



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

MAY 27 1977

Docket No. 50-263

Northern States Power Company
ATTN: Mr. L. J. Wachter
Vice President
Power Production and
System Operation
414 Nicollett Mall
Minneapolis, Minnesota 55401

Gentlemen:

This refers to the inspection conducted by Messrs. C. C. Peck and D. J. Holody of this office on May 11-12, 1977, of activities at the Monticello Nuclear Generating Plant authorized by NRC Operating License No. DPR-22 and to the discussion of our findings with Messrs. Eliason, Nevinski and others of your staff at the conclusion of the inspection.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

During this inspection, certain of your activities appeared to be in noncompliance with NRC requirements, as described in the enclosed Appendix A.

Areas examined during this inspection concern a subject matter which is exempt from disclosure according to Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Consequently, our report of this inspection will not be placed in the Public Document Room.

During this inspection it was also concluded that some of the data reported by you on Material Status Reports (NRC-742) for the

Northern States Power
Company

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two semi-annual periods of 1975 appeared to contain significant errors as described in the enclosed report. It is our understanding based on discussions with your staff, that you will investigate these errors, advise us of your findings, and issue corrected NRC-742 forms, as appropriate.

This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office within twenty days of your receipt of this notice a written statement or explanation in reply, including for each item of noncompliance: (1) corrective action taken and the results achieved; (2) corrective action to be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

J. A. Hind, Chief
Safeguards Branch

Enclosures:

1. Appendix A, Notice of Violation
2. IE Inspection Report
No. 50-263/77-07 (Part
2.790(d) Information)

cc w/encls:

L. R. Eliason, Plant
Manager

Central Files

✓ Reproduction Unit NRC 20b

cc w/o encls:

PDR

Local PDR

ATTACHMENT CONTAINS
10 CFR 2.790 (d) INFORMATION

OFFICE ➤	RIII <i>glt</i>	RIII <i>glt</i>	RIII <i>glt</i>	RIII <i>mc</i>		
SURNAME ➤	Peck/bk <i>glt</i>	Holody <i>glt</i>	Hind <i>glt</i>	Choules <i>mc</i>		
DATE ➤	5/26/77	<i>glt</i>				

Appendix A

NOTICE OF VIOLATION

Northern States Power
Company

Docket No. 50-263

Based on the results of the NRC inspection conducted on May 11-12, 1977, it appears that certain of your activities were not conducted in full compliance with NRC regulations as indicated below. The item is an infraction.

Contrary to 10 CFR 70.51(d), no physical inventory was conducted between the completion of the last refueling in November, 1975 and May 12, 1977, a period of eighteen months.

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-263/77-07

Docket No. 50-263 License No. DPR-22 Safeguards Group IV

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

Facility Name: Monticello Nuclear Generating Plant

Inspection at: Monticello site, Monticello, MN

Inspection Conducted: May 11-12, 1977

Inspectors: *J. A. Hind*
C. C. Peck

5/26/77
(date signed)

J. A. Hind
D. J. Holody

5/26/77
(date signed)

Approved by: *J. A. Hind*
J. A. Hind, Chief
Safeguards Branch

5/26/77
(date signed)

Inspection Summary:

Inspection on May 11-12, 1977 (Report No. 50-263/77-07)

Areas Inspected: Nuclear material control and accounting inspection including organization; measurements; shipping and receiving; internal control; inventory; records and reports; and management of material control system. The inspection was routine, unannounced and involved 20 inspector-hours on site by two NRC inspectors.

Results: Of the areas inspected, one apparent item of noncompliance was identified pertaining to inventory (infraction - failure to conduct and record results of annual physical inventory - Paragraph 7).

S-F3-77-71

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8 Pages

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APPROVAL OF RIII

Part 2.790(d) Information

DETAILS

1. Persons Contacted

Principal Licensee Employees

*Mr. L. Eliason, Plant Manager
*Mr. W. Shamla, Plant Engineer - Technical
*Mr. D. Nevinski, Engineer - Nuclear
*Mr. M. Clarity, Superintendent - Plant Engineering
Mr. R. Vandell, Engineer

Other Personnel

*Mr. N. Choules, NRC - Principle Inspector, Monticello

*denotes those present at exit interview.

2. Licensee Action on Previous Inspection Findings

There were no items of noncompliance identified during the previous material control and accounting inspection on July 9-10, 1975. During that inspection, examination disclosed that the uranium depletion quantity reported by the licensee for the January-June 1974 period appeared in error, and the licensee was requested to investigate and submit a revised NRC-742 form if appropriate. Subsequently, the discrepancy was resolved and a revised report submitted.

3. Organization and Operation

The licensee's procedure describing the accountability system was inspected. The procedure is Section D.1 of the facility Operations Manual. The procedure was revised and approved June 3, 1975. The Plant Engineer, Technical, has overall responsibility for the procedure and the Nuclear Engineer, who reports to the Plant Engineer, has the responsibility for its implementation. The procedure was reviewed and approved by the plant Operations Committee which includes the Plant Manager. The procedure is subjected to a scheduled biennial review.

The accountability system described in the procedure is basically a computerized system supplemented by manual checks. The principal features of the system are described below:

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- a. Graphic Models - A planning board maintained by the Nuclear Engineer and consists of a layout of the core, fuel pool and new fuel vault on which all fuel items are represented by small magnetic squares, numbered to correspond to the fuel assembly numbers. The planning board is used to plan all fuel movements to be made. In addition, a tagboard is maintained on the refueling floor. This depicts current locations of all fuel in the plant. Tags are moved as fuel moves are completed. Core and fuel pool maps are also maintained.
- b. A Procedure Checklist is a computerized listing of core component and fuel movements to be made. It is prepared by the Nuclear Engineer using an off-line computer at company headquarters. All moves must be approved by signature by a member of the Operations Committee in advance. The fuel handling supervisor indicates completion of each move by signing in a space provided for that purpose. The completed checklist provides a permanent, official history of all fuel and component movements.
- c. A current, computerized inventory log is maintained which lists the location of all fuel assemblies and other core components in the plant. The file is updated as inventory items are moved. The log, which is called LOCFILE is available from the off-line computer on demand.
- d. A printout which provides the complete history of each fuel assembly onsite is available from the off-line computer. The printout, called FUELLOCHT, lists each location of each fuel assembly beginning with its arrival at the site, provides a chronological listing of each movements and provides a record of in-core exposure.
- e. After completion of all moves on the Computer Checklist during a refueling outage, a video tape scan of the core is made. The tape may be compared to the checklist and other records to confirm them, and is kept until completion of the subsequent core modification.

The licensee's material control and accounting procedures satisfy the requirements of 10 CFR 70.51(c).

4. Measurements

The on-line process computer provides a continuous printout record of thermal and electrical energy generated on an hourly, daily, and monthly basis. Thermal energy is recorded in terms of megawatt days. Accumulated core exposure for the cycle in terms of MWD/STU is also provided.

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The process computer also provides an isotopic inventory of each fuel assembly in the core. The computer uses the General Electric OD-12 program. The printout is used to determine uranium depletion and plutonium production quantities which are reported on semi-annual Material Status Reports (NRC-742 Forms).

Using the licensee's thermal energy data and average core exposure figures, the inspectors attempted to verify depletion and production quantities reported by the licensee for the four reporting periods from January 1975 through March 1977. A data comparison is shown as Attachment A. Agreement for the two most recent periods in 1976 is good, but the two periods in 1975 show wide discrepancies. The uranium, uranium-235, and plutonium quantities reported do not appear logical, relative to each other and relative to what would be expected for the thermal energy generated. In particular it was noted that the plutonium produced during the July-December 1975 period was reported as exceeding the uranium-235 depletion, an impossibility. The licensee acknowledged that the data appeared inconsistent and agreed to investigate the problem and submit revised NRC-742's, if appropriate.

Plutonium-241 decay in spent fuel has been calculated beginning in January 1976 and reported on NRC-742's. The decay appeared correctly calculated. However, much of the spent fuel has been out of the core for several years and decay prior to 1976 has not been reported. The licensee agreed to calculate the earlier decay and include it in the next Material Status Report.

5. Shipping and Receiving

All shipment and receipt activity during the period since the previous inspection in July 1975 occurred in late 1975, prior to the refueling for cycle 5. Records indicate the receipt of 269 new fuel bundles, all of which were subsequently loaded into the core with the exception of one bundle which was subsequently returned to the vendor.

In addition, 28 test rods were received from the vendor and three irradiated rods were shipped offsite. There have been no shipments of irradiated fuel assemblies from the facility.

Records of all shipments and receipts, both NRC-741 transfer forms and internal records, were found to be complete and correctly executed.

6. Storage and Internal Control

Records of all SNM in the facility were found to be current and accurate. There has been no fuel movement, either external or internal, since the major refueling in late 1975, except for some movement of fuel within the spent fuel pool.

The inspectors made random cross-checks of the accuracy of the models and records described previously in Paragraph 3, as follows:

- a. Procedure Checklist completed during last refueling against the Planning Board (50 assemblies).
- b. Location History file against the Planning Board (50 assemblies).

No discrepancies were found in making the above checks.

7. Inventory and Inventory Verification

An inspector verified the presence of 484 fuel assemblies, two whole rods, and twenty segmented test rods in the spent fuel pool by piece count. Serial numbers of twenty of the assemblies were confirmed using the licensee's TV monitor and no discrepancies with the licensee's records were noted.

The accuracy of the status board (tag board) of the core was checked against the current core diagram. There were no discrepancies. In addition, the inspector viewed a portion of the video tape of the core made after the last refueling. The serial numbers of eighty assemblies in the core were checked against the core diagram by this method.

Except for fuel, the only SNM in the licensee's possession consists of a plutonium-beryllium source containing 16 grams of plutonium and fission chambers containing nine grams of high-enriched uranium. The presence of these items was verified.

Although all visual and records checks made by the inspector indicated that current records accurately account for all special nuclear material, no physical inventory was conducted between the completion of the last refueling in November 1975 and the current inspection, a period of eighteen months. This is contrary to the requirement of 10 CFR 70.51(d) which states that a physical inventory shall be conducted at intervals not to exceed twelve months. Such a physical inventory would consist of an inventory of the visually accessible fuel in the spent fuel pool and other SNM-containing items, since the reactor has been sealed since the last refueling and would be exempt from inventory.

8. Records and Reports

All Material Transactions and Material Status Reports (Forms NRC-741 and 742) completed by the licensee since the previous inspection were examined. All appeared to have been executed and completed as required. Inventory quantities, were accurately reported on the Material Status Reports, and shipments and receipts were in agreement with the amounts reported on the Material Transaction Reports.

Attachment B is a material balance for the period since the previous inspection, January 1, 1975, through March 31, 1977. Other than depletion and production, there were no changes from March 31 to the date of the current inspection.

9. Exit Interview

At the conclusion of the inspection, the inspectors met with the licensee representatives denoted in paragraph 1 on May 12, 1977.

The probable inaccuracies in uranium depletion and plutonium production (described in Paragraph 4) were discussed. The licensee agreed to investigate the data and issue revised Material Status Reports if appropriate.

The licensee was asked to calculate plutonium-241 decay for the years prior to 1976 and include this decay quantity in the next Material Status Report (described in Paragraph 4).

The licensee representatives were advised that the failure to conduct a physical inventory since November 1975 constituted noncompliance (Paragraph 7). The licensee stated that procedural changes would be made that would prevent recurrence of this infraction.

Attachments:

Attachments A and B

MONTICELLO
URANIUM DEPLETION - PLUTONIUM PRODUCTION

<u>Period</u>	<u>Reported</u>	<u>NRC Estimate</u>	<u>Diff. (%)</u>
1/1/75 - 6/30/75			
U	254,833	317,400	+ 24.6
U-235	152,998	173,099	+ 13.1
Pu	75,099	78,596	+ 4.6
7/1/75 - 12/31/75			
U	187,242	212,067	+ 13.2
U-235	117,775	120,771	+ 2.5
Pu	129,591	58,486	- 54.9
1/1/76 - 6/30/76			
U	379,624	380,527	+ 0.2
U-235	228,205	220,524	- 3.4
Pu	116,762	109,397	- 6.3
7/1/76 - 3/31/77			
U	554,519	565,423	+ 2.0
U-235	300,545	312,044	+ 3.8
Pu	142,431	144,312	+ 1.3

ATTACHMENT A

Part 2.790(d) Information

MONTICELLO (YND)

Material Balance as of
March 31, 1977

Units: Grams

	<u>Uranium</u>	<u>Uranium-235</u>	<u>Plutonium</u>
Inventory, 1/1/75	131,397,277(2)	1,968,490(2)	607,748(1)
Additions			
Production	-----	-----	463,883
Receipts	49,471,806	1,091,892	-----
Removals			
Fission	1,376,218	799,523	-----
Shipments	187,639	4,143	-----
Decay	-----	-----	3,379
Inventory, 3/31/77	179,305,226(2)	2,256,716(2)	1,068,252(1)

(1) Includes 16 grams in sealed Pu-Be source

(2) Includes 9 grams U and 8 grams U-235 in fission chambers.

Possession Limits of DPR-22: 3200 kilograms U-235
16 grams of Pu as sealed source
50 grams of U-235 as fission chambers

ATTACHMENT B