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P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

NUCLEAR PRODUCTION DEPARTMENT

September 4, 1981

RECEIVED SEP 10 1981 U.S. NUCLEAR REGULATORY COMMISSION

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20556

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
File 0260/0755/L-860.0
NUREG-0737, Item II.F.1, Noble Gas Effluent Monitor
AECM-81/339

The purpose of this letter is to transmit additional information concerning Item II.F.1 of NUREG-0737. This information was informally requested by your Effluent Treatment Systems Branch and is delineated below:

ITEM 1: Provide further information on the ranges, locations and sensitivities of the noble gas effluent monitors.

RESPONSE: The response to this item is given in new FSAR Table 18.1-3 which is provided in Attachment 1 to this letter.

ITEM 2. Power supply to the monitors should come from vital instrument bus or backup power supply to normal ac.

RESPONSE: The noble gas effluent monitors are powered from normal ac off-site power. However, in response to the above NRC concern, a method will be provided to restore these components to available on-site power after an accident when off-site power has been lost. Details of the proposed modifications will be provided by December 31, 1981. Implementation of proposed modifications will be completed prior to startup after the first regularly scheduled refueling outage.

ITEM 3: Develop procedures or calculative methods to be used for converting instrument readings to release rates.

RESPONSE: Procedures or calculative methods intended to convert instrument readings to release rates will be provided by November 1, 1981.

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ITEM 4: Revise FSAR subsections 18.1.27.1 and 18.1.27.2 to encompass each of the effluent monitoring systems.

RESPONSE: Revised subsections 18.1.27.1 and 18.1.27.2 are provided in Attachment 2 to this letter.

ITEM 5: Verify the components of the radioactivity detection assembly for the normal range containment ventilation microprocesser based radiation monitoring system.

RESPONSE: FSAR Table 11.5-1 provides an accurate listing of the detector types which makeup the containment ventilation microprocessor system. In Attachment 3 to this letter, FSAR subsection 11.5.2.2.4.1 (page 11.5-9a) has been revised, for the normal range monitor, to be consistent with FSAR Table 11.5-1.

ITEM 6: It is important that the displays and controls added to the control room as a result of this requirement, do not increase the potential for operator error.

A human-factor analysis should be performed taking into consideration:

(1) the use of this information by an operator during both normal and abnormal plant conditions;
(2) integration into emergency procedures;
(3) integration into operator training; and
(4) other alarms during emergency and the need for prioritization of alarms.

RESPONSE: A human-factor analysis, taking into account the above considerations, will be conducted on a schedule consistent with the requirements of NUREG-0700, "Control Room Human Engineering Guidelines."

Pertinent portions of the above responses will be included in the next available FSAR amendment. Should you have any questions, please contact this office.

Yours, truly,

L. F. Dale
Manager of Nuclear Services

SDR/JGC/JDR:jgt

(See Next Page)

Attachments: 1. FSAR Table 18.1-3
2. Revised FSAR Subsections 18.1.27.1 and 18.1.27.2
3. Revised FSAR Subsection 11.4.2.2.4.1

cc: Mr. N. L. Stampley
Mr. R. B. McGehee
Mr. T. B. Conner
Mr. G. B. Taylor

Mr. Victor Stello, Jr., Director
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Table 18.1 - 3

TMI Item II.F.1 - Noble Gas Effluent Monitors

| Release Points Monitor | Range µCi/cc | Indicator Location | Recorder Location | Alarm Location | Sensitivity | Power Source | Vendor's Model No. |
|---|---|---|---|---|---|---|---|
| Containment Bldg. | $10^{-7}$ to $10^{5}$ | Computer System with Printout in CR & TSC | Computer Sys. with Printout in CR & TSC | Control Room & Locally | 40 CPM/mR/hr (Note 1) | BOP MCC (Note 2) | Eberline Sping-4 wit AXM-1 |
| Radwaste Bldg. | $10^{-7}$ to $10^{5}$ | Computer System with Printout in CR & TSC | Computer Sys. with Printout in CR & TSC | Control Room & Locally | 40 CPM/mR/hr (Note 1) | BOP MCC (Note 2) | Eberline Sping-4 wit AXM-1 |
| Turbine Bldg. | $10^{-7}$ to $10^{5}$ | Computer System with Printout in CR & TSC | Computer Sys. with Printout in CR & TSC | Control Room & Locally | 40 CPM/mR/hr (Note 1) | BOP MCC (Note 2) | Eberline Sping-4 wit AXM-1 |
| Fuel Handling | $10^{-7}$ to $10^{5}$ | Computer System with Printout in CR & TSC | Computer Sys. with Printout in CR & TSC | Control Room & Locally | 40 CPM/mR/hr (Note 1) | BOP MCC (Note 2) | Eberline Sping-4 wit AXM-1 |
| SGTS | $10^{-7}$ to $10^{5}$ | Computer System with Printout in CR & TSC | Computer Sys. with Printout in CR & TSC | Control Room & Locally | 40 CPM/mR/hr (Note 1) | BOP MCC (Note 2) | Eberline Sping-4 wit AXM-1 |

Notes: (1) Medium range noble gas detector for AXM-1 is 1900 cpm/mR/hr All others (Sping-4 and AXM-1) are 40 cpm/mR/hr.

(2) Normal ac off-site power. However, a method will be provided to restore these components to available on-site power after an accident when off-site power has been lost. Details of the proposed modifications will be provided by December 31, 1981. Inplementation of proposed modifications will be completed prior to startup after the first regularly scheduled refueling outage.

(3) Calibration as per Plant Technical Specifications (R).

18.1.27.1 Noble Gas Effluent ' ..tor (II.F.1.1)

REQUIREMENT

Noble gas effluent monitors all be installed with an extended range designed to function durin ccident conditions as well as during normal operating conditions. Mu' .ple monitors are considered necessary to cover the ranges of interest.

a. Noble gas effluent monitors with an upper range capacity of $10^5$ uCi/cc (Xe-133) are considered to be practical and should be installed in all operating plants.

b. Noble gas effluent monitoring shall be provided for the total range of concentration extending from normal condition (as low as reasonably achievable (ALARA) concentrations) to a maximum of $10^5$ uCi/cc (Xe-133). Multiple monitors are considered to be necessary to cover the ranges of interest. The range capacity of individual monitors should overlap by a factor of 10.

RESPONSE

Grand Gulf Nuclear Station provides for continuous monitoring of high level, post-accident releases of radioactive noble gases, both during and following an accident, via the Containment Ventilation Monitoring System described in subsection 11.5.2.2.4, the Offgas and Radwaste Building Ventilation Radioactivity Monitoring System described in subsection 11.5.2.2.6, the Fuel Handling Area Ventilation Radioactivity Monitoring System described in subsection 11.5.2.2.7, the Turbine Building Ventilation Radioactivity Monitoring System described in subsection 11.5.2.2.8, and the Standby Gas Treatment A and B Exhaust Ventilation Radioactivity Monitoring Systems described in subsection 11 . 2.2.9. Additional information concerning the above systems detector types, detector locations, detector ranges, and radionuclides detected is presented in Tables 11.5-1 and 18.1-3.

18.1.27.2 Sampling and Analysis of Plant Effluents (II.F.1.2)

REQUIREMENT

Because iodine gaseous effluent monitors for the accident condition are not considered to be practical at this time, capability for effluent monitoring of radioiodines for the accident condition shall be provided with sampling conducted by absorption on charcoal or other media, followed by onsite laboratory analysis.

RESPONSE

Grand Gulf Nuclear Station provides for continuous sampling of plant gaseous effluent for post-accident releases of radioactive iodines and particulates via the Containment Ventilation Monitoring System described in subsection 11.5.2.2.4, the Offgas and Radwaste Building Ventilation Radioactivity Monitoring System described in subsection 11.5.2.2.6, the Fuel Handling Area Ventilation Radioactivity Monitoring System described in subsection 11.5.2.2.7, the Turbine Building Ventilation Radioactivity Monitoring System described in subsection 11.5.2.2.8, and the Standby

Gas Treatment A and B Exhaust Ventilation Radioactivity Monitoring Systems described in subsection 11.5.2.2.9. Additional information concerning the above systems detector types, detector locations, detector ranges, and radionuclides detected is presented in Tables 11.5-1 and 18.1-3.

extracting a highly representative sample of the stack air from the airstream. The sampling nozzles are capable of simultaneously extracting an equal volume of stack gas and are located such that a minimum of one nozzle exists for each square foot of duct cross-sectional area. The overall accuracy of the isokinetic sampling rate is within ±5 percent of actual stack flow conditions.

In addition, the isokinetic sample panel is capable of delivering a sample simultaneously to the GE constant volume radioactivity monitoring system, if desired. This extends the overall system capabilities since the effluent can still be monitored while the microprocessor-based system is out of service. See subsection 11.5.2.2.4.2 for a discussion of the GE system.

The sample lines from the FM&IS unit to the radioactivity monitoring panels are provided with heat tracing to prevent any entrained water in the airstream from reaching the sampling medium. The heat tracing is shown on Figure 9.4-11.

The radioactivity detection assembly for the normal range monitor consists of a shielded chamber, a sample filter of activated charcoal for iodine collection, a sodium iodide crystal gamma scintillation detector capable of monitoring the iodine 364 keV gamma peak with approximately 4 percent ($4\pi$) efficiency, a sample filter of 0.009-inch-thick filter paper for particulate collection, a plastic beta scintillation detector to monitor the particulate Cs-137 beta particles with approximately 11 percent ($4\pi$) efficiency, a beta scintillation detector and a GM tube to monitor gross radioactivity (i.e., noble gas activity) with an accuracy of approximately 15 percent of logarithmic scale down to 40 keV, and a check source mechanism.

The normal range monitor is also provided with a purge assembly which can be manually initiated from the data acquisition module or either of the central control terminals. In addition, upon receipt of a high radioactivity isolation signal, the normal range monitor will automatically isolate and the purge will automatically be initiated to purge the normal range monitor. The purge air is then exhausted back to the containment ventilation system exhaust duct.

The accident range monitor flow path is provided with a particulate-iodine sample filter assembly. The sample filter, constructed of silver uzeolite, has a collection efficiency greater than 90 percent for 0.3-micron-diameter particles and for iodines. A bypass line is provided around the sample filter to permit filtered flow to continue to the high range monitor through the bulk filter. See Figure 9.4-11 for the system arrangement drawing. Sample filter removal is provided by means of quick disconnects. The sample filter is housed in a lead shield, mounted for ease of removal and replacement of filter media and capable of being transported to the on-site analysis facility during normal and accident conditions without