

IPRenewal NPEmails

From: Palla, Robert
Sent: Thursday, October 29, 2009 1:07 PM
To: Stuyvenberg, Andrew
Cc: IPRenewal NPEmails
Subject: Weather Runs 10 29 09.doc
Attachments: Weather Runs 10 29 09.doc

FYI

Hearing Identifier: IndianPointUnits2and3NonPublic_EX
Email Number: 1838

Mail Envelope Properties (8C658E9029C91D4D90C6960EF59FC0D60258F0F749)

Subject: Weather Runs 10 29 09.doc
Sent Date: 10/29/2009 1:07:29 PM
Received Date: 10/29/2009 1:07:30 PM
From: Palla, Robert

Created By: Robert.Palla@nrc.gov

Recipients:
"IPRenewal NPEmails" <IPRenewal.NPEmails@nrc.gov>
Tracking Status: None
"Stuyvenberg, Andrew" <Andrew.Stuyvenberg@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	Size	Date & Time
MESSAGE	5	10/29/2009 1:07:30 PM
Weather Runs 10 29 09.doc	224878	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Indian Point Weather

Weather data were reviewed and are of interest because the consequences for a given release of radioactive material would be different if the release occurred at different times of the year and under different ambient weather conditions. Entergy averaged 5 years of meteorological data and used the 5 year average as input data in the MACCS2 analysis rather than using the standard approach of sampling over a year of data. The process used to average the data was provided in the MACCS2 Meteorological Input File Generation Report (IPEC00103877 thru IPEC00103889). The MACCS2 input file meti.inp includes 8,760

hourly weather samples (365 days x 24 hours/day) from the January 2000 to December 2004 IPEC 10 meter met tower data. The results of the averaged weather generate a wind rose

predominantly in the northerly direction as shown in Figure 1. Review of the process describing how the weather was averaged did not provide insights into why the wind rose is predominantly northerly.

The averaged weather data were compared to the wind speed/direction

information provided in the Indian Point annual effluent reports for 1999 through 2002 (ML031220099, ML021260723, ML011240172, ML003714664), also for the 10 meter met tower. A wind rose was developed for each year from 1999 through 2002. Each of the weather files for the years 1999 thru 2002 are relatively similar, and the wind rose for each year of weather shows in Figure 2 that the northern and southern directions are

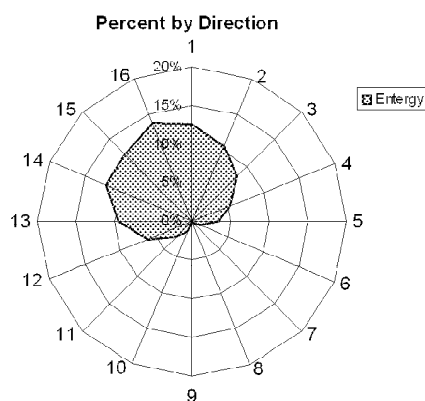


Figure 1. Plot of Entergy 5 Year Averaged Weather from the site 10 meter tower showing direction wind is blowing toward.

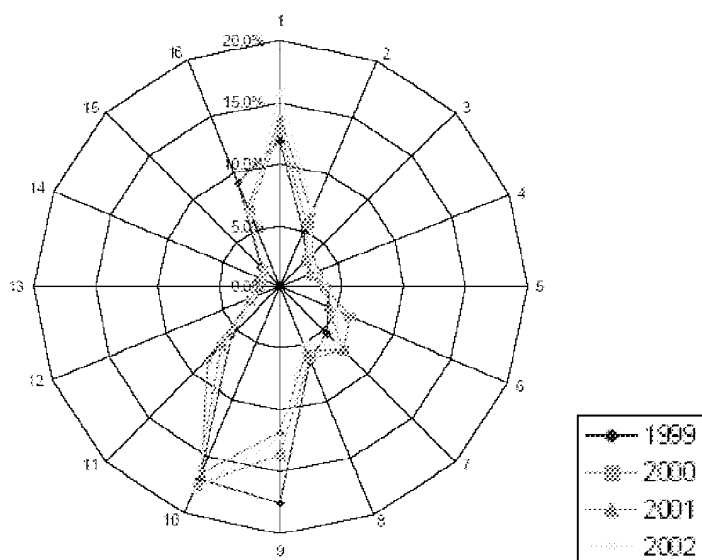


Figure 2. Plot of Weather for Years 1999 – 2002 from the site 10 meter tower showing direction wind is blowing toward. (percent by direction)

dominant. Thus, the MACCS2 input of averaged weather used in the analysis does not appear to reflect the annual weather conditions. An analysis is needed using discrete years of weather data for each or at least some of the 5 years, without averaging weather, to understand the effects of weather on the SAMA conclusions.

Data Needs

The inputs and assumptions regarding the weather input file were not described well enough to fully understand whether the application of these were appropriate for the analysis. In order to confirm the SAMA analysis is conservative and consistent with current industry practice and modeling techniques, additional information is needed including the following:

1. Additional information is needed in the form of consequence analyses using annual, rather than averaged, weather data. An analysis of at least one specific weather year should be conducted using the 10 meter weather information available from the site. Use of the 10 meter station may be expected to show a greater likelihood of wind in the northerly and southerly directions following the river. It may be beneficial to also perform an analysis using the weather data from the 120 meter station available from the site.

When performing the analysis using the specific weather year, it may be beneficial to revise some other parameters.

- NUREG 1150 values of 50 rem in 12 hours and 25 rem in 24 hours as the input criteria for Hotspot and Normal Relocation. These values lead to higher dose to individuals than current practice would indicate. Values used in current MACCS2 analyses are based on EPA protective action guides (PAGs) of 1 rem in 12 hours and 0.5 rem in 24 hours.
- A single plume segment was modeled by Entergy which can limit the effect of weather changes. There may be a benefit to using the more current approach of multiple plume segments. Using hourly plume segments takes maximum advantage of wind shifts that occur in the weather data, but this would require using WinMACCS rather than the older MACCS2.