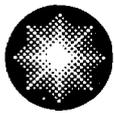


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## **Constellation Energy**

R.E. Ginna Nuclear Power Plant

July 8, 2004

Mr. Robert L. Clark  
Office of Nuclear Regulatory Regulation  
U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-0001

**Subject:** Response to Request for Additional Information (RAI) dated June 9, 2004,  
Regarding Proposed Control Room Emergency Air Treatment System (CREATS)  
Modification and Change in Dose Calculation Methodology to Alternate Source  
Term  
R.E. Ginna Nuclear Power Plant  
Docket No. 50-244

**References:** 1. Letter from Robert C. Mecredy (RG&E) to Robert L. Clark (NRC) dated May 21,  
2003, License Amendment Request Regarding Revision of Ginna Technical  
Specification Sections 1.1, 3.3.6, 3.4.16, 3.6.6, 3.7.9, 5.5.10, 5.5.16, and 5.6.7  
Resulting From Modification of the Control Room Emergency Air Treatment  
System and Change in Dose Calculation Methodology to Alternate Source Term.  
  
2. Letter from Robert L Clark (NRC) to Robert C. Mecredy (RG&E) dated June 9,  
2004, Request for Additional Information Regarding R.E. Ginna Nuclear Power  
Plant License Amendment Request Relating to the Control Room Emergency Air  
Treatment System Modification (TAC No. MB9123).

Dear Mr. Clark:

The attachments to this letter provide a response to the Request for Additional Information (RAIs) contained in Reference 2 and related items discussed during a conference call between RG&E and your staff on May 20, 2004. Specifically, Attachment 2 discusses assumptions included in the Tornado Missile Accident (TMA) dose calculations. This information should be docketed as an addendum to Reference 1. If you have questions regarding the content of this correspondence, please contact Mr. Mike Ruby at (585) 771-3572 or Mr. George Wrobel at (585) 771-3535.

Very truly yours,

Mary G. Korsnick

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**Attachment 1**  
**Response to RAIs**

REQUEST FOR ADDITIONAL INFORMATION  
R.E. GINNA NUCLEAR POWER PLANT  
CONTROL ROOM EMERGENCY AIR TREATMENT SYSTEM

R.E. Ginna Nuclear Power Plant's (formerly Rochester Gas and Electric Corporation's) proposed design modifications to the Control Room Emergency Air Treatment System, the Control Room Emergency Cooling System, and the Containment Post Accident Charcoal Filters are based on the full scope implementation of the alternate source term. The Nuclear Regulatory Commission staff has determined that the following additional information is needed to complete its review.

Meteorological Data

1. *There are apparently a number of day-of-the-year and hour-of-the-day labeling discrepancies in the ARCON96 1999-2003 hourly meteorological data set. Examples of these day and hour labeling discrepancies for the year 1999 are provided in Table 1. Similar abnormalities exist for each of the other years in the data set. A precursory review of the data base also indicates that the data capture rate for each year is less than 100% (e.g., there are less than 8,760 hourly values for each year); yet, there are no hours in the data set that have been identified as having invalid data.*

*The day and hour labeling discrepancies should not have an impact on the ARCON96 results. However, in order to properly implement ARCON96's intended technical approach, the ARCON96 meteorological data input file should have one record for every hour in the year, even for those hours where there are no valid data. As explained in Subsection 3.8 of Revision 1 to NUREG/CR-6331, "Atmospheric Relative Concentrations in Building Wakes," ARCON96 uses time series of hourly meteorological data to properly account for the effects on wind direction persistence in reducing average relative concentrations for periods longer than 2 hours in duration. Missing data are treated by deleting hours with missing data from the calculation of the average relative concentrations used in determining the cumulative frequency distributions. Missing data tolerance criteria are used to determine when the number of hours of missing data make a specific average relative concentration unacceptable. The criterion for averaging 8 hours or less is zero missing data; for longer duration averages, up to 10% missing data are acceptable. Averages are not calculated for periods in which the number of hours of missing data exceed tolerance criteria.*

Response:

The day-of-the-year and hour-of-the-day labeling discrepancies have been addressed and data labels no longer repeat.

556 missing hours have been added (coded as 999) as follows:

1999 - 180 hours  
2000 - 117  
2001 - 248  
2002 - 8  
2003 - 3

The total hours per year are as follows:

1999, 2001, 2003 and 2003: 8,760 hours  
2000 (leap year): 8,784 hours

2. *There are nearly 700 consecutive hours in the 2003 data base (from day 197 hour 11 through day 227 hour 08) where nearly all of the lower level wind direction values are reported as "002". Likewise, there are 144 consecutive hours in the 2002 data base (from day 253 hour 08 through day 259 hour 07) where nearly all of the lower level wind direction values are also reported as "002". These are most likely invalid data values which should be reset to "999."*

Response:

There are 835 hours identified with invalid lower-level data. All of these were judged invalid as a result of consecutive, identical lower-level wind direction, and were reset to 999. The corresponding upper-level direction values were all judged to be valid. When either the lower-level speed or direction data is invalid, ARCON96 substitutes valid upper-level data for the corresponding hour. As such, ARCON96 considers this information to be valid.

#### Control Room Atmospheric Dispersion Factors

3. *There are apparently three ARCON96 files (CASE1A.log, CASE2A.log, and CASE2TA.log) related to determining control room CHI/Q values for a containment leakage release. Which one of these three runs is being considered for use in the dose assessment analyses and why?*

Response:

The Radiological Basis Case (Case 2a) is being used in the dose assessment analysis. Two sensitivity cases were run in addition to the Radiological Basis Case. The sensitivity cases were included for information. Case1a (sensitivity case), evaluated the effect of a reduced initial diffusion coefficient, in the vertical direction. The  $\sigma_{z0}$  was based on a source height equal to the distance from grade to the containment springline. Case 2a (Radiological Basis) used a  $\sigma_{z0}$  based on a source height from grade to the top of the containment dome. Case 2T (sensitivity case) increased the wake area from the calculated containment vertical area of 1071 m<sup>2</sup>, to 2000 m<sup>2</sup>. The results show little benefit to increasing the wake area.

4. *There are apparently two ARCON96 files (CASE4A.log and CASE4TA.log) related to determining control room CHI/Q values for atmospheric relief valve releases. Which one of these two runs is being considered for use in the dose assessment analyses and why?*

Response:

The Radiological Base Case (Case 4a) is being used in the dose assessment analysis. A sensitivity case was run in addition to the Radiological Basis Case. The sensitivity case was included for information. Case 4a, used the calculated containment vertical area; Case 4aT (sensitivity case) used 2000 m<sup>2</sup>. The results show little benefit to increasing the wake area.

5. *There are apparently two ARCON96 files (CASE5A.log and CASE6A.log) related to determining control room CHI/Q values for plant releases. Which one of these two runs is being considered for use in the dose assessment analyses and why?*

Response:

The Case 5a x/Qs are for Plant Vent releases. The Case 6A values are for Containment Vent releases. The Plant Vent source is used in the dose analysis of the Fuel Handling Accident (FHA) in the spent fuel pool because the ventilation system is required by Tech Specs and assumed to be running during the event. The Containment Vent is not used for any dose calculations. Bounding releases from an open containment (FHA in containment) are via the Equipment Hatch roll-up door (Case 3).

6. *There are apparently five ARCON96 files (Case7.log, Case7a.log, Case7b.log, Case7cc.log, and Case7dd.log) related to determining control room CHI/Q values for auxiliary building leakage releases. Which one of these five runs is being considered for use in the dose assessment analyses and why? Please also justify using the containment building area (1071 m<sup>2</sup>) as the basis for determining wake diffusion for this release point.*

Response:

The five cases represent the leakage areas, from the Auxiliary Building to the environment that are identified as closest to the CR air intake. Case 7a is limiting and will be used in the control room dose assessment.

The building areas, used for wake diffusion, were re-evaluated for each source, rather than assuming that all releases are into the containment wake. The revised area, assumed for Case 7a, is 553 m<sup>2</sup>.

#### Site Boundary Atmospheric Dispersion Factors

7. *Is it still your intent to use the current CHI/Q values presented in the Ginna UFSAR for all the EAB and LPZ dose calculations, except for the tornado missile and locked rotor accidents?*

Response:

Both the EAB and LPZ x/Qs have been assessed using the KRPavan code. The joint cumulative distribution used for these calculations is based on the same meteorological data set used for the updated ARCON96 assessment (except for missing and invalid hours, which were removed). For consistency, the new CHI/Q values will be used in all of the updated dose analysis.

TABLE 1

Day-of-the-year and Hour-of-the-day Labeling Discrepancies  
For 1999

Range of Data Labels				Missing Data Labels				Repeated Data Labels			
Date of First Data Record		Date of Last Data Record		Date of First Data Record		Date of Last Data Record		Date of First Data Record		Date of Last Data Record	
Day	Hour	Day	Hour	Day	Hour	Day	Hour	Day	Hour	Day	Hour
001	00	353	23	008	10	008	10	031	00	031	23
				056	01	056	04	058	00	058	23
				069	22	070	07	087	00	087	23
				072	15	072	15	116	00	116	23
				075	07	075	08	146	00	146	23
				088	07	088	08	175	00	175	23
				090	02	090	02	205	00	205	23
				090	06	091	06	235	00	235	23
				092	19	092	19	264	00	264	23
				093	11	093	13	294	07	294	09
				153	08	154	15	323	00	323	23
				267	04	267	04				
				295	12	295	12				
				317	18	317	18				
				323	10	323	12				
				327	05	327	06				
				329	12	329	12				
				329	16	329	16				
				343	23	344	06				
				345	02	345	06				
				345	08	345	13				

**Attachment 2**

**May 20, 2004 Conference Call With NRC**

May 20, 2004 Conference call with NRC

Call participants: M. Ruby - RG&E  
K. Rubin - RG&E Consultant for Dose Analysis  
Bob Clark - NRC Project Manager  
Brad Harvey - NRC Meteorologist  
Jay Lee - NRC Analysis

Item 1 - The draft RAIs from Brad Harvey, Control Room Emergency Air Treatment System Modifications Draft Meteorology RAIs, Revision 1, 4/26/04, were reviewed. Questions 1 through 6 were discussed and agreed to by RG&E. The comments have already been incorporated into the latest revision of the calculations. The answer to question 7 is yes, the new  $x/Q$  for off site doses will be used in the analysis going forward. It was agreed that Bob Clark will issue the questions as official RAIs to document the issues and responses.

Item 2 - Unlike ARCON96, The PAVAN methodology does not account for missing or invalid data. Consideration was given to writing the PAVAN joint cumulative frequency distribution with upper level data substituted for invalid lower level data, similar to the ARCON96 process. We concluded that data substitution is not consistent with the PAVAN methodology, and NRC agreed. The PAVAN meteorological data set is considered to be valid if it captures at least 90% of the possible hours. Ginna's data set exceeds the minimum capture.

Item 3 - The Tornado Missile Accident (TMA) - The NRC stated that since Ginna was quite unique in postulating a TMA, there is no branch position on the assumptions that go into the analysis. However they agreed that the following approach is reasonable and acceptable.

- This accident was previously modeled similar to the Fuel Handling Accident (FHA), in that building remained in tact and the release duration was assumed to occur over a two-hour period. However, the nature of the accident dictates that the Auxiliary Building would be damaged in the TMA scenario, and that assuming a "puff" release was acceptable.
- Since the release would occur in extremely unsettled atmospheric conditions, it is also reasonable to assume a "tornado  $x/Q$ " based on recorded meteorological conditions using Mr. Rubin's described methods (~22 m/s wind speed) was acceptable. The NRC further added that this could be extracted from ARCON96 using a single hour of recorded data.
- It is acceptable to use a diffused area source based on the surface area of the Spent Fuel Pool (SFP) in place of a point source.
- A one minute tornado duration assumption is appropriate.

The above points were reviewed and the call ended without further discussion.