deficiencies of the nature noted above.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Calculations performed prior to testing, or testing of motor operated valves in the "as-found" condition prior to planned overhaul of the valve operators, revealed a number of deficiencies. Because the testing will extend over a period of more than one (1) month there is a potential for discovery of additional problems. As a result, this LER is submitted as an "Interim Report". An updated report will be submitted following completion of the valve operator overhauls and post-overhaul ("as-left") testing.

Between January 7, 1992 and January 24, 1992, seven (7) motor operated valve deficiencies were identified as indicated below.

1. On January 7, 1992 Residual Heat Removal/Low Pressure Coolant Injection (RHR/LPCI) system [BO] valves 10MOV-26A&B, which are outboard primary containment [NH] (drywell) spray isolation valves for the containment spray mode of the RHR/LPCI system, were determined to be designed with inadequate torque and thrust capability. As a result, the drywell spray function was declared inoperable for both safety divisions.

Analysis of the required valve operator torque revealed a minimum of 137 foot-pounds required. The available torque is calculated to be 100 foot-pounds at degraded voltage conditions and 124 foot-pounds at full voltage.

2. On January 15, 1992 during "as-found" testing prior to valve operator overhaul, core spray [BM] loop B suction valve 14MOV-7B tripped on torque switch actuation. The thrust at torque switch trip was 5,978 pounds-force compared to a minimum of 6,211 pounds-force.
3. On January 17, 1992, during testing, main steam leak collection [BD] system Division 2 drain line isolation valve 29MOV-204B was found to trip on high torque at a valve stem thrust of 1,082 pounds-force. The target thrust values for the valve are 2,434 pounds-force (minimum thrust) and 5,897 pounds-force (maximum thrust).
4. On January 18, 1992 main steam leak collection system [BD] outboard main steam isolation valve stem leak-off isolation valve 29MOV-203A failed to close during testing. The valve motor controller was interrupted by torque switch actuation at less than the expected stem thrust of 3,173 to 4,695 pounds-force (minimum and maximum thrust respectively).
5. On January 22, 1992 during test of low pressure core spray [BM] loop B full flow test valve 14MOV-26B tripped on torque switch actuation. Testing indicated a valve stem thrust of 26,7380 pounds-force compared to minimum required thrust of 30,271 pounds-force and a maximum thrust of 43,549 pounds-force.



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TEXT (If more space is required, use additional NRC Form 366A's) (17)

6. On January 24, 1992 during test of High Pressure Coolant Injection system [BJ] injection line outboard isolation valve 23MOV-20 the valve stem thrust exceeded the calculated maximum value of 58,465 pounds-force. The indicated thrust was 68,298 pounds-force.

Cause

Specific causes of each deficiency have not been determined. The "as-found" testing, overhaul, and "as-left" testing following installation after overhaul will require at least two months to complete for the large number of valve operators scheduled for test and overhaul. At the time this Interim Report is submitted work has not progressed to the point where the causes are evident.

The update of this LER will include information concerning the cause of each deficiency.

Analysis

The deficiencies found while testing to meet the requirements of Generic Letter 89-10 are considered reportable events under 10 CFR 50.73(a)(2)(ii)(B) as conditions outside the design basis of the plant because calculations indicate inadequate thrust is developed by some valve operators to properly position the valves during design basis accidents described in the Final Safety Analysis Report (FSAR). In addition, the events are reportable under 10 CFR 50.73(a)(2)(v)(B), (C), and (D) as conditions that alone could prevent fulfillment of safety functions of systems needed to remove residual heat, control release of radioactive material, and mitigate the consequences of an accident.

The potential consequences of each deficiency have not been fully evaluated at the time this Interim Report is submitted. A more detailed evaluation will be provided in the updated report. This evaluation will consider the potential effects on systems as a result of each deficiency.

Corrective Action

1. The deficiencies noted in this Interim Report were noted during pre-test evaluation prior to actual testing or during "as-found" testing prior to scheduled overhaul of the valve operator. In each case, the valve operator of concern and/or the system was declared inoperable. No action was required by Technical Specifications for any of the deficiencies because none of the affected systems were required to be operable.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Additional Information

Failed Components: Failed component information will be provided in the Update Report.

Update Report: An Update Report will be submitted within 90 days of the completion of the testing. The updated report will describe any corrective action required to allow plant start-up following the refueling outage. Ninety (90) days will be necessary to complete the significant number of evaluations related to root causes and potential consequences of the deficiencies. The refuel outage is currently scheduled to be completed on March 23, 1992.