

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-282/85-02(DRS)

Docket No. 50-282

License No. DPR-42

Licensee: Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

Facility Name: Prairie Island Nuclear Generating Plant Unit 1

Inspection At: Red Wing, MN

Inspection Conducted: January 14-18 and February 4-7, 1985

W. E. Milbrot
Inspector: W. E. Milbrot

2/24/85
Date

L. A. Reyes
Approved By: L. A. Reyes, Acting Chief
Operational Programs Section

2/28/85
Date

Inspection Summary

Inspection on January 14-18, and February 4-7, 1985 (Report No. 50-282/85-02(DRS))

Areas Inspected: Routine, announced inspection of refueling preparations and refueling activities. The inspection involved a total of 77 inspector-hours onsite by one NRC inspector including 4 inspector-hours onsite during off-shifts.
Results: No items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

Northern States Power Company (NSP)

- *E. L. Watzl, Plant Manager
- M. J. Balk, Superintendent of Operations
- *M. A. Klee, Superintendent, Nuclear Engineering
- *J. L. Hoffman, Superintendent, Technical Engineering
- J. R. Maki, Production Engineer
- G. L. Edon, Shift Supervisor

NRC Representatives

- *J. Hard, Senior Resident Inspector
- *P. Hartmann, Resident Inspector

The inspector also contacted and interviewed other licensee personnel during this report period.

*Denotes personnel present at the exit interview on February 7, 1985.

2. Refueling Preparation

The inspector reviewed procedures, tests and surveillances covering the maintenance, testing, and operational check out of refueling tools, equipment and systems required to support the fuel loading effort to assure that the applicable Technical Specifications and licensee's procedure requirements have been included. The inspector also performed a review of completed surveillance and preventative maintenance procedures involving fuel handling tools and fuel transfer systems, spent fuel pool ventilation systems, radiation monitoring systems, residual heat removal pumps operable, and refueling integrity assured.

Reactor Refueling Operation Procedure, D5, Revision 10 (Section D of Prairie Island Nuclear Generating Plant Operations Manual) is the refueling procedure that identifies those requirements, precautions and preparations necessary to be acknowledged and completed prior to and maintained during fuel movement activities. The precautions sections of this procedure, paragraph 3, identifies a list of conditions that require the suspension of fuel movement in the reactor vessel if and when any one of the listed conditions occur. The list is an aid to refueling personnel to assure that fuel handling operations are conducted in a safe manner. Many of the items covered in the precautions list were developed from Technical Specification requirements. The inspector considers the "precautions" section a valuable part of the Reactor Refueling Operations Procedure, D5. However, a review of the Technical Specifications note that there are other similar conditions that require the suspension of fuel handling operations. TS 3.8D4 covers suspending fuel handling operations in the Auxiliary Building if operability conditions of the Spent Fuel Pool Special Ventilation System cannot be met. TS 3.13D covers terminating refueling operations within two hours if operability

conditions of the Control Room Air Treatment System cannot be met. TS 3.8C states that if any condition specified in 3.8A or 3.8B are not met, refueling or fuel handling operations shall cease. The inspector has a concern that refueling personnel may rely upon the "precaution" paragraph as an all encompassing list that mandates the suspension of fuel movement and overlook other Technical Specifications that require fuel handling operations to cease not covered by the subject paragraph. Resolution of this condition is considered an open item (282/85-02-01(DRS)) pending action by the licensee to expand its refueling procedures to include all conditions that require the suspension of fuel handling operations.

Reactor Refueling Operation Procedure, D5, paragraph 4, Preparation for Fuel Transfer, identifies Preventive Maintenance (PM) procedures, Surveillance Procedures (SP) and other refueling related requirements that need to be identified as complete prior to commencing refueling operations. Paragraph 4.1 list the PM's and SP's for fuel handling tools and cranes that are to be accomplished within the past 60 days just prior to fuel handling. On the Control Room copy of the procedure the date completion column for each PM and SP list in paragraph 4.1 was noted as "NA" and the signature space completed. The licensee reported that completion dates were identified as "NA" because the information was recorded on the copy of the procedure used for defueling the core. A review of the defueling copy of the procedure listed the completion date of PM, 1360-4, Spent Fuel Pit Bridge Crane (SFPBC) and SP 1051A, Fuel Handling System Checkout for Fuel Receipt, (Paragraph 4 which covers SFPBC operational test) as November 17, 1984 which exceeded the 60 day limit established by the procedure. All other completion dates were within the 60 day limit for fuel loading. Procedure deviation No. A0312 was issued to procedure D5 to change the 60 day requirement to 100 days based on satisfactory use of the equipment during defueling. The inspector has a concern of the licensee making several invalid verifications of action meeting a specified requirement. Resolution of this item is considered an open item (282/85-02-02(DRS)) pending licensee action to prevent recurrence.

No items of noncompliance or deviations were identified.

3. Refueling Activities

The inspector witnessed portions of reactor vessel core loading operations involving the use of the manipulator crane and the SFPBC. The inspector also verified that prior to commencing with fuel handling operations applicable Technical Specifications and licensee's procedures had been completed including communications established between manipulator crane, spent fuel pit, reactor side upender and the control room, satisfactory refueling cavity water level and temperature, core component accountability system established, boron concentration determined and maintained and boric acid flow path established. The inspector observed the completion of SP 1011, Revision 6, Nuclear Source Range Functional Test for channels one and two. Testing was conducted by locating the first fuel assembly adjacent to a source range detector. This fuel movement was controlled by the Fuel Transfer Log (FTL) which controls all fuel movement in the core. The test was conducted by an Instrument and Control Specialist and

an Operator. Detector N32 was verified operable including the audible evacuation horn in the containment. When a fuel assembly was located adjacent to the second source range detector (N31) it was determined inoperable and further fuel movement was suspended. A change was issued to the FTL to allow locating a fuel assembly adjacent to source range detector N52 which was an installed spare. This detector was verified operable and the nuclear source range functional test was complete.

Following continuation of fuel loading the inspector observed the maintenance of the refueling status boards in the control room, proper shift manning and shift turnover, and witnessed a reactor coolant sample being drawn and analyzed for boron concentration.

When attempting to load a fuel assembly into cavity E9 the manipulator crane operator experienced difficulty in getting the assembly to seat properly. The assembly was several inches from seating when the problem occurred. Repeated attempts were made to move the assembly in the lateral direction to get the module to seat. It was considered that the fuel assembly may be bowed. When this effort was unsuccessful the FTL was changed to allow installing all the assemblies adjacent to the problem assembly location first and then install the problem assembly into the enclosed opening to provide guidance during installation. This effort was successful. The inspector has a concern regarding loading the fuel assembly in a lateral direction. A review of Reactor Refueling Operation procedure, D5, Revision 10 and Fuel Handling Systems procedure, C17, Revision 5 (the detailed procedure for operating fuel handling tools and equipment) revealed that neither procedure provided any guidance to the manipulator crane operator for handling abnormal fuel handling situations. Westinghouse Specification titled Instructions, Precautions and Limitations for Handling New and Partially Spent Fuel Assemblies, F5, Revision 7, was used to develop Prairie Island Fuel Handling System procedure, C17. Westinghouse Specification, Section V, Paragraph C5, Lateral Movement of Fuel Assemblies and Section IV, Paragraph G, Fuel Assembly Load and Deflection Limits provide guidance and precautions to be observed when handling fuel assemblies. The inspector considers that the pertinent precautions and guidelines covered in the Westinghouse Specification for handling abnormal situations should be evaluated for incorporating into Prairie Island Refueling Procedures D5 and/or C17. Resolution of this item is considered an open item (282/85-02-03(DRS)) pending licensee action to expand fuel handling procedures to cover abnormal fuel handling situations.

The inspector verified that the licensee had implemented extensive cleanliness and foreign material controls to protect against debris falling into the refueling cavity. Overall, fuel handling activities witnessed by the inspector appeared well managed and controlled.

No items of noncompliance or deviations were identified.

4. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action

on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 2 and 3.

5. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on February 7, 1985 to discuss the scope and findings of the inspection. The licensee acknowledge the statements made by the inspector with respect to items discussed in the report. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary.