VOGTLE ELECTRIC GENERATING PLANT
UNIT 1
INSERVICE INSPECTION PROGRAM
ISI-P-006
Revision 2 Summary of Changes

Page 1-4	Paragraph 1.10.3 was revised to clarify the number of welds that will be examined each ten-year interval.
Page 1-6	Paragraph 1.12 was revised to reflect that Code Cases listed in Regulatory Guide 1.147 Revision 4 may be used in lieu of the previous itemized list of Code Cases. This is addressed in GPC letter SL-3321 dated October 21, 1987 to the U.S. Nuclear Regulatory Commission.
Page 6-3 and 6-60	Withdrew Relief Request. RR-33. This is addressed in GPC letter SL-3321 dated October 21, 1987 to the U.S. Nuclear Regulatory Commission.
Pages 6-36, 6-36A, 6-37,and 6-38	Relief Request RR-21 was revised to reflect improved examination techniques which have been developed for branch connection welds. This is addressed in GPC letter SL-3321 dated October 21, 1987 to the U.S. Nuclear Regulatory Commission.
Pages 6-81 and 6-82	Relief Request RR-42 was revised to require a visual examination inside surface of each steam generator primary side nozzle inner radiused section. This is addressed in GPC letter SL-3321 dated October 21, 1987 to the U.S. Nuclear Regulatory Commission.

relief requests are contained in the Relief Request section of this document. Additional relief requests will be submitted as necessary.

The inservice inspection program outlined in the attached tabulations have been developed as a result of a design review and the Preservice Inspection.

1.10 Augmented Examinations

The Nuclear Regulatory Commission (NRC) has required certain augmented examinations to assure structural reliability. The areas of interest and the examinations to be performed are discussed below.:

1.10.1

The Reactor Coolant Pump flywheels shall be examined per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14 Revision 1, August 1975 as required by the Technical Specifications.

1.10.2

As required by the Technical Specifications, the four main steamlines and feedwater lines from the containment penetration flued head outboard weld, to the upstream weld of the five-way restraint, which is downstream of the main steam isolation valves, shall be examined. The extent of the inservice examinations completed during each inspection interval (ASME Code Section XI) shall provide 100 percent volumetric examination of circumferential and longitudinal pipe welds to the extent practical.

1.10.3

During each ten year inspection interval, a minimum of 7.5 percent of the required welds in the engineered safety systems (safety injection, containment heat removal, and residual heat removal) will be subjected to an ultrasonic examination. For VEGP-1 this commitment will require that 70 welds be ultrasonically examined each ten-year interval. These added welds are mostly in thin-walled or small-diameter piping that Section XI exempts from volumetric weld examinations because of size, thickness, pressure, or temperature.

Relief Request No.	Examination Area
RR-35	Technique for volumetric exam of thin-wall piping.
RR-36	UT examination of thin-wall Class 2 piping
RR-37	UT examination of small-diameter Class 2 piping
RR-38	Subsection IWE
RR-40	Notch length in basic ultrasonic calibration blocks for examination of vessel welds

1.12 Code Cases To Be Used During ISI

The guidance of the Code Cases listed in Regulatory Guide 1.147, Revision 4, may be used during Inservice Inspections.

Relief Request No.	Examination Area
RR-32	Volumetric exam of RHR heat exchanger nozzle inner radius
RR-33	Relief request withdrawn
RR-34	Volumetric exam of Class 2 piping welds
RR-35	Technique for volumetric exam of thin-wall piping
RR-36	Volumetric exam of Class 2 thin-wall piping
RR-37	Volumetric exam of small-diameter Class 2 piping
RR-38	Subsection IWE
RR-39	Mechanized volumetric examination of pressure-retaining shell and head welds in the reactor vessel outside the beltline region
RR-40	Notch length in basic ultrasonic calibration blocks for examination of vessel welds
RR-41	Calibration blocks for reactor vessel nozzle-to-safe-end welds
RR-42	Volumetric examination of nozzle inner radius section for steam generator inlet and outlet nozzles
RR-43	VT-4 visual examination of snubbers
RR-44	Class 2 piping hydrostatically tested to Class 1 requirements
RR-45	System pressure test of piping which penetrates the containment vessel
RR-46	System pressure test on Class 2 components
RR-47	System pressure test of air-containing systems
RR-48	Class 3 system inservice test on systems used in support of reactor shutdown function

RR-21

Component or Relief Area

Volumetric examination of pressure retaining branch pipe connection welds for nominal pipe size 4-inches and greater in Class 1 systems. Affected welds are listed in Attachment 1.

Requirement from which Relief is Requested

Item No. B9.31, Category B-J, Table IWB-2500-1 of ASME Section XI requires a surface and volumetric examination to be done on branch pipe connection welds. The examination areas are shown in Figures IWB-2500-9, -10 and -11.

Basis for Relief

Examination of branch connection welds is typically difficult due to the configuration of the branch connection fitting and the weld design. For branch connection welds in the VEGP main loop piping, these problems exist in addition to the problems of examining cast stainless pipe material.

Two basic weld configurations are used for the branch connection designs on the main loop piping. The 4-inch branch connections were installed using a "set-on" weld design, while the 6-, 10-, 12-, and 16-inch branch connections were installed using a "set-in" design. (See Attachment 2 for configuration.)

Typically, examination coverage of branch connection welds can be obtained by scanning from the main run of pipe using a "45" shear wave technique. In this case, due to the cast stainless material used in the main loop, the examination is limited to a 1/2 node examination using a refracted longitudinal (RL) wave technique developed for this piping.

Examination of the 4-inch branch connection welds from the main run of piping using the 1/2 node RL wave is not possible due to the geometry of the "set-on" configuration. However, partial coverage of the 6-, 10-, 12-, and 16-inch branch connection welds from the main run using the 1/2 node RL technique is possible because of the "set-in" configuraton. Approximately 50 percent of the code required volume (one beam direction only) for the 6-, 10-, 12-, and 16-inch branch connection welds can be examined using this technique.

To increase coverage and provide two-directional coverage, scanning from the branch connection side will also be used where possible. The forged stainless steel material used in all but the 10-inch branch connections allows the use of shear wave ultrasonic techniques, however the geometry of the fittings still presents problems in obtaining Code required coverage.

Based on plots and calculations, it was determined that the only feasible examination from the branch connection side would be a shear wave technique from the taper of the fitting. This technique will rely on the ability of the shear wave to reflect off of the inner wall of the fitting bore, and should result in approximately 80 percent of the required volume being examined on the 4-inch branch connections.

The fitting side of the 10-inch branch connection is cast stainless steel, this precludes the use of a shear wave technique. Also, due to the geometry of the part examination from the branch connection side using the 1/2 node RL technique is not feasible.

When examinations are conducted from the branch connection side, calibration blocks will be fabricated to match the actual configuration of the components to the extent practical. Reflectors would be machined into these "mockups" in the appropriate locations. In cases where it is determined that one size mockup would provide adequate representation for two branch connection sizes, only one calibration block will be fabricated. For example, only one mockup would be provided for the 12- and 16-inch branch connections if it is determined to provide appropriate calibration.

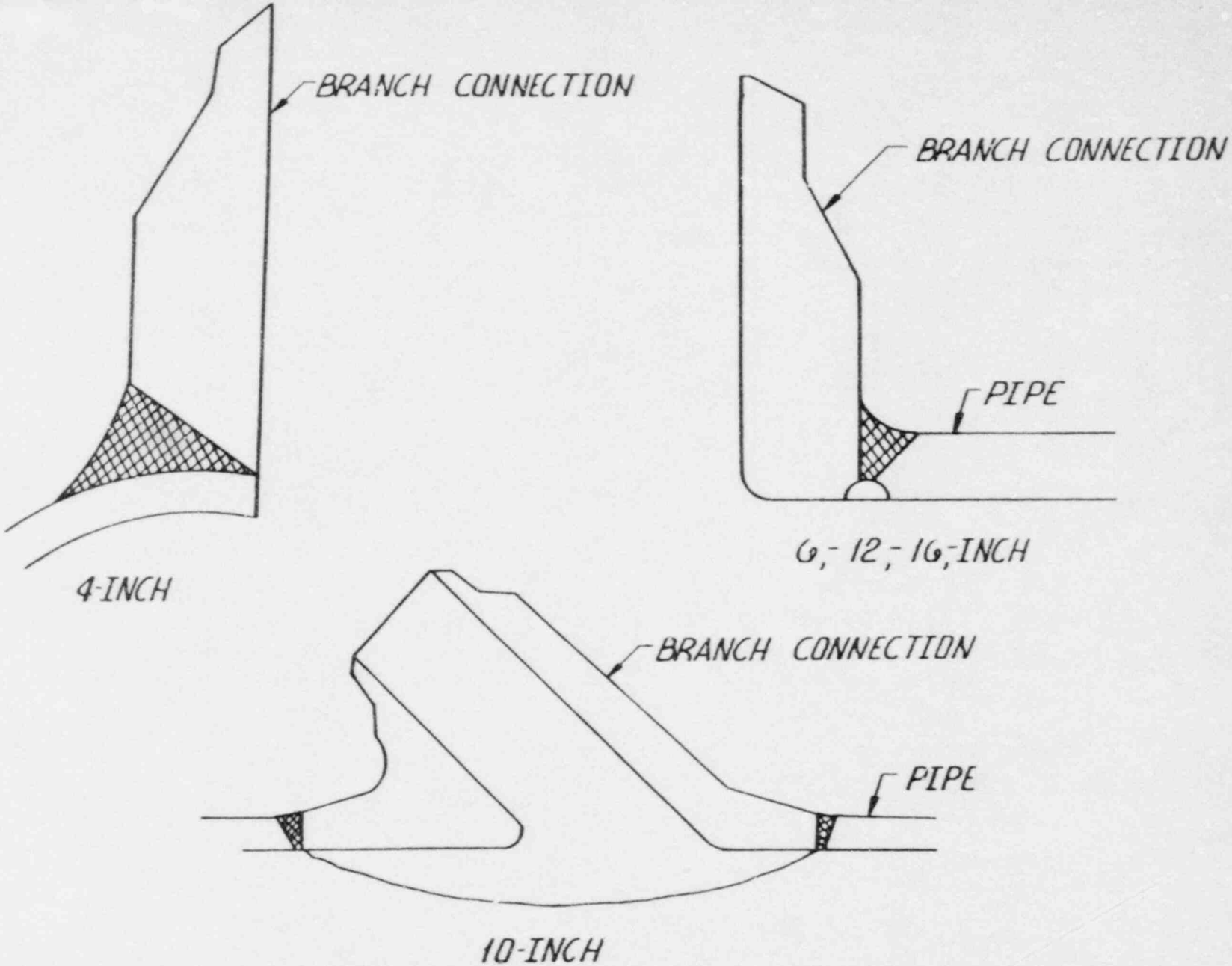
Attachment 1 lists each weld for which relief is requested and delineates the expected coverage using these techniques.

Alternate Examination

The Code required surface examination will be performed. An ultrasonic examination will be performed to the extent possible as defined above.

RR-21
Attachment 1

Identification No.	Code Category	Description	Volume Examined
11201-001-2	B-J	12" Branch Connection	50% Exam from pipe side 90% Exam from branch side
11201-002-2	B-J	6" Branch Connection	50% Exam from pipe side 90% Exam from branch side
11201-003-2	B-J	6" Branch Connection	50% Exam from pipe side 90% Exam from branch side
11201-004-2	B-J	16" Branch Connection	50% Exam from pipe side 90% Exam from branch side
11201-004-3	B-J	12" Branch Connection	50% Exam from pipe side 90% Exam from branch side
11201-009-4	B-J	4" Branch Connection	0% Exam from pipe side 100% Exam from branch side
11201-009-6	B-J	10" Branch Connection	50% Exam from pipe side 0% Exam from branch side
11201-010-4	B-J	10" Branch Connection	50% Exam from pipe side. 0% Exam from branch side
11201-011-5	B-J	10" Branch Connection	50% Exam from pipe side. 0% Exam from branch side
11201-012-4	B-J	4" Branch Connection	0% Exam from pipe side. 100% Exam from branch side
11201-012-6	B-J	10" Branch Connection	50% Exam from pipe side. 0% Exam from branch side



BRANCH CONNECTION CONFIGURATIONS
ATTACHMENT 2

RR-33

Relief request withdrawn.

RR-42

Component or Relief Area

Volumetric examination of nozzle inner radius section for Steam Generator inlet and outlet nozzles.

Examination Identification Numbers: 11201-B6-001-IR-01
11201-B6-001-IR-02
11201-B6-002-IR-01
11201-B6-002-IR-02
11201-B6-003-IR-01
11201-B6-003-IR-02
11201-B6-004-IR-01
11201-B6-004-IR-02

Requirement from which Relief is Requested

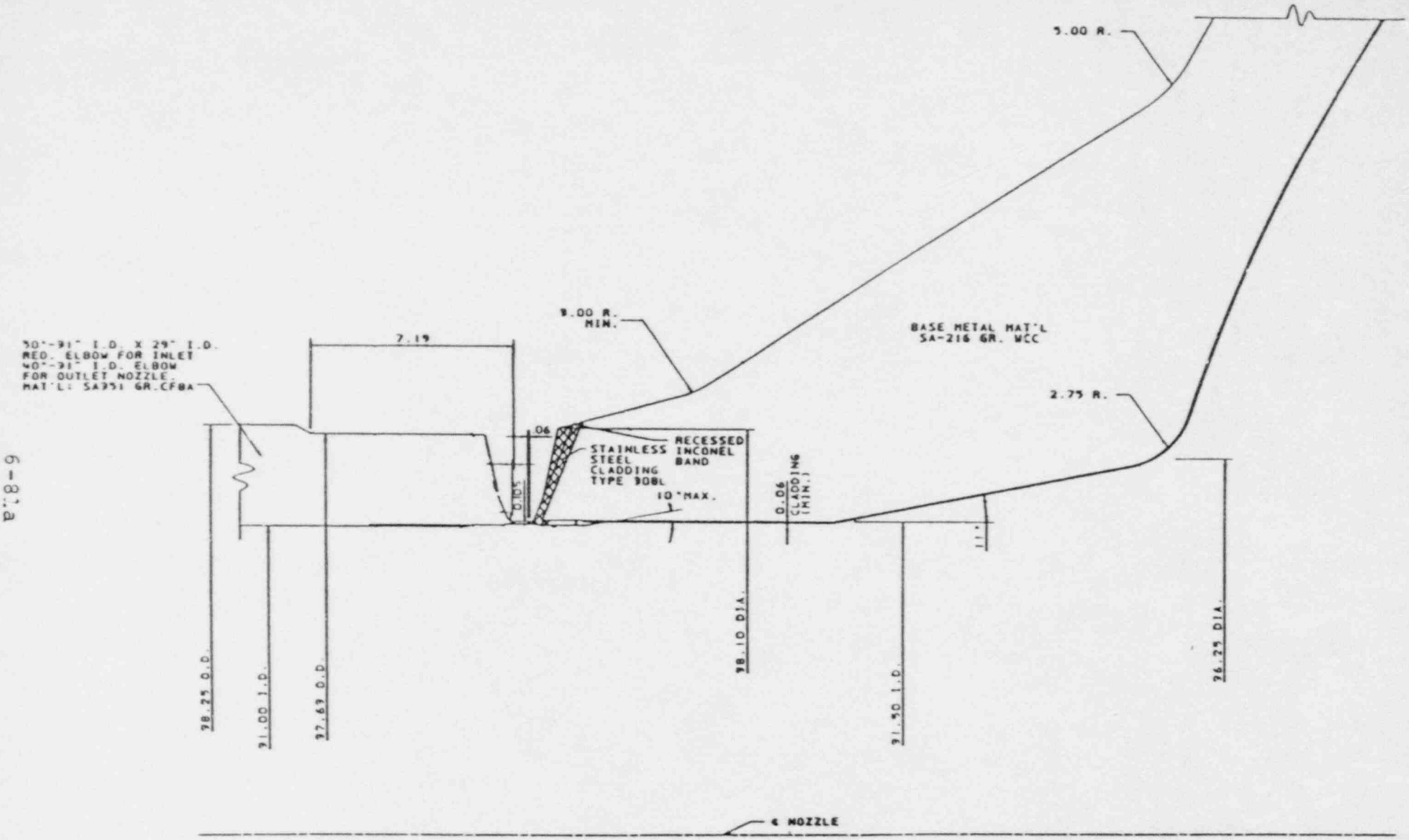
ASME Code Item No. B3.140 Category B-D, requires volumetric examination of the nozzle inside-radius section for steam generator nozzles. Figure IWB-2500-7 shows the applicable examination volume. Relief is requested from accomplishing this examination for the inlet and outlet nozzles on all steam generators.

Basis for Relief

The steam generator primary side nozzles are integrally cast as a part of the channel head. The steam generator nozzle inner radiused section cannot be volumetrically examined from the outside of the nozzle or channel head because the rough, as-cast contact surface is not suitable for ultrasonic coupling, and the geometrical configuration requires an excessively long test metal distance resulting in high ultrasonic attenuation. The inside of the nozzle and channel head areas are covered with cladding in the "as-welded" condition; therefore, meaningful volumetric examination cannot be performed from the "as-welded" surface. Even with proper preparation of the inside surface for volumetric examination, an adequate examination of the area of interest (base metal just below the cladding) could not be achieved due to the resulting ultrasonic response at the clad-to-base metal interface. A section drawing of the steam generator primary inlet and outlet coolant nozzle has been provided.

Alternate Examination

The inside surface of each steam generator primary side nozzle inner radiused section will be visually examined to the extent practical. The examination area will include the inner radius surface region shown in ASME Section XI, Figure IWB-2500 to the extent practical.



STEAM GENERATOR PRIMARY
INLET-OUTLET NOZZLE SECTION