

May 18, 2000

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

SUBJECT: WNP-2- ISSUANCE OF AMENDMENT RE: WIDE RANGE NEUTRON
MONITORING SYSTEM (TAC NO. MA6165)

Dear Mr. Parrish:

The Commission has issued the enclosed Amendment No. 162 to Facility Operating License No. NPF-21 for WNP-2. The amendment removes item 3.(b) of Attachment 2 to License Condition 2.C.(16), in response to your application dated July 29, 1999, as supplemented by letters dated August 30, 1999, and February 28, 2000.

Removal of item 3.(b) would allow WNP-2 to deactivate the wide range neutron monitoring system.

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/

Jack Cushing, Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosures: 1. Amendment No162 to NPF-21
2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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2. Safety Evaluation

cc w/encls: See next page

WNP-2

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

ENERGY NORTHWEST

DOCKET NO. 50-397

WNP-2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 162
License No. NPF-21

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Energy Northwest (licensee) dated July 29, 1999, as supplemented by letters dated August 30, 1999, and February 28, 2000, 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, the license is amended by changes to the Operating License as indicated in the attachment to this license amendment.

3. The license amendment is effective as of its date of issuance and is to be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Stephen Dembek, Chief, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Operating
License

Date of Issuance: May 18, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 162

FACILITY OPERATING LICENSE NO. NPF-21

DOCKET NO. 50-397

Replace the following page of the operating license with the attached revised page. The revised page is identified by amendment number and contains vertical lines indicating the areas of change.

REMOVE

Page 2 of Attachment 2

INSERT

Page 2 of Attachment 2

3. Regulatory Guide 1.97, Revision 2 Compliance

- (a) The licensee shall implement (installation or upgrade) requirements of Regulatory Guide 1.97, Revision 2 with the exception of items (b) and (c) below prior to startup following the first refueling outage.
- (b) Deleted.
- (c) The licensee shall implement (install and have operational) a wide range suppression pool level monitoring system which satisfies the Category 1 equipment specifications in accordance with Regulatory Guide 1.97, Revision 2, prior to startup following the second refueling outage.

4. Upgrade Emergency Operating Procedures (EOPs)

The licensee shall provide within two (2) months after the issuance of this operating license, an addendum to the Procedures Generation Package describing the function and task analysis as identified in Supplement 1 to NUREG-0737.

5. Emergency Response Facilities

The licensee shall have fully functional emergency response facilities (Technical Support Center, Operational Support Center, and Emergency Operations Facility) prior to exceeding five (5) percent of rated power.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 162 TO FACILITY OPERATING LICENSE NO. NPF-21

ENERGY NORTHWEST

WNP-2

DOCKET NO. 50-397

1.0 INTRODUCTION

By application dated July 29, 1999, as supplemented by letters dated August 30, 1999, and February 28, 2000, Energy Northwest (the licensee, formerly known as the Washington Public Power Supply System), requested removal of item 3.(b) of Attachment 2 to License Condition 2.C.(16), from Facility Operating License No. NPF-21 for WNP-2. The license condition required installation of a neutron flux monitoring system in the form of excore wide range monitors in conformance with the requirements of Regulatory Guide (RG) 1.97, Revision 2, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." WNP-2 installed the wide range neutron flux monitoring system in the spring of 1989. Removal of the license condition would allow WNP-2 to deactivate the wide range flux monitoring system.

The February 28, 2000, supplemental letter provided additional clarifying information but 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 published in the *Federal Register* on October 20, 1999 (64 FR 56530).

2.0 BACKGROUND

Amendment No. 60 to the WNP-2 operating license required that the licensee implement the requirements of RG 1.97 with regards to neutron flux monitoring prior to startup following the fourth refueling outage. By letter dated June 15, 1989, the licensee informed the staff that it had satisfied the requirements of RG 1.97 for flux monitoring.

By letter dated January 13, 1993, the staff issued its safety evaluation (SE) approving the Boiling Water Reactors Owners Group (BWROG) Topical Report NEDO-31558-A, "Position on NRC Regulatory Guide 1.97, Revision 3, Requirements for Post-Accident Neutron Flux Monitoring System." NEDO-31558-A, specifies the criteria for neutron flux monitoring instrumentation, which if satisfied, would make a wide range neutron flux monitoring system unnecessary. The NEDO-31558-A SE states: "The neutron flux monitoring instrumentation at Susquehanna Steam Electric Station Units 1 and 2 and WNP-2 exceed the criteria of NEDO-31558-A, and therefore, these plants may take advantage of any relaxation that the new criteria might provide."

By letter dated July 29, 1999, Energy Northwest submitted an amendment request to remove the license condition requiring wide range neutron flux monitoring that satisfied the criteria of RG 1.97 and submitted for staff review its plant specific assessment of the alternate flux monitoring criteria of NEDO-31558-A. Satisfaction of these criteria would eliminate the need for a wide range neutron flux monitoring system.

3.0 EVALUATION

Section 50.49 of Title 10 of the Code of Federal Regulations requires licensees to establish a program for qualifying certain post-accident monitoring equipment for which specific guidance concerning the types of variables monitored is provided in RG 1.97, Rev. 2. This regulatory guide identifies neutron flux as a type B variable that provides information to indicate whether plant safety functions are being accomplished. The selection criteria for RG 1.97 variable qualification category are based upon whether monitoring of system parameters is needed during and following an accident and whether subsequent operator actions are dependent on the information provided by this instrumentation.

The NEDO-31558-A report analyzed event scenarios to determine the consequences of neutron flux monitoring unavailability and concluded that failure of this instrumentation will not prevent the operator from determining reactor power levels. The staff concluded in its SE of the NEDO-31558-A topical report that, for existing BWRs, neutron flux monitoring instrumentation does not need to meet the criteria of RG 1.97. Neutron flux monitoring at existing BWRs needs to meet the criteria contained in NEDO-31558-A.

The NEDO-31558-A SE states that the licensees should evaluate and confirm that their neutron monitoring system (NMS) meets the criteria of NEDO-31558-A. If the licensee's NMS deviates from the criteria, then the licensees should provide supporting justification for the deviation from the criteria or alternatives to the criteria. The licensees were also required to ensure that the role for neutron flux monitoring in the emergency operating procedures does not differ from the role evaluated in NEDO-31558-A topical report.

The NEDO-31558-A criteria and the evaluation of WNP-2's NMS are shown below.

Neutron Flux Range - 1 percent to 100 percent

The average power range monitors/local power range monitors (APRM/LPRM) exceed the range specified by the NEDO report. The operating range is 1 percent to 125 percent of rated power. The staff finds the APRM/LPRM satisfies the neutron flux range criterion.

Accuracy - ± 2 percent of rated power

By letter dated February 28, 2000, Energy Northwest responded to a request for additional information regarding instrument accuracy. Energy Northwest stated that a re-analysis of the APRM loop accuracy determined that WNP-2 meets the criteria with existing equipment. The accuracy is 1 percent of rated power under pre-accident conditions. Further, WNP-2's technical specifications (TS) surveillance requirements verify weekly that the APRM is accurate to within ± 2 percent of rated power when operating at greater than or equal to 25 percent power.

Energy Northwest stated that the APRM system may not meet the accuracy requirement under all post accident conditions such as anticipated transients without scram (ATWS). The justification provided for the deviation is that when the ATWS condition potentially threatens containment, shutdown is accomplished by injecting boron via the standby liquid control system. The decision to inject boron is not dependent on APRM indications and is predicated on degrading containment conditions (such as rising suppression pool temperatures). The staff has determined that the deviation from the accuracy requirement is acceptable because the decision to inject boron is not based on neutron monitoring instrumentation, but is instead based on degrading containment conditions such as rising suppression pool temperature. Therefore, the staff finds the APRM satisfies the criterion for accuracy.

Response Characteristics - 5 seconds/10 percent change

The WNP-2 APRM fixed neutron upscale trip TS surveillance confirms the response time is less than or equal to .09 sec/23 percent change. Therefore, the staff finds that the APRM response time satisfies the criterion for response characteristics.

Equipment Qualification - Operate in an ATWS environment

The licensee performed a plant specific equipment qualification evaluation for WNP-2 and determined that the intermediate range monitors (IRM) and APRM components would be functional during an ATWS event. Therefore, the staff finds that the IRM and the APRM satisfy the criterion for equipment qualification.

Function Time - 1 hour

The WNP-2 NMS will function for 1.5 hours. The ATWS event with the longest duration is an ATWS with an inadvertent open relief valve, which from beginning to less than 1 percent power lasts approximately 25 minutes. Therefore, the staff finds that the NMS satisfies the criterion for function time.

Seismic Qualification - Seismic qualification is not required

Seismic qualification is not required. Therefore, the staff finds that the NMS satisfies this requirement.

Redundancy and Separation - Redundancy to assure reliability

The WNP-2 APRM/LPRM subsystem consists of six (6) independent channels, each channel consists of inputs from up to 22 LPRM detectors. The six (6) APRM channels are divided into two (2) separate divisions each powered from an independent bus.

The staff finds, because of the redundancy in detector inputs per channel, the separate divisions of power supply, and the total number of channels, the APRM/LPRM satisfies the criterion for redundancy and separation.

Power Sources - Uninterruptible and reliable power sources

The APRM NMS is powered from separate and redundant 480/120 volt AC motor-generator (MG) sets. The MG sets are fed from separate and redundant divisional 480 volt AC buses that are powered by division 1 and 2 diesel generators (DG) on a loss of offsite power.

The MG sets supply uninterruptible and reliable power to the APRM system except in the event of a loss of offsite power (LOOP) event. In the event of a LOOP, power to the APRM system will be lost until the diesel generator has started and the MG sets have been manually reset. The manual reset of the MG sets requires operator dispatch since the location is outside the control room. This is a deviation from the NEDO-31558-A criterion for uninterruptible and reliable power sources and by letter dated February 28, 2000, Energy Northwest responded to a request for additional information regarding this criterion.

In their response Energy Northwest stated that during the time power is lost to the APRM, the operator can determine if control rods inserted properly. In addition, although the source range monitors (SRM) and the intermediate range monitors (IRM) detectors are normally withdrawn from the core, the drive motors will be energized on startup of the DG. The detectors could then be driven into the core. By procedure the MG sets are re-energized to restore power to the APRM. This deviation from the NEDO criterion is consistent with the Boiling Water Reactors Owners Group (BWROG) position that the existing MG set power supplies meet the intent of the functional criterion as described in NEDO-31558-A and does not compromise plant safety.

The staff has determined that the deviation from the power source criterion is acceptable because alternate means such as control rod indication are available to determine that the reactor is shutdown and the SRM and IRM could be driven into the core to provide power indication. Also, the APRM is procedurally required to be re-energized. Therefore, the staff finds the NMS satisfies the criterion for power sources.

Channel Availability - Available prior to the accident

WNP-2 is required by TS 3.3.1.1 to have the APRM instrumentation operable during power operation. The staff finds that this existing requirement is sufficient to meet the criterion for channel availability.

Quality Assurance - Limited QA requirements based on Generic Letter 85-06

The NMS detectors and signal processing equipment that are part of the reactor protective system are safety related with 10 CFR 50, Appendix B, quality requirements. The recorders used to collect data from the NMS are procured to Energy Northwest's Quality Class 2 requirements. Since this equipment is located in the control room, the installation must meet stringent quality requirements for that location. A review of the quality requirements for the recorders indicate they are equivalent to those required by Generic Letter 85-06.

The staff finds that the existing 10 CFR 50, Appendix B, quality requirements and the quality class 2 requirements are sufficient to meet the quality assurance criterion.

Display and Recording - Continuous recording

Continuous recording capability is provided by recorders located on the operator's control console. The staff finds that the NMS recording capability satisfies the criterion for continuous recording capability.

Equipment Identification - Identified in accordance with control room design review

The NMS recorders are all clearly marked and labeled. The staff finds that the equipment labeling meets the criterion for equipment identification.

Interfaces - No interference with RPS trip functions

The non-class 1E parts of the NMS are consistent with 10 CFR 50.62, ATWS Events, requirements and do not interfere with RPS trip functions. The non-class 1E portions are isolated and separated from the Class 1E portions of the system as required by the WNP-2 electrical separation design criteria.

The staff finds the electrical separation and isolation meets the interface criterion for no interference with RPS trip functions.

Service, Test and Calibration - Establish in plant procedures

The NMS equipment is tested and calibrated on the frequencies specified in the TS and the licensee controlled specifications. The TS and licensee controlled specifications are implemented in plant procedures.

The staff finds the service, test and calibration criterion is met by the plant implementing procedures.

Human Factors - Incorporate human factors engineering principles

The NMS equipment was included as part of the human factors design review as part of the Three Mile Island action plan.

The staff finds that the human factor criterion is met by the human factors engineering principles that were incorporated into Three Mile Island action plan.

Direct Measurement - Direct measurement of neutron flux

The NMS uses input from fission detectors which are located in the reactor core and provide a direct measurement of neutron flux.

The staff finds that the NMS meets the criterion for direct measurement of neutron flux.

Emergency Operating Procedure (EOP) Evaluation

The safety evaluation for NEDO-31558-A requires the licensees to evaluate that the plant specific role for neutron flux monitoring does not differ from the role evaluated in NEDO-31558-A. Energy Northwest identified two differences from NEDO-31558-A under ATWS conditions.

In Plant Procedure PPM 5.1.2, "RPV [Reactor Pressure Vessel] Control - ATWS," guidance is given for the reduction of RPV level to reduce power. The generic Emergency Procedure Guidelines (EPGs) require maintaining the RPV level above the minimum steam cooling water injection level by using the outside shroud injection systems. At WNP-2 the high pressure core spray (HPCS) system injects water inside the shroud. Under ATWS conditions it is desirable to use this system even though it injects inside the shroud since it is the only safety-related system capable of providing high volume injection at high pressure if the feedwater system is not available.

In Plant Procedure PPM 5.1.2, "RPV Control - ATWS," boron injection is required to commence and continue when periodic neutron flux oscillations are greater than 25 percent. The APRM is available to measure this power level. However, if the NMS was not available, boron injection would still occur as required before the wetwell temperature reaches 110°F.

The staff has evaluated the activities described above and has determined that the decision to inject boron does not depend solely on having the NMS available. The WNP-2 EOP's do not reference the wide range monitoring system. The EOP provides direction to proceed to initiate boron injection if the power level is not known. The operator will be alerted to the scram failure by the rod position indication system (RPIS). In addition, the operator will be aware that the reactor is not shut down by other plant parameters such as reactor vessel pressure above normal operating pressure and safety relief valves opening. The safety relief valves closing are an indication that power level is decreasing. Boron concentration can also be measured to determine that the proper amount of boron has been injected and to verify dilution is not taking place. Evaluation of the differences noted above resulted in the same conclusions for transients without scram as NEDO-31558-A and do not change the applicability of the NEDO to WNP-2.

The staff concludes that the NMS at WNP-2 satisfies the criteria of NEDO-31558-A and that the role of the NMS in the WNP-2 EOP does not differ from the role evaluated in NEDO-31558-A. Therefore, it is acceptable to delete item 3.(b) of Attachment 2 to License Condition 2.C.(16) which required installation of a wide range neutron flux monitoring system that satisfied the requirements of RG 1.97.

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 and changes surveillance requirements. 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 (64 FR 56530). 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 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.

Principal Contributor: Jack Cushing

Date: May 18, 2000