March 14, 1994

Docket No. 50-244

Dr. Robert C. Mecredy
Vice President, Nuclear Production
Rochester Gas & Electric Corporation
89 East Avenue
Rochester, New York 14649

Dear Dr. Mecredy:

SUBJECT: R. E. GINNA NUCLEAR POWER PLANT - EVALUATION OF PROPOSED REQUIREMENTS FOR CONTAINMENT ISOLATION BOUNDARIES RELATED TO LICENSE AMENDMENT NO. 54 (TAC NO. M77849)

Enclosed is NRC staff's evaluation of certain proposed requirements for containment isolation boundaries for the Ginna Nuclear Power Plant (Enclosure 1). The evaluation was performed in response to an unresolved item reported in NRC Region I, Inspection Report 50-244/93-20 (Reference 1). The unresolved item is related to your submittal of November 30, 1992 (Reference 4), and pertains to those portions of your proposed changes that were not authorized with the issuance of License Amendment No. 54 (Reference 2). During the processing of Amendment No. 54, a request for additional information (Reference 3) reported a staff finding that these proposed changes to the Ginna Technical Specifications action requirements were not adequately justified. In the subject evaluation, the staff has concluded that your specific changes, not authorized in Reference 4, as stated in Enclosure 1, are not acceptable. Also, a list of references is provided as Enclosure 2.

Sincerely,

Original signed by
Allen R. Johnson, Project Manager
Project Directorate I-3
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Office of Nuclear Reactor Regulation

Enclosures:
1. Safety Evaluation
2. References

cc w/enclosures:
See next page

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Allen R. Johnson, Project Manager
Project Directorate I-3
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UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 54

REQUIREMENTS FOR CONTAINMENT ISOLATION BOUNDARIES

FOR FACILITY OPERATING LICENSE NO. DPR-18

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA NUCLEAR POWER PLANT

DOCKET NO. 50-244

1.0 INTRODUCTION

By letter dated November 30, 1992, Rochester Gas and Electric Corporation (the licensee) transmitted an application for an amendment to Facility Operating License No. DPR-18 for the Ginna Nuclear Power Plant. The licensee requested that the Technical Specification (TS) requirements for containment isolation valves be changed to address containment isolation boundaries and to add an action statement to TS 3.6.3.1 to state the following:

> Verify the operability of a closed system for the affected penetrations within 4 hours and either restore the inoperable boundary to OPERABLE status or isolate the penetration as provided in 3.6.3.1.b within 30 days.

The following change was proposed for the Bases of TS 3.6.3.1 to address isolation boundaries:

> In the event that one isolation boundary is inoperable, the affected penetration must be isolated with at least one boundary that is not affected by a single active failure. Isolation boundaries that meet this criterion are a closed and deactivated automatic containment isolation valve, a closed manual valve, or a blind flange.

The following change was proposed for the Bases of TS 3.6.3.1 to address the noted proposed action requirement:

> A closed system also meets this criterion however, a 30 day period to either fix the inoperable boundary or prov,ide additional isolation is conservatively applied. Verification of the operability of the closed system can be accomplished through normal system operation, containment leakage detection systems, surveillance testing, or normal operator walkdowns.

In the licensee's safety evaluation (SE) accompanying the proposed change, the licensee describes the proposed action requirement as a change to include the use of a closed system as an allowable means to isolate a containment penetration that has an inoperable containment isolation boundary.

The staff approved the proposed change to address isolation boundaries rather than just valves, but denied the change to add the noted action statement because the proposal was inconsistent with the requirements in the Standard Technical Specifications (STSs).

2.0 STAFF EVALUATION

The staff was asked to elaborate on its rejection of the licensee proposal to add the action statement that would allow a 30-day outage time to restore an inoperable containment isolation valve, associated with a closed system inside the containment, to operable status or isolate the penetration. This evaluation addresses an expanded basis for the staff denial of the TS change to add the proposed action statement.

The STSs are used as a guide for evaluating license amendment requests to modify the TSs for a plant. For the requested change to the Ginna TSs that would extend the allowable outage time (AOT) for closed system isolation valves, the requirements of two specifications of the STSs are relevant for evaluating the proposed change. The first specification is the corresponding requirements for isolation valves in the STSs. The STS requirements for an inoperable containment isolation are specified in the action section of TS 3.6.4 as follows:

> With one or more of the isolation valve(s) specified in Table 3.6-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and:
>
> a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or
>
> b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or
>
> c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange, or
>
> d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The isolation provisions for closed systems located inside the containment are specified by General Design Criteria (GDC) 57 that requires only one containment isolation valve which shall be either automatic, locked closed, or capable of remote manual operation. Thus, for closed systems, the requirement to maintain at least one isolation valve operable in each affected penetration

that is open would be fulfilled by a valve that is neither classified as a containment isolation valve nor required to satisfy the requirements of GDC 57.

The Ginna TSs do not contain the requirement to maintain one isolation valve operable in each affected penetration that is open; however, this is a moot consideration. Ginna TS 3.6.3.1 states that with a containment isolation boundary inoperable for one or more containment penetrations, either (a) restore each inoperable boundary to operable status within 4 hours, (b) isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, one closed manual valve, or a blind flange, or (c) be in at least hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours. The Ginna TS 3.6.3.1 does not address the situation of two isolation barriers being inoperable for any penetration. Therefore, where two isolation valves exist, there would be no need to qualify the provisions of the action requirements to maintain at least one isolation valve operable in each affected penetration that is open.

Where only one isolation valve is provided for a closed system, a requirement to maintain at least one isolation valve operable in each affected penetration that is open would probably be met by a local manual valve, rather than by a remotely operated valve, that would be closed if the associated inoperable containment isolation valve were not restored to operable status within 4 hours. However, it is unlikely that the plant operators would be aware of a pre-existing condition in which that local manual valve is inoperable, and it would probably only be discovered to be inoperable at the time that an operator attempts to close it to fulfill the action requirements. In any case, the consequence of not having an action statement that requires an additional operable valve, when a containment isolation valve associated with a closed system is inoperable, is that the shutdown requirement could be delayed by the 4 hours allowed for restoring the inoperable valve to operable status or for isolating the open penetration by closing another valve when these actions are not be performed within that 4-hour limit. Thus, the time allowed by the TS to reach hot-shutdown conditions could be extended from 6 to 10 hours if this scenario were to occur. Therefore, considering the low probability of this scenario and the low probability that the operator would know in advance that a backup isolation valve is inoperable at the time a closed system penetration isolation valve is determined to be inoperable, the NRC staff concludes that the absence of the STS requirement, to maintain at least one isolation valve operable in each affected penetration, as part of the Ginna TS action requirements, has a negligible impact on safety.

The proposal made for the Ginna TS on containment isolation valves would cause the AOT for an inoperable containment isolation valve associated with a closed system to be extended from 4 hours, as is also specified in the STSs, to 30 days, which is a 180-fold increase in the AOT. This is a large increase in the time for which the plant would be vulnerable to the consequence of a failure of a closed system without the assurance of the capability to isolate such failures with an operable containment isolation valve. Considering the

potential consequences of steam generator tube rupture events without the capability to isolate a faulted steam generator, the NRC staff concludes that the licensee has not made a good case for increasing the AOT for such valves from 4 hours to 30 days.

The second specification of the STSs that is relevant to the licensee's proposal to increase the AOT for closed system isolation valves covers containment integrity. The STSs require containment integrity to be maintained at all times; containment integrity, must be restored within 1 hour or the unit must be shut down. In contrast, Ginna TS 3.6.1.a requires that, except as allowed by TS 3.6.3, containment integrity shall not be violated unless the reactor is in the cold-shutdown condition. Under the requirements of Ginna TS 3.6.3, an inoperable containment isolation boundary must be restored to operable status within 4 hours or the unit must be shut down. The AOT for an inoperable closed system boundary in the Ginna TS is thus already a 4-fold increase from that allowed by the STSs. The 30-day AOT as proposed would be a 720-fold increase in the AOT as allowed by the STSs.

From a practical standpoint, there may not be a very likely situation where a closed system boundary inside the containment would be inoperable and the system would be opened to the containment atmosphere for repairs during plant operation without first isolating all penetrations associated with the closed system. However, nothing in the TS action requirements would preclude such conditions for a period of up to 30 days under the action requirements that were proposed for the Ginna TS. The licensee did not address such conditions and did not submit an argument that would justify a TS change that would allow such conditions to exist.

In addition to the requirements for containment integrity in Ginna TS 3.6.1, TS 4.4.2 addresses requirements for local leak detection tests. Corrective action is specified in TS 4.4.2.3.a, which states that repairs shall be initiated immediately if at any time it is determined that the total leakage of all penetrations and isolation boundaries exceeds 0.60 of the maximum allowable leakage rate (La). In addition, TS 4.4.3.b states that the reactor shall be shut down and depressurized until repairs are made and the local leakage meets the acceptance criterion if repairs are not completed and conformance to the acceptance criterion of TS 4.4.2.2 is not demonstrated within 48 hours. The provisions of the STSs do not relax the requirements for containment leakage in the manner in which they are relaxed in the Ginna TS and, thus, there is a greater safety significance for an increased AOT of 30 days in which a penetration could have excessive leakage and not be required to be isolated in 4 hours as stipulated by the existing Ginna TS requirements.

Closed systems that are located inside the containment and that penetrate primary reactor containment are an extension of the containment boundary. The failure of the closed system boundary inside the containment provides a path by which radioactive material could be released from the containment to systems located outside the containment and eventually to the environment. Although closed systems are designed to survive in the event of a loss-of-coolant accident, the failure of a closed system boundary is a possibility for

which the GDCs establish requirements for containment isolation. GDC 57 establishes requirements for the containment isolation valve for closed systems as follows:

> Each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve.

The containment isolation valve for a closed system serves no other safety purpose than to provide the means to establish a boundary against the release of radioactive material outside the containment in the event of a failure of the closed system boundary inside the containment. The integrity of the primary reactor containment includes the integrity of the closed system when its associated containment penetrations are open. Therefore, it is not a relevant consideration to state that a closed system may be used to isolate a containment penetration that has an inoperable containment isolation boundary (valve) as stated in the licensee's SE for the proposed action requirement. As stated by the staff, the isolation valve serves no other safety purpose than to protect against the failure of the closed system boundary and, therefore, the existence of that closed system boundary is not an alternative to requiring the isolation of that boundary when the isolation valve is inoperable.

3.0 CONCLUSION

The staff concludes that the licensee has not provided an adequate justification for the proposed 30-day allowed outage time for containment isolation valves in closed systems. On this basis, the staff finds this change unacceptable.

Principal Contributor: T. G. Dunning

Date: March 14, 1994

REFERENCES

1. NRC Region I Inspection Report 50-244/93-20, dated November 18, 1993 (Section 2.1.3), "Service Water Leak From Reactor Compartment Cooler A," Unresolved Item 50-244/93-20-01.

2. Amendment No. 54 to the Facility Operating License No. DPR-18, R.E. Ginna Nuclear Power Plant, dated August 30, 1993.

3. Letter to Dr. Mecredy (RG&E) from A. Johnson (NRC), dated March 11, 1993, "Request for Additional Information - Application for Amendment to Operating License DPR-18 - Removal of Containment Isolation Valve List (Table 3.6-1) from Ginna Technical Specifications."

4. RG&E Submittal to NRC, dated November 30, 1992, Application for License Amendment, "Removal of the Table of Containment Isolation Valves From Technical Specifications."