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AUTH.NAME AUTHOR AFFILIATION
MECREDY,R.C. Rochester Gas & Electric Corp.
RECIP.NAME RECIPIENT AFFILIATION
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SUBJECT: Responds to Generic Ltr 89-19, "Safety Implication of Control Sys in LWR Nuclear Plants."

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March 19, 1990

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Allen R. Johnson
Project Directorate I-3
Washington, D.C. 20555

Subject: Generic Letter 89-19, "Safety Implication of Control System in LWR Nuclear Power Plants" (USI A-47)
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Johnson:

Generic Letter 89-19 required licensees to respond within 180 days of the Generic Letter detailing whether the recommendations of the letter will be implemented and an implementation schedule if applicable.

The Generic Letter addresses concerns about Steam Generator (SG) overfill protection. At Ginna, overfill protection is initiated on a SG high-water-level signal based on a 2-out-of-3 initiating logic. This instrumentation is safety grade but one of the three channels is used for both control and protection. The system isolates Main Feedwater (MFW) by closing the main feedwater control and bypass valves.

In terms of USI A-47, this design is concluded to be acceptable if:

A) The Feedwater Control System is not powered from the same source as overfill protection.

B) Overfill protection and feedwater control are not located within the same cabinets.

C) Overfill protection and feedwater control signals are routed such that a fire is not likely to affect both systems.

D) Plant procedures and Technical Specifications include requirements to periodically verify operability of overfill protection.

The following address each criterion in the context of the Ginna design:

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1. System Power

Overfill protection is provided through trip bistables in the reactor protection racks, which are powered from A, B, C and D 120 VAC instrument buses. Upon bistable actuation, the 120 VAC protection relays (normally powered by the bistable) are de-energized, and the relay contacts (configured in a 2-out-of-3 matrix) open, de-energizing the vent solenoids from Train A and Train B 125 VDC power, resulting in closure of the main feedwater control and bypass valves.

The Feedwater Control System receives power from the A and C 120 VAC instrument buses. Separate breakers are used to provide power to the protection racks and the feedwater control system except Feedwater Loop A and Level Loop 461 share a common instrument Bus A breaker and a common regulator (TWINCO-MQ400A). Failure of the common breaker or regulator would cause a loss of Loop A feedwater control and makeup of the LT-461 portion of overfill protection logic. Loss of any other breaker or regulator would only affect its associated level channel or Feedwater Control Loop B. Since overfill protection is fail safe, actuation of overfill protection will vent the feedwater control valve thus overriding any actions of the Control System. The design of overfill protection is considered to be adequate because of the fail safe design and actuation will override any actions of the feedwater control system.

2. Location

Overfill protection and feedwater control are physically located in separate cabinets.

3. Routing - Overfill Protection

The SG level transmitters are located inside containment. Level signals from four of the transmitters exit containment in the Auxiliary Building Intermediate Floor (ABI). Two of the level signals exit containment in the Intermediate Building Basement (IBB). The trip bistables are located in protection racks in the Control Room. The basic relay contacts for solenoid actuation are located in the SIA & SIB racks in the Relay Room. Routing from the penetration to the valve is illustrated on Table 1.

Routing - Feedwater Control

The Feedwater Control System is located in the feedwater rack in the Relay Room. The SG level signal is taken from LT-461 and LT-471 channels via isolators located in the protection racks in the Control Room and supplied to the feedwater rack. The valve control signal is routed from the feedwater rack to the control valves as illustrated on Table 1.

Overfill protection and feedwater control share common fire areas but are not routed in the same cable. A review of Ginna's safe shutdown capability in the event of any credible postulated fire (which include the common areas) was documented in our fire protection and Appendix R conformance reviews, and approved by the NRC in Safety Evaluation Reports dated 02/14/79

(Fire Protection) and 02/27/85 (Appendix R). Also, RG&E has documented contingency actions in the event of fires in specific areas (e.g., SC-3.30 series procedures and other plans covering fire-fighting strategies for safety-related fire areas). Thus, it is considered that all required situations involving safe shutdown in the event of a fire have been addressed, and no additional changes are warranted.

4. Technical Specifications/Surveillance

Technical Specification 3.5.2 requires SG overfill protection to be operable and specifies limiting conditions for operation should the system or portions of the system become inoperable. Technical Specification Table 4.1-1 requires SG level be tested monthly. Therefore, Technical Specifications require periodic verification of system operability.

Procedures are in place that implement the Technical Specification requirements. Also, functional logic tests are performed that verify valve response.

Based upon Technical Specification surveillance requirements, power supply configuration, fail-safe design of overfill protection, separate cabinets and adequate cable routing (fires have been addressed in Appendix R reviews), the Ginna design provides sufficient separation to ensure automatic SG overfill protection to mitigate a main feedwater overfeed event. No system modifications are planned as a result of this Generic Letter.

Very truly yours,

Robert C. Mecredy

Robert C. Mecredy
Division Manager
Nuclear Production

Subscribed and sworn to before me
on this 19th day of March, 1990.

Lynn I. Hauck

LYNN I. HAUCK
Notary Public in the State of New York
MONROE COUNTY
Commission Expires Nov. 30, 1990

RWE\091
Attachments

xc: Mr. Allen R. Johnson (Mail Stop 14D1)
Project Directorate I-3
Washington, D.C. 20555

U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Ginna Senior Resident Inspector

TABLE 1

CABLE ROUTING

OVERFILL PROTECTION

Level Signal	Containment Penetration	Routing	Protection Rack Location	SIA SIB Location	Routing
LT-461 & LT-472	(AE10) ABI	ABI, CT, CR	CR	RR	RR, AHR, TB, Valve
LT-463 & LT-471	(AE11) ABI	ABI, CT, CR	CR	RR	RR, AHR, TB, Valve
LT-462 & LT-473	(CE4) IBB	IBB, CR	CR	RR	RR, AHR, TB, Valve

FEEDWATER CONTROL SYSTEM

Level Signal	Signal Pickup Location	Feedwater Rack Location	Routing
LT-461	CR	RR	RR, AHR, TB, Valve
LT-471	CR	RR	RR, AHR, TB, Valve

Legend:

ABI - Auxiliary Building Intermediate Floor
IBB - Intermediate Building Basement
CT - Cable Tunnel
CR - Control Room
RR - Relay Room
TB - Turbine Building