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MAY 20 1982

MEMORANDUM FOR: G. Lainas, Assistant Director for Safety Technology, DL
 FROM: R. Wayne Houston, Assistant Director for Radiation Protection, DSI
 SUBJECT: GENERIC RECOMMENDATIONS BASED ON THE REVIEW OF THE GINNA STEAM GENERATOR TUBE RUPTURE

In response to the memorandum from Harold R. Denton to the Division Directors, dated May 3, 1982, attached are generic recommendations from each of the three branches in Radiation Protection. All of these relate to the Task Force report on Radiological Consequences. Input from Task Force member Jack Whanias is also incorporated.

Original signed by
 R. Wayne Houston

R. Wayne Houston, Assistant Director
 for Radiation Protection
 Division of Systems Integration

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Generic Recommendation from ETSB

The high range noble gas effluent monitors installed at the R.E. Ginna Nuclear Power Plant to satisfy the requirements in NUREG-0737, Item II.F.1, Attachment 1, failed to monitor or quantify the releases of airborne radioactive materials during the steam generator tube rupture incident. The monitor failure is believed to have been associated with the monitor installation and operational procedures rather than design deficiency. It is recommended, therefore, that licensees be advised to review and modify, if necessary, their installation and operating procedures for such monitors so as to assure their proper performance when needed.

GENERIC RECOMMENDATIONS FROM AEB

Plant equipment malfunctions and operator actions subsequent to the steam generator tube rupture at Ginna resulted in overfilling of the affected steam generator. Overfilling of this generator negated the ability of the moisture separators in retarding the flow of fission products to the environment. In addition, the level in the secondary system reached the steam line and resulted in water in the inlet of the code safety valves. This water may have ultimately led to failure in these valves. Failure in these valves allows an uncontrolled release to the environment and prevents isolation of the affected steam generator.

As a result of the events, it can be concluded that operating procedures and plant response limitations may produce accidents distinctly different from those analyzed previously where the accidents were assumed to be terminated in approximately thirty minutes and proper water levels were maintained in the affected steam generators (no overfilling). It is also the staff's conclusion that plant response to steam generator tube rupture (SGTR) accidents should preferentially use the turbine condenser, if it is available. Increased reliability and availability of the turbine bypass system may be necessary. Further, in the event of loss of the condenser, the atmospheric dump valves should be used to prevent the overfilling of the affected steam generator and lifting of the code safety valves. This conclusion is based upon two considerations:

- a. PWR designs typically incorporate block valves on the atmospheric dump valves, and therefore, failure of the dump valve to close will not result in an uncontrolled release to the environment; and

- b. Maintenance of the steam space in the steam generators retards the flow of certain fission products to the environment by utilization of the moisture separators, or by simple gas/liquid partitioning.

The staff concludes that previous analyses of the offsite consequences of SGTR accidents may not adequately envelope the range of conditions resulting from operator actions at specific plants. Of primary concern are such factors as overfilling the upset steam generator, unanticipated relief valve releases, the accident duration, low primary to secondary system decontamination factors following overfilling, iodine spiking, and primary coolant activity levels prior to such accidents. On the basis of this conclusion the staff recommends that:

1. SGTR accidents for each NSSS vendor affected should be reassessed by licensees and applicants to assure that plant procedures and designs are adequate such that that offsite dose consequences during incidents in which releases are purposely made for periods substantially longer and via other release points than previously assessed for design basis accidents remain within acceptable limits. These analyses should specifically address the assumptions in SRP section 15.6.3.

At Ginna, the operation of the ventilation system while the safety valves were relieving caused radioactivity to be drawn into the auxiliary building through the nearby ventilation intake.

The staff therefore recommends:

2. All operating PWRs should consider restricting ventilation intake while atmospheric dump/relief or safety valves on a faulted steam generator are open. (Most of the initiative and study for this should come from the licensee, not the staff.)

The coolant activity level of radioiodines at the time of the accident at Ginna was about 2% of the plant's technical specification limit, thereby limiting the release of iodine activity over what might have been released. The licensee (RG&E) already committed to proposed changes on activity as recommended by the staff, resulting from a Systematic Evaluation Program evaluation of this design basis accident.

However, eleven PWR's do not have any specific limits on radioiodine, but do have limits on total gamma activity. While the total primary coolant activity might remain substantially below the total activity technical specification shutdown value, the actual radioiodine levels could be very high. Further, iodine spiking must be accommodated, but controlled, and surveillance to assure compliance is necessary. It has been previously recommended (c.f. NUREG-0651, "Evaluation of Steam Generator Tube Rupture Events") that a limit on iodine activity be incorporated in technical specifications for plants without any. In addition, the memorandum for Commissioner Bradford from

W. J. Dircks (dated 2/9/82) notes that all the recommendations for industry action are being addressed as part of on-going programs.

The staff recommends that:

3. A schedule be established for incorporating appropriately conservative technical specifications for plants that lack either iodine limits or surveillance requirements. The Standard Technical Specifications incorporating dose equivalent iodine concentration limits for all the PWR vendors which
1) incorporate suitably conservative limits, 2) accommodate but control spiking of iodine, and 3) incorporate adequate surveillance for both primary and secondary coolants; should be implemented.
4. For those plants that have radioiodine limits which are higher than the Standard Technical Specification, the staff recommends that a schedule be established for the licensees to provide analyses justifying the value, considering the actual plant emergency procedures and specific plant response to this accident.

Generic Recommendation from RAB

Licensees located in climatic regions where it is appropriate should develop specific procedures (for inclusion in emergency response plans) for the uniform collection of snow samples if snow is on the ground or is falling during the emergency, so that ground deposition and deposition patterns can be reasonably quantified.