UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION OF THE THIRD TEN-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN AND ASSOCIATED REQUESTS FOR RELIEF FOR VIRGINIA ELECTRIC AND POWER COMPANY SURRY POWER STATION, UNIT 1 DOCKET NUMBER: 50-280

1.0 INTRODUCTION

The Technical Specifications for Surry Power Station, Unit 1 state that the inservice inspection of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i).
10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Surry Power Station, Unit 1, third 10-year inservice inspection (ISI) interval is the 1989 Edition. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed. In a letter dated July 16, 1993, Virginia Electric and Power Company (licensee) submitted to the NRC its Third Ten-Year Interval Inservice Inspection Program Plan, Revision 0 and associated requests for relief for the Surry Power Station, Unit 1. Additional information was provided by the licensee in its letters dated June 22, 1994, September 12, 1994, October 19, 1994, and by teleconference on February 23, 1995.

2.0 EVALUATION AND CONCLUSIONS

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the information provided by the licensee in support of its Third Ten-Year Interval Inservice Inspection (ISI) Program Plan, Revision 0, and associated requests for relief for Surry Power Station, Unit 1.

Based on the contractor's review of the ISI program, no deviations from regulatory requirements or commitments were identified in the *Surry Power Station, Unit 1, Third Ten-Year Interval ISI Program Plan, Revision 0.* With respect to the relief requests, the staff adopts the contractor's conclusions and recommendations presented in the Technical Evaluation Report attached, with the exception of Request for Relief No. RR 11.

In Request for Relief RR 11, the Code-requirement IWA-5242(a) states that for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure-retaining bolted connections for VT-2 visual examination. The licensee has requested relief from the Code-requirement of removal of insulation for VT-2 visual examination of bolted connections in borated systems that are normally tested in sub-atmospheric conditions (Reactor Coolant, Charging, and Safety Injection System).

The licensee has proposed the following alternative examination: "bolted connections on Class 1 systems containing boric acid to be examined each refueling outage at zero or static pressure. The examination would be performed with insulation removed. Class 2 bolting will be examined similarly once a period. This alternative only applies to systems that are pressure tested under sub-atmospheric conditions. In addition the required testing will be conducted with a VT-2 examination without removing the insulation."

The Code requirement to perform a VT-2 with the insulation removed during system pressure testing is impractical for systems under sub-atmospheric conditions. Because Surry, Unit 2 operates with a subatmospheric containment, compliance with the code requirements would require station personnel to reinsulate the lines as well as disassemble and remove scaffolding from the containment while wearing self-contained breathing apparatus. Furthermore, the piping will be at normal operating temperature which will create an additional personnel hazard as well as being exposed to increased radiation levels. Compliance with the Code requirement would result in significant personnel hazard. Removal of insulation from bolted connections and examination for evidence of boric acid during the refueling outage at zero or static pressure should allow detection of any leaks occurring at the bolted connection. Since the same Code corrective actions would be required, the licensee's proposed alternative should provide adequate assurance of the integrity of these connections. Therefore, in view of the burden on the licensee that could result if the Code requirements were imposed on the facility, the licensee's Request for Relief No. RR 11 is granted pursuant to 10 CFR 50.55a(g)(6)(i).

In summary, in view of the burden on the licensee, that could result if the Code requirements were imposed on the facility, requests for Relief Nos. 2, 6, 7, 8, SR-002, SR-003, SR-004, SR-006, and RR-11 are granted pursuant to 10 CFR 50.55a(g)(6)(i). The proposed alternative for request SR-006 is authorized provided that each Class 1 and 2 piping weld examined receives all of the reference markings at the time of inservice examination to provide assurance of traceability of piping welds and repeatability of examinations. The relief granted is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. The alternatives, which provide an acceptable level of quality and safety, contained in Requests for Relief Nos. 3, 5, 10, SR-001, SR-007, and SR-008 are authorized pursuant to 10 CFR 50.55a(a)(3)(i). With respect to Relief No. 10, the proposed alternative is authorized provided that at least one bolt closest to the source of leakage is removed and evaluated. Because compliance with the specified requirement would result in hardship or unusual difficulty without a compensatory increase in the level of quality and safety, the alternative contained in Request for Relief No. SR-005 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii). Requests for Relief Nos. 4 and 9 were withdrawn by the licensee. Relief is not required for Request for Relief No. SH-1.

By teleconference on February 23, 1995, the licensee stated that it was withdrawing Request for Relief No. RR-1 from its ISI program and will provide documentation to that effect in the near future.

TABLE 1
SUMMARY OF RELIEF REQUESTS

Relief Request Number	System or Component	Exam Category	Item No.	Volume or Area to be Examined	Required Method	Licensee Proposed Alternative	Relief Request Status
SR-001	Reactor Vessel	B-F	B5.10	Nozzle-to-Safe End Butt Welds Weld No. — Drawing No. 1-01DM — 11448-WKMS-0100AZ-1 1-17DM — 11448-WKMS-0100AZ-1 1-01DM — 11448-WKMS-0101AZ-1 1-17DM — 11448-WKMS-0101AZ-1 1-01DM — 11448-WKMS-0102AZ-1 1-17DM — 11448-WKMS-0102AZ-1	Surface and volumetric examination	Automated 100% volumetric exam from the pipe ID surface	Authorized
SR-002	Steam Generator	B-D	B3.140	Nozzle Inside Radius Sections Mark No. — Component No. 1-01ANIR — 1-RC-E-1A 1-01BNIR — 1-RC-E-1A 1-02ANIR — 1-RC-E-1B 1-02BNIR — 1-RC-E-1B 1-03ANIR — 1-RC-E-1C 1-03BNIR — 1-RC-E-1C	Volumetric examination	Visual (VT-1) examination from the nozzle ID	Granted
R-003	Pressurizer	B-D	B3.120	Surge Nozzle Inside Radius Section	Volumetric examination	Visual (VT-2) examination during pressure test	Granted W/Conditions
SR-004	Recirc. Spray and Safety Injection Pumps	C-G	C6.10	All Reactor Coolant Pump Casing Welds Pumps 1A, 1B, 2A, and 2B Welds 2-01, 2-02, 2-03, and 2-04	Surface examination	Visual (VT-1) examination if pump is disassembled and shaft removed for maintenance	Granted
SR-005	Ultrasonic Calibration Block	APP-III		Calibration block fabrication requirements	Section XI, Appendix III and Section V, Article IV	Use existing calibration blocks	Authorized

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SR-006	All Class 1 and Class 2 Components	IWA-2610		Weld reference system	Weld reference system per Paragraph IWA-2610	Establish weld reference system as welds are examined	Granted w/ conditions
SR-007	Reactor Vessel	IWA-2610		Weld reference system for Reactor Vessel and Vessel Nozzle Area	Weld reference system per Paragraph IWA-2610	To use the reference established by the automated tool	Authorized
SR-008	Class 1 Piping	B-J		B-J Weld selection criteria	Table IWB-2500-1 Category B-J Notes	25%, including all typical high stress areas	Authorized
RR 1	Class 1 Safety Injection Piping	B-P	B15.51	SI piping between the following check valves in the safety injection system: 1-SI-79 AND 1-SI-235, 1-SI-241 1-SI-82 AND 1-SI-236, 1-SI-242 1-SI-85 AND 1-SI-237, 1-SI-243 1-SI-88 AND 1-SI-238 1-SI-91 AND 1-SI-239 1-SI-94 AND 1-SI-240	System hydrostatic test in accordance with IWB-5222	System pressure test conducted with pressure 100 psig less than the RCS normal operating pressure	Withdrawn by licensee
RR 2	Class 1 Residual Heat Removal	B-P	B15.51	RHR piping between MOV-1700 and MOV-1701	System hydrostatic test in accordance with IWB-5222	System pressure test at the pressure required by the adjoining Class 2 system	Granted
RR 3	Class 3 Circulating and Service Water	IWD-5223		Piping upstream of the first isolation valve in the Class 3 Circulating and Service Water systems	System hydrostatic test in accordance with IWD-5223	System flow test as allowed for open ended portions of discharge lines (IWD-5223(d))	Authorized

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RR 4	Class 3 Component Cooling Water	IWD-5223			System Hydrostatic Test		Withdrawn in Response to the 9/12/94 NRC's RAI
RR 5	Class 3 Service Water	IWD-5223		Class 3 Service Water System piping used in the cooling of component cooling water for the charging pumps and lube oil for the charging pumps	System hydrostatic test in accordance with IWD-5223	System hydrostatic test using 60 psig as this systems PD value	Authorized
RR 6	Class 3 Auxiliary Feedwater	IWD-5223		Auxiliary Feedwater system between the following valves: 1-FW-145 1-FW-149 1-FW-146 1-FW-609 1-FW-160 1-FW-163 1-FW-161 1-FW-608 1-FW-175 1-FW-179 1-FW-176 1-FW-607	System hydrostatic test in accordance with IWD-5223	System functional test IWA IWD-5222	Granted
RR 7	Class 3 Circulating and Service Water Systems	D-A	D1.10	Circulating and Service Water piping between valves: 1-SW-499 and 2-SW-476 1-SW-311/ 1-SW-321/ 2-SW-331 1-SW-317/ 1-SW-327/ 2-SW-337 1-SW-346 and 2-SW-344	System hydrostatic test in accordance with IWD-5223	System inservice test, IWD-5221 be performed in conjunction with a visual (VT-2) examination	Granted

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Relief Request Number	System or Component	Exam Category	Item No.	Volume or Area to be Examined	Required Method	Licensee Proposed Alternative	Relief Request Status
RR 8	Class 3 Circulating and Service Water System	D-A	D1.10	Class 3 Circulating and Service Water System valves: 1-SW-MOV-102A and 1-SW-MOV-102B 1-SW-37 1-SW-33 1-SW-29 1-SW-25	System hydrostatic test in accordance with IWD-5223	System inservice test, IWD-5221 performed in conjunction with a visual (VT-2) examination	Granted
RR 9	Repair or Replacement				System Hydrostatic Test		Withdrawn in submittal dated 6/22/94
RR 10	Bolted Connections	IWA-5250		Corrective measurements for leakage at bolted connections found during pressure test	IWA-5250(a)(2)	1992 Edition of ASME Section XI, IWA-5250(a)(2)	Authorized w/ conditions
RR 11	Insulated Bolted Connections	IWA-5252		Insulated bolted connections	IWA-5242(a)	Inspect during outage with insulations removed and non pressurized	Granted
SH-1	Component Supports	F-A F-B F-C	F1.10 Thru F3.50	Component Supports	VT-3 Visual	Code Case N-491	Not required