RECORD #326

TITLE: REGION II TECHNICAL ASSISTANT REQUEST ON VENTING OF TURBINE BUILDING AT GRAND GULF NUCLEAR STATION

JUN 2 3 1993

MEMORANDUM FOR: Eleanor G. Adensam, Assistant Director
for Region IV and V Reactors
Division of Reactor Projects III/IV/V

FROM: LeMoine J. Cunningham, Chief
Radiation Protection Branch
Division of Reactor Safety
and Safeguards

SUBJECT: REGION II TECHNICAL ASSISTANT REQUEST ON VENTING OF TURBINE BUILDING AT GRAND GULF NUCLEAR STATION (TAC NO. 84763)

This responds to the technical assistance request (TIA) dated October 22, 1992, concerning the issue of an unidentified, unmonitored release pathway for noble gases and iodine from the turbine building roof hatches of the Grand Gulf Nuclear Station. The Radiation Protection Branch (PRPB) has completed its review of the subject TIA and our response is enclosed. Please include the following on distribution when you respond to Region II: J. Joyner, RI; W. Cline, RII; B. Jorgensen, RIII; L. Callan, RIV; J. Reese, RV; R.L. Anderson, TTC; and J. Lieberman, OE.

Original signed by LeMoine J. Cunningham

LeMoine J. Cunningham, Chief
Radiation Protection Branch
Division of Reactor Safety
and Safeguards

Enclosure: As stated

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Enclosure

Region II Technical Assistance Request TIA on
Venting the Turbine Building Grand Gulf Nuclear Station (TAC No. 84763)

By letter dated October 22, 1992, Region II requested that NRR review an event involving open turbine building roof hatches at the Grand Gulf Nuclear Station. The roof hatches were inadvertently left open following the venting of excess hydrogen gas from the Turbine Building. The open hatches were identified as a potential unmonitored release pathway for iodine and noble gases. The TIA requested guidance on several issues associated with the event.

Background

During a routine radiological controls inspection conducted at the Grand Gulf Nuclear Station on June 22-26, 1992, (50-416/92-17) inspectors discovered several turbine building roof hatches in the opened position. The roof hatches are automatic and are located above the operating deck; they are designed to provide additional smoke ventilation in the event of a turbine building fire. The roof hatches were manually opened on June 11, 1992, to vent hydrogen that had accumulated due to leaks from various components. The licensee conceded that the hatches were inadvertently left open due to an administrative oversight. It was further determined that the opened hatches constituted a potential for an unidentified, unmonitored release pathway for noble gases and iodine.

Evaluation

Region II specifically requested guidance on the following questions:

1. Was it acceptable for the turbine building roof hatches to remain open thus creating an unmonitored release pathway?

   The turbine building roof hatches are designed to provide additional ventilation in the turbine building in the event of a fire. The Grand Gulf Nuclear Station SER, Section 9.4.4, Turbine Area Ventilation System, noted that failure of the system does not compromise the operation of any essential systems and does not affect the capability to safely shutdown the plant. Although no immediate safety threat was imposed, an unmonitored release pathway was created by inadvertently leaving the turbine building roof hatches open. Therefore, it was not acceptable to allow them to be left open and unattended for an extended period.

2. Would it have been reasonable, under the circumstances, to evaluate the extent of the radiation hazards that may be present as required by 10 CFR 20.201?

   The licensee stated that an assessment of the potential releases from the hatches was made before they were opened. The licensee consulted information from continuous air sampling and monitoring equipment located within a reasonable distance of the hatches. The air sampling

equipment included charcoal filters to monitor for radioiodine. The licensee concluded that this monitoring information was representative of the concentrations of radioactive material in the air which would be released through the hatches. For a controlled release of short duration (which this situation was intended to be), such an assessment of the potential release is an adequate survey as required by 10 CFR 20.201. However, the hatches were inadvertently left open and unattended for an extended time period. No conscious assessment of the potential releases from the hatches for the extended time period was performed before the hatches were opened. In cases where the hatches are to be left open for an extended period of time, a quantitative method of assessing the potential release should be provided. We do not believe this event warrants a citation for violation of 10 CFR 20.201; the major issue of concern in this case is the breakdown in administrative controls.

3. Should the unplanned, unmonitored release via the turbine building roof hatches be reported in the Semi-Annual Effluent Release Report?

   In accordance with the Grand Gulf Technical Specifications 6.9.1.8 and 6.9.1.9, a summary of all (planned and unplanned) quantities of radioactive liquid and gaseous effluents, from the unit must be included in the Semi-Annual Effluent Release Report. Using the continuous air sampling and monitoring information, the licensee should provide a bounding estimate of the amount of radioactive material released from the hatches. This estimate should be included in the Semi-Annual Effluent Release Report.

The issue of unmonitored release pathways through turbine building roof hatches is not uncommon to BWRs, and the necessity of monitoring BWR turbine building effluents has been recognized. SRP 11.5, "Process and Effluent Monitoring", GDC 64, and 10 CFR 50 Appendix I, called for such monitoring. In addition, Region II personnel informed us that several BWRs open these hatches for extended times to help cool the turbine building, especially in the summer. Under these circumstances, one cannot ensure that releases will not occur from the roof vents under both accident and normal operating conditions. Browns Ferry monitors each open hatch through isokenetic sampling, using the Eberline SPING 3 monitor; Vermont Yankee rerouted its potential unmonitored release through the turbine building stack, which has effluent monitors in place per the plant's Technical Specifications; Brunswick determined that their building circulation was sufficient and actually closed and sealed off the turbine building roof hatches, using them only for design base purposes and opening them manually. While the activity released from the roof vents may represent a small fraction of the total activity released from the plant, experience has shown that, when taking into account the meteorology associated with a ground level release, the ground level source can account for the majority of the dose commitment from a facility.

Conclusion

The licensee left the turbine roof hatches open and unattended over an extended period of time due to an administrative oversight. Although the licensee conducted a reasonable survey prior to opening the hatches for a controlled release of short duration , it was not acceptable for the turbine

controlled release of short duration , it was not acceptable for the turbine building roof hatches to remain open and unattended for an extended period of time without continuous quantitative method for monitoring the potential release. This created an unidentified unmonitored release path which was discovered by NRC inspectors. Finally, the requirements of reporting apply here as in all matters with respect to effluent releases.