

PHILADELPHIA ELECTRIC COMPANY

NUCLEAR GROUP HEADQUARTERS

955-65 CHESTERBROOK BLVD.

WAYNE, PA 19087-5691

(215) 640-6000

NUCLEAR ENGINEERING & SERVICES DEPARTMENT

March 12, 1992

Docket No. 50-352

License No. NPF-39

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

SUBJECT: Limerick Generating Station, Unit 1
N2H Recirculation Riser Nozzle to Safe
End Weld Corrective Action Alternatives

Dear Sir:

As committed in our October 23, 1990 letter, and confirmed in the NRC's associated Safety Evaluation dated November 20, 1990, this letter describes four corrective action alternatives for the Limerick Generating Station (LGS) Unit 1, N2H recirculation riser nozzle to safe end weld indication which have been identified and evaluated for potential implementation during the fourth LGS Unit 1 refueling outage scheduled to begin on March 21, 1992. The selection of one of the following corrective actions will be based on the results of the ultrasonic testing (UT) inspection of the N2H nozzle to safe end weld that will be performed during the refueling outage.

1. Apply the Mechanical Stress Improvement Process (MSIP) to the N2H nozzle to safe end weld and discontinue the Crack Advance Verification System (CAVS) monitoring.
2. Apply an engineered mechanical clamp on the N2H nozzle to safe end weld, and discontinue CAVS monitoring.
3. Perform a weld overlay repair of the N2H nozzle to safe end weld and continue CAVS monitoring.
4. Use "as is" with continued CAVS monitoring.

CAVS monitoring would be discontinued if either the MSIP or engineered mechanical clamp is implemented since the CAVS specimen would no longer be representative of the N2H nozzle to safe end weld condition (i.e., resultant weld area stresses would be different from the stresses imposed in the specimen).

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If, based on inspection results of the N2H nozzle to safe end weld, the MSIP alternative is selected, we would request prior NRC approval since the dimensions of the N2H nozzle to safe end weld indication measured during the third refueling outage already exceed the MSIP applicability limitations specified by the NRC in NUREG-0313, "Technical Report on Material Selection and Process Guidelines for BWR Coolant Pressure Boundary Piping," Revision 2. If the inspection results show that the size of the indication is such that application of MSIP is not a justifiable corrective action, we would then request prior NRC approval to install an engineered mechanical clamp. While a weld overlay repair of the N2H nozzle to safe end weld is a possible corrective action alternative, the use of the engineered mechanical clamp is now the preferred alternative should corrective action other than MSIP be required by the results of the inspection. The mechanical clamp would restore the structural margin to an acceptable level, prevent catastrophic failure, and arrest crack growth by generating favorable compressive axial and hoop stresses. If used, the mechanical clamp could be disassembled and reassembled to allow subsequent UT inspections, thereby avoiding the inherent difficulties of inspection with the presence of a weld overlay.

Although unlikely, one corrective action alternative would be to operate LGS Unit 1 for the fifth cycle with the N2H nozzle to safe end weld left in the "as-is" condition if the UT inspection does not show evidence of significant crack growth since the last inspection. If this alternative is selected, we would request prior NRC approval, and would continue CAVS monitoring and establish action levels similar to those described in our October 23, 1990 letter.

Currently, our plans for the Unit 1 fourth refueling outage also include performing MSIP on additional susceptible nozzle to safe end welds as a preventive measure even though previous inspection results show no indication of flaws.

If you have any questions or require additional information, please contact us.

Very truly yours,



G. J. Beck, Manager
Licensing Section

cc: T. T. Martin, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS