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JOSEPH W. GALLAGHER
MANAGER
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August 7, 1980

Re: Docket Nos. 50-277
50-278

IE Bulletin 80-17

Mr. Boyce H. Grier, Director
Office of Inspection & Enforcement
Region I
US Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Dear Mr. Grier:

This letter is in response to IE Bulletin 80-17 and IE Bulletin 80-17, Supplement 1, which concern the failure of 76 of 185 control rods to fully insert during a scram at a BWR. These responses address item 1 of the original Bulletin (Unit 2 only) and items A.1 through A.5 of Supplement 1. The "Actions to be Taken by Licensees" and our responses are treated sequentially.

BULLETIN 80-17

Item 1

Within 3 days from the date of this Bulletin, perform surveillance tests to verify that there is no significant amount of water in the Scram Discharge Volume (SDV) and associated piping and that the SDV vent valves are operable and vent system is free of obstruction.

Response

On August 1, 1980, the scram discharge volume drain and vent valves on Unit 2 were proven operable in accordance with a special test procedure prior to the unit returning to power. This test procedure operated the air solenoid valves which would normally operate in conjunction with scram initiation and reset. Valve stroking was verified as proper.

On August 1, 1980, tests were also performed to verify that the vent system is free from obstruction. To verify that the vent header piping was open to atmosphere, a test was performed which drew air through the vent valve on the north header through the scram discharge volume header pipe and out the vent valve on the south header. This test proved that the piping system from a spool piece on the vent line on the north side of the reactor building to a similar spool piece on the south side vent line was open and free from obstruction. A second test was performed which drew air from the vent piping leading to the clean radwaste drain system on both the north and south vent piping. This test proved that the clean radwaste drain system does provide an unobstructed vent path. The combination of these two tests verified that the existing installation provides an atmospheric vent for the vent header piping.

To ensure this venting capability under all conditions, a 1" vent standpipe was added to each closed funnel at elevation 135 in the reactor building. In addition, a 1/4" hole was drilled in the side of the funnel at the elevation where the vent piping enters the closed funnel. Additional design review is being performed in accordance with IE Bulletin 80-17, Supplement 1, Item B.2, and may result in additional modifications to the SDV venting system.

The tests performed and the modifications made, provide a positive venting capability for the vent valves under all conditions, and satisfy both the requirements of item 1 of Bulletin 80-17 and Supplement 2 to that Bulletin.

BULLETIN 80-17 SUPPLEMENT 1

A.1) Provide to the NRC Regional Office an analysis of the adequacy of the "as-built" SDV system and associated vent and drain systems, including any identified design deficiencies. Include copies of verified "as-built" isometric drawings of the SDV and detailed descriptions of the remainder of the system, verified to be correct, as part of this analysis.

Response

A detailed analysis of the Peach Bottom Units 2 and 3 scram discharge volume system has been performed, including the scram discharge instrument volumes. This analysis included a verification of the "as-built" configuration of this piping by measurement at the plant and an assessment of the adequacy of the "as-built" system to meet its intended safety function. The results of this review, as outlined below, indicate that design changes to the system may be warranted, in order to ensure that sufficient volume is available in the scram discharge volumes at all times during reactor operation.

Specific information on the physical arrangement of the scram discharge and instrument volumes for each unit is contained in the detailed drawings submitted with this response.

A similar analysis of the adequacy of the vent and drain systems will be provided by September 1, 1980 in response to Item B.2) of IE Bulletin 80-17, Supplement No. 1. For the purposes of this response, a written description has been provided.

Scram Discharge Volume and Scram Discharge Instrument Volume:

The safety-related function of the scram discharge and instrument volume is to limit the loss of and contain the reactor vessel water discharged from all drives during a scram.

The adequacy of design as it pertains to the ability of the discharge volume to limit the loss of reactor water during a scram will be addressed in response to Item B.2 of IE Bulletin 80-17, Supplement 1.

The scram discharge and instrument volume was reviewed with respect to its ability to contain the reactor water discharge from the over-piston area of the control rod drives during a scram. The design criteria specified by General Electric for this volume is 3.34 gallons per drive. Thus, for Peach Bottom (185 drives) the total required volume is 618 gallons.

This criteria has been met at Peach Bottom with calculated discharge volumes of 628 gallons and 689 gallons for Units 2 and 3 respectively. These volumes do not include any volumes of the vent lines, drain lines or instrument volume and connecting piping.

While the ability of the system to maintain this available volume will be addressed in the previously mentioned vent and drain analysis, the method by which any water accumulated in the system is detected was reviewed. Water level in the discharge volume is inferred by measurement of level in a common instrument volume located between the scram discharge headers. It therefore may

not be truly indicative of the actual water level in the scram discharge volumes. A means for accomplishing direct measurement is being investigated.

The physical arrangement of the instrumentation associated with the instrument volume has been reviewed and found to be acceptable.

Vent and Drain System:

The north and south scram discharge volume headers, on both Units 2 and 3, are provided with vent systems to assist in draining the scram discharge headers.

On Unit 2, a 1 inch air operated vent valve is located on both north and south headers, at elevations 153'-7-1/8" and 151'-7-1/2", respectively. From each vent valve, dedicated piping slopes downward and turns vertically into 8 inch clean radwaste funnels, located at elevation 135'-9-1/2" on the south and 135'-5-1/2" on the north. These funnels have welded covers, and are positively vented via 1" diameter stand pipes extending from the funnel covers and a 1/4" hole drilled into the side of each funnel. From each funnel, a 2 inch pipe passes through the floor at elevation 135'-0 on both sides. From there, the south side 2 inch pipe ties into a 4 inch clean radwaste line, to which several miscellaneous drains are connected. The north side 2 inch line ties into the same clean radwaste line further down at elevation 126'-4-3/8". The 4 inch clean radwaste line drops vertically into the clean radwaste sump pit where it discharges below water. With the exception of embedded pipe, the entire path from the header vent valves to the sump is verified to slope downward, without loop seals or upward slope. For embedded pipe, physical drawings were checked to verify slope.

On Unit 3, the configuration of the Unit 3 scram discharge volume vent system is similar to the Unit 2 system, except the north side 2 inch pipe from the vent control valve ties into the 4 inch clean radwaste pipe prior to the south side tie-in.

A 2 inch drain pipe is provided from the scram discharge instrument volume on Units 2 and 3 for the purpose of draining the scram discharge volume headers.

On Unit 2, an air operated valve is located in the 2 inch drain line from the scram discharge instrument volume at elevation 135'-11-1/2". At this point the pipe drops vertically and runs through the floor to elevation 128'-11-1/2", and then runs horizontally without slope for about 15 feet. It begins to slope downward through the torus room into the radwaste building. Upon entering the radwaste building, the 2 inch drain line ties into a

3 inch maintenance steam line drain. Two valves in the maintenance steam line drain, upstream of this tie-in point, are normally closed during reactor operation. The steam line drain slopes downward from this point until it reaches the waste collector tank where it discharges above the water level in the tank. The tank is vented to the atmosphere. The slope and configuration of the drain pipe has been verified, where possible, through field walkdowns. There are no loop seals or upward sloping sections of drain piping downstream of the instrument volume drain valve.

While the overall configuration of the Unit 3 drain system is similar to that of Unit 2, actual field verification is in progress. If any significant differences are identified during field verification, they will be reflected in our September 1, 1980 response to item B.2 of Supplement 1.

A.2) Revise and implement Operating Procedures as necessary to provide clear guidance to the licensed operator in the control room regarding when he should initiate the SLCS without obtaining prior supervisory approval. Provide a description of the implemented procedural requirements.

Response

Procedures GP-4, GP-6, and S-3.6.B have been revised to provide clear guidance to the licensed operator in the control room regarding SLCS initiation without obtaining prior supervisory approval. All three procedures instruct the licensed operator that if five or more adjacent control rods or 30 or more control rods cannot be inserted past 06 position, and either a) reactor level cannot be maintained, or b) the suppression pool temperature reaches 110 degrees F, he is to refer to procedure S-3.6.B and to initiate SLCS. If shift supervision is not available to grant permission within two minutes the licensed operator shall inject the standby liquid.

A.3) Assure that procedures exist and are implemented for specifying remedial action to be taken if water is found in the SDV system at times when it should be free of water. Provide a description of the implemented procedural requirements.

Response

Surveillance test procedure ST 9.22-2 and ST 9.22-3 specify remedial action if it is determined that there is the possibility of water being held up in the SDV when it should be drained. If the surveillance test indicates a problem, the test will be

repeated to verify the results. If the problem is verified by the results of the retest, the Station Superintendent or his alternate will be notified immediately and additional steps will be taken to verify water inventory in the SDV (i.e. radiographs or ultrasonic testing of the SDV). If the SDV cannot be proven to be essentially free of water in a timely fashion, the plant will be shut down on the order of the Station Superintendent or his alternate. Further, the procedure mandates the plant to be shut down in an orderly fashion if the Station Superintendent or his alternate cannot be reached and the problem not resolved within eight hours.

A.4) Revise and implement administrative procedures as necessary to ensure that the SLCS key shall be readily available to the licensed operator in the control room. Provide a description of the implemented procedural requirements.

Response

To ensure that the SLCS key is readily available to the licensed operator in the control room, the key has been chained to the SLCS keylock switch.

A.5 Continue daily monitoring of water levels in all scram discharge volumes until continuous monitoring system(s) (discussed in B.1 below) is (are) installed and operational (this requirement supersedes the requirements of Item 5 of IE Bulletin 80-17 which required daily surveillance for only 6 days).

Response

Monitoring of water levels in the scram discharge volumes is being continued on a daily basis.

Very truly yours,

J. W. Gallagher

Enclosure

cc: US Nuclear Regulatory Commission
Office of Inspection & Enforcement
Division of Reactor Operations Inspection
Washington, DC 20555

COMMONWEALTH OF PENNSYLVANIA :

ss.

COUNTY OF PHILADELPHIA :

J. W. Gallagher, being first duly sworn, deposes and says:

That he is Manager of the Electric Production Department of Philadelphia Electric Company; that he has read the foregoing response to IE Bulletin 80-17 and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

J W Gallagher

Subscribed and sworn to
before me this 8th day
of August, 1980

Elizabeth H. Boyer

Notary Public

ELIZABETH H. BOYER
Notary Public, Phila., Phila. Co.
My Commission Expires Jan. 30, 1982