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License DPR-35
 Docket 50-293

Response to a Request for Additional Information on
 Motor Operated Valve Switch Settings (IE Bulletin 85-03)

This letter's attachment responds to the NRC's March 25, 1988 request for additional information resulting from its review of Boston Edison's response to IE Bulletin 85-03.


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PMK/amm/1936

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Attachment to BECo letter 88- 077
NRC Request for Additional Information on IE
Bulletin (IEB) 85-03: Motor Operated Valves

1. Request

HPCI MOV MO-2301-15 is shown normally closed in Zone C-8 of Drawing M243 Revision E9, and as CST Test Return Valve MOV 6 on Page 68 of BWROG Report NEDC-31322 dated September 1986. Revise the response dated 12/31/86 to include this MOV, or justify its exclusion.

Response

MO-2301-15 is excluded because "Action a" of IEB 85-03 states that IEB 85-03 applies to valves which are required to be tested in accordance with 10CFR50.55(a)(g). MO-2301-15 does not require 50.55(a)(g) testing because it is downstream of restricting orifice RO-2301-59; hence MO-2301-15 functions in a low pressure portion of the system and is not part of the reactor coolant pressure boundary.

MOV-2301-10 is upstream of both the restricting orifice and MOV-2301-15, is part of the pressure boundary, and is tested in accordance with 50.55(a)(g) requirements. MOV-2301-10 is part of the IEB 85-03 test program we submitted on December 31, 1986.

2(a). Request

Provide a commitment to a training program for setting switches and maintaining valve operators.

Response

BECo has an INPO accredited training program which provides maintenance personnel with training on motor operators. This program includes training on a procedure for the electrical checkout and adjustment of Limitorque motor operators that has a section on torque switch adjustment. The program requires retraining on motor operator maintenance once per fuel cycle.

2(b). Request

Provide a commitment to justify continued operation of a valve determined to be inoperable.

Response

"Action b" of IEB 85-03 requires the licensee to "...make an appropriate justification for continued operation in accordance with the applicable technical specification." Pilgrim's Technical Specifications include a definition, "Operable-Operability", that encompasses "...all necessary attendant instrumentation, controls ...or other auxiliary equipment that are required for the system...to perform its function(s)..."

This definition requires entrance into a Limiting Condition for Operation (LCO) for the affected system if a valve necessary to that system performing its function is determined to be inoperable.

The LCOs for the High Pressure Core Injection (HPCI) system (3.5.C.2), and the Reactor Core Isolation Cooling (RCIC) system (3.5.D.2) allow (justify) continued reactor operation for seven days following a system being determined inoperable. Continued operation beyond seven days would require the NRC to grant us relief from technical specifications.

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The following responses represent our position following a preliminary review of your questions. Refinements to these responses may be necessary based on further review by us and by industry groups studying these issues.

2(c). Request

Provide a description of a method possibly needed to extrapolate valve stem thrust determined by testing at less than maximum differential pressure.

2(d). Request

Provide a justification of a possible alternative to testing at maximum differential pressure at the plant.

Response to 2(c) and 2(d)

The alternative method to testing at maximum differential pressure (or other differential pressure condition) and its justification is:

- Develop a calculational analysis to determine the minimum thrust required to operate at maximum differential pressure. This minimum thrust value would include sufficient conservatism to overcome maximum differential pressure.
- Verify via MOVATS (or equivalent) that the operators at the torque switch trip setpoint provide sufficient minimum thrust to overcome the maximum differential pressure. Additional thrust margin is provided above the torque switch trip set point since operator inertia, due to motor contact dropout time, increases the delivered thrust beyond the minimum required. This total thrust is also a parameter measured by MOVATS.
- The torque switch trip set point should be adjusted such that the delivered thrust is above the minimum required calculated value. The total thrust delivered should be below the maximum operator or valve component capability. A review of the total thrust values to component ratings could then be performed.
- Generally, if the total delivered thrust is below the component ratings, and if the torque switch trip thrust is above the minimum required to operate against maximum differential pressure, the torque switch trip setting would be considered appropriate.

- The acceptability of the valve torque switch settings is verified by operating those valves which can be operated at maximum differential pressure, at maximum differential pressure.
- The above generally applies for the closed direction since in the open direction the torque switch is jumpered. The motor actuator ceases operation based on limit switches in the open direction. Therefore, total stall thrust capability would be available to open the valve. Stall thrust can be calculated and is typically much greater than the thrust required to overcome maximum differential pressure. Thus, there would not be a thrust concern for the opening direction on valves which have their torque switch jumpered. For all the valves we are considering, the torque switch is jumpered in the open direction.
- Motor operated valves are included in preventative maintenance and surveillance testing programs to insure they would function.

Calculations have been completed to establish valve torque switch settings for IEB 85-03. MOVATS testing was performed without the presence of differential pressure, however, the thrust output can be directly measured at a given torque switch setting without the presence of differential pressure.

Following restart, specific valves will be operated against maximum differential pressure. Successful valve operation will verify that the analytical models are accurate and sufficient to establish proper torque switch settings. The valves to be operated against maximum differential pressure are representative of all applicable valves and the calculational method used to establish torque switch settings is similar for the applicable valve types.

The above are preferred approaches, but could change based on information gained through industry studies or further NRC revisions to this bulletin.