Entergy

Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc
440 Hamilton Avenue
White Plains, NY 10601
Tel 914 272 3200
Fax 914 272 3205

Michael R. Kansler
Senior Vice President &
Chief Operating Officer

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JPN-02-026

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
License No. DPR-59
Relief Request RR-28, Revision 3 for the
Third 10-Year Inservice Inspection Interval Program Plan

Reference:

1. USNRC letter, R. Emch to H. Sumner, dated May 31, 2000, regarding "Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Third Ten-Year Interval Inservice Inspection Program, Relief Request Nos. RR-25 and RR-26 (TAC Nos. MA6123 and MA6124)"
2. Entergy letter, JPN-01-020, dated December 3, 2001, regarding "Relief Request RR-28 for Third 10-Year Inservice Inspection Interval Program Plan"
3. Entergy letter, JPN-02-010, dated May 8, 2002, regarding "Relief Request RR-28, Revision 1 for Third 10-Year Inservice Inspection Interval Program Plan"
4. Entergy letter, JPN-02-022, dated July 10, 2002, regarding "Relief Request RR-28, Revision 2 for Third 10-Year Inservice Inspection Interval Program Plan"

Dear Sir:

This letter submits Revision 3 of Relief Request RR-28 which requests the use of ASME Section XI Code Case N-562-1 for weld overlay on carbon steel service water piping under the Third Ten-Year Inservice Inspection Interval Program Plan for the James A. FitzPatrick (JAF) Nuclear Power Plant

This revision (Attachment I) incorporates Entergy's responses to questions on Revision 2 of RR-28 (Reference 4) that were discussed at a teleconference held on July 30, 2002 between Entergy Nuclear Operations, Inc. (ENO) and the NRC staff.

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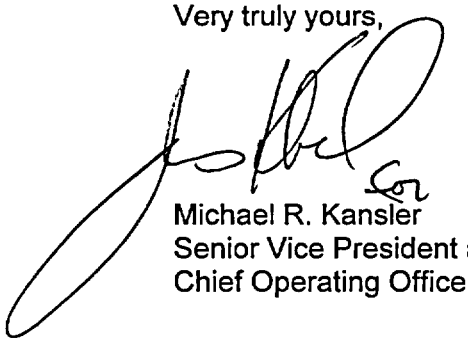
Attachment II contains the RAI questions as provided by email on July 29, 2002, and Entergy's corresponding responses. A similar request for relief was approved for the Hatch Plant, Units 1 and 2 (Reference 1).

There are no new commitments made by this letter. If you have any questions, please contact Ms. Charlene Faison at 914-272-3378.

Very truly yours,



Michael R. Kansler
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Attachments: As stated

cc: Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector's Office
James A. FitzPatrick
U.S. Nuclear Regulatory Commission
P.O. Box 136
Lycoming, NY 13093-0136

Mr. Guy S. Vissing, Project Manager
Project Directorate I
Division of Licensing Project Management
U.S. Nuclear Regulatory Commission
Mail Stop 8C2
Washington, DC 20555-0001

Attachment I to JPN-02-026

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

THIRD TEN-YEAR INSERVICE INSPECTION INTERVAL PROGRAM PLAN

Relief Request 28, Revision 3

ENTERGY NUCLEAR OPERATIONS, INC.

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
DOCKET NO. 50-333
DPR-59

JAMES A. FITZPATRICK
THIRD INSPECTION INTERVAL
RELIEF REQUEST NO. 28, Rev. 3

A: ARTICLE IDENTIFICATION/COMPONENT INDENTIFICATION:

IWA-4000 / ISI Class 3 moderate energy RHR service water piping. Line numbers are 16"-WS-151-30A, 16"-WS-151-30B, and 22"-WS-151-57.

B: REPAIR REQUIREMENTS

ASME Code, Section XI, IWA-4310 requires that the defect be removed or reduced in size in accordance with Article IWA.

C: RELIEF REQUESTED:

Relief is requested from removing defects and repairing in accordance with the design specification or the original construction code for internal wall thinning or pitting resulting from conditions such as, but not limited to, microbiological corrosion; cavitation induced pitting; erosion/corrosion and/or localized pitting corrosion.

The ASME Section XI Code Committee recognized that an alternative existed for internal wall thinning of Class 3 piping systems which have experienced degradation mechanisms such as flow-assisted corrosion (FAC) and/or microbiological corrosion that would provide an acceptable repair configuration. This alternative repair technique involves the application of additional weld metal on the exterior of the piping system, which restores the wall thickness requirement. Code Case N-562-1 was approved by the ASME Section XI Code Committee on July 30, 1998. However, it has not been incorporated into NRC Regulatory Guide 1.147 and thus is not available for application at nuclear power plants.

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to use Code Case N-562-1 on the basis that the proposed alternative will provide an acceptable level of quality and safety. This relief request applies to the ASME Class 3 moderate energy RHR service water system (i.e., less than or equal to 200°F and/or less than or equal to 275 psig maximum operating conditions) carbon steel piping lines listed above. This relief is requested for the timeframe through the start of refueling outage 16 which is currently scheduled for the Fall of 2004. Specifically, if any weld overlays are installed during operating cycle 16 (i.e., from Fall 2002 to Fall 2004) an ASME Code repair will be performed during Refueling outage 16.

ENO also proposes to use the following welding processes on piping that can be drained: Gas Tungsten Arc Welding (GTAW) - manual and/or automated, Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW). These processes offer other advantages such as higher deposition rates or automated remote welding over the Shielded Metal Arc Welding (SMAW) method.

JAMES A. FITZPATRICK
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D: BASIS FOR RELIEF

A number of alternatives (e.g., Generic Letter GL 90-05, Code Cases N-513 and N-523) are currently available and approved by the NRC for evaluating and repairing of piping wall thinning and pitting (including through wall leaks). However, these alternatives have their limitations and do not always encompass the specific situations that arise from a large bore service system (SWS) piping leak. The specific sections of SWS piping for which Entergy is seeking relief are the large bore (NPS 16" and 22") RHR service water piping from the RHR heat exchanger outlet to the last isolable valve before discharge into the lake. These sections of piping consist of approximately 30' feet of 16" and 22" NPS piping. If and when a leak is developed, Code Case N-523 cannot be used due to its limitation on piping of 6" NPS and smaller. While the guidance provided by GL 90-05 and Code Case N-513 could be used to evaluate and accept the leaking condition, if the structural integrity of the piping can be ascertained, the leak would most likely continue to increase in size over time and would pose more significant housekeeping difficulties. On the other hand, if the flaw exceeds the acceptance criteria provided by GL 90-05 or Code Case N-513, an emergency code repair (which may include up to full piping replacement of the affected sections) would be required. This would pose a significant hardship on plant operations to isolate and drain the affected piping sections (some of which are not isolable and would require plant shutdown). Therefore, Entergy requests that a relief be granted to use a weld overlay in lieu of a code weld repair on the RHRSW piping, during operating cycle 16, so that an unscheduled plant shutdown could be avoided. Any weld overlay installed during operating cycle 16 would be replaced with an ASME code repair at the next scheduled refueling outage (R16) in the Fall of 2004.

Code Case N-562-1 provides an additional alternative to the IWA-4000 requirements for the repair of internal piping system defects or degradation. The ASME XI Code Committee determined that such a weld overlay would restore the minimum piping wall thickness at the flawed location and would ensure that an adequate level of quality and safety is maintained. Entergy expects these weld overlays to be approximately 8" x 8" in size, with thickness of up to 0.375" as may be required to restore pipe minimum wall thickness. Entergy has been monitoring the affected piping sections since 1996 for wall thinning / degradation rates, and expects no more than 4 overlays will be required prior to the next scheduled piping replacement in the Fall of 2004. Therefore, the proposed alternative is justified per 10CFR50.55a(a)(3)(i) as the proposed repair will provide an acceptable level of quality and safety. The primary purpose for implementing this alternate repair method (installation of a weld overlay) is to avoid the need for an unplanned outage to perform code repair and possibly piping replacement. It also allows for adequate time to perform additional examination of adjacent piping so that pipe replacement can be properly identified and scheduled to: reduce impact on system availability; increase safety of plant operations, and reduce cost for replacement materials and labor.

A similar relief request was approved at Southern Nuclear Operation Company's Hatch Plant, Units 1 and 2 (Reference SER dated May 31, 2000, TAC Nos. MA6123 and MA 6124).

JAMES A. FITZPATRICK
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E: PROPOSED ALTERNATIVE REPAIR TECHNIQUE:

ENO will implement the requirements of Code Case N-562-1 in its entirety with the additional conditions, restrictions and/or exceptions as described below:

1. Evaluate the use of Code Cases N-513 "Evaluation Criteria for Temporary Acceptance of Flaws in Class 3 Piping , Section XI, Division 1", or N-523 "Mechanical Clamping Devices for Class 2 and 3 Piping, Section XI, Division 1"Use of Code Case N-562-1, for the identified Class 3 moderate energy (i.e., $\leq$ 200°F and/or $\leq$ 275 psig maximum operating pressure) piping system repairs resulting from phenomenon such as flow-assisted corrosion and/or microbiological corrosion. These types of defect are typically identified by small leaks in the piping system or by pre-emptive non-code and code-required examinations performed by the Licensee to monitor the degradation mechanisms.

2. When engineering evaluation determined the aforementioned guidance or code cases are not suitable, the repair technique described in Code Case N-562-1 may be utilized for the particular defect or degradation being resolved. The Code Case N-562-1 weld overlay will only be applied to the RHR service water system piping on the specified line numbers.

3. The repair will be considered to have a maximum service life of one fuel cycle (until refueling outage 16 currently scheduled for the Fall of 2004 at which time a ASME code repair will be performed).

4. Provisions for use of this code case will be addressed in the repair and replacement program procedure. Those provisions will require that adjacent areas be examined to verify that the repair will encompass the entire flawed area and that there are no other unacceptable degraded locations within a representative area dependent on the degradation mechanism present. An evaluation of the degradation and an estimation of the remaining service life will be performed as required by Entergy Design Engineering procedures for any type of wall thinning detected by NDE methods. This includes MIC, Flow Accelerated Corrosion (FAC), etc. The calculation ensures that there is adequate remaining service life and margin to the design code minimum allowable wall thickness. This calculation aids the responsible engineer in determining the next required inspection. It is also anticipated that the initial re-inspection of the weld overlay and its surrounding areas would be performed within a period of no greater than 6 months

5. For piping in which a through wall flaw has been detected, the piping shall be drained prior to performing the repair.

6. For water-backed piping, only the SMAW process shall be used as described in Code Case N-562-1.

7. For piping where the water can be drained, ENO proposes the following welding processes may be used as appropriate: Gas Tungsten Arc Welding (GTAW) - manual and/or automated, Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW). These processes offer other advantages such as higher deposition rates or automated remote welding over the SMAW method. Some of the RHR service water piping is in high radiation areas where repairs performed using the SMAW process would result in increased exposure to plant personnel. Using the other processes or automated welding techniques would reduce exposure to personnel (ALARA).

The NRC had previously approved JAF Relief Request No. 6 (Reference SER dated November 25, 1998, TAC No. MA0711) to utilize ASME Section XI Code Case N-532. Code Case N-532 provides alternatives for the documentation requirements for repair and replacement activities. Code Case N-532 allows use of Form NIS-2A in lieu of Form NIS-2 as required by Code Case N-562-1, paragraph 7.0. Therefore, ENO will document the use of Code Case N-562-1 on Form NIS-2A in lieu of Form NIS-2.

F: IMPLEMENTATION SCHEDULE

The relief request is applicable only for the duration from Fall 2002 through Fall 2004 (Refueling outage 16) of the third 10-Year Interval.

G: ATTACHMENTS TO THE RELIEF REQUEST:

Code Case N-562-1 (previously provided with Revision 1 of this relief request).

Attachment II to JPN-02-026

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

THIRD TEN-YEAR INSERVICE INSPECTION INTERVAL PROGRAM PLAN

Response to RAI on RR 28, Revision 2

ENTERGY NUCLEAR OPERATIONS, INC.

JAMES A FITZPATRICK NUCLEAR POWER PLANT
DOCKET NO. 50-333
DPR-59

Attachment II to JPN-02-026

REQUEST FOR ADDITIONAL INFORMATION ON
JAMES A. FITZPATRICK RELIEF REQUEST NO.28, Rev. 2

The following are the RAI question(s) on JAF RR-28, Rev. 2 as discussed at the July 30 telephone conference, and the Entergy responses.

1. The staff has indicated the response to the previous RAI, question 3 was not robust enough. They cannot tell if this data is representative or bounding to all forms of degradation and for all locations of the piping.

Entergy Response:

Based on the degradation rates of the affected piping for the corresponding degradation mode, as monitored by Entergy since 1996, the proposed weld overlay (repair) would provide an acceptable level of quality and safety, and maintain the piping system pressure boundary integrity. It is believed that the degradation mechanics is MIC (Microbiological Induced Corrosion). The following is an example of previous inspection results. This example is the bounding or "worst case" result (i.e., the lowest reading) amongst the other wall thinning locations within the RHRSW system currently being monitored by Entergy.

Example: Line 16"-WS-151-30A

Prior Inspection	Min. Wall Thickness (localized pitting) measurement
3/1995	0.200"
7/1998	0.148"
6/2000	0.141"

The nominal wall thickness is 0.375" for the 16" piping. The Code minimum wall thickness required is 0.113". This code minimum wall thickness assumes uniform wall loss of the piping while the actual wall loss is very localized.

In July 2002, a follow-up inspection was performed on the location shown above and the UT thickness measurement was recorded as 0.143". The slight increase in wall thickness measurement of 0.002" is explained by small variations due to UT equipment setup and different NDE technicians performing the examination, but is well within the acceptable tolerance for such UT thickness measurement technique. The latest re-inspection result suggest that the localized corrosion rate might have declined to essentially zero (0) mils per year. The following is a

summary of what Entergy believes to be the contributing factors for the decrease in the degradation rate:

1. **The subject line is part of the RHR service water system. The RHR service water (RHRSW) pumps take suction from the emergency service water (ESW) bay and get makeup water through a "keep full" line from a service water pump when the RHRSW pumps are not running.**

2. **The service water system, including the RHRSW system, is periodically chlorinated in an effort to control MIC attacks on the piping. The RHRSW system is also run for quarterly surveillance and other plant needs. Since 2000, the RHRSW system has also been used periodically to moderate the temperature of the suppression pool. Chlorination is performed directly into the ESW bay for approximately 1 hour prior to any known runs of greater than 5 minutes of the RHRSW pumps (chlorination is performed within environmental restrictions). This practice increases the chlorine concentration (and the duration of having the higher concentration) within the RHRSW piping.**

3. **It is therefore believed that this chlorination practice is effective in controlling MIC degradation, and decreased the piping wall loss due to MIC to essentially zero (0) mills per year. A follow-up examination has been planned for the June 2003 timeframe to further validate our conclusion, and to verify the minimum wall thickness requirement is still met. Other pitting locations on lines 30A/30B and 57 currently being monitored within the RHRSW system will be re-inspected at that time as well.**