NRC-00-002

Wisconsin Public Service Corporation
(a subsidiary of WPS Resources Corporation)
Kewaunee Nuclear Power Plant
North 490, Highway 42
Kewaunee, WI 54216-9511
920-388-2560

January 13, 2000

10 CFR 50, App. E

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Radiological Emergency Response Plan Implementing Procedures

Pursuant to 10 CFR 50 Appendix E, Wisconsin Public Service Corporation hereby submits one copy of the latest revisions to the Kewaunee Nuclear Power Plant Radiological Emergency Response Plan Implementing Procedures (EPIPs). These revised procedures supersede the previously submitted procedures.

Pursuant to 10 CFR 50.4, two additional copies of this letter and attachment are hereby submitted to the Regional Administrator, U. S. Nuclear Regulatory Commission, Region III, Lisle, Illinois. As required, one copy of this letter and attachment is also submitted to the Kewaunee Nuclear Power Plant NRC Senior Resident Inspector.

Sincerely,

for

Mark L. Marchi
Vice President-Nuclear

DLF/jmf

Attachment

cc - NRC Senior Resident Inspector, w/attach.
US NRC, Region III (2 copies), w/attach.
Electric Division, PSCW, w/o attach.
QA Vault, w/attach.

A045

KEWAUNEE NUCLEAR POWER PLANT

December 29, 1999

EMERGENCY PLAN IMPLEMENTING PROCEDURES TRANSMITTAL FORM

RETURN TO DIANE FENCL - KNPP

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T. Webb - KNPP QA Vault w/NRC Letter (15)*
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L. Renier-Hicks – GB-D2 Nuclear EOF (77)
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C. Hutter - ATF-1 (64)
LOREB – ATF-1 (66)
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C. Long - RPO (55)

WORKING COPIES (101-199) These copies of procedures are kept in the areas designated for use in response to an emergency. These are not complete sets, but contain only those procedures that are used to implement activities in the location where they are kept. Please dispose of any sections distributed that are not tabbed in the indicated copy.

C. Long - RAF/RPO (106, 107)
C. Long - SBF/ENV (108, 109)
C. Long - SBF/EM Team (110, 111, 111A)
C. Long - T. R. Hospital (118, 119)
W. Flint - Cold Chem/HR Sample Room (113)
N. Deda - SBF/SEC (114)
M. Anderson - CR/Communicator (116)(Partial Distribution)
Simulator/Communicator (117)
J. Fletcher - Security (121)
N. Deda - Security Building (120)
K. Evers (125)
J. Stoeger (126)

Originals to KNPP QA Vault

Please follow the directions when updating your EPIP Manual. WATCH FOR DELETIONS!!! These are controlled procedures and random checks may be made to ensure the manuals are kept up-to-date.

*THIS IS NOT A CONTROLLED COPY. *IT IS A COPY FOR INFORMATION ONLY.*

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WISCONSIN PUBLIC SERVICE CORP. Kewaunee Nuclear Power Plant *Emergency Plan Implementing Procedure*	No. EPIP-ENV-3C	Rev. T
	Title Dose Projection Using RASCAL Version 2.2 Software	
	Date DEC 29 1999	Page 1 of 19
Reviewed By David R Seebart	Approved By Arthur M Bartlett	
Nuclear Safety Related ☐ Yes ☑ No	PORC Review Required ☐ Yes ☑ No	SRO Approval Of Temporary Changes Required ☐ Yes ☑ No

1.0 Purpose

1.1 This procedure provides instruction for assessing radiological dose due to radiological emergencies using Radiological Assessment System for Consequence Analysis (RASCAL) Version 2.2 Software.

1.2 RASCAL is a set of computer based tools to estimate the following: source term, atmospheric transport, dose from a radiological accident, dose from field measurements of radiological concentrations, and compute decay of radionuclides.

2.0 General Notes

2.1 For releases of radionuclides too small to be adequately evaluated using RASCAL, refer to SP-32B-268, Site Boundary Doses From Gaseous Effluents.

2.2 After activation of the EOF and the RAF, each dose projection printout should be reviewed and approved by both the Radiation Protection Director (RPD) and the Environmental Protection Director (EPD) prior to distribution to the Emergency Director (ED) or Emergency Response Manager (ERM).

2.3 KNPP Meteorological Data is available from the Plant Process Computer - Group Output Block #9, Graphics Display #54 or #111, Point Summary #M@@@@@, or the Technical Support Center.

2.4 Point Beach Meteorological Data is available through the Point Beach Nuclear Power Plant Control Room (See EPIP Appendix APPX-A-3 for the telephone number).

2.5 RASCAL may be run from any computer connected to the two primary network servers used by the Nuclear Department (GBNUC1 and KNPP1).

2.6 Two computers, connected to reliable power sources and provided with hard disk drives and necessary software, are provided as stand alone dose calculating stations to be used to run RASCAL Version 2.2. They are in:

- EOF Dispatch Area (GB D2-6)
- RAF Calibration Room

3.0 Precautions and Limitations

3.1 Lake Breeze is not calculated by RASCAL.

3.1.1 To determine if Lake Breeze is present, see Table 1.

3.1.2 IF Lake Breeze is present, THEN RASCAL projections may not be correct.

3.2 Due to the uncertainties of initial conditions and the unfolding accident sequence, RASCAL should be used to bound the possible range of dose projections. Set up several sets of inputs to cover the possible range of plant conditions (source terms), event data, and meteorological conditions.

3.3 Dose projections produced by RASCAL are rough estimates and should serve only as a guide during a declared emergency. Protective Action Recommendations should be based as a minimum on the level of declared emergency as stated in EPIP-AD-19, and when available actual conditions as measures in the field.

4.0 Initial Conditions

4.1 This procedure is to be used in conjunction with RASCAL software whenever conditions at the Kewaunee Nuclear Power Plant involve a release, or potential release of radioactive materials to the atmosphere.

5.0 Procedure

5.1 Starting RASCAL without Network Support

Note

The computer in the EOF dispatch area is "Stand Alone" and does not have a network connection. It is equipped with a hard drive which is setup to boot and run RASCAL automatically. IF RASCAL doesn't start, THEN perform step 5.1.1 using a designated back-up Lap Top computer.

5.1.1 In the EOF Dispatch Area, perform the following steps:

5.1.1.1 Ensure a laser printer is connected to the computer.

5.1.1.2 Restart (reboot) the computer.

5.1.2 In the RAF Calibration Room, perform the following steps:

5.1.2.1 Connect a laser printer to the computer.

5.1.2.2 Locate the RASCAL non-network startup disk.

5.1.2.3 Insert the disk in the A: drive.

5.1.2.4 Restart (reboot) the computer.

Note

Contact the Help Desk at extension 7200 if problems are encountered.

5.2 Starting RASCAL from a Network computer

5.2.1 Log onto the network using your normal Login ID.

5.2.2 Select the desired printer.

5.2.2.1 Click on the **START** button.

5.2.2.2 Click on the **SETTINGS** icon.

5.2.2.3 Click on the **PRINTERS** icon.

5.2.2.4 Select the desired printer and right click on the icon.

5.2.2.5 Left click on the **SET AS DEFAULT**.

5.2.2.6 Close printers folder.

5.2.3 Run the RASCAL Program

5.2.3.1 Select Start, then Run.

5.2.3.2 Type N:\apps\RASCAL22\RASCAL22.bat

!! Caution !!

RASCAL will not accept the date 2/29/2000 (this is known Y2K problem). If a dose projection or other calculation is required with any dates of 2/29/2000, all dates should substitute the year "2000" with the year "1944."

5.3 When the RASCAL Version 2.2 Program starts and displays text showing the version, press any key or any mouse button to continue.

5.3.1 Select one of the following menu choices:

- Source Term to Dose (ST-DOSE); should be used to asses the consequences of potential or ongoing releases. ST-DOSE estimates the integrated doses and consequences resulting from the accidental release of radionuclides to the atmosphere.
- Close-In Source Term to Dose; is designed for a materials accident. In a materials accident the effects are usually close to the source. A "close-in" straight-line Gaussian plume model estimates doses within 25 to 800 meters from the accident site.
- Field Measurement to Dose (FM-DOSE); computes doses from measured environmental radionuclides in the air or on the ground.
- Decay Calculator; computes the activities of radionuclides present after decay and ingrowth for a period specified by the user.
- Exit/Return to System

Note

ST-DOSE estimates integrated doses and consequences resulting from the accidental release of radionuclides to the atmosphere.

5.4 IF ST-DOSE or Close-In source is chosen, then select "Create New Case."

Note

The case name will appear as a title on the printouts and, therefore, should be both descriptive and unique. For example: Tube rupture – Initial Run, No fuel damage.

5.4.1 Enter a **CASE TITLE** on the main data entry form in the first field (i.e., Kewaunee Plant Emergency Drill).

5.4.1.1 Pressing F6 will clear the field and allow quick entry.

5.4.1.2 Add your initials to the title to help identification of your printout.

5.4.2 Site Name; enter **"K"** for Kewaunee.

5.4.3 Effective Release Height; enter **IOM**.

5.4.4 Default Units: Select (Ci)

5.4.5 Data Source: IF the data entered are not measured data, **THEN** select projected. **IF** the data entered are real data for an actual incident, **THEN** select actual. .

5.4.6 Select one of the following source term calculation methods:

- Isotopic Release Rate
- Isotopic Concentrations
- Mix specified by Analyst
- Plant Conditions
- Containment Monitor Reading
- Spent Fuel/Spent Fuel Pool

Note

Contact the RPD for isotopic release rate information (EPIP Forms RET 2B.1 or RET 2B.2).

5.4.6.1 IF the source term release rates for each radionuclide has been estimated independently, THEN select isotopic release rate.

5.4.6.1.1 Release Units: Select units of the release; first select metric prefix, then select sec., min., or hr.

5.4 6.1.2 Release Rates: Enter release rate for each radionuclide to a maximum of three significant figures.

5.4.6.1.3 Zero - resets all release rates to zero.

5.4.6.1.4 Select "Main Menu" or press F10 Key to exit form.

5.4.6.2 IF the source term release concentration for each radionuclide has been estimated independently, then select isotopic concentrations.

5.4.6.2.1 Release Rate: Enter release rate for the accident then select cc, ft3, liter, or g., then select sec., min., or hr.

5.4.6.2.2 Concentration Units: Select the units of concentration, first select metric prefix, then select cc, ft^3, liter, or g,

5.4.6.2.2 Concentration: Enter concentration of each radionuclide to a maximum of three significant figures.

5.4.6.2.3 Zero - resets all concentrations to zero.

Note

This pushbutton imports data from the decay calculator. The data imported is added to the concentrations already present on the form.

5.4.6.2.4 Import: (Optional) Allows the decay of several isotopic concentrations over different time periods and then adding them together.

5.4.6.2.5 Select "Main Menu." Press F10 key to exit form.

Note

Contact the RPD for SPING data or steam release information (EPIP Forms RET 2B.3, RET 2B.4, or RET 2B.5).

5.4.6.3 IF gross release rate information is available on Forms RET 2B.3 (Auxiliary Building Stack Release), RET 2B.4 (Containment Stack Release), or RET 2B.5 (Steam Release), THEN select mix specified by analyst.

5.4.6.3.1 Enter the gross release rate in Ci/sec.

Note

Sum of percentage of release may not be greater than 100%.

Note

Default values for percentage of release are 98% noble gases, 2% iodine's.

5.4.6.3.2 Percentage of Release: Enter the estimated percentages of the release that is in each of the listed categories.

5.4.6.3.3 Select "Main Menu" or press F10 Key to exit form.

5.4.6.4 IF the release pathway is known, select Plant Conditions.

5.4.6.4.1 Select one of the following release pathways:

- Large dry or sub atmospheric containment (leakage/failure)
- Steam generator tube rupture
- Bypass of containment

5.4.6.4.2 IF the release pathway is large dry or subatmospheric containment leakage/failure, select:

Note

Core Conditions can be obtained from the control room or the TSC if it is activated.

a. Core conditions:

- Gap release (15-30 min)
- In-vessel severe core damage (>30 min.)
- Vessel melt through

b. Enter reactor power for the last few months or a default of 1650 Mw(T)

c. Select sprays (ON or OFF)

d. Select release path (Filtered or Unfiltered)

e. Select leak Rate (percent per hr.)

f. Select "Main Menu" or press F10 Key to exit form

5.4 6.4.3 If release pathway is Steam Generator Tube Rupture:

Note

Core Conditions can be obtained from the control room or the TSC if it is activated.

a. Select the coolant concentrations using the description that is closest to probable core condition:

- Gap release (uncovered 15–30 min.)
- In-vessel severe core damage (>30 min.)
- Typical coolant
- Coolant with 100x normal non-nobles

b. Select Steam Generator Conditions (Partitioned or Not Partitioned)

Note

Default is one tube.

c. Select Release Rate using one of five leak rate categories, based on number of tubes or pumps active.

d. Select release is from (steam jet air ejector or safety valves).

e. Select "Main Menu" or press F10 Key to exit form.

5.4.6.4.2 If the release pathway is Bypass of containment

Note

Core conditions can be obtained form the control room or TSL if it is activated.

a. Select one of the following core conditions:

- Gap release (15-30 min.)
- In-vessel severe core damage (>30 min.)
- In-vessel melt through

b. Enter

- Reactor power level last few months or a default of 1650 $Mw_{(T)}$

c. Select release path (filtered or unfiltered)

d. Select leak rate (percentage per hour)

e. Select "Main Menu" or press F10 Key to exit form.

5.4.11 IF the containment area radiation levels are known, select Containment Monitor Reading.

5.4.11..1 Select Location of Monitor (PWR)

5.4.11.2 Enter Reactor Power for the last few months or allow default of 1650 Mw(t)

5.4.11.3 Enter Monitor Reading in R/hr

5.4.11.4 Select containment sprays (ON or OFF)

5.4.11.5 Select Release Path (filtered or unfiltered)

5.4.11.6 Select Leak Rate from one of the eight leak rate categories in percent per hour

5.4.11.7 Select "Main Menu" or press F10 Key to exit form

5.4.6.5 IF the accident is based on the spend fuel select Spent Fuel/Spent Fuel Pool

5.4.6.5.1 Select Fuel Condition, (Zircalloy Fire-New Batch Only or Fuel Cladding Failure-Gap Release.

5.4 6.5.2 Enter Reactor Power Enter for the last few months or allow default of 1650 Mw(t)

5.4.6.5.3 Enter Last Batch put in Pool (date and time)

5.4.6.5.4 Enter number of batches

5.4.6.5.5 Select sprays (ON or OFF)

5.4.6.5.6 Select Release Path (filter or unfiltered)

5.4.6.5.7 Select Leak Rate (one of the seven leak rates in percent per hour)

5.4.6.5.8 Select "Main Menu" or press F10 Key to exit form.

5.4.7 Select **EVENTS** from the main menu.

Note

Radionuclides are decayed from shutdown time except when the isotopic release rates containment monitor or spent fuel option are used.

5.4.7.1 IF required, enter the day and time the Reactor Shutdown, OR, IF the analysis does not model a reactor trip, THEN enter the time the release started in the **SHUTDOWN** field.

Note

The release start to containment time may be the same as shutdown or up to one year later. It may not be before shutdown.

5.4.7.2 IF required, enter date and time for Release to Containment or Other Structure when the release from the Reactor Coolant System occurred.

Note

The release start to environment must not be before the release to containment but may be up to 24 hours after it.

5.4.7.3 IF required, enter the day and time for Release to Environment (Start of Exposure) when the release to the atmosphere occurred.

Note

The release end time can be from 1 minute to 24 hours after the start of the release.

Note

IF a leak rate of 100% per hour is to be selected in the source-term section, THEN the release end time cannot be more than 1 hour later than the release start time.

5.4.7.4 IF required enter the End of Release to Environment day and time.

Note

Exposure end time must be the same as or later than the release to environment end. However, it cannot be more than 48 hours after the release to environment end.

5.4.7.5 IF required enter the End of Exposure day and time, time when dose calculations will end.

5.4.7.6 WHEN all the Event Times are entered correctly, THEN select "Main Menu" or press F10.

5.4.8 Select **METEOROLOGICAL DATA** from the Main Menu.

Note

The time entered for the first set of met data should correspond to the start of release.

5.4.8.1 Enter date and time meteorological data was obtained.

5.4.8.2 Enter the 10 meter wind speed.

5.4.8.3 Enter the 10 meter wind direction.

Note

RASCAL does not calculate the meteorological stability classification. Table 3 can be used to determine Pasquill categories.

5.4.8.4 Select the stability class of the mixing layer. A choice list of stability classes is displayed when the stability field is highlighted.

5.4.8.5 Enter Mixing Layer Height (Default 500M)

Note

Precipitation affects the wet deposition rate. The precipitation type and intensity can be found in National Weather Service hourly weather reports. Table 2 provides the conversion of weather report precipitation symbols to the appropriate precipitation class and intensity. Notes usually precede the affected steps.

Note

IF a weather report shows more than one precipitation type, THEN choose the type giving the most intense model precipitation

Note

IF rain and snow precipitation are reported with equal intensity, THEN enter the corresponding rain intensity.

5.4.8.6 Select Precipitation Type

- None
- Light Rain
- Moderate Rain
- Heavy Rain
- Light Snow
- Moderate Snow
- Heavy Snow

5.4.8.7 When all of the data is entered correctly, THEN select "Main Menu" or press F10 key to exit this form.

5.4.9 IF additional meteorological data for other times is to be entered, THEN repeat step 5.4.8.

Note

There are two dispersion models: Plume or Puff. Use plume when projecting dose based on a single met data set. Use puff when projecting dose based on several different met data sets, for extremely low wind speed conditions, or when more data points on the plots are desired. Notes usually precede the affected steps

Select the PLUME option to calculate doses using a straight-line Gaussian plume model

Note

All of the meteorology data that have been entered and that are effectiveduring the interval from release to the environment through the end of exposure are used in calculating doses with a Puff model.

Select the **PUFF** model to calculates doses for 0-2 miles using straight-line Gaussian plume model and for greater distances using a Lagrangian puff model.

5.4.10 Select **CALCULATION OPTIONS** from the Main Data Entry Form (Plume or Puff).

Note

This option is not included for CLOSE-IN ST DOSE calculations (O-2 MI)

5.4.11 Select **BUILDING WAKE** (ON or OFF)

Select on to include building wake into calculation.

Note

The release will be assumed to be at ground level if the wind speed is 1 mph or more and the rate of diffusion will be increased to account for the effects of the building wake. If wind speed is less than 1 mph, the release will be assumed to be at the specific release height and the diffusion rate will not be adjusted.

Select **OFF** to exclude building wake effects.

Note

RASCAL defaults to a 10 mile radius from the plant with a spatial resolution of 0.67 mile.

5.4.12 Select **CALCULATION RADIUS** (10 miles (16KM) or 25 miles (40 KM).

Note

The calculate pushbutton is not available if you have not defined a title and a source term or if you have selected a new plant site and previously selected source term option is invalid for the new plant site

The form that appears summarizes the input and reports calculation progress.

5.4.13 Select **CALCULATE** to begin calculations

Note

Three summary reports and ten graphic reports are generated. Only significant results are displayed. Values $<10^{-3}$ rem are converted to zeros

5.4.13.1 Select the desired report for the list below:

- **MAXIMUM VALUES** to display a table of the Maximum Doses at selected distances from the release point.
- **COMPUTED SOURCE TERM REPORT** for a summary of the radionuclides making up the release will be displayed and radionuclide and the fraction of the core inventory released.

Note

Not available for CLOSE-IN ST DOSE calculations (0-2 MI)

The remaining options are:

- **TOTAL ACUTE BONE DOSE** to plot the Total Acute Bone Dose on the map and give insight into early health effects for reactor accidents.
- **ACUTE LUNG DOSE** to plot the Acute Lung Dose on the map and provide insight into early health effects for accidents where lung dose dominates such as Pu releases.
- **TEDE** to plot the Total Effective Dose Equivalent on the map for comparison with EPA guidance.
- **THYROID DOSE** to plot the Thyroid Dose on the map for comparison with EPA thyroid PAGs.
- **CLOUD SHINE DOSE** to plot the Cloud Shine Dose on the map for calculating

Note

The total Deep Dose Equivalent (DDE) equals cloud shine + initial ground shine.

- **INITIAL GROUND SHINE DOSE** to plot Ground Shine Dose on the map for calculating DDE from deposition.
- **4-DAY GROUND SHINE DOSE** to plot the deposition component of the Total Effective Dose Equivalent on the map (not normally viewed).
- **ACUTE BONE INHALATION DOSE** to plot the Inhalation Component of the Total Acute Bone Dose on the map (not normally viewed).
- **DEPOSITION** to plot the Ground Deposition levels in uCi/cm^2 and on the map (not normally viewed).

5.4.13.2 Select **(VIEW/PRINT)** to see projected data. If a printout is required, select (Print (ALT-P) or Enter (ALT-P))

5.4.13.3 Select (Save File) to save your calculations for later review.

5.4.13.4 Select **"MAIN FORM"** or press **(F10)** to exit this form.

5.4.14 Select (Mainform (F-10)) or the F-10 key to return to the main menu.

5.5 Comparison of RASCAL Dose Projection Results with Environmental Monitoring Team (EMT) and/or Site Radiation Emergency Team (SRET) Survey Results.

5.5.1 IF available, THEN obtain plume centerline field radiation survey results (mr/hr) at 0.5, 1.0, 2.0, 5.0, and/or 10 miles from the plant.

5.5.2 Using the maximum values results (screen and printout) for the completed dose projection, add the doses (rem) from the Cloud Shine line and the Initial Ground Shine line together (for the appropriate distance from the plant).

5.5.3 Convert the sum of Cloud Shine and Ground Shine Dose from rem to mrem (multiply by 1000).

5.5.4 Convert the sum of Cloud Shine and Initial Ground Shine Dose to a dose rate (mrem/hr) by dividing the sum by the total exposure time (hours) entered in the event times menu.

5.5.5 Compare the dose rate (mrem/hr) from the dose projection determined in step 5.6.4 to the dose rate (mrem/hr) measured by the field team at the corresponding centerline distance from the plant.

5.6 IF Field Measurements to Dose (FM-Dose) is chosen, select "Create New Case."

Note

A title must be entered to calculate results.

5.6.1 Enter a title.

5.6.2 If known, enter the date and time the sample was collected.

5.6.3 Ground Concentration Units: Select units, first select metric unit and (Ci or Ba). Then select (M^2, CM^2 or ft^2).

5.6.4 Air Concentration Units: Select units, first select metric units and (Ci or Ba) then select (M^2. CM^2 or ft^2).

5.6.5 Enter ground concentrations.

Note

Surface Correction Factor, Resuspension Factor, and Reentry Delay are set at default values and should only be changed if specific instructions to do so are given.

5.6.5.1 Enter exposure time.

5.6.5.2 Enter concentration for each nuclide deposited.

5.6.5.3 Use "scroll up" or "scroll down" for additional nuclides.

5.6.5.4 Select "Main Menu" or press F10 to exit form.

5.6.6 Enter air concentration.

5.6.6.1 Enter exposure time.

5.6.6.2 Enter concentration for each nuclide.

5.6.6.3 Use "scroll up" or "scroll down" for additional nuclides.

5.6.6.4 Select "Main Menu" or press F10 to exit form.

5.6.7 Select the concentrations to be used in the calculations (air, ground, or both).

5.6.8 Select the dose units, metric unit and (REM or Su).

5.6.9 Select calculate.

5.6.10 Select the view desired.

6.0 Final Conditions

6.1 Plant Emergency has been Terminated or Recovery actions have begun and the Emergency Response Manager has suspended the use of EPIPs.

7.0 References

7.1 NAD-12.20, Emergency Plan Implementing Procedures (EPIPs)

7.2 NAD-05.23, Software Development, Procurement, Modification, and Control

7.3 EPIP-AD-19, Protective Action Guidelines

7.4 SP-32B-268, Site Boundary Doses from Gaseous Effluents

7.5 NUREG/CR-5247/PNL-8454, Vol. 1, Rev. 1, RASCAL Version 2.2 User's Guide

7.6 Workbook of Atmospheric Dispersion Estimates, D. Bruce Turner, 1970

7.7 NUREG/BR0150, Vol. 1, Rev. 2, RTM-92 Response Technical Manual

7.8 EPA-400-R-92-001, Manual of Protective Action Guides and Protective Actions For Nuclear Incidents

7.9 NUREG/CR-5247, Vol. 2, Rev. 2, RASCAL Version 2.2 Workbook

7.10 EPIP Forms

7.10.1 RET 2B.1, Containment Stack Release (Grab Sample)

7.10.2 RET 2B.2, Auxiliary Building Stack (Grab Sample)

7.10.3 RET 2B.3, Auxiliary Building Stack (Spring Reading)

7.10.4 RET 2B.4, Containment Stack (Spring Reading)

7.10.5 RET 2B.5, Steam Release

8.0 Records

8.1 The following QA records and non-QA records are identified in this directive/procedure and are listed on the KNPP Records Retention Schedule. These records shall be maintained according to the KNPP Records Management Program.

8.1.1 <u>QA Records</u>

- RASCAL Projection Printouts

8.1.2 <u>Non-QA Records</u>

None

LAKE BREEZE

Determine Lake Breeze Effect

The following conditions must be met for a possible Lake Breeze Effect:

KNPP or PBNP wind direction is between 20° and 170°,
AND
PBNP Inland Tower or Green Bay NWS wind direction is between 210° and 330°,
AND
Meteorological Data Record time is between 0700 and 2000 hours,
AND
Meteorological Data Record date and date of Lake Breeze onset time are the same.

WEATHER REPORT SYMBOL, MODEL CLASS, AND INTENSITY

WEATHER REPORT SYMBOL	MODEL CLASS	INTENSITY
None	NONE	- - -
A	SNOW	Moderate
IC-, IP-	SNOW	Light
IC, IP	SNOW	Moderate
IC+, IP+	SNOW	Heavy
L-, L, L+	RAIN	Light
R-, RW-	RAIN	Light
R, RW	RAIN	Moderate
R+, RW+	RAIN	Heavy
S-, SG-, SP-, SW-	SNOW	Light
S, SG, SP, SW	SNOW	Moderate
S+, SG+, SP+, SW+	SNOW	Heavy
ZL-, ZL, ZL+, ZR-	RAIN	Light
ZR	RAIN	Moderate
ZR+	RAIN	Heavy

STABILITY CLASSIFICATION

To specify a stability classification without using RASCAL, first obtain **Delta T** or **Sigma Theta** from the Meteorological data. Values of **Delta T** or **Sigma Theta** will correspond to the various stability classifications as shown below

STABILITY CLASSIFICATION	PASQUILL CATEGORIES	SIGMA THETA ($\sigma\theta$) (DEGREES)	60M – 10M DELTA T (°F/50M)
Extremely Unstable	A	$\sigma\theta \geq 22.5$	DELTA T $\leq$ -1.71
Moderately Unstable	B	$22.5 > \sigma\theta \geq 17.5$	-1.71 < DELTA T $\leq$ -1.53
Slightly Unstable	C	$17.5 > \sigma\theta \geq 12.5$	-1.53 < DELTA T $\leq$ -1.35
Neutral	D	$12.5 > \sigma\theta \geq 7.5$	-1.35 < DELTA T $\leq$ -0.45
Slightly Stable	E	$7.5 > \sigma\theta \geq 3.8$	-0.45 < DELTA T $\leq$ 1.35
Moderately Stable	F	$3.8 > \sigma\theta \geq 2.1$	1.35 < DELTA T $\leq$ 3.60
Extremely Stable	G	$2.1 > \sigma\theta$	3.60 < DELTA T

Reference: ANSI/ANS-2.5-1984