

Keith J. Polson
Vice President-Nine Mile Point

P.O. Box 63
Lycoming, New York 13093
315.349.5200
315.349.1321 Fax



Constellation Energy

• Nine Mile Point Nuclear Station

August 1, 2007

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 1; Docket No. 50-220

License Amendment Request Pursuant to 10 CFR 50.90: Application of Alternative Source Term – Response to NRC Request for Additional Information (TAC No. MD3896)

- REFERENCES:**
- (a) Letter from T. J. O'Connor (NMPNS) to Document Control Desk (NRC), dated December 14, 2006, License Amendment Request Pursuant to 10 CFR 50.90: Application of Alternative Source Term
 - (b) Letter from M. J. David (NRC) to T. J. O'Connor (NMPNS), dated June 8, 2007, Meteorology Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 1, Implementation of Alternative Source Term (TAC No. MD3896)
 - (c) Letter from K. J. Polson (NMPNS) to Document Control Desk (NRC), dated July 17, 2007, License Amendment Request Pursuant to 10 CFR 50.90: Application of Alternative Source Term – Response to NRC Requests for Additional Information (TAC No. MD3896)

Nine Mile Point Nuclear Station, LLC (NMPNS) hereby transmits supplemental information requested by the NRC in support of a previously submitted application for amendment to Nine Mile Point Unit 1 (NMP1) Renewed Operating License DPR-63. The initial application, dated December 14, 2006 (Reference a) proposed to revise the accident source term used in the design basis radiological consequence analyses in accordance with 10 CFR 50.67. The proposed accident source term revision would replace the current methodology that is based on Technical Information Document (TID)-14844 with the alternative source term methodology described in Regulatory Guide 1.183.

By letter dated June 8, 2007 (Reference b), the NRC requested additional information regarding the subject license amendment request. NMPNS provided responses to the request for additional information

A001
NRC

Document Control Desk

August 1, 2007

Page 3

Attachments: (1) Nine Mile Point Unit 1 – Response to NRC Request for Additional Information
Regarding Proposed Revision to the Accident Source Term

cc: S. J. Collins, NRC
M. J. David, NRC
Resident Inspector, NRC
J. P. Spath, NYSERDA

ATTACHMENT (1)

**NINE MILE POINT UNIT 1
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
REGARDING PROPOSED REVISION TO
THE ACCIDENT SOURCE TERM**

ATTACHMENT (1)

NINE MILE POINT UNIT 1 RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING PROPOSED REVISION TO THE ACCIDENT SOURCE TERM

By letter dated December 14, 2006, Nine Mile Point Nuclear Station, LLC (NMPNS) submitted a license amendment request to implement the alternative source term methodology for Nine Mile Point Unit 1 (NMP1). The NRC requested additional information regarding this license amendment request in a letter dated June 8, 2007. NMPNS provided responses to the request for additional information by letter dated July 17, 2007, with the exception of Request AADB-8. This attachment provides the response to Request AADB-8. The NRC request is repeated (in italics), followed by the NMPNS response.

Request AADB-8

The NRC staff notes that 60.7 meter wind measurements, rather than the 9.4 meter measurements, were used in the calculation of the ground level EAB and LPZ χ/Q values. In addition, the 60.7 meter wind measurements and atmospheric stability measurements between the 60.7 and 9.4 meter levels were used to calculate the elevated release χ/Q values for releases from the 106.7 meter NMP1 stack. NRC Regulatory Issue Summary 2006-04, "Experience With Implementation of Alternative Source Terms," dated March 7, 2006, states that when running the offsite atmospheric dispersion model PAVAN, two or more files of meteorological data representative of each potential release height should be used if χ/Q values are being calculated for pathways with significantly different release heights. Please provide justification that use of the 60.7 meter data is adequate for generation of both the ground level and elevated release χ/Q values used in the dose assessment.

Response

PAVAN includes a methodology for addressing differences in release height and measurement height. The height above plant grade of the release point (HS) and the height above ground level at which the wind speed was measured (TOWERH) are model inputs. PAVAN accounts for differences in release and wind measurement height if HS is not equal to TOWERH (ADJWIND subroutine) using the following relationship:

$$U_R = U_M (HR/TH)^P \quad (1)$$

where:

U_R = wind speed adjusted to the height of release (meter/sec),

U_M = wind speed at the level of measurement (meter/sec),

HR = height of release (meter),

TH = height at which wind speed U_M was measured (meter), and

P = 0.25 for unstable and neutral atmospheric conditions and 0.50 for stable conditions.

For ground-level releases, when HR = 10 meter and TH = 60.7 meter, the adjusted wind speed is $U_R = 0.637U_M$ (unstable/neutral) and $U_R = 0.406U_M$ (stable). Thus, the 60.7 meter wind measurement data is properly reduced to simulate winds at the lower release height of 10 meter. These factors were applied to the χ/Q values calculated in calculation H21C076 and reported in Attachment (7) of the December 14, 2006, NMPNS submittal.

A survey of the 9.4 meter and 60.7 meter wind measurement data shows differences in wind speed and direction. At the 60.7 meter level the wind speeds are typically 1 to 3 meter/sec faster. Also, a difference

ATTACHMENT (1)

NINE MILE POINT UNIT 1 RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING PROPOSED REVISION TO THE ACCIDENT SOURCE TERM

in the directional component occurs for lower wind speeds (< 4 meter/sec). At the 9.4 meter level most of the lower speed wind is from the land sectors (approximately 2:1 compared to the lake sectors). There is little directional variation in the lower speed wind at the 60.7 meter level. Conversely, for moderate wind speeds (> 4 meter/sec), more wind is from the lake sectors at the 9.4 meter level.

To assess the impact on the PAVAN models, sensitivity calculations were performed using the 9.4 meter wind measurement data to determine ground level release X/Q values. Comparison of these values to the X/Q values used in performing the evaluations to support the December 14, 2006 submittal determined that the calculated X/Q values based on the 60.7 meter data were conservative (i.e., higher) relative to the values based on the 9.4 meter data, both for the exclusion area boundary (0 to 2 hour) and for the low population zone (LPZ) for the 0 to 24 hour time periods; however, the calculated LPZ X/Q values for the 1-4 day and 4-30 day time periods were non-conservative.

To ascertain the impact of the non-conservative LPZ X/Q values for the 1-4 day and 4-30 day periods, sensitivity calculations were performed using the RADTRAD loss of coolant accident (LOCA) models. The dose at the LPZ was recalculated for the three ground level release pathways. The resultant LPZ TEDE doses were found to be bounded by those reported in the December 14, 2006 submittal. Therefore, the use of 60.7 meter wind measurement data for the determination of ground level release X/Q values results in bounding offsite doses and is therefore conservative.

The onsite meteorological measurement program is described in the Nine Mile Point Unit 2 (NMP2) Updated Safety Analysis Report, Section 2.3.3, and was accepted by the NRC in their Safety Evaluation Report for NMP2 (NUREG-1047). For both the preoperational and operational measurements programs, the meteorological tower height of 200 feet was and is not suitable for collecting wind measurement data at higher elevations, such as the 350-foot tall main stack. The current stack release X/Q values were calculated with PAVAN using the 60.7 meter level wind measurement data. As described above, the PAVAN model properly accounts for the difference in release and measurement height by increasing the wind speeds using Equation (1) above.