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EISENHUT,D.G. Division of Licensing

SUBJECT: Application for Amend 46 to License DPR-43,changing format & wording of section on pressure isolation valves,changing existing refs on heating & cooldown limit curves & requiring operability of three auxiliary pumps.W/o encl.

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NRC-81-124

WISCONSIN PUBLIC SERVICE CORPORATION

P.O. Box 1200, Green Bay, Wisconsin 54305

August 7, 1981

Mr. D. G. Eisenhut, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Proposed Amendment 46 to the Kewaunee Technical Specifications

This letter transmits a request and the supporting documentation for an amendment to the Kewaunee Nuclear Power Plant Technical Specifications. Accordingly, the following documents are submitted:

- 3 originals of the cover letter
- 40 copies of proposed amendment 46 to the Kewaunee Technical Specifications
- 12 copies of the report WCAP-9878, "Analysis of Capsule R from the Wisconsin Public Service Corporation Kewaunee Nuclear Plant Reactor Vessel Surveillance Program"
- 12 copies of the report XN-NF-79-72, "Exposure Sensitivity Study for ENC XN-1 Reload Fuel at Kewaunee Using the ENC-WREM-11A PWR Evaluation Model"
- 12 copies of the letter dated February 25, 1981, from L. C. O'Malley (Exxon) to E. D. Novak (WPSC) providing F_Q exposure dependence as a function of fuel rod burnup
- 12 copies of the report "Rod Misalignment Analysis"
- One check for $12,300.00 in accordance with 10CFR 170.22 for review fees

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Proposed Amendment 46 requests changes to the KNPP technical specifications in six areas. The pages affected by this change are as follows:

TS 3.1-2	TS 3.4-1	TS 3.10-10	TS 4.2-2a	Table TS 3.1-2
TS 3.1-2a	TS 3.4-1a	TS 3.10-10a	TS 4.2-8	Figure TS 3.1-1
TS 3.1-2b	TS 3.10-1	TS 3.10-11	TS 6-2	Figure TS 3.1-2
TS 3.1-3	TS 3.10-2	TS 3.10-16		Figure TS 3.10-7
TS 3.1-6	TS 3.10-2a	TS 3.10-17		
TS 3.1-7	TS 3.10-6			

The requested changes are discussed below.

Pressure Isolation Valves

Affected pages: TS 3.1-2, TS 3.1-2a, TS 3.1-2b, TS 4.2-2a, TS 4.2-8, Table TS 3.1-2

References: Order for Modification of License Concerning Primary Coolant System Pressure Isolation Valves; transmitted by letter dated April 20, 1981, from S. A. Varga (NRC) to E. R. Mathews (WPS)

The NRC order of April 20, 1981, revised the KNPP Technical Specifications to require surveillance testing of the check valves which provide a pressure boundary between the RCS and the low pressure safety injection system and between the RCS and the residual heat removal system return line. The order also established allowable leakage criteria for the valves.

This requested revision provides the same intent as the ordered technical specifications, but changes the format and wording of the specification to be more consistent with the KNPP Technical Specifications.

Specifically, we deleted the sections of this specification which refer to its applicability and objective. The applicability has been included in item 3.1.a.4.A which has been reworded. Items B., C., and the footnote have been deleted.

The wording of our proposed specification appears to be more restrictive than the wording of the existing specification, as given by the order. This is due to the fact that we have deleted the corrective actions which were allowed in item B. As a practical matter, however, the requirements of item B resulted in isolation of one train of low pressure safety injection, which in turn would require a shutdown.

Since testing of these valves would be done prior to escalating to hot shutdown, valve leakage which exceeds allowable limits would essentially preclude a return to power. We feel that this requirement is made clearer with our proposed wording.

On Table 3.1-2, we have defined the allowable leakage rates in the form of a forumula. This formula presents the exact criteria as the order; however, we feel that it is easier to interpret in this form.

The surveillance requirements on page 4.2-2a have been revised to require testing of the subject valves following refuelings and after maintenance, repair or replacement work performed on these valves. This represents a potential, slight decrease in the surveillance frequency as given in the order. In addition to the requirements mentioned above, the order also required that the valves be tested:

> after each time the plant is placed in a cold shutdown condition for 72 hours if testing has not been accomplished in the preceding 9 months.

This relaxation in the surveillance frequency for testing these valves is warranted at the Kewaunee Plant for the following reasons:

- The Kewaunee Plant operates on approximately a 12-month cycle. Therefore, the amount of time affected by this wording is less than three months, and only if the plant underwent a significant outage after 9 months of operation. The additional time that the valve would remain untested is minimal and represents a very small risk to the health and safety of the public.

- Testing of the valves following a refueling operation provides reasonable assurance that the valves will function properly throughout the cycle and reduces the probability of a Class V event (as described in the Reactor Safety Study) to acceptable levels.

- During the previous refueling outage, the subject valves were tested with exceptional results. Four of the five valves had zero leakage, and the fifth valve had indicated a possible leakage which was measured at less than one gallon per minute, worst case. The fifth valve is located in a piping configuration which is not conducive to testing in that several other leakage paths existed from that portion of piping that was pressurized to perform the tests. The total measured leakage was less than one gallon per minute. We believe that little or no leakage was through that fifth, backseated check valve.

  These exceptional tests results came after seven years of operation. This supports a test frequency based on refueling outages.

The bases for this technical specification on pages 3.1-26 and 4.2-8 have been revised to include a discussion of the reason for this specification.

In summary, our proposed wording changes regarding the operability and testing of the pressure isolation valves meet or exceed the intent of the existing technical specifications with the exception of the testing frequency. The significance of this decrease in frequency is minor and does not adversely impact the health and safety of the public.

Heatup and Cooldown Limit Curves for Normal Operation

Affected pages: TS 3.1-3
TS 3.1-6
TS 3.1-7
Figure TS 3.1-1
Figure TS 3.1-2

References:
1) S. E. Yanichko, et al, "Analysis of Capsule R from the Wisconsin Public Service Corporation Kewaunee Nuclear Plant Reactor Vessel Radiation Surveillance Program," WCAP 9878, March, 1981.

2) Letter from P. S. VanTeslaar (Westinghouse) to C. W. Giesler (WPS) dated April 30, 1981, transmitting the KNPP Heatup and Cooldown Curves based on Capsule R results.

During the cycle 5-6 refueling outage in the spring of 1980, Capsule R of the KNPP Reactor Vessel Radiation Surveillance Program was removed for analysis. That analysis has been completed and the results are summarized in references one and two, above. Based on those results, the Heatup and Cooldown limit curves for normal operation of the KNPP reactor vessel have been reevaluated using Regulatory Guide 1.99 predictions. Based on this reevaluation, it was determined that the heatup and cooldown curves are appropriate for use up to 10 effective full power years (EFPY).

The proposed changes to the KNPP Technical Specifications incorporate these results by changing existing references concerning the applicability of the heatup and cooldown curves up to 6.6 EFPY to 10 EFPY of plant operation and adding the above noted references to page TS 3.1-7.

Since these changes are based on NRC approved analysis methods, they do not represent a safety concern and, therefore, have no effect on the health and safety of the public.

Auxiliary Feedwater Pumps

Affected pages: TS 3.4-1
TS 3.4-1a

In March of this year, questions were raised by the NRC on the appropriateness of the KNPP technical specifications concerning the operability of the auxiliary feedwater system. At that time, we agreed to administratively require that three auxiliary feedwater pumps be available, with appropriate corrective measures and time constraints should one pump be out of service. We also committed to a review of the auxiliary feedwater system design criteria to determine if a technical specification change was warranted.

Based on our review, we have concluded that Technical Specification 3.4.a.2 should be changed to require that three auxiliary feedwater pumps are operable.

The specific changes to the technical specifications are on pages TS 3.4-1 and TS 3.4-1a. As noted above, TS 3.4.a.2 is revised to require that three auxiliary feedwater pumps are operable. Specification 3.4.b is changed to include a reference to a new specification; 3.4.c. Specification 3.4.c provides for a temporary relaxation of the specification, allowing one auxiliary feedwater pump to be out of service for 72 hours. The time duration has been picked to be consistent with the standard technical specifications.

This change increases the assurance that the auxiliary feedwater system will be available to respond on demand, and, therefore, represents an increase in the assurance that the health and safety of the public will be maintained.

Power Distribution Limits

Affected pages: TS 3.10-1
TS 3.10-2
TS 3.10-2a
TS 3.10-10
TS 3.10-11
TS 3.10-16
TS 3.10-17
Figure TS 3.10-7

References:

1) George C. Cook, Philip J. Valentine; "Exposure Sensitivity Study for ENC XN-1 Reload Fuel at Kewaunee Using the ENC-WREM-IIA PWR Evaluation Model, WN-NF-79-72", Exxon Nuclear Company, October, 1979.

2) Letter from L. C. O'Malley (Exxon Nuclear Company) to E. D. Novak (WPSC) dated February 25, 1981, providing F_Q exposure dependence as a function of rod burnup.

3) Letter from E. R. Mathews (WPSC) to D. G. Eisenhut (USNRC) dated January 8, 1980, submitting information on clad swelling and fuel blockage models.

4) Letter from E. R. Mathews (WPSC) to A. Schwencer (USNRC) dated December 14, 1979, submitting the ECCS re-analysis properly accounting for the zirconium/water reaction.

5) Letter from A. Schwencer (USNRC) to E. W. James (WPSC) dated May 17, 1978, exempting KNPP from 10CFR50.46(a)(1) under a confirmatory order.

In October of 1979, Exxon informed us of the results of their analysis indicating that there is a dependence of F_Q on burnup to maintain appropriate Peak Clad Temperature (PCT) limits. These results are reported in reference 1, above. WPSC subsequently requested that the function be expressed in terms of rod (rather than pellet) burnup. Exxon responded with this information in reference 2.

It is expected that this change will impact the cycle 7 reload design sometime during the fall of this year. At that time, the burnup on certain Exxon fuel assemblies will reach the point that their allowable peaking factor, as per the Exxon analysis, will fall below 2.16. This is the $F_Q(Z)$ limit currently specified in the KNPP Technical Specifications.

The Cycle 7 Reload Safety Evaluation was performed with consideration for this dependency. The results of the evaluation showed that the cycle 7 design will not exceed the allowable peaking factor for Exxon or Westinghouse fuel under normal operation or expected operational transients. An addendum to the Cycle 7 RSE is currently being prepared to describe the analyses done in this regard and report the results. That addendum will be submitted to the NRC by August 19, 1981.

Based on Exxon's analysis, we are proposing revisions to the technical specifications to incorporate the dependency of F_Q on burnup for Exxon fuel. Additionally, we are also updating the technical specifications to incorporate the allowable F_Q (Z) limits for Westinghouse fuel, as calcualted in references 3 and 4 above.

These changes include the effects of clad swelling and fuel blockage. This change eliminates the need of the 2.16 limit which was voluntarily maintained under a confirmatory order (Reference 5).

Finally, the $F^N_{\Delta H}$ limits have been defined for Exxon and Westinghouse fuel. The limits for Westinghouse fuel include penalties associated with rod-bow effects at high burnup. These penalties do not apply to Exxon fuel and have not been included in the specifications pertaining to Exxon fuel.

The bases have been revised to reflect the above noted changes.

These changes are based on NRC approved analyses and reflect allowable limits for core physics parameters. Therefore, there is no effect on the health and safety of the public.

Rod Misalignment

Affected pages: TS 3.10-6
TS 3.10-10a
TS 3.10-16

Reference: Rod Misalignment Analysis, performed by WPS Fuel Management, July 27, 1981

WPS fuel management has performed an analysis using methods the NRC has previously reviewed and approved. The analysis indicates that for cycle 7, rod misalignments as great as 22.5 inches can be tolerated without violating allowable core peaking factors for normal operation or expected transients. Based on this analysis, we propose that Technical Specification TS 3.10.a be changed to incorporate this result.

During the Reload Safety Evaluation performed for future reload cores, this specification will be reviewed for applicability and changes will be requested, as appropriate.

Since a rod misalignment of 22.5 inches has been shown to be acceptable in terms of core peaking factors, this change does not affect the health and safety of the public.

Health Physics Supervisor

Affected pages: TS 6-2

References: 1) Letter from E. W. James (WPSC) to A. Schwencer (USNRC) dated January 20, 1978.

2) Letter from A. Schwencer (USNRC) to E. W. James (WPSC) dated November 10, 1977.

By request of the NRC, WPS has committed to certain qualifications of the Health Physics Supervisor at the Kewaunee Plant and this proposed change incorporates that commitment into the KNPP Technical Specifications. The requirements of the Health Physics Supervisor which we have committed to in Specification 6.3.1 are:

> "the requirements of Regulatory Guide 1.8, Revision 1-R, September, 1975 or their equivalent."

The equivalent of the requirements of Regulatory Guide 1.8 were defined by the NRC in Reference 2, above and committed to by WPS in Reference 1. The equivalent requirements are:

a. 4 years of formal schooling in science or engineering,

b. 4 years of applied radiation protection experience at a nuclear facility,

c. 4 years of operational or technical experience/training in nuclear power, or

d. any combination of the above totaling 4 years.

These equivalent requirements are in addition to 5 years of professional experience in applied radiation protection.

Since this change is administrative in nature, it has no effect on the health and safety of the public.

We have determined that Proposed Technical Specification Amendment 46 to the Kewaunee Technical Specifications contains several changes of the Class III type and, therefore, is categorized as a Class IV amendment. Accordingly, pursuant to the requirements of 10CFR 170.22, a check for $12,300.00 for review of this amendment is enclosed.

Very truly yours,

E.R. Mathews

E. R. Mathews, Senior Vice President
Power Supply and Engineering

snf

Enc.

cc - Mr. Robert Nelson, NRC Resident Inspector
RR #1, Box 999, Kewaunee, WI 54216

Subscribed and Sworn to
Before Me This 7th Day
of August 1981

Donald C. Dutch
Notary Public, State of Wisconsin

My Commission Expires
October 8, 1984

8-14-81

NOTE TO: Mike Collins & Don Lanham, DSB (016)

FROM: Reba Diggs, License Fee Management Branch, ADM

SUBJECT: PROCESSING LETTERS WITH CHECKS RECEIVED DIRECTLY BY THE LICENSE FEE MANAGEMENT BRANCH

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Amount: $12,300.00
Date: 8-03-81
Ltr. Date: 8-07-81
Applicant: Wisconsin Public Service Corp.
Docket No: 50-305
Plant: Kewaunee

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Thanks!

Kerry Kohler
for Reba M. Diggs
License Fee Management Branch
Office of Administration

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