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November 6, 2003
RC-03-0231

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

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
SUBMITTAL OF INFORMATION REQUESTED BY NRC
FOR INTEGRITY EVALUATION FOR FUTURE OPERATION
VIRGIL C. SUMMER NUCLEAR STATION (VCSNS):
REACTOR VESSEL NOZZLE TO PIPE WELD REGIONS

- References:
1. S. A. Byrne (SCE&G) to Document Control Desk (NRC) letter (RC-02-0088), Submittal of Information Requested by NRC for Integrity Evaluation for Future Operation Virgil C. Summer Nuclear Station (VCSNS): Reactor Vessel Nozzle to Pipe Weld Regions, May 4, 2002
 2. S. A. Byrne (SCE&G) to Document Control Desk (NRC) letter (RC-02-0108), Response to Request for Additional Information Regarding V.C. Summer's MSIP Analysis, June 21, 2002
 3. Karen R. Cotton (NRC) to S. A. Byrne (SCE&G) letter, Safety Evaluation of Flaws Detected In V.C. Summer Nozzle-to-Pipe Welds in the Hot Legs of Loops B and C (TAC No. MB4870), October 1, 2002
 4. S. A. Byrne (SCE&G) to Document Control Desk (NRC) letter, Request to Use Alternatives to ASME Boiler and Pressure Vessel Code, Section XI (RC-03-0142) dated July 11, 2003.
 5. S. A. Byrne (SCE&G) to Document Control Desk (NRC) letter (RC-03-0229), Response to Request for Additional Information Regarding Request to Use Alternatives to ASME Boiler and Pressure Vessel Code, Section XI, Relief Request RR-II-20 (0-C-03-0262), November 3, 2003.

Attachments: NDE Results from V. C. Summer Outlet Nozzle to Pipe Welds

A047

Introduction

South Carolina Electric and Gas (SCE&G) examined the VCSNS Reactor Vessel nozzle dissimilar metal welds during refueling outage 14 (RF-14). Ultrasonic testing (UT), eddy current testing (ET), remote visual examination, and surface profile mapping were included. These activities were performed as part of the 10 year ASME Inservice Inspection (ISI) for VCSNS and as follow up to examinations initiated as a result of the NRC evaluation of VCSNS RF-12 for a cracked weld in the RCS "A" loop piping and RF-13 for implementation of Mechanical Stress Improvement Process (MSIP). SCE&G is providing the results to satisfy the commitments contained in References 1 and 2 and directed through Reference 3.

Results

Inspection results are included in the attachment to this letter. To facilitate review, we have tabulated the data for comparison with results of RF-12 (2000) and RF-13 (2002). The results demonstrate that previously identified indications were identified and characterized, and that there was no crack growth on those indications.

Specifically:

Eddy Current Testing (ET)

All previous indications identified in RF-12 and RF-13 were found in RF-14. No new indications were identified in RF-14. There is no evidence of growth in any indications previously noted by ET.

Ultrasonic Testing (UT)

Automated ultrasonic examinations of the VCSNS Reactor Vessel nozzle to pipe dissimilar metal welds yielded one recordable indication in C hot-leg. Previously, in RF-13, this indication was noted as a surface breaking flaw. UT performed in RF-14 identifies this indication as an embedded flaw (see Note 3 of the attached Table). This indication was assessed in terms of the criteria in the ASME Code, Section XI, 1989 Edition, no Addenda, Article IWB-3000, Paragraph IWB-3500; and was found to be within the allowable limits specified with no further evaluation required.

The previous indication noted in the B hot-leg that became transparent after implementation of the MSIP, remained transparent to UT.

Future Examinations

For the Reactor Vessel A hot-leg and cold-leg nozzle welds, the B cold-leg weld, and the C hot-leg and cold-leg welds, reexamination will occur once in the third ISI interval. For the B hot-leg, the accepted flaw will be reexamined during the next three successive inspection periods (as defined in the VCSNS Inservice Inspection [ISI] Plan) in accordance with IWB-2420 (b) and (c) requirements. IWB-2420 (c) permits the utility to revert to the original ISI Plan after three reexaminations if the results are acceptable. This approach will provide definitive evidence that the B hot leg nozzle to pipe welds continue to be operable. The three successive examinations for B-loop will commence in the third ISI Interval that begins January 2004. The earlier commitment (Reference 2) to reexamine the C hot-leg weld in the next three successive inspection periods is rescinded. This indication was noted as a surface breaking flaw in RF-13, but UT performed in RF-14 determines this indication is an embedded flaw (see Note 3 of the attached Table) which removes the need for reexamination.

SCE&G will perform future inspections in accordance with ASME Code, Section XI. Inspection methods and technology utilized for future inspections will be implemented in accordance with ASME Code requirements. Where VCSNS cannot accommodate the Code requirements, relief will be requested from the Code.

Conclusion

SCE&G has met the commitments made from RF-13 for VCSNS through the inspections just completed in our current RF-14.

RF-14 examinations demonstrate that current examination methods accurately characterize indications. There were no indication results noted as "not a flaw" nor were there any inconclusive indication results by the RF-14 examinations.

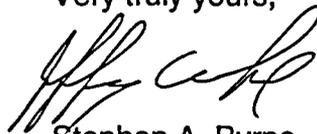
The results of these examinations demonstrate that the alternate examination to Appendix VIII, Supplement 10, as implemented through the PDI Program support NRC approval of relief request RR-II-20 submitted by SCE&G for VCSNS (Reference 4).

SCE&G concludes from review and evaluation of the results that the plant is safe to startup and operate in the future in accordance with the requirements of ASME Code. In order not to impact the start up schedule, your approval is requested by November 12, 2003.

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Should you have any questions, please call Mr. Ron Clary at (803) 345-4757 at your convenience.

Very truly yours,



Stephen A. Byrne

PER DIRECTION
OF S. BYRNE
11/6/03

JT/SAB
Attachment

c: N. O. Lorick
N. S. Carns
T. G. Eppink
R. J. White
L. A. Reyes
K. R. Cotton
K. M. Sutton
Dr. S. Doctor
NRC Resident Inspector
NSRC
RTS (0-C-00-1392)
File (810.58)
DMS (RC-03-0231)

**V.C. Summer 2000, 2002 and 2003 RV Nozzle Dissimilar Metal Weld Results Summary
(2003 Ultrasonic Examinations are Appendix VIII with Supplemental Eddy Current)**

| NOZZLE | IND. | ORIENTATION | EDDY CURRENT | | ULTRASONIC | | | DATE/EXAM |
|-----------------|--------|----------------|--------------|---------------|----------------|--------|--------|------------------|
| | | | LOCATION | LENGTH | LOCATION | DEPTH | LENGTH | |
| "A" 25° OUTLET | | CIRC | 156°-206° | NOTE 1 | NO INDICATIONS | | | 2003 (FIRST ISI) |
| | | | | | | | | |
| "C" 95° INLET | 1 | CIRC | 200° | 0.5° | NO INDICATIONS | | | 2000 |
| | | CIRC | 200° | 0.125" NOTE 6 | NO INDICATIONS | | | 2003 ISI |
| | | | | | | | | |
| "C" 145° OUTLET | 1 | CIRC | 309° | 0.5° | | | | 2000 |
| | 1 | CIRC | 300° | 0.5° | 299.4° | 0.11" | 0.375" | 2002 PRE - MSIP |
| | 1 | CIRC | 310° | 0.5° | 299° | 0.11" | 0.375" | 2002 POST - MSIP |
| | 1 | CIRC | 310.3° | 0.375" NOTE 4 | | | | 2003 ISI |
| | NOTE 3 | | | | 298.79° | 0.11" | 0.625" | 2003 ISI |
| | | | | | | | | |
| "B" 215° INLET | | NO INDICATIONS | | | NO INDICATIONS | | | 2000 |
| | | NO INDICATIONS | | | NO INDICATIONS | | | 2003 ISI |
| | | | | | | | | |
| "B" 265° OUTLET | 1 | AXIAL | 200.8° | 0.25" | NOT DETECTED | | | 2000 |
| | 1 | AXIAL | 200° | 0.5" | 202° | 0.317" | 0.625" | 2002 PRE - MSIP |
| | 1 | AXIAL | 200.4° | 0.5" | NOT DETECTED | | | 2002 POST - MSIP |
| | 1 | AXIAL | 200.8° | 0.32" NOTE 4 | NOT DETECTED | | | 2003 ISI |
| | 2 | CIRC | 35° | 0.6" | NOT DETECTED | | | 2000 |
| | 2 | CIRC | 50° | 0.36"/0.5" | NOT DETECTED | | | 2002 PRE - MSIP |
| | 2 | CIRC | 50° | 0.5" | NOT DETECTED | | | 2002 POST - MSIP |
| | 2 | CIRC | 48° | 0.5" | NOT DETECTED | | | 2003 ISI |
| | 3 | CIRC | 348° | 0.25" | NOT DETECTED | | | 2000 |
| | 3 | CIRC | 340° NOTE 2 | 0.25" | NOT DETECTED | | | 2002 PRE - MSIP |
| | 3 | CIRC | 340° NOTE 2 | 0.25" | NOT DETECTED | | | 2002 POST - MSIP |
| | 3 | | | NOTE 5 | NOT DETECTED | | | 2003 ISI |
| | | | | | | | | |
| "A" 335° INLET | 1 | CIRC | 326° | 0.5" | NO INDICATIONS | | | 2000 |
| | 1 | CIRC | 326° | 0.375" NOTE 4 | NO INDICATIONS | | | 2003 ISI |

Notes

- 1 Intermittent Eddy Current indication. Visual examination confirms a surface scratch-like indication consistent with the location of the Eddy Current indication. There are no ultrasonic detections in the weld. The surface condition of the replacement weld was confirmed as smooth and flat using surface profiling techniques with no limitations in the application of the Appendix VIII Ultrasonic exam procedure.
- 2 Interpreted in 2002 as possibly the result of geometry and/or material variations.
- 3 Weak correlation between Ultrasonic and Eddy Current data in 2002 examination reported. 2003 examination confirms ultrasonic flaw is embedded with 0.43" inch ligament of metal between flaw and ID surface with no surface connecting characteristics noted in the data. Indication length differences are a result of increased exam sensitivity and Appendix VIII procedure measurement differences.
- 4 Result of finer increment size in 2003 data.
- 5 Considered not valid in 2003 analysis.
- 6 Shorter length in 2003 data interpreted to be the result of shorter flaw seen adjacent to surface geometry indication.