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Nuclear Business Unit

## DEC 1 2 1996

## LR-N96334

United States Nuclear Regulatory Commission Document Control Desk Washington, DC 20555

Gentlemen:

ASME BOILER AND PRESSURE VESSEL CODE RELIEF REQUEST FOR ALTERNATIVES TO THE WELDING RESTRICTIONS IN THE 1989 EDITION OF THE ASME CODE FOR STATION SERVICE WATER PUMPS SALEM AND HOPE CREEK GENERATING STATIONS, DOCKET Nos. 50-272, 50-311, AND 50-354

By letter dated January 18, 1995, Public Service Electric and Gas Company (PSE&G) requested approval to use alternatives to the 1989 Edition of the American Society of Mechanical Engineers (ASME) Section III Boiler and Pressure Vessel Code. PSE&G specifically requested approval to weld repair SA-351, Grade CD4MCu material, which is not permitted by Section III, Table I-7.2 Note 5, of the 1989 Edition of the ASME Code but is allowed per Section II , material specification SA-351, paragraph 10, of the 1989 edition of the ASME Code.

By letter dated May 5, 1995 (TAC numbers M91454, M91455, and M91456), the NRC approved the use of the proposed alternatives pursuant to 10CFR50.55a(a)(3)(i). However, based upon discussions between PSE&G and the NRC, the Safety Evaluation Report (SER) attached to the May 5, 1995 approval letter from the NRC contains statements that limit the usefulness of the initially requested alternatives. Specifically, item number (2) under section 3.0 of the SER states, "No repairs will be performed at the site. All repairs will be performed at the manufacturer's facilities where the parts can be solution heat treated after repair."

PSE&G hereby requests approval to adopt the provisions of Section III of the 1995 Edition of the ASME Boiler and Pressure Vessel Code for performing weld repair of SA-351, Grade CD4MCu material without the stipulations of item (2) in the initial SER. This would allow both onsite and offsite weld repairs without Post-Weld Heat Treatment (PWHT). Finish machined castings which require weld repairs usually cannot be PWHT due to potential loss

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of dimensional tolerances. The 1995 ASME Code allows welding of SA351, Grade CD4MCu, and neither requires nor prohibits PWHT. This request is made to support two specific circumstances. The first circumstance would be in support of potential emergent plant conditions due to potential long lead times for replacement castings. The second circumstance would be during manufacturing of pump castings, where it may also be necessary to allow the manufacturer to make minor weld repairs on machined surfaces where casting cavities/indications may be discovered after final machining. Based upon the following discussions, PSE&G concludes that these activities do not decrease the level of safety associated with this material application on site.

Currently, the 1995 Edition of the ASME Code Section III allows welding of the CD4MCu alloy and neither requires nor prohibits PWHT. The ASME Section II-D in the 1994 Addenda removed the note 5 from the Table 1A-B2 that prohibited welding. This material is designated for welding as a number P-10H material. ASME Section III, Table ND-4622.1-1, which establishes PWHT requirements, neither requires nor prohibits PWHT for this material. Additionally, the ASME/ASTM casting specification, SA/A351, allows weld repairs for castings and neither requires nor prohibits PWHT.

Post-Weld Heat Treatment by solution annealing is conducted to assure that the optimum microstructure, corrosion resistance, and toughness of this duplex phase material are restored in the Heat Affected Zone (HAZ). The filler metal that is employed for making weld repairs to this material (i.e., E/ER2553) is designed to provide the necessary microstructure and strength in an aswelded condition. The filler material's higher nickel content and the addition of nitrogen, which are austenite promoters, result in the desired dual phase microstructure in the weld This results in the necessary corrosion resistance. metal. The base metal microstructure remains untouched with a narrow band of the HAZ presenting a microstructure with possible little or no austenite phase. This still provides adequate toughness for structural purposes and sufficient corrosion resistance.

The structural properties (e.g., Ultimate Tensile Strength, yield strength) of the weld (including the HAZ) in the as-welded condition will meet or exceed the base metal tensile and yield strength requirements as currently required by the ASME Code. Consequently, the structural integrity of the Service Water Pump(s) castings made from this material would not be compromised by the performance of either onsite or offsite weld repairs without subsequent solution annealing (PWHT). Document Control Desk LR-N96334 DEC 1 2 1996

In conclusion, PSE&G finds weld repair of SA-351 material without PWHT, in accordance with the 1995 Edition of the ASME Code, constitutes a reasonable, safe alternative to our current requirements contained in the 1989 Edition of the ASME Code as supplemented within the SER (May 5, 1995). Properly performed weld repairs of this material without PWHT will provide material of equal strength to the base material with no compromise of structural integrity. However, It is still the overall intent of PSE&G to purchase CD4MCu castings which have been PWHT following weld repairs. There may be minor weld repairs which will not be PWHT. As a result, it is requested that welding of SA/A351 , grade CD4MCu, castings be in accordance with the requirements of ASME Section III, 1995 Edition.]

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Should there be any questions with regard to this submittal, please do not hesitate to contact us.

Sincerely,

David R. Powell Manager-Licensing and Regulation Document Control Desk LR-N96334

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