

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/94012(DRSS); 50-306/94012(DRSS)

Docket Nos. 50-282; 50-306

Licenses No. DPR-42; DPR-60

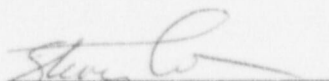
Licensee: Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

Facility Name: Prairie Island Nuclear Generating Plant

Inspection At: Prairie Island Site, Red Wing, MN

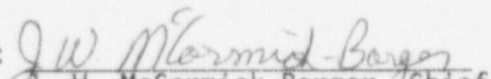
Inspection Conducted: July 11 through 15, 1994

Inspector:


Steven K. Orth
Radiation Specialist

8/1/94
Date

Approved By:


J. W. McCormick-Barger, Chief
Radiological Programs Section

8/3/94
Date

Inspection Summary

Inspection on July 11 through 15, 1994 (Report No. 50-282/94012(DRSS); 50-306/94012(DRSS))

Areas Inspected: Routine announced inspection of: (1) the chemistry program (Inspection Procedure (IP) 84750) including, organization, reactor systems water quality control programs, quality assurance/quality control program in the laboratory, and non-radiological confirmatory measurements, (2) the radiological environmental monitoring program (REMP) (IP 84750), and (3) review of previous inspection findings and licensee event reports (LERs) (IP 84750).

Results: Three non-cited violations were identified concerning the failure to calculate the offsite doses for July 1993 and the corresponding effluent monitor setpoint and for the failure to provide continuous gaseous effluent monitoring during September 1993. The latter event was attributed to poor communications between the chemistry and operations staffs (Section 3).

Chemistry non-radiological analytical ability continued to be very good (Section 5). Self assessment activities were good, but corrective actions concerning the REMP were not always effective (Section 9). Weaknesses were identified in the labeling and control of non-radiological standards and reagents (Section 5).

DETAILS

1. Persons Contacted

Northern States Power Company

- *M. Agen, Emergency Planning Senior Consultant
- *D. Gauger, Senior Plant Chemist
- *J. Hill, Quality Manager
- *A. Johnson, REMP Field Technician
- S. Lappegaard, Radiochemistry Supervisor
- *D. Larimer, Radiochemistry Supervisor
- J. Lucas, Radiation Protection Specialist
- M. Marotz, Radiation Protection Specialist
- A. McLeran, Radiation Protection Specialist
- *D. Schuelke, General Superintendent, Radiation Protection and Chemistry
- D. Stember, Health Physics Consulting Engineer
- *M. Wadley, Plant Manager

Nuclear Regulatory Commission

- *R. Bywater, Resident Inspector
- *C. Pederson, Chief, Reactor Support Programs Branch

The inspector also interviewed other licensee personnel during the course of the inspection.

*Indicates those present at the exit meeting on July 15, 1994.

2. Licensee Action on Previous Inspection Findings (IP 84750)

(Closed) Inspection Follow-up Item (50-282/91002-01; 50-306/91002-01):

The licensee was to sample the discharge canal at the outlet to the Mississippi River to demonstrate that adequate dilution of liquid effluents had occurred. The licensee performed a study in 1993 in which tritium (H-3) activity was monitored at selected points during a liquid effluent release. The study indicated that the licensee's calculated dilution factor was appropriate. The activity of H-3 at the release point was less than the calculated activity based on the activity of the discharged tanks and the dilution factor from the flow of recirculating water. This item is closed.

3. Licensee Event Reports (LERs) (IP 84750)

- a. (Closed) LER 50-282/93012: Failure to perform offsite dose and effluent monitor setpoint calculations due to personnel inadequacy and personnel error.

The licensee identified the failure to perform the required monthly offsite dose calculations and monitor setpoints for July 1993. After the omission was identified, the licensee completed

the calculations and determined that there was no effect on the monitor setpoints. The details of the event were documented in Inspection Reports No. 50-282/93014(DRP); 50-306/93014(DRP) and 50-282/93019(DRP); 50-306/93019(DRP).

The licensee implemented acceptable corrective actions to prevent recurrence. The calculations were proceduralized, and the respective procedures were entered into the licensee's surveillance tracking system to ensure that they were completed at the required frequencies. The licensee also evaluated other activities to ensure that all required surveillances and calculations were properly contained in the chemistry scheduler and determined that requirements were properly controlled.

The failure to perform offsite dose and effluent monitor setpoint calculations would be violations of Technical Specifications (TS) 4.17 and 3.9, respectively. However, because the violations were identified by the licensee, reported to the Commission as required, and adequate corrective actions were implemented, the violations meet the criteria contained in Section VII.B of 10 CFR Part 2, Appendix C and are not cited.

- b. (Closed) LER 50-282/93013: Gaseous effluent sampling requirements were not met during two days of September 1993.

The licensee identified that tritium activity was not sampled from September 8 through September 10, 1993 in effluents released from the Auxiliary Building. During a modification, the licensee isolated the Auxiliary Building normal ventilation. As there was no flow through the system, the silica gel sampler used for tritium sampling and analysis was removed from the normal sample train and was isolated from the building stack. When the normal Auxiliary Building ventilation was restored, the silica gel sampler was not returned to service. The chemistry and operations staff did not provide clear communications concerning the alterations to the monitor and alignment of the ventilation system. Additional details of the event were documented in Inspection Reports No. 50-282/93014(DRP); 50-306/93014(DRP) and 50-282/93019(DRP); 50-306/93019(DRP).

The licensee implemented acceptable corrective actions to correct the problem and prevent recurrence. The licensee conducted discussions to emphasize the importance of interdepartmental communications. Additionally, procedures were revised to ensure that the silica gel sampler was not isolated from ventilation trains during sampler modification or other non-flow conditions. The inspector emphasized the importance of effective communications between chemistry and other plant organizations during the NRC exit meeting (Section 10).

The failure to provide continuous tritium monitoring of gaseous effluents would be a violation of TS 4.17.B. However, because the

violation was identified by the licensee, reported to the Commission as required, and adequate corrective actions were implemented, the violation meets the criteria contained in Section VII.B of 10 CFR Part 2, Appendix C and is not cited.

No violations or deviations were identified.

4. Management Control and Organization (IP 84750)

The inspector reviewed the Chemistry Unit organization and discussed it with the licensee. The chemistry group has remained unchanged since the last chemistry inspection. The chemistry group had its full complement of radiation protection specialists (RPS); one RPS was still completing training and was expected to be fully qualified within the next several months. The chemistry unit continued to be very stable and experienced.

During January of 1993, the REMP was transferred from the corporate staff to site personnel. The site staff consisted of a supervisor and a field technician. The field technician participated in the corporate program and maintained continuity during the transfer. This person was expected to leave in the fall of 1994, but a suitable replacement had been trained to fill the vacancy. No problems were identified during the transfer of responsibilities.

No violations or deviations were identified.

5. Confirmatory Measurements (IP 84750)

The inspector submitted chemistry samples to the licensee for analyses as part of a program to evaluate the laboratory's capabilities to monitor non-radiological chemistry parameters in various plant systems with respect to regulatory and administrative requirements. The samples were analyzed by the licensee using routine methods and equipment. The licensee determined 12 analytes at 3 concentrations. Of the 36 analyses, 35 of the licensee's values were in agreement and 1 was in disagreement (Table 1). One of the licensee's agreements was a qualified agreement, which may have indicated a minor bias in the lithium analysis. The disagreement in the ammonia analysis was attributed to the initial dilution being beyond the instrument's calibration range. After an additional dilution, the analyte was in agreement.

The inspector observed the RPSs performing the analyses and an RPS obtaining primary and secondary chemistry samples and obtaining a waste tank sample prior to release. Generally, the RPSs demonstrated good technique and analytical practices, with the exception that RPSs did not always rinse re-used sample containers very thoroughly. The inspector discussed this observation and the potential for cross contamination of chemistry samples with licensee representatives.

The inspector identified some weaknesses in the control and labeling of reagents and standards in the laboratory. The inspector identified

reagents having expiration dates which were not in accordance with the licensee's procedures but which were of shorter frequencies than directed. One of the identified standards was beyond the expiration date affixed to the container. During the weekly, scheduled laboratory review of standards and reagents, an RPS had noted that the expiration date had passed and that it was incorrect, but the RPS had not taken actions to correct the problem. The inspector indicated to the licensee that these examples indicate a lack of attention to detail. The licensee also stored expired chemicals in the laboratory which were to be used for experimental purposes; however, these were not well controlled nor uniquely identified. The control of chemistry reagents and standards was discussed during the exit meeting (Section 10) and will be reviewed in future inspections as an inspection follow-up item (IFI Nos. 50-282/94012-01 and 50-306/94012-01).

No violations or deviations were identified.

6. Water Chemistry Control Program (IP 84750)

The licensee maintained administrative limits on water quality, as defined in Radiation Protection Implementing Procedures, which met the EPRI PWR Owners Group Guidelines. The inspector reviewed selected trends in water quality over the last year and found chemistry parameters to be well maintained. The inspector discussed initiatives in secondary water control and steam generator corrosion control with members of the chemistry and site engineering staffs. The staffs were knowledgeable of current industry standards and initiatives. Overall, the staffs appeared to be working together to mitigate steam generator corrosion problems.

The primary system's water quality remained very good. The reactor coolant system chloride and fluoride concentration were maintained below 3 and 1 parts per billion (ppb), respectively, with an EPRI normal value of 150 ppb for each. The secondary water chemistry was also maintained within the EPRI Owners Group Guidelines. The dissolved oxygen in feedwater averaged less than 2 ppb as compared to an EPRI action level of 5 ppb. The iron concentration was less than 4 ppb with an EPRI action level of 10 ppb. Steam generator blowdown chloride and sodium averaged less than 2 and 1 ppb, respectively. Chemistry parameters were entered into a computerized database, and appropriate levels of chemistry management and plant management reviewed the parameters and historical trends.

The inspector reviewed the boron concentration in the spent fuel pool, reactor water storage tank, boric acid storage tanks, and the accumulators. The boron concentrations were maintained within the TS limits.

No violations or deviations were identified.

7. Implementation of the QA/QC Program in the Laboratory (IP 84750)

Quality control of the laboratory instruments was very good. The inspector reviewed the licensee's preparation, maintenance, and review of QC performance trend charts and the licensee's performance in its interlaboratory comparison program, which were very good.

No violations or deviations were identified.

8. Radiological Environmental Monitoring Program (REMP) (IP 84750)

The inspector examined the REMP, including the 1992 and 1993 Annual Reports and toured several air sampling stations. The REMP was implemented in accordance with the Technical Specifications (TS) requirements, and the review of the 1991 and 1992 reports did not indicate any radiological release to the environment in excess of TS reporting limits.

The inspector observed an RPS performing routine air filter replacements. The licensee's air sampling stations were all operable and were within the calibration dates affixed to the samplers. The RPS properly verified the absence of air inleakage into the sampling train after installing each replacement air filter head. Several o-rings in the sampling train appeared cracked and warranted replacement. Although no inleakage was detected, these o-rings have a higher probability of failing in service.

No violations or deviations were identified.

9. Audits and Appraisals (IP 84750)

The inspector reviewed chemistry and REMP audits conducted in 1992 and 1993. The audits appeared to be technically sound and performed in sufficient depth. However, some 1992 audit observations regarding the corporate administration of the REMP program, specifically the preparation of annual reports, remained uncorrected until an additional finding was issued in 1993. The inspector reviewed the 1993 annual report and found those items to have been corrected; however, the resolution of the problems was not timely. The inspector commented on the importance of timely and effective corrective actions both with the auditing staff and with licensee management during the exit meeting (Section 10).

The inspector discussed the scope of the licensee's self assessment and corrective action program with members of the quality assurance staff. The licensee representatives indicated that more emphasis was being placed on performance based observations. Additionally, the licensee was attempting to lower the threshold for observations to ensure that all negative performance trends were identified.

No violations or deviations were identified.

10. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the inspection on July 15, 1994. During the exit interview, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed during the inspection. Licensee representatives did not identify any such documents or processes as proprietary. The following matters were specifically discussed by the inspector:

- a. the results of the non-radiological confirmatory measurements (Section 5);
- b. the chemistry quality control program and the licensee's problems in the control and labeling of laboratory standards and reagents (Section 5); and
- c. the licensee's self assessment program and necessity for timely corrective actions (Section 9).

Attachment: Table 1, Non-Radiological
Confirmatory Measurements Program Results

TABLE 1
 Non-radiological Confirmatory Measurements Results
 Prairie Island Nuclear Generating Station
 July 11-15, 1994

Analyte	Method ¹	Conc ²	Ratio ³	Acceptance ± 2RSD	Ranges ⁴ ± 3RSD	Result ⁵
		<u>ppb</u>				
Chloride	A	10	1.028	0.933-1.067	0.900-1.100	A
	B	20	1.027	0.919-1.081	0.887-1.113	A
	C	40	0.980	0.926-1.074	0.895-1.105	A
Sulfate	A	10	0.980	0.895-1.105	0.842-1.158	A
	B	20	0.962	0.895-1.105	0.868-1.132	A
	C	40	0.956	0.900-1.100	0.867-1.133	A
Fluoride	A	10	0.993	0.875-1.125	0.833-1.167	A
	B	20	0.998	0.875-1.125	0.833-1.167	A
	C	40	0.972	0.878-1.122	0.824-1.176	A
Iron	G	1000	1.032	0.904-1.096	0.854-1.146	A
	H	1600	1.000	0.903-1.097	0.855-1.145	A
	I	1600	1.972	0.903-1.097	0.855-1.145	A
Copper	G	1000	1.035	0.905-1.095	0.859-1.141	A
	H	1600	1.001	0.904-1.096	0.857-1.143	A
	I	1600	0.964	0.904-1.096	0.857-1.143	A
Nickel	G	1000	1.023	0.936-1.064	0.906-1.094	A
	H	1600	1.024	0.938-1.062	0.908-1.092	A
	I	1600	1.002	0.938-1.062	0.907-1.093	A
Sodium	J	80	1.066	0.863-1.137	0.784-1.216	A
	K	160	1.082	0.859-1.141	0.788-1.212	A
	L	80	1.046	0.862-1.138	0.789-1.211	A
Silica	S	15	1.076	0.906-1.094	0.859-1.141	A
	T	30	1.058	0.909-1.091	0.860-1.136	A
	U	60	1.079	0.907-1.093	0.857-1.143	A
Hydrazine	P	50	0.993	0.922-1.078	0.888-1.118	A
	Q	150	1.036	0.922-1.078	0.888-1.118	A
	R	225	1.043	0.922-1.078	0.888-1.118	A
Ammonia	M	500	0.965	0.902-1.098	0.856-1.147	A
	N	1500	0.993	0.902-1.098	0.856-1.147	A
	O	3000	1.232	0.902-1.098	0.856-1.147	D

Table 1 (cont.)

Analyte	Method ¹	Conc ²	Ratio ³	Acceptance ± 2RSD	Ranges ⁴ ± 3RSD	Result ⁵
		<u>ppb</u>				
Rerun	O	1000	1.029	0.902-1.098	0.856-1.147	A
Lithium	JJ	500	1.176	0.859-1.142	0.788-1.212	A+
	KK	125	1.051	0.859-1.142	0.788-1.212	A
	LL	250	1.005	0.859-1.142	0.788-1.212	A
		<u>ppm</u>				
Boron	D	1000	1.001	0.979-1.021	0.968-1.032	A
	E	3000	0.995	0.979-1.021	0.968-1.032	A
	F	5000	1.001	0.979-1.021	0.968-1.032	A

- Methods: Titr - Titration
IC - Ion Chromatography
Spec - Ultraviolet/Visible Spectrophotometry
AA/FU - Atomic Absorption Spectrophotometry (furnace)
- Conc: Approximate concentration analyzed.
- Ratio of Licensee mean value to NRC mean value.
- The standard deviation (SD) in the sixth and seventh columns represents the coefficient of variation obtained from averaging licensee data from the preceding cycle (Table 2.1 of NUREG/CR-5244). A result is considered to be in agreement if it falls within the ± 2 SD range; a qualified agreement if it lies outside ± 2 SD, but within ± 3 SD; and in disagreement if it is outside the ± 3 SD range.
- Result:
A = Agreement: Licensee value is within ± 2 SDs of the NRC mean value.
A+ = Qualified agreement, licensee is between ± 2 and ± 3 SDs of the NRC value.
D = Disagreement: licensee value is outside ± 3 SDs.