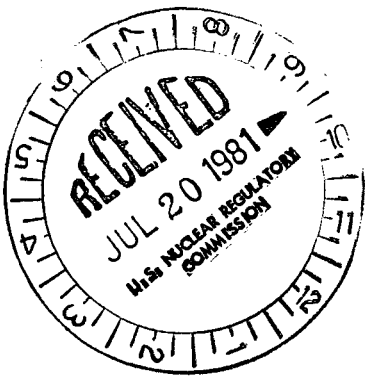
Docket File

Docket No. 50-263

July 15, 1981



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

Dear Mr. Mayer:

SUBJECT: TMI ACTION PLAN ITEM II.K.3.46, "MICHELSON CONCERNS"

RE: MONTICELLO NUCLEAR GENERATING PLANT

Enclosed for your information is our evaluation of the BWR Owners Group response to TMI Action Plan Item II.K.3.46 "Michelson Concerns." We find the response to be acceptable. Since your letter dated June 30, 1980 endorsed the Owners Group response, we consider Item II.K.3.46 to be complete for your facility.

Sincerely,

Original Signed by
T. A. Ippolito

Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
As Stated

cc w/enclosure
See next page

Distribution
Docket File
NRC PDR
Local PDR
TERA
NSIC
ORB#2 Reading
D. Eisenhut
OELD
IE-3
ACRS (10)
K. Eccleston
Gray File

8107240580 810715
PDR ADOCK 05000263
P PDR

OFFICE	ORB#2	ORB#2	ORB#2	ORB#2	ORAB		
SURNAME	SNorris	JVan Vliet:pbe	K.Eccleston	TIppolito	D. Vassallo		
DATE	7/14/81	7/15/81	7/15/81	7/15/81	7/15/81		

NRC FORM 318 (10/80) NRCM 0240 OFFICIAL RECORD COPY ☆ USGPO: 1980—329-824

Mr. L. O. Mayer
Northern States Power Company

cc:

Gerald Charnoff, Esquire
Sahw, 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

Plant Manager
Monticello Nuclear Generating Plant
Northern States Power Company
Monticello, Minnesota 55362

Russell J. Hatling, Chairman
Minnesota Environmental Control
Citizens Association (MECCA)
Energy Task Force
144 Melbourne Avenue, S. E.
Minneapolis, Minnesota 55414

Ms. Terry Hoffman
Executive Director
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

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

U. S. Nuclear Regulatory Commission
Resident Inspectors Office
Box 1200
Monticello, Minnesota 55362

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

ENCLOSURE

EVALUATION OF BWR OWNERS GROUP
GENERIC RESPONSE TO NUREG-0660 ITEM II.K.3.46

STATEMENT OF REQUIREMENTS

"A number of concerns related to decay heat removal following a very small break LOCA and other related items were questioned by Mr. C. Michelson of the Tennessee Valley Authority. These concerns were identified for PWRs. GE was requested to evaluate these concerns as they apply to BWRs and to assess the importance of natural circulation during a small-break LOCA in BWRs. GE has not yet responded to the Michelson concerns. A brief description of natural circulation was addressed in NEDO-24708. The submittal was incomplete, however, in that natural circulation for purposes of depressurizing the reactor vessel was not addressed. GE should provide a response to the Michelson concerns as they relate to BWR plants."

SUMMARY AND EVALUATION OF RESPONSE

The concerns related to decay heat removal which were raised by Mr. Michelson were responded to in a letter to D. F. Ross (NRC) from R. H.Buhholz (GE), MFN-041-80, "Response to Questions Posed by Mr. C. Michelson " February 21, 1980. An additional question was issued in June, 1980 and the BWR Owners Group responded in a letter to Darrell G. Eisenhut (NRC) from David B. Waters (BWR Owners Group), BWROG-8117, "BWR Emergency Procedure Guidelines Revision 1, and Responses to Related Questions," January 31, 1981. A summary of our evaluation of the questions is given below:

Question 1: Pressurizer level is an incorrect measure of primary coolant inventory.

Response: BWRs do not have pressurizers. BWRs measure primary coolant inventory

directly using differential pressure sensors attached to the reactor vessel. This concern does not apply to BWRs.

Question 2: The isolation of small breaks (e.g., letdown line; PORV) is not addressed or analyzed.

Response: Automatic isolation only occurs for breaks outside the containment. Such breaks are addressed in NEDO-24708. If the high pressure systems are available, no operator actions are required. If all high pressure systems fail, the operator must depressurize to allow low pressure systems to maintain vessel level. Analyses show that the operator has sufficient information and time to perform these manual actions. The required manual actions have been included in the guidelines for small break accidents.

Question 3: Pressure boundary damage due to loadings from (a) bubble collapse in subcooled liquid and (b) injection of ECC water in steam filled pipes.

Response: Because the BWR geometry and injection locations are not the same as for a PWR, this concern is not applicable to a BWR. ECC injection in the BWR at high pressure is either directly into the reactor vessel (BWR/5-6 HPCS, HPCI on some BWR/4) or into the feedwater lines (FWCI, HPCI on most BWR/3-4). The feedwater lines are normally filled with relatively cool liquid (420^{o}F or less). ECC injection in the BWR at low pressure is either directly into the reactor vessel (LPCS, BWR/5-6 LPCI) or into the recirculation pump discharge line (BWR/3, 4 LPCI) near the automatically closed recirculation pump discharge valve.

The concern on collapse of bubbles in subcooled liquid was for steam bubbling upward through the pressurizer surge line and pressurizer. There is no comparable BWR geometry.

Question 4: In determining need for steam generators to remove decay heat, consider that break flow enthalpy is not core exit enthalpy.

Response: Since BWRs do not use steam generators to remove decay heat, this concern does not apply to BWRs.

Question 5: Are sources of auxiliary feedwater adequate in the event of a delay in cooldown subsequent to a small LOCA?

Response: Since BWRs do not need feedwater to remove heat from the reactor following a LOCA, this concern is not applicable to BWRs. The ECCS sub-systems which are available are adequate. For breaks which are too small to remove all of the decay heat, the reactor coolant system pressure will increase to the relief valve setpoint. The high pressure systems are capable of pumping against the relief valve opening pressure.

Question 6: Is the recirculation mode of operation of the HPCI pumps at high pressure an established design requirement?

Response: All recirculation modes of the high pressure systems in BWRs are established design requirements.

Question 7: Do the HPCI pumps and RHR pumps run simultaneously? Do they share common piping/suction? If so, is the system properly designed to accommodate this mode of operation?

Response: On some BWRs the RCIC/HPCI and RCIC/HPCS systems share a common suction line from the condensate storage tank. Also, many of the BWR LPCI pumps and LPCS pumps share common suction. It is an established design requirement to size the suction piping, including shared piping, such that adequate NPSH is available to RCIC, HPCI, HPCS, RHR/LPCI and CS pumps for all simultaneous operating modes. Pre-operational and/or startup tests are conducted that demonstrate that this requirement is met.