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K. R. Goller, Assistant Director for Operating Reactors, DOR

REVIEW OF MONTICELLO RESPONSE FOR THE INTERIM PROPOSED OFF-SITE SHIPMENT OF SPENT FUEL DATED JUNE 16, 1976

Plant Name: Monticello Nuclear Generating Plant
License Number: DPR-22
Docket Number: 50-263
Responsible Branch: ORB #2
Project Manager: R. Snaider
Reviewing Branch: Plant Systems Branch
Requested Completion Date: Not Specified
Review Status: Awaiting Responses to Round 2 Questions

The Plant Systems Branch, DOR, as requested on June 29, 1976, has completed its review of the Northern States Power submittal, dated June 16, 1976. This submittal was in response to our request for additional information which was prepared on the basis of our review of NSP's January 22, 1976 submittal in which NSP described its proposed interim offsite fuel shipment program. In order to continue our evaluation, we find that additional information, as described in the enclosure, is required.

The evaluation of the structural aspects of NSP's submittal will be performed by the Engineering Branch, DOR.

D. G. Eisenhut, Assistant Director
for Operational Technology
Division of Operating Reactors

Attachment:
As stated

cc w/attachment:
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D. Ziemann
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PLANT SYSTEMS BRANCH

REQUEST FOR ADDITIONAL INFORMATION

ON MONTICELLO CASK DROP ACCIDENT

1. Response No. 10 states the design factors of safety of the NFS-4 cask lifting trunnions and yoke are 5.7 and 3.0 respectively. With the following simplifying assumptions, it appears that the two automatically set hoist brakes are capable of developing a deceleration force that exceeds the load carrying capabilities of the cask trunnions and handling yoke. The assumptions are:

   (a) The load carrying members between the two mechanical holding brakes (the capacity of each being equal to 150% of motor torque) are rigid and have zero mass

   (b) The hoist experiences a loss of electrical power while it is lowering the cask at its maximum speed. This loss of hoist power, by design, causes both brakes to be automatically set.

   Therefore, Response No. 11 does not adequately address our concern that the resulting dynamic load may cause a structural failure that can result in a cask drop accident.

   Provide the assumptions and analyses which demonstrate that the dynamic deceleration load described in Request No. 11 will not exceed the load carrying capacity of the cask lifting trunnions and handling yoke.

2. In our Item No. 14, we requested "With the aid of drawings of these structures (empty spent fuel and control rod storage racks) describe and discuss the reasons why they will not in turn tip and or collapse against the stored spent fuel located in the north end of the pool as a result of the tipped cask drop." From Figure 5-1 (January 22, 1976 submittal) it would appear that these racks receive no lateral support restraint from the walls of the pool and are only anchored at their base to the bottom of the pool. Response No. 14 failed to explain why the empty storage racks would not bend or tip over against stored fuel when impacted by an obliquely oriented dropped NFS-4 cask.

With the aid of storage rack drawings and a description on how they are anchored to the pool, provide additional clarification which supports the statement "the storage racks will not topple due to a cask drop of either orientation, and damage to the spent fuel located in the north end of the pool will be prevented."

3. Tables 3-1 and 3-2 in your January 22, 1976 submittal presents the results of various postulated cask drops assuming cask impact limiting devices assist in absorbing the impact. The resulting factors of safety for the floor slabs range between 1.23 and 1.39 providing the

administratively controlled cask drop height of six inches is not exceeded.

The presently proposed administrative controls for limiting the NFS-4 cask carrying height to six inches above the operating floor does not provide adequate assurance to enable us to conclude that drop heights in excess of six inches is precluded.

Since the January 22, 1976 submittal represents an interim proposal, designed to alleviate the present storage capacity limitations until the crane modification has been completed, describe and discuss the merits and disadvantages of the two approaches described below to provide additional assurance that the cask will not be elevated more than six inches above the operating floor:

(a) providing hoist limit switches which prevent the hoist from raising the cask more than six inches above the operating floor; and

(b) disabling the "up" portion of the hoist power circuit once the cask has been raised to the proper elevation.