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July 10, 2002  
JPN-02-022

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 2 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"

Dear Sir:

This letter submits Revision 2 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.

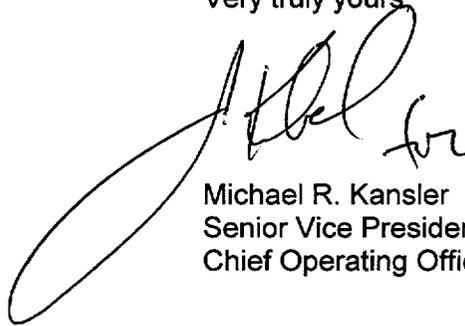
This revision (Attachment I) incorporates responses to questions that were discussed at a teleconference held on June 24, 2002 between ENO and the NRC staff, and provided subsequently by email to Entergy Nuclear Operations, Inc. (ENO) on June 25, 2002. Attachment II contains the RAI questions as provided by email, and Entergy's corresponding responses. A similar request for relief was approved for the Hatch Plant, Units 1 and 2 (Reference 1).

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Approval for this relief request is needed by August 15, 2002 to support planning and resource scheduling of the upcoming Refueling Outage R015.

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,

A handwritten signature in black ink, appearing to read "M. Kansler for". The signature is written in a cursive style with a large, sweeping initial "M".

Michael R. Kansler  
Senior Vice President and  
Chief Operating Officer

Attachments: As stated

cc: Regional Administrator, Region I  
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Resident Inspector's Office  
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Mr. Guy S. Vissing, Project Manager  
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Attachment I to JPN-02-022

**JAMES A. FITZPATRICK NUCLEAR POWER PLANT**  
**THIRD TEN-YEAR INSERVICE INSPECTION**  
**INTERVAL PROGRAM PLAN**

Relief Request 28, Revision 2

ENERGY 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. 2

**A: ARTICLE IDENTIFICATION/COMPONENT IDENTIFICATION:**

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.

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.

**D: BASIS FOR RELIEF**

A number of alternatives (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

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seeking relief are the large bore (NPS 16/22" ) 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 N-513 could be used to accept the leaking condition, even 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 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). If the piping was acceptable via the guidelines of NRC Generic Letter 90-05 a ASME Code repair (pipe replacement) would be required at the next scheduled refueling outage current scheduled for October, 2002. This has the potential to delay the currently scheduled refueling outage by approximately 2 days. If this situation were to occur the weld overlay would be installed and the pipe would be replaced at the next scheduled refueling outage 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 being 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 repair method is to allow adequate time for additional examination of adjacent piping so that pipe replacement can be properly identified and scheduled to reduce impact on system availability including Maintenance Rule applicability, safety of plant operations, and the availability of replacement materials and cost. In addition, use of Code Case N-562-1 may reduce overall outage durations, as installation of a weld overlay would avoid the need for an unplanned pipe replacement and corresponding system lineups and draindowns during scheduled refueling outages.

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).

**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:

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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.,  $\leq 200^{\circ}\text{F}$  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) unless specific approval is requested and received from the NRC.

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 re-inspection of the weld overlay and the surrounding areas would be performed within a period of no greater than one year.

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

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

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

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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 for the Third 10-Year Interval and will be utilized upon receipt of NRC approval.

**G: ATTACHMENTS TO THE RELIEF REQUEST:**

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

Attachment II to JPN-02-022

**JAMES A. FITZPATRICK NUCLEAR POWER PLANT**  
**THIRD TEN-YEAR INSERVICE INSPECTION**  
**INTERVAL PROGRAM PLAN**

Response to RAI on RR 28, Revision 1

ENTERGY NUCLEAR OPERATIONS, INC.  
JAMES A. FITZPATRICK NUCLEAR POWER PLANT  
DOCKET NO. 50-333  
DPR-59

Attachment II to JPN-02-022

REQUEST FOR ADDITIONAL INFORMATION ON  
JAMES A. FITZPATRICK RELIEF REQUEST NO.28, Rev. 1

The following are the RAI questions on JAF RR-28, Rev. 1, as discussed at the June 24 telephone conference, and the Entergy responses.

1. Code Cases N-513 "Evaluation Criteria for Temporary Acceptance of Flaws in Class 3 Piping, Section XI, Division 1" and N-523 "Mechanical Clamping Devices for Class 2 and 3 Piping, Section XI, Division 1" and Generic Letter GL90-05 "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2 and 3 Piping" are available as alternative methods of repair or analytical evaluation of pipe wall thinning or pitting. Discuss why these alternatives cannot be used in this specific application.

**Entergy Response:** The other alternatives (i.e., GL 90-05, Code Cases N-513 and N-523) will be evaluated for implementation prior to installing the weld overlay. However, if NRC GL 90-05 is used for a leak that develops before the October 2002 refueling outage, the affected piping section will require replacement at the next scheduled refueling outage in October of 2002. This would adversely impact the currently planned outage schedule. It is proposed that a weld overlay would be installed in the October 2002 refueling outage, and the affected piping section will then be replaced during the next scheduled refueling outage of October 2004 when it can be properly integrated into the refueling outage schedule.

2. The relief request should:

- a) state the specific pipe lines and locations that may be restored using this code case.

**Entergy Response:** The piping lines are 16"-WS-151-30A, 16"-WS-151-30B and 22"-WS-151-57 (from the RHR Heat Exchangers outlets to the common header section, prior to discharge into the lake).

- b) state the approximate number and size (length, width, thickness) of the overlay

**Entergy Response:** The approximate number of weld overlays is 4, depending on the final inspection results. The final length, width and thickness of the overlay are dependent on the calculations required by ASME Code Case N-562-1. The nominal wall is 0.375" for this class of piping. It is estimated that the weld overlay would be no larger than an areas of 8" x 8" with a thickness of up to 0.375".

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c) repairs - specify that this repair will only be used for one cycle.

**Entergy Response: The repair will be used until refueling outage 16 (October 2004) at which time the piping shall be replaced.**

3. To justify the applicability of the weld overlay repair, for one cycle, provide the expected degradation rates for the corresponding degradation mode. Provide past inspection results to support these degradation rate(s).

**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. The following is an example of previous inspection results:**

**a) Line 16"-WS-151-30A**

<b>Inspection</b>	<b>Minimum wall thickness (localized pitting)</b>
<b>3/1995</b>	<b>0.200"</b>
<b>7/1998</b>	<b>0.148"</b>
<b>6/2000</b>	<b>0.141"</b>

**The Code minimum wall thickness required is 0.113". This assumes uniform wall loss of the piping while the actual wall loss is very localized. The next inspection is scheduled for July of 2002.**