BALTIMORE GAS AND ELECTRIC COMPANY
GAS AND ELECTRIC BUILDING
BALTIMORE, MARYLAND 21203

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

August 24, 1979

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

Subject: Calvert Cliffs Nuclear Power Plant
Units Nos. 1 & 2, Dockets Nos. 50-317 & 50-318
IE Bulletin No. 79-17

Reference: NRC letter dated 7/26/79 from B. H. Grier to A. E. Lundvall, Jr., same subject.

Dear Mr. Grier:

The referenced letter forwarded IE Bulletin 79-17 which described a potential problem of pipe cracks in stagnant borated water system and asked that we provide certain information on our safety-related stainless steel piping containing stagnant oxygenated borated water.

From our operating experience, we have never had any instance of stress-corrosion related cracking in stainless steel pipe containing stagnant or essentially stagnant borated water. However, we have identified the following safety-related systems (described by item 1 of the Bulletin) which may contain stagnant oxygenated borated water.

I. Class I Systems

A. Safety Injection System

1. Safety injection line from the second isolation valve to Reactor Coolant Loop. (System designated CC-4 in FSAR Fig. No. 4-1).

B. Shutdown Cooling System

1. Shutdown cooling line from the Reactor Coolant Loop through the isolation valves (System designated CC-14 in FSAR Fig. No. 4-1).

2. Reactor coolant system drains and vents up to second valve. (System designated CC-9 in FSAR Fig. 4-1)

3. Auxiliary spray system from normal spray line to second valve. (System designated CC-5 in FSAR Fig. 4-1).

II. Class II Systems

A. Safety Injection System

1. Redudnant High Pressure Safety Injection Line. (Line designated CC-6 in FSAR Fig. 6-1)

2. Safety Injection Line Upstream of second isolation valve from the Reactor Coolant Loop. (Line designated CC-13 in FSAR Fig. 6-1)

3. High Pressure Safety Injection Line (upstream of flow control station) to Reactor Coolant Loop. (Line designated DC-1 in FSAR Fig. 6-1)

4. Low Pressure Safety Injection pump discharge (upstream of flow control station) to Reactor Coolant Loop. (Line designated GC-1 in FSAR Fig. 6-1)

5. Containment Spray Pump discharge. (Line designated GC-2 in FSAR Fig. 6-1)

6. High Pressure Safety Injection pump suction from shutdown Heat Exchanger discharge. (Line designated GC-3 in FSAR Fig. 6-1)

7. Reactor Coolant to Low Pressure Safety Injection Pump suction, Shutdown Cooling. (Line designated GC-5 in FSAR Fig. 6-1)

8. Safety Injection Tank to check valve on tank outlet. (Line designated GC-9 in FSAR Fig. 6-1)

B. Chemical and Volume Control System

1. A portion of auxiliary spray line from charging line to control valve 517. (Line designated CC-7-1018 in FSAR Fig. 9-3)

2. Boric Acid gravity feed line to charging pump suction header (Line designated HC-6 and HC-40 in FSAR Fig. 9-3)

3. Boric Acid pump discharge to charging pump suction header. (Line designated HC-7 and HC-16 in FSAR Fig. 9-3)

III. Class III System

A. Safety Injection System

1. Refueling Water Storage Tank Miscellaneous piping. (Line designated HC-23 in FSAR Fig. 6-1)

The above systems contain stagnant borated water during normal reactor operation and may not have any flow due to flushing or performance testing for at least 30 days.

The following paragraphs respond to the four sections of item 1 of the Bulletin as indicated.

a. Inservice Inspections in accordance with ASME Code Section XI have been performed on the systems containing stagnant borated water during refueling outages in February, 1977 (Unit 1), September, 1978 (Unit 2) and April, 1979 (Unit 1). Many of the welds in the above systems were non-destructive examined and leak tested by hydro in accordance with ASME Section XI during the outages. The following paragraphs discuss the specifics of each inservice inspection (ISI).

An ISI of selected systems was performed in February and March of 1977 at Calvert Cliffs Unit 1. The welds were selected in accordance with the 1971 Edition of ASME Section XI and NRC I.E. Circular 76-06. During the ISI, 65 circumferential welds addressed in I.E. Bulletin 79-17 were examined with manual UT techniques. The examinations were performed in accordance with SwRI NDT Procedures 800-36, Revision 10, and 600-3, Revision 25. The procedures were qualified in accordance with ASME Section III, 1971 Edition. All indications producing a response greater than 100% of the reference level which could not be resolved as geometric in nature were, by procedure, to be reported for evaluation. No reportable indications were observed.

An ISI of selected Class 1 and Class 2 systems was performed in September and October of 1978 at Calvert Cliffs Unit 2. The welds were selected in accordance with ASME Section XI. During the ISI, 72 circumferential welds addressed in I.E. Bulletin 79-17 were examined with manual UT techniques. The examinations were performed in accordance with SwRI NDT Procedures 800-36, Revision 15, and 600-3, Revision 46. The procedures were qualified in accordance with ASME Section V, Article 5. All indications producing a response greater than 20% of the reference level were evaluated to determine their type and character. Any indications greater than 20% of the reference level which could not be resolved as geometric or irrelevant were, by procedure, to be reported for evaluation. One reportable indication was observed during the ISI at Unit 2, but it was found on the outside surface of the pipe and was not service induced.

An ISI of selected Class 1 and Class 2 systems was performed in April and May of 1979 at Calvert Cliffs Unit 1. These welds were selected in accordance with ASME Section XI. During the ISI, 56 circumferential welds addressed in I.E. Bulletin 79-17 were examined with manual UT techniques. The examinations were performed in accordance with SwRI NDT Procedures 800-36, Revision 21, and 600-3, Revision 51. The procedures were qualified in accordance with ASME Section V, Article 5. All indications producing a response greater than 100% of the reference level which could not be resolved as geometric in nature were, by procedure, to be reported. No reportable indications were observed.

A total of 19 liquid penetrant (PT) examinations have been performed on the 2" Safety Injection Systems subject to I E. Bulletin 79-17. Reportable indications have been observed in both Units 1 and 2 but no service-related flaws have been found. All PT indications have been accepted after rework, reexamination and evaluation.

In summary, 212 welds that would be subject to the I.E. Bulletin 79-17 have been examined at Calvert Cliffs. Examinations have revealed no reportable indications of the type addressed in I.E. Bulletin 79-17 and, therefore, no rejectable welds.

b. The attached Attachment 1 describes the water chemistry control and the chemistry data on the systems. There was neither design change nor any action taken to maintain specified chemistry.

c. All Class I piping systems identified above were preservice inspected in accordance with the 1971 Edition of ASME Section XI including all 1971 addenda. A portion of the redundant high pressure safety injection system (CC-6) and the entire safety injection line (CC-13) upstream of the second isolation valve from the reactor coolant loop, were examined in accordance with ASME Section XI. Although the above safety injection piping was class II and the applicable 1971 section XI Code did not address preservice inspection of class II components, the welds on those lines were examined under our preservice inspection plan. The non-descructive examinations performed on the weld joints of the above systems are visual, liquid penetrant and ultrasonics, based on examination categories of ASME Section XI, 1971 Edition. The acceptance criteria applied to the examination was in accordance with the code applicable to construction of the component (B 31.7, 1969 Edition plus 1971 a & b addenda) with the exception that ultrasonic indications which produced a response greater than 100% of the reference level were investigated and the acceptability was determined in accordance with the acceptance criteria of ASME Section III, 1971 Edition.

d. Not applicable.

Because of the extensive examinations and favorable results described above, we conclude that the integrity of welds has not been affected by service environment and residual stress as discussed in NRC Bulletin 79-17 and that the inspections and reports discussed in items 2,3, 4 & 6 of the Bulletin are not required. This conclusion is further reinforced by the following:

(a) During construction of the plant welding parameters such as heat input and interpass temperature were carefully controlled to minimize sensitization in the heat affected zone of type 304 stainless steel.

(b) Our record of strict adherence to specified chemistry during plant operation.

Very truly yours,

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