

April 28, 2005

Mr. J. V. Parrish
Chief Executive Officer
Energy Northwest
P.O. Box 968 (Mail Drop 1023)
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION - ISSUANCE OF AMENDMENT RE:
IMPLEMENTATION OF THE BOILING WATER REACTOR VESSEL AND
INTERNAL PROJECT REACTOR PRESSURE VESSEL INTEGRATED
SURVEILLANCE PROGRAM TO ADDRESS THE REQUIREMENTS OF
APPENDIX H TO TITLE 10 OF THE CODE OF FEDERAL REGULATIONS
PART 50 (TAC NO. MC4484)

Dear Mr. Parrish:

The Commission has issued the enclosed Amendment No. 192 to Facility Operating License No. NPF-21 for the Columbia Generating Station (CGS). The amendment revises the Final Safety Analysis Report (FSAR) in response to your application dated September 23, 2004, (available in the Agencywide Documents Access Management System (ADAMS) under accession number ML042880448), as supplemented by letter dated January 13, 2005, (ADAMS accession number ML050190243).

The amendment revises the basis and FSAR for their compliance with the requirements of Appendix H to Title 10 of the *Code of Federal Regulations* Part 50 (Appendix H to 10 CFR Part 50), "Reactor Vessel Material Surveillance Program Requirements." In their license amendment submittal, the licensee requested approval to implement the Boiling Water Reactor Vessel and Internals Project reactor pressure vessel integrated surveillance program as the basis for demonstrating the compliance of CGS with the requirements of Appendix H to 10 CFR Part 50.

J. Parrish

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A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

Brian J. Benney, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosures: 1. Amendment No. 192 to NPF-21
2. Safety Evaluation

cc w/encls: See next page

J. Parrish

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Columbia Generating Station

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March 2005

ENERGY NORTHWEST

DOCKET NO. 50-397

COLUMBIA GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 192
License No. NPF-21

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Energy Northwest (licensee) dated September 23, 2004, as supplemented by letter dated January 13, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, by Amendment No. 192, the license is amended to authorize revision to the Final Safety Analysis Report (FSAR), as set forth in the application for amendment by the licensee dated September 23, 2004, as supplemented by letter dated January 13, 2005. The licensee shall update the FSAR to incorporate the revision to the basis for compliance with the requirements of Appendix H to 10 CFR Part 50, "Reactor Vessel Material Surveillance Program Requirements," as described in the amendment application of September 23, 2004, as supplemented by letter dated January 13, 2005, and the staff Safety Evaluation attached to this amendment, and shall submit the revised description authorized by this amendment with the next update of the FSAR.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance. The FSAR changes shall be implemented in the next periodic update to the FSAR in accordance with 10 CFR 50.71(e).

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Robert A. Gramm, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: April 28, 2005

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 192 TO FACILITY OPERATING LICENSE NO. NPF-21

ENERGY NORTHWEST

COLUMBIA GENERATING STATION

DOCKET NO. 50-397

1.0 INTRODUCTION

By application dated September 23, 2004, (available in the Agencywide Documents Access Management System (ADAMS) under accession number ML042880448), as supplemented by letter dated January 13, 2005, (ADAMS accession number ML050190243), Energy Northwest (the licensee) requested changes to the Final Safety Analysis Report (FSAR) (Appendix A to Facility Operating License No. NPF-21) for the Columbia Generating Station (CGS). The supplement dated January 13, 2005, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on October 26, 2004 (69 FR 62471). Federal Register Notice 69 FR 62471 inadvertently referenced the application letter date as September 22, 2004, instead of September 23, 2004. The requested change modifies the basis for their compliance with the requirements of Appendix H to Title 10 of the *Code of Federal Regulations* Part 50 (Appendix H to 10 CFR Part 50), "Reactor Vessel Material Surveillance Program Requirements." In their license amendment submittal, the licensee requested approval to implement the Boiling Water Reactor Vessel and Internals Project (BWRVIP) reactor pressure vessel (RPV) integrated surveillance program (ISP) as the basis for demonstrating the compliance of CGS with the requirements of Appendix H to 10 CFR Part 50.

The BWRVIP RPV ISP was submitted for NRC staff review and approval in topical reports BWRVIP-78, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan," and BWRVIP-86, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan." Additional information necessary to establish the technical basis for, and proposed implementation of, the BWRVIP ISP was provided in letters from the BWRVIP to the NRC dated December 15, 2000, and May 30, 2001. The NRC staff approved the proposed BWRVIP ISP in a safety evaluation (SE) which was provided to the BWRVIP by letter dated February 1, 2002. However, the NRC staff's SE required that plant-specific information be provided by BWR licensees who wish to implement the BWRVIP ISP at their facilities. Energy Northwest's September 23, 2004, submittal addressed the plant-specific information required in the NRC staff's February 1, 2002, BWRVIP ISP SE.

2.0 REGULATORY EVALUATION

Nuclear power plant licensees are required by Appendix H to 10 CFR Part 50 to implement RPV surveillance programs to “monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region... which result from exposure of these materials to neutron irradiation and the thermal environment.” Two specific alternatives are provided with regard to the design of a facility’s RPV surveillance program which may be used to address the requirements of Appendix H to 10 CFR Part 50.

The first alternative is the implementation of a plant-specific RPV surveillance program consistent with the requirements of the American Society for Testing and Materials (ASTM) Standard Practice E 185, “Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels.” In the design of a plant-specific RPV surveillance program, a licensee may use the edition of ASTM Standard Practice E 185 which was current on the issue date of the American Society of Mechanical Engineers Code to which the reactor vessel was purchased, or later editions through the 1982 edition.

The second alternative provided in Appendix H to 10 CFR Part 50 is the implementation of an ISP. An ISP is defined in Appendix H to 10 CFR Part 50 as occurring when, “the representative materials chosen for surveillance for a reactor are irradiated in one or more other reactors that have similar design and operating features.” Five specific criteria are stated in Section III.C.1 of Appendix H to 10 CFR Part 50 which must be met to support approval of an ISP:

- a. The reactor in which the materials will be irradiated and the reactor for which the materials are being irradiated must have sufficiently similar design and operating features to permit accurate comparisons of the predicted amount of radiation damage.
- b. Each reactor must have an adequate dosimetry program.
- c. There must be adequate arrangement for data sharing between plants.
- d. There must be a contingency plan to assure that the surveillance program for each reactor will not be jeopardized by operation at reduced power level or by an extended outage of another reactor from which data are expected.
- e. There must be substantial advantages to be gained, such as reduced power outages or reduced personnel exposure to radiation, as a direct result of not requiring surveillance capsules in all reactors in the set.

As noted in Section 1.0 of this SE, the Nuclear Regulatory Commission (NRC) staff approved the proposed BWRVIP ISP in an SE which was issued to the BWRVIP by letter dated February 1, 2002 (Reference 1). All of the criteria cited above for approval of the ISP were addressed either completely or partially in Reference 1. For those criteria which could not be fully addressed in Reference 1, plant-specific information would be required from licensees who wished to implement the BWRVIP at their facilities. As stated in Reference 1:

[L]icensees who wish to participate in the BWR ISP must provide, for NRC staff review and approval, information which defines how they will determine RPV

and/or surveillance capsule fluences based on the dosimetry data which will be available for their facilities. This information must be submitted concurrently with each licensee's submittal to replace their existing plant-specific surveillance program with the BWR ISP as part of their facility's licensing basis. The information submitted must be sufficient for the staff to determine that:

(1) RPV and surveillance capsule fluences will be established as based on the use of an NRC-approved fluence methodology that will provide acceptable results based on the available dosimetry data,

(2) if one methodology is used to determine the neutron fluence values for a licensee's RPV and one or more different methodologies are used to establish the neutron fluence values for the ISP surveillance capsules which "represent" that RPV in the ISP, the results of these differing methodologies are compatible (i.e., within acceptable levels of uncertainty for each calculation).

Regulatory Guide (RG) 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," describes methods and assumptions acceptable to the NRC staff for determining the pressure vessel neutron fluence. The RG is intended to ensure the accuracy and reliability of the fluence determination required by General Design Criteria 14, 30, and 31 of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50.

This plant-specific information was required by the NRC staff to ensure that criterion III.C.1.b of Appendix H to 10 CFR Part 50 for an ISP could be met by each facility and to confirm that data which would be shared as part of the BWRVIP ISP could be effectively utilized by each licensee for the monitoring of RPV embrittlement for their facility.

3.0 TECHNICAL EVALUATION

In their letter dated September 23, 2004, Energy Northwest submitted information for the CGS which addressed the information requested in the NRC staff's February 1, 2002, BWRVIP ISP SE. Energy Northwest provided a revised Section 4.3.2.8 of the CGS FSAR which stated:

The reactor pressure vessel (RPV) irradiation calculation provides a best-estimate prediction of the fluence rather than a conservative prediction as was the case with earlier methods. The methodology for neutron flux calculation conforms to Licensing Topical Report (LTR) NEDC-32983P-A. In general, the methodology described in the LTR adheres to the guidance in the Regulatory Guide 1.190 for neutron flux evaluation and was approved by the U.S. NRC in the Safety Evaluation Report (SER) for referencing in licensing actions.

The NRC staff has concluded that the inclusion of this statement in the CGS FSAR is sufficient to address both items (1) and (2) from Reference 1. Regarding item (1), the licensee's use of a methodology for determining the CGS RPV neutron fluence values which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff will provide acceptable results based upon the available dosimetry data. Regarding item (2), RPV surveillance capsules tested under the BWRVIP ISP will have their fluences determined by the use of a methodology which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff. The NRC staff has concluded that any two (or more) different fluence methodologies will

provide “compatible” (as defined in Reference 2) results provided that the best estimate fluence values are within each other’s uncertainty bounds. In addition, the CGS provided additional information in their September 23, 2004 submittal, regarding their performance of an updated RPV fluence analysis for the CGS RPV:

Energy Northwest has used the NRC-approved General Electric NEDC 32983P-A, “General Electric Methodology for Reactor Pressure Fast Neutron Flux Evaluations,” to calculate the most recent fluence values for Columbia. The methodology is in accordance with the recommendations of Regulatory Guide 1.190 and was approved by the NRC in a letter dated October 27, 2003. This methodology was utilized to support a proposed revision to Columbia’s RPV pressure-temperature limit curves that was submitted to the NRC for review and approval by letter dated June 9, 2004.

The NRC staff found this statement to be acceptable since the licensee’s current RPV fluence calculations for the CGS RPV have been performed using a methodology consistent with the guidance in RG 1.190.

In its application, Energy Northwest provided a revised Section 5.3.1.6 of the CGS FSAR which documents the licensee’s proposed incorporation of the BWRVIP ISP into the CGS licensing basis. Revised FSAR Section 5.3.1.6 states:

The CGS plant-specific RPV materials surveillance program is replaced by the NRC approved BWR Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP), as described in BWRVIP-86-A. The NRC approved the ISP for the industry in their safety evaluation dated February 1, 2002. The ISP meets the requirements of 10 CFR 50, Appendix H.

The current surveillance capsule withdrawal schedule for the representative materials for the CGS vessel is based on the latest approved version of BWRVIP-86-A. No capsules from the CGS vessel are included in the ISP. The withdrawal of capsules for the CGS plant-specific surveillance program is permanently deferred by participation in the ISP. Capsules from other plants will be removed and tested in accordance with the ISP implementation plan. The results from these tests will provide the necessary data to monitor embrittlement for the CGS vessel.

The NRC staff has concluded that the information provided in the revised CGS FSAR is adequate to incorporate the BWRVIP ISP into the CGS licensing basis and implement the BWRVIP ISP as the method for demonstrating the compliance of CGS with the requirements of Appendix H to 10 CFR Part 50.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Washington State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (69 FR 62471, published October 26, 2004). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The information provided by Energy Northwest was sufficient to conclude that the BWRVIP ISP, as approved in Reference 1, can be implemented for the CGS as the basis for demonstrating the facility's continued compliance with the requirements of Appendix H to 10 CFR Part 50. As part of the implementation and documentation of the licensee's intent to utilize the BWRVIP ISP for this purpose, the licensee shall modify the CGS FSAR as noted in Section 3.0 of this SE and as stated in their September 23, 2004 submittal. This document is controlled in accordance with the requirements of 10 CFR 50.59, "Changes, tests, and experiments."

The Commission has concluded, based on the considerations discussed above, that: (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.

5.0 REFERENCES

1. W. H. Bateman (USNRC) to C. Terry, "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," February 1, 2002.
2. BWRVIP-86-A, "BWR Vessel and Internals Project, Updated BWR Integrated Surveillance Program (ISP) Implementation Plan," Final Report, October 2002.

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Date: April 28, 2005