



April 17, 2002
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U. S. Nuclear Regulatory Commission
Washington, DC 20555

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
INSPECTION/MECHANICAL STRESS IMPROVEMENT (MSIP)
PLAN FOR VCSNS HOT LEG WELDS

South Carolina Electric & Gas Company (SCE&G) acting for itself and as agent for the South Carolina Public Service Authority, is providing this letter to outline the planned activities and contingencies associated with the committed inspections for "B" and "C" Reactor Coolant Loop Hot Leg welds for the planned 2002 spring refueling outage (RF-13). These activities were initiated as a result of the NRC evaluation of V. C. Summer Nuclear Station (VCSNS) refueling outage 12 for a cracked weld in the Reactor Coolant System (RCS) "A" loop piping.

This plan is provided to facilitate the review of the planned activities for RCS loop examinations at VCSNS, outline the contingencies, and provide the basis for an NRC evaluation favorable for plant re-start. SCE&G would appreciate review to facilitate approval by May 10, 2002. Should examination results exceed the limits associated with this plan, SCE&G will perform additional actions, as necessary, to comply with regulatory and ASME Code requirements and re-submit request for concurrence for start-up.

The information provided by this letter is a summarization of a presentation made by SCE&G on January 17, 2002, in a meeting with the NRC (TAC NO. MB3839).

The VCSNS RCS includes welded connections between the reactor vessel and the RCS loop piping. The reactor nozzle-to-hot leg weld joins the stainless steel pipe to the carbon steel nozzle with Alloy 82/182 filler material. Alloy 82/182 filler material is susceptible to primary water stress corrosion cracking (PWSCC) at the elevated temperatures seen in the hot leg pipe.

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SCE&G will be implementing a preventive/mitigative strategy by using a mechanical stress improvement process (MSIP) at the reactor-to-hot leg welds for loops "B" and "C" in RF-13. MSIP is a mechanical process that replaces the tensile residual stresses along the inside surface of piping in the weld with a zone of compressive residual stresses. MSIP produces a slight permanent deformation of the pipe on one side of the weld. VCSNS has previously replaced the "A" loop reactor nozzle-to-hot leg weld with material that is not susceptible to PWSCC, so MSIP is not required for that location.

The RF-13 examination of record will be UT, complimented with ET, conducted with the following examination strategy for the RCS "B" and "C" hot legs:

- An ET examination of the "B" and "C" hot leg indications noted in RF-12 will be conducted, as a complimentary method to the UT, using enhanced ET methodology developed by Wesdyne. This examination will entail a close scrutiny of the relevant ET indications identified in WCAP 15615, Revision 1. Additionally, Wesdyne will do a circumferential scan of the entire weld area of both hot legs, via ET, to screen for new relevant indications.

ET indications that are detected on three or more scans (the same indication/hit detected on all three passes) will be considered relevant. Relevant indications will be further evaluated, sized, and characterized using any combination of UT, VT, PT, or other methodology deemed appropriate by SCE&G Engineering.

- An ultrasonic (UT) examination of the "B" and "C" hot legs will be conducted using the enhanced Inside Diameter (ID) ultrasonic techniques developed by Wesdyne. Indications that meet the 0.30t criterion of the MSIP will be noted, evaluated to the requirements of IWB-3600 and left in place for future tracking. Our initial reviews have shown that indications which meet the 0.30t criterion will be acceptable to IWB 3600 after the MSIP is applied.
- Prior to applying MSIP, all Code recordable indications will be determined to be less than the MSIP acceptance criteria of 0.30t.
- Post MSIP examination by Eddy Current (ET) and UT will be performed.
- VCSNS will perform the required ASME In-service Examinations in RF-14 for these locations.

VCSNS believes that this plan effectively provides the most viable approach for performing the RF-12 commitments for "B" and "C" loop inspections and preventing/mitigating future problems at these welds.

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The schedule for these activities has the as-found inspections being performed on "B" loop and "C" loop during RF-13 followed immediately by MSIP on these loops.

MSIP has been shown to mitigate and/or arrest growth of indications through industry experience as noted in USNRC Research Information Letter No. 149, "Evaluation of the Mechanical Stress Improvement Process" and AEA Technology Engineering Services, Inc., "Overview of Mechanical Stress Improvement Process". Performance of the hot leg examinations as committed, implementation of MSIP, post-MSIP examinations, and RF-13 inspections, will assure RCS integrity and support VCSNS restart.

Should there be any questions, please call Mr. Mel Browne at (803) 345-4141.

Very truly yours,



Stephen A. Byrne

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