

NRR-PMDAPEm Resource

From: Beltz, Terry
Sent: Friday, February 15, 2013 9:37 AM
To: 'Fields, John S.'
Cc: 'Eckholt, Gene F.'; Carlson, Robert; Sallman, Ahsan
Subject: Monticello - Requests for Additional Information Supporting the EPU Containment Accident Pressure and MELLLA+ Reviews (MD9990)
Attachments: Monticello - Requests for Additional Information Supporting EPU CAP Review (TAC No. MD9990).docx

Dear Mr. Fields:

The U.S. Nuclear Regulatory Commission (NRC) staff in the Containment and Ventilation Branch (SCVB) of the Office of Nuclear Reactor Regulation is currently supporting the review of your license amendment requests associated with an Extended Power Uprate and Maximum Extended Load Line Limit Analysis Plus (MELLLA+) expanded operating domain. Specifically, the SCVB staff is performing the containment accident pressure review and has determined that additional information is required to complete its review. The draft requests for additional information (RAI) are attached.

You may accept these draft RAIs as a formal Requests for Additional Information and respond to the questions by March 28, 2013. Alternatively, you may request to discuss the contents of this RAI with the NRC staff in a conference call, including any change to the proposed response date.

Please let me know if you have any questions or concerns.

Sincerely,

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REQUESTS FOR ADDITIONAL INFORMATION

FROM THE CONTAINMENT AND VENTILATION BRANCH

SUPPORTING THE REVIEW OF THE EXTENDED POWER UPRATE AND MELLLA+

LICENSE AMENDMENT REQUESTS

NORTHERN STATES POWER COMPANY – MINNESOTA (NSPM)

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1. In Reference 1, NSPM provided the following responses:

Response to 6.6.5 states:

“The EOPs also include a caution that identifies to the operators that if containment pressure falls below 7 psig (the value required for CAP based on use of NPSHr3%) then this may result in inadequate NPSH. This NPSHr value does not change for EPU.”

Response to 6.6.1 states:

“The uncertainties in NPSHr included in the staff’s guidance address the possibility that conditions during the NPSHr vendor tests could be different than those seen by the pumps during operation at the plant, effectively increasing the NPSHr values. The differences could arise due to pump inlet temperature variation, pump inlet geometry variation, dissolved gas evolution, and increase in mechanical wear ring clearance.”

The response to 6.6.5 is in conflict with response to 6.6.1. The response to 6.6.1 addresses the uncertainty in the vendor tested value of Net Positive Suction Head (NPSH) required at 3-percent pump head drop (NPSHr3%) and states that the required NPSH seen by the pumps during operation could be different. The Nuclear Regulatory Commission (NRC) staff position is that in the Emergency Operating Procedure (EOP) caution statement, the required NPSH for the pump should be NPSH Required Effective (NPSH_{reff}), where $NPSH_{reff} = (1 + \text{uncertainty}) \times NPSHr3\%$, instead of simply NPSHr3%.

Please revise the EOP caution statement or justify the use of NPSHr3% in the EOPs.

2. In Reference 1, NSPM Response to 6.6.6, states the following:

“Worst case conditions are at an NPSHr value that is between NPSHr3% and the inception point for cavitation, NPSHr0%.”

Please explain what are the worst case conditions in the stated NPSHr range?

3. In Reference 1, NSPM Response to 6.6.7, under heading “Monitoring During Normal Operation”, states the following:

“A computer point is provided that continually calculates the N2 mass in containment and provides a computer alarm in the control room if the N2 mass is too low or too high. The low inventory alarm corresponds to the minimum noncondensable gas mass assumed for the ECCS pump NPSH analysis. Calculated values below the minimum assumed in the NPSH analysis will result in operator action to declare the ECCS pumps inoperable.”

Please describe the action to be taken after the operator declares that the emergency core cooling system (ECCS) pumps are inoperable. In case the plant operation at full power continues with the ECCS pumps declared inoperable, please justify plant operability.

4. In Reference 1, NSPM Response to 6.6.7, Item (3), does not specify an appropriate time limit for performing the correction in case the containment leakage rate (determined by the on-line test and monitoring described in response to 6.6.7 item (2)) exceeds the acceptance limits. TS 3.6.1.1 specifies that containment is operable if it's Surveillance Requirement of visual inspection and integrated leak rate testing is met, which is performed every 15 years during an outage. This would imply that the containment is operable even if the on-line test and monitoring gives unacceptable results.

Under the condition when the containment leakage is not corrected and with the plant in Modes 1, 2 or 3, please justify proper operation of the ECCS and containment heat removal pumps without containment accident pressure (CAP) (or without adequate NPSH) during design basis or non-design basis accidents.

5. In Reference 2, Enclosure 5, Section 2.6.5, under heading “Small Steam Line Break Accident (SBA)”.

Please confirm that 0.01 ft² is the limiting break area for the net positive suction head (NPSH) analysis.

6. In Reference 3, NSPM response to NRC RAI No 7, eighth paragraph, for the SBA analysis for NPSH.

Please describe the alternate method used to simulate the one-pump variable K-value for evaluation of the containment response.

7. In Reference 1, NSPM Response to Section 6.6.7, states:

“Section 6.6.4 above addresses possible loss of containment isolation that could compromise containment integrity for an Appendix R event.”

- (a) Neither Reference 1 nor NSPM Response to Section 6.6.4 in Reference 4 addresses Appendix R Fire induced failure of associated circuits that could result in a loss of containment integrity due to containment venting.

Please provide results of safe shutdown analysis showing that adequate NPSH will be available for the residual heat removal (RHR) and core spray (CS) pumps under a loss of containment integrity due to fire induced multiple spurious operations (MSO), or justify that a loss of containment integrity cannot occur under a Appendix R Fire scenario.

- (b) Reference 4, NSPM Response to 6.6.4 states that the effect of MSO was evaluated after transferring to the alternate shutdown system (ASDS) panel as per the guidance of NEI 00-01 Revision 2. The response does not address the scenarios listed in the NEI document Table G-1 under “Decay Heat Removal” which are applicable to MNGP. Please list the applicable scenarios and provide their NPSH margin results. Please note that scenarios 4r, 4s, and 4t discuss the potential fire-induced impact on CAP and possible NPSH loss which should be addressed.

Justify why the remaining scenarios listed for BWR-3 under “Decay Heat Removal” are not applicable for MNGP.

8. In Reference 1, NSPM Response to 6.6.7 mentions “drywell Continuous Air Monitor (CAM)”.

Is this the same system as described in USAR Section 5.2.2.7, “Containment Atmosphere Monitoring System”?

9. In Reference 1; Figure 6.6.6-5 caption states: “Long-term RHR NPSH Margin”; graph title states: “Core Spray Pump B Long-term DBA LOCA NPSH”.

Please provide the correct graph for Long-term Residual Heat Removal (RHR) NPSH margin.

10. In Reference 5, Section 4.1.1, second paragraph states:

“The peak drywell temperatures for the current licensed operating domain and the MELLLA+ operating domain are 291°F and 290°F, respectively.”

- (a) Please define “current licensed operating domain” in terms of value of thermal power and the operating domain.

- (b) Reference 1, Table 2.6-1 gives a peak drywell temperature under current licensed thermal power as 335°F and under EPU maximum extended load line limit (MELLLA) conditions as 338°F. These temperatures do not match with the temperatures given in the above statement.

Please remove the discrepancy or justify the difference.

REFERENCES

1. NSPM letter to NRC dated September 28, 2012, "Monticello Extended Power Uprate and Maximum Extended Load Line Limit Analysis Plus License Amendment Requests: Supplement to Address SECY 11-0014 Use of Containment Accident Pressure (TAC Nos. MD9990 and ME3145)," ADAMS Accession No. ML12276A057
2. NSPM letter to NRC dated November 5, 2008, "License Amendment Request: Extended Power Uprate (TAC MD9990)," ADAMS Accession No. ML083230111
3. NSPM letter to NRC dated July 13, 2009, "Monticello Extended Power Uprate: Response to NRC Containment and Ventilation Review Branch (SCVB) Request for Additional Information (RAI) dated March 19, 2009, and March 26, 2009 (TAC No. MD9990)," ADAMS Accession No. ML092170404
4. NSPM letter to NRC dated November 30, 2012, "Monticello Extended Power Uprate and Maximum Extended Load Line Limit Analysis Plus License Amendment Requests: Supplement to Address SECY 11-0014 Use of Containment Accident Pressure, Sections 6.6.4 and 6.6.7 (TAC Nos. MD9990 and ME3145)
5. NSPM letter to NRC dated January 21, 2010, Attachment 3 of L-MT-10-003, "MELLLA Plus Safety Analysis Report Proprietary"