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JAFF 88-0450

United States Nuclear Regulatory Commission
Washington, DC 20555

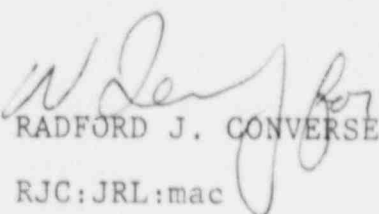
Attention: Document Control Desk

SUBJECT: RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI)
ON IEB 85-03

ENCLOSURES: (1) Response to Request for Additional Information on
IEB 85-03 (8 pages)

REFERENCE: (a) NRC letter, Wenzinger to Converse, dated
April 11, 1988

The enclosure contains the Authority's response to your Request for Additional Information contained in reference (a). The specific requests have been included in the text of the enclosure to assist in evaluating the responses.


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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION ON IEB 85-03NRC REQUEST

1. "Revise Table 1 of the response dated 05-14-86 to include the following MOVs, or justify their exclusion. According to pages 55 and 60 of BWROG Report NEDC-31322 dated September 1986 (for HPCI and RCIC respectively), these valves have no safety action; however, utilities are expected to report differential pressures for testing, per Note "o" on Page 66 of that report.
 - (a) HPCI MOVs 21 and 24 are shown normally closed in the upper right quadrant of FSAR Figure OP-15-1 Revision 6, and as MOVs 5 and 6 on Page 68 of the BWROG Report.
 - (b) RCIC MOV 30 is shown normally closed in Zone I-3 of FSAR Figure OP-19-1 Revision 6, and as MOV 5 on Page 72 of the BWROG Report."

RESPONSE

Table 1 of the 5/14/86 response reflected the design differential pressure for those valves determined by Attachment A of the Authority's response to be within the scope of the Bulletin requirements. Section 3.3.1.2 (page 13) of the Owner's Group report, NEDC-31322, dated September 1986, provides the rationale for exclusion of the test valves from the Bulletin response.

For the purpose of the note "o" on page 68, the test methodology for the full flow surveillance pre-opens the valves prior to turbine start and trips the respective turbine before the valves are given a close signal. The maximum recorded operating pump differential pressures from IST records are 1125 psig (RCIC) and 1140 psig (HPCI). Both test valves have restricting orifices upstream that reduce the differential pressure the test valves would experience during situations with significant flow to the Condensate Storage Tanks. Since these valves are not within the scope of IEB 85-03 as established in Section 3.3.1.2 of NEDC-31322, revision of Table 1 is not required.

NRC REQUEST

2. "Revise Table 1 of the response dated 05-14-86 to include the following MOVs, or justify their exclusion. According to pages 58 and 62 of the BWROG Report (for HPCI and RCIC respectively), each of these valves has a safety action for closing.
- (a) HPCI MOV 59 is shown normally open in Zone B-6 of FSAR Figure OP-15-1 Revision 6, and as MOV VII on Page 71 of the BWROG Report.
 - (b) RCIC MOV 130 is shown normally open in Zone F-6 of FSAR Figure OP-19-1 Revision 6, and as MOV VII on Page 74 of the BWROG Report."

RESPONSE

The JAFNPP Technical Specifications and FSAR establish the containment isolation boundary with the respective upstream HPCI and RCIC turbine exhaust check valves. These positions were established during the initial modification installing the vacuum breaker capability and confirmed by the Technical Specifications and FSAR. The Authority recently created a computerized Master Equipment List which provides a single, concise and unambiguous source for the identification of safety-related components. Generation of the Master Equipment List included component classification and the valve operator on these valves was designated class II/III - non-safety-related. Other than serving as a pressure and maintenance boundary, these valves provide no active safety-related function. For JAF these valves have no active safety function and no revision to Table 1 is required.

While investigating the status of these remote manual isolation valves, an inconsistency was discovered in the November 15, 1985 submittal for the ASME Section XI Second Interval Inservice Test Program per 10CFR50.55a(g). Although the discussions at that time reflected the position stated above, the two valves were unintentionally left in the submitted program package. A change will be submitted so that the Second Interval Program accurately reflects the status of these valves as having no active safety function.

NRC REQUEST

3. "Revise Table 1 of the response dated 05-14-86 to include a value of differential pressure for closing Steam Admission Valve MOV-132 (sic), or justify exclusion of that pressure. According to Page 61 of the BWROG Report, this valve has safety actions for opening and closing. "N/A" is the present entry for closing this valve."

RESPONSE

The steam admission valve for RCIC is 13MOV-131.

RCIC is not a safety-related system at FitzPatrick except for the primary containment isolation valves and steam leak detection components. The commitment in the 5/14/86 Authority response was to include "those RCIC valves which provide functions comparable to HPCI valves which are within the scope of the Bulletin." Since neither the HPCI steam admission valve nor the original designed RCIC steam admission valve had any safety-related closure function, the closed direction was not included in Table 1 in the original response.

A design modification to the 13MOV-131 logic resulting from NUREG 0737 actions, produced a High Reactor Vessel Water level closure signal. This closure would occur against the BWROG's maximum pressure of 1090 psig. An identical upstream valve (13MOV-16) demonstrated successful closure against this line pressure during plant hydrostatic testing.

A revised Table 1 has been included in this response to reflect this requested change and the 13MOV-131 data sheet from the 1/15/88 response has been revised to take credit for the type testing performed with 13MOV-16.

NRC REQUEST

4. "According to the response of 01-15-88, MOVATs has been included in the MOV testing program. If MOVATs is planned for application to some MOVs which are not included in its data base, commit to and describe an alternate method for determining the extra thrust necessary to overcome pressure differentials for these valves."

RESPONSE

No credit was taken for the data from the MOVATs data base of required thrust as a function of differential pressure for various valve manufacturers and sizes.

In each case where MOVATs testing was cited in lieu of a hydrostatic test, the signature analysis was used to verify that the actuator could produce a pre-calculated target thrust. In all cases the thrust calculations had been verified by a differential pressure test in the open direction on the same valve.

The method used involved maximum differential pressures calculated using the GE BWROG's report methodology for target thrust calculations verified by on-site hydrostatic tests. This combination resulted in valve-specific target thrusts. The MOVATs signature analysis equipment was used to demonstrate that torque switch trip on closure provided adequate thrust relative to the target thrust ranges.

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,"

RESPONSE

All electrical personnel that work on Limitorque actuators have had training in the setting of actuator switches and maintaining valve actuators. The FitzPatrick Training module for electricians, who perform all Limitorque switch settings and electrical valve operator maintenance, received INPO accreditation in December, 1987. The curriculum includes sixteen hours of theory and operations and sixteen hours of lab work including equipment disassembly/reassembly and training in plant procedures. The qualification standards include additional practical factors that require the demonstration of these skills. Additionally, electricians directly involved in the acquisition of MOVATs signature analysis traces have received up to 40 hours of instruction that included actuator theory and setup in addition to vendor equipment instruction. Additional training has been scheduled before the 1988 Refueling Outage to familiarize electrical maintenance personnel with the new motor control center signature acquisition.

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

RESPONSE

The requirements of JAF Technical Specifications and the ASME Boiler and Pressure Vessel Code Section XI are the determining criteria for motor operator valve operability. Accordingly, operability or continued operation decisions will be based on this criteria.

Many IEB 85-03 Bulletin programs, especially those prepared for utilities by the leading signature analysis equipment vendor, rely heavily on "motor load unit" measurements for long-term valve monitoring. All but two of the FitzPatrick valves within this bulletin scope are DC. No equipment has been available until recently to perform these measurements on DC actuators. The Authority has submitted one of the first orders for this newly offered equipment and have had personnel at the vendor this month participating in procedural development. An active participation in this development process will continue, but the Authority can make no specific program commitments without site evaluation of the product. This evaluation is expected to occur during the 1988 Refueling Outage (fall).

Presently available signature analysis equipment provides exceptional diagnostic capabilities during actuator set-up and trouble shooting but cannot provide, of itself, practical operability criteria. Signature analysis equipment will be used to supplement existing criteria during operability considerations but at present is unsuitable for determining operability. An existing Plant Standing Order contains a maintenance post-work testing matrix that requires various levels of MOVATs equipment as a function of the complexity of the maintenance task completed.

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

RESPONSE

In addition to the one-time operation with maximum differential pressure for those valves which could be tested in that mode, numerous signature tests capable of measuring either required (pressure test) or available (static tests) thrust were performed. Many tests against differential or line pressure were conducted with signature analysis equipment attached. These tests provided required thrust values for the imposed pressures. Similarly instrumented valves in functionally identical applications provided available thrust measurements from signature analysis. In this manner, an inboard steam line isolation valve could be type tested using the (isolable) outboard valve's pressure test results as criteria.

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

RESPONSE

The calculations performed to establish target thrust values for various differential pressures were proven conservative in all but one case. That one case appears to be a valve stem lubrication problem requiring actuator disassembly which will be addressed before the end of the 1988 Refueling Outage. Since the calculations have proven valid through the maximum differential pressures, reduced differential pressure tests can be utilized to benchmark thrusts necessary for a given valve and the results extrapolated to obtain target thrusts for the higher pressure.

- (e) "consideration of pipe break conditions as required by the bulletin."

RESPONSE

The bulletin requires pipe break consideration only to the extent that such valve operation is relied upon in the design basis. The only valves in this category are the HPCI and RCIC steam supply containment isolation valves. These five valves (for FitzPatrick) all had a line break assumption in the maximum differential pressure evaluation as provided by the NSSS supplier in the BWROG report. Once the maximum differential pressures were obtained, the values were inputted into the calculation for target thrust values and treated no differently than any other thrust requirement.

ATTACHMENT BTABLE 1DESIGN BASIS DIFFERENTIAL PRESSURES

<u>JAF ID</u>	<u>DESCRIPTION</u>	<u>NORMAL POSITION</u>	<u>DESIGN DIFFERENTIAL PRESSURES</u>	
			<u>OPEN PSID</u>	<u>SHUT PSID</u>
<u>RCIC System</u>				
13 MOV-15	Containment Inboard Steam Supply	OPEN	1250 ⁽²⁾	1250 ⁽²⁾
13 MOV-16	Containment Outboard Steam Supply	OPEN	1250 ⁽²⁾	1250 ⁽²⁾
13 MOV-18	Pump Suction From CST	OPEN	50	50
13 MOV-20	Pump Discharge Outboard Isolation	OPEN	1320 ⁽³⁾	N/A
13 MOV-21	Pump Inboard Discharge to Reactor	CLOSED	1320 ⁽³⁾	1320 ⁽³⁾
13 MOV-27	Minimum Flow to Suppression Pool	CLOSED	1500	1500
13 MOV-39	Pump Suction From Suppression Pool	CLOSED	50	50
13 MOV-41	Pump Suction From Suppression Pool	CLOSED	50	50
13 MOV-131	Turbine Steam Inlet	CLOSED	1250 ⁽²⁾	1250 ⁽²⁾
13 MOV-132	Cooling Water Isolation	CLOSED	1320 ⁽³⁾	N/A
<u>HPCI System</u>				
23 MOV-14	Turbine Steam Inlet	CLOSED	1250 ⁽²⁾	N/A
23 MOV-15	Containment Inboard Steam Supply	OPEN	1250 ⁽²⁾	1250 ⁽²⁾
23 MOV-16	Containment Outboard Steam Supply	CLOSED	1250 ⁽¹⁾	1250 ⁽²⁾
23 MOV-17	Pump Suction From CST	OPEN	50	50
23 MOV-19	Pump Inboard Discharge to Reactor	CLOSED	1320 ⁽³⁾	1320 ⁽³⁾

COMPONENT I.D.: 13 MOV 131FUNCTION: RCIC Turbine Steam AdmissionMANUFACTURER: VELAN SIZE - TYPE: 3" GateMODEL: Pressure Seal B10-7054P-02TS RATING: 900 # ClassLIMITORQUE SMB - 00-10MOTOR RPM: 1900 OUTPUT RPM: 59.6

DIFFERENTIAL PRESSURES:

ORIGINAL DESIGN BASIS OPEN/CLOSE	RECALCULATED DESIGN BASIS OPEN/CLOSE	TEST OPEN/CLOSE
1250/1250	1090/1090	1100/ -

ORIGINAL SWITCH SETTINGS
OPEN/CLOSE

2/2

POST BULLETIN SWITCH SETTINGS
OPEN/CLOSE

1.5/1.5

AS FOUND VALVE OPERABILITY

Operable in the "as found" condition. The valve was exhibiting higher than expected thrust levels which were more than adequate to ensure operation. The torque switch settings were reduced to provide margin to the actuator maximum continuous thrust ratings while still providing sufficient thrust for reliable operation.

TEST METHOD DESCRIPTION/JUSTIFICATION

This valve was opened against an 1100 psid.

Type testing of 13MOV-16 demonstrated the closure ability of this valve/actuator combination.

Revision 1 - 5/88