

NRC-03-078

10 CFR 50.90

July 25, 2003

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

**KEWAUNEE NUCLEAR POWER PLANT
DOCKET 50-305
LICENSE No. DPR-43
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO LICENSE
AMENDMENT REQUEST 192 TO THE KEWAUNEE NUCLEAR POWER PLANT TECHNICAL
SPECIFICATIONS**

- References:
- 1) Letter from Thomas Coutu (NMC) to Document Control Desk (NRC), "License Amendment Request 192 To The Kewaunee Nuclear Power Plant Technical Specifications, 'Changes to Steam Generator Inspection Reporting Criteria,'" dated December 19, 2002. (Adams Accession NO. ML023650500)
 - 2) Letter from John G. Lamb, (NRC) to Thomas Coutu (NMC), "Kewaunee Nuclear Power Plant - Request For Additional Information For Proposed Amendment Request, 'Changes To Steam Generator Inspection Reporting Criteria' (TAC NO. MB6993)," dated June 13, 2003. (Adams Accession NO. ML031640206)

Pursuant to 10 CFR 50.90, the Nuclear Management Company (NMC) submitted (reference 1) a Licensing Amendment Request (LAR) to the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS). The proposed amendment would revise the reporting requirements upon discovery of defective or degraded steam generator tubes. On October 25, 2000, the Nuclear Regulatory Commission (NRC) amended its event reporting requirements (10 CFR 50.72 and 10 CFR 50.73) for nuclear power reactors to reduce or eliminate the unnecessary reporting burden associated with events of little or no safety significance. This LAR is to align KNPP's Technical Specifications to the changes in 10 CFR 50.72 and 10 CFR 50.73 reporting requirements.

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In the NRC RAI, NMC's response was requested within 30 days of the date of the letter and stated to contact John Lamb if circumstances should require a change in this response date. On July 14, 2003, NMC contacted John Lamb and requested a week's extension for this response. That request was granted with a new response date of July 18, 2003. On further review additional time was needed and NMC contacted Deidre Spaulding, of the NRC Staff, where a due date of July 25, 2003 was agreed to.

Attachment 1 to this letter contains the NMC response to a Request for Additional Information (RAI) from the NRC staff (reference 2). Attachment 2 contains excerpts from Table 2 of NUREG 1022, Revision 2 that are pertinent to NMC response. NMC makes no new commitments in this response.

I declare under penalty of perjury that the foregoing is true and correct.
Executed July 25, 2003.



Thomas Coutu
Site Vice-President, Kewaunee Plant

GOR

cc- US NRC, Region III
US NRC Senior Resident Inspector
Electric Division, PSCW

Attachments	1	NMC Response to NRC RAI
	2	NUREG 1022 Revision 2, Excerpts

ATTACHMENT 1

**NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR POWER PLANT
DOCKET 50-305**

July 25, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 192

NMC Response

to

NRC Request for Additional Information

NRC Request for Additional Information

In letter dated December 19, 2002, Nuclear Management Company (NMC) submitted changes to the technical specifications (TSs) for the Kewaunee Nuclear Power Plant. NMC proposed to change: (1) the tube plugging reporting requirement from the current 30 days to 60 days in TS 4.2.b.7.a, and (2) the C-3 category notification from 10 CFR 50.72(b)(2)(ii) to 10 CFR 50.72(b)(3)(ii) in TS 4.2.b.7.c. To complete its review, the U. S. Nuclear Regulatory Commission (NRC) staff requests the following additional information:

1. In the proposed TS 4.2.b.7.a, it is stated that "...Following each in-service inspection of steam generator tubes during which tubes are plugged, the number of tubes plugged shall be reported to the Commission within 60 days..." The current TS require a 30-day reporting period. The licensee proposed the 60-day reporting requirement to be consistent with 10 CFR 50.73, "License Event Report System."

Please provide a technical basis for the proposed change. (a) Please cite the specific subparagraph in 10 CFR 50.73 that is applicable to the tube plugging report and explain why that subparagraph is applicable, and (b) 10 CFR 50.73 requires that licensees submit a license event report within 60 days of the discovery of an event. Please clarify when the 60-day period starts, e.g., from the completion of the eddy current data analysis of the steam generator inspection results, completion of the tube plugging effort, restart of the unit, or, closure of the steam generator manways.

NMC Response

- 1a. **Please cite the specific subparagraph in 10 CFR 50.73 that is applicable to the tube plugging report and explain why that subparagraph is applicable.**

The specific subparagraph in 10CFR50.73 that is related to the tube plugging report is 10 CFR 50.73(a)(2)(ii)(A), which states that the licensee shall report any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded.

This determination is due to NUREG 1022, "Event Reporting Guidelines" 10 CFR 50.72 and 50.73 (NUREG 1022)⁽¹⁾. NUREG 1022 states (page 40) that this criterion applies to material (e.g., metallurgical or chemical) problems that cause abnormal degradation of or stress upon the principal safety barriers (i.e., the fuel cladding, reactor coolant system pressure boundary, or the containment). Additionally, NUREG 1022 states, in the examples section, that an example of a reportable event include serious steam generator tube degradation.

As stated in Regulatory Guide 1.83, Revision 1, the plugging limit is not a depth of penetration within the defect range but rather an imperfection depth with conservative allowances. Thus, the tube may be plugged before the reporting criteria of § 50.73(a)(2)(ii)(A) are reached.

It would seem logical that if a condition exists that is less serious than that described for a serious degradation, which does require a 60 day report, that a 30 day report is overly burdensome (when more serious events require a 60 day report). Therefore, the threshold for reporting would seem to be consistent with that of § 50.73.

- 1b **10 CFR 50.73 requires that licensees submit a license event report within 60 days of the discovery of an event. Please clarify when the 60-day period starts, e.g., from the completion of the eddy current data analysis of the steam generator inspection results, completion of the tube plugging effort, restart of the unit, or, closure of the steam generator manways.**

NMC would submit a license event report within 60 days from the completion of the eddy current data analysis of the steam generator inspection results. NMC believes that the logical starting point is upon completion of the eddy current analysis, as a complete listing of tubes required to be plugged is not finalized until this point. This is consistent with current plant TS.

NRC Question

2. In the proposed TS 4.2.b.7.c, it is stated that "...If a steam generator tube inspection result falls into Category C-3, the Commission shall be promptly notified according to requirements of 10 CFR 50.72(b)(3)(ii)..." This will change the 4-hour notification in the current TS to the 8-hour notification as specified 10 CFR 50.72(b)(3)(ii).

Please provide a technical basis for extending the notification from 4 hours to 8 hours: (a) Please cite the specific subparagraph in 10 CFR 50.72(b)(3)(ii) that is applicable to the C-3 category notification and to explain why the subparagraph is applicable. (b) The staff believes that 10 CFR 50.72(c), "Followup Notification," is also applicable to the C-3 category notification. Explain why was 10 CFR 50.72(c) not cited in the proposed TS 4.2.b.7.c, and (c) Confirm that when a C-3 category is established, the licensee is required by 10 CFR 50.73, "Licensee event report system," to submit a written license event report.

NMC Response

- 2a. **Please cite the specific subparagraph in 10 CFR 50.72(b)(3)(ii) that is applicable to the C-3 category notification and to explain why the subparagraph is applicable.**

The specific subparagraph in 10 CFR 50.72(b)(3)(ii) that is applicable to the C-3 category notification is 10 CFR 50.72(b)(3)(ii)(A). This subparagraph, with the other associated text, starting at 10 CFR 50.72(b)(3), included states:

(3) Eight-hour reports. If not reported under paragraphs (a), (b)(1) or (b)(2) of this section, the licensee shall notify the NRC as soon as practical and in all cases within eight hours of the occurrence of any of the following:

(ii) Any event or condition that results in:

(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or

The reason this subparagraph is applicable is found in NUREG 1022, Revision 2. The current Kewaunee Nuclear Power Plant (KNPP) TS states that the NRC shall be notified according to the requirements of 10 CFR 50.72(b)(2)(i). Attachment 2 to this letter is excerpts from NUREG 1022, Rev. 2, Table 2. In the first column is listed the previous 10 CFR 50.72 requirements with the second column listing the current, amended, requirements. In the "Previous Requirements" column is listed 10 CFR 50.72(b)(2)(i). In the corresponding "Amended Requirements" column it states that it is now an 8 hour report and to refer to § 50.72(b)(3)(ii) above.

Also, in the TS basis issued with KNPP TS amendment 73⁽²⁾ it stated that Category C-3 inspection results are considered abnormal degradation to a principal safety barrier and are therefore reportable under 10 CFR 50.72(b)(2)(i).

Therefore, the change to the KNPP TS is pursuant to the changes made to the reporting criteria in 10 CFR 50.72 and that the C-3 category is applicable.

- 2b. **The staff believes that 10 CFR 50.72(c), "Followup Notification," is also applicable to the C-3 category notification. Explain why was 10 CFR 50.72(c) not cited in the proposed TS 4.2.b.7.c.**

10 CFR 50.72(c) states

§ 50.72(c) Followup notification. With respect to the telephone notifications made under paragraphs (a) and (b) of this section, in addition to making the required initial notification, each licensee, shall during the course of the event:

(1) Immediately report

- (i.) any further degradation in the level of safety of the plant or other worsening plant conditions, including those that require the declaration of any of the Emergency Classes, if such a declaration has not been previously made, or
- (ii.) any change from one Emergency Class to another, or
- (iii.) a termination of the Emergency Class.

(2) Immediately report

- (i.) the results of ensuing evaluations or assessments of plant conditions,
- (ii.) the effectiveness of response or protective measures taken, and
- (iii.) information related to plant behavior that is not understood.

(3) Maintain an open, continuous communication channel with the NRC Operations Center upon request by the NRC.

NMC does not believe that § 50.72(c), "Followup notification" is necessary to be placed in the KNPP TS. During the eddy current analysis of the steam generator tubes the steam generator tubes are not being relied upon as a principal safety barrier. The reactor coolant is drained from the steam generators and primary manways are removed to allow access to the steam generator tubes for inspection. As such, a degradation in the level of plant safety or other worsening of plant conditions would not occur due to the analysis of the steam generator tube via eddy current examination. There would be no declaration of a plant emergency due to the analysis or pertinent results of ensuing evaluations or assessments of plant conditions that would require immediate notification of the NRC. The NRC can always request continuous open communications channel during the eddy current analysis if the NRC Operations Center deems it to be necessary.

Additionally, as stated in the Federal Register for this change to 10 CFR 50.72 ⁽³⁾, non-emergency events that are reportable by telephone under 10 CFR 50.72 would be reportable as soon as practical and in all cases within 8 hours (instead of within 1 hour or 4 hours as is currently required). This would reduce the burden of rapid reporting, while still capturing those events where there may be a need for the NRC to contact the plant to find out more about the event and/or initiate a special inspection or investigation within about a day. Immediately reporting any new indications analyzed during the steam generator eddy current evaluation would not add to the NRC's purpose for requesting the notification.

Thus, if the KNPP steam generator inspection analysis resulted in categorizing a steam generator as C-3 the NRC would be notified within 8 hours. As the plant is in a shutdown condition with the steam generators isolated from the reactor coolant, and not providing any safety function, immediate follow-up notification of the NRC is unnecessary and does not support the goals of the change in the requirements to reduce the burden of rapid reporting.

- 2c. Confirm that when a C-3 category is established, the licensee is required by 10 CFR 50.73, "Licensee event report system," to submit a written license event report.**

NMC is required to submit a written Licensee Event Report as set forth in 10 CFR 50.73 upon discovery of a category C-3 condition. This requirement is contained in the second sentence of proposed KNPP TS 4.2.b.7.c, which states:

A Licensee Event Report shall then be filed with the Commission as described by Specification 4.2.b.7.a and as set forth in 10 CFR 50.73(a)(2)(ii).

In NUREG 1022, Revision 2, Section 3.2.4, "Degraded or Unanalyzed Condition," the NRC states as one of its examples, example three for a degraded condition as:

- (3) *Serious steam generator tube degradation. Steam generator tube degradation is considered serious if the tubing fails to meet the following two performance criteria:*
- (a) *Steam generator tubing shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cooldown and all anticipated transients included in the design specification) and design basis accidents. This includes retaining a margin of 3.0 against burst under normal steady state full power operation and a margin of 1.4 against burst under the limiting design basis accident concurrent with a safe shutdown earthquake.*
 - (b) *The primary to secondary accident induced leakage rate for the limiting design basis accident, other than a steam generator tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all steam generators and leakage rate for an individual steam generator. The licensing basis accident analyses typically assume a 1 g.p.m. primary to secondary leak rate per steam generator, except for specific types of degradation at specific locations where the tubes are confined, as approved by the NRC and enumerated in conjunction with the list of approved repair criteria in the licensee's design basis documents.*

In KNPP TS, a degraded tube is defined as a tube containing degradation that is $\geq 20\%$ of nominal wall thickness. A defective tube is one that contains an imperfection that violates criteria used to determine the acceptability of tube for continued use in operation. KNPP steam generators enter the C-3 category when more than 10% of the total tubes inspected are degraded tubes, or more than 1% of the inspected tubes are defective.

Therefore, the notification to the NRC in accordance with KNPP TS may be prior to reaching the threshold for reporting required by 10 CFR 50.73.

References

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- ⁽¹⁾ NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73, Revision 2, published October 2000.
 - ⁽²⁾ Letter from Morton B. Fairtile (NRC) to D.C. Hintz (WPSC), dated April 1, 1987. (TAC NO. 60049)
 - ⁽³⁾ Federal Register dated July 6, 1999, Page 36297, Section IV. "Discussion," item 2.

ATTACHMENT 2

**NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305**

July 25, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 192

NUREG 1022, Revision 2

Table 2 Excerpts

<p align="center">NUREG 1022 Rev 2 Table 2. Changes In Reporting Requirements Excerpts</p>	
Previous requirements.	Amended requirements.
<p><i>One-hour report.</i></p> <p>§ 50.72(b)(1)(II) Any event or condition during operation that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or results in the nuclear power plant being:</p> <p>(A) In an unanalyzed condition that significantly compromises plant safety;</p> <p>(B) In a condition that is outside the design basis of the plant; or</p> <p>(C) In a condition not covered by the plant's operating and emergency procedures.</p>	<p><i>Eight-hour report.</i></p> <p>§ 50.72(b)(3)(II) Any event or condition that results in:</p> <p>(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or</p> <p>(B) The nuclear power plant being in an unanalyzed condition that significantly degrades plant safety.</p> <p><i>Former Items (B) and (C) are deleted. Refer primarily to §§: 50.73(a)(2)(i)(B); 50.73(a)(2)(ii)(A) and 50.72(b)(3)(ii)(A); 50.73(a)(2)(ii)(B) and 50.72(b)(3)(ii)(B); 50.73(a)(2)(v) and 50.72(b)(3)(v);</i></p>
<p><i>Four-hour report.</i></p> <p>§ 50.72(b)(2)(I) Any event, found while the reactor is shut down, that, had it been found while the reactor was in operation, would have resulted in the nuclear power plant, including its principal safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety.</p>	<p><i>Eight-hour report. Refer to § 50.72(b)(3)(ii) above, which captures these events regardless of whether or not they are found while the reactor is shutdown.</i></p>
<p>§ 50.73(a)(2)(II) Any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear power plant being:</p> <p>(A) In an unanalyzed condition that significantly compromised plant safety;</p> <p>(B) In a condition that was outside the design basis of the plant; or</p> <p>(C) In a condition not covered by the plant's operating and emergency procedures.</p>	<p>§ 50.73(a)(2)(II) Any event or condition that resulted in:</p> <p>(A) The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or</p> <p>(B) The nuclear power plant being in an unanalyzed condition that significantly degraded plant safety.</p> <p><i>Former Items (B) and (C) are deleted. Refer primarily to §§ 50.73(a)(2)(i)(B), (a)(2)(ii)(A), (a)(2)(ii)(B), (a)(2)(v), (a)(2)(vii), and (a)(2)(ix)(A).</i></p>