

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/85018(DRS); No. 50-306/85015(DRS)

Docket Nos. 50-282; 50-306

Licenses No. DPR-42; No. DPR-60

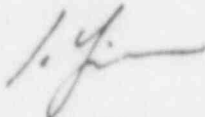
Licensee: Northern States Power Company  
414 Nicollet Mall  
Minneapolis, MN 55401

Facility Name: Prairie Island Nuclear Generating Plant, Units 1 and 2

Inspection At: Prairie Island Site, Red Wing, MN

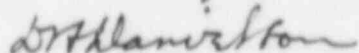
Inspection Conducted: September 26-27, 1985

Inspector: I. T. Yin



10/21/85  
Date

Approved By: D. H. Danielson, Chief  
Materials and Processes Section



10/21/85  
Date

Inspection Summary:

Inspection on September 26-27, 1985 (Reports No. 50-282/85018(DRS);  
No. 50-306/85015(DRS))

Areas Inspected: Routine, announced inspection of activities related to the large capacity snubbers installed on the steam generators. The inspection involved a total of 12 inspector-hours onsite by one NRC inspector.

Results: No violations or deviations were identified.

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## DETAILS

### 1. Persons Contacted

#### Northern States Power Company (NSP)

- \*L. R. Eliason, General Manager, Nuclear Plants
- \*G. D. Gore, System Engineer
- \*D. Mendele, Plant Superintendent, Engineering and Radiation Protection
- \*G. L. Miller, Superintendent, Operations Engineer
- \*E. L. Watzl, Plant Manager
- \*A. A. Hunstad, Staff Engineer
- J. A. Scobie, Quality Engineer
- G. A. Rolfson, QC Engineer
- \*K. Beadell, Superintendent, Quality Engineering

#### Paul-Munroe Hydraulics, Inc. (PM)

P. H. Creager, Field Service Manager

#### USNRC - Region III (RIII)

- \*M. M. Moser, Resident Inspector
- J. E. Hard, Senior Resident Inspector

\*Denotes those attending the management exit meeting on September 27, 1985 at the site.

### 2. Licensee Action on Previous Inspection Findings

- a. (Closed) Unresolved Item (282/85015-06; 306/85012-06): Certain actions for ITT-Grinnell (ITT-G) steam generator snubbers (SGSs) will be completed by NSP prior to installation. See Paragraph 6 for detail.
- b. (Closed) Unresolved Item (282/85015-07; 306/85012-07): Review of the NSP program for testing and refurbishment of Anchor-Holth (AH) SGSs. See Paragraphs 3, 4, and 5 for details.

### 3. Review of AH SGS Procedures and Records

#### a. Review of Test Procedure

PM Procedure PA 90873, "Functional Test Procedure, Anker-Holth 900 kip Snubbers (At Site)", Revision A, dated August 23, 1985 was forwarded to RIII for review on September 5, 1985. The inspector discussed his comments with NSP and PM personnel during a telephone conference on September 6, 1985, and had the following comments:

- Paragraph 3 - Fluid filling and air bleeding should not be performed prior to or during the as-found condition test.

- Paragraph 5 - The snubber should be set at the Hot Position Setting (HPS)  $\pm 1/16''$  during the breakaway test.
- Paragraph 7 - The snubber should be set at the HPS  $\pm 1/16''$  during the lockup velocity test.
- Paragraph 8 - The fluid leak locations and corresponding severity levels should be recorded.
- Paragraph 9 - The entire paragraph, "Velocity at Parallel Connection Valve Closure," should be deleted.

The inspector reviewed Revision B of the test procedure, dated August 23, 1985, at the site on September 26, 1985. All the above comments were observed to have been incorporated into the revised procedure except the comment concerning Paragraph 3. The RIII Resident Inspector, stated that he had witnessed some of the AH SGS as-found tests and observed that filling and air bleeding had not been performed.

b. Review of Test and QC Records

All the as-found tests met the acceptance criteria, with one exception that the bleed rate on one of the AH SGSs was out of specification by a small amount. The problem was resolved by machining the control valve bleed surface. All eight AH SGSs were disassembled after the as-found tests and all parts were observed to be in good physical condition, with one exception. A deficiency was documented in NSP Discrepancy Report No. 2173-E, dated September 21, 1985, stating "piston to rod sealing surfaces damaged". The problem was corrected prior to SGS assembly and installation. The inspector selected the following AH test records for review:

- SGS No. SN-12

The as-found test was conducted on September 13, 1985. The test after seal replacement was conducted on September 16, 1985.

- SGS No. SN-16

The as-found test was conducted on September 17, 1985. The test after seal replacement was conducted on September 23, 1985.

The tests were recorded on PM PA90874, "Functional Test Procedure Data Sheet", Revision 0, approved on September 3, 1985.

The inspector also reviewed NSP test surveillance QC records documented in Inspection No. 1610, dated September 12 through 20, 1985. The inspection plan was developed based on NSP QC Procedure P-1, "Physical Inspection, Generic", dated October 6, 1982.

The licensee stated that the test results will be evaluated by the responsible engineering organization prior to plant startup.

No violations or deviations were identified as a result of the above review.

#### 4. SGS Seal Material Tests

The inspector reviewed some of the Purchase Orders (POs) for the replacement seals used on the AH SGSs.

- PO No. D82753 M2, dated September 4, 1985, forwarded to Miller Sales Company, St. Paul, MN.
- PO No. M2A 68258, dated March 26, 1982, forwarded to E. S. Dygent Company, Edina, MN.
- PO No. A64915, dated February 23, 1982, forwarded to Gatke Corporation, Warsaw, IN.

The seal materials ordered in the above POs were based on the following original AH SGS drawing specifications which specified the following:

- O-ring: Viton MIL-R-25897
- Rod seal ring: Palmetto G-T
- T-ring: Fludro Elastometer MIL-R-83248
- None extrusion ring: Nylatron (Nylon 6)
- Backup ring: Nylatron BU

These SGS seals were purchased as off-the-shelf items from vendors not having approved QA programs. The NSP Administrative Work Instruction (AWI) No. 3AWI6.1.3, "Off-The-Shelf Procurement", Revision 1, dated May 18, 1982, states that, "Items may be procured as off-the-shelf items provided the following conditions are satisfied:

- The item is standardized and,
- The item has a satisfactory operational history and,
- The manufacturer has been producing the particular item of a long period of time."

The inspector noted that the SGS seal materials did not meet the above AWI definition; however, since the present AH SGS tests did not reveal seal deterioration problems that could affect the functionability of the snubbers, the NRC inspector had no further questions concerning the licensee's procurement control at this time. Prior to the conclusion of the inspection, NSP agreed to conduct material tests on the replacement seals, including chemical analysis, to determine that:

- a. The materials delivered were in accordance with PO specifications, and
- b. The service life expectancy for these materials was adequate.

This is an unresolved item pending review of the material test results. (282/85018-01; 306/85015-01).

5. AH SGS Cracked Bushing

As of September 27, 1985, six out of the eight total AH SGSs installed on Unit 2 were tested. One of the two spherical bushings was found to be cracked in four places transverse to the direction of load application on Snubber No. 1. This finding is documented in a NSP Liquid Penetrant Examination Report, dated September 26, 1985. The cracking was determined by NSP to be the result of tests that were conducted under the full load condition. The inspector indicated that it was his recommendation that the following corrective action items should be initiated by NSP:

- a. Replace both cracked and uncracked bushings on SGS No. 1.
- b. Conduct full load proof test for SGS No. 1 after bushing replacement (900 Kips compression and 450 Kips tension).

Followup of the above recommendations is planned. This is an unresolved item (282/85018-02; 306/85015-02).

The licensee stated its intent to conduct future SGS functional tests at a reduced load capacity. The inspector noted that he reserved comment pending review of the licensee's design engineering evaluation.

6. ITT-SGSs

In response to items delineated in RIII Inspection Report Nos. 50-282/85015; 50-306/85012, Paragraph 11.a(1), the licensee conducted breakaway and drag force tests with the ITT-G SGSs filled with GE SF 1154 silicone fluid. Tests showed that all SGS met the design acceptance criteria. The test results are documented in PM PA 90874, "Functional Test Procedure Data Sheet", Revision 0, approved on September 3, 1985. The inspector selected SGS Nos. SG-1 and SG-2 test records, dated September 14, 1985, for review, and had no adverse comments.

Subsequent to the above tests, two cracks were observed in the spherical bushing on SGS No. SG-4. A NSP Discrepancy Report No. 2179 was issued on September 24, 1985 documenting the defects.

During installation of the ITT-G SGSs, structure interferences were identified. These interferences resulted in the licensee not being able to replace four of the AH snubbers as originally planned.

The inspector stated that he will review NSP procurement and IIT-G design control measures in addition to the licensee's response to items delineated in RIII Inspection Report No. 282/85015; 306/85012, Paragraph 11.a(2) to (6). This is an unresolved item (282/85018-03; 306/85015-03).

7. Unresolved Items

An unresolved item is a matter about which more information is required in order to ascertain whether it is an acceptable item, an open item, a deviation, or a violation. Unresolved items disclosed during this inspection are discussed in Paragraphs 4, 5, and 6.

8. Exit Interview

The Region III inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on September 27, 1985. The inspector summarized the purpose and findings of the inspection. The licensee representatives acknowledged this information. 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 representatives did not identify any such documents/processes as proprietary.