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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ROCHESTER GAS AND ELECTRIC CORPORATION

R. E. GINNA NUCLEAR POWER PLANT

DOCKET No. 50-244

1.0 INTRODUCTION

The Safety Evaluation Report (NUREG-0916) related to the restart of Ginna after the steam generator tube rupture (SGTR) incident on January 25, 1982 and specifically license conditions 2.C(9)1 through 20 required that Rochester Gas and Electric Corporation (RG&E) (licensee) address 20 long-term items. This safety evaluation addresses three of the license conditions regarding procedures [2.C(9)11, 2.C(9)12, and 2.C(9)20]. Item 11 requires RG&E to provide procedures for cool-down following a SGTR; item 12 requires RG&E to provide procedures to cover a SGTR with a failed open steam generator safety valve; and item 20 requires that RG&E determine the criteria which should be provided in the SGTR procedures for deciding when to discontinue the use of the main condenser in favor of the atmospheric steam dump.

By letter dated November 22, 1982 and telephone conversation of July 15, 1983 between NRC staff and representatives of RG&E sufficient information was provided to allow the staff to evaluate the licensee's response to the staff's concerns.

2.0 BACKGROUND

2.1 Procedures for Cooldown Following a SGTR

During the SGTR incident plant cooldown was accomplished according to written procedures with the exception of cooling of the faulted B steam generator. Procedure E-1.4 did not address the technique to be used for cooldown of the faulted steam generator. Oral instructions developed by the Ginna Technical Support Center staff directed operators to fill the steam generator up to a level of about 60% of narrow range, and the pressurizer to an indicated pressure of about 25 psi below the secondary side pressure. The secondary water was allowed to flow through the tube break back into the primary side and the steam generator narrow-range level was allowed to drop to a minimum of about 25% of scale. Boron sampling at half-hour intervals assured that there was reduction in the required shutdown margin. The feeding of the steam generator and bleeding to the primary was repeated six to eight times in order to accomplish the desired cooling. Since there were no written procedures dealing with the cooldown, the licensee committed to perform a long-term evaluation of alternative methods for cooling the affected steam generator.

2.2 Procedures for SGTR with a Failed Open Safety Valve

The licensee's SGTR emergency operating procedure did not contain instructions for coping with a failed open or leaking atmospheric relief valve (ARV) or code safety valve on the steam generator with a ruptured tube. During the Ginna SGTR event with the SG ARV blocked, the lowest setpoint code safety valve was challenged several times. Following each repeated opening, the valve shut at successively lower setpoints. However, failure of a safety valve to shut would result in depressurization of the secondary side of the steam generator followed by depressurization of the primary through the ruptured tube. This condition would complicate core cooling and increase the amount of activity released to the environs. Consequently, the licensee, agreed to perform a review of this issue and to provide emergency procedure instructions for this contingency including SG filling.

2.3 Criteria for Isolation of the Main Condenser

During the course of the SGR event, plant personnel took the condenser out of service by tripping the condensate pumps. This action was taken to prevent contamination of the full flow condensate demineralizer system and of the condensate storage tanks. Tripping the condensate pumps took the condenser out of service because continued accumulation of condensed steam would flood the hotwell and because condensate flow was needed to cool the air ejectors. The air ejectors are necessary to maintain vacuum in the condenser. However, tripping of the condensate pumps removed the main condenser as the heat sink for decay heat and reactor coolant system cooldown, the A steam generator and, thus, the reactor coolant system was cooled by relieving secondary system steam to the atmosphere through the A SG ARV.

The decision not to utilize the condenser but to dump steam to atmosphere using the A SG ARV left fewer means available for primary energy removal should a problem with the ARV have occurred. In addition use of the ARV resulted in releases from the A SG to the atmosphere. In addition to the proposed procedure change, the licensee committed to perform a long-term evaluation to determine the criteria which should be provided in the procedures for deciding when to discontinue the use of the main condenser in favor of the atmospheric steam dump. These criteria assumed that offsite power was available and were based on minimizing release of radioactivity offsite.

3.0 DISCUSSION AND EVALUATION

3.1 Procedures for Cooldown Following a SGTR

The licensee stated that the procedures for cooldown following a steam generator tube rupture have been prepared based on Westinghouse Owners Group guidance and have been implemented.

The staff agrees with the Licensee's decision to implement procedures for cooldown based on the Westinghouse Owners Group (WOG) guidance. In Generic Letter 83-22 the NRC concluded that the technical guidelines developed by the WOG were acceptable for implementation. These guidelines include guidance for cooling down following a steam generator tube rupture. Thus, RG&E's response, i.e., to implement the guidance contained in the WOG Guidelines, is acceptable for covering cooldown following a steam generator tube rupture.

3.2 Procedures for SGTR with a Failed Open Safety Valve

The licensee stated that the steam generator tube rupture procedure has been broadened to include various size steam breaks, including a break equivalent to a failed open safety valve, coincident with a steam generator tube rupture on the same steam generator. This procedure has been implemented.

In a telephone discussion with Licensee representatives on July 15, 1983, the staff was advised that procedures covering a steam generator tube rupture with a failed open steam generator safety valve were broadened as indicated in the licensee response above and were made to be in accord with guidance in the WOG technical guidelines. Because these guidelines cover contingencies for various sizes of steam breaks simultaneous with a SGTR, and because the guidelines developed by WOG have been found acceptable by the staff for implementation, the staff finds the licensee's response acceptable.

3.3 Criteria for Isolation of the Main Condenser

The licensee stated that it has been determined that steam dump to condenser should be utilized whenever possible during a steam generator tube rupture. The determination was based on minimizing releases and the best method to monitor releases. When steam is dumped to the condenser many contaminants remain in the condensate system and less contaminants are released through the air ejector than would be released through steam dump to atmosphere. It is also more straight forward to monitor releases through the air ejector than through the atmospheric steam dump. Therefore, the current tube rupture procedure E-1.4 directs operators to use steam dump to condenser as long as necessary permissives are met.

The staff agrees that steam dump to condenser should be used for RCS cooling whenever possible following a SGTR because it minimizes radioactive releases to the environment and allows more accurate quantification of these releases. In addition, the staff recognizes that the condenser may not always be available for use during a SGTR event (e.g., if offsite power is unavailable). In such circumstances, steam dump to atmosphere is the alternate method for cooling the RCS and removing decay heat. The staff, therefore, finds the licensee's response acceptable.

4.0 CONCLUSION

The staff has reviewed the responses submitted by the licensee concerning cooldown following a SGTR, a SGTR with a failed open safety valve, and criteria for isolation of the condenser. The staff finds the responses acceptable and concludes the commitment of items 2.C(9)11, 2.C(9)12 and 2.C(9)20 have been acceptably fulfilled.

5.0 ACKNOLEDGEMENT

S. Bryan prepared this evalution.

Date: November 3, 1983