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Docket Nos. 50-277
50-278

Mr. John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Peach Bottom Atomic Power Station
Emergency Response Capability
Conformance to Regulatory Guide 1.97, Rev. 3

REFERENCE: 1) Letter, S. L. Daltroff to D. G. Eisenhut, NRC,
dated January 16, 1984 - Subject: Implementation
of NUREG-0737, Supplement 1, Regulatory
Guide 1.97, Application to Emergency
Response Facilities
2) Letter, S. L. Daltroff to D. G. Eisenhut, NRC,
dated September 27, 1984 - Subject: Implementation
of NUREG-0737, Supplement 1, Regulatory
Guide 1.97, Application to Emergency
Response Facilities
3) Letter, J. F. Stolz, NRC, to E. G. Bauer,
dated June 3, 1985 - Subject: Emergency
Response Capability - Conformance to Regulatory
Guide 1.97, Rev. 3 - Interim Report
and Request for Additional Information

Dear Mr. Stolz:

This letter provides the additional clarification and information requested in the reference 3 letter from the NRC. The referenced letter provided the NRC's evaluation of two Philadelphia Electric Company submittals (references 1 and 2) concerning compliance with Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an

Accident", at the Peach Bottom Atomic Power Station, Units 2 and 3. This letter addresses the request in the order listed in Section 4 - Conclusions.

Conclusion #1 - Neutron Flux

The licensee's present instrumentation is acceptable on an interim basis until Category 1 instrumentation is developed and installed.

Response

In responses to the NRC, dated January 16, 1984 and September 27, 1984 (See references 1 and 2), we have noted that the only event that would require the long-term monitoring of neutron flux is an anticipated transient without scram (ATWS) event. The environmental qualification criteria for equipment required to mitigate the consequences of an ATWS event were issued along with the NRC Rule on ATWS (10 CFR 50.62) in the Federal Register on June 26, 1984. This criteria states that the equipment must be qualified for "anticipated operational occurrences only, not for accidents." Our investigation of an ATWS event at Peach Bottom has shown that the time required for the operator to initiate the insertion of the Source Range Monitors (SRM) and Intermediate Range Monitors (IRM) into the core is five minutes or less. During this time period, the environment in the drywell is the same as that which exists during normal plant operations. The SRM and IRM drive mechanisms and controls are qualified for the normal drywell environment.

For this reason, as well as the reasons provided in our previous R.G. 1.97 submittals, we conclude that the SRM and IRM equipment as currently designed (Category 2) will function as required during an ATWS event. Accordingly, an upgrade of the equipment to a Category 1 classification does not appear to be necessary.

Conclusion #2 - Primary Containment Isolation Valve Position

The licensee should verify the seismic qualification of the indicating lamps; environmental qualification for the position switch for certain valves should be addressed in accordance with

10 CFR 50.49.

Response

- 1) In our September 27, 1984 submittal to the NRC (see reference 2), we stated that no documentation exists to prove the seismic qualification of the main control room indication lights associated with each primary containment isolation valve, but the lamps are of high commercial quality and would be expected to be qualified if analyzed or tested. Based on an evaluation of the indicating position lights, it would be more appropriate to request an exception to the seismic qualification requirement in RG 1.97 for the primary containment isolation valve position indicating lights. The following justification is provided for this proposed exception:

With the exception of the position indication lights used for monitoring certain valves associated with the control rod drive (CRD) and traversing in-core probe (TIP) systems, the primary containment isolation valve indicating lights used at Peach Bottom are either General Electric Company Model #ET-16 or Micro Switch Model #52 PB 54-T2. The lamp socket associated with these lights has no credible failure mode during a seismic event. There are no moving parts that must function. The mass of the socket is so insignificant that no force would be generated that could fail the wire connection to the base.

The lamps (i.e. light filaments in general) have a shorter and more uncertain life span than do other electrical devices such as meters and switches. Consequently, the lamps can fail anytime, not just during a seismic event. An indicating lamp failure is detected by observation that neither the red nor green indicating light (located in the main control room) associated with a particular valve is lit. New lamps are then inserted into the sockets until the defective lamp is located and replaced. This procedure is easily performed and multiple replacements, if any, can be made quickly by the operators following a seismic event. It is noted that industry experience has shown that all lights would not be expected to fail simultaneously during a seismic event. This experience is gleaned from

studies the Seismic Qualification Utility Group (SQUG) has done regarding operation of equipment after actual seismic events. The work done by SQUG has been in response to Unresolved Safety Issue (USI) A-46 and has been favorably reviewed by the Equipment Qualification Branch of the NRC. Additionally, for approximately 50% of the primary containment isolation valves, redundant indication lights exist in the main control room. This will further ensure that valve position indication will be available to the operator.

The above discussion does not apply to the position indication portion of certain valves associated with the CRD and TIP systems since, as you acknowledged in the June 3, 1985 letter, an exception to their design and qualification requirements was requested in the September 27, 1984 submittal (reference 2).

Based on the above discussion, we believe that the design of the primary containment isolation valve indicating lamp sockets in conjunction with the replaceability of the lamps, makes the seismic qualification of the indicating lights unnecessary.

- 2) As you recommended in the June 3, 1985 letter, the environmental qualification of the position indication portion of certain isolation valves associated with the TIP and CRD systems is being addressed as part of our program for 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants."

Conclusion #3 - Drywell Atmosphere Temperature

The licensee should provide the recommended range or justify the deviation from the recommended range.

Response

In the reference 1 and 2 letters, we committed to modifying the range of indication for drywell temperature to that specified by R.G. 1.97. The modification will be completed by the end of the second refueling outage for each unit

following the Spring 1984 Unit 2 refueling outage. According to the current schedule, this would be 1988 for Unit 2 and 1987 for Unit 3.

Conclusion #4 - Cooling Water Flow to ESF System Components

Since emergency service water pump discharge pressure is an early indication of loss of flow, the licensee should verify that this instrumentation is Category 2 and provide the information required in Section 6.2 of NUREG-0737, Supplement No. 1.

Response

The following information is applicable to the emergency service water pump discharge pressure instrumentation:

Required Range:	0 to 110% design flow (pressure). Peach Bottom design pressure for the emergency service water pumps is 40 psig.
Required Category:	Category 2
Purpose:	To monitor operation
Installed Range:	0 to 100 psig
Environmental Qualification:	Yes
Seismic Qualification:	N/A
Quality Assurance:	Commercial Grade
Redundancy:	One pressure indicator for each pump. There are two emergency service water pumps at Peach Bottom.

Sensors

Location

PT-0236A	Unit 2 pump structure building
PT-0236B	Unit 3 pump structure building

Power Supply:

Onsite

Location of Display: Main control room and emergency shutdown panel

Exceptions to Regulatory Guide 1.97 and Justification: None

Modifications Proposed: None

Schedule for Upgrade: None

The pressure indication described above for the emergency service water pumps meets the R.G. 1.97 requirements for Category 2 instruments.

Conclusion #5 - Reactor Building or Secondary Containment Area Radiation

The licensee has not shown how the area radiation monitor range requirement is correlated to and satisfied by the plant noble gas effluent monitors.

Response:

The Regulatory Guide 1.97 range requirement for the variable "Reactor Building or Secondary Containment Area Radiation" is 1×10^{-1} to 1×10^4 R/HR (1×10^2 to 1×10^7 MR/HR). The following methodology describes how this range can be correlated to and is encompassed by the range of the plant noble gas effluent monitors at Peach Bottom:

Assuming a 2 pi geometry and standby gas treatment flow, and using the Regulatory Guide 1.109 semi-infinite cloud gamma dose conversion factor for Xe-133, the Area Radiation Monitor (ARM) response (MR/HR) can be correlated to effluent release concentration by the factor, $5 \times 10^{-6} \frac{\text{uci/cc Xe-133}}{\text{MR/HR}}$.

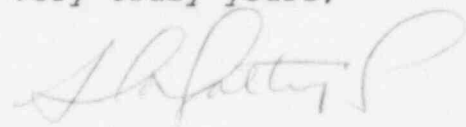
Using this factor, the required ARM response (1×10^2 to 1×10^7 MR/HR) can then be expressed as (5×10^{-4} to 5×10^1 uci/cc Xe-133). The combined range of the plant off-gas stack normal and high-range noble gas effluent radiation monitors is (1.0×10^{-5} to 1.4×10^4 uci/cc Xe-133). By inspection, the Regulatory Guide 1.97 reactor building ARM

range requirement is enveloped by the plant off-gas stack noble gas effluent monitors.

As part of our review of the evaluation received from the NRC (reference 3), it appears that there may have been a misinterpretation of our submittal concerning the variable, "Noble Gas and Vent Flow Rate - Common Plant Vent" (Section 3.3.16 of the reference 3 letter). The NRC evaluation states that, "The Peach Bottom units have two common plant vents, the unit vent stack and the off-gas stack." This is incorrect. Each Peach Bottom unit has its own vent stack. Only the off-gas stack is common to both units.

Should you have any questions regarding this matter, please do not hesitate to contact us.

Very truly yours,



cc: T. P. Johnson, Resident Site Inspector