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JOHN D. LEONARD, JR.
VICE PRESIDENT - NUCLEAR OPERATIONS

MAY 13 1988

SNRC-1460

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

I.E. Bulletin 85-03, Supplement 1
Request for Additional Information
Shoreham Nuclear Power Plant Station - Unit 1
Docket No. 50-322

Reference: 1. Letter from Mr. J. T. Wiggins (NRC) to Mr. J. D. Leonard (LILCO), dated April 7, 1988.

2. NRC Bulletin 85-03 Supplement 1 dated April 27, 1988.

Gentlemen:

Attached please find our response to the above referenced request for additional information and NRC Bulletin Supplement. As stated in the attached response, the requested revision to Table 1A will be sent under separate cover within 90 days after the Boiling Water Reactor Owner's Group (BWROG) submits the results of their reevaluation of valve differential pressures.

This revised Table 1A will also serve as our reply to item (a) of Reference 2. Our letter which will transmit this updated table will also contain the information requested for in items (b), (c), and (d) of Reference 2. LILCO still intends to complete the testing requirements of the subject bulletin on a schedule consistent with our power ascension test program. As previously stated, LILCO will submit a written report as required by item (f) of the bulletin and supplement 1 within 60 days of completion of our test program.

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Should you or your staff have additional questions, please contact my office.

Very truly yours,

John D. Leonard, Jr.
Vice President - Nuclear Operations

TD:lh

Attachment

cc: W. T. Russell
S. Brown
R. J. Kiessel
F. Crescenzo

AFFIDAVIT

STATE OF NEW YORK)
: ss:
COUNTY OF SUFFOLK)

I, JOHN D. LEONARD, JR., being duly sworn, depose and say that I am the Vice President - Nuclear Operations for the Long Island Lighting Company. I am authorized on the part of said Company to sign and file with the U.S. Nuclear Regulatory Commission the enclosed letter (SNRC-1460) for the Shoreham Nuclear Power Station. This response was prepared under my supervision and direction; and the statements contained therein are true and correct to the best of my knowledge, information and belief.

John D. Leonard, Jr.

Sworn to before me this
13th day of May 1988

Linda A. Cratty

LINDA A. CRATTY
NOTARY PUBLIC, State of New York
No. 4816267
Qualified in Suffolk County
Commission Expires March 30, 1990

NRC Request

1. Revise Table 1A of the response dated 09-24-87 to include values of differential pressure for opening the following MOVs, or justify exclusion of these pressures. As required by Action Item a of the bulletin, assume inadvertent equipment operations.

   (a) HPCI MOV031 is shown normally open in Zone F-8 of Drawing M-10121019, and as MOV 3 on Page 68 of BWROG Report NEDC-31322 dated September 1986. How would suction from the CST be ensured if this MOV were to be (a) actuated inadvertently to the closed position upon intended initiation of the system or (b) left closed inadvertently?

   (b) RCIC MOV031 is shown normally open in Zone G-8 of Drawing M-10116-20, and as MOV 3 on Page 72 of the BWROG Report. The question in Item 1(a) above applies here also.

   (c) HPCI MOV044 is shown normally open in Zone C-5 of Drawing M-10121-19, and as MOV V1 on Page 71 of the BWROG Report. How would exhaust from the HPCI Turbine to the suppression pool be ensured if this valve were to be (a) actuated inadvertently to the closed position upon intended initiation of the system or (b) left closed inadvertently?

   (d) RCIC MOV045 is shown normally open in Zone C-5 of Drawing M-10116-20, and as MOV V1 on Page 74 of the BWROG Report. The question in Item 1(c) above applies here also.

Response

The Boiling Water Reactor Owner's Group (BWROG) informed the Nuclear Regulatory Commission in a letter dated March 28, 1988, that it will reevaluate valve differential pressures, considering inadvertent valve operation of nine NRC selected motor operated valves. The specific valves mentioned in items 1(a) through (d), 2 and 3 of the Request for Additional Information are among the nine NRC selected valves. Thus, it is our intent to submit a revised Table 1A containing the requested information within ninety (90) days after the BWROG submits the results of their reevaluation to the NRC.

1(a) The HPCI suction can be supplied from either the Condensate Storage Tank (CST) or the Suppression Pool. It is preferentially lined up to the CST. In this configuration 1E41*MOV-031 (suction from CST) is open while HPCI is in the standby condition. HPCI is verified to be in its standby configuration once per shift as operators walk down the control room boards prior to accepting the watch. The "HPCI SYS INOP" alarm (provided in response to regulatory guide 1.47) will annunciate in the event 1E41*MOV-031 were to be closed with 1E41*MOV-032 (suppression pool suction valve) in the closed position. Therefore it is extremely remote that the HPCI system would be without a suction path due to the CST suction valve being "left closed inadvertently".

During an intended initiation of the system, there is a remote chance that the operator would accidentally reposition the CST suction valve closed. However, in the unlikely event that the valve was closed while the suppression pool suction was also closed, the system's initiation logic would automatically open the suction from the CST. If the CST suction was closed while the suppression pool suction was open, the HPCI system will have an adequate supply of water from the suppression pool, and would not require the CST as a source. Therefore, in the unlikely event that the operator accidentally closes the CST suction valve during a required initiation of the system, adequate suction will be ensured either via the CST (as the control logic re-opens the valve) or from the suppression pool.

1(b) The RCIC system is also preferentially lined up to the CST through 1E51*MOV031. This standby lineup is also verified once per shift during the shift turnover. Annunciation of "RCIC SYS INOP" (installed per regulatory guide 1.47) would occur if both suction valves were in the closed position. Therefore, as with HPCI, it is not credible to assume that both suction paths could be closed inadvertently and left closed for any period of time without the operator taking the appropriate corrective action.

During an intended initiation of the system, there is a remote chance that the operator may accidentally reposition the RCIC's CST suction valve. However, as with HPCI's control logic, adequate pump suction would be ensured either by the automatic reopening of 1E51*MOV-031 or from the suppression pool, through 1E51*MOV-032.

1(c) The HPCI turbine exhaust valve, 1E41*MOV044 is a normally open valve in the standby configuration of the system. The valve's control switch is key locked in the open position. Access to the key can only be obtained through the Watch Engineer or Watch Supervisor. Therefore, LILCO does not consider inadvertent closing of this valve during an intended initiation of the system a credible occurrence.

It is similarly not credible to assume that the turbine exhaust valve could be left closed for any period of time without the operator taking appropriate corrective action. Anytime *MOV-044 is not fully open, the "HPCI SYS INOP" annunciator (installed per regulatory guide 1.47) will sound, alerting the operator to a problem with the system.

1(d) The RCIC turbine exhaust valve, 1E51*MOV045, is similar in operation to the HPCI turbine exhaust valve. Inadvertent closure during intended operation is not credible due to the keylock switch arrangement. The "RCIC SYS INOP" annunciator precludes the valve from being left closed inadvertently, without the operator taking appropriate corrective action.

NRC Request

2. Revise Table 1A of the response of 09/24/87 to include RCIC MOV044. This trip and throttle valve is shown normally open in Zone G-3 of Drawing M-10117-16, and as MOV X on Page 74 of the BWROG Report. How would steam supply to the RCIC turbine be ensured if this MOV were to be (a) actuated inadvertently to the closed position upon intended initiation of the system or (b) left closed inadvertently?

Response

As identified in the response to item 1 above, we will revise and submit Table 1A within ninety (90) days after the BWROG submits the results of their reevaluation to the NRC.

2. The RCIC turbine trip and throttle valve, 1E51*MOV-044, is a normally open, spring charged valve. The valve's normal safety function is to close on a turbine trip or isolation signal.

2(a) During an intended initiation of RCIC, there is a remote chance that the operator could inadvertently close the RCIC turbine trip and throttle valve.

To verify the valves capability to recover (re-open) from an inadvertent operator action (closing valve), it will be added to our signature analysis program.

2(b) In the event that 1E51*MOV-044 is not fully opened, the "RCIC SYS INOP" annunciator will sound, alerting the operator to a problem with the system. Therefore, based on this annunciation, coupled with the operator's required verification of system operability, once per shift, LILCO does not consider that the valve could be left closed inadvertently.

NRC Request

3. Revise Table 1A of the response dated 09/24/87 to include values of differential pressure for opening the following CST test return valves, or justify exclusion of these pressures. According to pages 55 and 59 of the BWROG Report, these valves have no safety action; however, utilities are expected to report differential pressures for testing, per Note o on Page 66.

   (a) HPCI MOVs 037 and 038 are shown as MOVs 5 and 6 on Page 68 of the BWROG Report.

   (b) RCIC MOV 037 is shown as MOV 5 on Page 72 of the BWROG Report.

Response

3. Table 1A will be revised to include the requested information and submitted at a later date per response to items 1 and 2 above.

NRC Request

4. According to notes 4 and 5 of the response dated 09/24/87, three MOVs were under engineering review. Report the results of this review.

Response

4(a) Note 4 applies to the HPCI CST return valves, 1E41*MOV037 and 1E41*MOV038. The valves have no active safety function and are normally closed during plant operation except during HPCI surveillance testing.

During 1987 surveillance testing, these valves individually failed to operate as expected under pump full flow conditions. (See SNPS LER 87-022 and NRC Inspection Report 50-322/87-13 for more details).

1E41*MOV037 is an 8" Velan globe valve installed with flow from the bottom up (under the seat). Based on discussions with the valve vendor, inspection of the valve internals, review of the disk geometry, and vendor in-house test results on a smaller, but similar valve, a decision was made to modify the valve disk. The modification consisted of drilling holes in the valve guide area to reduce differential pressure forces.

The valve disk modification was performed by Velan and the disk has been reinstalled. As previously committed LILCO will test this valve under pump full flow conditions during the next plant startup and will supplement LER 87-022.

1E41*MOV038 is a 10" Velan flex wedge gate valve installed downstream of 1E41*MOV037. Based on a review of the motor operator sizing calculations, a valve internal inspection, and discussions with the valve vendor, a decision was made to change the actuator gear ratio to reduce the motor torque required to operate the valve.

Replacement parts were procured from Limitorque and recently installed. Similar to 1E41*MOV037, LILCO plans to test this valve during the next plant startup.

The internals of both valves were examined by a Velan service representative; additionally, a Limitorque service representative reviewed the general working condition of both actuators. All modifications to these valves were performed with the concurrence of the valve manufacturer.

4(b) Note 5 applies to the HPCI and RCIC steamline keep-warm valves, 1E41*MOV047 and 1E51*MOV047. Both valves are normally open 1" globe valves. Diagnostic testing performed on these valves indicated that each valve is thrusting substantially above the calculated thrust requirement. At this time, LILCO is actively pursuing the root cause for this condition via additional diagnostic testing and physical inspections of actuator internals. The results of our investigation will be documented and available for the Resident Inspector's review.

NRC Request

5. The proposed program for action items b, c and d of the bulletin is incomplete. Provide the following details as a minimum:

   (a) commitment to a training program for setting switches and maintaining valve operators,

   (b) commitment to justify continued operation of a valve determined to be inoperable,

   (c) description of a method possibly needed to extrapolate valve stem thrust determined by testing at less than maximum differential pressure,

   (d) justification of a possible alternative to testing at maximum differential pressure at the plant,

   (e) consideration of pipe break conditions as required by the bulletin, and

   (f) stroke testing when necessary to meet bulletin requirements.

Response

5(a) The responsibility for valve operator maintenance is shared by I&C technicians and maintenance mechanics. For the technicians, the training program has recently been enhanced to cover all tasks performed by the technicians. This enhancement includes the setting of torque and limit switches. This program is now a qualification requirement for technicians working on motor operated valves. For the mechanics, vendor training (either by Limitorque or one of the valve manufacturers) is provided which includes disassembling and rebuilding the operator.

5(b) In the second paragraph of our response to item b of the Bulletin we stated the following: "If it is determined that any design is not acceptable, then the valve will be declared inoperable and the applicable limiting conditions for operation will be enforced, or we will make an appropriate justification for continued operation in accordance with the applicable technical specification."

5(c&d) Since our last transmittal concerning the subject bulletin, we have decided to utilize signature analysis to verify operability of the subject MOV's. This analysis will measure the stem thrust at torque switch trip. This value is independent of the existing differential pressure during any valve stroke and is therefore a measure of the MOV's present capability. This measured value will be verified to be greater than the required stem thrust as derived analytically from the original design calculations. If the MOV is capable of providing more stem thrust than required by design, then there is no need to perform an actual test at the maximum differential pressure.

5(e) As part of our review of item a of the subject bulletin (which required licensees to review and document the design basis for each identified valve), consideration was given to both normal and abnormal events including pipe breaks, for determining maximum differential pressures and required valve thrust. For valves with maximum differential pressures based on pipe break events, testing will be performed as stated in response to item 5(c) and (d) above.

5(f) As stated in Item 5 (c) & (d) above, LILCO intends to signature test the subject MOVs to verify that the valves are developing sufficient stem thrust. This testing requires the valves to be stroked and is considered to meet the stroke test requirements of the subject bulletin.