



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

July 13, 2010

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

SUBJECT: COLUMBIA GENERATING STATION - ACCEPTANCE REVIEW FOR LICENSE  
AMENDMENT REQUEST TO CHANGE TECHNICAL SPECIFICATIONS IN  
SUPPORT OF PRNM/ARTS/MELLLA IMPLEMENTATION (TAC NO. ME3981)

Dear Mr. Parrish:

By letter dated May 11, 2010, Energy Northwest submitted a license amendment request for Columbia Generating Station. The proposed changes are needed to allow modifications of the Neutron Monitoring System by installation of the General Electric Hitachi (GEH) Nuclear Monitoring Analysis and Control (NUMAC) Power Range Neutron Monitoring (PRNM) System and to provide an expanded operating domain resulting from the implementation of Average Power Range Monitor/Rod Block Monitor/Technical Specifications/Maximum Extended Load Line Limit Analysis (ARTS/MELLLA).

The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this amendment request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), an amendment to the license (including the technical specifications) must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 50.34 of 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

In order to make the application complete, the NRC staff requests that the licensee supplement the application to address the information requested in the enclosure by July 30, 2010. This will enable the NRC staff to complete its detailed technical review. If the information responsive to the NRC staff's request is not received by the above date, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC staff will cease its review activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the NRC staff's detailed technical review by separate correspondence.

J. Parrish

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The information requested and the associated time frame in this letter was discussed with Mr. D. Coleman, et al., of your staff on July 13, 2010.

If you have any questions concerning this matter, please contact me at (301) 415-2296 or by electronic mail at [fred.lyon@nrc.gov](mailto:fred.lyon@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "C. F. Lyon".

Carl F. Lyon, Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosure:  
As stated

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REQUEST FOR SUPPLEMENTAL INFORMATION  
FOR COMPLETION OF ACCEPTANCE REVIEW  
PRNM/ARTS/MELLLA SYSTEM UPGRADE  
ENERGY NORTHWEST  
COLUMBIA GENERATING STATION  
DOCKET NO. 50-397

By letter dated May 11, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101390368), Energy Northwest, the licensee, submitted a license amendment request (LAR) to change the Technical Specifications (TSs) in support of the installation of the digital General Electric - Hitachi (GEH) Nuclear Measurement Analysis and Control (NUMAC) Power Range Neutron Monitoring (PRNM) System and the implementation of Average Power Range Monitor/ Rod Block Monitor/Technical Specifications/Maximum Extended Load Line Limit Analysis (ARTS/MELLLA) for Columbia Generating Station (CGS). The licensee intends to replace the existing Oscillation Power Range Monitor (OPRM) system hardware and integrate the OPRM trip function the NUMAC PRNM System. The licensee also proposed changes to the TSs for the Standby Liquid Control (SLC) system. Energy Northwest plans to implement the requested changes during the spring 2011 refueling outage. Implementation of the expanded operating domain is planned to be incorporated in subsequent operating cycles.

The NRC staff has determined that the following supplemental information is needed to accept the application for review:

1. Please identify the changes to the GEH NUMAC PRNM System platform from those defined and approved on September 5, 1995 within GE Nuclear Energy (GE) Licensing Topical Report (LTR), "Clean Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function," NEDC-32410P-A, dated October 1995 (ADAMS Legacy Accession No. 9605290009). For example, the identified changes should include those to hardware, programmable devices, software, applicable development processes, and the like, that will be reflected within the CGS PRNM System upgrade. When considering the software development processes for the platform, the response should address changes (from that previously approved for the GE LTR NEDC-32410P-A) to the applicable documentation that is identified under Section B.2 of the Standard Review Plan (SRP or NUREG-0800), Branch Technical Position 7-14, "Guidance on Software Reviews for Digital Computer-Based Instrumentation and Control Systems," Revision 5, March 2007 (ADAMS Accession No. ML070670183), and the secure development and operational environment.
2. Please describe how a software common-cause failure of the CGS PRNM/ARTS/MELLLA and OPRM System upgrade is addressed or coped with, such that, upon its

Enclosure

failure, CGS remains within its design basis for all design-basis accidents and anticipated operational occurrences. The software common-cause failure should include failure of the OPRM functions because they will be integrated into the NUMAC PRNM System.

3. For the CGS application of the GEH NUMAC PRNM/ARTS/MELLLA and OPRM Systems, please clearly identify and define all safety to non-safety data communications, including the data communications between the PRNM System and the Plant Computer and between independent/redundant PRNM channels. For the data communications among the four PRNM channels of the CGS PRNM System, please include a demonstration of compliance with NRC's "Digital Instrumentation and Controls, DI&C-ISG-04, Task Working Group #4: Highly-Integrated Control Rooms—Communications Issues (HICRc), Interim Staff Guidance, Revision 1," dated March 6, 2009 (ADAMS Accession No. ML083310185) (DI&C-ISG-04), for inter-channel communications. For the plant-specific data communications between the CGS PRNM System and the Plant Computer, please include a demonstration of compliance with DI&C-ISG-04 for safety to non-safety communications. Also address any other communication signals between safety and non-safety systems and/or Plant Computer, as well as any other inter-channel communications.
4. In Section 3.3 of the LAR, the licensee stated that it complies with Section 73.54, "Protection of digital computer and communication systems and networks," of Title 10 of the *Code of Federal Regulations* (10 CFR), NRC Regulatory Guide (RG) 5.71, "Cyber Security Programs for Nuclear Facilities," dated January 2010, and Nuclear Energy Institute (NEI) 08-09, Revision 3, "Cyber Security Plan for Nuclear Power Reactors," dated September 2009. The LAR will not be reviewed for compliance to cyber security-related rules/guidance. However, the software changes will be reviewed for meeting the guidance of regulatory positions 2.1 through 2.5 of draft Regulatory Guide 1.152, Revision 3, which is available for public comment at the NRC's public Web site as DG-1249, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants" (ADAMS Accession No. ML100490539). For all software changes and updates, please provide the appropriate documents necessary for their comparison to the guidance of RG 1.152.
5. In accordance with the NUMAC PRNM LTR, both the documentation of the qualification activities and the required confirmation "should be included in the plant-specific licensing submittal." The licensee has provided limited information regarding plant-specific environmental conditions being encompassed by the generic environmental qualifications of the PRNM equipment. For example, in Section 4.4.2.2.1.4 of Attachment 1 to the LAR, the licensee has stated that the control room temperature range is 40-104 degrees Fahrenheit which is encompassed by the generic conditions. Please confirm that the worst-case temperature including the mounting panel temperature rise is encompassed by the generic qualification temperature envelope (see Section 3.4.1 of the Safety Evaluation Report (SER) for NEDC-32410-P-A). Similarly, the control room humidity range is stated as 10 to 60 percent, but it has not been made clear whether this is the maximum humidity under all conditions when the equipment functionality is required. Section 4.4.2.4.4 requires implementation of specific administrative actions as well as confirmation of electromagnetic interference (EMI)

emission levels, which have not been fully addressed in Attachment 1 to the LAR. Please provide the analyses or reference documents that demonstrate the environmental conditions for the CGS PRNM System configuration are enveloped by the conditions to which GEH NUMAC PRNM System equipment has been environmentally qualified (for example, NRC RG 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants"; Institute of Electrical and Electronics Engineers (IEEE) 323-1974; IEEE 323-1983; NRC RG 1.100 "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants"; IEEE 344-1975, etc.) as discussed in Section 4.4.2 of GE LTR NEDC-32410P-A and as required in Section 5.0, item 4 of the original SER for the LTR.

6. As required by item 6 of Section 5.0 in the original SER for the LTR, please provide the information necessary to demonstrate that any changes to CGS's operator's panel have received human factors reviews per plant-specific procedures. Please provide the necessary information for the NRC staff to determine that human factors review has been conducted and meets the human factors review guidance. Please provide the human factors evaluation (HFE) information for staff review.
7. The original SER for the LTR (Section 5, item 5), requires a plant-specific action to confirm administrative controls for channel bypass or removal for operation, as well as access to the PRNM operating panel and the Average Power Range Monitor/Oscillation Power Range Monitor (APRM/OPRM) channel bypass switch that will be provided (see paragraphs 3.10, 3.17, and 5.0, and Item 5 of the original SER for the LTR). Please describe the administrative controls that CGS will provide for the GEH NUMAC PRNM System upgrade. Please demonstrate in your response that the administrative controls are provided for manually bypassing APRM/OPRM channels, or protective function, and for controlling access to the CGS PRNM System panel and the APRM/OPRM channel bypass switch. Also, please identify and describe any administrative controls requiring operator involvement in the generation, review, and use of new Local Power Range Monitor gain and calculated core thermal power values, which can affect APRM and OPRM setpoints.
8. To support NRC assessment of the acceptability of the LAR for the CGS PRNM System setpoints, please provide documentation (including representative calculations) of the setpoint methodology used for establishing the limiting setpoint (or nominal setpoint) and the limiting acceptable values for the As-Found and As-Left setpoints. Please indicate the related Analytical Limits and other limiting design values (and the sources of these values) for each setpoint. In addition to demonstration of acceptable values for the new OPRM Upscale setpoint, the representative calculations should reflect the upgraded equipment to confirm values for existing setpoints, such as Neutron Flux-High (Setdown), Fixed Neutron Flux-High, and Flow Biased Simulated Thermal Power-High. If more than one setpoint methodology (e.g., plant-specific setpoint methodology and GE setpoint methodology) has been used, please identify them and provide the needed information for each method. Also, please confirm whether or not the single-sided setpoint method of calculation has been used for any of the setpoints. Please identify any cycle-specific setpoints and how they will be controlled. For those setpoints which are controlled in a document other than the TSs (e.g., OPRM-related setpoints), please describe how it will be ensured that the controls will be implemented.

J. Parrish

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The information requested and the associated time frame in this letter was discussed with Mr. D. Coleman, et al., of your staff on July 13, 2010.

If you have any questions concerning this matter, please contact me at (301) 415-2296 or by electronic mail at [fred.lyon@nrc.gov](mailto:fred.lyon@nrc.gov).

Sincerely,

/RA/

Carl F. Lyon, Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosure:  
As stated

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**ADAMS Accession No. ML101830271**

**\*email dated**

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