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MAY 1 2 1982

Docket No. 50-244

MEMORANDUM FOR: Thomas M. Novak, Assistant Director
for Operating Reactors
Division of Licensing

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

SUBJECT: RADIATION PROTECTION INPUT TO GINNA RESTART SER

Enclosed is the input from the Effluent Treatment Systems Branch (ETSB), Radiological Assessment Branch (RAB) and Accident Evaluation Branch (AEB) for the subject Safety Evaluation Report.

The ETSB evaluated the effluent monitoring system function during the Ginna accident, as described in Section 5.6. Based on their evaluation, the ETSB concluded that the functional failures of the high range noble gas effluent monitors (the monitors are required for NUREG-0737, Item II.F.1., Attachment 1) during the steam generator tube rupture accident do not preclude a restart of the Ginna reactor. However, we do recommend that the licensee develop an operability surveillance program and reevaluate alarm setpoints for these monitors. J. Lee prepared this evaluation.

The AEB prepared Sections 7.1 to 7.3, and 7.8. P. Easley was the primary technical author. Staff concerns regarding radiological consequences relative to the design-basis steam generator tube rupture accident are addressed in Section 7.1. The Commission concern regarding the acceptability of the auxiliary building ventilation system intake location is addressed in Section 7.8. The Commission question regarding the checking of secondary coolant activity prior to the intentional release from the unaffected steam generator is addressed in Section 7.2.

The discussion of radiological consequences in Section 7.1 expresses concerns about the ability of the licensee, using present and proposed short-term revisions to the emergency operating procedures, to control the duration of the accident and the level in the affected steam generator. Therefore, stringent Technical Specifications are required on the reactor coolant activity limits and surveillance requirements. The factor of five reduction (relative to the Westinghouse Standard Technical Specifications) in the limits on dose-equivalent I-131 would cover these potential non-conservatisms until the licensee provides an analysis, acceptable to the

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staff, that justifies higher limits, not to exceed the Westinghouse Standard Technical Specification limits. The analysis should be performed within six months of the issuance of the Safety Evaluation Report. The analysis should, among other things, address procedure changes to prevent prolonged primary-to-secondary leakage and steam generator overfill. The Accident Evaluation Branch has coordinated with the Reactor Systems Branch on the requirements for this analysis.

The RAB evaluated the licensee's environmental monitoring actions during the course of the steam generator tube rupture accident, as described in the attached 7.4 to 7.7. Their evaluation found that the licensee's actions were, in general, consistent with good health physics practices and that the licensee's interpretation of data and conclusions are consistent with ours. However, the RAB recommends that the licensee develop a specific procedure for the uniform collection of snow samples during other than normal atmospheric releases of radioactive materials for inclusion in the final emergency response plan. Restart of the reactor should not be delayed for the approval of this procedure. Further, the RAB concluded that none of the licensee's actions in the area of environmental monitoring during the event preclude a restart of the Ginna reactor. M. Wangler and J. Nehemias prepared this evaluation.

Original signed by
R. Wayne Houston

R. Wayne Houston, Assistant Director
for Radiation Protection
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GINNA RESTART SAFETY EVALUATION REPORT

Section 5.6 and Chapter 7

5.6 Effluent Radioactivity Monitoring System

The release pathways for airborne radioactive materials from R. E. Ginna Nuclear Power Plant to the environment during the steam generator tube failure incident involved three effluent radioactivity monitoring systems:

(1) The main steam radiation monitoring system, which is designed to detect, indicate, record, alarm, and quantify radioactive materials released from the steam generator PORVs and safety valves;

(2) The air ejector radiation monitoring system, which is designed to detect, indicate, record, alarm and quantify releases of radioactive materials in noncondensible gases from the secondary system steam via the air ejector and turbine gland seal exhaust; and

(3) The plant ventilation effluent monitoring system, which is designed to monitor radioactive particulates, noble gases, and radioiodines in ventilation air discharge from the Auxiliary Building.

5.6.1 Main Steam Radiation Monitoring System

The system consists of a collimated energy-compensated Geiger-Mueller detector (Eberline Model SA-11) on each main steam line. The system indicates radioactivity readout locally and in the main control room. A high radioactivity alarm activates the system recorders to start continuous recording of radioactivity in the main steam line and the steam generator PORV and safety valve positions. Radioactivity releases can then be quantified by taking the product of steam flow rate, radioactivity concentration, and the time duration that the valves were open. This system was installed in December 1981 to satisfy the requirements in NUREG-0737, Item II.F.1, attachment 1, high range noble gas effluent monitor.

During the incident, however, a high radiation alarm setting was not reached and this prevented the system from activating the recorders. Later attempts to retrieve the data from the monitoring data processing system also failed due to a malfunction of the monitor during the incident. The licensee states in his incident evaluation report that the monitor malfunction is believed to have been due to a small smudge of dirt or residue which caused electrical leakage on a printed circuit board. In addition, the steam generator PORV and safety valve position monitoring function also failed during the incident. The licensee states that inadequate adjustment of the new actuator rods installed on the safety valves, and open sliding links on terminal blocks in the relay room for the PORV, caused the inoperability of the valve position monitoring.

Within three months subsequent to the plant restart, the staff will complete the review of (1) the adequacy and basis of the monitor high alarm setpoints, (2) the monitor operability surveillance program, (3) the monitor ranges and sensitivity with respect to their capability to cover the entire range of effluents from normal (ALARA) through accident conditions, and and (4) procedures or calculative methods to be used for converting monitor readings to release rate per unit time.

5.6.2 Air Ejector Exhaust Monitoring System

The system consists of two radiation monitors: the R-15 monitor, and the SPING R-15A monitor. The R-15 monitor is a sodium iodide detector (Victoreen Model.No. 843-03) mounted on the outside of the 8 inch diameter exhaust pipe and has been in service since 1979. The monitor has a range of 10^2 to 10^6 cpm gamma radiation (equivalent to 0 to 0.1 μCi/cc). The response of this monitor is recorded on a strip chart and also fed to a computer.

During the incident, the strip chart recorder for the R-15 monitor went off scale for 105 seconds beginning at 0926 of January 25, 1982.

The SPING R-15A monitor (Eberline Model SPING-4) is a high range monitor and has three sensitivity ranges with a separate detector for each range.

Range	Detector	Range, µCi/cc
low	beta scintillation	10^{-6} to 0.05
middle	compensated GM tube	2.8×10^{-5} to 10
high	compensated GM tube	0.03×10^{5}

During normal operation, only hourly averages of the monitor readouts are printed out with the capability of providing an instantaneous readout on demand. Only a high radiation alarm activates the system to provide 10 minute average readouts and recordings. This monitor was installed in December 1981 to satisfy the requirements in NUREG-0737, Item II.F.1, Attachment 1, noble gas effluent monitor.

During the incident, the SPING R-15A low range monitor actuated a high radiation alarm and is suspected to have been off scale, after activating the SPING R-15A middle range monitor. However, while the low range monitor was off scale, no 10 minute average radiation readouts or recordings were obtained from the SPING R-15A middle range monitor because a high alarm setpoint was not reached and this prevented the system from activating the recorder. Subsequent to the incident, the licensee made corrections on these alarm point settings such that an alarm on the low range monitor actuates the 10 minute average readouts on the middle range monitor.

The licensee should provide a continuous and instantaneous indicator-recorder (strip chart) in addition to the 10 minute average readouts in the computer to indicate release rate of airborne radioactive materials from the air ejector exhaust to the environment.

Within three months subsequent to the plant restart, the staff will complete the review of (1) the adequacy of readouts and recording capability, (2) the adequacy of all monitor alarm setpoints, (3) the monitor operability surveillance program, and (4) the procedures or calculative methods to be used for converting the monitor readouts to release rate per unit time.

5.6.3 Plant Ventilation Exhaust Monitoring System

The monitoring system consists of radioactive particulate, noble gas, and radioiodine detectors. A continuous sample is drawn from the main exhaust vent stack. The system has been in service since the plant startup. These monitors functioned properly throughout the tube rupture incident and provided important information regarding the timing and amounts of radioactivity releases due to the safety valve liftings. The intake for supply air to the Auxiliary Building is located on the roof of the Auxiliary Building at a point which was, most of the time during the incident, downwind from the safety valve releases. Therefore, the plant vent monitors detected the radioactivity released from the safety valve drawn into the Auxiliary Building through the supply air intake. The monitor readouts reflected the time and duration of the safety valve liftings and releases. The adequacy concerning the location of supply air intake to the Auxiliary Building is discussed in Section 7.8.

7.0 Radiological Assessment

During the January 25, 1982 steam generator tube rupture accident (SGTR) at Ginna, radioactive primary coolant leaked to the B steam generator. Some of the contaminated secondary coolant was than released to the environment. A description of the releases and the follow-up activities is presented in chapter 5 of NUREG-0909 and Chapter 7 of the Licensee's "Incident Evaluation." A discussion of the releases and the monitoring, surveying, and sampling activities after the accident, as they relate to Ginna restart, and recommendations for licensee actions prior to and after restart, are presented in the following sections.

7.1 Recommendations for Mitigation of Radiological Consequences

During the January 25, 1982 accident at Ginna, the total amount of primary-to-secondary leakage and the total amount of water and steam released to the environment were larger than would normally be predicted, because of valve malfunctions and operator actions (see Chapters 3, 4, and 5 of NUREG-0909). A comparison with a previous safety evaluation report input on the radiological consequences of a steam generator tube rupture accident (SGTR) (for the Systematic Evaluation Program, W. E. Kreger memorandum to G. C. Lainas, June 25, 1981) shows that the potential exists for doses exceeding Part 100 Guidelines from a design-basis SGTR accident. These doses would occur only if there were an unlikely, but not impossible, set of circumstances, namely: primary coolant with iodine concentration at the Westinghouse Standard Technical Specification coolant iodine concentration spiking limit of 60 $\mu Ci/g$ dose-equivalent I-131, maximum flow rate through a double-ended tube rupture, flow through the tube rupture prolonged for two or more hours, filling of the steam generator and steam line of the affected steam generator, releases through the affected steam generator's safety or atmospheric dump/relief valves as a two-phase mixture, and conservative atmospheric dispersion factors. The actual radiological consequences of the Ginna accident were not severe because the reactor coolant iodine concentration was very low, 0.057 μCi/g dose-equivalent I-131; and because the meteorologic conditions were far more favorable, with respect to offsite doses, than the conservative assumptions used in the prior analyses.

Some aspects of the Ginna accident were as severe as some of the above assumptions: the high initial rupture leak rate, the prolonged leak, the filling of the steam generator and part of the steam line, and the release of a two-phase mixture through the safety valve. Although a more serious accident was avoided and the radioactivity releases were not excessive, the staff believes that corrective measures must be taken to prevent potential accidents in the future from having similarly large leakages and releases that could cause more severe radiological consequences.

The following discussion is not meant to describe the accident (as do NUREG-0909 and the licensee's "Incident Evaluation"), but to evaluate the general implications of events as they might affect the radiological consequences of potential accidents, and to provide a background for the suggested corrective measures. Two things that contributed to the prolonged primary-to-secondary leakage and the overfilling of the steam generator were (indirectly) the pressurizer PORV that stuck open, and the delayed decision to terminate safety injection (the staff notes that there were other legitimate concerns that required evaluation, that may have contributed to this delay). Overfilling of the steam generator is undesirable with respect to releases of radioactivity for several reasons: as the water level rises above its normal value, the steam dryers flood, which permits higher moisture carryover (liquid droplets that may amount to a few percent of the total mass released) with the steam. When the steam generator is overfilled and the steam line is flooded to the MSIV, it is likely that most or all of the releases from the relief or safety valves will be as water or a two-phase mixture. This can cause a mass flow rate of contaminated secondary coolant to the environment that is higher than the design release rate, which is based on steam. (Two-phase flow through the relief or safety valves may contribute to valve degradation and possible failures to reseat. This can contribute to the radiological consequences by providing a prolonged pathway to the environment. The evaluation of both the pressurizer PORV and the safety valve function and their repair, is elsewhere in this SER.)

The release of a two-phase mixture also results in the transport to the environment of non-volatile radionuclides not expected to be present in a steam-only release, and a much higher concentration of iodine in the material released, because of the lack of liquid phase/gas phase partitioning.

The release of radioactive steam and water to the environment to relieve the pressure in the affected steam generator was worsened by the decision to close the block valve upstream of the affected (B) steam generator atmospheric dump/relief valve, and the failure of the B steam generator safety valve to reseat fully. The block valve closure forced the safety valve to open and close repeatedly to relieve pressure over a period of about two hours. This cycling, or the release of two-phase water/steam, may have contributed to the failure of the safety valve to reseat fully (see pages 3-18 and 3-19 of NUREG-0909 for further discussion). During a period of prolonged leakage into the steam generator, for which pressure relief may be repeatedly required, it may be better to use the steam generator atmospheric dump/relief valve on the affected steam generator, since that type of valve is better suited for cycling than safety valves.

The licensee has recommended (see Section 8.1 of the "Incident Evaluation") several short-term procedural changes. A review of all these recommended changes appears elsewhere in this SER. The following specific changes or additions to Procedures E-1.4, "Steam Generator Tube Rupture," as proposed and annotated by the licensee, are designed to increase the likelihood that that unnecessary demand on the steam generator safety valves, prolonged primary-to-secondary leakage, and steam generator overfill will not occur:

"STEP 3.9.3 Change to read, 'put atmospheric steam dump controller in the manual closed position'.

This change will clarify that the controller is to be put into manual, but that the [block] valve itself need not be manually closed.

"Add NOTE After STEP 3.15.3	'Termination of SI with suspected voids in the upper RV head is allowed when natural circulation is verified. (Refer to O-8)'
	This note serves to eliminate hesitancy in terminating SI when the SI termination criteria are met and natural circulation is assured.
"Add STEP 3.20.3	'Block SI before the faulted S/G drops below 550 psig.'
	This will prevent SI re-initiation due to low SG pressure.'"

The licensee is also recommending a long-term procedure change: "Add a section to the procedure to address operation with the faulted steam generator full of water."

However, the recommended procedure changes are, by themselves, insufficient evidence to the staff that potential steam generator tube rupture accidents will not result in offsite doses exceeding Part 100 guidelines. In particular, all of the recent SGTR accidents have shown that with the reactor coolant pumps (RCP) tripped, it has taken longer to equalize primary and secondary (affected steam generator) pressure than the licensee assumed in their FSAR. The licensee for Ginna has not proposed any revision to their present RCP trip criteria which would allow the RCPs to remain operational if tube rupture similar to the January 25 rupture recurred. Moreover, with the RCPs tripped, the potential for primary system void formation, overfilling the steam generator, and two-phase discharge from either a safety or relief valve is increased. Thus, until the licensee can develop an RCP trip criteria or install modifications that will prevent RCP trip for SGTR accidents for which the trip is not required for safety purpose, corrective measures are prudent and warranted. Because the licensee's analysis did not consider some of the factors noted above, and because of the concern about potentially high doses, and the incomplete evaluation of the effects of changes to operator guidelines, the staff recommends that the licensee re-analyze the radiological consequences of an SGTR accident. The new analysis should, in particular, either analyze the effect of prolonged primary-to-seconday leakage and overfilling of the steam generator, or provide evidence that this will not occur. The staff is also reviewing, generically, the Standard Review Plan for the radiological consequences of an SGTR. As an interim measure, to reduce the probability that a steam generator tube rupture in the future will not result in severe radiological consequences, the staff recommends that the technical specifications for primary coolant iodine concentration be changed, prior to restart, as follows: 1) a limit on the maximum primary coolant activity during spiking of 12 μCi/g dose-equivalent I-131, (DE I-131), a limit which, if exceeded, requires the plant to be in Hot Standby within 6 hours, 2) a long-term, equilibrium primary coolant iodine concentration of 0.2 μCi/g DE I-131, which cannot be exceeded more than 48 consecutive hours without placing the reactor in Hot Standby, 3) a limit on the total duration during which the equilibrium limit is exceeded of 800 hours per year, and 4) the sampling and reporting requirements specified in the Westinghouse Standard Technical Specifications for those times that the coolant iodine concentration exceeds or has a potential for exceeding the equilibrium limit. The staff proposes that, if there is a favorable review of the recommended licensee SGTR evaluation, these technical specification limit may be replaced by the less stringent Westinhouse Standardard Technical Specification (STS) limits for iodine activity, retaining the surveillance requirements. The licensee has agreed to change some of their technical specifications to conform to the Westinghouse STS following the Systematic Evaluation Program Integrated Assessment (J. E. Maier letter to D. M. Crutchfield November 4, 1981).

The staff notes that it took the operators 15 minutes to identify positively the steam generator with a tube rupture during the Ginna accident. With respect to radiological consequences, the staff concludes that this was not an excessive time. For design basis analyses, the staff typically assumes that 30 minutes are required for positive identification of the affected generator.

7.2 Releases from the Unaffected Steam Generator

It has been noted that the dumping of slightly contaminated steam from the unaffected (A) steam generator amounted to an intentional release to the atmosphere. This is a necessary and normal response to a steam generator tube rupture when the condenser is not available; and, because there are a variety of reasons why it is impossible or undesirable to use the condenser following the accident, this is the case for which licensing accident evaluations are done. However, the condenser is likely to be available, and useful, after most accidents. It appears that, during the January 25, 1982 accident at Ginna, removing the condensers from service could have been more carefully evaluated, taking into account the alternatives and the effects of additional environmental releases (see p. 3-15 of NUREG-0909). Recommendations have been made elsewhere in this Report for procedure changes to use the condenser as a heat sink (in conjunction with the unaffected steam generator) to effect cooldown following an SGTR, in preference to the atmospheric dump valve. During the Ginna accident, the licensee did not sample the A steam generator water prior to the first release from the A atmospheric dump valve.

7.3 Meteorology

The staff has no objections to, or conditions on, the Ginna restart with respect to meteorology considerations.

7.4 Survey Teams

In Section 7.4 of the Licensee's Incident Evaluation Report and in Section 5.7.5 of NUREG-0909 the actions and findings of the licensee's survey teams are discussed.

During the event the Licensee dispatched 2 onsite and 3 offsite survey teams to record direct radiation exposure data and to collect environmental samples (e.g. air, water, and snow). Each team was equipped with Geiger-Mueller and scintillation detection equipment. Each team was assigned a particular route and conducted at least 2 surveys of each route during and subsequent to the releases. The surveys were conducted primarily in the quadrant SE of the release point to a distance of 4 miles.

The highest exposure rate measurement made in the course of the surveys, 3 mr/hr, was obtained at the site fence, approximately 130 meters southeast of the release point, as the team passed under a radioactive steam cloud. All other measurements onsite were lower by a factor of 2 or greater. Beyond the plant boundary all radiation levels were at background levels with the exception of one measurement of 1.2 mr/hr near the plant entrance.

These data were used by the NRC staff and the licensee to evaluate possible exposure to the maximum-exposed individual offsite. The NRC staff considers licensee actions in this area to be consistent with good health physics practice.

7.5 Sampling

In Section 7.5 of the licensee's Incident Evaluation Report and in Sections 5.7.2 through 5.7.4 of NUREG-0909 the findings of the licensee's environmental sampling program during the event are discussed.

7.5.1 Air Sampling

The licensee's fixed air sampling stations were operating throughout the event. Survey teams dispatched by the licensee shortly after the beginning of the event also collected airborne contamination samples with portable air sampling equipment. Three sampling locations exhibited iodine concentrations above background. These samples were collected downwind from the plant.

On the day of the event, instantaneous iodine concentrations higher than the annual average permitted by 10 CFR Part 20 for unrestricted areas were measured at one onsite plant location. However, within 4 days of the event iodine concentrations had decreased to less than the detection limit of the counting equipment.

At 2 offsite locations the measured radioiodine concentrations were less than 25% of the maximum permissable air concentrations for unrestricted areas as specified in 10 CFR Part 20.

Because the iodine concentrations remained above background for several days after the releases, the licensee concluded that volatile radioiodines deposited on buildings near the release point continued to evolve and be carried downwind.

The NRC staff considers that the licensee's conclusions are consistent with the data, and that licensee actions in this area during the event were consistent with good health physics practices.

7.5.2 Snow Sampling

During the event snow was falling at a rate of about 1/4 inch per hour in the vicinity of Ginna. The licensee collected more than 100 snow samples from the ground, from vehicles, and from buildings.

Because of the wide variability in area, depth, density of the snow samples collected, and possible cross contamination of samples, measured concentrations of radioactive materials in snow could not be used to determine deposition quantitatively. However, a comparison of the relative concentrations for snow collected onsite and offsite indicates that a major portion of radioactive materials was deposited within the site boundary. The samples further indicated that a significant proportion of the iodine available for release from the B steam generator was deposited in the snow onsite.

The NRC staff considers the licensee's conclusion about the relative depositon of radioactive materials to be consistent with the data. However, the NRC staff has concluded that if the licensee survey teams had established and implemented a uniform snow sampling procedure, an accurate assessment of the deposition of radioactive material could have been made.

Therefore, the staff recommends that the licensee develop a specific procedure for the uniform collection of snow samples, under snow conditions, during other than normal atmospheric releases of radioactive materials.

7.5.3 Water Samples

Onsite tap water samples and offsite samples at the Ontario Water Works were taken by the licensee. None of the analyses indicated radionuclide concentrations above the minimum detection capability of the instruments used.

The NRC staff considers licensee actions in this area to be consistent with good health physics practices.

7.6 TLD Measurements

The licensee had placed thermolumimescent dosimeters (TLDs) at 32 offsite locations including 11 at the site boundary and at 7 onsite locations. Nine additional TLD's were placed offsite by survey teams immediately following the event. Additionally, the NRC had 27 TLD's offsite and the State of New York had 2 TLD's onsite.

With the exception of the two TLD's onsite that were situated approximately 0.2 mile downwind SE of the release point, no TLD measurement indicated an exposure significantly above background. The 2 TLD's that recorded significant exposures (21.7 millirems as measured by RG&E and 9.4 millirems as measured by New York State) were located at the approximate centerline of the predicted plume. Most of the these TLD exposures probably came from radioactive materials deposited on the ground and nearby surfaces rather than from the plume itself.

These data were used by the NRC staff and the licensee to evaluate possible exposures to the maximum-exposed individual onsite. The NRC staff considers licensee actions in this area to be consistent with good health physics practices.

7.7 Estimated Offsite Doses

In Section 7.7 of the licensee's Incident Evaluation Report and in section 5.8 of NUREG-0909 the offsite population and maximum-exposed individual doses are discussed. External exposure, inhalation, and ingestion pathways were considered.

For plume exposure the licensee investigated the maximum individual doses from 2 sources of radiation, inhalation of radionuclides and external exposure to radiation. The licensee concluded that the maximum-exposed individual could have received a thyroid dose of 2 millirems offsite and a whole body dose of 0.07 millirem. The NRC staff has estimated that the maximum-exposed individual could have received a thyroid dose of less than 5 millirems offsite and a whole body dose of 0.5 millirem. The difference in the whole body doses may be attrbuted to the NRC staff's higher estimated source terms (cf Table 5.4 of NUREG-0909 and Tables 7.2-4 and 7.2-5 of the licensee's report).

For population doses the licensee estimated that the maximum whole body population dose within 40 miles of the plant is 0.2 person-rem. The NRC staff has estimated that for the population within a 50 mile radius of the plant, the whole body dose is less than 0.1 person-rem.

Additionally, the licensee considered potential ingestion pathways, such as fish and drinking water consumption, due to runoff of melted snow into Deer River and the lake. The licensee concluded that the maximum-exposed individual would receive about 0.6 millirem and the maximum population dose would be 1.3 millirems. However, the licensee feels that these doses overestimate the actual doses because a large fraction of the deposited radioactivity in snow was plowed up and stored in the Radwaste bunker to allow radioactive decay prior to entering unrestricted water bodies. The staff has made no comparable analysis because of the lack of radionuclide deposition data.

Finally, the licensee compared predicted dose rates based on estimated radionuclide releases with actual measured dose rates near plant buildings. The licensee has determined that the actual dose rates were lower than the predicted dose rates. The NRC did not perform a comparable analysis but considers the licensee's findings to be consistent with the data.

Based on the foregoing discussion the NRC staff has concluded that the licensee evaluation of offsite dosev are consistent with that of the NRC staff.

7.8 Recommendations Regarding Ventilation Intake During Steam Generator Tube Rupture Releases

During the January 25, 1982 accident at Ginna, air contaminated by steam and/or water droplets released from the affected steam generator safety valve was pulled into the auxiliary building through the ventilation intake. (This is discussed further in pages 7.2-4 and 7.2-5 of the licensee's "Incident Evaluation".) Although relocation of the intake may be unrealistic, the staff recommends that the licensee consider a procedural change calling for closure of the auxiliary building's (and perhaps other buildings') ventilation intake ports, or turning off some of the intake fans, while a steam generator with a tube rupture has open safety or relief valves. The evaluation of this change should consider potential doses from the safety/relief valve source, potential doses resulting from disturbing normal ventilation flow paths for a short time, and potential short-term reductions in the cooling of safety-grade or safety-related equipment rooms. (The staff notes that the Ginna FDSAR states that essential equipment in the auxiliary building is supported by separate cooling and ventilation systems.)

7.9 Summary of Recommendations

In the previous sections, the staff has recommended several changes to mitigate radiological conseq nces from an SGTR at Ginna. In summary, they are: to adopt new technical specifications for reactor coolant iodine activity concentration and surveillance requirements providing for lower limits; to make procedural changes to reduce the chances of unnecessary safety valve use, prolonged primary-to-secondary leakage, and steam generator overfilling; and to consider procedural changes to prevent or lessen ventilation intake of contaminated air during accidental releases.

Also, the NRC staff has evaluated the licensee's enviromental monitoring program during the event and finds that the licensee's actions were, in general, consistent with good health physics practices and that the licensee's interpretation of data and conclusions are consistent with those of the NRC staff. However, the stat does recommend that the licensee develop a specific procedure for the uniform collection of snow samples during other than normal atmospheric releases of radioactive materials for inclusion in the final emergency response plan. Restart o the reactor should not be delayed for the development of this procedure.