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October 5, 1988

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

ULNRC-1840

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT
WIDE RANGE GAS MONITOR
CONCENTRATION DISPLAY

Ref.: 1) ULNRC-1393, dated October 24, 1986
2) T. W. Alexion letter to D. F. Schnell, dated August 15, 1988

Reference 1 requested a variance from the requirement as described in NUREG 0737, Section II.F.1, Attachment 1, Clarification 1. Reference 2 requested additional information concerning this variance request.

Attached please find the information requested by Reference 2. If you have any questions concerning this information, please contact me.

Very truly yours,

Donald F. Schnell

Donald F. Schnell

WEK/keb

Attachment

A046
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Item 1. Provide a block diagram of the General Atomic Wide Range Gas Monitor (WRGM).

Response: A block diagram of the Callaway Plant General Atomic Wide Range Gas Monitor is shown in Figure 1.

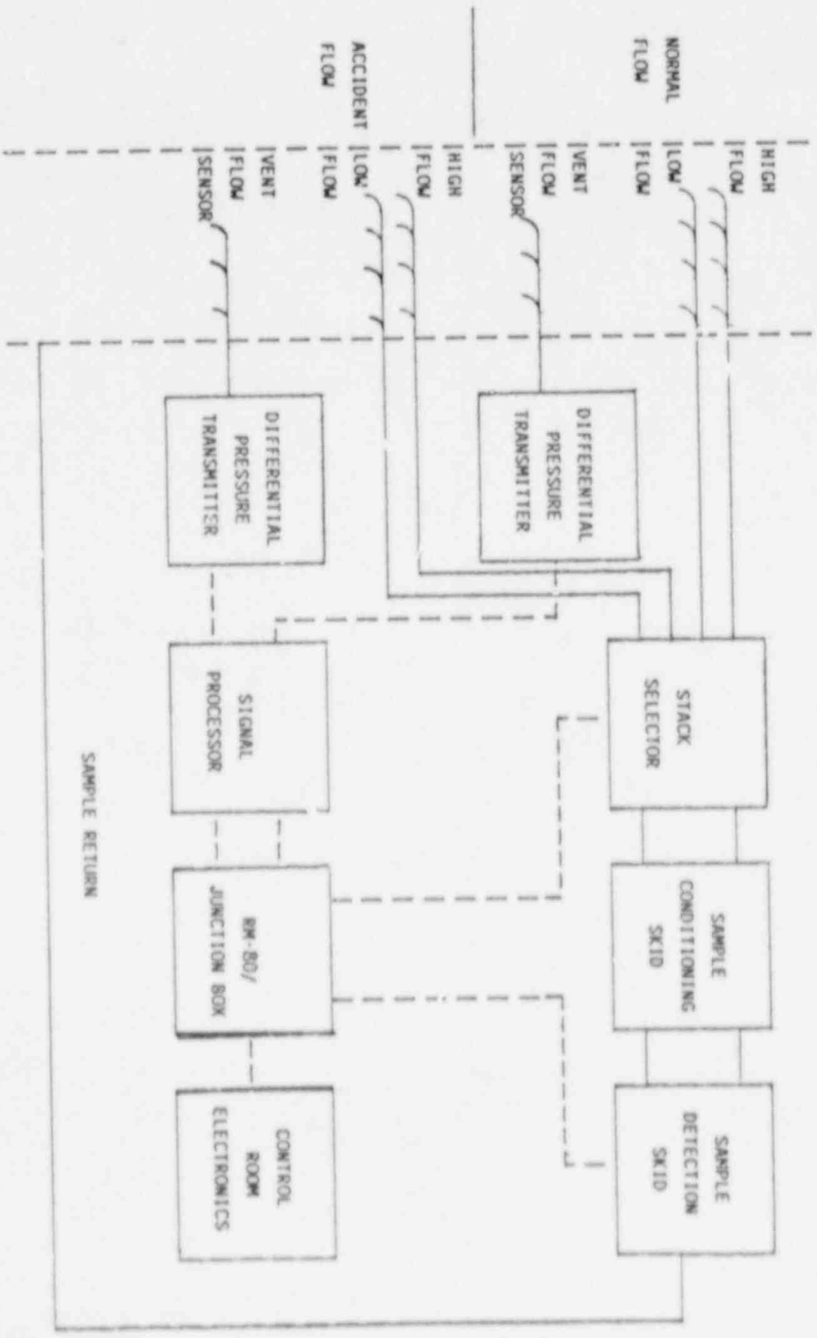


FIGURE 1
WIDE RANGE GAS MONITOR
BLOCK DIAGRAM

Item 2. Demonstrate how the information from the WRGM RM-80 microprocessor and junction box uses the signal from the stack velocity system to maintain flow control and for calculating effluent release rate (microcuries per second). Summarize how these curves are developed. Please use recent data to demonstrate how the release rates are calculated from the stacks.

Response: Isokinetic Flow Control

When the sample pump is on in either or both sample lines, the sample flow rate is controlled isokinetically by the Wide Range Gas Monitor (WRGM) RM-80 microprocessor as described below, except when a purge is in progress.

A mass flow meter in each sample line sends the WRGM RM-80 an analog signal that is proportional to the flow rate in the sample line. Also, the unit vent flow measurement system provides the WRGM RM-80 with an analog signal that is linerally proportional to process flow rate in the unit vent. Each signal is applied to a separate analog to digital converter (ADC) contained in the WRGM RM-80. The ADC outputs are converted into a flow rate (SCFM) by multiplying by an ADC to SCFM flow conversion factor for that flow path contained in the WRGM RM-80.

For isokinetic flow control, the isokinetic flow control ratio setpoint in the WRGM RM-80 is multiplied by the process flow rate to obtain the desired sample flow rate. This calculated sample flow rate is compared to the sample flow rate and the flow control value opening is varied by the WRGM RM-80, as required, to maintain the proper sample flow rate for isokinetic sampling.

Effluent Release Rate

A gross effluent release rate for all isotopes in the gas sample is calculated by the WRGM RM-80. This release rate in uCi/sec is the product of activity concentration in uCi/cc, process flow rate (SCFM) and a conversion factor 4.72E+02 cc/$ft^3$/min/sec. The WRGM RM-80 selects the most accurate of the three detectors for the effluent release activity. Detector selection is performed by the WRGM RM-80 based on mid and high range detector accepted range point setpoints.

The process flow rate is derived from the unit vent flow measurement system as described above.

The effluent release rate calculated by the WRGM is not used to calculate normal effluent releases to the environment from the Callaway Plant. Samples are taken per Callaway Plant Technical Specifications and analyzed for individual isotope activities. These activities are used in our effluent release program as described in the offsite Dose Calculation Manual.

Item 3: Please verify:

a. that noble gas effluent monitors with an upper range capacity of up to $10^5$ uCi/cc (Xe-133) are installed,

b. that the range extends from normal conditions (ALARA) to $10^5$ uCi/cc (Xe-133),

c. that the system provides continuous capability during and following and accident,

d. that a design description of the system identifying the specifications in accordance with Table II.F.1-1 is available,

e. that procedures and calculational methods are established,

f. that instrument ranges will overlap to cover the entire range of effluents, from normal through accident conditions.

Response: At the request of NRC Region III, Union Electric has performed a line by line compliance review of NUREG 0737 Section II.B.3 and II.F.1 (Attachments 1,2, and 3). In this review we verified that each of the above requirements is satisfied.