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 Washington, D. C. 20426
 T. A. Phillips

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 FPC - Bureau of Power
 Report on the Monticello Nuclear
 Generating Plant
 (1 cy encl rec'd)

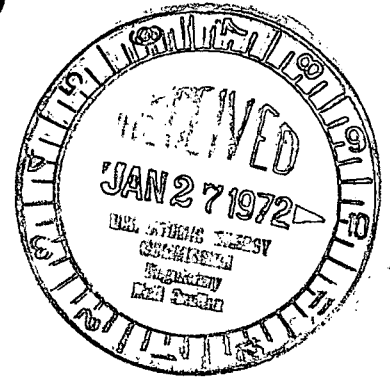
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REMARKS:
 (1 cy Local PDR - Minneapolis, Minn.)

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FEDERAL POWER COMMISSION
 WASHINGTON, D.C. 20426
 January 25, 1972



50-263

Mr. Roger S. Boyd
 Assistant Director
 for Boiling Water Reactors
 Division of Reactor Licensing
 U. S. Atomic Energy Commission
 Washington, D. C. 20545

Dear Mr. Boyd:

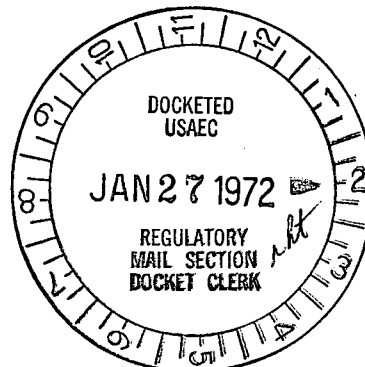
This is in response to your letter of November 4, 1971 requesting the comments of the Federal Power Commission on the "Appendix D, Section E.3" statement filed by the Northern States Power Company in connection with its Monticello Nuclear Generating Plant.

The enclosed staff report prepared by the Commission's Bureau of Power, sets forth specific information relative to the projected load and power supply conditions for the Applicant and for the Upper Mississippi Valley Power Pool, a subregional planning and coordination organization of which the Applicant is a member. The report illustrates the need for the continued operation of the 545-megawatt Monticello unit for the projected 1971-72 winter and the following 1972 summer peak load conditions.

Very truly yours,

T. A. Phillips
 Chief, Bureau of Power

Enclosure
 Staff Report on the
 Monticello Nuclear Generating
 Plant



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Federal Power Commission
Bureau of Power

Report on the Monticello Nuclear Generating Plant

On November 4, 1971, the Assistant Director for Boiling Water Reactors, Division of Reactor Licensing, U. S. Atomic Energy Commission forwarded to the Federal Power Commission a copy of Northern States Power Company's October 15, 1971, statement together with supporting information for continued operation of the Monticello Nuclear Generating Plant at full rated electrical capacity of 545 megawatts. Monticello Nuclear Generating Plant, AEC Docket No. 50-263, is now operating under operating License No. DPR-22 at full rated power. The Applicant's statement was submitted in accordance with paragraph 3, Section E, Appendix D, 10 CFR, Part 50.

These comments by the Bureau of Power analyze the needs for power to meet projected demands on the Northern States Power Company's system and the Upper Mississippi Valley Power Pool during the 1971-72 winter peak load and the 1972 summer peak load periods. We understand that the environmental aspects of this plant are currently undergoing supplemental analysis and that the AEC wishes to consider such factors as: the effect of shut-down of the facility operation upon the public interest, particularly "the power needs to be served by the facility; the availability of alternative sources, if any, to meet those needs on a timely basis; and the shutdown costs to the licensee and to consumers." Thus our comments are directed to these points in a review of the need for the facility as concerns the adequacy and reliability of both the Applicant's electrical system and the Upper Mississippi Valley Power Pool of which the Applicant is a member. This review is in accordance with the National Environmental Policy Act of 1969 and the Guidelines of the President's Council on Environmental Quality dated April 23, 1971.

In preparing this report, the Bureau of Power staff has analyzed the supplemental testimony of Mr. A. V. Dienhart, Vice President-Engineering, Northern States Power Company as contained in the Company's application; the Monthly Power Statements submitted to this Commission by the Applicant; and related reports made in response to the Commission's April 1970 Statement of Policy on Adequacy and Reliability of Electric Service (Order 383-2).

Need for the Facilities

The following tabulations show the projected loads to be served by the Northern States Power Company and the Upper Mississippi Valley Power Pool and the relationship of the Monticello Nuclear Generating Plant to their available reserve margins at the times of the 1971-72 winter and 1972 summer peaks. These are the initial service periods of the new unit, but its life is expected to be some 35 years, and it is expected to constitute a proportionate part of the Applicant's total generating capacity throughout that period. Therefore, it will be depended upon to supply power to meet future demands over a period of many years beyond the initial service needs discussed in this report.

1971-72 Winter Peak Load Period

| | <u>Northern States Power Company</u> | <u>Upper Mississippi Valley Power Pool</u> |
|--|--|--|
| <u>With the Monticello Plant (545 MW)</u> | | |
| Net Dependable Capacity - Megawatts | 3,470 | 6,410 |
| Peak Load - Megawatts | 3,076 | 5,663 |
| Reserve Margin - Megawatts | 394 | 747 |
| Reserve Margin - Percent of Peak Load | 12.8 | 13.2 |
| Company's Stated Reserve Margin Needs - Megawatts (For 12 Percent of Peak Load) | 369 | 680 |
| Plant Capacity (545 MW) as Percent of Needed Reserve | 148.0 | 80.1 |

Without the Monticello Plant

| | | |
|--|-------|-------|
| Net Dependable Capacity - Megawatts | 2,925 | 5,865 |
| Peak Load - Megawatts | 3,076 | 5,663 |
| Reserve Margin - Megawatts | -151 | 202 |
| Reserve Margin - Percent of Peak Load | -4.9 | 3.6 |
| Capacity Deficiency - Megawatts of Reserve | 520 | 478 |

1972 Summer Peak Load Period

| | <u>Northern States Power Company</u> | <u>Upper Mississippi Valley Power Pool</u> |
|--|--|--|
| <u>With the Monticello Plant (545 MW)</u> | | |
| Net Dependable Capacity - Megawatts | 4,123 | 6,879 |
| Peak Load - Megawatts | 3,681 | 6,186 |
| Reserve Margin - Megawatts | 442 | 693 |
| Reserve Margin - Percent of Peak Load | 12.0 | 11.2 |
| Company's Stated Reserve Margin Needs - Megawatts (For 12 Percent of Peak Load) | 442 | 742 |
| Plant Capacity (545 MW) as Percent of Needed Reserve | 123 | 73.5 |
| Capacity Deficiency - Megawatts of Reserve | - | 49 |

Without the Monticello Plant

| | | |
|--|-------|-------|
| Net Dependable Capacity - Megawatts | 3,578 | 6,334 |
| Peak Load - Megawatts | 3,681 | 6,186 |
| Reserve Margin - Megawatts | -103 | 148 |
| Reserve Margin - Percent of Peak Load | -2.8 | 2.4 |
| Capacity Deficiency - Megawatts of Reserve | 545 | 594 |

The Applicant states that the Pool's desired reserve of 12 percent of peak load is required to provide reliable electric service to its customers. The 598-megawatt unit of the Allen S. King Generating Plant is the largest on the Applicant's system. The Applicant's expected system reserves during the 1971-72 winter peak load period with the 545-megawatt Monticello Plant in service are estimated to be 394 megawatts or 12.8 percent of peak load. If the unit should be shut down and its capacity lost as a result of suspension of the operating license, the Applicant's system generating capacity would be 151 megawatts or 4.9 percent less than projected peak load. The Monticello Nuclear Plant constitutes 148 percent of the Applicant's expected system reserves at the time of the 1971-72 winter peak.

The capacity on the Applicant's system at the time of the 1972 summer peak will be increased by 325 megawatts of new gas turbine peaking capacity and approximately 328 megawatts of additional power purchases. Reserves are estimated to total 442 megawatts or 12.0 percent of the 1972 summer peak load with the Monticello Plant in service. Without this plant in service, generating capacity would be 103 megawatts or 2.8 percent less than the projected 1972 summer peak load.

Analysis of the Upper Mississippi Valley Power Pool, in which the Applicant is a member, indicates expected reserves of 747 megawatts or 13.2 percent of the 1971-72 winter peak load with the Monticello Unit in operation. Without the Monticello Unit, the Pool's reserves are 202 megawatts, or 3.6 percent of peak load. The Pool's expected reserves at the time of the 1972 summer peak total 693 megawatts or 11.2 percent of peak load with the Monticello Unit in operation. These reserves are reduced to 148 megawatts or 2.4 percent of peak load if operation of the unit is suspended.

The Northern States Power Company's system represents about 50 percent of the capacity and about 50 percent of the load of the Upper Mississippi Valley Power Pool. As the largest single system of the Pool, the reserve margin of the Applicant's system is reflected directly in that of the Pool and the effect of the Applicant's reserve margin is felt throughout the Pool. Hence, suspension of the commercial operation of the Monticello Plant would impose negative reserve margins at both peak periods considered on the Applicant's system and reduce the Pool's reserves to 3.6 and 2.4 percent respectively for the 1971-72 winter and 1972 summer peak periods.

The Northern States Power Company had scheduled 325 megawatts of peaking capacity and the 530-megawatt Prairie Island Nuclear Unit No. 1 for commercial service in May 1972. Construction delays and design changes to meet environmental considerations have delayed both of these additions. The Applicant has purchased all available surplus power in the Upper

Mississippi Valley Power Pool and is negotiating firm power purchases of 236 megawatts from outside the Pool. Total purchases for 1972 will be about 500 megawatts, and are included in the Applicant's estimated system net dependable capacity for the 1972 summer peak.

Transmission Facilities

Present transmission facilities from the plant were completed by July 1970. Transmission circuits of 345, 230 and 115 kilovolts connect the Monticello Plant to the Applicant's interconnected transmission grid.

After consideration of the environmental impacts of alternate routes, two single routes were selected for the 345 kilovolt transmission lines to substations located about thirty miles from the Plant. Construction utilizes steel tower construction near the plant and substations and wood pole construction for the most part where the lines pass through rural and agricultural lands. Selective clearing was used by retaining existing trees and ground cover on the right-of-ways where adequate clearance and safe operation of the lines were not jeopardized.

Alternates to the Proposed Facilities

There are no known alternate additions of generating capacity which could be substituted for the Monticello Plant within the time available. No significant amounts of surplus power are available in adjacent areas for firm purchase by the Applicant. Since most of the neighboring systems are dependent for much of their reserves upon other operating nuclear units which are subject to NEPA review, this capacity may not be available to their respective owner's systems. The Applicant possibly could reactivate some retired fossil-fueled capacity to partially make up for Monticello, but these retired generating plants have no fuel stocks, and severe logistic problems are foreseen in the purchase and transportation of the fossil fuels and reactivation of the retired capacity. Although, the Applicant has based costs of meeting energy requirements to the extent possible with existing generation, the problems associated with reactivation of the retired capacity are great, and involve activation of retired capacity, deferment of maintenance, and installation of new air pollution control equipment. The shutdown of the Monticello Plant would result in a deficiency of generating capacity to meet the projected system loads to the extent that it appears load reduction measures might be necessary during peak load periods.

Conclusions

The Bureau of Power staff concludes that the suspension of operation of the Monticello Nuclear Generating Plant, if the forecasted loads obtain in the two periods analyzed, would result in the Northern States Power Company having less generating capacity than load, and thus be dependent upon the remaining resources of the Upper Mississippi Valley Power Pool to satisfy its customer's needs. In this event, the Pool capacity with which to meet contingencies is indicated to be only 202 megawatts (3.6 percent of peak demand) for the 1971-72 winter and 148 megawatts (2.4 percent of peak demand) for the 1972 summer. These indicated small reserve margins represent the Pool's only generating capacity to provide for contingencies such as loss of capacity due to forced outages of generating equipment, occurrence of loads higher than those forecast, operating margins required to fulfill obligations to participants in the interconnected systems, and operating margins to provide for flexibility in the allocation of load to generating resources because of abnormal power system conditions. Since the generating resources of the Northern States Power Company include fossil fuel steam electric generating units with ratings of 240 megawatts, 180 megawatts, and 163 megawatts, and the Dairyland Power Cooperative (another Pool member) Genoa No. 3 unit is rated 346 megawatts, it is evident that in the absence of the Monticello nuclear unit at the time of the forecasted peak demands, the forced outage of any one of these four large units would jeopardize the adequacy and reliability of electric service throughout the Pool area by causing a condition of less available generating than existing load demand.

The Applicant states it made a power production simulation study covering the twelve month period November 1971-October 1972 inclusive, assuming the non-availability of this unit, and based upon the assumption that all energy would be furnished by its remaining generation to the extent possible and assumed purchases from outside sources when required. The Applicant states that its added expenses so computed would be about \$20,000,000 for the one year period. Without any supporting analysis from the applicant, we have no basis for analysis or further comment on this estimate.


T. A. Phillips

December 20, 1971