ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. --- 14649

May 15, 1972

Mr. Edward J. Bloch, Acting Director
Division of Reactor Licensing
U.S. Atomic Energy Commission
7920 Norfolk Avenue
Bethesda, Maryland 20014

Subject: Compliance with Technical Specifications at the R. E. Ginna Nuclear Power Plant Unit No. 1
Docket 50-244

Dear Mr. Bloch:

On May 4, 1972, the Rochester Gas and Electric Corporation informed the Atomic Energy Commission, Division of Compliance, by telephone that an abnormal occurrence, a loss of function of the residual heat removal system had taken place at the Ginna facility and because of the caution that was taken in resolving this abnormal occurrence another requirement of the facility's technical specification was probably violated, specifically that of Section 3.6.1-a which requires that containment integrity be maintained when above the cold shutdown condition of 200°F. In addition, Section 3.1.2.1 which limits heatup and cooldown rates to 60°F/hr and 50°F/hr respectively when below 290°F was also probably violated.

As your Staff is aware, the Ginna facility has been shutdown since April 14 for maintenance and refueling, although refueling had not commenced at the time of this occurrence. The cold shutdown condition was achieved on April 16. As part of the maintenance program, the Rochester Gas and Electric Corporation has decontaminated, shielded, and is in the process of an extensive inspection of the "A" steam generator. At the time of the occurrence, both manways to the "A" steam generator were open and a strongback on one of the "B" steam generator manways was off. The loop plugs had not been installed in the "A" steam generator. In order to enter the steam generators, the water level had been lowered to approximately 4 inches above the centerline of the reactor primary coolant nozzles. The residual heat removal system had been operated at this or a lower level on several previous occasions to replace resistance temperature detectors (RTD's), however, it is noted that the length of time at this level exceeded any previous experience.

The following is a sequence of the significant events during the period of the residual heat removal system interruption.

At approximately 11:15 a.m. on May 3, 1972, the head control operator noted an increase in loop ΔT (differential temperature) and that the residual heat removal system flow meter indicated zero flow. At that time, the loop level indicator showed 14 inches or about 4 inches above the centerline of the

50-244 incident

2685

COPY SENT REGION

primary coolant piping. An operator was immediately dispatched and the residual heat removal local pump discharge pressure was found to be zero and the pump was running smoothly.

The "A" residual heat removal pump was shut down and the "B" residual heat removal pump started. No indication of pressure or flow was seen. Valve "856" which is on the suction line from the refueling water storage tank was opened, flow and pressure with the "B" pump were established and the level in the loops raised to 18 inches on the loop level indicator which is approximately 8 inches above the piping centerline. The "B" pump was then stopped, "856" valve closed, and then the "B" pump restarted. Again, no flow or pressure indications were observed.

The "B" residual heat removal pump was stopped and personnel entered the "A" steam generator to verify that no material could have fallen into the "A" hot leg piping which is the suction for the residual heat removal system. During this period, personnel prepared to replace the "A" steam generator manway inserts and strongbacks and the one "B" generator strongback and also to secure the containment.

A loop "A" spare resistance temperature detector was disconnected from the protection rack and at 1:20 p.m., the temperature indicated approximately 212^{o}F although at no time was there any indication of vapor. The loop level was raised to 32 inches on the control board indicator, which is approximately 22 inches above the centerline of the primary coolant pipe, and a residual heat removal pump was started and flow and pressure were established at 1:25 p.m.

During this period, all personnel not directly associated with the RHR investigation, left the containment. Throughout the period, the investigation and the solution proceeded in a disciplined manner. Immediately following the investigation and solution, a Plant Operations Review Committee (PORC) Meeting was convened and the following actions were instituted:

1. During the period of steam generator inspection the minimum level in the primary coolant pipe will be 20 inches on the control board loop level indicator to assure sufficient net position suction head (NPSH) to the heat removal pumps.

2. A hot leg temperature indicator was added to the cold leg recorder so that a more comprehensive monitoring of loop temperatures can be attained.

3. A temporary recorder, to monitor for any flow fluctuations, was connected to the residual heat removal system.

The decay heat released from the core was calculated from decay heat curves to be 5,500,000 BTU/hr. A calculation, made by using the steady state loop ΔT and the residual heat removal flow rate, results in a decay heat rate of 6,000,000 BTU/hr.

May 15, 197[illegible]
Mr. Edward J. Bloch

On May 10, the PORC Committee again reviewed the actions taken at the time of the RHR (residual heat removal) system interruption and also reviewed the system itself. The conclusion reached was that the actions of plant personnel indicated a proper perspective of the situation and that the RHR system is adequate to perform its function.

It has been observed that because of the configuration of the RHR system suction piping, there are two potential locations where the system could become air bound if the RHR system is operated at levels which could allow air into "A" loop hot leg and through vortexing into the suction of the RHR system. Our best judgment is that this is what must have occurred to cause the interruption of the heat removal system. It is thought that some air was probably removed when water from the refueling water storage was injected into the "A" loop hot leg through the RHR suction line so that with the loop water level raised to 22 inches above the pipe centerline, the system functioned properly and swept the remaining air from the system. Subsequent venting at both locations where air could be trapped has indicated no air to be present. Since the possibility exists that the air build-up could have taken place over a long period, a scheduled venting of the system has been established while at the present condition.

The effect of exceeding 200°F has been reviewed and it has been concluded that at no time during the RHR system interruption was the health and safety of the public endangered and at no time was there a question of being able to provide adequate cooling to compensate for the decay heat. The effect of exceeding the 60°F/hr heatup rate and the 50°F/hr cooldown rate has also been investigated. Based upon the cold leg temperature trace a cold leg maximum heatup of 55°F may have occurred over the total period of the RHR system interruption. The cold leg temperature should be a reasonable estimate of the temperature next to the vessel wall since the water in and above the core is separated by the core barrel. The vessel wall heatup and cooldown rate should not therefore have exceeded those specified. Coolant in the hot leg nozzle probably did exceed the specified heatup and cooldown rates. Regarding this, preliminary review indicates that the stress developed during the heatup and cooldown was within acceptable limits, however, calculations are presently being performed to confirm this.

Very truly yours,

Keith W. Amish

xc: Mr. James P. O'Reilly, Director
Divison of Compliance, Region I