Gerald R. Rainey
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January 19, 1996

Docket Nos. 50-277
50-278
License Nos. DPR-44
DPR-56

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Peach Bottom Atomic Power Station Units 2 & 3
Response to Notice of Violation (Combined Inspection Report No. 50-277/95-26 & 50-278/95-26)

Gentlemen:

In response to your letter dated December 12, 1995, which transmitted the Notice of Violation concerning the referenced inspection report, we submit the attached violation response and revision to LER 3-95-04. The subject report concerned a Routine Residents' Integrated Inspection that was conducted October 15 through November 25, 1995. An extension to the original required date of response was requested via telephone on January 10, 1996, by Ronald K. Smith, PBAPS Regulatory Group, and was granted by Walter J. Pasciak, Section Chief - Projects Branch 4, Division of Reactor Projects.

If you have any questions or desire additional information, do not hesitate to contact us.

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Attachment

250036

CCN #96-14008

IE01
1/1

cc: B. W. Gorman, Public Service Electric & Gas
R. R. Janati, Commonwealth of Pennsylvania
T. T. Martin, US NRC, Administrator, Region I
W. L. Schmidt, US NRC, Senior Resident Inspector
H. C. Schwemm, VP - Atlantic Electric
R. I. McLean, State of Maryland
A. F. Kirby III, DelMarVa Power

RESPONSE TO NOTICE OF VIOLATION

Restatement of Violation

Technical Specification 3.6.C. requires, in part, that during reactor power operation with both drywell sump collection and flow monitoring systems inoperable, for longer than 24 hours, the unit shall be in at least Hot Shutdown within the next 12 hours.

Contrary to the above, between October 26 and October 29, 1995, during reactor power operations, both drywell sump collection systems were inoperable for longer than 24 hours, and the unit was not in at least Hot Shutdown within the next 12 hours.

This is a Severity Level IV violation (Supplement I).

Incident Description

In April 1995, the Liquid Radwaste System Manager initiated a request for the Drywell Sump Pump Level Controllers to be replaced. The existing controllers were obsolete, and more reliable solid state controllers were requested. Engineering Change Requests (ECR's) were initiated to perform the task and in May, 1995, the ECRs were approved to replace controllers in the Drywell Floor Drain and Drywell Equipment Drain Systems.

In August 1995, an Administrative Guideline (AG)-123, "Maintaining Configuration Control of Design Changes" review was performed by Maintenance Planning, Design Engineering and the Liquid Radwaste System Manager. The AG-123 review was required to ensure that modification design, installation and acceptance test plan (ATP) were thoroughly evaluated to successfully implement the modification. The topic of resistor sizing was discussed and the decision was made to use a resistor value of 10K ohms. This decision was based primarily on the resistor value sizing chart provided by the manufacturer and consideration of the process fluid (water) being monitored. Resistance level probes found in both Drywell systems and comparative resistance circuitry initiate and stop associated drain pumps to control system level. Each Drywell system has two pumps, a lead pump and a lag pump, that will start pumping on a HI level (lead pump) or a HI-HI level (lag pump). Both pumps will automatically cease pumping when instrumentation circuity senses LOW level. Control instrumentation initiates or ceases pumping based on resistance changes between a common probe, which is always immersed in water, and three other associated probes for HI level, HI-HI level and LOW level. The resistance between these probes is compared to a fixed resistor in the instrumentation circuitry to automatically initiate or stop pump of the Drywell Sumps.

On October 23, 1995, the Drywell Floor Drain Sump Pumps were run in the manual mode, to pump the sump to its lowest level. A clearance was then applied to the Drywell Floor Drain Sump, which isolated the system and blocked the pumps from automatically starting. Work was completed by Instrumentation and Controls (I&C) personnel on October 25, 1995, and the logic was tested satisfactorily under the clearances. I&C then signed off the clearance to support Operations Surveillance Test (ST)-O-020-560-3, "Reactor Coolant Leakage Test", to verify normal floor drain pump out rates.

Operations personnel decided that the post modification test (PMT) was satisfied after observing three-4 hour periods with no Drywell Floor Drain pump-outs. This pump-out rate was considered consistent with the pump out rate of the Drywell Floor Drain Sump before the system was removed from service where only one pump out had occurred in seventeen-4 hour periods. The Shift Supervisor concluded that it could take several days for the Drywell Floor Drain Sump to fill back up and signed off the PMT as satisfactory, since the I&C PMT was completed without any known discrepancies. The Drywell Floor Drain System was declared operable, which allowed application of clearances on the Drywell Equipment Drain System.

On October 26, 1995, the Drywell Equipment Drain Sump Pumps were run in the manual mode, to pump the sump to its lowest level. A clearance was then applied to the Drywell Equipment Drain Sump, which isolated the system and blocked the pumps from automatically starting. Work was completed by I&C personnel on October 27, 1995, and the logic was tested satisfactorily under the clearance. I&C then signed off the clearance to support the Operations PMT and Operations initiated ST-O-020-560-3 to verify normal Drywell Equipment Drain Sump pump out rates.

During the performance of ST-O-020-560-3 on October 28, 1995, at approximately 2300 hours, it was noted that no pump outs from the Drywell Equipment Drain Sump had occurred in > 24 hours and that no pump outs from the Drywell Floor Drain Sump had occurred in > 44 hours. Shift Supervision was notified and the decision to manually start the sump pumps was made. It was realized at that time that a problem existed with the automatic start function of the Drywell Collection Systems and I&C was notified. The Liquid Radwaste System Manager was also notified of the situation, and Operations initiated a manual pump out schedule for both the Drywell Floor Drain & Drywell Equipment Drain Systems to maintain surveillance requirements.

Once the resistor sizing problem was identified, a plan was developed to replace the resistor in question and to test the system. On October 31, 1995, the Drywell Equipment Drain Sump was blocked and the 10K ohm resistor was replaced with a 2.2 mega ohm resistor. Approximately 10 hours later the PMT was signed off satisfactorily based on a revised testing method which allowed the Drywell Equipment Drain Sump to fill up with the pumps in off to allow the HI-HI alarm to come in. Following the HI-HI alarm, the pumps were returned to the automatic mode of operation and the sump was allowed to pump down. The system was then declared operable.

On November 1, 1995, the Drywell Floor Drain Sump was blocked and the 10K ohm resistor was replaced with 2.2 mega ohm resistor. On November 3, 1995, the revised PMT was completed and signed off satisfactorily. The Drywell Floor Drain System was then returned to the automatic mode of operation and the system was declared operable.

Reasons for the Violation

The initial design review and AG-123 review were less than adequate in the selection of the proper resistor value for the Drywell Sump Pump Level Controllers. Engineering did not recognize the importance of evaluating conductivity as a critical characteristic of the replacement part and therefore did not ensure that the resistor selected was proper for that application. Although resistor sizing was discussed during the AG-123 review process, it was not thoroughly evaluated by the design engineer. The design engineer based the selection of the 10 K ohm resistor on a sizing chart provided by the manufacturer. Additional clarifying information supplied by the manufacturer was not adequately evaluated to ensure the proper resistor was selected. The primary concern of the design engineer was centered around the circuit wiring and the logic of the Drywell Sump Collection System. The wiring was very complex and the wiring documentation for the system required close scrutiny. As a result of the design engineer's concentrated focus on the wiring and not realizing the importance of resistor sizing, the walkdown performed by the designer and the design engineer was less than adequate. The installed resistor value was not recorded on the existing system or compared to the resistor value selected.

The AG-123 review team did not adequately address the ATP. The lack of sensitivity to include and address conductivity as a critical characteristic resulted in an ATP that did not address the full spectrum of inputs to be verified. The ATP lacked sufficient detail for Operations and did not assure a positive test to verify operability. The AG-123 review team relied too heavily on an existing ST to adequately address the Drywell Sump Level Controller replacement. In addition, management expectations were not met for the use of a routine surveillance test to satisfy AG-123 requirements of "one step beyond" operability verification. If a routine test is used for this purpose it is expected that specific modification acceptance criteria be added as appropriate to ensure positive verification of operability. The ATP in this case did not provide specific acceptance criteria for system performance or direction regarding sump capacities, expected time for pump outs, or contingency plans in case unexpected results were received.

The Liquid Radwaste System Manager's oversight of the replacement of Drywell Sump Pump Level Controllers was less than adequate. The System Manager should have exhibited a heightened awareness and ownership of the system during the controller replacement. In addition, the System Manager should have been more involved to provide system expertise to Operations personnel.

The implementation of the AG-123 process in this event did not meet management expectations. Overall, the AG-123 process has heightened the awareness of station personnel performing modifications and has improved the overall change process. Additional clarification and communication of management expectations for AG-123, however, is required to ensure station personnel are implementing AG-123 as intended. The AG-123 review for this ECR did not account for and address the full range of variables or special criteria when developing the ATP. In addition, the review failed to ensure that appropriate testing parameters were incorporated.

Operations personnel failed to identify that the Drywell Floor Drain Sump did not pump out following the pre-maintenance pump out or after receiving overflow from the Drywell Equipment Drain System. Additionally, it was not identified that the Drywell Equipment Drain Sump did not initiate a pump out following the return of the sump to service. Operations personnel were aware that the sumps had not pumped out, but were not aware of the sump capacities or the time that would be required for the sumps to fill up and initiate a pump out. Operations personnel did not aggressively question system data and did not meet managements expectations for applying healthy skepticism and heightened awareness when returning equipment to service.

Operations personnel failed to log the removal and return of both Drywell Collection Systems and to enter a potential limiting condition of operation (PLCO) when removing equipment required to be operational by Technical Specifications (TS). Personnel did not meet management expectations or the Operations Manual requirement of OM-P-8.2 which clearly states that the removal or return to service of Technical Specifications (TS) related systems or components are to be appropriately logged. Additionally, OM-P-12.2 states the expectation to enter a PLCO when removing TS equipment from service. The OM requirements and management expectations for entering PLCOs were not met.

Operations personnel did not identify that the PMT was inadequate to demonstrate operability. The PMT adequately verified the electronic configuration changes, but did not adequately address or verify the component (resistor) change, which resulted in the loss of the automatic pump out function of the Drywell Collection System Sumps. The control room Supervisor based the operability determination of the Drywell Floor Drain System on the successful completion of the I&C PMT and a passive negative test (no pump outs expected) and did not maintain a questioning attitude and heightened awareness when reviewing the PMT for operability.

The Corrective Steps That Have Been Taken and the Results Achieved

Manual pump outs were initiated every two hours on both the Drywell Floor Drain Sump and Drywell Equipment Drain Sump, after the automatic start function of the both systems pumps was determined to be inoperable.

An ECR was implemented to install the properly sized resistors and the ATP was revised to provide a more comprehensive test to ensure system operability.

The appropriate resistor value was documented on station drawings.

Operations Shift personnel involved in this event were counselled on the OM requirements and Management expectations regarding log keeping, conservative decision making and operability determinations.

The logkeeping performance indicator was also revised to monitor for entries where TS equipment is either removed or returned to service and to include PLCO and LCO entries.

The design engineer and designer were counselled on the expectations of performing an all inclusive walkdown when developing a plan to change plant equipment and the need to thoroughly review all appropriate documentation and manufacturer information regarding the planned change.

The System Manager was counselled on the expectations of system ownership and heightened oversight for any proposed change to that system and the importance of evaluating that change with a testing method "one step beyond" as required in AG-123.

Corrective Actions that Will be Taken to Avoid Further Violations

Management expectations of the AG-123 process will be reinforced to station personnel by February 5, 1996, to ensure that personnel understand the intent of AG-123. AG-123 will also be revised to include this event as an example of the degree of evaluation and questioning needed in the process to ensure success. This revision will be completed March 29, 1996.

Appropriate Design Engineering procedures will be evaluated and revised to provide additional guidance on the identification and selection of critical system characteristics and how to evaluate differences in these characteristics with respect to the functions of plant systems and components. The procedures will be revised March 29, 1996.

A sample of pending Document Equivalent Changes (DECs) for significant plant systems will be reviewed and evaluated for similar problems. This review will be completed by March 29, 1996.

Enhanced ATP training will be provided to appropriate design change team members by July 1, 1996.

OM-C-10.5 will be revised to verify that the control room Supervisor performs an adequate review of PMTs for operability. Specifically, when the PMT concerns a design change of a TS system. The OM will be revised to ensure that the PMT verifies positive automatic operation of the system or component utilizing actual plant parameters. This revision will be completed by March 29, 1996.

ST-O-020-560-3(2), "Reactor Coolant Leakage Test" will be revised to include the capacities of the Drywell Floor Drain and Drywell Equipment Drain Sumps.
This revision will be completed by March 29, 1996.

A training package will be developed to reinforce appropriate logkeeping, PLCO entries, PMT adequacy for determining operability, healthy skepticism and overall heightened awareness. This training will be developed and implemented by March 29, 1996.

Date When Full Compliance Was Achieved

Full compliance was achieved October 29, 1995, when two hour manual pump outs for the Drywell Floor Drain Sump and Drywell Equipment Drain Sump were initiated. The automatic start function of the Drywell Equipment Drain Sump was restored October 31, 1995, and the automatic start function of the Drywell Floor Drain Sump was restored November 3, 1995.