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RECIP.NAME RECIPIENT AFFILIATION
MAIER,J.E. Rochester Gas & Electric Corp.

SUBJECT: Forwards final safety evaluation & technical evaluation rept for SEP Topic 1X-5,ventilation sys.Sys in conformance w/current criteria except for potential backflow problems re auxiliary bldg sys.

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A Wang

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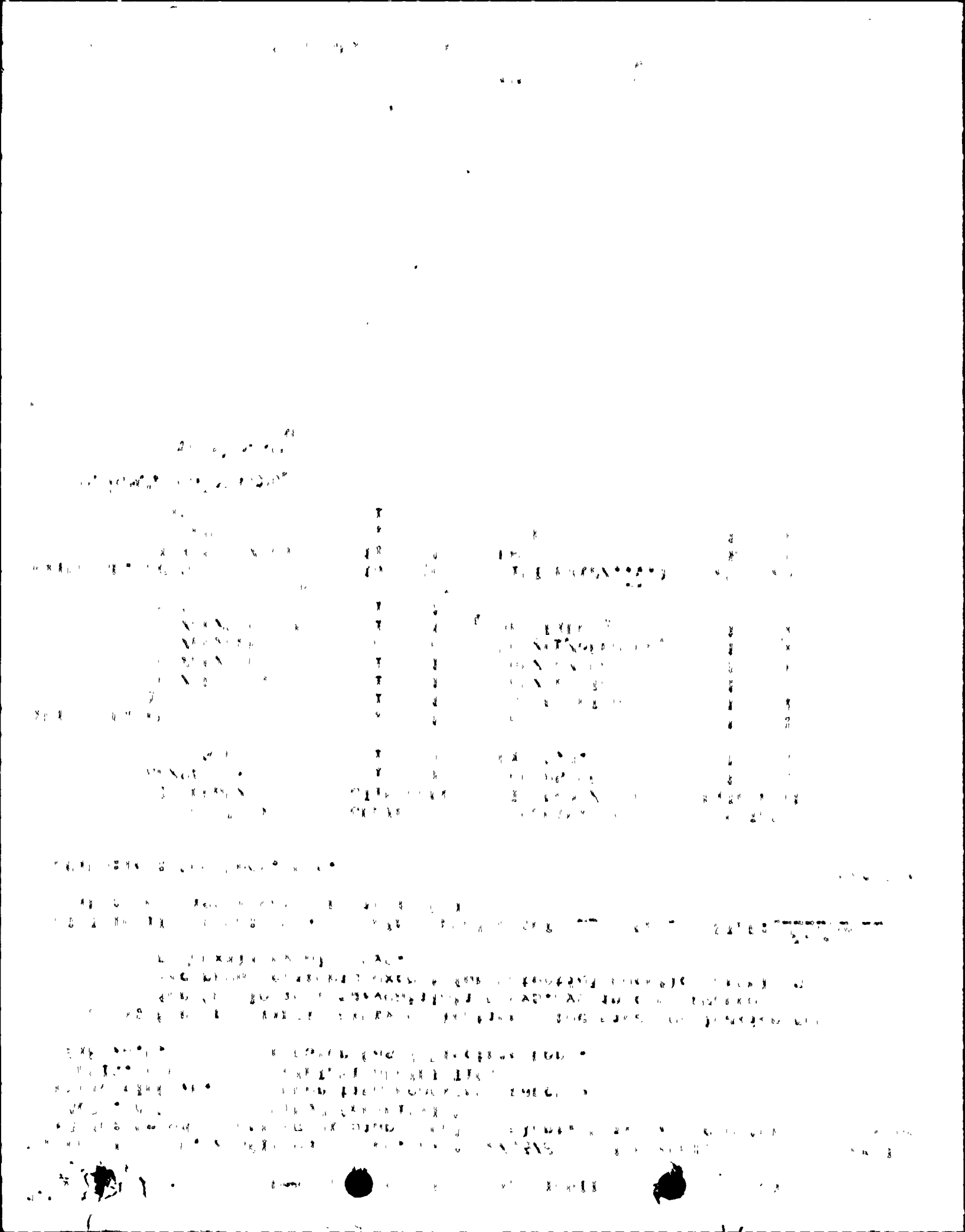

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March 29, 1982

Docket No. 50-244
LS05-82-03-105

Mr. John E. Maier, Vice President
Electric and Steam Production
Rochester Gas & Electric Corporation
89 East Avenue
Rochester, New York 14649

Dear Mr. Maier:

SUBJECT: FORWARDING FINAL EVALUATION REPORT OF SEP TOPIC IX-5, VENTILATION SYSTEMS FOR THE R. E. GINNA NUCLEAR POWER PLANT

Enclosed is a copy of a final Safety Evaluation Report of Systematic Evaluation Program Topic IX-5, Ventilation Systems. This evaluation is based on our contractor, the Franklin Research Center, Technical Evaluation Report (TER-C5257-409).

This assessment compares your facility, as described in Docket No. 50-244, with the criteria currently used by the regulatory staff for licensing new facilities. The ventilation systems for the Ginna Plant were found to be in conformance with current criteria except for potential backflow problems associated with the auxiliary building. system.

This evaluation will be a basic input to the intggrated safety assessment for your facility. A determination of the need to actually implement modifications will be made during the integrated assessment. This topic assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this topic are modified before the integrated assessment is completed.

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Sincerely,

ADD:
G. Staley
A. Wang

Original signed by:

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 29, 1982

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Sincerely,

Thomas V. Wambach
for Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosures:
As stated

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TOPIC IX-5

SEP REVIEW

VENTILATION SYSTEMS

FOR THE

R.E. GINNA NUCLEAR POWER PLANT

I. INTRODUCTION

To assure that the ventilation systems have the capability to provide a safe environment for plant personnel and for engineered safety features, it is necessary to review the design and operation of these systems. For example, the function of the spent fuel pool area ventilation system is to provide ventilation in the spent fuel pool equipment areas, to permit personnel access, and to control airborne radioactivity in the area during normal operation, anticipated operational transients, and following postulated fuel handling accidents. The function of the engineered safety feature ventilation system is to provide a suitable and controlled environment for engineered safety feature components following certain anticipated transients and design basis accidents.

II. REVIEW CRITERIA

The current criteria and guidelines used to determine if the plant systems meet the topic safety objective are those provided in Standard Review Plan (SRP) Sections 9.4.1, "Control Room Area Ventilation System", 9.4.2, "Spent Fuel Pool Area Ventilation System", 9.4.3, "Auxiliary And Radwaste Area Ventilation System", 9.4.4, "Turbine Area Ventilation System" and 9.4.5, "Engineered Safety Feature Ventilation System". In determining if plant design conforms to a safety objective, use is made, where possible, of applicable portions of previous staff reviews.

III. RELATED SAFETY TOPICS AND INTERFACES

The scope of review for this topic was limited to avoid duplication of effort since some aspects of the review were performed under related topics. The related topics and the subject matter are identified below. Each of the related topic reports contains the acceptance criteria and review guidance for its subject matter.

II-2.A	Severe Weather Phenomena
III-1	Classification of Structures, Components and Systems (Seismic and Quality)
III-6	Seismic Design Considerations
VI-4	Containment Isolation System
VI-7.C.1	Independence of Onsite Power
VI-8	Control Room Habitability
VII-3	Systems Required for Safe Shutdown
IX-3	Station Service and Cooling Water Systems
IX-6	Fire Protection
XV-20	Radiological Consequences of Fuel Damaging Accidents (Inside and Outside Containment)

TMI III.D.3.4 Control Room Habitability

USI-A24. QUALIFICATION OF CLASS IN SAFETY RELATED EQUIPMENT

IV. REVIEW GUIDELINES

In determining which systems to evaluate under this topic, the staff used the definition of "systems important to safety" provided in Regulatory Guide 1.105. The definition states that systems important to safety are those necessary to ensure (1) the integrity of the reactor coolant pressure boundary,[1] (2) the capability to shutdown the reactor and maintain it in a safe condition, or (3) the capability to prevent, or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines of 10 CFR Part 100, "Reactor Site Criteria". This definition was used to determine which systems or portions of systems were "essential". Systems or portions of systems which perform functions important to safety were considered to be essential.

V. EVALUATION

The systems reviewed under the topic are the Control Room Area Ventilation System, Spent Fuel Pool Area Ventilation System, Auxiliary and Radwaste Area Ventilation System, Turbine Area Ventilation System, and Engineered Safety Feature Ventilation System.

A. Control Room Area Ventilation System

The function of the Control Room Area Ventilation System (CRAVS) is to provide a controlled environment for the comfort and safety of control room personnel and to assure the operability of control room components during normal operating, anticipated operational transient and design basis accident conditions.

As a result of TMI this system is being reviewed generically (TMI Item III.D.3.4, Control Room Habitability) to assure compliance with Criterion 19, "Control Room" of Appendix A, "General Design Criteria for Nuclear Power Plants", to 10 CFR Part 50. Therefore the CRAVS was not reviewed under this topic.

B. Spent Fuel Pool Area Ventilation System

The function of the Spent Fuel Pool Area Ventilation System (SFPAVS) is to maintain ventilation in the spent fuel pool equipment areas, to permit personnel access, and to control airborne radioactivity in the area during normal operation, anticipated operational transients, and following postulated fuel handling accidents.

Based on the Franklin Research Center (FRC) review of the SFPAVS and the licensee's fuel handling accident analysis, we determined that the system is non-essential as defined in Section IV.

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[1] Reactor Coolant Pressure Boundary is defined in 10 CFR Part 50 & 50.2 (v).

C. Auxiliary Building and Radwaste Area Ventilation System

This system provides clean, filtered, tempered air to all regions of the operating floor of the auxiliary building, including the spent fuel pool and decontamination pit areas. The system exhausts air from all regions of the auxiliary building and its specific equipment rooms and work areas by means of four separate exhaust subsystems, in addition to providing exhaust for the service building and intermediate building. Other than the spent fuel pool and decontamination pit area, which has a dedicated air supply and exhaust path within this system, the auxiliary building supply air is directed to the open work areas of the main operating floor from which a major portion of the ventilating air makes its way down to the intermediate and basement levels of the auxiliary building by means of stairwells and other floor openings.

Based on the FRC review this system was found to be in conformance with current criteria (see Section II) with the exception of a potential back flow problem. Current criteria requires that the capability exist to direct ventilation air from areas of low radioactivity to areas of progressively higher radioactivity.

In general, the ventilation of the auxiliary building appears to be adequate and does promote the flow of air from areas of low radioactivity potential to areas of higher radioactivity potential. However, two conditions exist that could possibly violate that requirement, both of which occur with the main exhaust fans shut down when offsite power is not available and the plant is operating on emergency diesel power.

The first condition is one in which exhaust air, with a higher radioactivity potential, could leak into the intermediate building housing the controlled access area. With the main exhaust fans shut down, the positive pressure created on the input side of the HEPA filter could cause exhaust leakage into the intermediate building if there is insufficient partial vacuum created by the plant vent stack.

The second possibility could occur under the same main exhaust fan shutdown conditions with the plant vent stack providing insufficient partial vacuum on the system. With four separate exhaust subsystems discharging to a common point at the HEPA filter input, it is possible that the flow-pressure characteristics of the fans could be sufficiently mismatched to produce backflow through an operating fan (isolation dampers open) and thus introduce higher radioactive exhaust to an area of generally lower radioactivity potential.

In either case, if backflow were to occur, a possible effect could be restriction of access to the Intermediate Building.

D. Turbine Building Ventilation System

The turbine building, while not requiring an HVAC system, uses roof vent fans, wall vent fans, windows, and unit heaters for ventilation and temperature control. The fans are not supplied by emergency diesel-generated power, and loss of these fans would not be critical to a safe shutdown.

The turbine building does not house systems required for safe shutdown. Although it is the source for ventilation air to other rooms that do contain safety-related systems, revisions are currently being made to the plant to provide outside air ducts to these systems.

E. Engineered Safety Features Ventilation Systems

The engineered safety features ventilation systems include those ventilating and cooling systems that service equipment required following an accident or needed to assure a safe shutdown of the plant. Equipment and/or areas serviced by these ventilating and cooling systems include the following:

- engineered safeguard equipment
- safety injection system
- containment spray system
- hydrogen recombiner
- relay room
- battery rooms
- auxiliary and emergency systems
- diesel generator rooms.

The ventilation systems that service the above listed equipment and associated areas, were found to be in conformance with current criteria, based on the FRC Review, with one exception, the ventilation and cooling systems for the residual heat removal and component cooling water loops. FRC concern is that the residual heat removal system could be susceptible to a single failure. Consider a major pump seal leak or a through the wall crack in the residual heat removal system coolant pipe in the pump pit, would produce a hot, highly humid atmosphere. This environment may produce failures in one or both residual heat removal pump motors in the pit to render the residual heat removal system inoperative.

While this is a valid concern, we feel that the proper place for resolution is the Qualification Review. Furthermore, the staff has already considered the effect of loss of all RHR cooling in Topic V-10.B and concluded that acceptable alternative cooling methods exist.

VI. CONCLUSION

The ventilation systems for the Ginna Plant were found to be in conformance with current criteria for this topic except for the potential back flow problem associated with auxiliary building system (see Section V.C). The licensee was requested to evaluate the likelihood and consequences of this backflow. The licensee has stated, that it currently does not have the information from which it could demonstrate that a backflow condition would not develop. In addition the licensee has failed to adequately address the consequences of this event by either demonstrating that there will be no need for entering the Intermediate Building or that personnel access would not be inhibited, if required. Therefore, this issue will be resolved as part of the Integrated Assessment.