



October 30, 2003

NRC 2003-0106  
10 CFR 50.67  
10 CFR 50.90

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Point Beach Nuclear Plant, Units 1 and 2  
Dockets 50-266 and 50-301  
License Nos. DPR-24 and DPR-27  
Response to Request for Additional Information Regarding  
License Amendment Request 234, Selective Scope Implementation of  
Alternative Source Term for Fuel Handling Accident

Reference: 1) Letter from NMC to NRC dated March 27, 2003 (NRC 2003-0028)

In Reference 1, Nuclear Management Company, LLC (NMC) submitted a license amendment request for review and approval of a selective scope application of the Alternative Source Term (AST) methodology for only the fuel handling accident (FHA) for Point Beach Nuclear Plant (PBNP). Additionally, NMC requested an amendment to PBNP Technical Specifications 3.9.3, "Containment Penetrations".

As committed to in Reference 1, a second license amendment request will be submitted to request approval of the remaining dose analyses for PBNP.

By letter dated August 1, 2003, (ADAMS Accession ML032060586), the Nuclear Regulatory Commission (NRC) requested additional information in support of their review of Reference 1. Enclosure 1 of this letter contains the NMC's partial response to the staff's questions. As discussed with the NRC on October 9, 2003, the remainder of the response to the NRC's meteorological questions will be submitted in a subsequent response.

Summary of Commitments

This letter makes the following new commitment:

- 1) A subsequent response to respond to the staff's meteorological questions will be submitted to the NRC by November 30, 2003.

I declare under penalty of perjury that the foregoing is true and accurate. Executed on October 30, 2003.



for  
A. J. Cayia  
Site Vice President, Point Beach Nuclear Plant  
Nuclear Management Company, LLC

Enclosures

cc: Administrator, Region III, USNRC  
Project Manager, Point Beach Nuclear Plant, USNRC  
Resident Inspector - Point Beach Nuclear Plant, USNRC  
PSCW

**ENCLOSURE 1  
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION (RAI)  
REGARDING LICENSE AMENDMENT REQUEST 234,  
SELECTIVE SCOPE IMPLEMENTATION OF ALTERNATE SOURCE TERM  
FOR FUEL HANDLING ACCIDENT**

The following information is provided in response to the Nuclear Regulatory Commission staff's request for additional information (RAI) regarding reference 1.

The NRC staff's questions are restated below, with the NMC response following.

**NRC Question 1a – Meteorological Data:**

With regard to atmospheric stability, there appears to be a relatively high occurrence of category A and lower occurrence of categories D and E when compared with some other nuclear power plant sites. Further, stability category A is reported to occur for as long as 56 consecutive hours which seems quite high and the occurrence of unstable conditions at night is reported to be high relative to some other sites. The response to NRC Question 1 in Attachment VII to the March 27, 2003, letter provides a discussion of methodologies used historically to estimate the stability category for Point Beach. It notes that use of fluctuations in wind direction appear to provide estimates more similar to those at other sites than use of the temperature change with height methodology. However, why do relatively warm temperatures occur near the ground so frequently at night and for such long durations at the Point Beach site? Other than changing from strip charts to digital recording in the control room in 1999, have other changes occurred in the onsite meteorological measurement during the period over which the data were measured? Was there a change in the 1999 time frame that resulted in the atmospheric stability data for that year appearing to be more similar to some other sites than the 1997 and 1998 data?

**NMC Response:**

This information will be provided in a subsequent response.

**NRC Question 1b – Meteorological Data:**

With regard to wind speed, why was there a high occurrence of light wind speeds at both measurement levels in 1999 when compared with the other 2 years? For example, this is especially notable between roughly Julian days 159 and 214 at the upper level and Julian days 296 to 334 at the lower level when many of the speeds are listed as a single digit and do not seem well correlated with the wind speed at the other measurement level.

**Further, there appears to be a relatively high occurrence of wind speed data repeating from hour to hour at the upper level, with a maximum duration of approximately 16 hours at the upper level and 11 hours at the lower level. While this may be associated with the question concerning the apparent anomalous occurrence of light wind speeds, what is the procedure for reviewing data to confirm that repeating data are valid?**

**Page 5 of Attachment VII states that the wind speed data provided in the ARCON96 format is in units of meters per second, but it appears to be in miles per hour (mph). Are the data in mph?**

**NMC Response:**

The wind speed data provided in the ARCON96 format submitted with reference 1 is given in miles per hour versus the stated unit of meters per second on page 5 of Attachment VII.

The remainder of the response to this question will be provided in a subsequent response.

**NRC Question 1c – Meteorological Data:**

**With respect to Figure 5, page 10 of Attachment VII, the frequency of occurrence of the north and north-northwest winds in 1997-1999 is approximately 11.5 percent and 2.5 percent, respectively. The NRC staff estimates based on the 1997-1999 hourly data at the 10 meter level for the same two directions are about 7.5 percent and 5.5 percent, respectively. The NRC staff does not understand the reason for this difference. Are all measurements from the same tower? What are the measurement heights of the wind roses shown in Figure 5? Are values centered on each direction?**

**NMC Response:**

A review of the data and PBNP Engineering Evaluation that supports the wind direction frequency data analysis indicates that Figure 5 in Attachment VII to reference 1 has the wrong data plotted for the 1997 - 1999 (10 m instrument) wind direction frequency. PBNP performed statistical data analysis to determine the number of hours observed in each of the 16 sectors, whereby, each sector was centered on the direction and considered to be 22.5 degrees wide. For example, the number of hours observed in the north direction were those hours reported for directions greater than 348.75 degrees and less than or equal to 11.25 degrees. This data analysis performed at PBNP demonstrates that the wind direction frequencies for the north and north-northwest winds in 1997 - 1999 are 8 percent and 6 percent, respectively. Therefore, the PBNP analysis results are in general agreement with those results NRC had obtained from the ARCON96.met data file submitted with reference 1.

**NRC Question 1d – Meteorological Data:**

**Why are calibrations performed annually and not semi-annually as recommended by Regulatory Guide 1.23, “Onsite Meteorological Programs?”**

**Are all data presented, including that provided in figures, from the same tower?**

**Are any of the 1997-1999 data from strip charts? If so, how much and for what time intervals?**

**NMC Response:**

The calibration frequency for the meteorological instruments changed in 1997 from semi-annual to annual. This change was evaluated under the 10 CFR 50.59 process at PBNP. The frequency change was deemed acceptable because there had been a reduced emphasis on the use of meteorological data due to the emergency event classification basis shifting from dose projections to plant conditions. This was based on NRC letter dated July 11, 1994, “Acceptable Deviations to Appendix 1 to NUREG-0654/FEME-REP-1,” and the service recommendation of the manufacturer supported by a review of past data that had indicated that instrument drift had not become worse over time. However, it was recognized this year that an inadequate change process had been used to reduce the calibration frequency. Since then, the semi-annual calibration frequency has been restored.

All of the data presented in reference 1 for years 1967-1969, 1991-1993 and 1997-1999 are from the same tower; the primary PBNP meteorological tower located south of the units. As noted in reference 1, the only difference between the 1960’s data and the 1990’s data is the instrumentation used to collect the data.

None of the data from 1997 – 1999 was taken from strip charts. All of the data used to calculate the atmospheric dispersion factors was recorded by the Plant Process Computer System.

**NRC Question 2a – Onsite Relative Concentration (X/Q) Values:**

**Table 5-1 of Attachment II of the March 27, 2003, letter provides inputs used in the control room X/Q calculations. Is the distance from the containment purge stack to the control room air intake the same as the height of the intake and are both the containment purge stack and drumming vent stack the same height or are these approximations?**

NMC Response:

All distances and heights are based on information either directly or indirectly provided from approved plant controlled drawings. The control room intake height was set equal to the elevation of the turbine hall building. The distance from the Unit 2 containment purge stack to the control room intake was taken from a plan view of the plant. It is a mere coincidence that the control room intake height and distance to the Unit 2 containment purge stack are estimated to be the same numerical value.

NRC Question 2b – Onsite Relative Concentration (X/Q) Values:

**The first paragraph of page 21 of Attachment II implies that the closer a release location is to the receptor, the higher the resultant X/Q value will be. This is generally, but not always, true. Were comparative estimates made for an assumed release from the Unit 1 containment vent purge stack?**

NMC Response:

Specific results for the Unit 1 containment vent purge stack were not calculated, because the results obtained for the Auxiliary Building Vent Stack and the Unit 1 "A" and "B" Main Steam Safety Valves demonstrated that release points to the south of the Control Room air intake located in the Unit 1 facade are less than the values calculated for release points associated with the Unit 2 facade. The Unit 1 containment purge stack is located approximately mid-way between the Unit 1 "A" and "B" Main Steam Safety Valves with a release height commensurate with that of the Safety Valves.

NRC Question 2c – Onsite Relative Concentration (X/Q) Values:

**Referring to page 31 of Attachment II, how do the resultant X/Q values for an open equipment hatch and personnel airlocks compare with X/Q estimates from the containment purge stack?**

NMC Response:

Specific X/Q values were not calculated for an open equipment hatch or personnel airlocks for either Unit due to their location relative to the control room intake as compared to release points whose atmospheric dispersion factors were specifically calculated. The equipment hatches for Unit 1 and Unit 2 are located at the 26 ft elevation (ground elevation) on the south and north sides of their respective facades. Unit 2 equipment hatch is directionally orientated in approximately the same direction as the Unit 2 "B" Safeties; however, considerably further away and at the ground elevation. Similarly, the Unit 2 personnel hatch is located with the same directional orientation and distance from the control room intake as the Unit 2 "B" safeties, however, at a lower elevation (66 ft verses the safeties which are at the 170 ft elevation). The Unit 2 "B" safeties' atmospheric dispersion X/Q for the 0-2 hr time interval was calculated to be  $3.51E-03 \text{ sec/m}^3$ , which is less than that calculated for the Unit 2 purge stack

( $5.65\text{E-}03 \text{ sec/m}^3$ ). Because the Unit 2 equipment and personnel hatches have approximately the same orientation relative to the control room intake, are at least as far or farther from the control room, and are both at lower elevations than the Unit 2 "B" safeties, it is reasonable to assume that the dispersion factors for Unit 2 "B" safeties will bound those for the hatches.

Unit 1 personnel and equipment hatches are directional orientated similar to the Unit 1 "B" safeties, whereby the personnel hatch is at the 66 ft elevation on the east side of the Unit 1 containment and the equipment hatch is at the 26 ft elevation on the south side of the Unit 1 containment. (Essentially, these hatches are mirrored from the location of those for the Unit 2.) The Unit 1 "B" safeties' atmospheric dispersion factor for the 0-2 hr time period is calculated to be  $2.00\text{E-}03 \text{ sec/m}^3$ , which is less than the value calculated for the Unit 2 purge vent. Because Unit 1 hatches have approximately the same directional orientation, are at least as far or farther from the control room intake, and are both at lower elevations than the Unit 1 "B" safeties, it is reasonable to assume that the dispersion factors for Unit 1 "B" safeties would bound those for the hatches. In addition, based on the calculations performed for other postulated release points associated with both Units 1 and 2, it can be concluded that the atmospheric dispersion factors increase as directional orientation changes from south to north and from west to east.

**NRC Question 2d – Onsite Relative Concentration (X/Q) Values:**

The first paragraph of the response to NRC Question 3, page 5 of Attachment VII, states that Bechtel drawing M-142 has been attached. Is it attached to Attachment II, Attachment VII, or elsewhere?

**NMC Response:**

Bechtel drawing M-142 was inadvertently not included in reference 1. However, it is included as an enclosure to this response.

**NRC Question 3a – Offsite X/Q Values:**

Table 2-4, page 9 of Attachment II, lists the 0-8 hour low population zone (LPZ) X/Q value as  $3.0 \text{ E-}04 \text{ sec/m}^3$ , but is given as  $3.0 \text{ E-}05 \text{ sec/m}^3$  elsewhere. Is the value in Table 2-4 correct?

**NMC Response:**

The 0-8 hour atmospheric dispersion factor for the low population zone provided in Table 2-4, page 9 of Attachment II of reference 1 is a typographical error. The LPZ X/Q used in the dose calculations is  $3.0 \text{ E-}05 \text{ sec/m}^3$  as provided elsewhere in the submittal. A review of the submittal has been performed, and no other necessary corrections to this parameter have been found.

**NRC Question 3b – Offsite X/Q Values:**

**Page 21 of Attachment II states that the X/Qs are 95 percentile values. Typically, but not always, the 99.5 percentile direction dependent values are more restrictive than the 95 percentile site X/Q values. Are the 95 percentile site X/Q values more restrictive at Point Beach and, therefore, the X/Q values shown are the 95 percentile values?**

**NMC Response:**

Section 5.2 of Attachment II inaccurately stated that the offsite X/Q values are 95 percentile values. The exclusion area boundary and low population X/Q values provided are the 99.5 percentile sector values. These values were calculated per the guidance of Regulatory Guide 1.145. Meaning that both 99.5 percentile sector values and 95 percentile site X/Q values were calculated and compared in order to determine the maximum value. For PBNP, the sector values (99.5 percentile values) are more restrictive.

**ENCLOSURE 2**

**BECHTEL DRAWING M-142**

**1 page follows**

**THIS PAGE IS AN  
OVERSIZED DRAWING OR  
FIGURE,**

**THAT CAN BE VIEWED AT THE  
RECORD TITLED:  
DRAWING NO. M-142,  
"HEATING AND VENTILATION  
ROOF PLAN"**

**WITHIN THIS PACKAGE... OR  
BY SEARCHING USING THE  
DOCUMENT/REPORT NO.  
M-142**

**D-01**