

**REQUEST FOR ADDITIONAL INFORMATION  
REGARDING PROPOSED LICENSE AMENDMENT REQUEST FOR  
IMPLEMENTATION OF ALTERNATIVE SOURCE TERM (AST)  
PALISADES NUCLEAR PLANT (PNP)  
TAC NO.: MD3087**

**Meteorological Data**

1. ARCON96 was used to calculate new atmospheric dispersion factors ( $\chi/Q$  values) for use in evaluating the radiological consequences of design-basis accidents on the control room. Hourly onsite meteorological data (e.g., wind speed and direction, temperature) that were collected during the calendar years of 1999-2003 at 10.1-m and 57.8-m levels were used as input into the ARCON96 code. PAVAN was used to generate  $\chi/Q$  values at the exclusion area boundary and low population zone using a joint frequency distribution (JFD) of wind direction and wind speed with respect to atmospheric stability class. The JFD was derived from the onsite meteorological data collected at 10.1-m.

According to the U.S. Nuclear Regulatory Commission (NRC) Regulatory Guide (RG) 1.194 (Table A-1), ARCON96 requires wind directions to be represented from 1°–360°, with a wind blowing from the north representing 360°. However, the meteorological data set submitted contains wind direction values ranging from 0°–360°. If the 0° wind direction values are intended to represent valid wind direction observations from the north, they will be misinterpreted by ARCON96 as invalid data. Please explain this apparent deviation from the regulatory guidance.

The staff notes that the onsite wind directions from 0° always have a corresponding wind speed of 0 m/s. Table 1.1 below illustrates the number of occurrences where the wind direction is from 0° and the wind speed is 0 m/s. Are the meteorological data where wind direction equals 0° and wind speed equal to 0 m/s actually representing calm meteorological conditions or should these data be considered invalid? What is the impact, if any, on both the ARCON96 and the PAVAN  $\chi/Q$  values if these data are invalid values and are identified as such with a field of "9"s?

Table 1.1: Palisades (1999-2003) Number of Occurrences of Wind Direction from 0° and Wind Speed equal to 0 m/s

Palisades (1999-2003)		
Counts of Wind Direction from 0° and Wind Speed = 0 m/s		
	10.1-m	57.8-m
1999	19	41
2000	19	23
2001	38	6
2002	15	16
2003	33	11
Total	124	97

ENCLOSURE

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**Atmospheric Dispersion Factors**

2. ARCON96 was used to calculate new  $\chi/Q$  values for use in evaluating the radiological consequences of design-basis accidents on the control room. Table 1.8.1-1, on page 58 of 84, in Enclosure #4 (NAI Report No. NAI-1149-027 AST Licensing Technical Report for Palisades Revision #1) of the Palisades Alternative Source Term Proposed License Amendment lists release-receptor combination parameters for analysis events. Of particular interest to the staff is the release-receptor combination involving the safety injection and refueling water tank vent and the normal control room intake "B" which has a separation distance of approximately 7.7 m. According to the NRC RG 1.194 Regulatory Position C.3.4, if the distance to receptor is less than about 10 m, ARCON96 should not be used to assess relative concentrations. Please explain this deviation from regulatory guidance and justify the use of ARCON96 in your analysis for this release-receptor combination.
3. Table 1.8.1-3, on page 59 of 84, in Enclosure #4 of the Palisades Alternative Source Term Proposed License Amendment shows the release-receptor point pairs assumed for analysis events (e.g., loss-of-coolant accident (LOCA), main steamline break (MSLB), steam generator tube rupture (SGTR), small line break outside containment (SLBOC), control rod ejection (CRE), fuel handling accident (FHA), and spent fuel cask drop) prior to and following control room isolation. For the small line break outside containment event listed in Table 1.8.1-3, the release-receptor point pairs prior to and following control isolation appear to be reversed. More specifically, should the release-receptor pair prior to control room isolation be E (plant stack-normal intake "B") and the release-receptor pair following control room isolation be F (plant stack-emergency intake)?
4. The staff finds the licensee's description of the Radiological Consequences – Event Analyses in Section 2.0, beginning on page 16 of 84, in Enclosure #4 (National Applications, Inc. (NAI) Report No. NAI-1149-027 AST Licensing Technical Report for Palisades Revision #1) of the Palisades Alternative Source Term Proposed License Amendment to be very thorough and adequate. However, the staff had difficulty interpreting the summary of the cask drop event description presented in Table 1.8.1-3 Release-Receptor Point Pairs Assumed for Analysis Events. The cask drop event is characterized by multiple cases which do not necessarily correspond to the format of Table 1.8.1-3, with regard to the other event descriptions (i.e., LOCA, MSLB, SGTR, SLBOC, CRE, and FHA). Therefore, to clarify the description of the cask drop event, please provide a separate table which completely describes the event.
5. The plant drawings that were submitted as part of the Palisades Alternative Source Term License Amendment Request are somewhat hard to decipher. In order to perform an adequate review of the release-receptor data provided as input to ARCON96, please provide a plant drawing, to scale, with all the release and receptor locations clearly labeled.