DR Central

UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

TELEPHONE
(312) 858-2660

January 3, 1974

Wisconsin Public Service Corporation
ATTN: Mr. E. W. James, Senior Vice President
Power Generation and Engineering
P. O. Box 1200
Green Bay, Wisconsin 54305

Docket No. 50-305

Gentlemen:

The enclosed Directorate of Regulatory Operations Bulletin No. 74-1, involving two valve problems, is sent to you to provide you with information we recently received from the Philadelphia Electric Company and the Wisconsin Electric Power Company. The problems involved deficiencies identified at the Peach Bottom, Units 2 and 3 and the Point Beach reactors. This information may relate to the performance of certain equipment at your facilities. The Bulletin also requests certain action on your part in this matter.

Sincerely yours,

James G. Keppler
Regional Director

Attachment:
Bulletin No. 74-1

bcc: RO Files
DR Central Files
PDR
Local PDR
OGC, Beth, P-506A
R. Renfrow, GC (2)

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January 3, 1974
Directorate of Regulatory
Operations Bulletin No. 74-1

VALVE DEFICIENCIES

Information was recently received from the Philadelphia Electric Company and the Wisconsin Electric Power Company concerning two types of deficiencies relating to valves.

The deficiency identified by the Philadelphia Electric Company at the Peach Bottom Units 2 and 3 facilities related to weld failures between the valve yoke and the motor operator mounting plate in valves supplied by the Walworth Company. A description of the deficiency is provided in Attachment A.

The second deficiency, identified by the Wisconsin Electric Power Company at the Point Beach plant, involved a backseating disc mislocation problem on two inch Darling valves. Details are provided in Attachment B.

In light of the above information, you are requested to determine whether similar valves are installed or scheduled to be installed in your facilities and inform this office in writing within 30 days of the date of this letter regarding the results of your determination. Also please send a copy of your report to B. H. Grier, Assistant Director for Construction and Operation, Directorate of Regulatory Operations, USAEC, Washington, D. C. 20545. In the event such valves are identified, you are requested to determine whether those identified valves have the deficiencies described and if so, to inform us in your letter of the corrective action planned and the date of scheduled completion of that corrective action.

Attachments:
A. Philadelphia Electric Co. Ltr
   dated 10-1-73 to Dr. Knuth
B. Wisconsin Electric Power Co. Ltr
   dated 10-29-73 to J. F. O'Leary

ATTACHMENT A

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

PHILADELPHIA, PA. 19101

(215) 841-4500

V. S. BOYER
VICE-PRESIDENT

October 1, 1973

Dr. D. F. Knuth, Director
Directorate of Regulatory Operations
United States Atomic Energy Commission
Washington, D.C. 20545

Subject: Significant Deficiency Report -
High Pressure Service Water Valve Weld Failure
Peach Bottom Atomic Power Station - Units 2 & 3
AEC Construction Permit Nos. CPPR-37 and CPPR-38
File: QUAL 2-10-2 SDR No. 5

Dear Dr. Knuth:

In compliance with 10CFR50.55, paragraph (e) attached is the Significant Deficiency Report concerning the weld failure on the High Pressure Service Water valve in Unit No. 2. This item was reported to AEC DRO I by telecon on June 1, 1973.

We trust that this satisfactorily resolves this item. If further information is required, please do not hesitate to contact us.

We appreciate your extending the time for our response to October 1, 1973 as agreed by telecon on September 14, 1973 between our Mr. G. R. Hutt and Mr. R. Heischmann, USAEC DRO I.

Sincerely,

V. S. Boyer

Copy to: J. P. O'Reilly, USAEC

SIGNIFICANT DEFICIENCY REPORT - SDR NO. 5

HIGH PRESSURE SERVICE WATER VALVE WELD FAILURE

PEACH BOTTOM ATOMIC POWER STATION - UNITS 2 & 3

AEC CONSTRUCTION PERMIT NOS. CPPR-37 AND CPPR-38

Description of Deficiency

During a routine walk-thru of Unit No. 2 plant by the licensees operating personnel, a 12 inch - 300 pound motor operated globe valve in the High Pressure Service Water line on the discharge side of one Residual Heat Removal heat exchanger was discovered to have experienced a weld failure. The failure occurred between the valve yoke and the motor operator mounting plate. The reason for the failure has been identified as insufficient fillet weld throat dimension caused by the installation of unauthorized shims between the yoke legs and the mounting plate, which reduced the effective size of the weld.

Corrective Action

The failed valve is one of a series of eight valves (four in Unit 2 and four in Unit 3). These eight valves were visually inspected and a second valve was found to have cracks in the yoke to motor operator mounting plate weld.[1] All eight valves were returned to the vendor for rework. The rework involved elimination of the shims in the failed valve and the rewelding of the mounting plates to the yoke legs with full penetration welds on all eight valves.

An investigation of similar valves (supplied by the same vendor) elsewhere in the plant, was undertaken. A total of 108 valves were identified by the vendor to have yoke to motor operator mounting plate construction similar to that of the failed valve. Fifty-eight (including the above mentioned eight) of these valves are nuclear valves classified as Group II as defined by Figure A.2.1 of Appendix A of the Peach Bottom Atomic Power Station FSAR. The remaining valves are Group III non-nuclear balance of plant valves.

The Vendor's weld stress analysis calculations were reviewed and a table of acceptable weld sizes prepared.

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1 This valve was originally reported in the interim report to have shims. The valve was only visually inspected at that time and the cracks were interpreted to indicate the presence of shims.

ATTACHMENT B

Wisconsin Electric POWER COMPANY
231 WEST MICHIGAN, MILWAUKEE, WISCONSIN 53201

October 29, 1973

Mr. John F. O'Leary, Director
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. O'Leary:

DOCKET NOS. 50-266 AND 50-301
FACILITY OPERATING LICENSE NOS. DPR-24 AND DPR-27
POINT BEACH NUCLEAR PLANT
BACKSEATING DISC MISLOCATION PROBLEM ON 2" DARLING VALVES

In accordance with Section 15.6.6.A.3.b of the Technical Specifications for Point Beach Nuclear Plant (Facility Operating License Nos. DPR-24 and DPR-27), this report describes a possible generic problem with a category of 2" gate valves installed at Point Beach Nuclear Plant. The valves in question are 2", No. S-350 WDD welding end, outside screw and yoke, double disc gate valves with lip seals, and are manufactured by the Darling Valve and Manufacturing Company. The valves used at Point Beach Nuclear Plant are safety class I, ASA series 1500 lb. valves.

An investigation of excess letdown line leakage on September 15, 1973, lead to an inspection and subsequent repair of valve 1MOV-1299 on Unit 1 (excess letdown system root valve) on September 26, 1973. Inspection of the valve disclosed that its downstream seat protruded from the valve body such that if the valve disc was fully withdrawn from the guides, as allowed by its backseating ring, the disc could catch the "lip" of the seat ring when reinserting. Four marks on the lip of the downstream seat ring indicated that the disc had caught there during previous valve closings. Internal damage to the valve consisted of a fine vertical crack at the 12 o'clock position in the upper portion of the downstream seat ring. Two locating pins between the upstream and downstream discs of the split disc valve were found to be slightly bent also and some facial scratches to the down-stream disc were evident. There was no metal loss involved in the damage.

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Repair of the valve involved rounding the lip of the seat ring to prevent future hangups of the disc. The thin vertical crack in the downstream seat could not be fully lapped out during the repair. Accordingly, a manual valve was added to the system downstream of 1MOV-1299 to back up the root valve. Valve 1MOV-1299 thereby remains effective and operable as a remotely controlled root shutoff valve, but is considered not totally capable of effecting completely tight shutoff without some through-leakage.

At the time,measurements indicated that the location of the backseating ring on the valve stem was too low but this could not be assuredly determined. If such was the case, this would allow the split discs to fully clear the seat rings when the valve was fully open and backseated. The tendency for interference to occur between the downstream disc and seat during valve closing could be expected to increase if there was flow through the valve, creating a differential pressure which could swing the loose hanging disc onto the lip of the seat.

There are six similar 2" Darling valves in each unit at Point Beach Nuclear Plant. In addition to the above mentioned 1299 valve, valves 270A & B (normally open) are installed on the reactor coolant pump seal return lines. These valves are rarely operated in the life of the plant. Also, valves 598 and 599 on the reactor coolant system drain line are of this type. These valves are never operated during normal pressurized and power operation. The sixth similar valve on each unit is MOV-427 on the normal letdown line. The function of valve 427 is to close in the event of low pressurizer level and, in closing, cause the closure of the containment isolation valves 200 A, B and C, via an interlock. None of the Darling valves described in this report are containment isolation valves.

Valve 1MOV-427 was investigated during a Unit 1 shutdown on October 13, 1973, after it was reported that it would not fully close remotely. Manual manipulation of the valve on September 28, 1973, had shown that at approximately one-half shut and again just prior to closing, the valve operation became sticky. Tests were conducted at that time to verify that 1MOV-427 was capable of performing its primary function of initiating an isolation signal for the letdown line. The slightest movement of the valve off its backseat was found to be sufficient to activate the interlocks and close the AOV-200 letdown isolation valves.

Measurements indicated that the discs of 1MOV-427 when backseated cleared the seat rings and left the valve open to similar problems as experienced in 1MOV-1299. Inspection showed no damage to valve 1MOV-427 other than a slight marking of the upper edge of the seat ring, similar to that found in 1MOV-1299. Before closing up the valve, the seat ring edges were rounded to aid in guiding the discs down between the seats. The "valve open" limit switch was then set for 2-1/4", 5/16" less than the maximum backseating position of 2-9/16". Valve cycling tests were then conducted satisfactorily.

During the same shutdown, valve 1MOV-270B was cycled manually with no evidence of stickiness or disc hangup. At the completion of repair of 1MOV-427, on October 13, 1973, it was concluded from measurements taken, operating experience and telephone discussions with the valve manufacturer, that, indeed, a dimension error could exist with respect to backseat locations on the stem. With these confirmations, it was concluded that all twelve valves of this type would require investigation on a schedule commensurate with the plant operating schedules.

Valves 1MOV-1299, 2MOV-1299 and 2MOV-427 will be electrically limited similarly to 1MOV-427. Valve 1MOV-1299 will be completely changed out during a convenient shutdown following the receipt of a new valve. New valve stems with backseats located so that full opening of the valve will not permit the discs to lose the guide effect of the seats have been ordered and will be fitted in the remaining valves at convenient shutdowns. The service of the 598, 599 and 270A & B valves is such that it is not considered necessary to change the stems of these valves until the next refueling shutdown of each unit.

The nuclear steam supply system supplier has been informed about the problems encountered with these valves.

Very truly yours,

Sol Burstein

Sol Burstein

Senior Vice President

cc: Mr. James G. Keppler
Regional Director
Directorate of Regulatory Operations,
Region III