

**Constellation  
Energy Group**

Nine Mile Point  
Nuclear Station

January 9, 2004  
NMP1L 1804

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**SUBJECT:** Nine Mile Point Unit 1  
Docket No. 50-220  
Facility Operating License No. DPR-63

**License Amendment Request: Revision to the Reactor Pressure Vessel Material  
Surveillance Program**

Gentlemen:

Pursuant to 10 CFR 50.90, Nine Mile Point Nuclear Station, LLC (NMPNS) hereby requests an amendment to Nine Mile Point Unit 1 (NMP1) Operating License DPR-63. The proposed changes revise the NMP1 licensing basis by replacing the current plant-specific reactor pressure vessel (RPV) material surveillance program with the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP). Specifically, the proposed changes (1) delete the current reactor vessel material specimen surveillance schedule that is described in NMP1 Technical Specification (TS) 3/4.2.2, "Minimum Reactor Vessel Temperature for Pressurization," and associated Bases; (2) delete the special reporting requirement of TS 6.6.6.a regarding RPV material surveillance specimen examination; and (3) revise the NMP1 Updated Final Safety Analysis Report (UFSAR) to reflect the following key elements:

- NMP1 participation in the ISP, whose program documents consist of BWRVIP-78, dated December 1999, and BWRVIP-86-A, dated October 2002, and
- The use of a methodology for determination of RPV and/or surveillance capsule neutron fluences that is in accordance with the recommendations of Regulatory Guide (RG) 1.190.

By letter dated February 1, 2002, the NRC issued a Safety Evaluation (SE) approving the BWRVIP ISP as an acceptable alternative to all existing BWR plant-specific RPV surveillance programs for the purpose of maintaining compliance with the requirements of 10 CFR 50 Appendix H, "Reactor Vessel Material Surveillance Program Requirements." In Regulatory Issue Summary (RIS) 2002-05, "NRC Approval of Boiling Water Reactor Pressure Vessel Integrated Surveillance Program," dated April 8, 2002, the NRC stated that licensees who elect

A008

to participate in the ISP shall submit a license amendment request to incorporate this program into their licensing basis. This license amendment request is consistent with the guidance contained in the referenced NRC SE and the RIS.

Similar requests have previously been approved for the Nuclear Management Company's Monticello Nuclear Generating Plant by NRC letter dated April 22, 2003 (TAC No. MB6460), and for Exelon Generation Company's Limerick Generating Station, Units 1 and 2, by NRC letter dated November 4, 2003 (TAC Nos. MB7003 and MB7004).

NMPNS requests approval of the proposed amendment within one year. Once approved, the amendment shall be implemented within 90 days. This letter contains no new regulatory commitments, as reflected in Attachment 5.

Pursuant to 10 CFR 50.91(b)(1), NMPNS has provided a copy of this license amendment request and the associated analyses regarding no significant hazards consideration to the appropriate state representative.

Very truly yours,



Peter E. Katz  
Vice President Nine Mile Point

PEK/DEV/bjh

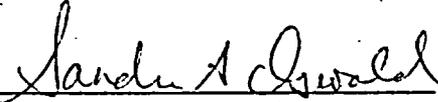
STATE OF NEW YORK :  
: TO WIT:  
COUNTY OF OSWEGO :

I, Peter E. Katz, being duly sworn, state that I am Vice President Nine Mile Point, and that I am duly authorized to execute and file this request on behalf of Nine Mile Point Nuclear Station, LLC. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other Nine Mile Point employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

  
\_\_\_\_\_

Subscribed and sworn before me, a Notary Public in and for the State of New York and County of Oswego, this 9<sup>th</sup> day of January, 2004.

WITNESS my Hand and Notarial Seal:

  
\_\_\_\_\_  
Notary Public

My Commission Expires:

1/9/04  
\_\_\_\_\_  
Date

SANDRA A. OSWALD  
Notary Public, State of New York  
No. 01OS6032276  
Qualified in Oswego County  
Commission Expires 10/25/05

Attachments:

1. Evaluation of Proposed Changes
2. Proposed Technical Specification Changes (Mark-up)
3. Changes to Technical Specifications Bases Pages (Mark-up)
4. Proposed Changes to Updated Final Safety Analysis Report Pages (Mark-up)
5. List of Regulatory Commitments

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I  
Mr. G. K. Hunegs, NRC Senior Resident Inspector  
Mr. P. S. Tam, Senior Project Manager, NRR (2 copies)  
Mr. J. P. Spath, NYSERDA

## ATTACHMENT 1

### EVALUATION OF PROPOSED CHANGES

Subject: *License Amendment Request: Revision to the Reactor Pressure Vessel Material Surveillance Program*

- 1.0 DESCRIPTION
- 2.0 PROPOSED CHANGE
- 3.0 BACKGROUND
- 4.0 TECHNICAL ANALYSIS
- 5.0 REGULATORY SAFETY ANALYSIS
- 6.0 ENVIRONMENTAL CONSIDERATION
- 7.0 REFERENCES

## 1.0 DESCRIPTION

This letter is a request to amend Nine Mile Point Unit 1 (NMP1) Operating License DPR-63. The proposed changes revise the NMP1 licensing basis by replacing the current plant-specific reactor pressure vessel (RPV) material surveillance program with the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP). Specifically, the proposed changes (1) delete the current reactor vessel material specimen surveillance schedule that is described in NMP1 Technical Specification (TS) 3/4.2.2, "Minimum Reactor Vessel Temperature for Pressurization," and associated Bases; (2) delete the special reporting requirement of TS 6.6.6.a regarding RPV material surveillance specimen examination; and (3) revise the NMP1 Updated Final Safety Analysis Report (UFSAR) to document NMP1 participation in the ISP.

## 2.0 PROPOSED CHANGE

Surveillance Requirement (SR) 4.2.2.b currently requires removal and inspection of reactor vessel material and surveillance samples in accordance with a prescribed schedule. The proposed changes delete SR 4.2.2.b. The revised NMP1 UFSAR description (discussed below) will replace the deleted TS requirements. In addition, the special reporting requirement of TS 6.6.6.a regarding RPV material surveillance specimen examination is deleted. The proposed TS changes are indicated on the marked-up TS pages provided in Attachment 2. Supporting changes to the TS Bases are shown in Attachment 3. The proposed TS Bases changes are provided for information only and will be processed in accordance with NMP1 TS 6.5.6, "Technical Specifications (TS) Bases Control Program," upon approval of the license amendment request.

The NMP1 UFSAR, Section XVI-A.4.1, "Coupon Surveillance Program," describes the current plant-specific RPV material surveillance program. This UFSAR section is revised to document NMP1 participation in the ISP, including references to appropriate BWRVIP program documents and the NRC safety evaluation (SE) dated February 1, 2002 (Reference 1). Also, new Section V-C.4.6 is added to describe the use of a neutron fluence calculational methodology that is in accordance with the recommendations of Regulatory Guide (RG) 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," dated March 2001. The proposed changes to the UFSAR are provided in Attachment 4. Following NRC approval of the license amendment request, the UFSAR will be updated to incorporate the changes identified in Attachment 4 in accordance with 10 CFR 50.71(e).

## 3.0 BACKGROUND

Appendix H to 10 CFR 50 requires that reactor pressure vessels have their beltline regions monitored by a surveillance program that complies with American Society for Testing and Materials (ASTM) E 185, except as modified by Appendix H. ASTM E 185 provides guidelines for designing a minimum surveillance program, selecting materials, and evaluating test results for light-water cooled nuclear power reactor vessels. It also provides recommendations for the

H further requires that the proposed withdrawal schedule be submitted to and approved by the NRC prior to implementation.

The NMP1 RPV material surveillance program was developed in accordance with 10 CFR 50, Appendix H, and ASTM E 185-66. The program is described in NMP1 UFSAR Section XVI-A.4.1, "Coupon Surveillance Program." The current NMP1 RPV surveillance capsule withdrawal schedule is contained in TS SR 4.2.2.b.

The BWRVIP ISP was developed in response to an issue raised by the NRC regarding the potential lack of adequate unirradiated baseline Charpy V-notch (CVN) data for one or more materials in plant-specific RPV surveillance programs at several boiling water reactors (BWRs). The lack of baseline properties would inhibit a licensee's ability to effectively monitor changes in the fracture toughness properties of RPV materials in accordance with 10 CFR 50, Appendix H. The BWRVIP ISP, as approved by the NRC in its SE dated February 1, 2002 (Reference 1), resolves this issue.

Implementation of the ISP will provide additional benefits. When the original surveillance materials were selected for plant-specific surveillance programs, the state of knowledge concerning RPV material response to irradiation and post-irradiation fracture toughness was not the same as it is today. As a result, many facilities did not include what would be identified today as the plant's limiting RPV materials in their surveillance programs. Hence, this effort to identify and evaluate materials from other BWRs, which may better represent a facility's limiting materials, should improve the overall evaluation of BWR RPV embrittlement. Also, the inclusion of data from the testing of BWR Owners' Group (BWROG) Supplemental Surveillance Program (SSP) capsules will improve overall quality of the data being used to evaluate BWR RPV embrittlement. Further, occupational radiation exposure will be reduced due to elimination of the need for some units (including NMP1) to remove material specimens. Overall, the combined benefits of the ISP are substantial. Finally, implementation of the ISP is also expected to reduce the cost of surveillance testing and analysis because surveillance materials that are of little or no value will no longer be tested.

#### 4.0 TECHNICAL ANALYSIS

The deletion of TS SR 4.2.2.b is acceptable because it does not meet the minimum requirements of 10 CFR 50.36(c)(3) for inclusion in the TS. The installation of test specimens in the reactor vessel and their associated material sample program monitor fluence embrittlement for long term operation of the reactor vessel and for establishing pressure-temperature curve limitations. These measurements do not assure that the necessary quality of systems and components is maintained, or that facility operation will be within safety limits, nor do they assure that a limiting condition for operation will be met. Therefore, the surveillance is not a required TS surveillance requirement per the provisions of 10 CFR 50.36(c)(3). In addition, the proposed deletion of SR 4.2.2.b is consistent with the current NRC guidance regarding TS content (NUREG-1433 and NUREG 1434), and is consistent with the guidance provided in Generic Letter 91-01, "Removal of the Schedule for the Withdrawal of Reactor Vessel Material Specimens from Technical Specifications," dated January 4, 1991.

In BWRVIP-78 (Reference 2) and BWRVIP-86-A (Reference 3), the technical basis is described for the development and implementation of an ISP intended to support operation of all U. S. BWR RPVs through the completion of each facility's current 40-year operating license.

In its SE dated February 1, 2002 (Reference 1), the NRC concluded that the ISP proposed by the BWRVIP, if implemented in accordance with the conditions of the NRC SE, is an acceptable alternative to all existing BWR plant-specific RPV surveillance programs for the purpose of maintaining compliance with the requirements of 10 CFR 50 Appendix H through the end of the current facility 40 year operating licenses. The NRC SE requires that each licensee electing to participate in the ISP (1) provide information regarding what specific neutron fluence methodology will be implemented as part of participation in the ISP, and (2) address neutron fluence methodology compatibility as it applies to the comparison of neutron fluences calculated for its RPV versus the neutron fluences calculated for surveillance capsules in the ISP which are designated to represent its RPV. This information is provided in the following discussion.

With respect to the specific fluence methodology, NMPNS has used the methodology described in NMPNS letter NMP1L 1697 dated November 15, 2002 (Reference 4), as supplemented by the information submitted in NMPNS letters NMP1L 1708 dated January 15, 2003 and NMP1L 1749 dated July 31, 2003 (References 5 and 6, respectively), to calculate the most recent fluence values. This calculation was performed to support proposed revisions to the NMP1 RPV pressure-temperature limit curves that were submitted to the NRC in letter NMP1L 1697. The methodology is in accordance with the recommendations of RG 1.190 and was approved by the NRC in a letter dated October 27, 2003 (Reference 7). The NMP1 UFSAR is being revised (Attachment 4) to reflect that an NRC-approved fluence methodology will be used which conforms with RG 1.190. Use of an NRC-approved fluence methodology satisfies the first condition contained within the NRC SE (Reference 1).

Regarding neutron fluence methodology compatibility, at the August 29, 2002 "Workshop on the BWRVIP RPV Integrated Surveillance Program," the NRC staff stated that methodology compatibility is satisfied if the surveillance capsules and the RPVs are evaluated with an NRC-approved methodology that complies with RG 1.190. The requirement to use an NRC-approved fluence methodology that is consistent with RG 1.190 is being included in the NMP1 UFSAR (Attachment 4). Use of an NRC-approved fluence methodology that is consistent with RG 1.190 satisfies the second condition contained within the NRC SE (Reference 1).

In accordance with the existing plant-specific RPV material surveillance program, three NMP1 surveillance capsules have been withdrawn and tested, with satisfactory results. Three capsules are all that is normally required to satisfy the 40-year license term for a BWR. However, as described in TS SR 4.2.2.b, two plant-specific supplemental surveillance capsules were re-inserted (A' and C'), and a third supplemental surveillance capsule was to be re-inserted (B'). SR 4.2.2.b includes a withdrawal schedule for these three re-insertion capsules. Under the ISP, NMP1 is not identified as a host plant. The representative materials for the NMP1 limiting RPV plate and weld materials, and their associated withdrawal schedules, are identified in Reference 3. Thus, in accordance with the ISP, withdrawal and testing of re-insertion capsules A' and C' will be permanently deferred, and capsule B' need not be re-inserted.

The proposed changes include deletion of TS 6.6.6.a, which requires that a special report containing the results of reactor vessel material surveillance specimen examination conducted pursuant to TS SR 4.2.2.b be submitted to the NRC within 12 months. As discussed above, the proposed changes delete SR 4.2.2.b. Additionally, the requirements of TS 6.6.6.a are contained in 10 CFR 50, Appendix H, Paragraph IV, "Report of Test Results." Since these special reporting requirements are contained in the regulations, it is not necessary to repeat them in the TS.

## 5.0 REGULATORY SAFETY ANALYSIS

### 5.1 No Significant Hazards Consideration

Nine Mile Point Nuclear Station, LLC (NMPNS) is proposing to revise the licensing basis for Nine Mile Point Unit 1 (NMP1) by replacing the plant-specific reactor pressure vessel (RPV) material surveillance program with the Boiling Water Reactor Vessel Internals Project (BWRVIP) Integrated Surveillance Program (ISP). This change is acceptable because the BWRVIP ISP has been approved by the NRC staff as meeting the requirements of paragraph III.C of Appendix H to 10 CFR 50 for an integrated surveillance program. Additionally, the Technical Specification (TS) surveillance requirement that prescribes a plant-specific withdrawal schedule for RPV surveillance specimens is deleted. This is acceptable because it does not meet the requirements of 10 CFR 50.36(c)(3) for inclusion in the TS. Lastly, an unnecessary TS special reporting requirement relating to RPV surveillance specimen examination is deleted.

NMPNS has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed changes implement an ISP that has been evaluated by the NRC as meeting the requirements of paragraph III.C of Appendix H to 10 CFR 50; remove a TS surveillance requirement that prescribes a plant-specific withdrawal schedule for RPV surveillance specimens; and delete an unnecessary reporting requirement relating to RPV surveillance specimen examination. The proposed changes provide the same assurance of RPV integrity as has always been provided. Implementation of an ISP is not a precursor or initiator of any accident previously evaluated. No physical changes to the plant will result from the proposed changes. The proposed changes will not cause the RPV or interfacing systems to be operated outside of any design or testing limits, and will not alter

any assumptions or initial conditions previously used in evaluating the radiological consequences of accidents.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes revise the NMP1 licensing bases to reflect participation in the BWRVIP ISP. The ISP was approved by the NRC staff as an acceptable material surveillance program that complies with 10 CFR 50, Appendix H. No physical changes to the plant will result from the proposed changes. The proposed changes do not affect the design or operation of any system, structure, or component. As an alternate monitoring program, the ISP cannot create a new failure mode involving the possibility of a new or different kind of accident.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed changes have no impact on the margin of safety of any TS. There is no impact on safety limits or limiting safety system settings. The changes do not affect any plant safety parameters or setpoints. No physical or operational changes to the plant will result from the proposed changes.

The RPV material surveillance program requirements contained in 10 CFR 50, Appendix H provide assurance that adequate margins of safety exist during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the reactor coolant pressure boundary may be subjected over its service lifetime. The BWRVIP ISP has been approved by the NRC staff as an acceptable material surveillance program that complies with 10 CFR 50, Appendix H. The ISP will provide the material surveillance data that will assure that the safety margins required by the NRC regulations are maintained.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above evaluation, NMPNS concludes that the proposed amendment involves no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

## 5.2 Applicable Regulatory Requirements/Criteria

10 CFR 50 Appendix G, "Fracture Toughness Requirements," which is invoked by 10 CFR 50.60, "Acceptance criteria for fracture prevention measures for lightwater nuclear power reactors for normal operation," specifies fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary, including RPVs. In order to support evaluations to demonstrate that compliance with these requirements will be maintained, information regarding irradiated RPV material properties and the neutron fluence level of a licensee's RPV is necessary. Therefore, 10 CFR 50.60 also invokes 10 CFR 50, Appendix H, which requires licensees to implement an RPV material surveillance program.

An alternative provided in Appendix H to 10 CFR 50 is to implement an ISP. An Appendix H requirement for an ISP is that "the representative materials chosen for surveillance for a reactor are irradiated in one or more other reactors that have similar design and operating features." Appendix H, Paragraph III.C, "Requirements for an Integrated Surveillance Program," sets forth specific criteria upon which approval of an ISP shall be based. In its safety evaluation dated February 1, 2002 (Reference 1), the NRC documented that the BWRVIP ISP met the criteria specified in 10 CFR 50, Appendix H, Paragraph III.C.

In conclusion, based on the considerations discussed above and in Section 4.0, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## 6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed adoption of an integrated surveillance program for reactor material specimen surveillances at NMP1 would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## 7.0 REFERENCES

1. Letter from U. S. NRC to C. Terry (BWRVIP), "Safety Evaluation Regarding EPRI Proprietary Reports 'BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)' and 'BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan,'" dated February 1, 2002
2. BWRVIP-78, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan," Final Report, December 1999
3. BWRVIP-86-A, "BWR Vessel and Internals Project, Updated BWR Integrated Surveillance Program (ISP) Implementation Plan," Final Report, October 2002
4. NMPNS Letter to the NRC, NMP1L 1697 dated November 15, 2002, "License Amendment Request Pursuant to 10 CFR 50.90: Revision of Reactor Pressure Vessel Pressure-Temperature Limits and Request for Exemption from Requirements of 10 CFR 50.60 - TAC Nos. MB6687 and MB6703"
5. NMPNS Letter to the NRC, NMP1L 1708 dated January 15, 2003, "Transmittal of Neutron Transport Calculations Benchmarking Report - TAC Nos. MB6687 and MB6703"
6. NMPNS Letter to the NRC, NMP1L 1749 dated July 31, 2003, "Request for Additional Information (RAI) - Amendment Application Re: Pressure-Temperature Limit Curves (TAC Nos. MB6687 and MB6703)"
7. NRC Letter to NMPNS dated October 27, 2003, "Nine Mile Point Nuclear Station, Unit No. 1 - Issuance of Amendment Re: Pressure-Temperature Limit Curves and Tables (TAC No. MB6687)"

## ATTACHMENT 2

### Proposed Technical Specification Changes (Mark-up)

The current versions of Technical Specifications pages 83, 84, and 358 have been marked-up by hand to reflect the proposed changes.

**LIMITING CONDITION FOR OPERATION**

**3.2.2 MINIMUM REACTOR VESSEL TEMPERATURE FOR PRESSURIZATION**

**Applicability:**

Applies to the minimum vessel temperature required for vessel pressurization.

**Objective:**

To assure that no substantial pressure is imposed on the reactor vessel unless its temperature is considerably above its Nil Ductility Transition Temperature (NDTT).

**Specification:**

- a. During reactor vessel heatup and cooldown when the reactor is not critical, the reactor vessel temperature and pressure shall satisfy the requirements of Figures 3.2.2.a and 3.2.2.b.
- b. During reactor vessel heatup and cooldown when the reactor is critical, the reactor vessel temperature and pressure shall satisfy the requirements of Figures 3.2.2.c and 3.2.2.d except when performing low power physics testing with the vessel head removed at power levels not to exceed 5 mw(t).

**SURVEILLANCE REQUIREMENT**

**4.2.2 MINIMUM REACTOR VESSEL TEMPERATURE FOR PRESSURIZATION**

**Applicability:**

Applies to the required vessel temperature for pressurization.

**Objective:**

To assure that the vessel is not subjected to any substantial pressure unless its temperature is greater than its Nil Ductility Transition Temperature (NDTT).

**Specification:**

- a. Reactor vessel temperature and pressure shall be monitored and controlled to assure that the pressure and temperature limits are met.

b. Vessel material and surveillance samples located within the core region to permit periodic monitoring of exposure and material properties shall be inspected on the following schedule:

- First capsule (A) - 5.8 EFPY
- Second capsule (C) - 7.98 EFPY
- Third capsule (B) - 16 EFPY

**LIMITING CONDITION FOR OPERATION**

- c. During leakage and hydrostatic testing, the reactor vessel temperature and pressure shall satisfy the requirements of Figure 3.2.2.e, if the core is not critical. During reactor vessel heatup and cooldown for the purpose of leakage and hydrostatic testing, the reactor vessel temperature and pressure shall satisfy the requirements of Figures 3.2.2.a and 3.2.2.b for non-critical heatup and cooldown, respectively.
- d. The reactor vessel head bolting studs shall not be under tension unless the temperature of the vessel head flange and the head are equal to or greater than 100°F.

**SURVEILLANCE REQUIREMENT**

In order to generate additional plant-specific data, a capsule containing irradiated and unirradiated material will be re-inserted at the B capsule location. Re-insertion capsules have already been installed at the A and C locations. A prime (') is used to indicate a re-insertion capsule. The withdrawal schedule for the re-insertion capsules is as follows:

- Fourth capsule (A') - 24 EFPY
- Fifth capsule (C') - 32 EFPY
- Sixth capsule (B') - 40 EFPY

- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
  - 1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel," U.S. Supplement, (NRC approved version specified in the COLR).
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as shutdown margin (SDM), transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

6.6.6 Special Reports

Special reports shall be submitted within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification:

a. - f.

- a. ~~Reactor Vessel Material Surveillance Specimen Examination, Specification 4.2.2.(b) (12 months)~~
- b. ~~(Deleted)~~
- c. ~~(Deleted)~~
- d. ~~(Deleted)~~
- e. ~~(Deleted)~~
- f. ~~(Deleted)~~

(Deleted)

- g. Sealed Source Leakage In Excess Of Limits, Specification 3.6.5.2 (Three months).
- h. Accident Monitoring Instrumentation Report, Specification 3.6.11.a (Table 3.6.11-2, Action 3 or 4) (Within 14 days following the event).

## ATTACHMENT 3

### Changes to Technical Specifications Bases Pages (Mark-up)

The current version of Technical Specifications Bases page 95 has been marked-up by hand to reflect the proposed changes. This Bases page is provided for information only and does not require NRC issuance.

## BASES FOR 3.2.2 AND 4.2.2 MINIMUM REACTOR VESSEL TEMPERATURE FOR PRESSURIZATION

Figures 3.2.2.a, 3.2.2.b, 3.2.2.c, and 3.2.2.d are plots of pressure versus temperature for heatup and cooldown rates of up to 100°F/hr. maximum (Specification 3.2.1). Figure 3.2.2.e is the plot of pressure versus temperature for leakage and hydrostatic testing. When the heatup rate to the minimum test temperature for leakage and hydrostatic testing is maintained  $\leq 10^\circ\text{F/hr}$ , the thermal gradient across the vessel wall is negligible, however, if the heatup rate exceeds  $10^\circ\text{F/hr}$ , a thermal soak is required. These curves are based on calculations of stress intensity factors according to Appendix G of Section XI of the ASME Boiler and Pressure Vessel Code 1989 Edition and Code Case N-640. In addition, temperature shifts due to fast neutron fluence at twenty-eight effective full power years of operation were incorporated into the figures. These shifts were calculated using the procedure presented in Regulatory Guide 1.99, Revision 2. Reactor vessel flange/reactor head flange boltup is governed by other criteria as stated in Specification 3.2.2.d. The pressure readings on the figures have been adjusted to account for instrument uncertainties and to reflect the calculated elevation head difference between the pressure sensing instrument locations and the pressure sensitive area of the core belline region. The temperature readings on the figures have been adjusted to account for instrument uncertainties.

The reactor vessel head flange and vessel flange in combination with the double "O" ring type seal are designed to provide a leak-tight seal when bolted together. When the vessel head is placed on the reactor vessel, only that portion of the head flange near the inside of the vessel rests on the vessel flange. As the head bolts are replaced and tensioned, the vessel head is flexed slightly to bring together the entire contact surfaces adjacent to the "O" rings of the head and vessel flanges. Both the head and vessel flanges have an NDT temperature of 40°F and they are not subject to any appreciable neutron radiation exposure. Therefore, the minimum vessel flange and head flange temperature for bolting is established at 40°F + 60°F or 100°F.

Figures 3.2.2.a, 3.2.2.b, 3.2.2.c, 3.2.2.d, and 3.2.2.e have incorporated a temperature shift due to the calculated fast neutron fluence. The neutron flux at the vessel wall is calculated based on Regulatory Guide 1.190 compliant methods using a plant specific model validated to flux monitors installed inside the vessel. The curves are applicable for up to twenty-eight effective full power years of operation.

Vessel material surveillance samples are located within the core region to permit periodic monitoring of exposure and changes in material properties. The material sample program conforms with ASTM E185-66 except for the material withdrawal schedule which is specified in Specification 4.2.2.b.