



Kewaunee Nuclear Power Plant

Operated by Nuclear Management Company, LLC

May 06, 2004

NRC-04-051  
10 CFR 50.55a

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

KEWAUNEE NUCLEAR POWER PLANT  
DOCKET 50-305  
LICENSE NO. DPR-43

NMC RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION  
REGARDING THE INSERVICE TESTING PROGRAM (TAC NO. MC2097)

- Reference:
- 1) Letter from Kyle A. Hoops (NMC) to US NRC dated September 21, 2001, (Adams Accession NO. ML012710313).
  - 2) Letter from Thomas Coutu (NMC) to US NRC dated August 14, 2003, (Adams Accession NO. ML032320522).
  - 3) Letter from Nuclear Management Company, LLC to Document Control Desk, "Inservice Testing Program Project," dated February 16, 2004, (Adams Accession NO. ML040550405).

Nuclear Management Company, LLC (NMC), the licensee for Kewaunee Nuclear Power Plant (KNPP), performed a comprehensive design basis review and revision of the Inservice Testing (IST) Program at KNPP. This effort was in response to various internal Quality Assurance audits as well as NRC inspections that identified potential weaknesses and areas for improvement. The Commission was previously informed of KNPP's proposed plan for implementing the IST Improvement Project (Reference 1).

IST Program Revision Q was submitted to the Commission as documented in Reference 2. Following NRC review of the submittal, a teleconference between the NRC reviewer and the NMC was held on October 30, 2003. As a result of this discussion, the NMC revised the relief requests for the IST Program, submitted five new relief requests and changed two relief requests previously submitted (Reference 3).

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On March 5, 2004, the Nuclear Regulatory Commission (NRC) transmitted a request for additional information via email to the Nuclear Management Company. The NMC responded to this request via email and received an additional request on March 24, 2004. NMC hereby submits its response to those questions emailed to the NMC.

This letter contains no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and accurate.  
Executed on May 06, 2004.



Thomas Couturier  
Site Vice President, Keweenaw Nuclear Power Plant  
Nuclear Management Company, LLC

Enclosure

cc: Administrator, Region III, USNRC  
Project Manager, Keweenaw, USNRC  
Senior Resident Inspector, Keweenaw, USNRC  
Public Service Commission of Wisconsin

## **ENCLOSURE 1**

**NUCLEAR MANAGEMENT COMPANY, LLC,  
Relief Request VRR-08 for the Kewaunee Nuclear Power Plant  
NRC Request for Additional Information  
OPERATING LICENSE NO. DPR-43,  
DOCKET NO. 50-305**

### **NRC Staff Question received March 5, 2004**

The submittal does not provide a basis to justify valve disassembly outside of the required refueling outage frequency specified in the Code.

Several licensees have submitted relief requests to the NRC to conduct inservice testing once per fuel cycle, as opposed to during a refueling outage as prescribed by the Code. In reviewing, these relief requests the NRC has requested that licensees address several factors to ensure that the proposed alternative provides an acceptable level of quality and safety. The submittal should address whether the testing can be accomplished within the allowed outage time permitted by the technical specifications. The time necessary to complete the testing should be significantly less than the allowed outage time. The submittal should address the effect on scheduled maintenance work windows at power versus refueling work windows and whether the testing can be performed within these work windows or does the testing extend either the refueling or at power maintenance work window. The submittal should address the risk, either quantitatively or qualitatively, for why testing on-line is appropriate as compared to testing during a refueling outage. The submittal should also identify any compensatory measures established as a risk management tool to reduce the risk impact of testing with the nuclear plant at power.

The licensee may want to review relief requests submitted by other licensees that requested relief from the refueling outage testing requirement.

Please provide a maintenance history of the valves with respect to valve failures.

### **NMC Response**

#### **Maintenance History**

These valves were evaluated in 1989 for the Check Valve Reliability Program (CVRP) and placed in a periodic disassembly and inspection program. The valves were re-evaluated in 1994 as part of the PM optimization effort, with the recommendation to retain the valves in the CVRP with the current 6-year inspection frequencies. These recommendations and evaluations were made in accordance with EPRI NP-5479, Application Guidelines for Check Valves in Nuclear Power Plants. All four valves were replaced in 1991 to upgrade valve disc material due to inspection results identifying small areas of erosion and pitting.

In 2000, it was determined that the valves would be inspected in conjunction with the service water (SW) pump removal/replacement. The frequency for this maintenance was 96 months or 8 years. The valves are disassembled and inspected during the activity that rotates the spare service water pump into service. The SW pump replacement is performed with the plant at power. The last pump replaced was the B2 pump, which was out-of-service (OOS) 19 hours and 19 minutes of an allowed 72-hour limiting condition for operation. The check valves were inspected at the time the pump was out-of-service and no additional OOS time was required to complete the maintenance on these valves.

As part of the third interval improvement project it was identified that the quarterly pump IST does not pass accident flow though the valve and that the activities being performed for the CVRP need to be part of the IST program. As such, the frequency was revised to every 6 years.

Discussion with Maintenance Engineering determined an approximate estimate of 10-12 hours, of which 4-5 hours would be "wrench time", for the work associated with check valve inspection. This would include the partial open with flow retest and pump vibration testing.

Recent inspection results have shown areas where the soft seat has been delaminating. Calculations indicate that if a complete failure of the soft seat occurs an approximate back flow of 20 gpm through the idle pump would result. Significant back leakage through the valve would have to occur to rotate the pump in the reverse direction. Like-for-like valve replacement is performed when indications of a delaminating soft seat and/or pitting is found.

#### **Work Windows/Risk**

As stated, this task has been routinely completed during normal at power plant operation. The task is performed well within the allowed technical specification limiting condition for operation. Therefore, there is no adverse impact on at power work windows.

Performing this task during the refueling outage will add tasks to the refueling outage and potentially extend the refueling work window.

An evaluation was performed to determine impact on risk. Assuming each of the individual SW pumps were unavailable the highest risk was 5.01E-05/yr with baseline risk core damage frequency (CDF) = 2.93E-05/yr. This represents a risk of 1.7 times baseline, which is classified as green. Therefore, even if a conservative value of zero risk is assumed, during refueling shutdown, for the removal of a SW pump from service, acceptable results are achieved.

#### **Compensatory Measures**

Compensatory measures include: ensuring Technical Specification compliance during the work planning and execution process, utilization of a 13-week schedule with train-specific workweeks, and performing risk evaluations of emergent work. Additionally, systems and components are monitored as required by the Maintenance Rule.

**NRC Staff Question received March 24, 2004**

The licensee discusses a 13 week schedule with train specific workweeks but does not address the at power work windows associated with the service water system. Will the inspection be performed as part of a scheduled work window or will it be performed as a stand-alone activity? If it will be performed as part of a scheduled work window how will the inspection activity affect the window?

**NMC Response**

On March 27, 2004, the Keweenaw Nuclear Plant transitioned from a 13-week schedule to a 12-week schedule. The next check valve inspection is currently scheduled to occur on June 9, 2004, as a stand-alone activity in conjunction with Train A Residual Heat Removal System work. If this schedule were to change it would subject to an evaluation in accordance with the Maintenance Rule. The subsequent valve inspection would be due in December 2005, which is in the fourth interval. If similar relief is requested for the fourth interval, it is the intent of the Planning and Scheduling Group to include the check valve inspection in a service water work window.