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September 4, 1980

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

ATTENTION: MR. BOYCE H. GRIER, DIRECTOR

SUBJECT: Beaver Valley Power Station - Unit No. 2
Welding Electrode Control Program - Deficiency
Docket No. 50-412
Significant Deficiency Report No. 80-04

Gentlemen:

During the field welding installation of the Safety Injection System, it was discovered that E-309-16 welding electrode had been issued and used instead of the specified E-308-16 welding electrode, this condition being one of a series of similar type welding electrode control problems revealed by our own organization and Nuclear Regulatory Commission Inspectors. This problem was reported to Mr. L. Narrow of the Nuclear Regulatory Commission, Region I, on August 1, 1980.

Pursuant to the requirements of 10CFR50.55(e), the final report on this problem is attached for your review.

An investigation has been performed to establish the extent of the misapplication of welding electrode E-309-16 utilized since 1976; the results of this investigation assures us that, with the exception of the incidents described in the final report, proper control had been applied.

Our Engineers have evaluated the misapplication of the welding electrode reported, and advise there is no safety implication.

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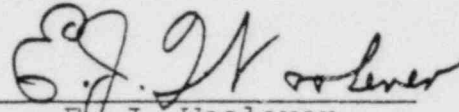
The Stop Work Order, imposed on our Contractor, August 1, 1980, was lifted on August 29, 1980, with the verbal concurrence of Mr. L. Narrow of the Nuclear Regulatory Commission, Region I, in his telephone conversation of the same date with our Quality Assurance Manager. The welding activity resumed September 3, 1980.

We have included in the attached report our final response to the NRC Violation 50-412/80-06-02, as described in our letter dated August 6, 1980, to Mr. Robert T. Carlson, Chief - Facility Construction and Engineering Support Branch.

If you have any questions concerning this report, we are available to meet with Nuclear Regulatory Commission personnel at their convenience.

DUQUESNE LIGHT COMPANY

By



E. J. Woolever
Vice President

Enclosure

cc: V. Stello (15)

FINAL REPORT

ON

WELDING ELECTRODE CONTROL PROGRAM

AT

BEAVER VALLEY POWER STATION - UNIT No. 2

1.0 SUMMARY

During the field welding installation of the Safety Injection System, it was discovered that E-309-16 welding electrode had been issued and used instead of the specified E-308-16 welding electrode, this condition being one of a series of similar type welding electrode control program problems.

2.0 IMMEDIATE ACTION TAKEN

Nonconformance and Disposition Report #6260 was initiated and a Stop Work Order requiring our Mechanical Contractor to cease any and all welding activities immediately was imposed on August 1, 1980. The Nuclear Regulatory Commission was informed of this Deficiency by telephone on August 1, 1980.

3.0 DEFICIENCY

The utilization of welding electrode E-309-16 instead of the required E-308-16 in Field Welds #2-SIS-067-F-04, #2-SIS-067-F-03 and #2-SIS-071-F-04, forming the part of the Pressure Boundary for the Safety Injection System (ASME Section III, Division 1, Class 1).

Generic welding electrode control program failure having a potential for a future safety implication when the above condition is taken in conjunction with previous Nonconformance and Disposition Reports, Nuclear Regulatory Commission Infractions and Unresolved Items relating to the weld electrode control program.

4.0 ANALYSIS OF SAFETY IMPLICATIONS

A comprehensive review of the electrode mixture in the three safety injection piping system welds has been performed, and it has been determined that the welds meet all Design and ASME Code Requirements. The major concern with a mixture of E-308 and E-309 welding filler metal is in its resistance to the corrosive properties, if any, of the fluids with which the weld will come in contact. The three welds in which a mix of the two electrode types were used were made with Schneider's Welding Procedure Technique Sheet SPBV-300G, Revision 5. This procedure specifies a type 308 or 308L consumable insert ring at the root, with a layer of ER-308 or ER-308L over the root. Any type E-309 filler metal is, therefore, isolated from the fluid.

The use of Type E-309 filler metal does not violate the ASME IX Procedure Qualification Requirements for the welding procedure used. The carbon content of the specific material used does not invalidate the corrosion test per ASTM-708, which is part of the procedure qualification. The measured delta ferrite content of the deposited E-309 is 10.8 Ferrite Number (9.8%). For a range of dilution factors of 20-40% due to mixing with E-308 filler metal and/or the type 316 base metal, calculated ferrite content is from 4.5 to 16.5 Ferrite Number. This meets the recommendations of Regulatory Guide 1.31. Finally, the strength of E-308 and E-309 are essentially equal at room temperature and 600°F.

5.0 CORRECTIVE ACTION TO REMEDY DEFICIENCY

In view of the safety analysis implications stated in Paragraph 4.0, our corrective action emphasized revision to the Electrode Control Program, Training Program, and Organizational Structure of our Mechanical Contractor. In addition, our Quality Assurance Department has increased its emphasis on the verification of the Mechanical Contractor's electrode control program. These actions are summarized below:

- (a) The Mechanical Contractor has made a basic change to his Organizational Structure by creating a new position of Chief Welding Engineer, having a line supervisory function instead of the original service or consultant function. All activities and personnel that support the welding operations such as Welding

5.0 CORRECTIVE ACTION TO REMEDY DEFICIENCY
(Continued)

Supervisors and Weld Issue Station Attendants are consolidated under this new position, that has the overall responsibility for the technical and material control aspects of welding. Improved detailed position descriptions have been produced to assure compatibility with the newly created position.

- (b) A more detailed training program has been developed and applied, directly relating the training lesson plans to our Field Construction Procedures, and a training matrix/lesson plan guide has been developed specifically for Field Construction Procedure 601.5, "Weld Material Control". The training program has been expanded to include all personnel involved in the welding process, including welder's assistants.
- (c) Field Construction Procedure 601.5, "Weld Material Control", has been revised to include an improved Weld Material Requisition Form designed to assist the craftsmen and Issue Station Attendants in identifying possible problems. A Storage Oven Control Log and improved standard format for storage oven content has also been included, with verification requirements by cognizant supervisors specified.
- (d) A Duquesne Light Company, Site Quality Control Inspection Plan 7.30, "Surveillance of Schneider Inc. Weld Material Control", has been developed and implemented.

6.0 NRC VIOLATION 50-412/80-06-02

Contrary to Licensee's commitments...

(Quote)

"On June 3, 1980, approximately 25-40 welding electrode stubs and damaged electrodes had been placed in a large trash container within the containment building.

This item is an infraction."

(End of quote)

6. NRC VIOLATION 50-412/80-06-02
(Continued)

Response

We have investigated the above Infraction and have established that an individual welder employed by our Mechanical Contractor had failed to return his stub bucket to the designated disposal at the end of each shift as required by our Field Construction Procedure 601.5. The investigation also determined that the welder's assistant disposed of the stubs. The assistant was not aware of the stub disposal requirement and had not been trained in this duty. The welder in question was reprimanded in accordance with administrative procedures. Subsequent questioning of personnel involved in welding in the Containment Building indicated that this was an isolated incident.

Corrective Action

The changes in the training program, organizational structure and increased surveillance described in our Response to Significant Deficiency 80-04, in this Report, are submitted as our corrective action.