

Public Service
Electric and Gas
Company

Louis F. Storz

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Senior Vice President - Nuclear Operations

JUN 09 1997
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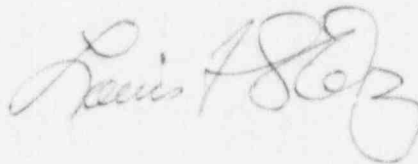
SUPPLEMENTAL RESPONSE TO GENERIC LETTER 94-03
CORE SHROUD INSPECTION, EVALUATION, AND REPAIR PLANS
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354

Ladies and Gentlemen:

On July 25, 1994, the NRC issued Generic Letter 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors." Public Service Electric and Gas Company (PSE&G) submitted an initial response to the generic letter on August 24, 1994 and a supplemental response on March 31, 1995. These responses committed to providing plans for inspection and for evaluation and/or repair of the core shroud no later than three months prior to performing the inspections. PSE&G plans to conduct the inspections during the seventh refueling outage scheduled for September 1997. This letter provides the inspection/evaluation/repairs plans for the core shroud in accordance with the commitments in the previous letters. The attachment to this letter contains detailed information on PSE&G's plans.

Should you have any questions regarding this request, we will be pleased to discuss them with you.

Sincerely,



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Affidavit
Attachment

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PDR ADOCK 05000354
G PDR



JUN 09 1997

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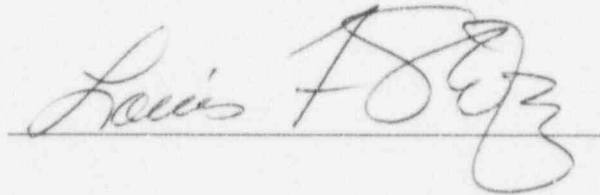
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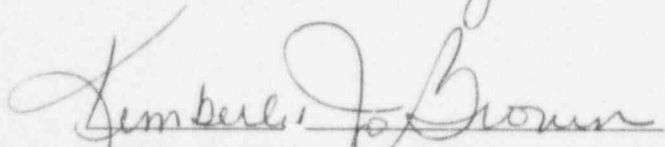
STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

L. F. Storz, being duly sworn according to law deposes and says:

I am Senior Vice President - Nuclear Operations of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter, concerning Hope Creek Generating Station, Unit 1, are true to the best of my knowledge, information and belief.



Subscribed and Sworn to before me
this 10th day of June, 1997


Notary Public of New Jersey

KIMBERLY JO BROWN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires April 21, 1998

My Commission expires on _____

HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
CORE SHROUD INSPECTION, EVALUATION, AND REPAIR PLANS

In accordance with NRC Generic Letter (GL) 94-03, dated July 25, 1994, the core shroud inspection plan for Hope Creek is provided below. The plan has been developed for implementation during Hope Creek's seventh refueling outage (RFO7), which is scheduled to begin in September 1997.

The inspection methods, scope, and flaw evaluation criteria of this inspection plan satisfy the recommendations of the Boiling Water Reactor Vessel Internals Project (BWRVIP), as specified in the "BWR Core Shroud Inspection and Flaw Evaluation Guidelines" (BWRVIP-01) - Revision 2.

This inspection plan has been developed using the ongoing guidance provided by the BWRVIP, the recommendations of General Electric Company Service Information Letter (SIL) 572, and site specific experience gained through previous shroud inspections at Hope Creek. The key factors considered in the development of the plan include: hot operating years, materials, water chemistry history, fabrication processes, neutron fluence, available inspection techniques, accessibility, equipment, logistics of data evaluation and stress corrosion cracking history at Hope Creek.

The Hope Creek shroud is considered to have limited, but low, potential for Intergranular Stress Corrosion Cracking (IGSCC); due primarily to material, age, and water chemistry history.

Since the Hope Creek core shroud has experienced more than eight hot operating years, and is fabricated with low carbon content stainless steel, Hope Creek had been identified by BWRVIP-01 as an Inspection Category B facility. For Inspection Category B facilities, BWRVIP-01 recommends a limited inspection of H-3, H-4, H-5 and H-7 shroud welds. Since Hope Creek intends to use the longest re-inspection interval allowed by the "BWRVIP Guidelines For Reinspection of BWR Core Shrouds" (BWRVIP-07), an examination of 100% of the accessible lengths of circumferential welds H-3, H-4, H-5 and H-7 will be performed.

SCOPE OF INSPECTION:

The Hope Creek shroud welds can be divided into four groups:

1. Shroud attachment welds (e.g. shroud head bolt lugs)
2. Shroud vertical welds
3. Shroud support structure welds
4. Shroud circumferential welds

The shroud attachment welds, vertical welds, and support structure welds have not been included in the initial inspection plan. As indicated in Section 3.1 of BWRVIP-01, the safety consequences of degradation of the shroud attachment welds are considerably less significant than those associated with the circumferential welds and inspection of these welds is not currently required. The basis for not including the vertical welds is addressed in Section 3.11 and Appendix A of BWRVIP-01. The shroud support structure welds have not been included since these welds are considered to be less susceptible to cracking than the shroud welds. The reduced susceptibility is based on the following: 1) the shroud support structure is fabricated from Alloy 600 material and its susceptibility to IGSCC is expected to be lower than the Type 304 stainless steel material, 2) the shroud support structure is welded in a non-crevice configuration further reducing susceptibility to IGSCC, and 3) in this region of the vessel, the applied stresses are relatively low, the reactor coolant is expected to cause less oxidation, and the fluence levels are significantly lower.

Therefore, the scope of welds included in the initial shroud inspection plan for Hope Creek include shroud circumferential welds H-3, H-4, H-5 and H-7.

EXTENT OF INSPECTION:

The extent of inspection of each of these four welds is based on factors such as accessibility, susceptibility, inspection technique, inspection equipment, neutron exposure (fluence), and evaluation methods. The initial extent of planned inspections exceeds the minimum sound ligament approach, described in Section 3.0 of BWRVIP-01. The extent of inspections has been developed considering inspection logistics and outage impact.

The inspection technique planned for the initial inspection is Ultrasonic Testing (UT). This technique is intended to interrogate the volume of the subject welds and associated heat affected zones for cracking initiating on the inside surface (ID)

and portions of the outside surface (OD). The evaluation of inspection results will be consistent with the technique used.

The extent of inspection of each circumferential weld will vary, depending on the specific weld characteristics (i.e. accessibility, inspection technique, safety significance, fluence, loads, evaluation methodology, and inspection results). The initial extent of inspections planned will be the accessible length in a 360° segment of H-3, H-4, H-5 and H-7.

<u>Weld Number</u>	<u>Extent of Inspection</u>
H-3	Accessible length in a 360° segment
H-4	Accessible length in a 360° segment
H-5	Accessible length in a 360° segment
H-7	Accessible length in a 360° segment

EVALUATION:

The evaluation of the inspection results will be conducted following the guidelines of BWRVIP-01. A combination of fracture mechanics methodologies will be utilized. The methodologies applied, based on neutron fluence, will be Load Limit, LEFM - Linear Elastic Fracture Mechanics, and EPFM - Elastic-Plastic Fracture Mechanics.

For welds with exposures less than or equal to $3E20$ n/cm², the Load Limit methodology will be utilized. For welds with exposure between $3E20$ n/cm² and $1E21$ n/cm², the Load Limit and LEFM/EPFM will be utilized.

REPAIR:

Hope Creek does not anticipate the need for repairs during RFO7. Discussions are being conducted with vendors to have the appropriate contingencies in place if a repair were to be needed. The BWRVIP is anticipating Revision 2 to the BWRVIP Core Shroud Repair Design Criteria (BWRVIP-02). Due to the short time duration to RFO7, we anticipate that the contingency shroud repair plans will use Revision 1 of BWRVIP-02.