January 28, 2002

Dr. Robert C. Mecredy
Vice President, Nuclear Operations
Rochester Gas and Electric Corporation
89 East Avenue
Rochester, NY 14649

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING R. E. GINNA NUCLEAR POWER PLANT LICENSE AMENDMENT REQUEST RELATING TO THE CONTROL ROOM EMERGENCY AIR TREATMENT SYSTEM ACTUATION CIRCUITRY (TAC NO. MB1887)

Dear Dr. Mecredy:

By letter dated May 3, 2001, as supplemented on October 29, 2001, Rochester Gas & Electric Corporation (RG&E) submitted a request to revise the Ginna Station Improved Technical Specification (ITS) associated with the Control Room Emergency Air Treatment System (CREATS). RG&E also submitted attachments to the above letters that provided details regarding the design and testing of the CREATS actuation circuitry.

The NRC staff has reviewed the information and based on our review, we have determined that additional information is required in order for the staff to complete its review. Enclosed is the Nuclear Regulatory Commission staff's request for additional information (RAI). This request was discussed with your staff on January 8, 2002, and it was agreed that your response would be provided 60 days from the date of this letter.

Sincerely,

/RA/

Robert Clark, Project Manager, Section 1
Project Directorate 1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-244

Enclosure: RAI

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

R. E. GINNA NUCLEAR POWER PLANT

CONTROL ROOM EMERGENCY AIR TREATMENT SYSTEM (CREATS)

ACTUATION CIRCUITRY

The NRC staff is currently reviewing RG&E's proposed design changes to the CREATS actuation circuitry. According to RG&E's license amendment, as supplemented on October 29, 2001, the new CREATS actuation circuitry will be classified as safety-related and, therefore, designed in accordance with Class 1E requirements. The staff interprets this to mean that RG&E intends to take credit for the CREATS to maintain a protective environment for the reactor operators in the main control room in the event of a design-basis accident. As such the CREATS actuation circuitry should be considered an engineered safety feature actuation system. Therefore, the staff requests that RG&E provide documentation to demonstrate that the CREATS actuation circuitry will be designed in accordance with the applicable requirements specified by the following documents as endorsed by Regulatory Guide 1.152 and 1.153:

- Institute of Electrical and Electronic Engineers (IEEE) Standard 603, "Standard Criteria for Safety Systems for Nuclear Power Generating Stations", and

- IEEE Standard 7-4.3.2, "Standard Criteria for Digital Computers in Safety Systems of Nuclear Power Generating Stations."

Guidance for the requirements specified by the above documents can be found in Section 7.3 of the Standard Review Plan (SRP), "Engineered Safety Features," and in Branch Technical Position 14 of the SRP. Additional details on the dedication of commercial grade digital equipment used in nuclear safety applications can be found in the Electric Power Research Institute (EPRI) Topical Report TR-106439, or, if the digital equipment use is a programable logic controller (PLC) type, in EPRI TR-107330, "Generic Requirements for Qualifying a Commercially Available PLC for Safety-Related Applications in Nuclear Power Plants."

All applicable design requirements specified in IEEE 603 and 7-4.3.2 should be addressed and the bases provided for any exceptions.

In addition to the above requested information, the staff has the following specific questions with regards to the proposed Class 1E CREATS Actuation System and the process for dedicating commercial grade digital equipment:

A. Questions Regarding the Proposed Design of the Class 1E CREATS Actuation System

1. The licensee's submittal dated October 29, 2001, page 1, Section 1, Cable Separation/Isolation/Power Train Separation states that: "Separation of trains of internal wiring and devices in these cabinets (RMS2 and Auxiliary Bench board) will be maintained to the extent practicable ...," leads to the conclusion that in a few places, internal wiring separation between redundant trains or channels could not be

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maintained. If this is true, please justify how this is acceptable without compromising safety.

2. The licensee's submittal does not address Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) qualification of the proposed design change. Please confirm that CREATS instrumentation will not be susceptible to EMI/RFI, will not become a source for conducted and/or radiated EMI/RFI for other safety-related circuits, and that the EMI/RFI specifications for the CREATS instrumentation envelope the design limits specified in EPRI TR-102323. In addition, other environmental qualifications such as temperature, humidity, pressure, radiation, and seismic withstand capability should be discussed.

3. Unless your in-house setpoint calculation methodology for safety-related instrumentation was previously reviewed and approved by the staff, please confirm that your Procedures EP-3-S-0505, "Instrument Setpoint/Loop Accuracy Calculation Methodology," and CH-RETS-RMS, "RMS Monitor Setpoint Determination," are based on the staff approved Industry standards.

4. From the submittals, it was not evident to the staff, if the licensee has performed failure modes and effects analysis for the new Class 1E CREATS instrumentation system. Please explain how the CREATS actuation circuitry is protected from a potential common cause failure which could cause both radiation protection channels to fail in a non-conservative direction (i.e., instrument output loop fails low).

5. If the toxic gas monitors, actuation logic and associated wiring are to be non-Class IE circuits, please confirm that physical separation and electrical (signal) isolation will be maintained for Class 1E circuits.

6. In your response to our request for additional information, please include a statement verifying that the proposed CREATS actuation circuitry design meets all previous commitments regarding NRC regulations and industry standards for safety-related systems.

B. <u>Questions Regarding the Process for Dedicating Commercial Grade Digital Equipment</u>

1. What are the types of equipment, manufacturer and model? What documentation is available on the dedication process?

2. What type of digital device is used, i.e, microprocessor (μP), PLC, or Application-Specific Integrated Circuits (ASICs)? Which device is it?

3. How many of these are in use at other sites, nuclear and non-nuclear?

4. Is there a failure history available, and if so, how accurate is it?

5. What type and how much memory is in each device?

6. Is the code in the device accessible to the end-user? How many lines of code are there?

7. What programing language was the code written in? What tools were used during software development?

8. How was the code verified and tested? Are those records available?

9. How was the hardware tested? Are those records available? Was a written and verified test plan used?

10. What in the device is user modifiable? How will this be controlled?

11. What configuration control does the vendor have? If Ginna decides to buy a replacement device in 5 years, what assurance do they have that the new device will be the same as the old device? If it is different, how will Ginna know what the differences are?