January 12, 2007

Mr. Peter T. Dietrich
Site Vice President
James A. FitzPatrick Nuclear Power Plant
Entergy Nuclear Operation, Inc.
P.O. Box 110
Lycoming, NY 13093-0110

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION REGARDING THE REVIEW OF THE LICENSE RENEWAL APPLICATION FOR JAMES A. FITZPATRICK NUCLEAR POWER PLANT (TAC NO. MD2666)

By letter dated July 31, 2006, Entergy Nuclear Operations, Inc., submitted an application pursuant to Title 10 Code of Federal Regulations Part 54, to renew the operating license for James A. FitzPatrick Nuclear Power Plant for review by the U.S. Nuclear Regulatory Commission (NRC). The NRC staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, an area where additional information is needed to complete the review.

Based on discussions with Mr. Rick Plasse of your staff, a mutually agreeable date for your response is within 30 days from the date of this letter. If you have any questions regarding this letter or if circumstances result in your need to revise the response date, please contact me at 301-415-1458 or by e-mail at nbl@nrc.gov.

Sincerely,

/RA/

N. B. (Tommy) Le, Senior Project Manager
License Renewal Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosure:
As stated

cc w/encl: See next page

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Based on discussions with Mr. Rick Plasse of your staff, a mutually agreeable date for your response is within 30 days from the date of this letter. If you have any questions regarding this letter or if circumstances result in your need to revise the response date, please contact me at 301-415-1458 or by e-mail at nbl@nrc.gov.

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ADAMS Accession No.:

OFFICE	LA:DLR	PM:RLRB:DLR	BC:RLRB:DLR
NAME	IKing	NBLe	RAuluck
DATE	01/10/07	01/10/07	01/12/07

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Letter to Peter Dietrich, from N B Le dated, January 12, 2007

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION REGARDING THE REVIEW OF THE LICENSE RENEWAL APPLICATION FOR JAMES A. FITZPATRICK NUCLEAR POWER PLANT (TAC NO. MD2666)

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REQUESTS FOR ADDITIONAL INFORMATION (RAIs)
JAMES A. FITZPATRICK NUCLEAR POWER PLANT LICENSE RENEWAL APPLICATION
SECTIONS 2.2, 2.3, 2.5, 3.1, 3.5, 4.2, 4.7, AND APPENDIX B

Section 2.2

RAI 2.2.4-1

License Renewal Application (LRA) Section 2.4.4 includes review of bulk commodities such as structural components or commodities that support intended functions of in-scope systems, structures, and components. It is not clear from the review of the LRA Table 2.4-4, “Bulk Commodities Summary of Components Subject to Aging Management Review (AMR),” and Table 3.5.2-4, “Bulk Commodities Summary of Aging Management Evaluation,” that the structural fire barriers (walls, ceilings, floors, and slabs) are within the scope of license renewal in accordance with Title 10 Code of Federal Regulations (CFR) Part 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If these structural fire barriers are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

Section 2.3

RAI 2.3.2.3-1

Page 498 of the James A. FitzPatrick Nuclear Power Plant (JAFNPP) updated final safety analysis report (UFSAR) states that each of the eleven safety/relief valves [(SRVs)] is equipped with a nitrogen accumulator. These pneumatic accumulators ensure the ability of the SRVs to depressurize the vessel in the event of a small to intermediate size line break concurrent with a high-pressure coolant injection (HPCI) failure and an interruption of the pneumatic supply to the accumulators. This provides short term automatic depressurization system SRV capability. Long term operation of the SRVs is assured with the seismically qualified lines to the accumulators. LRA Table 2.3.2-3 does not list accumulators as in scope, therefore, the staff requests that the applicant indicate if the above accumulators have been included in scope and identify the LRA Table and subcomponent group that includes the subject component. If the component is not in scope, please justify the exclusion or submit an AMR for the component.

RAI 2.3.3.5-1

LRA drawing LRA-FB-48A-0 shows the motor driven vertical turbine make up pump (P-3), hydropneumatic tank (TK-4), and associated components as out of scope (i.e., not colored in blue). The staff requests that the applicant verify whether the motor driven vertical turbine make up pump, hydropneumatic tank, and associated components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

ENCLOSURE

RAI 2.3.3.5-2

LRA drawing LRA-FB-48A-0 shows the yard fire hydrants to be in scope (i.e., colored in blue). The LRA Table 2.3.3-5, "Fire Protection—Water System Components Subject to Aging Management Review," and Table 3.3.2-5, "Fire Protection—Water System Summary of Aging Management Evaluation," do not list yard fire hydrants for the Fire Protection—Water System. According to JAFNPP commitments to satisfy Appendix A to Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSP) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," May 1, 1976," August 23, 1976, JAFNPP letter dated January 11, 1977, states that: *"the condensate storage tanks located outdoors are protected by outside fire hydrants and associated hose houses and equipment*." The staff requests that the applicant verify whether the yard fire hydrants are subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from an AMR, the staff requests that the applicant provide justification for the exclusion and address how the aging of those hydrants will be managed for the extended period of operation to ensure providing an effective hose stream when required. Furthermore, fire hydrants are considered passive and long-lived components in accordance with 10 CFR 54.21.

RAI 2.3.3.5-3

LRA drawing LRA-FB-48A-0 shows the sprinkler heads to be in scope (i.e., colored in blue). The LRA Table 2.3.3-5, "Fire Protection—Water System Components Subject to Aging Management Review," and Table 3.3.2-5, "Fire Protection—Water System Summary of Aging Management Evaluation," do not list sprinkler heads for the Fire Protection—Water System. The staff requests that the applicant verify whether the sprinkler heads are subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-4

LRA drawing LRA-FB-49A-0 shows the east diesel fire pump and Screenwell Building fire suppression system and associated components as out of scope (i.e., not colored in blue). The staff requests that the applicant verify whether the east diesel fire pump and Screenwell Building fire suppression system and associated components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-5

Section 4.3.1.3 of the Safety Evaluation (SE) dated August 1, 1979, states that a 30 gpm automatic electric driven centrifugal jockey pump is located in the same room as the electric motor driven fire pump. The jockey pump takes suction from the intake sump to maintain about 150 psig in the fire water system yard loop. The jockey pump and its associated components appear to have fire protection intended functions required for compliance with 10 CFR 50.48 as stated in 10 CFR 54.4. The staff requests that the applicant verify whether the jockey pump and its associated components are in the scope of license renewal in accordance with

10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-6

Section 4.3.1.4 of the SE dated August 1, 1979, discusses interior hose stations in plant areas. The staff requests that the applicant to verify whether these interior hose stations and their associated components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-7

Section 4.3.1.5 of the SE dated August 1, 1979, discusses preaction sprinkler systems provided in the recirculation pumps motor generator set room and in the emergency diesel generator rooms. The LRA does not list preaction sprinkler systems and their associated components provided in the recirculation pumps motor generator set room and in the emergency diesel generator rooms as being in scope and subject to an AMR. The staff requests that the applicant verify whether the preaction sprinkler systems and their associated components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-8

Section 4.3.1.5 of the SE dated August 1, 1979, discusses manual water spray systems in the HPCI pump room and reactor core isolation coolant (RCIC) pump room; in the vicinity of the standby gas treatment (SGT) system charcoal filters, hydrogen seal oil unit, and turbine generator bearing boxes; and in the reactor feed-pump turbine area and piping area. The LRA does not list manual water spray systems provided in HPCI and RCIC pump rooms; in the vicinity of the SGT system charcoal filters, hydrogen seal oil unit, and turbine generator bearing boxes; and in the reactor feed-pump turbine area and piping area as being in scope and subject to an AMR. The staff requests that the applicant verify whether the manual water spray systems and their associated components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-9

Section 4.5 of the SE dated August 1, 1979, discusses flood drains provided in all plant areas protected with a fixed water fire suppression system. The curbs/dikes are provided for liquid tanks in the diesel fire pump area, the dirty oil storage rooms, and main oil sump room to contain oil and fire water. The LRA does not list flood drains and curbs/dikes as being in scope and subject to an AMR. The staff requests that the applicant verify whether the flood drains and curbs/dikes are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-10

Section 4.11 of the SE dated August 1, 1979, discusses the installation of fire resistance coating on exposed structural steel in the plant areas where the failure of exposed structural steel supporting fire barriers (floors, walls, and ceilings) could impair the safe-shutdown capability of the plant. These areas include the reactor building, turbine building, control building, diesel generator building, and others. The LRA does not list three-hour rated fire resistance coating for exposed structural steel as being in scope and subject to an AMR. The staff requests that the applicant verify whether the fire resistance coating for structural steel is in scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If structural fire resistance coating is excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.5-11

JAFNNP is required to meet Appendix A to BTP APCSP 9.5-1. According to JAFNPP commitments to satisfy Appendix A to BTP APCSP 9.5-1, JAFNPP letter dated January 11, 1977, states that:

> *"The Emergency Diesel Generator A and C combined ventilation air intake is located approximately 40 ft from the Station Reserve Transformer, T-3. This air intake is approximately 10 ft above the ground. It is not practicable to seal this opening with a 3 hr fire barrier or by a combination of opening seals and water spray.*
>
> *The power Authority does not consider it necessary to provide a 3 hr fire barrier between the ventilation opening and the transformer for the following reasons:*
>
> *1) The transformer is protected by an automatic water spray deluge system in accordance with NFPA 13."*

The staff requests that the applicant verify whether the automatic water deluge system for the Station Reserve Transformer, T-3 is in scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If the automatic water deluge system is excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.6-1

LRA Section 2.3.3.6 describes the CO_2 fire suppression system as being in the scope of the license renewal and subject to an AMR. The aging management program (AMP) for the CO_2 fire suppression system does not appear in LRA Section B.1.13, "Fire Protection Program." The NUREG-1801, GALL Report, Revision 1, Section XI.M26, "Fire Protection," describes the requirements for aging management of the CO_2 fire suppression system. It requires that an AMP be established to evaluate the periodic visual inspection and function test be performed at least once every six months to examine the signs of degradation of the CO_2 fire suppression system. Material conditions that may affect the performance of the system, such as corrosion, mechanical damage, or damage to dampers, are observed during these tests. The staff requests that the applicant describe the AMP and operating experience for the CO_2 fire suppression system in LRA Section B.1.13.

RAI 2.3.3.6-2

LRA Table 2.3.3-6, "Fire Protection—CO_2 Components Subject to Aging Management Review," and Table 3.3.2-6, "Fire Protection—CO_2 Components Summary of Aging Management Evaluation," exclude several types of CO_2 fire suppression system components that appear in the LRA drawing LRA-FB-56A-0 colored in purple. These components are listed below.

- strainer
- strainer housing
- filter housing
- heater housing
- orifice
- siren body
- pipe supports
- couplings
- odorizer
- threaded connections
- pneumatic actuators

For each, determine whether the component should be included in Tables 2.3.3-6 and 3.3.2.6, and if not, justify the exclusion.

RAI 2.3.3.6-3

According to JAFNPP commitments to satisfy Appendix A to BTP APCSP 9.5-1, JAFNPP letter dated January 11, 1977, states that: "*the plant computer room is located within a wire fence area inside the relay room... The relay room (including computer room) is protected by a total flooding CO_2 system with outside backup by a water hose station and portable CO_2 extinguisher*." UFSAR Section 9.8.3.11 states that: "*Halon is used for fire protection in the Emergency and Plant Information Computer (EPIC) Room where it is not desirable to use a water spray or a sprinkler system*." The staff requests that the applicant verify whether the flooding CO_2 fire suppression system or Halon fire suppression system in the EPIC room is in scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If the CO_2 or Halon fire suppression system is excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant to provide justification for the exclusion.

Section 2.5

RAI 2.5-1

In Section 2.5 (Page 2.5-2) of the LRA, the switchyard bus is included in the list of components/commodity groups subject to AMR. However, the switchyard bus is not shown in the LRA, Figure 2.5-1, "SBO Offsite Power Scoping Diagram." Please provide details of the switchyard bus which is included in the scope subject to AMR.

Section 3.1

RAI 3.1.2-2A

The applicant implemented AMP B.1.7, "BWR Vessel Internals," for managing the aging effects due to loss of preload and cracking in these bolts. AMP B.1.7 in turn invokes the inspection guidelines that are specified in the BWRVIP-25 report, "BWR Core Plate Inspection and Flaw Evaluation Guidelines." Table 3.1.2-2 of the Boiling Water Reactor Vessel and Internals Project (BWRVIP)-25 report recommends that if wedges are not installed, the core support rim bolts should be inspected for cracks using enhanced visual testing (EVT-1) from below the core plate or ultrasonic testing (UT) from above the core plate if an effective UT technique is developed. Since wedges are not currently installed at JAFNPP, the staff requests that the applicant provide information regarding the type of inspection methods, inspection frequency and the results of the inspections that have been performed thus far on core support rim bolts. If the applicant does not plan to install wedges, it should provide information regarding the accessibility for performing the inspections, type of inspections including UT technique, and inspection frequency that will be used to monitor the aging degradation in the core support rim bolts during the license renewal period.

RAI 3.1.2-2B (Editorial)

Table 3-2 of the BWRVIP-25 report addresses inspection strategy for the core plate hold-down bolts. However, in Table 3.1.2-2 of the LRA, the applicant identifies them as core support rim bolts. To maintain consistency in nomenclature, the staff requests that applicant revise Table 3.1.2-2 of the LRA to include core plate hold-down bolts in lieu of core support rim bolts.

Section 3.5

RAI 3.5.2-1

In Table 3.5.2-1 under Structure and/or Component or Commodity "Drywell shell," "Drywell to vent system," and "Torus shell," JAFNPP Containment Inservice Inspection (CII) and Containment Leak Rate programs are credited to manage loss of material due to general, pitting, and crevice corrosion. The staff requests the applicant to verify that these programs include the aging effects on both accessible and inaccessible areas.

RAI 3.5.2-2

In Table 3.5.2-1 under Structure and/or Component or Commodity "Drywell shell," and "Torus shell," JAFNPP CII Program is credited to manage the loss of material due to general, pitting, and crevice corrosion. Operating experience in the AMP stated "Results of the CII general visual walkdown of primary containment during RO15 (2002) revealed minor areas of peeling paint and rust scale." The staff requests the applicant to provide the root cause and any preventive actions taken to alleviate the instances of peeling paint and rust scale in primary containment.

RAI 3.5.2-3

In Table 3.5.2-1 under Structure and/or Component or Commodity "Drywell shell," JAFNPP CII and Containment Leak Rate Programs are credited to manage the loss of material due to general, pitting, and crevice corrosion. However, it was unclear to the staff how and when inspections were performed to verify that there has been no observed leakage causing moisture in the vicinity of the sand cushion at JAFNPP and no moisture has been detected or is suspected on the inaccessible areas of the drywell shell which would result in corrosion and wall thinning. If conditions exist, the staff requests the applicant to address proposed license renewal interim staff guidance LR-ISG-2006-01, "Plant Specific Aging Management Program for Inaccessible Areas of Boiling Water Reactor Mark 1 Steel Containment Drywell Shell," which was published in the Federal Register on May 9, 2006. Also, the staff requests the applicant to provide significant findings during the implementation of, and subsequent examinations to GL 87-05, "Request for Additional Information-Assessment of Licensee Measures to Mitigate And/Or Identify Potential Degradation of Mark I Drywells."

RAI 3.5.2-4

In Table 3.5.2-1 under Structure and/or Component or Commodity "Drywell to torus vent system," and "Drywell to torus vent line bellows," JAFNPP CII and Containment Leak Rate programs are credited to manage loss of material due to general, pitting, crevice corrosion, and cracking. The vent system as well as the vent line bellows may be inaccessible and likely to be subject to corrosion (see IN 92-20). The staff requests the applicant to provide operating experience and information on how the AMPs will manage aging effects of these components through the period of extended operation.

RAI 3.5.2-5

In Table 3.5.2-1 under Structure and/or Component or Commodity "Torus shell," JAFNPP CII and Containment Leak Rate programs are credited to manage loss of material due to general, pitting, crevice corrosion. According to NRC Information Notice 2006-01, "Torus Cracking in a BWR Mark I Containment," which was published on January 12, 2006, the most likely cause of through-wall torus crack was the cyclic loading due to condensation oscillation during HPCI operation. In order for the AMPs to properly manage aging effect of this structure, the staff requests the applicant to include cracking as an aging effect requiring management. Also, the staff requests the applicant to provide information on how other areas of the torus that are susceptible to cracking and/or pitting corrosion are managed in order to provide reasonable assurance that the torus will function properly through the period of extended operation.

RAI 3.5.2-6

In Table 3.5.2-1 under Structure and/or Component or Commodity “Drywell shell,” and “Torus shell,” JAFNPP referenced no time-limited aging analysis (TLAA). An absence of TLAA related to drywell and torus corrosion indicates that both of these containment components have not experienced degradation that requires such an analysis. Please explain the condition of these two components to justify that a TLAA is not required for either of these components.

Section 4.2

RAI 4.2.2-1

Please discuss whether the 54 effective full-power years (EFPY) Pressure-Temperature (P-T) limit curve bases summarized in LRA Table 4.2-3 take into consideration the JAFNPP power uprate conditions.

RAI 4.2.2-2

The staff does not require the P-T limit curves for the extended period of operation to be submitted as part of the applicant’s LRA for this TLAA. However, the staff does require NRC approval of the P-T limit curves for the extended period of operation prior to the expiration of the facility’s current P-T limit curves for 32 EFPY. Please state when you intend to submit P-T limit curves for NRC approval for the extended licensed period of operation (54 EFPY).

RAI 4.2.3-1

In reference to LRA Table 4.2-1, the applicant is requested to clarify whether any other surveillance capsule data is available. If so, provide this information and address how this additional data affects your response to RAI 4.2.2-1.

RAI 4.2.5-1

The NRC staff requires that a request for relief from the American Society of Mechanical Engineer Boiler and Pressure Vessel Code (ASME Code) reactor vessel (RV) circumferential shell weld examination requirements be submitted prior to the beginning of the extended period of operation. Please state whether you intend to apply for relief from the ASME Code RV circumferential weld examination requirements for the extended licensed period of operation. State when you plan to submit this relief request.

RAI 4.2.5-2

In the July 28, 1998 SE for the BWRVIP-05 report, the NRC staff concluded that examination of the RV circumferential shell welds would need to be performed if the corresponding volumetric examinations of the RV axial shell welds revealed the presence of an age-related degradation mechanism. Confirm whether or not previous volumetric examinations of the RV axial shell welds at JAFNPP have shown any indication of cracking or other age-related degradation mechanisms in the welds.

RAI 4.2.5-3

The BWRVIP-05 report does not use a margin term for calculations of surface mean RT_{NDT} for RV circumferential welds. Please clarify the inclusion of a margin term in Table 4.2-4 and in section 4.2.5.

RAI 4.2.6-1

Section 4.2.6 of the JAFNPP LRA states that the mean RT_{NDT} value for the limiting RV axial shell weld at the end of the extended period of operation (54 EFPY) is significantly less than the NRC limiting plant-specific mean RT_{NDT} value established in the staff's March 7, 2000, supplement to the final SE for the BWRVIP-74 report. Therefore, the JAFNPP axial weld failure probability is well below the acceptable limit of 5×10^{-6} per reactor-year. However, the limiting axial weld failure probability calculated by the NRC is based on the assumption that "essentially 100 percent" (i.e., greater than 90 percent) examination coverage of all RV axial welds can be achieved in accordance with ASME Code, Section XI requirements.

State whether your inservice inspection examinations achieved "essentially 100 percent" (i.e., greater than 90 percent) overall examination coverage for the RV axial welds. If they did not, reference the NRC staff's Safety Evaluation Report granting relief for limited scope axial weld examination coverage for the current licensed operating period. If less than 90 percent overall examination coverage was achieved for the RV axial welds, revise this TLAA to account for the effects of the limited scope examination coverage.

Section 4.7

RAI 4.7.3.2-1

Section 4.7.3.2 of the JAFNPP LRA addresses the recommendations of the BWRVIP-25 report, "BWR Core Plate Inspection and Flaw Evaluation Guidelines," pertaining to the TLAA for the RV core plate hold-down bolts. The relevant degradation mechanisms for this TLAA include loss of preload and cracking of the core plate rim hold-down bolts. Section 4.7.3.2 of the JAFNPP LRA indicated that the BWRVIP-25 report calculated the loss of preload for these bolts for the original 40-year licensed operating period. Appendix B to BWRVIP-25 projected this calculation to 60 years, demonstrating that the JAFNPP core plate rim hold-down bolts would experience, at most, a 19 percent loss of preload for the extended period of operation.

The staff determined that additional information is required concerning the data and analyses that were used to determine that the loss of preload at the end of the period of extended operation would be less than 20 percent. Therefore, the staff requests that the applicant provide additional information demonstrating that the requirements specified in the BWRVIP-25 report, including Appendix B, are applicable to JAFNPP, based on the following:

a. configuration and geometry of the JAFNPP core plate rim hold-down bolts;

b. the temperature of the core plate rim hold-down bolts during normal operation, taking into consideration power uprate conditions; and

c. projected bolt neutron fluence at the end of the period of extended operation, taking into consideration power uprate conditions.

Please include the actual values for bolt temperature and projected bolt neutron fluence in the above discussion, and explain how it was determined that the effects of temperature and neutron fluence at the end of the period of extended operation would result in less than a 20 percent loss of bolt preload. Provide a detailed description of the methodology and data used at JAFNPP to perform the above analyses, and include the basis for the stress relaxation curves.

Finally the staff requests that the applicant demonstrate that, under the conditions stated in Scenario 3 of BWRVIP-25, Appendix A (determination of hold-down bolt loading with no credit for aligner pins or rim weld), the axial and bending stresses for the hold-down bolts with the mean and highest loading will not exceed the ASME Code, Section III allowable stresses for primary membrane and primary membrane plus bending, as a result of a 20 percent reduction in the specified bolt pre-load. Clearly state the assumptions on which this analysis is based, taking into consideration the fact that the approach recommended in Appendix A of BWRVIP-25 is based on an elastic finite element analysis of the core plate and hold-down bolts.

RAI 4.7.3.2-2

Please indicate whether any cracking has been detected in the core plate rim hold-down bolts. If any cracking has been detected, clarify why there is no TLAA that addresses the evaluation of flaws due to cracking in the core plate rim hold-down bolts.

RAI 4.7-1

Radiation embrittlement may affect the ability of RV internals, particularly the core shroud, to withstand a low-pressure coolant injection thermal shock transient. The analysis of core shroud strain due to reflood thermal shock is based on the calculated lifetime neutron fluence. This analysis satisfies the criteria of 10 CFR 54.3(a). As such, this analysis is a TLAA. Explain why the analysis for core shroud strain due to reflood thermal shock is not addressed in the LRA. Note: For reference, please see the NRC staff's evaluation in section 4.2.2.4 of NUREG-1796 "Safety Evaluation Report Related to the License Renewal of the Dresden Nuclear Power Station, Units 2 and 3 and Quad Cities Nuclear Power Station, Units 1 and 2," dated October 2004, which is available on the NRC website.

RAI 4.7-2

Radiation embrittlement may affect the ability of the RV to withstand a low-pressure coolant injection thermal shock transient. Explain why the analysis for reflood thermal shock of the RV is not addressed in the LRA. Note: For reference, please see the NRC staff's evaluation in section 4.2.2.3 of NUREG-1796 "Safety Evaluation Report Related to the License Renewal of the Dresden Nuclear Power Station, Units 2 and 3 and Quad Cities Nuclear Power Station, Units 1 and 2," dated October 2004, which is available on the NRC website.

Section Appendix B

RAI B.1.24-1

The applicant, in UFSAR supplement A.2.1.26, “Reactor Vessel Surveillance Program,” and in AMP B.1.24, “Reactor Vessel Surveillance,” states that it will implement the BWRVIP Integrated Surveillance Program (ISP) as specified in the BWRVIP-116 report, “BWR Vessel Internals Project Integrated Surveillance Program Implementation for License Renewal,” at the JAFNPP. By letter dated March 1, 2006, the staff has issued the final SE for the BWRVIP-116 report and, therefore, the staff requests that the applicant include the following statement (shown bold underlined font) in the UFSAR supplement Section A.2.1.26 and in AMP B.1.24 of the LRA.

> *“The ISP-BWRVIP-116 report which was approved by the staff will be implemented at JAFNPP with the conditions documented in Sections 3 and 4 of the staff’s final SE of the BWRVIP-116 report.”*

RAI B.1.24-2

10 CFR Part 50, Appendix H, requires that an ISP used as a basis for a licensee implemented RV surveillance program be reviewed and approved by the NRC staff. The ISP to be used by the applicant is a program that was developed by the BWRVIP. The applicant will apply the BWRVIP ISP as the method by which the JAFNPP unit will comply with the requirements of 10 CFR Part 50, Appendix H. The BWRVIP ISP identifies capsules that must be tested to monitor neutron radiation embrittlement for all licensees participating in the ISP and identifies capsules that need not be tested (standby capsules). Table 3-3 of the BWRVIP-116 report indicates that the capsules from JAFNPP unit are not tested. These untested capsules were originally part of the applicant's plant-specific surveillance program and have received significant amounts of neutron radiation.

The staff requests that the applicant include the following statement (shown bold underlined font) in the UFSAR supplement Section A.2.1.26 of the LRA.

> *“If the JAFNPP standby capsule is removed from the RPV without the intent to test it, the capsule will be stored in manner which maintains it in a condition which would permit its future use, including during the period of extended operation, if necessary.”*

RAI B.1.24-3

The staff requests that the applicant provide information on whether it is currently implementing BWRVIP ISP at JAFNPP. If so, the applicant should reference the staff-approved license amendment request for implementing ISP at JAFNPP.

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