

*DK Central  
file*

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

AUG 1 1975

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

Docket No. 50-263

Gentlemen:

This refers to the inspection conducted by Mr. C. C. Peck of this office on July 9-10, 1975, of activities at Monticello Nuclear Generating Plant authorized by NRC Operating License No. DPR-22 and to the discussion of our findings with Messrs. C. E. Larson and D. E. Nevinski of your staff at the conclusion of the inspection.

This inspection consisted of an examination of the Monticello fuel accountability procedures, internal special nuclear material control records, material transaction and status reports, and inventory records.

No items of noncompliance were found within the scope of this inspection. It is our understanding that an apparent error in the quantity of uranium depletion reported for the period July - December, 1974 will be corrected by an appropriate adjustment in the Material Status Report for the January - June, 1975 period.

Areas examined during the 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 No. 050-263/75-11 will not be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely yours,

J. A. Hind, Chief  
Materials and Plant  
Protection Branch

bcc w/o Rpt:  
PDR  
Local PDR

*JAH*

UNITED STATES NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Operations Inspection

IE Inspection Report No. 050-263/75-11

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

Monticello Nuclear Generating Plant  
Monticello, Minnesota

License No. DPR-22  
Category: C  
Priority: 1

Type of License: BWR, 545 MWe

Type of Inspection: Routine, Announced

Dates of Inspection: July 9 - 10, 1975

Principal Inspector: *J. A. Hind*  
*for* C. C. Peck

8/1/75  
(Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: *J. A. Hind*  
J. A. Hind  
Materials and Plant  
Protection Branch

8/1/75  
(Date)

Attachment:  
Findings (10 CFR 2.790 Information)

# 10 CFR 2.790 INFORMATION

## SUMMARY OF FINDINGS

### Inspection Summary

Inspection on July 9-10, (75-11): Inspection of accountability requirements of 10 CFR Part 70 since previous accountability inspection of July 12, 1973. Special nuclear material accountability procedures, internal control records, inventory records, and completed AEC-741 and AEC-742 documents examined for completeness and accuracy. Visual observation of special nuclear material in the spent fuel pool and inspection of the core map to verify records. A calculation of uranium depletion and plutonium production to confirm quantities reported by the licensee.

### Enforcement Items

None.

### Licensee Action on Previously Identified Enforcement Items

No previous enforcement items.

### Other Significant Items

#### A. Systems and Components

Not applicable.

#### B. Facility Items (Plans and Procedures)

Not applicable.

#### C. Managerial Items

Not applicable.

#### D. Noncompliance Identified and Corrected by Licensee

None.

#### E. Deviations

None.

#### F. Status of Previously Reported Unresolved Items

No previous unresolved items.

IE:III Control No. 36  
Copy No. 1 of 3

## 10 CFR 2.790 INFORMATION

### Management Interview

A closeout meeting was held July 10 by C. C. Peck with C. E. Larson, Plant Superintendent, and D. E. Nevinski, Nuclear Engineer. The licensee representatives were informed that the inspection had disclosed no items of noncompliance with the requirements of 10 CFR Part 70.

An apparent error of significant magnitude in the quantity of uranium depletion reported by the licensee for the period July - December, 1974 was discussed. The licensee agreed with the inspector's estimate that the reported amount appeared high by about 50%. The licensee stated that he would include an appropriate adjustment in the AEC-742 Material Status Report for the January - June 1975 period.

REPORT DETAILSPersons Contacted

C. E. Larson, Plant Superintendent  
D. E. Nevinski, Nuclear Engineer

General Status of Facility

The Monticello Nuclear Generating Plant has a boiling water reactor designed by General Electric; the reactor has design power of 1670 MWt and 545 MWe.

License No. DPR-22 was issued to the facility September 8, 1970 and full power was achieved January 19, 1971. The reactor has undergone three refuelings since startup, and fuel Cycle 4 was in progress at the time of the inspection. Many fuel assemblies containing leaking fuel rods have been removed from the core during refuelings and replaced by new assemblies. In addition to 484 assemblies in the core there were 216 assemblies in the spent fuel pool including many leakers. No spent fuel has yet been shipped to offsite storage or fuel reprocessing sites.

Fuel Accountability Procedures

The licensee's accountability procedures are Section D.1 of his Operations Manual. The current approved procedures were revised and approved June 3, 1975. All accountability information necessary to comply with 10 CFR Part 70 is contained in the procedures. The principle revisions to the procedures since the inspection in 1973 are changes to reflect increased dependence on computerized rather than manual record keeping.

Features of accountability system as described in the procedures are:

1. A planning board, formerly called a tagboard, which serves as a master record for all current fuel locations both in the core and in the spent fuel pool. This board is also used in the planning of proposed fuel movements.
2. A location history form on which was recorded the movements of each fuel assembly from time of receipt, was replaced in 1974 by computerized printouts which contain the same information.
3. Basic manual internal records are: (1) a procedure checklist on which all pre-planned fuel movements are listed and checked off as executed by the operations group, (2) a core component transfer log sheet on which all fuel movements are logged by an accountability representative. The two forms must agree or a reconciliation must be made after every series of fuel movements.

## 10 CFR 2.790 INFORMATION

4. Computerized internal records include a program that provides the current isotopic content of each fuel assembly in the core as well as core totals. The on-site process computer supplies this information; the computer program is a General Electric proprietary program.
5. An underwater TV system is used to scan the core and the spent fuel pool after each refueling. The system provides a tape record of fuel identification, location, and orientation.

### Inventory and Inventory Verification

The licensee's most recent physical inventory was taken in January 1974, at the completion of refueling at the end of cycle III. Records were updated at that time.

The core diagram, fuel pool diagram, planning board, and tag board in the loading area were all cross-checked and no discrepancies found. Fuel movements recorded on the computerized printout location history were checked for about 10% or about 50 of the assemblies in the core. There were not discrepancies.

A visual observation and piece count of the 216 fuel bundles in the spent fuel pool were made. The count and locations of the fuel matched the pool diagram exactly. Despite the fact that the water was exceptionally clear and underwater lighting good, it was not possible to verify any of the assembly numbers with binoculars. The licensee uses the underwater TV camera to make such identifications. Although the licensee stated that a taped record of the fuel pool was available, it was not examined.

In addition to fuel, the licensee possesses a single Pu Be source containing 16 grams of plutonium. Its location in a 55-gallon drum inside a storage cage was verified.

### Uranium Depletion and Plutonium Production

Thermal power data in megawatt hours are typed out hourly by the process computer. Each day's total is also provided automatically as well as a monthly compilation. Control room instruments indicate the power levels continuously.

The process computer is programmed to provide fuel burnup data in terms of MWD/St and isotopic data for each fuel bundle in the core and for the core total. The program is on Demand 12 (OD12), a General Electric - supplied code. The computer updates the information periodically, monthly. After refuelings, the information on the positions of new fuel in the core and any fuel location changes is input to the computer. The program apparently combines gross thermal power data with flux distribution data for each core location to compute the burnup and isotopic data for each fuel bundle.

## 10 CFR 2.790 INFORMATION

As part of the inspection, manual calculations of uranium depletion and plutonium production were made by the inspector for comparison with the corresponding quantities reported by the licensee on his semiannual AEC-742 reports. Comparisons were made for four periods from January 1973 through December 1974. Calculations became complex because there were three levels of fuel exposure in the core during the 1974 periods and it was necessary to make separate calculations for each of these, then combine the totals. However, the totals were in reasonable agreement with the licensee's quantities with one exception. The uranium depletion total reported by the licensee for the period January to June 1974 appeared high by about 50%. A review of the data by the nuclear engineer confirmed this probable error. The error apparently was not caused by the computer, but in the manual calculations that are necessary to determine the differences between periods. The licensee agreed to adjust his AEC-742 report for the period January - June 1975 to compensate for the apparent error in the previous periods.

Attachment A is a comparison of quantities reported by the licensee with those calculated by the inspector.

Attachments:

Attachments A and B

## 10 CFR 2.790 INFORMATION

## MONTICELLO

URANIUM DEPLETION — PLUTONIUM PRODUCTION  
REPORTED ON AEC-742 vs CALCULATED

<u>Period</u>	<u>Thermal Power (MWD)</u>	<u>AEC-742 (Grams)</u>	<u>Calculated (Grams)</u>	<u>Difference (%)</u>
1/73-6/73	152,962			
Uranium		248,872	221,324	-11.1
Uranium-235		119,846	124,454	+ 3.7
Plutonium		75,211	68,233	- 9.3
7/73-12/73	259,473			
Uranium		356,250	351,538	- 1.3
Uranium-235		171,933	182,674	+ 6.2
Plutonium		86,252	79,253	- 8.1
1/74-6/74	145,058			
Uranium		291,608*	200,719	-31.2
Uranium-235		98,114	107,130	+ 9.2
Plutonium		43,762	42,314	- 3.3
7/74-12/74	199,677			
Uranium		328,820	295,872	-10.0
Uranium-235		172,984	170,740	- 1.3
Plutonium		82,810	85,820	+ 3.6
Overall				
Uranium		1,225,550	1,069,453	-12.7
Uranium-235		562,877	584,998	+ 3.9
Plutonium		288,035	275,620	- 4.3

\*Probably in Error.

Attachment A



# 10 CFR 2.790 INFORMATION

MONTICELLO (RIS:YND)  
PRIVATELY OWNED SNM  
MATERIAL BALANCE  
AS OF DECEMBER 31, 1975

	Units : Grams		
	<u>Uranium</u>	<u>Uranium-235</u>	<u>Plutonium</u>
Beginning Inventory, 1/1/73	96,422,622	1,601,757	319,713*
Additions			
Production	-	-	288,035
YLJ(GE to YND)	36,107,516	929,968	-
ZGR(GE) to YND	167,302	4,343	-
Removals			
Fission and Transmutation	1,225,550	562,877	-
YND to YLJ(GE)	184,116	4,844	-
Ending Inventory, 12/31/74	131,287,774	1,968,347	607,748*

\*Includes 16g in sealed Pu Be Source  
Possession limits of DPR-22: 2300 Kilograms uranium -235  
16 grams of plutonium as sealed source

Attachment B