



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

March 12, 2013

Mr. Mark E. Reddemann  
Chief Executive Officer  
Energy Northwest  
P.O. Box 968 (Mail Drop 1023)  
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION – REQUEST FOR ADDITIONAL  
INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO  
IMPLEMENT PRNM/ARTS/MELLLA (TAC NO. ME7905)

Dear Mr. Reddemann:

By letter dated January 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML120400144), Energy Northwest (the licensee), submitted a license amendment request for Columbia Generating Station that would allow the licensee to expand the operating domain by the implementation of Average Power Range Monitor/Rod Block Monitor/Technical Specifications/Power Range Neutron Monitoring/Maximum Extended Load Line Limit Analysis (ARTS/PRNM/MELLLA). The Neutron Monitoring System would be modified by replacing the analog Average Power Range Monitor subsystem with the Nuclear Measurement Analysis and Control (NUMAC) Power Range Neutron Monitoring System. The licensee would expand the operating domain to Maximum Extended Load Line Limit Analysis (MELLLA) and make changes to certain allowable values and limits and to technical specifications. The changes to the technical specifications include the adoption of Technical Specification Task Force Traveler (TSTF) 493 Option A surveillance notes. Furthermore, the amendment would allow a change in the licensing basis to support Anticipated Transient without Scram (ATWS) accident mitigation with one Standby Liquid Control (SLC) pump instead of two.

Energy Northwest provided Phase 2 information to the staff by letter dated July 31, 2012 (ADAMS Accession No. ML12219A255). By letter dated October 5, 2012 (ADAMS Accession No. ML122920735), Energy Northwest also provided responses to the U.S. Nuclear Regulatory Commission (NRC) staff's request for additional information dated September 5, 2012 (ADAMS Accession No. ML12249A011).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by the licensee and determined that additional information identified in the enclosure(s) to this letter is needed in order for the NRC staff to complete its review.

NOTE: Enclosure 1 to this letter contains Proprietary Information. Upon separation from Enclosure 1, this letter is DECONTROLLED.

M. Reddemann

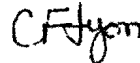
- 2 -

The draft copy of the request for additional information (RAI) was provided to Ms. Lisa Williams of your staff via e-mail on February 26, 2013, and discussed with her and other members of your staff by telephone on March 5, 2013. Please provide your response to the RAI within 30 days of the date of this letter.

The NRC staff's proprietary version of the RAIs is provided in Enclosure 1 and a non-proprietary version is provided in Enclosure 2. Proprietary information in Enclosure 1 is identified by text enclosed within double brackets.

If you have any questions regarding this matter, I may be reached at (301) 415-2296 or via e-mail at [Fred.Lyon@nrc.gov](mailto:Fred.Lyon@nrc.gov).

Sincerely,



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

Docket No. 50-397

Enclosures:

1. Proprietary RAIs
2. Non-proprietary RAIs

cc w/Encl 2: Distribution via Listserv

ENCLOSURE 2

REQUEST FOR ADDITIONAL INFORMATION  
(NON-PROPRIETARY)

Proprietary information pursuant to Section 2.390 of Title 10 of the  
*Code of Federal Regulations* has been redacted from this document.

**Redacted information is identified by blank space enclosed within double brackets.**

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST

TO IMPLEMENT PRNM/ARTS/MELLLA

ENERGY NORTHWEST

COLUMBIA GENERATING STATION

DOCKET NO. 50-397

By letter dated January 31, 2012, Energy Northwest (the licensee) submitted a license amendment request (LAR) for Columbia Generating Station (CGS). The proposed amendment would allow the licensee to expand the operating domain by the implementation of Average Power Range Monitor/Rod Block Monitor/Technical Specifications/Power Range Neutron Monitoring/Maximum Extended Load Line Limit Analysis (ARTS/PRNM/MELLLA). The Neutron Monitoring System would be modified by replacing the analog Average Power Range Monitor subsystem with the Nuclear Measurement Analysis and Control (NUMAC) Power Range Neutron Monitoring System (PRNMS). The licensee would expand the operating domain to Maximum Extended Load Line Limit Analysis (MELLLA) and make changes to certain allowable values and limits and to technical specifications. The changes to the technical specifications include the adoption of Technical Specifications Task Force Traveler (TSTF) 493 Option A surveillance notes. Furthermore, the amendment would allow a change in the licensing basis to support Anticipated Transient without Scram (ATWS) accident mitigation with one Standby Liquid Control (SLC) pump instead of two.

By letter dated October 5, 2012 (ADAMS Accession No. ML122920735), Energy Northwest provided responses to the U.S. Nuclear Regulatory Commission (NRC) staff's request for additional information (RAI) dated September 5, 2012 (ADAMS Accession No. ML12249A011). Energy Northwest also provided Phase 2 information to the staff by letter dated July 31, 2012 (ADAMS Accession No. ML12219A255). The NRC staff has reviewed the information provided by Energy Northwest and requests clarifications to the following responses:

Further Clarification for RAI 4 Response

When requested for software design specification (SDS) for maximum load line limit analysis (MELLLA), Energy Northwest stated that there is no separate SDS for MELLLA and that Option III supports MELLLA operation, and is implemented within average power range monitor (APRM) functional and automatic signal processor (ASP) stability modules. It further stated that "the APRM functional SDS specification is 26A8428, and the Columbia Generating Station (CGS) associated datasheet is 26A8428TC. The ASP stability SDS is 26A7713." The Energy Northwest response further stated that APRM SDS's references 68 and 69 of NEDC-33685P were changed to 26A8428 and 26A8428TC, respectively, during the design phase.

Please provide these three documents (26A8428, 26A8428TC, and 26A7713). If any of these documents have been previously provided, please provide the date and the ADAMS accession number, if available.

Further Clarification for RAI 5 Response

In response to RAI 5, Energy Northwest stated that even though the words [[

]]

The NRC staff disagrees with the interpretation, because the words [[ ]] and "shall not" are not equivalent statements. Please confirm that the RVs used were independent of the design process. If so, then reference 29, Section 7.1.3 should be revised in the next update to state that "the RV shall not have any role in...." This will eliminate any future confusion regarding the intended interpretation.

Further Clarification for RAI 8 Response

In response to RAI 8, Energy Northwest addressed the various aspects of security controls from the conceptual phase to the design and development phase. The response did not specifically address the security measures taken during the test phase. Energy Northwest is requested to further describe how the different elements of the system were secured during the test phase.

Please describe the test location and the elements of the security controls during various tests.

Further Clarification for RAI 17 Response

RAI 17 requested Energy Northwest to justify the use of the number 3 sigma where used. The licensee provided the following response:

For errors where there is a higher confidence that the error represents the maximum error, the Sigma number assigned by GEH for the setpoint calculation is three (3). For example, one instrument vendor, Rosemount, has stated that 100% of the instruments that they ship to their customers for use within a nuclear plant are tested prior to shipping to confirm that the instrument errors are within the error specifications for that instrument. Therefore, GEH has a higher confidence in those errors and assigns a three (3) Sigma number to them.

Energy Northwest has also provided an explanation for use of 3 sigma for as-left tolerances and leave alone tolerances based on the continuous use of tools and the assurance that the errors do not exceed the maximum allowed errors. This discussion also includes the justification for use of 3 sigma for APRM gain adjustment factor (AGAF).

The NRC staff agrees that when the instruments are always tested, or a maximum error or adjustment factor is used, a value of 3 sigma may be justifiable. However, the licensee has used the value of 3 sigma in the following documents without providing sufficient explanation or justification, unlike the cases specifically addressed above:

- NEDC-33750P (ADAMS Accession No. ML12040A088),

- 3 -

- NEDC-33753P (ADAMS Accession No. ML12219A256), and
- NEDC-33754P (ADAMS Accession No. ML12219A258).

Please review the above documents and provide appropriate justification for the use of 3 sigma.

Further Clarification for RAI 18 Response

Please provide the referenced calculation as a proprietary document.

In addition, please note that attachments 3 and 4 to Energy Northwest letter of July 31, 2012, provided the calculations for instrument limit calculations for APRM flow-biased simulated thermal power scrams and rod blocks, and rod withdrawal blocks, respectively. These calculations include inputs and results of the calculations, but not the calculations that show how the setpoints are calculated per the approved methodology. Please provide the setpoint calculations.

In addition to the above RAI clarifications, please provide the response to the following new RAIs:

RAI 19

The Columbia Power Range Neutron Monitoring System (PRNMS) reliability analysis was provided as NEDC-33751P, Revision 2, with the submittal of the Phase II information under Phase II package submitted July 31, 2012). The NRC staff has noted that failure rates for some of the hardware items (e.g., 386SX Computer Module, Display Controller Module, Fiber Direct Data Interface Communication Module, and the overall RBM Instrument MTBF) are higher than the failure rates noted in NEDC-32410-P, Supplement 1.

The explanation of the lower number being more conservative is based on the reliability number based on continuous operation at 40 degrees Celsius (°C). Per Note 3 to Table F-2 of NEDC-32410P-A, Supplement 1, the MIL handbook data is based on a continuous temperature of 40 °C. Considering that the reliability numbers are based on 40 °C, please clarify for the items identified in the paragraph above why the "temperature corrected reliability," is as good as or better than the previous reliability numbers quoted in NEDC-32410P-A, Supplement 1.

RAI 20

In response to RAI 4, Energy Northwest stated that some of the references in NEDC-33685P document have changed (e.g., references 68 and 69 of NEDC-33685P) and have been replaced by new document numbers (e.g., software design specifications (SDS) 26A8428 and 26A8428TC). Please inform the NRC staff if any other documents provided in Appendix A, Software Development Process References, in NEDC-33865, Revision 1, have been revised. Please submit the revised documents.

RAI 21

Nuclear Measurement Analysis and Control (NUMAC) Requirements Specification, 23A5082, Rev. 1, was provided as part of Appendix A to NEDC-33685, Revision 1. Unfortunately, the document is unreadable. Please provide a more legible copy of the document.

M. Reddemann

- 2 -

The draft copy of the request for additional information (RAI) was provided to Ms. Lisa Williams of your staff via e-mail on February 26, 2013, and discussed with her and other members of your staff by telephone on March 5, 2013. Please provide your response to the RAI within 30 days of the date of this letter.

The NRC staff's proprietary version of the RAIs is provided in Enclosure 1 and a non-proprietary version is provided in Enclosure 2. Proprietary information in Enclosure 1 is identified by text enclosed within double brackets.

If you have any questions regarding this matter, I may be reached at (301) 415-2296 or via e-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

Enclosures:

- 1. Proprietary RAIs
- 2. Non-proprietary RAIs

cc w/Encl 2: Distribution via Listserv

DISTRIBUTION:

NON-PUBLIC  
LPLIV Reading  
RidsAcrcAcnw\_MailCTR Resource  
RidsNrrDorlLp4 Resource  
RidsNrrPMColumbia Resource

RidsNrrLAJBurkhardt Resource  
RidsOgcRp Resource  
RidsRgn4MailCenter Resource  
RidsNrrDeEicb Resource  
GSingh, EICB

ADAMS Accession No. Proprietary RAI ML13067A102; Non-proprietary RAI ML13067A106\*by memo dated

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA	NRR/DE/EICB/BC	NRR/DORL/LPL4/BC	NRR/DORL/LPL4/PM
NAME	FLyon	JBurkhardt	JThorp*	MMarkley	FLyon
DATE	3/12/13	3/11/13	2/14/13	3/12/13	3/12/13

OFFICIAL RECORD COPY