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Docket No.: 50-263

FEB 11 1977

Northern States Power Company
ATTN: Mr. L. O. Mayer, Manager
Nuclear Support Services
414 Nicollet Mall - 8th Floor
Minneapolis, Minnesota 55401

Gentlemen:

RE: MONTICELLO NUCLEAR GENERATING PLANT

We have commenced review of your November 22, 1976 submittal entitled "Design Report for Redundant Reactor Building Crane" and have determined that the additional information described in the attachment is required. To prevent adverse impact upon your schedule and to allow sufficient time for our review, we request that your response to this request reach the NRC no later than February 28, 1977.

Sincerely,

Original signed by
Dennis L. Ziemann

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

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

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AP3
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OFFICE ▶	ORB#2:DOR	C-ORB#2:DOR				
SURNAME ▶	RSnaider	DLZiemann				
DATE ▶	2/9/77	2/11/77				

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

cc w/enclosure:
Gerald Charnoff, Esquire
Shaw, Pittman, Potts and
Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

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

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

Mr. Steve J. Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

Mr. Kenneth Dzugan
Environmental Planning Consultant
Office of City Planner
Grace Building
421 Wabasha Street
St. Paul, Minnesota 55102

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

Anthony Z. Roisman, Esquire
Roisman, Kessler and Cashdan
1025 15th Street, N. W., 5th Floor
Washington, D. C. 20005

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

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

REQUEST FOR ADDITIONAL INFORMATION

1. Your submittal states "The entire crane will be evaluated for the additional weight, load requirements and operating conditions imposed by the new trolley design": Considering the new trolley weight of 128,000 pounds compared with the old trolley weight of 62,000 pounds, describe and discuss how this increased trolley weight has been accommodated in the unmodified portions of the system without reducing the 85 ton load rating of the crane. The discussion should include the changes in the factors of safety as well as physical modifications that have been made to retain the same load rating.

2. In Section 3.3, item C.4.b, you state that subjecting the hoisting machinery and reeving to either the "two block" or "load hangup" test would be in violation of the ANSI B 30.10 standard on hooks. Justify the above statement by indicating how either of these tests violates ANSI B 30.10.

3. Describe, discuss and compare the peak loads experienced in the event of a "load hangup" by the presently proposed hoist overload protection system relative to that which would be experienced if compliance with items C.3.j and C.3.1 of Regulatory Guide 1.104 were attained. The discussion should include consideration of the elapsed time before the hoist motor was tripped, the kinetic energy stored in the system, and the load change as a function of time during a "load hangup" event, as well as the assumed distance between load blocks when the hangup occurs.

   In addition, describe the tests and time intervals between the tests which will verify the calibration and functional capability of the proposed hoist overload protection system.

4. Item 35 of Section 3.0 of your submittal indicates that in the event of a rope failure, a velocity actuated valve is actuated to create a large pressure drop across the hydraulic cylinder, causing it to act as a dashpot to reduce the shock on the intact reeving and structures. In this regard, provide the following:

   (1) A description of the velocity actuated valve, and how the system generates the appropriate signal causing it to be actuated;

   (2) The test methods that will be employed to verify its functional capability; and

   (3) The time interval between the tests that verify its functional capability.

5. With regard to the two hydraulic cylinders which act as load equalizers, provide the following information:

   (1) The means provided to detect the loss of hydraulic fluid and alert the operator; and

   (2) The measures taken to preclude the loss of hydraulic fluid.

6. Item C.3.p, Section 3.3 of your submittal cites information on pages ED-19 and 20 of AISE Standard No. 6, Specification for Electric Overhead Traveling Cranes for Steel Mill Service, to support the statement that the 110 percent horsepower limitation is not compatible with the established drive motor requirements. The factor K_a on page ED-19 appears to be applicable only to AC and Adjustable Voltage Motors (Without Field Weakening). Your submittal indicates that the existing General Electric Company Maxspeed drive systems utilize direct current motors in which both the field and armature currents are varied.

   Provide further clarification on how the information on pages ED-19 and 20 of AISE Standard No. 6 is applicable to the Maxspeed drive systems and hence that the 110 percent horsepower limitation is not compatible with the drive requirements.

   Further, from the information in Table E.4.C.2.I of AISE Standard No. 6, it appears that the overall friction factor for the trolley should be 12 pounds per ton rather than the 15 pounds per ton used in your item C.3.p. This value would result in a reduction in the full load running horsepower requirements and a corresponding reduction in the 110 percent horsepower limitation. With regard to the above, provide the following additional information:

   (1) Explain why the 12 pounds per ton would not be the more appropriate value to use in this calculation; and

   (2) Assuming the 12 pounds per ton is a more appropriate value, describe how it alters your conclusions.

7. It is stated in your report that the hoist will be provided with three holding brakes, each sized "to hold 125 percent of rated full load hoist motor torque at base speed" that will automatically set whenever electrical power is removed. Considering the changed reeving system and rope size, for each of the spent fuel shipping casks that will be handled, demonstrate that the crane hoist will not subject the various cask trunnions and handling yokes considered in your evaluation to excessive deceleration loads under the following assumptions: (1) the cask is near its upper limit of travel; (2) the cask is being lowered

at its maximum speed as defined by the hoist controls; and (3) the hoist experiences a loss of power. Accordingly, in tabular form for each cask, provide the following information:

(1) The static factors of safety of the cask handling yoke, the cask trunnions and the weight of cask;

(2) The maximum lowering speed as defined by the hoist controls; and

(3) The results of dynamic analyses which demonstrate that the cask trunnions and handling yoke have sufficient design margin to preclude their failure due to the deceleration loads created by the hoist brakes.

8. Indicate which of the two IF-300 shipping cask handling yokes (single or redundant design) will be utilized in the Monticello Nuclear Generating Plant. If you have selected the non-redundant design, justify its use within the limitations of your handling system.