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RC-01-0019



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U. S. Nuclear Regulatory Commission
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Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
RESPONSE TO QUESTIONS DATED
NOVEMBER 3, 2000
MSP 00-0244

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South Carolina Electric & Gas Company (SCE&G) submits the attached responses to the initial questions asked by the NRC during a telephone conference on October 24, 2000, as followed up with a letter dated November 3, 2000. These questions pertain to the cracked weld in the A loop of the Reactor Coolant System, specifically about the non-destructive testing performed in the past and plans to resolve this issue.

Should you have any questions, please call Mr. Phil Rose at (803) 345-4052.

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Very truly yours,

A handwritten signature in black ink that reads "Stephen A. Byrne". The signature is written in a cursive, flowing style.

Stephen A. Byrne

PAR/SAB/dr
Attachment

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DMS (RC-01-0019)

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Response to NRC questions received 11/03/00

1. The licensee should assess the ability of nondestructive examination at the Virgil C. Summer Nuclear Station (Summer) to detect, characterize, and size the crack in the hot leg. The licensee should either provide sufficient information to resolve this issue prior to restart or provide a plan for resolving this issue.

Response

SCE&G has appraised the ability to perform meaningful NDE, based on ultrasonic testing (UT), at VCS and has concluded that there is adequate capability to detect indications well before they become a concern for structural integrity. In addition to UT, other testing methodologies were utilized to ensure that the extent of condition was thoroughly assessed.

The repair cut line was determined based on the UT performed and the flaw was confirmed by liquid penetrant (PT) to be removed completely. The characterization of the through-wall flaw was confirmed by additional NDE once the weld was cut out. Hot cell testing also confirmed the size and shape of the through-wall flaw.

2. The licensee should re-evaluate the 1993 Inservice Inspection (ISI) data in light of the assessment performed above. What is the impact of the assessment in item 1 on the integrity of the other reactor coolant system hot legs and the cold legs?

Response

The Inservice Inspection performed in 1993 was a strict ASME Code, Section XI, ultrasonic examination. This testing complied with all requirements including volume inspected. The 1993 ISI used inspection techniques that were developed to interrogate only the Code required volume, i.e., the inner 1/3 of the weld. Based on the root-cause assessment that PWSCC was involved and the aggressive nature of PWSCC growth, it is unlikely that the crack existed in 1993.

The inspection noted liftoff (liftoff of the rigid transducer sled) at the location that the crack was ultimately located (approximately 10 degrees); the inspection did not detect a flaw. The resultant volume that was inspected met the Code required volume with ample margin and no Code rejectable indications were detected. In November 2000, a video inspection of all nozzle to pipe welds was performed to look for significant flaws and determine the condition of the inside surface of the welds. There seemed to be surface roughness in the area of interest on the A hot leg with a smoother finish on the other hot legs. Additionally, the 1993 UT data was reviewed again with specific locations scrutinized in depth based on indications present in the 2000 ET results.

The data for the 1993 Inservice Inspection has been reviewed by multiple parties (EPRI and WesDyne) and the conclusion is that in the volume examined, there were no recordable indications detected by the ultrasonic examination.

There is no impact on other reactor vessel nozzles because a complete inspection was performed during the fall, 2000 outage to verify the integrity of the other nozzles.

3. The staff expects that the licensee will perform sufficient inspections and repairs to ensure all American Society of Mechanical Engineers Code rejectable defects in all hot legs and cold legs are removed prior to plant restart such that the facility is brought back in conformance with the facility Code of Record.

Response

The A hot leg weld was removed in its entirety and sent off for non-destructive and destructive metallurgical testing. This repair technique eliminates all existing concerns with the A hot leg nozzle to pipe weld and will assure that all Code requirements are satisfied. Based on NDE examination performed on the other 5 nozzle to pipe welds, there are no Code rejectable indications and as such, no repairs to the other nozzle to pipe welds are required at this time.

Generic Industry Issues – For Appropriate Industry Response Group

1. Are techniques other than ultrasonic testing (UT) appropriate for assessing the integrity of the nozzle to pipe weld? How should these techniques be qualified?

Response

This question was determined to be too generic for SCE&G to attempt to answer. These generic questions have been referred to the EPRI Materials Reliability Project (MRP) as industry lead in resolving the issues raised.

2. What qualified UT techniques (i.e., inner diameter or outer diameter inspection, transducers, beam angle, type of wave, etc.) are used by industry (each UT vendor) to perform ISI of these types of welds? Describe how these techniques are capable of assessing the type of flaw found at Summer.

Response

This question was determined to be too generic for SCE&G to attempt to answer. These generic questions have been referred to the EPRI Materials Reliability Project (MRP) as industry lead in resolving the issues raised.

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