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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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TAP A-9

NOTE TO: A. Thadani  
FROM: M. Srinivasan  
SUBJECT: GE ATWS FIX

Following are concerns, more specifically in I & C areas, that emerge from my review of various GE/ATWS documents submitted thus far:

I. GE ATWS REPORT OF MAY 1979

- 1) On page 1-1 GE states that "the transients evaluated in this report are not intended to bound all plants in each class."

The above statement implies that the GE ATWS Resolution cannot be generic and plant specific reviews need to be conducted. We need GE to identify those areas which cannot be generically resolved.

- 2) GE's proposal on alternate #3 only addresses ARI, RPT and SLCS in general terms. We require GE to address other requirements such as SD, vessel isolation and feedwater runback logic and analysis specified in NUREG 460 - Volume 3.
- 3) We require all the information in electrical areas identified in item IX.D of our February 15, 1979 letter to GE to facilitate completion of our review of the proposed ATWS modifications.
- 4) As part of ATWS mitigation, it appears that GE relies on number of manual operation actions, some within 10 minutes, of the ATWS event. In the light of TMI-2 experience and the current licensing practice, we need to critically evaluate this and hence require a detailed discussion from GE on all the manual operation actions needed in the mitigation of an ATWS event.
- 5) Reference to Figures 3.4.3.1, 3.4.3.2.
  - a). A manual reactor scram signal is shown to have input to ARI and SLCS initiation circuits. Would not this feature compromise the independence required between RPS and ATWS prevention and mitigation systems?

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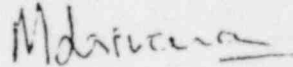
- b). Two permissive signals, "Neutron Flux" and "Rods not in" are shown in the actuation circuitry for SLCS. GE to provide a discussion as to how these signals conform to the requirements of IEEE 279.
- 6) In section 4.0 for various ATWS event analyses, GE assumes proper functioning of relief valves. In the light of TMI-2 experience, we need to require GE to provide failure rate data for these valves and how these valves should be powered in specific plant designs.
- 7) From Sec. 6.1. discussion, it appears that the diversity between RPS and ARI/RPT is achieved in providing different types of power source (A.C. vs D.C.) with complementary functional requirements (de-energise vs energise). No diversity is provided either in the sensor input or logic relays. In this regard we need to discuss the following with GE:
  - a) Operating experience has indicated that adherence to A.C. and D.C. power sources alone did not assure diversity in the operation of identical scram breakers.
  - b) With identical components there exists a high potential for miscalibration by a technician on these similar components i.e., pressure and level sensors. This could result in credible common cause failures. (Refer to G.E. Scram reliability analysis dated September 30, 1976 page II-135)

In the light of the above, we need to require GE to introduce component diversity (different type of instruments and different manufacturer) for ARI/RPT functions.

- 8) GE need to address to what extent the heat tracing and the high-low temperature alarms associated with SLCS meets the requirements of IEEE 279.
- 9) GE states on page 7.3-4 that "RPS is a fail safe system both for random mode and common cause failures".

GE to define what is "fail-safe" and discuss the consequences of failure in the CRD hydraulic system in accomplishing the scram functions.
- 10) On page A7.7.2 GE states, "all equipment with exception of the field breaker trip coil are environmentally & seismically qualified". In this regard we need the following:
  - a) GE to justify the above exception

- b) GE to describe the qualification requirements imposed on recirc-pump motor breakers/recirc M.G. set field breakers to perform the RPT functions adequately.
- 11) RPT function is achieved by tripping either the recirc-pump motor breakers or recirc M.G. set field breakers. We require GE to discuss the significance of these two different approaches and the resultant effects, if any, in the ATWS analysis.



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