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January 15, 2004
JAFP-04-0010

United States Nuclear Regulatory Commission
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Washington, DC 20555

SUBJECT: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333

Response to Request for Additional Information regarding Proposed Relief Request No. VRR-08 to the JAFNPP In-Service Testing Program

References: 1) JAFP-03-0096, Proposed Relief Request No. VRR-08 to the JAFNPP In-Service Testing Program, dated July 8,2003.
2) James A. FitzPatrick Nuclear Power Plant – Request For Additional Information Concerning Relief Request VRR-08 (TAC NO, MC0184)

Dear Sir:

On November 18, 2003, we received your request for additional information (RAI) (Ref. 2) to support technical review of our In-Service Testing (IST) Program Relief Request – VRR-08 that was transmitted in Reference 1.

This letter modifies our request for relief and provides our response to the request for additional information.

At this time we are deleting check valves 15RBC-214, 23HPI-13 and 23HPI-56 from the scope of the request. These valves will continue to be addressed as described in the IST Program Document.

The response to the request for additional information is delineated in Attachment I.

Very Truly yours,

T. A. Sullivan
Site Vice President

TAS:ed

Cc: next page

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VRR-08 requested relief from the refueling outage restriction of ASME/ANSI OM-10 Paragraphs 4.3.2.2(e) and 4.3.2.4(c) for certain Category C check valves, permitting disassembly and inspection for Inservice Testing (IST) purposes at a frequency of once per operating cycle. The NRC in reviewing VRR-08 requested the following additional information:

RAI 1: "The licensee has referenced a recently-approved Valve Relief Request for Entergy's River Bend Station Unit 1. See ADAMS Accession Number (ML030300276) as a comparable submittal to the one submitted by the licensee for Fitz Patrick in VRR-08. It should be noted that the River Bend Station submittal contained significantly more information than that provided in VRR-08. Please provide complete details (including your reasoning for each valve) in Relief Request VRR-08 as was provided in the Basis for Relief sections of River Bend's relief requests. Please see the River Bend Station's submittal to supplement the information in VRR-08. In addition, please include all the appropriate responses to the following RAIs in the relief request, as necessary. "

Response:

This relief request as modified by our cover letter addresses five (5) valves in the High Pressure Coolant Injection (HPCI) system. Each of the valves is discussed individually in the following paragraphs.

23HPI-130 is a two (2) inch, ASME Class 2, IST Category C, check valve. This check valve opens to provide a flowpath for cooling water circulation through the HPCI turbine lube oil cooler and closes to prevent flow diversion. This valve is currently inspected using the alternate method described in ASME/ANSI OM-10 Section 4.3.2.4(c). The alternate method (valve disassembly) is used since there is no means for determining flowrate, thus there is no means to verify full accident flow. There is also no provision on the valve for position indication, and there are no test taps and block valves to support a back-leakage test for verifying closure. Currently this disassembly and inspection is conducted during each refueling outage in accordance with ASME/ANSI OM-10 Section 4.3.2.4(c).

23HPI-131 is a two (2) inch, ASME Class 2, IST Category C, check valve. This check valve closes to prevent flow diversion from the HPCI Booster pump. This valve is currently tested using the alternate method described in ASME OM-10 Section 4.3.2.4(c). The alternate method (valve disassembly) is used since there is no provision on the valve for position indication, and there are no test taps and block valves to support a back-leakage test for verifying closure. Currently this disassembly and inspection is conducted during each refueling outage in accordance with ASME/ANSI OM-10 Section 4.3.2.4(c).

23HPI-32 is a sixteen (16) inch, ASME Class 2, IST Category C, check valve. This check valve closes during the suction swap from the Condensate Storage Tank (CST) to the torus to prevent diversion of the Torus flow from the HPCI pump suction. This valve is currently tested using the alternate method described in ASME OM-10 Section 4.3.2.4(c). The alternate method (valve disassembly) is used since there is no provision on the valve for position indication and there are no block valves between this valve and the HPCI Pump to support a back-leakage test for verifying closure. Currently this

disassembly and inspection is conducted during each refueling outage in accordance with ASME/ANSI OM-10 Section 4.3.2.4(c).

23HPI-61 is a sixteen (16) inch, ASME Class 2, IST Category C, check valve. This check valve opens to provide a flowpath from the torus to the suction of the HPCI Booster pump and it closes on cessation of flow. This valve is currently tested using the alternate method described in ASME OM-10 Section 4.3.2.4(c). The alternate method (valve disassembly) is used since the only way to full flow exercise this valve is to pump water from the torus into the reactor vessel and the water quality in the torus makes this an impractical option. Additionally there is no provision on the valve for position indication and there are no test taps and block valves to support a back-leakage test for verifying closure. Currently this disassembly and inspection is conducted during each refueling outage in accordance with ASME/ANSI OM-10 Section 4.3.2.4(c).

23HPI-62 is a four (4) inch, ASME Class 2, IST Category C, check valve. This check valve opens to provide a flowpath for minimum flow from the HPCI pump and closes upon cessation of flow. This valve is currently tested using the alternate method described in ASME OM-10 Section 4.3.2.4(c). The alternate method (valve disassembly) is used because the configuration of the minimum flow motor operated valve (MOV) control logic does not allow for full flow to be achieved through this valve under test conditions. Additionally, full stroke exercising cannot be verified with the existing instrumentation since there is no provision on the valve for position indication, and there are no test taps and block valves to support a back-leakage test for verifying closure. Currently this disassembly and inspection is conducted during each refueling outage in accordance with ASME/ANSI OM-10 Section 4.3.2.4(c).

The limitations on testing described in the preceding paragraphs remain as described. This request seeks to allow the same alternative to testing currently conducted during refueling outages to be performed in on-line maintenance windows. As allowed by ASME/ANSI OM-10 section 4.3.2.4(c) these valves are disassembled and inspected once per cycle during the refueling outage, which for the JAFNPP is a 24-month cycle. The frequency proposed in this relief request remains 24 months. The requested relief will allow the testing of these five (5) HPCI check valves to be performed in on-line maintenance windows.

Basis for Requested Relief:

JAFNPP proposes the alternative inservice testing and frequency for these check valves based on the following:

1. Inservice testing performed on a refueling outage frequency is currently acceptable in accordance with ASME/ANSI OM-10 and GL 89-04. By specifying testing activities on a frequency commensurate with each refueling outage, ASME/ANSI OM-10 recognizes and establishes an acceptable time period between testing. Historically, the refueling outage has provided a convenient and defined time period in which testing activities could be safely and efficiently performed. However, an acceptable testing frequency can be maintained separately without the schedule being constrained to that of a refueling outage. Inservice testing performed on a frequency that maintains the acceptable time

period between testing activities during the operating cycle is consistent with the intent of ASME/ANSI OM-10 and GL 89-04.

2. Over time, approximately the same number of tests will be performed using the proposed operating cycle test frequency as would be performed using the current refueling outage frequency. Thus, inservice testing activities performed during the proposed operating cycle test frequency provide an equivalent level of quality and safety as the inservice testing performed at a refueling outage frequency.

3. Each of the valves within the scope of this relief request can be adequately isolated to ensure the safety of maintenance personnel and to ensure adequate protection of operable plant equipment.

4. The proposed relief would allow the addition of these activities to on-line maintenance windows where they can be worked along with other activities that have been risk assessed in accordance with industry guidance without affecting the total amount of system unavailability. The JAFNPP experience with the inspection and maintenance activities associated with the subject check valves as well as on-line HPCI System maintenance gives confidence that the addition of these valves to the scope of an on-line maintenance window will not prolong the duration of the system outage.

RAI 2: "Provide the American Society of Mechanical Engineers Class and size of the Reactor Building Closed Loop Cooling (RBCLC) valve 15RBC-214."

Response:

As identified in our cover letter, we are deleting check valve 15RBC-214 from this relief request.

RAI 3: "Provide all the related piping and instrumentation drawings which contains the relief request's check valves in the HPCI and RBCLC systems."

Response:

The FM series of drawings are the JAF equivalent of piping and instrumentation drawings. Attached to this RAI response is the FM Drawing for the HPCI System that shows the check valves associated with this relief request, the valves have been circled and highlighted for ease of identification. Since check valve 15RBC-214 has been removed from the scope of this relief request the FM drawing for the RBCLC System has not been included with this response.

RAI 4: "Relief Request VRR-08 does not address the safety and risk significance of on-line inservice testing (IST) of the check valves. Please address (either in a qualitative or quantitative manner) the potential risk of disassembly and inspection of this check valve on-line compared to while the plant is shutdown for all check valves greater than 2 inches nominal pipe diameter including the HPCI and RBCLC check valves."

Response:

As modified by our cover letter the scope of this relief request is restricted to the five (5) HPCI check valves discussed in RAI 1. Each of the five (5) HPCI check valves is two (2) inches or larger.

JAFNPP performs on-line HPCI maintenance that includes tasks such as pump and turbine inspection/overhaul, and inspection of the governor and valve linkage. The system outage window for the basic inspections conducted on a 24-month frequency is approximately 72 hours; and for the major overhaul activities, which are currently on a 48-month frequency, the window will be longer. As shown in the attached maintenance history, the inspection of the subject check valves takes between 6 and 19 hours. The required inspections would be conducted simultaneously with the other maintenance scoped into the maintenance window. Based on maintenance history, scheduling experience, and work execution in past on-line maintenance windows on the HPCI system, this additional work will neither extend the maintenance window nor increase the overall maintenance unavailability. Therefore, performing these IST inspections on-line would change neither the duration of the on-line maintenance activity nor the core damage probability (CDP) associated with the HPCI on-line maintenance activity. For these reasons, the risk / CDP over the entire operating / shutdown spectrum would remain unchanged with approval of this relief request.

RAI 5: "Provide sufficient information for NRC staff to reach a safety or risk determination with regards to the leak testing experience and leak tightness reliability of the associated valves and the potential consequences of a loss of isolation capability during disassembly, inspection, and manual exercising of the larger size valves."

Response:

The valves that will be used to provide isolation have an excellent history of providing adequate isolation for the disassembly and inspection of the check valves. Four of the five check valves (23HPI-32, -62, -130 and –131) addressed by the proposed relief are within the boundaries normally established for on-line maintenance of the HPCI main and booster pumps. Since, the isolation has proven adequate to perform maintenance and inspections on these pumps including activities that breached the pressure boundary of the pumps, there is high confidence that the isolation is also adequate for disassembly and inspection of the check valves. The remaining check valve (23HPI-61) is in the HPCI torus suction line and is isolated from the torus by 23MOV-58. The pressure upstream of the isolation valve is a result of either the head developed by the water volume in the torus plus the pressure from the nitrogen used to inert the containment (approximately 1.7 psig) or just the head developed by the volume of water in the torus. Because of this the upstream pressure at the isolation valve varies only

slightly between on-line and shutdown conditions. Therefore, the conditions under which these valves must provide isolation during on-line maintenance are similar to the conditions during plant shutdown, where isolation has always been adequate.

Additionally, when breaching a pressure boundary the standard maintenance practice is to monitor the component being disassembled to ensure that there is no unexpected leakage during disassembly, thus verifying the integrity of the isolation boundary and allowing for recovery of safe conditions, should evidence of unexpected leakage become apparent.

Once adequate isolation is confirmed, it is maintained by passive isolating devices or devices made passive (e.g. de-energized motor operated valve); a loss of isolation capability under these conditions is not considered credible due to the passive characteristics of the devices providing it.

RAI 6: "Based on the risk significance discussed in RAI 4 above, discuss what preventive or compensatory measures are necessary to maintain safety and minimize risk while performing on-line IST."

Response:

Risk associated with on-line maintenance activities is controlled through JAFNPP's work control process. That process includes preventive measures for maintaining safety and minimizing risk while performing on-line maintenance such as:

1. Assessment of work activities by multiple independent personnel to ensure work activities in one system do not affect the ability of redundant systems or trains to perform their safety functions.

2. Establishment of redundant systems or trains as "Protected", so that these systems are less likely to be inadvertently made inoperable while they are being relied upon to operate during the period that another safety system is out of service for maintenance.

3. Providing additional management oversight for significant maintenance activities being conducted while in Technical Specification LCO ACTIONS.

4. Conducting shift briefings to ensure that personnel are aware of active Technical Specification LCO ACTION statements.

5. Using human performance tools including pre-job briefings, self-checking and peer checking.

RAI 7: "Under the section entitled Basis for Relief, the licensee states that the maintenance rule 10 CFR 50.65(a)(4) requires licensees to assess and manage the increase of risk that may [result from proposed maintenance activities. However, in order for the staff to evaluate whether the proposed IST alternative is acceptable, the licensee must demonstrate that the alternative][1] provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(a)(3)(i). Performing a risk assessment of the proposed on-line testing at the time of IST does not address why on-line testing provides an acceptable level of quality and safety at this time. Meeting the maintenance rule is a separate regulatory requirement. Nonetheless, discuss how risk insights, as well as other factors, will be used to establish when IST should be performed either on-line or during refueling outages."

Response:

The level of quality associated with the inspection activities is independent of whether the inspection is performed on-line or during an outage. The same personnel, procedures, and acceptance criteria will be used in either case. The safe conduct of maintenance and inspection activities is built into the work control process. The inspection activities will be planned ensuring adequate isolation boundaries are established to protect the maintenance personnel involved in the activity and to protect operable plant equipment.

JAFNPP manages work windows on a recurring cycle. Risk insight is used to ensure that proposed work or inspection activities are balancing reliability with unavailability. The work selection process provides the means to ensure, through the oversight of knowledgeable personnel, that when system unavailability is to be incurred, the preventive maintenance, corrective maintenance, and other inspections required to maximize the system's reliability are included in the maintenance window. In that manner, each window is scoped to maximize the reliability benefit from taking system unavailability while minimizing the unavailability such that it is maintained at a level that minimizes overall risk. JAFNPP is confident that this rigorous work selection, scoping, and risk management system will identify all work that is more appropriately placed in outages, and schedule such work accordingly.

RAI 8: "Explain how Technical Specification requirements for the HPCI system and/or RBCLC system will be satisfied while performing on-line IST of these check valves in their respective systems. Specifically, address the limiting condition for operation and describe the actions the licensee will take to ensure that on-line IST will be accomplished within the allowed outage time. Discuss the typical amount of time needed to complete the IST of this check valve based on previous testing experience. Similarly, describe any contingency plans that will be in effect to provide reasonable confidence that the allowed outage time will not be exceeded if the check valve is found to be in a significantly degraded or unacceptable condition."

[1] Note: The bracketed information was taken from a draft of the RAI and inserted to clarify the question.

Response:

The RBCLC check valve has been removed from the scope of this relief request and is not discussed in this response.

Work on the HPCI check valves discussed in this relief request and the other periodic work planned for the JAFNPP HPCI LCOs will cause the HPCI system to become inoperable. The 14-day shutdown action for the HPCI system inoperable will be entered as the work window begins. Work that requires entry into Technical Specification LCO ACTIONS is planned and scheduled in accordance with the JAFNPP work control process previously described. The controls required by that process include establishing the scope of work such that only 50% of the AOT is required to perform the scheduled work. In addition the site uses LCO Coordinators to provide continuous coverage for problem resolution. As discussed in RAI 4 the inspection activities for the valves associated with this relief request typically take from 6 to 19 hours and the LCO windows for on-line maintenance are planned for considerably longer periods. Based on the historical performance of the subject valves the inclusion of these activities in the LCO windows would not affect the duration of the time spent in the LCO ACTIONS.

RAI 9: For several check valves in the HPCI system for which you are requesting relief, you have provided the associated refueling outage justifications for allowing these check valves to be tested during refueling outages. For each of these check valves, the licensee should discuss why it is now practical to test these valves on-line when the refueling outage justifications appear to justify that testing on-line on a quarterly basis was impractical.

Response:

The requested relief is supported by the attached inspection history showing that there have been no deficiencies noted in the past 3 inspection intervals using this frequency. The two-year periodicity of the disassembly and inspection activities on these check valves is appropriate as evidenced by the acceptance of this periodicity by ASME/ANSI OM-10. The acceptability of performing these inspections on-line is addressed in the responses to RAIs 1, 4, 5, 6, 7, and 8. This acceptability is reinforced by experience from performing other on-line safety system maintenance activities effectively at JAFNPP. The excellent performance history of these valves and the lack of other HPCI system maintenance required on a quarterly basis shows that quarterly testing of these valves would impose a high HPCI unavailability penalty with little or no improvement in reliability. Therefore, performing these inspections on-line on a quarterly basis remains impractical, as it would result in a net degradation in plant safety. This analysis applies to each of the check valves that remain in the scope of the relief request.

Attachment 2 to JAFP-04-0010
Inspection History for 23HPI-130, 131, 32, 61, 62

Work Date	WR No.	WR Desc	COMPID	Notes	Time to Complete
10/28/1998	97-04567-00	OPEN AND INSPECT - IST REQUIRED	23HPI-130	Inspection satisfactory	9.0 hours
2/12/2001	99-04876-00	OPEN AND INSPECT - IST REQUIRED	23HPI-130	Inspection satisfactory	9.0 hours
10/11/2002	02-02733-00	OPEN AND INSPECT - IST REQUIRED	23HPI-130	Inspection satisfactory	6.0 hours
10/29/1998	98-03300-00	OPEN AND INSPECT - IST REQUIRED	23HPI-131	Inspection satisfactory	7.0 hours
2/12/2001	99-04875-00	OPEN AND INSPECT - IST REQUIRED	23HPI-131	Inspection satisfactory	9.0 hours
10/11/2002	02-02734-00	OPEN AND INSPECT - IST REQUIRED	23HPI-131	Inspection satisfactory	6.0 hours
10/30/1998	98-03302-00	OPEN AND INSPECT - IST REQUIRED	23HPI-32	Inspection satisfactory	19.0 hurs
2/14/2001	99-04877-00	OPEN AND INSPECT - IST REQUIRED	23HPI-32	Inspection satisfactory	9.0 hours
10/14/2002	02-02735-00	OPEN AND INSPECT - IST REQUIRED	23HPI-32	Inspection satisfactory	17.0 hours
10/27/1998	97-04569-00	OPEN AND INSPECT - IST REQUIRED	23HPI-61	Inspection satisfactory	10.0 hours
2/14/2001	99-04879-00	OPEN AND INSPECT - IST REQUIRED	23HPI-61	Inspection satisfactory	11.0 hours
10/14/2002	02-02737-00	OPEN AND INSPECT - IST REQUIRED	23HPI-61	Inspection satisfactory	10.0 hours
10/31/1998	97-04570-00	OPEN AND INSPECT - IST REQUIRED	23HPI-62	Inspection satisfactory	13.0 hours
2/14/2001	99-04880-00	OPEN AND INSPECT - IST REQUIRED	23HPI-62	Inspection satisfactory	10.0 hours
10/11/2002	02-02738-00	OPEN AND INSPECT - IST REQUIRED	23HPI-62	Inspection satisfactory	18.0 hours

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