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SEP 15 1975

Docket No. 50-263

Northern States Power Company
ATTN: Mr. L. O. Mayer
Director of Nuclear Support
Services
414 Nicollet Mall
Minneapolis, Minnesota 55401

Gentlemen:

The Commission has issued the enclosed Amendment No. 12 to Provisional Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. This amendment includes Change No. 20 to the Technical Specifications and is in response to your request dated August 15, 1975.

This amendment requires operability and surveillance of hydraulic snubbers required to protect the primary coolant system and all other safety related systems and components.

Copies of the related Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Reactor Licensing

Enclosures:

1. Amendment No. 12
w/Change No. 20
2. Safety Evaluation
3. Federal Register Notice

cc w/encls:

See next page

*Notified LO Mayer NSP by phone
on 9-15-75. P.W.O.*

OFFICE →	RL:ORB-2	RL:ORB-2	OELD	RL:ORB-2		
x7403	<i>RMDiggs</i>	<i>BBuckley:esp</i>	<i>F.S. Gwary</i>	DLZiemann		
SURNAME →						
DATE →	9/8/75	9/15/75	9/15/75	9/15/75		

SEP 15 1975

cc w/enclosures:

Arthur Renquist, Esquire
Vice President - Law
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Gerald Charnoff
Shaw, Pittman, Potts &
Trowbridge
910 - 17th Street, N. W.
Washington, D. C. 20006

Howard J. Vogel, Esquire
Legal Counsel
2750 Dean Parkway
Minneapolis, Minnesota 55416

Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

Mr. Daniel L. Ficker
Assistant City Attorney
638 City Hall
St. Paul, Minnesota 55102

Mr. Kenneth Dzigan
Environmental Planning
Consultant
St. Paul City Planning
421 Wabasha Street
St. Paul, Minnesota 55102

Sandra S. Gardebring
Special Assistant Attorney General
Counsel for Minnesota Pollution
Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

Anthony Z. Roisman, Esquire
Berlin, Roisman and Kessler
1712 N Street, N. W.
Washington, D. C. 20036

The Environmental Conservation
Library
Minneapolis Public Library
300 Nicollet Mall
Minneapolis, Minnesota 55401

Mr. D. S. Douglas, Auditor
Wright County Board of Commissioners
Buffalo, Minnesota 55313

cc w/enclosures and cy of NSPCo's
filing dtd. 8/15/75:
Warren R. Lawson, M. D.
Secretary & Executive Officer
State Department of Health
University Campus
Minneapolis, Minnesota 55440

Mr. Gary Williams
Federal Activities Branch
Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING STATION

AMENDMENT TO PROVISIONAL OPERATING LICENSE

Amendment No. 12
License No. DPR-22

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Northern States Power Company (the licensee) dated August 15, 1975, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations; and
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.
2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 3.B of License No. DPR-22 is hereby amended to read as follows:

"B. Technical Specifications

The Technical Specifications contained in Appendix A as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 20."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Reactor Licensing

Attachment:
Change No. 20 to the
Technical Specifications

Date of Issuance:

SEP 15 1975

ATTACHMENT TO LICENSE AMENDMENT NO. 12
CHANGE NO. 20 TO THE TECHNICAL SPECIFICATIONS
PROVISIONAL OPERATING LICENSE NO. DPR-22
DOCKET NO. 50-263

Replace the existing pages of the Technical Specifications listed below with attached revised pages bearing the same numbers, except as otherwise noted. Changes on these pages are shown by marginal lines.

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	121
	121A - Add
	121B Table 3.6.1, page 1 of 4 - Add
	121C Table 3.6.1, page 2 of 4 - Add
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3.0 LIMITING CONDITIONS FOR OPERATION

H. Hydraulic Snubbers

1. During all modes of operation, except Cold Shutdown and Refueling Shutdown, all hydraulic snubbers listed in Table 3.6.1 shall be operable except as noted in 3.6.H.2 through 3.6.H.4 below.
2. From and after the time that a hydraulic snubber is determined to be inoperable, continued reactor operation is permissible only during the succeeding 72 hours unless the snubber is sooner made operable.
3. If the requirements of 3.6.H.1 and 3.6.H.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 36 hours.
4. If a hydraulic snubber listed in Table 3.6.1 is determined to be inoperable while the reactor is in the shutdown or refueling mode, the snubber shall be made operable prior to reactor startup.

4.0 SURVEILLANCE REQUIREMENTS

3. The diffuser to lower plenum differential pressure reading on an individual jet pump is 10% or more, less than the mean of all jet pump differential pressures.

H. Hydraulic Snubbers

The following surveillance requirements apply to all hydraulic snubbers listed in Table 3.6.1:

1. All hydraulic snubbers whose seal material has been demonstrated by operating experience, lab testing or analysis to be compatible with the operating environment shall be visually inspected to verify their operability in accordance with the following schedule:

Number of Snubbers Found Inoperable During Inspection or During Inspection Interval	Next Required Inspection Interval
0	18 months \pm 25%
1	12 months \pm 25%
2	6 months \pm 25%
3,4	124 days \pm 25%
5,6,7	62 days \pm 25%
≥ 8	31 days \pm 25%

The required inspection interval shall not be lengthened more than one step at a time.

3.0 LIMITING CONDITIONS FOR OPERATION

20

5. Snubbers may be added to safety related systems without prior License Amendment to Table 3.6.1 provided that safety evaluations, documentation and reporting are provided in accordance with 10CFR 50.59 and that a revision to Table 3.6.1 is included with a subsequent License Amendment request.

4.0 SURVEILLANCE REQUIREMENTS

- Snubbers may be categorized in two groups, "accessible" or "inaccessible" based on their accessibility for inspection during reactor operation. These two groups may be inspected independently according to the above schedule.
2. All hydraulic snubbers whose seal materials have not been demonstrated to be compatible with the operating environment shall be visually inspected for operability every 31 days.
 3. The initial inspection shall be performed within 6 months from the date of issuance of these specifications. For the purpose of entering the schedule in Specification 4.6.H.1 it shall be assumed that the facility had been on a 12-month inspection interval.
 4. Once each refueling cycle, a representative sample of 10 snubbers or approximately 10% of the snubbers, whichever is less, shall be functionally tested for operability including verification of proper piston movement, lock up and bleed. For each unit and subsequent unit found inoperable, an additional 10% or ten snubbers shall be so tested until no more failures are found or all units have been tested.
 5. Once each refueling cycle at least two representative snubbers from a relatively severe environment shall be completely disassembled and examined for damage and abnormal seal degradation.

TABLE 3.6.1 (Page 1 of 4)

Safety Related Hydraulic SnubbersAccessible or
Inaccessible
(A or I)

Snubber No.	Location - System - Elevation			
SS-1	Drywell - Main Steam	953'	Az 279°	I
SS-2	Drywell - Main Steam	953'	Az 81°	I
SS-3	Drywell - Main Steam	950'	Az 212°	I
SS-4	Drywell - Main Steam	950'	Az 148°	I
SS-7	Drywell - Main Steam	953'	Az 240°	I
SS-8	Drywell - Main Steam	953'	Az 120°	I
SS-11	Drywell - Feedwater	952'	Az 302°	I
SS-12	Drywell - Feedwater	952'	Az 58°	I
SS-13	Drywell - Feedwater	952'	Az 258°	I
SS-14	Drywell - Feedwater	952'	Az 96°	I
SS-17A	Drywell - RHR	964'	Az 72°	I
SS-17B	Drywell - RHR	964'	Az 72°	I
SS-18A	Drywell - RHR	964'	Az 288°	I
SS-18B	Drywell - RHR	964'	Az 288°	I
SS-19	Drywell - RHR	964'	Az 341°	I
SS-20	Drywell - RHR	964'	Az 19°	I
SS-1AR	Drywell - Recirculation	922'	Az 315°	I
SS-1BR	Drywell - Recirculation	922'	Az 135°	I
SS-2AR	Drywell - Recirculation	927'	Az 302°	I
SS-2BR	Drywell - Recirculation	927'	Az 122°	I
SS-3AR	Drywell - Recirculation	927'	Az 328°	I
SS-3BR	Drywell - Recirculation	927'	Az 148°	I
SS-4AR(a)	Drywell - Recirculation	934'	Az 302°	I
SS-4AR(b)	Drywell - Recirculation	934'	Az 323°	I
SS-4BR(a)	Drywell - Recirculation	934'	Az 120°	I
SS-4BR(b)	Drywell - Recirculation	934'	Az 149°	I
SS-5AR	Drywell - Recirculation	941'	Az 315°	I
SS-5BR	Drywell - Recirculation	941'	Az 135°	I
SS-6AR	Drywell - Recirculation	953'	Az 261°	I
SS-6BR	Drywell - Recirculation	953'	Az 99°	I

TABLE 3.6.1 (Page 2 of 4)

Safety Related Hydraulic SnubbersAccessible or
Inaccessible
(A or I)

<u>Snubber No.</u>	<u>Location - System - Elevation</u>			
SS-7AR	Drywell - Recirculation	953'	Az 323°	I
SS-7BR	Drywell - Recirculation	953'	Az 32°	I
SS-8AR	Drywell - Recirculation	927'	Az 270°	I
SS-8BR	Drywell - Recirculation	927'	Az 90°	I
PS1-H2	Drywell - Main Steam	953'	Az 71°	I
PS1-H3	Drywell - Main Steam	950'	Az 148°	I
PS2-H2	Drywell - Main Steam	950'	Az 120°	I
PS3-H2	Drywell - Main Steam	950'	Az 240°	I
PS4-H3	Drywell - Main Steam	950'	Az 212°	I
RV24-H3	Drywell - Safety Relief	950'	Az 110°	I
RV24-H4	Drywell - Safety Relief	935'	Az 100°	I
RV24-H4A	Drywell - Safety Relief	935'	Az 100°	I
RV24-H5	Drywell - Safety Relief	935'	Az 110°	I
RV24A-H4A	Drywell - Safety Relief	947'	Az 48°	I
RV24A-H7	Drywell - Safety Relief	953'	Az 115°	I
RV24A-H8	Drywell - Safety Relief	939'	Az 32°	I
RV25-H1	Drywell - Safety Relief	953'	Az 180°	I
RV25-H1A	Drywell - Safety Relief	953'	Az 180°	I
RV25-H2	Drywell - Safety Relief	948'	Az 190°	I
RV25-H2A	Drywell - Safety Relief	948'	Az 190°	I
RV25-H3	Drywell - Safety Relief	934'	Az 180°	I
RV25A-H2	Drywell - Safety Relief	945'	Az 120°	I
RV25A-H2A	Drywell - Safety Relief	945'	Az 120°	I
RV25A-H7	Drywell - Safety Relief	953'	Az 135°	I
RV26-H1	Drywell - Safety Relief	953'	Az 200°	I
RV26-H1A	Drywell - Safety Relief	953'	Az 200°	I
RV26-H2	Drywell - Safety Relief	947'	Az 200°	I
RV26-H2A	Drywell - Safety Relief	947'	Az 200°	I
RV26A-H2	Drywell - Safety Relief	940'	Az 250°	I
RV26A-H2A	Drywell - Safety Relief	935'	Az 250°	I

TABLE 3.6.1 (Page 3 of 4)

Safety Related Hydraulic Snubbers

<u>Snubber No.</u>	<u>Location - System - Elevation</u>	<u>Accessible or Inaccessible (A or I)</u>
RV27-H1	Drywell - Safety Relief 950' Az 320°	I
RV27-H1A	Drywell - Safety Relief 950' Az 230°	I
RV27-H5	Drywell - Safety Relief 945' Az 270°	I
RV27-H6	Drywell - Safety Relief 945' Az 270°	I
RV27A-H2A	Drywell - Safety Relief 953' Az 290°	I
RV27A-H3	Drywell - Safety Relief 953' Az 290°	I
RV27A-H9	Drywell - Safety Relief 938' Az 290°	I
SS-21	Torus Floor Level - RHR South Wall	A
SS-22	Torus Floor Level - RHR South Wall	A
SS-23	"B" RHR Room - RHR Floor Level	A
SS-24	"A" RHR Room - RHR Floor Level	A
SS-25	RHR Discharge - RHR Southeast wall just below torus catwalk	A
SS-26	"B" RHR Room - Core Spray Floor Level	A
SS-27	"B" RHR Room - Core Spray Floor Level	A
SS-28A	"A" RHR Room - Core Spray Floor Level	A
SS-28B	"A" RHR Room - Core Spray Floor Level	A
SS-29	Overhead, by N ₂ Analyzer - RHR 954'	A
SS-30	Overhead, by N ₂ Analyzer - RHR 954'	A
SS-31	Torus catwalk - RHR Discharge ---	A
SS-32A	"A" RHR Room; Behind Heat Exchanger - RHR 916'	A
SS-32B	"A" RHR Room; Behind Heat Exchanger - RHR 916'	A
SS-33	Above Torus on side sloping towards Drywell - RHR Discharge ---	A
SS-34	Above Torus on side sloping towards Drywell - RHR Discharge ---	A
SS-35	HPCI Room - HPCI Pump Discharge On North Wall, 912'	A
SS-36A	HPCI Room - HPCI Turbine Exhaust Floor Level	A
SS-36B	HPCI Room - HPCI Turbine Exhaust Floor Level	A

TABLE 3.6.1 (Page 4 of 4)

Safety Related Hydraulic Snubbers

<u>Snubber No.</u>	<u>Location - System - Elevation</u>		<u>Accessible or Inaccessible (A or I)</u>
SS-37	HPCI Room - HPCI Turbine Exhaust	West Wall, 905'	A
SS-38A	RCIC Room - RCIC Turbine Exhaust	West Wall, 906'	A
SS-38B	RCIC Room - RCIC Turbine Exhaust	West Wall, 906'	A
SS-40	Main Steam Chase - HPCI Steam supply	---	I
SS-41	Above Torus Catwalk - Core Spray Discharge	927'	A
SS-42	Above Torus Ring Header - HPCI Steam Exhaust	North West Wall, 906'	A

Bases Continued 3.6 and 4.6:

A nozzle-riser system failure could also generate the coincident failure of a jet pump body; however, the converse is not true. The lack of any substantial stress in the jet pump body makes failure impossible without an initial nozzle-riser system failure.

H. Hydraulic Snubbers

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping as a result of a seismic or other event initiating dynamic loads. It is therefore required that all hydraulic snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the snubber protection is required only during relatively low probability events, a period of 72 hours is allowed for repairs or replacements. In case a shutdown is required, the allowance of 36 hours to reach a cold shutdown condition will permit an orderly shutdown consistent with standard operating procedures. Since plant startup should not commence with knowingly defective safety related equipment, Specification 3.6.H.4 prohibits startup with inoperable snubbers.

All safety related hydraulic snubbers are visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate hydraulic fluid level and proper attachment of snubber to piping and structures.

The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

Experience at operating facilities has shown that the required surveillance program should assure an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment.

Snubbers containing seal material which has not been demonstrated by operating experience, lab tests or analysis to be compatible with the operating environment should be inspected more frequently (every month) until material compatibility is confirmed or an appropriate changeout is completed.

H. Hydraulic Snubbers (contd.)

Examination of defective snubbers at reactor facilities and material tests performed at several laboratories has shown that millable gum polyurethane deteriorates rapidly under the temperature and moisture conditions present in many snubber locations. Although molded polyurethane exhibits greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. Lab tests and in-plant experience indicate that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

To further increase the assurance of snubber reliability, functional tests should be performed once each refueling cycle. These tests will include stroking of the snubbers to verify proper piston movement, lock-up and bleed. Ten percent or ten snubbers, whichever is less, represents an adequate sample for such tests. Observed failures on these samples should require testing of additional units. Snubbers in high radiation areas or those especially difficult to remove need not be selected for functional tests provided operability was previously verified. To complement the visual external inspections, disassembly and internal examination for component damage and abnormal seal degradation should be performed. The examination of two units, each refueling cycle, selected from relatively severe environments should adequately serve this purpose. Any observed wear, breakdown or deterioration will provide a basis for additional inspections.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 12 TO LICENSE NO. DPR-22

(CHANGE NO. 20 TO THE TECHNICAL SPECIFICATIONS)

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

INTRODUCTION

During the summer of 1973, inspections at two reactor facilities revealed a high incidence of inoperable hydraulic shock suppressors (snubbers) manufactured by Bergen Paterson Pipe Support Corporation. As a result of those findings, the Office of Inspection and Enforcement required each operating reactor licensee to immediately inspect all Bergen Paterson snubbers utilized on safety systems and to reinspect them 45 to 90 days after the initial inspection. Snubbers supplied by other manufacturers were to be inspected on a lower priority basis.

Since a long term solution to eliminate recurring failures was not immediately available, the Division of Reactor Licensing sent a letter dated October 2, 1973, to operating facilities (including Monticello) utilizing Bergen Paterson snubbers specifying continuing surveillance requirements and requesting a submittal within one year of proposed Technical Specifications for a snubber surveillance program. On August 15, 1975, Northern States Power Company proposed Technical Specifications for hydraulic snubbers at the Monticello reactor. During our review of the proposed change, we found that certain modifications were necessary. These modifications were discussed with Northern States and have been incorporated into the proposed Technical Specifications.

EVALUATION

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient while allowing normal thermal movement during startup and shutdown.

The consequence of an inoperable snubber is an increase in the probability of structural damage to piping resulting from a seismic or other postulated event which initiates dynamic loads. It is, therefore, necessary that snubbers installed to protect safety system piping be operable during reactor operation and be inspected at appropriate intervals to assure their operability.

Examination of defective snubbers at reactor facilities has shown that the high incidence of failures observed in the summer of 1973 was caused by severe degradation of seal materials and subsequent leakage of the hydraulic fluid. The basic seal materials used in Bergen Paterson snubbers were two types of polyurethane; a millable gum polyester type containing plasticizers and an unadulterated molded type. Material tests performed at several laboratories (Reference 1) established that the millable gum polyurethane deteriorated rapidly under the temperature and moisture conditions present in many snubber locations. Although the molded polyurethane exhibited greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. The investigation indicated that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

An extensive seal replacement program has been carried out at many reactor facilities. Experience with ethylene propylene seals has been very good with no serious degradation reported thus far. Although the seal replacement program has significantly reduced the incidence of snubber failures, some failures continue to occur. These failures have generally been attributed to faulty snubber assembly and installation, loose fittings and connections and excessive pipe vibrations. The failures have been observed in both PWRs and BWRs and have not been limited to units manufactured by Bergen Paterson. Because of the continued incidence of snubber failures, we have concluded that snubber operability and surveillance requirements should be incorporated into the Technical Specifications. We have further concluded that these requirements should be applied to all safety related hydraulic snubbers, regardless of manufacturer, in all light water cooled reactor facilities.

We have developed the attached Technical Specifications and Bases to provide additional assurance of satisfactory snubbers performance and reliability. The specifications require that snubbers be operable during

(1) Report H. R. Erickson, Bergen Paterson to K. R. Goller, NRC, October 7, 1974, Subject: Hydraulic Shock Sway Arrestors

reactor operation and prior to startup. Because snubber protection is required only during relatively low probability events, a period of 72 hours is allowed for repair or replacement of defective units before the reactor must be shut down.

An inspection program is specified to provide additional assurance that the snubbers remain operable. The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The longest inspection interval allowed in the Technical Specifications after a record of no snubber failures has been established is nominally 18 months. Experience at operating facilities has shown that the required surveillance program should provide an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment. Snubbers containing seal material which has not been demonstrated to be compatible with the operating environment are required to be inspected every 31 days until compatibility is established or an appropriate seal change is completed.

To further increase the level of snubber reliability, the Technical Specifications require functional tests and internal inspections of snubbers at least once each refueling cycle. The tests will verify proper piston movement, lock up and bleed, and the internal inspections will monitor for wear, breakdown and deterioration that cannot be observed by the external inspections.

CONCLUSIONS

We have concluded that the proposed additions to the Technical Specifications, as modified, increase the probability of successful snubber performance, increase reactor safety and we therefore find them acceptable.

We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: SEP 15 1975

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-263

NORTHERN STATES POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO PROVISIONAL
OPERATING LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 12 to Provisional Operating License No. DPR-22 issued to the Northern States Power Company (the licensee), which revised Technical Specifications for operation of the Monticello Nuclear Generating Plant (the facility), located in Wright County, Minnesota. The amendment is effective as of its date of issuance.

The amendment requires operability and surveillance of hydraulic snubbers required to protect the primary coolant system and all other safety related systems and components in accordance with the licensee's request dated August 15, 1975.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment is not required since the amendment does not involve a significant hazards consideration.

For further details with respect to this action, see (1) the application for amendment dated August 15, 1975, (2) Amendment No. 12 to License No. DPR-22, with Change No. 20, and (3) the Commission's concurrently issued related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Environmental Conservation Library, Minneapolis Public Library, 300 Nicollet Mall, Minneapolis, Minnesota 55401. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Maryland, this 15th day of September, 1975.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Reactor Licensing

OFFICE >						
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