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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST IR-023

SNUBBER VISUAL EXAMINATION AND FUNCTIONAL TESTING

FIRSTENERGY NUCLEAR OPERATING COMPANY

PERRY NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-440

1.0 INTRODUCTION

The operating license for the Perry Nuclear Power Plant, Unit 1 (PNPP), states that the inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components will be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Boiler and Pressure Vessel Code (ASME Code) and applicable addenda as required by Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission, 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 difficulty 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) must meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulation requires that inservice examination of components and system pressure tests conducted during the first 10-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) 12 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 Perry second 10-year ISI interval is the 1989 Edition.

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 will be submitted to the Commission in support of that determination and a request must be 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.

By letter dated August 26, 1998, FirstEnergy Nuclear Operating Company, the licensee and operator of Perry, requested relief from performing preservice examinations and tests of snubbers, inservice examinations and tests of snubbers, and examinations and tests of snubber repairs and replacements, in accordance with ASME/ANSI OM Part 4 of the OMa-1988 Addenda to the OM-1987 Edition (OMa-4), for the second 10-year ISI interval. OMa-4 is referenced by ASME Code, Section XI, 1989 Edition, Article IWF-5000. The licensee requested the use of the technical requirements within Section 6.4.1 of the Operational Requirements Manual (ORM), instead of ASME Code, Section XI, for the required snubber visual examination and functional testing, pursuant to 10 CFR 50.55a(a)(3)(i). The requirements provided in the ORM were relocated (and remain unchanged) from Perry Technical Specification (TSs) 4.7.4 upon the licensee's incorporation of the improved TSs. In response to the staff's request during a teleconference call on June 3, 1999, the licensee submitted a letter on August 10, 1999, which provided clarifications on the snubber VT-3 visual examinations, and the snubber repair or replacement activities.

2.0 DISCUSSION

In its letter of August 26, 1998, the licensee stated that the basic technical requirements within ORM 6.4.1 for examination and testing of snubbers are essentially the same as those within OMa-4. Additionally, the ORM provides requirements for a snubber service life replacement program.

ORM contains specifically-developed and approved visual examination scheduling and functional testing requirements. The licensee further stated that performance of examinations and testing to the requirements of ORM meet the Code requirements. Where the ORM approach differs in the areas of examination scheduling, re-examinations and functional testing requirements, the licensee stated that visual examination and testing to the ORM results in an increase in the overall level of plant quality and safety.

OMa-4 contains a visual examination schedule which was recommended for removal from the plant TSs by Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions," dated December 11, 1990. This GL was issued to reduce the burden placed upon utilities by the then overly restrictive visual examination schedule. The Perry ORM incorporated the requirements of GL 90-09.

The Perry ORM specifies that one of three methods be used for snubber functional test:

(1) Functionally test 10% of a type of snubber with an additional 5% tested for each functional testing failure,

(2) Functionally test a sample size and determine sample acceptance or rejection using Figure 6.4.1-1 of ORM, or

(3) Functionally test a representative sample size and determine sample acceptance or rejection using the equation, N = 55(1 + C/2), as stated in ORM 6.4.1, where "C" is the number of snubbers found which do not meet the functional test acceptance criteria and "N" is the total number of snubbers tested.

OMa-4 specifies two functional test plans similar to (1) and (3) above. For the 10% plan, it also specifies an additional 5% of snubbers to be tested for each functional test failure. For the test plan which is similar to Method (3), however, it specifies an initial sample of 35, as compared to the 55 specified by the ORM. The staff determined that the Perry sample requirements as stipulated in the ORM are more conservative than those specified in OMa-4.

3.0 EVALUATION

The licensee stated in their letter of August 26, 1998, that, in lieu of using OMa-4 (which is referenced by Article IWF-5000), the alternative examination and testing program, in accordance with ORM requirements (which incorporate the visual examination schedule of GL 90-09), are designed to demonstrate the functional integrity of the snubbers and are, at least, equivalent to the requirements of Article IWF-5000.

The licensee stated that, according to ORM requirements, the initial test sample shall be 10% or 55 for each design type population, and the sample expansion shall be based on an additional sample of at least one-half the size of the initial sample. In addition, according to the ORM, the service life of a snubber is evaluated via manufacturer input and information through consideration of a snubber's service conditions and its associated installation and maintenance records (i.e., newly installed snubber, seal replaced, spring replaced, in high radiation area, in high temperature area, etc.). The requirement to monitor the snubber service life is included in the snubber surveillance program to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operation conditions. These records will provide statistical bases for future consideration of snubber service life.

The staff finds the above alternative program as provided in the ORM acceptable.

The licensee stated in its letter of August 10, 1999, that when inspections of component support assemblies that contain snubbers are conducted to fulfill the requirements of the ASME Code, Section XI, Inservice Examination Program, VT-3 personnel are required to perform these inspections. The licensee noted that the relief request deals with the visual inspection requirements of OMa-4. These Code requirements do not discuss personnel qualifications for the inspections. Therefore, the relief request also does not address whether the inspections are performed as VT-3 examinations or by VT-3 certified personnel. The licensee stated, however, that, in practice, the PNPP snubber program requires that the visual inspections be performed by either VT-3 certified personnel or personnel qualified specifically as snubber visual inspectors under the program. This is acceptable to the staff.

In its letter of August 10, 1999, the licensee also stated that repairs and replacements of snubbers are conducted in accordance with the PNPP Nuclear Repair and Replacement Manual following the repair and replacement rules of ASME Code, Section XI, IWA-4000. This is acceptable to the staff.

4.0 CONCLUSION

Based on the information provided by the licensee, the staff determined that the licensee has presented an adequate justification for relief from the requirements of OMa-1988 Addenda to the OM-1987 Edition, Part 4 (which is referenced by ASME Code 1989 Edition, Section XI, Article IWF-5000), with regard to visual examination and functional testing of Perry snubbers. The staff has determined that the proposed alternative use of the ORM for Perry snubber activities would provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), Relief Request IR-023 for the second 10-year interval of the Perry ISI program is authorized.

Principal Contributor: A. J. Lee

Date: NOvember 22, 1999

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE INSPECTION PROGRAM, SECOND 10-YEAR INTERVAL

FIRSTENERGY NUCLEAR OPERATING COMPANY

PERRY NUCLEAR POWER PLANT, UNIT 1

DOCKET NUMBER 50-440

1.0 INTRODUCTION

Inservice Inspection (ISI) 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 (B&PV) Code and applicable addenda as required by Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Pursuant to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission, 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 difficulty 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 pre-service 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 10-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) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein subject to Commission approval. The applicable ASME Code, Section XI, for Perry Nuclear Power Plant, Unit 1 (PNPP), second 10-year ISI interval is the 1989 Edition.

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), Commission may grant relief and may impose 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.

By letters dated August 26, 1998, and March 24, 1999, FirstEnergy Nuclear Operating Company submitted its requests for relief and alternatives to the Section XI requirements for piping and components pursuant to 10 CFR 50.55a(a)(3) and 10 CFR 50.55a(g)(5) for the Perry Nuclear Power Plant, Unit 1 (PNPP). The licensee requested relief from and provided alternatives to ASME Code, Section XI, requirements for visual examination, volumetric and surface examination, VT-2 personnel qualifications, and pressure testing requirements of class 1, 2, and 3 piping and components. The NRC staff has reviewed and evaluated the licensee's proposed reliefs pursuant to 10 CFR 50.55a(a)(3) and 10 CFR 50.55a(g)(6)(i) for PNPP.

2.0 EVALUATION

The NRC staff, with technical assistance from the Idaho National Engineering and Environmental Laboratory (INEEL), has reviewed the information concerning ISI Program requests for relief submitted for the second 10-year interval for PNPP in a letter dated August 26, 1998. A summary of the Nuclear Regulatory Commission's approval or denial on each relief request is provided in Enclosure 3, Table 1 of this letter, "Summary of Relief Requests." The staff adopts the evaluations and recommendations for granting relief or authorizing alternatives as contained in INEEL's Technical Letter Report, which is provided in Enclosure 4 of this letter.

The INEEL staff recommended that Relief Request PT-001, Revision 1, System Pressure Tests, not be authorized. The contractor's report stated that the 4-hour hold time indicated in IWA-5213(c) is similar to that of the system hydrostatic test at IWA-5213(d) for insulated systems. Based on the results of our review, the staff takes exception to the INEEL conclusions for Relief Request PT-001.

The intent of the requirement that the system be in operation for at least 4 hours prior to visual examination during the Class 2 system inservice test is to allow any leakage to penetrate insulation. However, a system leakage test will be conducted on the Class 1 components after attaining test pressure and temperature. The Class 2 components in the relief request are not isolable from the Class 1 components and will be pressurized during the Class 1 system leakage test. The time required to bring the Class 1 system up to pressure and temperature for the leakage test is adequate to detect any leakage from insulated Class 2 components. In addition, the licensee will minimize overall personnel radiation exposure by conducting the Class 2 visual examination during the Class 1 system leakage test, eliminating the need to return after an additional 4 hours to conduct the system inservice test. Therefore, the staff finds that substituting IWA-5213(a) for IWA-5213(c) and the substitution of IWB-5210(a)(1) for IWC-5210(a)(2) provides an acceptable level of quality and safety.

The staff finds that the relief requests as evaluated by this safety evaluation provide reasonable assurance of the pressure integrity of the piping and components. The staff has determined that authorizing alternatives and granting reliefs pursuant to 10 CFR 50.55a(a)(3)(i), (ii), and 10 CFR 50.55a(g)(6)(i) will not endanger life or property, or the common defense and security, and is otherwise in the public interest. In making these determinations, the staff has considered the

impracticality of performing the required inspection and testing and the burden on the licensee if the requirements were imposed.

The granting of relief is based upon the fulfillment of any commitments made by the licensee in its basis for each relief request and the alternatives proposed. Program changes involving new or revised requests for relief must be submitted to the NRC for review.

3.0 CONCLUSION

The Perry ISI Program requests for relief from Code requirements have been reviewed by the staff with the assistance of its contractor, INEEL. A summary of the NRC's approval or denial on each relief request is provided in Enclosure 3, Table 1 of this letter, "Summary of Relief Requests." Enclosure 4 of this letter, INEEL's Technical Letter Report, provides their technical evaluation of the relief requests. The staff has reviewed the contractor's report and concurs with the evaluations and recommendations for granting relief or authorizing alternatives as modified by the staff. The authorizing of alternatives or granting of reliefs is based upon the fulfillment of any commitments made by the licensee in its basis for each relief request and the alternatives proposed. The implementation of the ISI Program and relief requests is subject to inspection by the NRC.

Relief is granted for IR-002, IR-004, IR-005, IR-007, IR-009, IR-012, IR-013, IR-015, IR-018, IR-019, and IR-024 pursuant to 10 CFR 50.55a(g)(6)(i) for the remainder of the second 10-year interval. In making this determination, the staff considered the impracticality of performing the required inspections and the burden on the licensee if the Code requirements were imposed. The alternatives proposed in relief requests PT-001 and PT-006 are authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that they provide an acceptable level of quality and safety. The alternatives proposed in the relief requests IR-001, IR-021, IR-025, IR-026, IR-027, IR-029, IR-042, IR-043, and PT-007 are authorized pursuant to 10 CFR50.55a(3)(ii) on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety. Finally, your letter of March 24, 1999, withdrew Relief Request PT-008.

Principal Contributor: G. P. Hatchett

Date:

Perry Nuclear Power Plant
Second 10-Year ISI Interval

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
IR-001	Reactor Coolant System (RCS)	BA BD	B1.22 B1.40 B3.90 B3.100	reactor pressure vessel (RPV) meridional head welds, RPV head-to-flange welds, RPV nozzle-to-vessel welds and nozzle inside radius sections	Volumetric and volumetric and surface	Partial examinations, which meet all the requirements of the ASME Section XI, 1989 Edition except coverage, will be performed.	Authorized according to 10 CFR 50.55a(a)(3)(ii)
IR-002	Reactor Recirculation (RR)	B-G-1	B6.180	RR pump bolts and studs	Volumetric Examination	Partial examination, which meets all the requirements of the ASME Section XI, 1989 Edition except coverage, will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)
IR-004	RHR	B-J	B9.11	Residual heat removal (RHR) system pressure retaining circumferential welds in Class 1 piping NPS 1 or larger	Volumetric and Surface Examination	Partial examination which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)
IR-005	RR	B-J	B9.11	RR system pressure retaining circumferential welds in Class 1 piping NPS 1 or larger	Volumetric and Surface Examination	Ultrasonic examinations, which meet all the requirements of ASME Section XI, 1989 Edition and NUREG-0313, Rev. 2 to the extent practical will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)

Perry Nuclear Power Plant
Second 10-Year ISI Interval

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
IR-007	Various	B-K-1	B10.10	Various integrally welded attachments for Class 1 piping	Surface Examination	Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)
IR-009	CRD	B-O	B14.10	Peripheral control rod drive (CRD) housing welds	Volumetric or Surface Examination	Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed.	Relief Granted with Provision according to 10 CFR 50.55a(g)(6)(i)
IR-012	Reactor Core Isolation Cooling (RCIC)	C-C	C3.30	Integrally welded attachments of Class 2 RCIC pumps.	Surface Examination	Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)
IR-013	Various	C-G	C6.10	Class 2 pump casing welds for high pressure core spray (HPCS), Low Pressure Core Spray (LPCS), and RHR pumps.	Surface Examination	If the subject welds become accessible through the disassembly of the pumps for maintenance, repair or modification, examinations which meet all of the requirements of ASME Section XI, 1989 Edition will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)
IR-015	Low Pressure Coolant Injection (LPCI), RWCU and RHR	C-C	C3.20	Integrally welded attachments to Class 2 piping in the LPCI, RWCU, and RHR systems.	Surface Examination	Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition, except coverage, will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)

Perry Nuclear Power Plant
Second 10-Year ISI Interval

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
IR-018	RR and Feedwater (FW)	B-K-1	B10.10	Various integrally welded attachments for Class 1 piping in FW and RR systems.	Surface Examination	Partial examinations, which meets all the requirements of ASME Section XI, 1989 Edition, except coverage, will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)
IR-019	Various	C-C	C3.20	Integrally welded attachments of Class 2 piping	Surface Examination	Partial examinations, which meet all the requirements of ASME Section XI, 1989 Edition, except coverage, will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)
IR-021	Various	D-B	D2.20	Integral attachment welds of Class 3 piping	Visual VT-3 Examination	Examinations that meet all the requirements of ASME Section XI, 1989 Edition will be performed on the accessible portions of the integral attachments.	Authorized according to 10 CFR 50.55a(a)(3)(ii)
IR-023	Snubbers	NA	NA	All safety-related hydraulic and mechanical snubbers	ASME XI, 1989 Edition, Subarticle IWF-5000	Preservice and inservice examinations and tests of snubbers, and examinations and tests of snubber repairs and replacements in accordance with the technical requirements within section 6.4.1 of the Operational Requirements Manual (ORM).	Authorized according to 10 CFR 50.55a(a)(3)(i)
IR-024	RCS, LPCS, HPCS, and RHR	B-F	B5.10	Nozzle safe-end to safe-end extension welds of Class 1 piping NPS 4 or larger in RCS, LPCS, HPCS, and RHR systems.	Surface and Volumetric Examination	Ultrasonic examinations, which meet all the requirements of ASME Section XI, 1989 Edition to the extent practical will be performed.	Relief Granted according to 10 CFR 50.55a(g)(6)(i)

Perry Nuclear Power Plant
Second 10-Year ISI Interval

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
IR-025	Main Steam (MS)	B-K-1	B10.10	Integral attachment welds on support lugs for MS piping.	Volumetric or Surface Examination	VT-1 examinations will be performed, to the extent and frequency required by Table IWB-2500-1, in lieu of surface examinations.	Authorized according to 10 CFR 50.55a(a)(3)(ii)
IR-026	MS and FW	C-C	C3.20	Integral attachment welds for Class 2 piping on MS and FW system piping.	Surface Examination	VT-1 examinations will be performed, to the extent and frequency required by Table IWB-2500-1, in lieu of surface examinations.	Authorized according to 10 CFR 50.55a(a)(3)(ii)
IR-027	Diesel Generator Fuel Oil	D-B	D2.20	Integral attachment welds for Class 3 component supports for the fuel oil day tanks.	Visual VT-3 Examination	At the time of the scheduled Category F-A visual examinations of the day tank anchors, the Pyrocrete covering their integral attachments will be examined for conditions which could indicate structural degradation of the buried integral attachment welds.	Authorized according to 10 CFR 50.55a(a)(3)(ii)
IR-029	RR and MS	B-J	B9.11 B9.12	Class 1, Circumferential Butt and Longitudinal Welds on Piping NPS 4 or Greater ("high stress welds).	Selection Criteria	Welds of the same size and similar configuration, but that are not "high stress" welds, will be examined in place of the obstructed welds to maintain the 25% selection requirement.	Authorized according to 10 CFR 50.55a(a)(3)(ii)

Perry Nuclear Power Plant
Second 10-Year ISI Interval

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
IR-042	Reactor Pressure Vessel (RPV)	B-H	B8.10	Inside surfaces of the RPV bottom head to skirt attachment.	Surface or Volumetric Examination	Surface examinations which meet all the requirements of ASME Section XI, 1989 Edition will be performed from the outside surface of the vessel to skirt weld. In lieu of performing the required surface examination of the inside surface of the vessel to skirt weld, ultrasonic examinations that will provide coverage of the inside surface will be performed.	Authorized according to 10 CFR 50.55a(a)(3)(ii)
IR-043	RWCU	B-M-1	B12.30	Class 1, Valve Body Welds (valves less than NPS 4)	Surface Examination	In lieu of categorizing the IG33-FI01 valve in a group by itself, it will be grouped with the IG33-FI00 and IG33-FI06 valves. Of these 3 valves, IG33-FI00 has exhibited the lowest contact dose rates and will be the valve selected for examination in accordance with Note 3 of Table IWB-2500-1, Category B-M-1. Also in accordance with the table, the 4" body weld of IG33-FI00 will receive a volumetric examination. In accordance with IWB-2430, should examination of the body weld of IG33-FI00 reveal indications exceeding the acceptance standards of Table IWB-3410- 1, the examinations will be extended to the IG33-FI06 and IG33-FI01 valves.	Authorized according to 10 CFR 50.55a(a)(3)(ii)
PT-001	Various	IWA- IWC-	5213(c) 5210(a)(2)	External surfaces of welds for leakage.	4 hour holding time before system inservice tests.	For those Class 2 systems/components attached to the Reactor Coolant Pressure Boundary (Class 1) which are not provided with either pressure or test isolation, pressure testing will be conducted in accordance with IWA-5213(a) and IWB-5210(a)(1) in lieu of IWA-5213(c) and IWC-5210(a)(2).	Authorized according to 10 CFR 50.55a(a)(3)(i)

Perry Nuclear Power Plant
Second 10-Year ISI Interval

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
PT-006	Various	IWA-	2312	System pressure testing - personnel qualifications.	Personnel VT-2 Qualifications per SNT-TC-1A	FirstEnergy proposes to perform VT-2 examinations utilizing personnel qualified in accordance with the provisions of Code Case N-546 in lieu of personnel who are qualified and certified to comparable levels of qualification as defined in SNT-TC-IA. The qualification provisions specified in Code Case N-546 are as follows: (1) Personnel must have at least 40 hours of plant walkdown experience, such as that gained by licensed and nonlicensed operators, local leak rate personnel, system engineers, and inspection and nondestructive examination personnel. (2) Personnel must receive at least 4 hours of training on Section XI requirements and plant specific procedures for VT-2 examination. (3) Personnel must meet the vision test requirements of IWA-2321, 1995 Edition. Training and qualification of VT-2 personnel will be documented and the records will be maintained. Additionally, to provide for consistent, quality VT-2 visual examinations, the examinations will be performed using standard procedures. An independent review and evaluation of the VT-2 visual examination results will be performed and documented on the examination records.	Authorized according to 10 CFR 50.55a(a)(3)(i)

Perry Nuclear Power Plant
Second 10-Year ISI Interval

TABLE 1
SUMMARY OF RELIEF REQUESTS

Relief Request Number	System or Component	Exam Category	Item No.	Volume or Area to be Examined	Required Method	Licensse Proposed Alternative	Relief Request Status
PT-007	Suppression System	IWD-	5223(f)	Class 3 Safety/Relief Valve Discharge Lines to Suppression Pool.	Pneumatic Testing	As an alternative to the hydrostatic / pressure test requirement of section IWD-5223(f), FirstEnergy proposes to perform the hydrostatic / pressure test requirements of section IWD-5223(d). Confirmation of adequate flow in accordance with section IWD-5223(d) will satisfy the inspection requirements of: extent of examination (pressure retaining material), examination method (visual, VT-2), and frequency of examination (each inspection interval).	Authorized according to 10 CFR 50.55a(a)(3)(ii)

TECHNICAL LETTER REPORT
ON SECOND 10-YEAR INTERVAL INSERVICE INSPECTION
REQUESTS FOR RELIEF
FOR
FIRST ENERGY CORPORATION
PERRY NUCLEAR POWER PLANT, UNIT 1
DOCKET NUMBER: 50-440

1. INTRODUCTION

By letter dated August 26, 1998, the licensee, First Energy Corporation, submitted requests for relief from the requirements of the ASME Code, Section XI, for the Perry Nuclear Power Plant, Unit 1, second 10-year inservice inspection (ISI) interval. In a subsequent letter dated March 24, 1999, request for relief No. PT-008 was withdrawn. The Idaho National Engineering and Environmental Laboratory (INEEL) staff's evaluation of the subject requests for relief are in the following section.

2. EVALUATION

The information provided by First Energy Corporation in support of these requests for relief from Code requirements has been evaluated and the bases for disposition are documented below. The Code of record for the Perry Nuclear Power Plant, Unit 1, second 10-year ISI interval, which began November 18, 1998, is the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

A. Request for Relief No. IR-001, Rev. 2, Examination Categories B-A and B-D, Items B1.22, B1.40, B3.90, and B3.100, RPV Meridional Head Weld, Head-to-Flange Weld, Nozzle-to-Vessel Weld and Nozzle Inside Radius Section

welds as defined by Figure IWB-2500-3. Item B1.40 requires 100% volumetric and surface examination of RPV head-to-flange welds as defined by Figure IWB-2500-5. Examination Category B-D, Items B3.90 and B3.100 require 100% volumetric examination of RPV nozzle-to-vessel welds and nozzle inside radius sections as defined by Figure IWB-2500-7.

Licensee's Proposed Alternative: in accordance with 10 CFR 50.55a(a)(3)(ii), the licensee proposed to perform partial volumetric examination of the following components.

Licensee Has Stated:
"Partial examinations, which meet all the requirements of the ASME Section XI, 1989 Edition except coverage, will be performed."

Item No.	Weld Id.	Description	Scan Coverage		Stated Limitations
			Axial	Parallel	
B3.90	1-B13-N1A-KA	N1 nozzle-to-shell weld	83%	63%	nozzle geometry
B3.90	1-B13-N1B-KA	N1 nozzle-to-shell weld	83%	63%	nozzle geometry
B3.90	1-B13-N2A-KA	N2 nozzle-to-shell weld	82%	67%	nozzle geometry
B3.90	1-B13-N2B-KA	N2 nozzle-to-shell weld	82%	67%	nozzle geometry
B3.90	1-B13-N2C-KA	N2 nozzle-to-shell weld	81%	67%	nozzle geometry and adjacent nozzle
B3.90	1-B13-N2D-KA	N2 nozzle-to-shell weld	81%	67%	nozzle geometry and adjacent nozzle
2B3.90	1-B13-N2E-KA	N2 nozzle-to-shell weld	82%	67%	nozzle geometry
B3.90	1-B13-N2F-KA	N2 nozzle-to-shell weld	82%	67%	nozzle geometry

Item No.	Weld Id.	Description	Scan Coverage		Stated Limitations
			Axial	Parallel	
B3.90	1-B13-N2G-KA	N2 nozzle-to-shell weld	82%	67%	nozzle geometry
B3.90	1-B13-N2H-KA	N2 nozzle-to-shell weld	81%	67%	nozzle geometry and adjacent nozzle
B3.90	1-B13-N2J-KA	N2 nozzle-to-shell weld	81%	67%	nozzle geometry and adjacent nozzle
B3.90	1-B13-N2K-KA	N2 nozzle-to-shell weld	82%	67%	nozzle geometry
B3.90	1-B13-N4A-KA	N4 nozzle-to-shell weld	83%	69%	nozzle geometry
B3.90	1-B13-N4B-KA	N4 nozzle-to-shell weld	83%	69%	nozzle geometry
B3.90	1-B13-N4C-KA	N4 nozzle-to-shell weld	83%	69%	nozzle geometry
B3.90	1-B13-N4D-KA	N4 nozzle-to-shell weld	83%	69%	nozzle geometry
B3.90	1-B13-N4E-KA	N4 nozzle-to-shell weld	83%	69%	nozzle geometry
B3.90	1-B13-N4F-KA	N4 nozzle-to-shell weld	83%	69%	nozzle geometry
B3.90	1-B13-N5A-KA	N5 nozzle-to-shell weld	83%	68%	nozzle geometry
B3.90	1-B13-N5B-KA	N5 nozzle-to-shell weld	83%	68%	nozzle geometry
B3.90	1-B13-N6A-KA	N6 nozzle-to-shell weld	84%	70%	nozzle geometry
B3.90	1-B13-N6B-KA	N6 nozzle-to-shell weld	84%	70%	nozzle geometry
B3.90	1-B13-N6C-KA	N6 nozzle-to-shell weld	84%	70%	nozzle geometry
B1.40	1-B13-AG	Head-to-flange weld	50%	50%	limited to head side only

Item No.	Weld Id.	Description	Scan Coverage		Stated Limitations
			Axial	Parallel	
B3.90	1-B13-N9A-KA	N9 nozzle-to-shell weld	88%	62%	nozzle geometry and adjacent nozzle
B3.90	1-B13-N9B-KA	N9 nozzle-to-shell weld	88%	62%	nozzle geometry and adjacent nozzle
B3.90	1-B13-N15-KA	N15 nozzle-to-bottom head	0	0	CRD tube bundle
B3.100	1-B13-N15-IR	N15 nozzle inner radius	0	0	CRD tube bundle
B1.22	1-B13-DG	Bottom head center plate to side plates	29%	29%	CRD tube bundle and skirt knuckle
B1.22	1-B13-DH	Bottom head center plate to side plates	29%	29%	CRD tube bundle and skirt knuckle

Licensee's Basis for Proposed Alternative (as stated):

"The structural integrity of the reactor pressure vessel welds was demonstrated during construction by meeting the requirements of the ASME Code Section III, and additionally by meeting the requirements of ASME Section XI during preservice inspections. All welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. The Perry Unit 1 reactor vessel had no reportable indications from preservice or first interval inspection results.

"The pressure boundary passed the required preservice hydrostatic tests and first interval pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998, without detectable pressure boundary leakage.

"Catastrophic reactor vessel failure is precluded by avoiding nil ductile temperatures at significant stress levels according to the design, surveillance and operating provisions described in the Perry USAR Sections 5.3.1 and 5.3.2, and Technical Specifications 3.4.1.1. Additionally, none of the components for which relief is being requested are located in the beltline region of the reactor vessel.

"Partial examinations, meeting all the requirements of the ASME Section XI except complete coverage, will continue to be performed. Although the examination coverage is limited, the most critical areas of the weld and/or

required volume (i.e., the root of the weld and adjacent base material for welds and the radius blend area of inner radius exams) receive full coverage. Since the construction, operating conditions, environmental conditions of the non-examined portions are identical to the examined portions, it is reasonable to apply the satisfactory results from the examined to the non-examined portions.

"The specific cause of the examination limitations for each component is shown in the attached table[1]. In general, the limitations are a result of manual and/or automated scanning restrictions due to the component geometry itself or adjacent interferences. All of the subject components are within Perry's biological shield where access is difficult and the dose rate in the areas of components typically exceeds 1 REM. In those cases where the component geometry precludes complete examination, some additional coverage could be achieved with the use of additional examination techniques, but only through undue hardship and a significant increase in dose.

"Revision 1 of this relief request, which requested similar relief for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. M84418, dated 2/24/94).

"In summary, because of the initial vessel condition free of reportable indications, successful code hydrotest and operating experience without leakage indications, the capability to detect pressure boundary leakage, protection against brittle reactor vessel failure, the capability to perform partial examinations which include full examination of the most critical areas, and the previous approval of similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Evaluation: The Code requires a 100% volumetric examination of all the subject RPV components. The Item B1.40 head-to-flange weld also requires 100% surface examination in addition to the volumetric examination. The licensee has proposed to perform partial volumetric examinations to the extent possible in lieu of the 100% volumetric examinations required by the Code. The table above lists the limitations that preclude the complete Code-required examination using the automated scanning equipment. Additional examination coverage of the nozzle welds may be achievable from the vessel exterior. However, all of the subject components are within the biological shield; access is difficult and the dose rate typically exceeds 1 REM. The

1 The licensee has provided drawings, figures, and tables in their ISI program that may not be included in this Technical Letter Report (TLR), but whose content may be referred to in the licensee's basis or the INEEL evaluation sections of this TLR.

consequence of the additional coverage would result in hardship or unusual difficulty without a compensating increase in quality and safety.

In most cases, the licensee has examined a significant portion of the subject components. Generally, a composite examination coverage of greater than 73% was obtained. The exceptions are limited to: top head-to-flange weld (50%), nozzle-to-bottom head weld and inside radius section (0% each), and bottom head meridional welds (29% each). Based on the examinations that were performed on the subject components, the INEEL staff concludes that any significant patterns of degradation, if present, should have been detected and that the proposed examinations provide reasonable assurance of the continued structural integrity of the reactor pressure vessel. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

B. Request for Relief No. IR-002, Rev. 1, Examination Category B-G-1, Item B6.180, Reactor Recirculation Pump Studs

Code Requirement: Examination Category B-G-1, Item B6.180 requires a 100% volumetric examination of the Class 1 pump bolts and studs as defined by Figure IWB-2500-12. The bolting may be examined in place under tension, when the connection is disassembled, or when the bolting is removed.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing the volumetric examination of the reactor recirculation Pump B studs to the extent required by the Code.

Licensee's Basis for Requesting Relief (as stated):

> "The end configuration of the reactor recirculation pump studs, with a chamfered lip, plug hole and elongation measurement bore hole, prohibits all but a very limited 0-degree examination from the end of the stud. Therefore, the volumetric examination of the reactor recirculation pump studs is performed by the use of forward and aft looking angle beam bore probes. The elongation measurement borehole (approximately 0.5-in. dia.) extends through 80% of bolt length. Examination coverage from the borehole is slightly limited by the stud geometry

as depicted in Figure IR-002-1[2]. The volume affected is approximately 22% of the total required volume.

"The structural integrity of the recirculation pump bolting was demonstrated during construction by meeting the requirements of the ASME Code Section XI during preservice inspections. Materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. There were no reportable indications observed from preservice or first interval inspections. The pressure boundary passed the required preservice hydrostatic test and inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leak indication attributable to the subject components.

"The major area of interest, the thread root area, received 100% volumetric examination. Material in the examined volume is identical to the non-examined portion of the studs. Since the construction, operating conditions and environmental conditions of the non-examined portions are identical to the examined volume, it is reasonable to apply satisfactory results obtained from the inservice inspections to the non-examined volume.

"An increase in the coverage, but still not complete coverage, could be obtained by grinding or machining off the chamfered lips at the ends of the studs to facilitate 1-degree examination from the end surface. However, this would cause undue hardship because it would require either disassembly of the pump or an estimated 1 REM of dose to grind them in place.

"Revision 0 of this relief request, which requested the same relief for the subject studs for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. 61443, dated 4/25/90).

"In summary, because of acceptable initial bolt condition, successful code hydro test and operating experience without related leakage indications, the capability to examine about 78% of bolt volume on a continuing basis, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Licensee's Proposed Alternative Examination (as stated):

"Partial examination, which meets all the requirements of the ASME Section XI, 1989 Edition except coverage, will be performed."

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2 The licensee has provided drawings, figures, and tables in their ISI program that may not be included in this TLR, but whose content may be referred to in the licensee's basis or the INEEL evaluation sections of this TLR.

Evaluation: The Code requires that Class 1 studs greater than 2-inch in diameter receive 100% volumetric examination. The examination may be performed with the bolting in place and under tension, when the connection is disassembled, or when the bolting is removed. This examination is usually performed using a 0° longitudinal scan from the exposed end of the bolt. However, the studs used for the reactor recirculation pump at Perry, Unit 1, have a raised chamfered lip around the end. This lip severely restricts the volume achieved when applying the 0° scan from the end. Consequently, the licensee uses a forward and aft looking angle beam bore probe to examine these studs. Examination coverage from the borehole is slightly limited by the stud geometry. The volumetric examination is therefore, impractical to perform to the extent required by the Code. To obtain 100% volumetric coverage, the studs would have to be redesigned and modified, or replaced causing a burden on the licensee.

The examination coverage obtained using the angle beam bore probe technique is approximately 78%. With this technique, the critical thread root area receives 100% coverage. Based on the extent of volumetric coverage obtained, existing patterns of degradation, if present, would be detected and reasonable assurance of structural integrity is maintained. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

C. Request for Relief No. IR-004, Rev. 2, Examination Category B-J, Item B9.11, Class 1 Pressure Retaining Circumferential Piping Welds

Code Requirement: Examination Category B-J, Item B9.11 requires 100% surface and volumetric examinations of pressure retaining circumferential welds in Class 1 piping NPS 1 or larger as defined by Figure IWB-2500-8.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing the Code-required 100% volumetric examination of Residual Heat Removal system weld 1E12-0880.

Licensee's Basis for Requesting Relief (as stated):

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III, and additionally by meeting the requirements of ASME Section XI during preservice inspections. The subject weld was examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. There were no reportable indications during preservice or first interval inspection.

"The pressure boundary passed the required preservice hydrostatic test and first interval pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject weld or similar welds.

"In addition to partial inspection of the subject weld, complete examinations meeting the requirements of the ASME Code Section XI are performed on welds of similar configurations that utilize the same weld techniques, procedures and materials. The examined welds are subject to the same operating and environmental conditions as the partially examined welds.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from examined to the non-examined portions.

"Complete surface examinations are performed.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"The limitation described for the subject weld (intradose of elbow does not allow for the full V scan path necessary for this one-sided exam) is such that only redesign and replacement of the piping at the weld location would provide for complete examination. Examination essentially 80% complete.

"Revision 1 of this relief request, which requested the same relief for the subject weld for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. M75334, dated 2/14/92).

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience without related leakage indications, protection against brittle failure, the capability to ultrasonically examine most of the subject weld volume and perform complete surface examinations on a continuing basis, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Licensee's Proposed Alternative Examination (as stated):

> "Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed."

Evaluation: The Code requires that Class 1 circumferential piping welds receive 100% volumetric and surface examinations each inspection interval. The licensee is proposing to perform the volumetric examination to the extent practical. The geometry of the process pipe-to-short radius elbow and the close proximity of the containment penetration, does not allow for the full scan path necessary for this one-sided examination. The volumetric examination is therefore, impractical to perform to the extent required by the Code. To obtain 100% volumetric coverage, the piping would have to be redesigned and modified, causing a considerable burden on the licensee.

The licensee will examine 80% of the subject weld. In addition, the weld receives 100% surface examination. Based on the extent of volumetric coverage obtained and the surface examination performed, existing patterns of degradation, if present, would be detected and reasonable assurance of structural integrity is maintained. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

D. Request for Relief No. IR-005, Rev. 2, Examination Category B-J, Item B9.11, Class 1 Pressure Retaining Piping Welds With Corrosion Resistant Cladding

Code Requirement: Examination Category B-J, Item B9.11 requires 100% surface and volumetric examinations of pressure retaining circumferential welds in Class 1 piping NPS 1 or larger as defined by Figure IWB-2500-8.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing the volumetric examination to the extent required by the Code for the following welds.

Weld ID	Description	Limitation
1-B33-0012	22" elbow-to-pump weld	geometry
1-B33-0046	24" x 12" reducer-to-12" pipe	geometry

Weld ID	Description	Limitation
1-B33-0054	12" pipe-to-nozzle	geometry
1-B33-0059	12" pipe-to-nozzle	geometry
1-B33-0074	22" elbow-to-pump	geometry
1-B33-0100	12" pipe-to-nozzle	geometry
1-B33-0111	12" pipe-to-nozzle	geometry
1-B33-0116	12" pipe-to-nozzle	geometry
1-B33-0121	12" pipe-to-nozzle	geometry

Licensee's Basis for Requesting Relief (as stated):

"Ultrasonic examinations conducted on welds in the recirculation loops which were inlaid and overlaid with corrosion resistant cladding require specialized techniques. Typical techniques identified in Appendix III of Section XI proved to be ineffective.

"To overcome the metallurgical properties impeding conventional shear wave ultrasonic transmission, refracted longitudinal wave examinations are employed. Personnel qualified for IGSCC detection in accordance with NUREG-0313, Rev. 2, perform the examinations. The acoustic properties of refracted longitudinal wave propagation limit the technique to ½ vee path. When examining from one side only, the Code required volume necessitates a full vee path through the weld and required volume. Therefore, when access to a butt weld was limited to one side only due to component geometry (e.g., pipe to valve) the perpendicular examination is considered to be only 50% complete.

"During construction, the subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. In addition, there were no reportable indications during preservice or first interval inspections.

"The pressure boundary passed the required preservice hydrostatic and first interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from examined to the non-examined portions.

"Complete surface examinations are performed.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"The limitation described for the subject weld is such that only a complete redesign and replacement of the piping at the weld locations would provide for complete examination.

"Revision 1 of this relief request, which requested the same relief for the subject welds for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. M95898, dated 5/27/97).

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience without related leakage indications, protection against brittle failure, the capability to ultrasonically examine half of the subject weld volume and perform complete surface examinations on a continuing basis, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Licensee's Proposed Alternative Examination (as stated):

"Ultrasonic examinations, which meet all the requirements of ASME Section XI, 1989 Edition and NUREG-0313, Rev. 2 to the extent practical will be performed."

Evaluation: The Code requires that Class 1 circumferential piping welds receive 100% volumetric and surface examinations each inspection interval. The licensee is proposing to perform the volumetric examination to the extent practical. The geometry of the subject components limits access to one side of the weld and the metallurgical properties of the overlaid corrosion resistant cladding necessitates the use of a refracted longitudinal wave examination. Additionally, the acoustic properties of the refracted L-wave technique limits the ultrasonic interrogation to ½ vee path. The volumetric examination is therefore, impractical to perform to the extent required by the Code. To obtain 100% volumetric coverage, the piping would have to be redesigned and modified, causing a considerable burden on the licensee.

The licensee will examine 100% in the parallel scan direction and approximately 50% in the perpendicular scan direction of each of the subject welds. In addition, the welds receive 100% surface examination. Based on the extent of volumetric coverage

obtained and the surface examinations performed, existing patterns of degradation, if present, would be detected and reasonable assurance of structural integrity is maintained. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

E. Request for Relief No. IR-007, Rev. 1, Examination Category B-K-1, Item B10.10, Integrally Welded Support Attachments for Class 1 Piping

Code Requirement: Examination Category B-K-1, Item B10.10 requires 100% surface or volumetric examination, as applicable, of the integrally welded attachments for Class 1 piping as defined by Figure IWB-2500-13, -14, or -15.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing the surface examination to the extent required by the Code for the following penetration-to-process pipe attachment welds.

1-E12-P411-WA	1-E12-P421-WA
1-E12-PRB2035-WA	1-E12PRB2036-WA
1-E12-PRB2044-WA	1-E21-P112-WA
1-E21-PRB3046-WA	1-E22-P410-WA
1-E22-PRB3052-WA	1-E51-P123-WA
1-C41-PRB4031-WA	1-E51-P422-WA
*1-N27-P121-WA	*1-N27-P414-WA
1-G33-P131-WA	1-N22-P423-WA
*1-B21-P122-WA	*1-B21-P124-WA
*1-B21-P415-WA	*1-B21-P416-WA

*Received augmented ultrasonic examination in accordance with USAR requirements for high-energy break exclusion regions.

Licensee's Basis for Requesting Relief (as stated):

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III.

The subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.

"Due to the inaccessibility of the weld face within the ID of the penetration, only 50% of the required surface area can be examined.

"Examinations meeting the requirements of the ASME Code Section XI were performed on the accessible face of the attachment welds with acceptable results during the preservice and first interval inspections.

"In accordance with Perry's USAR, penetration attachment welds within the high-energy break exclusion regions of piping systems are ultrasonically examined from the OD surface of the penetration. Although not performed specifically to supplement the limited surface examinations, these examinations do provide additional assurance of structural integrity.

"The pressure boundary passed the required preservice hydrostatic and inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject weld or similar welds.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from examined to the non-examined portions.

"Design, procurement and operational provisions against nil ductility failure of the subject welds remain as described in the Perry USAR.

"Redesign of the piping systems to facilitate access is not practical and performance of supplemental ultrasonic examinations, beyond those already required for high energy break exclusion regions, would present undue hardship. Calibration blocks would have to be designed and fabricated and the supplemental examinations would require as much as 2 REM to perform.

"The NRC (reference TAC No. 61443, dated 4/25/90) approved revision 0 of this relief request, which requested similar relief for the subject welds for Perry's first 10-year inspection interval.

"In summary, because of the acceptable initial condition, successful code hydrotest and operating experience, the capability to examine half of the required surface areas on a continuing basis, protection against brittle failure, and the previous approval of similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Licensee's Proposed Alternative Examination (as stated):

"Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed."

Evaluation: The Code requires that the subject Class 1 piping integral attachment welds receive 100% surface examination each inspection interval. The licensee is proposing to perform the surface examination to the extent practical (50%) due to the inaccessibility of the weld face within the ID of the penetration. The surface examination is therefore, impractical to perform to the extent required by the Code. To obtain complete Code coverage, the piping would have to be redesigned and modified, causing a considerable burden on the licensee. Requiring that the licensee perform supplemental volumetric examinations, in additional to those integral attachments being examined for high energy break exclusion, would result in hardship due to the radiation dose expended and the need to design and build ultrasonic calibration blocks.

The licensee will perform 50% of the Code-required surface examination on the subject welds. In addition, six of the twenty piping integral attachment welds receive supplemental ultrasonic examination. Based on the extent of surface coverage obtained, and the supplemental volumetric examinations performed, existing patterns of degradation, if present, would be detected and reasonable assurance of structural integrity is maintained. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

F. Request for Relief No. IR-009, Rev. 1, Examination Category B-O, Item B14.10, Control Rod Drive Housing-to-Flange Welds

Code Requirement: Examination Category B-O, Item B14.10 requires 100% volumetric or surface examination of 10% of the peripheral control rod drive (CRD) housing welds as defined by Figure IWB-2500-18.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from examining 100% of the required surface areas because of

partial inaccessibility due to control line interference. The insert and withdraw control lines limit the examination coverage to 85% for the following welds.

Weld ID	Weld ID	Weld ID
1-B13-02/23-FW	1-B13-02/27-FW	1-B13-02/31-FW
1-B13-02/35-FW	1-B13-02/39-FW	1-B13–06/15-FW
1-B13-06/47-FW	1-B13-10/11-FW	1-B13-10/51-FW
1-B13-14/07-FW	1-B13-14/55-FW	1-B13-22/03-FW
1-B13-22/59-FW	1-B13-26/03-FW	1-B13-26/59-FW
1-B13-30/03-FW	1-B13-30/59-FW	1-B13-34/03-FW
1-B13-34/59-FW	1-B13-38/03-FW	1-B13-38/59-FW
1-B13-46/07-FW	1-B13-46/55-FW	1-B13-50/11-FW
1-B13-50/51-FW	1-B13-54/15-FW	1-B13-54/47-FW
1-B13-58/23-FW	1-B13-58/27-FW	1-B13-58/31-FW
1-B13-58/35-FW	1-B13-58/39-FW	

Licensee's Basis for Requesting Relief (as stated):

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III, and additionally by meeting the requirements of ASME Section XI during preservice inspections. The subject weld was examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. There were no reportable indications during preservice or first interval inspection.

"The pressure boundary passed the required preservice hydrostatic test and first interval pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject weld or similar welds.

"Portions of welds examined are subject to the same operating and environmental conditions as the unexamined portions. It is, therefore, reasonable to apply the results from examined weld portions to the unexamined portions.

"The insert and withdraw control lines limit the examination coverage to 85% (see Figure IR-009-1)[3].

"Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical.

"Design, procurement and operational provisions against nil ductility failure of the subject welds remain as described in the Perry USAR.

"The NRC (reference TAC No. 61443, dated 4/25/90) approved revision 0 of this relief request, which requested similar relief for the subject welds for Perry's first 10-year inspection interval.

"In summary, because of the acceptable initial weld condition, successful code hydrotest and operating experience without leakage indications, the capability to examine most of the weld surface areas on a continuing basis, protection against brittle failure, and the previous approval of similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Licensee's Proposed Alternative Examination (as stated):

"Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed."

Evaluation: The Code requires that CRD housing-to-flange welds receive 100% surface or volumetric examination each inspection interval. The licensee is proposing to perform the surface examination to the extent practical because partial inaccessibility of the weld due to control line interferences limits the Code-required coverage. The examination of the selected CRD welds is therefore, impractical to perform to the extent required by the Code. Disassembly of the CRD mechanisms does not increase Code coverage and redesigning and modifying the CRD housing would cause a considerable burden on the licensee. However, in similar cases licensee's have simply increased the sample size (added additional CRD welds to the sample) as an alternative to strict compliance with the Code examination coverage requirements. Therefore, though it is impractical to

3 The licensee has provided drawings, figures, and tables in their ISI program that may not be included in this TLR, but whose content may be referred to in the licensee's basis or the INEEL evaluation sections of this TLR.

comply with the Code examination coverage requirements on the selected population of welds, the licensee's proposal does not provide a reasonable alternative to the Code.

Based on the determination that it is impractical to comply with the Code examination coverage requirements on the selected welds, and considering the availability of a sufficient quantity of similar welds, the licensee's alternative should be granted pursuant to 10 CFR 50.55a(g)(6)(i), provided additional welds are examined to increase the total sample size and account for the limitations encountered on each weld.

G. Request for Relief No. IR-012, Rev. 2, Examination Category C-C, Item C3.30, Integrally Welded Attachments for Class 2 Pumps

Code Requirement: Examination Category C-C, Item C3.30 requires a 100% surface examination of the integrally welded attachments of Class 2 pumps as defined by Figure IWC-2500-5.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing the surface examination to the extent required by the Code for the following welded pump casing support lug welds that are only partially accessible due to pedestal interference. The licensee estimates that each support lug weld will receive 83% examination coverage.

1-E51-C0001-A-WA	1-E51-C0001-B-WA
1-E51-C0001-C-WA	1-E51-C0001-D-WA

Licensee's Basis for Requesting Relief (as stated):

> "The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III, and additionally by meeting the requirements of ASME Section XI during preservice inspections. The subject weld was examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. There were no reportable indications during preservice or first interval inspections.

"The pressure boundary passed the required preservice hydrostatic test and first interval pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

". . . partially accessible due to pedestal interference (see Figure IR-012-1[4]). Coverage is limited to approximately 83%.

"In addition to partial inspection of the subject welds, complete examinations meeting the requirements of the ASME Code Section XI are performed on welds of similar configurations that utilize essentially similar weld techniques, procedures and materials. The examined welds are subject to the same operating and environmental conditions as the partially examined welds.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from examined to the non-examined portions.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Full access to the subject pump casing integral attachment welds could only be provided by redesign of the pump's pedestal mounting.

"Revision 1 of this relief request, which requested similar relief for the subject welds for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. M75334, dated 2/14/92).

"In summary, because of acceptable initial condition, successful test and operating experience the capability to examine at least 83% of the subject weld surfaces on a continuing basis, protection against brittle failure, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Licensee's Proposed Alternative Examination (as stated):

"Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition except coverage will be performed."

Evaluation: The Code requires that Class 2 integral attachment welds receive 100% surface examination each inspection interval. The licensee is proposing to perform the

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4 The licensee has provided drawings, figures, and tables in their ISI program that may not be included in this TLR, but whose content may be referred to in the licensee's basis or the INEEL evaluation sections of this TLR.

surface examination to the extent practical because partial inaccessibility of the weld, due to pump pedestal interferences, limits the Code-required coverage. The examination is therefore, impractical to perform to the extent required by the Code. To increase examination coverage, the pump's pedestal mount would have to be redesigned and modified causing a considerable burden on the licensee.

The licensee will perform 83% of the Code-required surface examination on the subject welds. Based on the extent of surface coverage obtained, existing patterns of degradation, if present, would be detected and reasonable assurance of structural integrity is maintained. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

H. Request for Relief No. IR-013, Rev. 1, Examination Category C-G, Item C6.10, Class 2 Pump Casing Welds

Code Requirement: Examination Category C-G, Item C6.10 requires a 100% surface examination of Class 2 pump casing welds as defined by Figure IWC-2500-8.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing routinely scheduled examinations of the following pump casing welds that are inaccessible because they are located within those portions of vertical line shaft pump casings that are installed below the floor elevations (i.e., bolted into a pit).

RHR Pump	1-E12-C002A
RHR Pump	1-E12-C002C
HPCS Pump	1-E22-C001
LPCS Pump	1-E21-C001

Licensee's Basis for Requesting Relief (as stated):

> "The structural integrity of the subject pressure boundaries was demonstrated during construction by meeting the requirements of the ASME Code Section III, and additionally by meeting the requirements of ASME Section XI during preservice inspections. The subject welds were examined in accordance with

the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.

"The pressure boundary passed the required preservice hydrostatic and first interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998, without leakage indication attributable to the subject welds.

"The subject welds are below the floor elevation. Only disassembly of the pump and removal of all the pump internals would provide examination access to these welds. Disassembly would involve removal of the 7,800-lb. pump motor, and the 22-ft long, 16,000-lb. pump head and vertical line shaft assembly.

"The pump casing welds above the floor elevation can be fully examined. Since the construction and operating conditions of these accessible pump casing welds are identical to those of the inaccessible welds, it is reasonable to apply satisfactory results from examined welds to the non-examined welds.

"The NRC (reference TAC No. 61443, dated 4/25/90) approved revision 0 of this relief request, which requested similar relief for the subject welds for Perry's first 10-year inspection interval.

"In summary, because of the acceptable initial condition, successful code hydrotest and operating experience, the capability to examine the similar accessible welds on a continuing basis, and the previous approval of similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Licensee's Proposed Alternative Examination (as stated):

"If the subject welds become accessible through the disassembly of the pumps for maintenance, repair or modification, examinations which meet all of the requirements of ASME Section XI, 1989 Edition will be performed."

Evaluation: The Code requires that Class 2 pump casing welds receive a 100% surface examination from either the inside or outside surface of the component. The pump casing welds listed in this relief request are below floor elevation, precluding examination from the inside or outside surface. To achieve the Code-required examination coverage, the pumps would have to be disassembled and the pump internals removed. Therefore, the Code-required surface examination is impractical to

perform to the extent required by the Code. Imposition of this requirement for the sole purpose of inspecting the welds would cause a considerable burden on the licensee.

The required examinations on pump casing welds above the floor elevation are being performed, and, when a pump is disassembled for maintenance, repair, or modification, the licensee has proposed to perform the required examinations as the subject welds become accessible. The examinations performed on the welds above the floor level should detect significant patterns of degradation if present and provide reasonable assurance of the continued structural integrity of the pump casing. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

I. Request for Relief No. IR-015, Rev. 1, Examination Category C-C, Item C3.20, Class 2, Integrally Welded Attachments

Code Requirement: Examination Category C-C, Item 3.20 requires a 100% surface examination of the integrally welded attachments to Class 2 piping as defined by Figure IWC-2500-5. The examinations are limited to attachments of those components required to be examined under Examination Categories C-F and C-G.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing surface examination to the extent required by the Code for the following process pipe welded attachments that are only partially accessible due to their location within the penetration. The licensee estimates that each weld will receive 50% examination coverage.

Component I. D.	ISI ISO SYSTEM/ SS-305-
1G33-P132-WA	RWCU/672-102
1E12-P105-WA	RHR/642-121
1E12-P407-WA	RHR/642-126
1E12-P113-WA	LPCI/642-133
1E12-P412-WA	LPCI/642-137

Licensee's Basis for Requesting Relief (as stated):

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. The subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.

"Examinations meeting the requirements of the ASME Code Section XI were performed on the accessible face of the attachment welds with acceptable results during preservice and first interval inspections.

"The pressure boundary passed the required preservice hydrostatic test and inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject weld or similar welds.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from examined to the non-examined portions.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Due to the inaccessibility of the weld face within the ID of the penetration, only 50% of the required surface area can be examined.

"Redesign of the piping systems to facilitate access is not practical and performance of supplemental ultrasonic examinations would present undue hardship. Calibration blocks would have to be designed and fabricated and the supplemental examinations would require as much as 1 REM to perform.

"The NRC (reference TAC No. 61443, dated 4/25/90) approved revision 0 of this relief request, which requested the same relief for the subject weld for Perry's first 10-year inspection interval.

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience, the capability to examine at least half of the required surface areas on a continuing basis, protection against brittle failure, and the previous approval of the similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Licensee's Proposed Alternative Examination (as stated):

"Partial examination, which meets all the requirements of ASME Section XI, 1989 Edition, except coverage, will be performed."

Evaluation: The Code requires 100% surface examination of the subject welded piping attachments. However, portions of the subject welds are located inside piping penetrations. This restricts access to these welds. To achieve the Code-required examination coverage, redesign of the piping systems to facilitate access would be required. Therefore, the 100% surface examination coverage of these welds is impractical to achieve. Imposition of the Code requirements would result in a considerable burden on the licensee.

The licensee has examined the subject welds to the extent practical, attaining approximately 50% of the cumulative code-required surface coverage. Therefore, any significant patterns of degradation that exist should be detected by the examinations that are completed and adequate assurance of the structural integrity of these integral attachment welds will be provided.

Based on the impracticality of meeting the Code coverage requirements for the subject welds, and the reasonable assurance provided by the examinations that can be completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

J. Request for Relief No. IR-018, Rev. 2, Examination Category B-K-1, Item B10.10, Class 1, Integrally Welded Piping Support Attachments

Code Requirement: Examination Category B-K-1, Item B10.10 requires a 100% surface examination of the integrally welded attachments of Class 1 piping as defined by Figures IWB-2500-13 through -15.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing surface examination to the extent required by the Code for the following welded attachments that are partially obstructed by pipe clamp or box guide to support lug interferences. The licensee estimates that each weld will receive examination coverage as defined in the table below.

Component I. D.	SYSTEM /DWG. No.	EST % Complete
1B33-H305A-WA	RR/SS-305-602-102	75%
1B33-H306A-WA	RR/SS-305-602-102	75%
1B33-H305B-WA	RR/SS-305-602-104	75%
1B33-H306B-WA	RR/SS-305-602-104	75%
1N27-H0029-WA	FW/SS-305-082-102	65%
1N27-H0030-WA	FW/SS-305-082-105	65%

Licensee's Basis for Requesting Relief (as stated):

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. The subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.

"The pressure boundary passed the required preservice hydrostatic test and first inspection interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

"Complete examinations meeting the requirements of the ASME Code Section XI are performed on welds of similar configurations that utilized the same weld techniques, procedures and materials. The examined welds are subject to the same operating and environmental conditions as the partially examined welds.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from examined to the non-examined portions.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Component support removal or in some cases (i.e., the rigid guides) complete redesign of the component supports would be necessary to facilitate full access to the integral attachment welds. All the supports are located in radiologically controlled areas with dose rates that range from 10 mr/hr to 300 mr/hr in the case of the reactor recirculation piping supports.

"The NRC (reference TAC No. 75334, dated 2/14/92) approved revision 1 of this relief request, which requested similar relief for the subject welds for Perry's first 10-year inspection interval.

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience, the capability to examine at least 65% of the required surface areas on a continuing basis, protection against brittle failure, and the previous approval of the similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Licensee's Proposed Alternative Examination (as stated):

"Partial examinations, which meets all the requirements of ASME Section XI, 1989 Edition, except coverage, will be performed."

Evaluation: The Code requires 100% surface examination of the subject welded piping attachments. However, portions of welds 1B33-H305A-WA, 1B33-H306A-WA, 1B33-H305B-WA, and 1B33-H306B-WA are inaccessible for the Code required surface coverage due to interference with the pipe clamp to support lug interface and welds 1N27-H0029-WA and 1N27-H0030-WA are inaccessible for the Code required surface coverage due to interference with the box guide to support lug interface. This restricts access to these welds and makes 100% surface examination coverage of these welds impractical to achieve. In order to achieve the code required coverage, component support removal or complete redesign of the component supports would be necessary to facilitate full access to the integral attachment welds. Imposition of the Code requirements would result in a considerable burden on the licensee.

The licensee has examined the subject welds to the extent practical, attaining a significant portion (65%-75%) of the code-required surface coverage. It is reasonable to conclude that any significant existing patterns of degradation, if present, would be detected by the examinations that were completed. Therefore, reasonable assurance of the structural integrity of these integral attachment welds will be provided.

Based on the impracticality of meeting the Code surface coverage requirements for the subject welds, and the reasonable assurance provided by the examinations that can be completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

K. Request for Relief No. IR-019, Rev. 1, Examination Category C-C, Item C3.20, Class 2, Integrally Welded Piping Support Attachments

Code Requirement: Examination Category C-C, Item 3.20 requires a 100% surface examination of the integrally welded attachments of Class 2 piping as defined by Figure IWC-2500-5.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing surface examinations to the extent required by the Code for the following process pipe welded attachments that are only partially accessible due to their location near pipe clamps or structural interferences. The licensee estimates that each weld received greater than 80% examination coverage.

NATURE OF COMPONENT I. D. OBSTRUCTION	SYS./EST % COMPLETE/ISI ISO #	DESCRIPTION
1C11-H0032-WA Adjacent structure	Control rod drive 86% SS-305-871-103	Welded lugs for pipe support
1C11-H0048-WA Adjacent structure	Control rod drive 86% SS-305-871-101	Welded lugs for pipe support
1C11-H0665-WA Pipe clamp	Control rod drive 87% SS-305-871-104	Welded lugs for pipe support
1C11-H0675-WA Pipe clamp	Control rod drive 87% SS-305-871-102	Welded lugs for pipe support
1E12-H0670-WA Pipe clamp	Residual heat removal 87% SS-305-642-137	Welded lugs for pipe support
1E22-H0027-WA Pipe clamp	High pressure core spray 81% SS-305-701-102	Pipe anchor

Licensee's Basis for Requesting Relief (as stated):

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III, and additionally by meeting the requirements of ASME Section XI during preservice inspections. The subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. There were no reportable indications during preservice inspections.

"The pressure boundary passed the required preservice hydrostatic and first inspection interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

"Complete examinations meeting the requirements of the ASME Code Section XI were performed on welds of similar configurations that utilized essentially similar weld techniques, procedures and materials. The examined welds are subject to the same operating and environmental conditions as the partially examined welds.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from examined to the non-examined portions.

"At least 80% of the required surface area is accessible and was examined during the first inspection interval and will be examined during subsequent intervals.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Component support removal or in some cases (i.e., the anchors) complete redesign of the component supports would be necessary to facilitate full access to the integral attachment welds. All the supports are located in radiologically controlled areas with dose rates that range from 10 mr/hr to 50 mr/hr.

"The NRC (reference TAC No. 75334, dated 2/14/92) approved revision 1 of this relief request, which requested similar relief for the subject welds for Perry's first 10-year inspection interval.

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience, the capability to examine at least 80% of the required surface areas on a continuing basis, protection against brittle failure, and the previous approval of the similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Licensee's Proposed Alternative Examination (as stated):

> "Partial examinations, which meet all the requirements of ASME Section XI, 1989 Edition, except coverage, will be performed."

Evaluation: The Code requires 100% surface examination of the subject piping support attachment welds. However, portions of the subject welds are inaccessible due to pipe clamp or structural interferences. This restricts access to these welds and makes 100% surface examination coverage of these welds impractical to achieve. In order to achieve the code required coverage, component support removal or complete redesign of the component supports would be necessary to facilitate full access to the integral attachment welds. Imposition of the Code requirements would result in a considerable burden on the licensee.

The licensee has examined the subject welds to the extent practical, attaining greater than approximately 80% of the cumulative code-required surface coverage. Therefore, any significant existing patterns of degradation should be detected by the examinations that were completed and reasonable assurance of the structural integrity of these integral attachment welds will be provided.

Based on the impracticality of meeting the Code coverage requirements for the subject welds, and the reasonable assurance provided by the examinations that can be completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

L. Request for Relief No. IR-021, Rev. 4, Examination Category D-B, Item D2.20, Class 3, Integral Attachment Component Supports and Restraints

Code Requirement: Examination Category D-B, Item D2.20 requires a visual VT-3 examination of the integral attachment welds of Class 3 piping as defined by Figure IWD-2500-1.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from performing visual VT-3 examination to the extent required by the Code for the following welded attachments that are partially accessible due to

their location within sealed penetrations or in the emergency service water pump house forebay. The specific accessibility issues and coverages achieved are listed in the following table.

Component I.D.	System/Description	Nature of Obstruction	Est % Complete
1B21-H0050-WA, 1B21-H0157-WA, 1B21-H0167-WA, 1B21-H0179-WA	Main Steam / Welded lugs for pipe support	Lugs in rubber booted suppression pool penet.	0%
1P42-H0221-WA	Emer. Closed Cool. / Welded lugs for pipe support	Lugs in penetration filled w/ sealant	0%
1P45-H0643-WA	Emer. Service Water / Welded lugs for pipe support	Lugs in penetration filled w/ grout	0%
2P42-H0009-WA	Emer. Closed Cool. / Welded lugs for pipe support	Two of eight lugs in penetration filled w/ sealant	25%

Component I.D.	System/Description	Nature of Obstruction	Est % Complete
1B21-H0176-WA, 1B21-H0128-WA, 1B21-H0156-WA, 1B21-H0158-WA, 1B21-H0173-WA, 1B21-H0175-WA, 1B21-H0155-WA, 1B21-H0168-WA, 1B21-H0120-WA, 1B21-H0159-WA, 1B21-H0160-WA, 1B21-H0186-WA, 1B21-H0177-WA, 1B21-H0163-WA, 1B21-H0164-WA	Main Steam / Welded lugs for pipe support	Lugs in rubber booted suppression pool penet.	0%
1G41-H0396-WA	Fuel Pool Cleaning / Welded lugs for pipe support	Lugs in penetration filled w/ sealant	0%
1P42-H0115-WA	Emer. Closed Cool. / Welded lugs for pipe support	Two of four lugs in penetration filled w/ sealant	50%
1P42-H0222-WA	Emer. Closed Cool. / Welded lugs for pipe support	Lugs in penetration filled w/ sealant	0%
1P45-H0022-WA	Emer. Service Wtr. / Welded stanchion of pipe support	Stanchion in penetration filled w/sealant	0%

Component I.D.	System/Description	Nature of Obstruction	Est % Complete
1P45-H0049-WA	Emer. Service Wtr. / Welded sleeve of pipe support	Sleeve in penetration filled w/sealant	0%
1P45-H0127-WA, 1P45-H0191-WA, 1P45-H0271-WA, 1P45-H0417-WA	Emer. Service Wtr. / Welded lugs for pipe support	Lugs in penetration filled w/sealant	0%
2P42-H0024-WA, 2P42-H0025-WA	Emer. Closed Cool. / Welded lugs for pipe support	Two of six lugs in penetration filled w/ sealant	66%
1P45-H0649-WA	Emer. Service Wtr. / Welded lugs for pipe support	Lugs inside penetration in ESW pumphouse forebay	0%
1P45-H0659-WA	Emer. Service Wtr. / Welded lugs for pipe guide	Lugs inside penetration in ESW pumphouse forebay	0%
1G41-H0427-WA	Fuel Pool Cleaning / Welded sleeve of pipe anchor	One end of sleeve in wall penetration filled with sealant	50%
1P42-H0234-WA	Emer. Closed Cool. / Welded lugs for pipe guide	Lugs inside wall penetration filled w/ sealant	0%
2P45-H0025-WA	Emer. Closed Cool. / Welded lugs for pipe guide	2 of 6 lugs inside floor penetration filled w/ sealant	66%
1P45-H0274-WA	Emer. Service Wtr. / Welded lugs for pipe guide	Lugs inside floor penetration filled w/ sealant	0%

Component I.D.	System/Description	Nature of Obstruction	Est % Complete
1P45-H0365-WA	Emer. Service Wtr. / Welded lugs for pipe guide	2 of 4 lugs inside wall penetration filled w/ sealant	50%

The licensee stated:

"Examinations that meet all the requirements of ASME Section XI, 1989 Edition will be performed on the accessible portions of the integral attachments."

Licensee's Basis for Requesting Relief (as stated):

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. All welds were inspected in accordance with the appropriate Code requirements. Weld techniques and welders were qualified in accordance with Code requirements and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.

"The pressure boundary passed the required preservice hydrostatic and first inspection interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

"Complete examinations meeting the requirements of the ASME Code Section XI are performed on those portions of the integral attachments that are accessible and on integral attachments with similar configurations to those that are completely inaccessible. 265 Category D-B integral attachments were examined over the course of the first inspection interval and no indications were found.

"Since the construction and operating conditions of the inaccessible or partially inaccessible welded attachments are similar to that of welded attachments that are examined, it is reasonable to extend the satisfactory results of the accessible attachments to the inaccessible ones.

"Removal of the fire retardant sealant within the wall and floor penetrations or the sealed rubber boots from the suppression pool penetrations would be necessary to provide full access to the integral attachment welds. In both cases, special procedures and cure times are necessary for reinstallation of the sealants. The suppression pool penetrations are located in the drywell with dose rates that range from 10 mr/hr to 50 mr/hr. The integral attachments within the Emergency Service Water pumphouse forebay (which cannot be drained) present a safety hazard to get to and could only be accessed by constructing a floating scaffold platform.

"The NRC (reference TAC No. M95898, dated 5/27/97) approved revision 3 of this relief request, which requested similar relief for the subject welds for Perry's first 10-year inspection interval.

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience, the capability to examine the partially accessible integral attachments on a continuing basis, and the previous approval of the similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Evaluation: The Code requires visual VT-3 examination of the subject integral attachment welds. However, portions of the subject welds are inaccessible due to their location within rubber booted, grouted, or sealant-filled penetrations or their location in the emergency service water forebay. Removal of the sealants or rubber boots in the wall or floor penetrations necessitates use of a special procedure and time for the materials to cure. Access for visual examination to the 2 welds in the emergency service water forebay would require building a floating scaffold platform. Requiring these actions to facilitate the Code required coverage of the subject welds would constitute a hardship on the licensee that would not be offset by a corresponding increase in the level of quality and safety. The licensee has examined the subject welds and similar welds to the extent practical. The partial examinations that were completed should provide adequate assurance of the structural integrity of these integral attachment welds.

Based on the determination that the licensee has provided adequate information to support the determination that compliance with the Code requirement to visually VT-3 examine the subject integral attachment welds presents a hardship without a compensating increase in safety, it is recommended that the alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

M. Request for Relief No. IR-023, Rev. 1, Inservice Inspection Requirements for Snubbers

This relief request is being addressed under separate cover by the Mechanical Engineering Branch (MEB) of the US Nuclear Regulatory Commission (NRC).

N. Request for Relief No. IR-024, Rev. 1, Examination Category B-F, Item B5.10, Class 1, Pressure Retaining Dissimilar Metal Welds

Code Requirement: Examination Category B-F, Item B5.10 requires 100% surface and volumetric examination of the nozzle safe-end to safe-end extension welds of Class 1 piping NPS 4 or larger as defined by Figure IWB-2500-8.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from performing volumetric examination to the extent required by the Code for the following dissimilar metal welds with geometric limitations. Specific limitations and estimated coverages are listed in the following table.

COMPONENT I. D.	DESCRIPTION NATURE OF OBSTRUCTION	EST % COMPLETE
1B13-N5A-KC	LPCS nozzle to safe-end to safe-end extension Joint geometry / Metallurgy	80% perpendicular 100% parallel
1B13-N5B-KC, 1B13-N6A-KC, 1B13-N6B–KC, 1B13-N6C-KC	HPCS nozzle to safe-end to safe-end extension Joint geometry / Metallurgy	80% perpendicular 100% parallel

Licensee's Basis for Requesting Relief (as stated):

> "Safe-end to safe-end extension welds of the Core Spray and Residual Heat Removal nozzles, which are inconel to carbon steel bimetallic welds, can not be effectively ultrasonically examined using conventional shear wave techniques.
>
> "To overcome the metallurgical properties impeding the conventional shear wave ultrasonic transmission, refracted longitudinal wave examinations are employed. The acoustic properties of refracted longitudinal wave propagation limit the technique to ½ vee path. The Code required volume necessitates either ½ vee path scanning from one side through the weld and required volume. Therefore, when joint geometry precludes adequate scan paths on both sides of a weld for ½ vee scanning, the perpendicular examination of the weld and required volume will be limited. For the subject safe-end to safe-end extension welds, a safe-end taper limits scanning from one side of the weld to approximately 60% resulting in

an overall perpendicular examination completion percentage of approximately 80% (see Fig. IR-024-1 below[5]).

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. The subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. There were no reportable indications during ASME Section XI preservice or first interval inservice inspections.

"Although the volumetric examination are limited, the most critical areas of the weld and required volume are adequately covered. The root of the weld receives full two dimensional coverage and both the heat affected zones receive coverage which is essentially perpendicular to the end preparation. Additional assurance of the weld integrity is provided by the complete surface examinations.

"Additional scanning of the subject welds with customized transducers and techniques could obtain some additional coverage, However, to do so would present undue hardship as the dose rates in the areas of the welds range from 400 mr/hr up to as much as 1 R/hr.

"Since the construction, operating conditions and environmental conditions of the non-examined portion of the welds are identical to the examined portions, it is reasonable to apply satisfactory results from the examined to the non-examined portions.

"The pressure boundary passed the required preservice hydrostatic and first interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Revision 0 of this relief request, which requested the same relief for the subject welds for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. 75334, dated 2/14/92).

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience without related leakage indications, protection against brittle failure, the capability to ultrasonically examine at least 80% of the weld

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5 The licensee has provided drawings, figures, and tables in their ISI program that may not be included in this TLR, but whose content may be referred to in the licensee's basis or the INEEL evaluation sections of this TLR.

volume and perform complete surface examination on a continuing basis, and the previous approval of similar relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Licensee's Proposed Alternative Examination (as stated):

"Ultrasonic examinations, which meet all the requirements of ASME Section XI, 1989 Edition to the extent practical will be performed."

Evaluation: The Code requires 100% surface and volumetric examination of the subject Class 1 RPV nozzle safe-end welds. However, as shown in the drawing provided by the licensee, accessibility for interrogating these weld volumes is limited by the geometry of the taper on the safe end of the RPV nozzle. Some additional volumetric coverage of the subject welds might be achieved with customized transducers and techniques. However, high radiation dose rates in the areas of the welds ranging from 400 mr/hr up to as much as 1 R/hr pose an additional hazard. To meet the Code requirements, significant design modifications and/or highly specialized equipment to gain access for examination would be required. Imposition of the Code requirements would result in a considerable burden on the licensee.

The licensee has completed 100% surface examination and a significant portion of the Code required volumetric examination (greater than 80%) for each of these safe-end to safe-end extension welds. Therefore, any existing patterns of degradation, if present, would have been detected and reasonable assurance of the structural integrity has been provided.

Based on the impracticality of meeting the Code volumetric coverage requirements for the subject examination areas, and the reasonable assurance provided by the examinations that can be completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

O. Request for Relief No. IR-025, Rev. 1, Examination Category B-K-1, Item B10.10, Class 1, Integrally Welded Support Attachments

Code Requirement: Examination Category B-K-1, Item B10.10 requires 100% surface or volumetric examination of the integral attachment welds for Class 1 piping as defined by Figure IWB-2500-13, 14, and 15.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from performing surface examination to the extent required by the Code for integral attachment welds 1B21-G101A-WA, 1B21-G101B-WA, 1B21-G101C-WA, and 1B21-G101D-WA.

The Licensee stated:

> "VT-1 examinations will be performed, to the extent and frequency required by Table IWB-2500-1, in lieu of surface examinations."

Licensee's Basis for Requesting Relief (as stated):

> "The welded attachments identified in the attached table [attached to the licensee's ISI program submittal] are pipe lugs within large and complicated guide supports for the 26" main steam piping. Disassembly (and the subsequent reassembly) of the guides to provide access for the required surface exams requires over 320 man-hours for each guide in a general radiation areas of approximately 10 mr/hr. Without disassembly, access is sufficient for VT-1 examination (utilizing mirrors and/or a fiberscope) of the welds. Utilization of the VT-1 exams in lieu of surface exams maintains an adequate level of quality and safety without the hardships which would be incurred in disassembly.
>
> "The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. The subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.
>
> "The pressure boundary passed the required preservice hydrostatic and first interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.
>
> "Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Revision 0 of this relief request, which requested the same relief for the subject welds for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. 75334, dated 2/14/92).

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience without related leakage indications, protection against brittle failure, the capability to completely visually examine the welds, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Evaluation: The Code requires 100% surface or volumetric examination, as applicable, of the subject Class 1 integral attachment welds. However, these attachments are pipe lugs within large and complicated guide supports for the main steam piping. Access to these welds for surface examination requires disassembly and subsequent reassembly of the main steam line guide supports. The disassembly and reassembly process for the required surface examinations requires over 320 man-hours per guide in areas with general radiation of approximately 10 mr/hr. Requiring the licensee to perform these activities for these welds would constitute a considerable hardship on the licensee.

The subject attachment welds are accessible for VT-1 examination. This may be conducted utilizing mirrors and/or a fiberscope without disassembly of the guides. The licensee's proposed VT-1 examination of 100% of the surface of these welds in lieu of surface examinations should provide reasonable assurance of structural integrity.

The licensee has provided information to support the determination that the Code requirement for 100% surface examination of the subject integral attachment welds presents a hardship without a compensating increase in safety; therefore, it is recommended that the proposed alternative, to perform visual VT-1 of the surfaces, be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

P. Request for Relief No. IR-026, Rev. 1, Examination Category C-C, Item C3.20, Class 2, Integrally Welded Support Attachments

Code Requirement: Examination Category C-C, Item C3.20 requires 100% surface examination of the integral attachment welds for Class 2 piping as defined by Figure IWC-2500-5.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from performing surface examination to the extent required by the Code for integral attachment welds 1N11-H221-WA, 1N11-H222-WA,1N11-H223-WA, 1N11-H224-WA, 1N27-H0031-WA, and 1N27-H0032-WA.

The Licensee stated:

> "VT-1 examinations will be performed, to the extent and frequency required by Table IWB-2500-1, in lieu of surface examinations."

Licensee's Basis for Requesting Relief (as stated):

> "The welded attachments identified in the attached table are pipe lugs within large and complicated guide supports for the 26" main steam and 20" feedwater piping. Disassembly (and the subsequent reassembly) of the guides to provide access for the required surface exams requires over 320 man-hours for each guide in a general radiation area of approximately 5 mr/hr. Without disassembly, access is sufficient for VT-1 examination (utilizing mirrors and a fiberscope) of the welds. Utilization of the VT-1 exams in lieu of surface exams maintains an adequate level of quality and safety without the hardships which would be incurred in disassembly.
>
> "The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. The subject welds were examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with the Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.
>
> "The pressure boundary passed the required preservice hydrostatic and first interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.
>
> "Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Revision 0 of this relief request, which requested the same relief for the subject welds for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. 75334, dated 2/14/92).

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience without related leakage indications, protection against brittle failure, the capability to completely visually examine the welds, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Evaluation: The Code requires 100% surface or volumetric examination, as applicable, of the subject Class 2 integral attachment welds. However, these attachments are pipe lugs within large and complicated guide supports for the main steam and feedwater piping. Access to these welds for surface examination requires disassembly and subsequent reassembly of the main steam or feedwater line guide supports. Disassembly and reassembly for the required surface exams requires over 320 man-hours per guide in areas with general radiation of approximately 5 mr/hr. Requiring performance of the surface examination for these welds would constitute a considerable hardship on the licensee.

The subject attachment welds are accessible for VT-1 examination. This may be conducted utilizing mirrors and a fiberscope without disassembly of the guides. The licensee's proposed VT-1 examination of 100% of the surface of these welds in lieu of surface examinations provides reasonable assurance of structural integrity.

The licensee has provided information to support the determination that the Code requirement for 100% surface examination of the subject integral attachment welds presents a hardship without a compensating increase in safety; therefore, it is recommended that the proposed alternative, to perform a visual VT-1 examination, be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

Q. Request for Relief No. IR-027, Rev. 1, Examination Category D-B, Item D2.20, Class 3, Integral Attachments: Component Supports and Restraints

Code Requirement: Examination Category D-B, Item D2.20 requires visual (VT-3) examination of the integral attachment welds for Class 3 piping as defined by Figure IWD-2500-1.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from performing visual (VT-3) examination to the extent required by the Code for integral attachment welds 1R45-A003A-WA, 1R45-A003BA-WA, and 1R45-A005-WA.

The Licensee stated:

> "At the time of the scheduled Category F-A visual examinations of the day tank anchors, the Pyrocrete covering their integral attachments will be examined for conditions which could indicate structural degradation of the buried integral attachment welds."

Licensee's Basis for Requesting Relief (as stated):

> "The structural integrity of the pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. All welds were inspected in accordance with the appropriate Code requirements. Weld techniques and welders were qualified in accordance with Code requirements and materials were purchased and traced in accordance with he appropriate Code and NRC requirements and guidelines.
>
> "The integrally attached (welded) anchors on the fuel oil day tanks are buried in fire retardant Pyrocrete in order to meet the PNPP fire protection program requirements per 10CFR50 Appendix R, and Branch Technical position APCSB 9.5-1, Appendix A (see PNPP USAR Appendix 9A, Section 90A.5(D) (2) (1)). Pyrocrete is a hard, rigid material. When applied, it is considered as a permanent feature of the system to endure through the life span of the facility. To remove this material from the day tanks would require cutting and chipping.
>
> "Complete examinations meeting the requirements of the ASME Code Section XI, Category F-A, are performed on the accessible portion of two of the day tank component supports. At the time of the support exams,.the Pyrocrete covering their integral attachments is examined for any condition which might indicate that their integral attachments are structurally degraded (i.e., severely cracked or missing Pyrocrete, support detached from component, etc.). First interval examinations produced acceptable results with no visible signs of structural degradation.

"The pressure boundary passed the required preservice hydrostatic and first interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

"Revision 0 of this relief request, which requested the same relief for the subject welds for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. M84418, dated 2/24/94)

"In summary, because of acceptable initial condition, successful code hydrotest and operating experience without related leakage indications, the capability to visually examine the Pyrocrete for indications of degradation of the underlying attachment welds, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Evaluation: The Code requires visual VT-3 examination of the subject Class 3 integral attachment welds. However, these integrally welded attachments on the fuel oil day tanks are encased in fire retardant Pyrocrete® according to fire protection program requirements. Pyrocrete® is a hard, rigid material and is considered to be a permanent feature of the system and should endure through the life span of the facility. To remove this material from the day tanks would require cutting and chipping to allow inspection then re-application to meet fire protection requirements. Therefore, requiring performance of the VT-3 examination for these welds would constitute a considerable hardship on the licensee.

The licensee proposes that concurrent with the scheduled visual examinations of the day tank anchors, the Pyrocrete® covering their integral attachments will be examined for conditions which could indicate structural degradation of the buried integral attachment welds. This examination provides reasonable assurance of structural integrity.

The licensee has provided information to support the determination that the Code requirement for visual (VT-3) examination of the subject integral attachment welds presents a hardship without a compensating increase in quality and safety; therefore, it is recommended that relief be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

R. Request for Relief No. IR-029, Rev. 1, Examination Category B-J, Items B9.11 and B9.12, Class 1, Circumferential Butt and Longitudinal Welds on Piping NPS 4 or Greater

Code Requirement: Table IWB-2500-1, Examination Category B-J, Pressure Retaining Welds in Piping, Items B9.11 and B9.12, Note 1, under the states selection criteria for welds to be examined. The criteria point to selection of welds in locations subject to "high stress" and "high fatigue," terminal ends, dissimilar metal welds, and additional welds (if necessary) such that the total number of circumferential butt welds equals 25%.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from selecting welds in accordance with the criteria of Note 1 (referenced above) when structural interferences make that selection impractical. The 22 specific welds and their suggested replacements are identified in the Tables on pages 4 and 5 of 5 of Relief Request IR-029[6].

The Licensee Stated:

> "Welds of the same size and similar configuration, but that are not "high stress" welds, will be examined in place of the obstructed welds to maintain the 25% selection requirement."

Licensee's Basis for Requesting Relief (as stated):

> "The welds identified in the attached table are "high stress" welds, but examination is impractical as they are in radiation areas and are encased in jet impingement shields. The jet shields are elbow or tee-shaped structural steel enclosures around Reactor Recirculation (RR) System and Main Steam (MS) System piping welds. The smallest of the RR jet shields weighs over 1600 lbs. and is assembled with 48 bolts. Each of the MS jet shields weighs over 2240 lbs. and is assembled with 180 bolts. The bolting for all of the jet shields is high strength, one time use, bolting that must be torqued to 10-16K. Disassembly, for inspection, and reassembly of these jet shields would be a labor-intensive effort with over 100 man-hours each. General area dose rates for the MS jet shield locations range from 20-50 mr/hr and contact dose rates for the RR piping beneath the RR jet shields range from 200-400 mr/hr. Therefore, removal of any of the jet shields would require significant dose expenditure.

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6 The licensee has provided drawings, figures, and tables in their ISI program that may not be included in this TLR, but whose content may be referred to in the licensee's basis or the INEEL evaluation sections of this TLR.

"The structural integrity of the piping pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III, and additionally by meeting the requirements of ASME Section XI during preservice inspections. The subject RR and MS welds were examined (prior to installation of the jet shields) in accordance

"With the appropriate Code requirements, weld techniques and welders were qualified in accordance with Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines. There were no reportable indications during preservice inspection. Additionally, the MS jet shields were removed in the first inspection interval (at considerable dose and monetary cost), the welds received inservice examinations, and they were found to be free of reportable indications.

"The pressure boundary passed the required preservice hydrostatic and first interval inservice pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998 without leakage indication attributable to the subject welds.

"Complete examinations meeting the requirements of the ASME Code Section XI have been performed on similar "high stress" welds within the RR and MS Systems where jet shields are not present or are easily removed, with satisfactory results. These welds are subject to the same operating and environmental conditions as the obstructed welds.

"Other RR and MS welds of the same size and configuration, but that are not "high stress" welds, will be examined in place of the obstructed welds. In accordance with ASME Research White Paper, "Risk-Based Alternative Selection Process for Inservice Inspection of LWR Nuclear Power Plant Components," (Library of Congress Catalog Number 94-71660) a recent industry survey, which included 50 nuclear units representing 733 cumulative years of operation, found that there is no apparent relationship between the type of welds selected for inspection (i.e., high design stress/fatigue welds versus low stress/fatigue welds) and the detection of flaws.

"Design, procurement and operational provisions against nil ductile failure of the subject welds remain as described in the Perry USAR.

"Revision 0 of this relief request, which requested the same relief for the subject welds for Perry's first 10-year inspection interval, was approved by the NRC (reference TAC No. M75334, dated 2/14/92).

"In summary, because of the dose burden, acceptable initial condition, successful Code hydrotest and operating experience without related leakage indications, the satisfactory examination of identical welds, the substitution of welds of similar size and configuration, protection against brittle failure, and the previous approval of the same relief it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Evaluation: The Code details specific selection criteria for welds to be examined. These criteria require examination of certain "high stress" welds. The "high stress" welds identified in the licensee's table are in radiation areas and are encased in jet impingement shields. The jet shields are elbow or tee-shaped structural steel enclosures around RR and MS system piping welds. The smallest of the RR jet shields weighs over 1600 lbs. and is assembled with 48 bolts. Each of the MS jet shields weighs over 2240 lbs. and is assembled with 180 bolts. The bolting for all of the jet shields is high strength, one time use bolting that must be torqued to 10-16K. Disassembly, for inspection, and reassembly of these jet shields would be a labor-intensive effort with over 100 man-hours each. General area dose rates for the MS jet shield locations range from 20-50 mr/hr and contact dose rates for the RR piping beneath the RR jet shields range from 200-400 mr/hr. Therefore, removal of any of the jet shields would require significant dose expenditure. Requiring disassembly and reassembly of the jet shields to allow examination of the subject welds in addition to the radiation exposure received by workers would constitute a significant hardship on the licensee. Therefore, performance of the surface and volumetric examination of the welds selected according to the Code selection criteria would constitute a considerable hardship on the licensee.

The licensee proposes to substitute the examinations of welds of the same size and similar configuration that are not "high stress" welds, in place of the obstructed welds required by the Code. The specific welds and their descriptions are included in the table attached to the relief request in their submittal. The proposed examination of similar welds provides reasonable assurance of structural integrity of the subject welds.

The licensee has provided information to support the determination that the Code requirement for selection of welds for inspection presents a hardship without a compensating increase in safety; therefore, it is recommended that the proposed alternative, to choose other similar welds for examination in lieu of those within installed jet shields, be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

S. Request for Relief No. IR-042, Rev. 0, Examination Category B-H, Item B8.10, Class 1, Reactor Vessel Bottom Head to Skirt

Code Requirement: Examination Category B-H, Item B8.10, requires 100% surface or volumetric examination of Class 1 RPV integral attachment welds as defined by Figures IWB-2500-13, 14, and 15.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from surface examination of the inside surfaces of the RPV bottom head to skirt attachment.

The Licensee Stated:

> "Surface examinations which meet all the requirements of ASME Section XI, 1989 Edition will be performed from the outside surface of the vessel to skirt weld. In lieu of performing the required surface examination of the inside surface of the vessel to skirt weld, ultrasonic examinations that will provide coverage of the inside surface will be performed."

Licensee's Basis for Requesting Relief (as stated):

> "Examination of the inside surface of the RPV bottom head to skirt attachment weld requires access inside the vessel skirt. Access is through an 18" x 24" manway and is considered a confined space entry. Once inside, rigid insulation panels must be disassembled and removed to provide access to the inside surface of the attachment weld. Then, within these tight confines, the weld surfaces must be mechanically cleaned of surface rust, dirt and scale. The dose rates inside the skirt (i.e., the bottom head area) range from 40 mr/hr to 100 mr/hr while the dose rates outside the skirt average about 5 mr/hr. Figure IR-042-1 depicts the skirt attachment weld configuration.
>
> "The structural integrity of the pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. The subject weld was examined in accordance with the appropriate Code requirements. Weld techniques and welders were qualified in accordance with Code requirements. Materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.
>
> "Code Case N-323, which has been annulled, previously allowed examination of the vessel to skirt weld from only the outside surface if the stress intensities at the inside surface of the weld did not exceed 80% of the Levels A, B, C, and D Service Limits (NB-3000) and the cumulative usage factor U [NB-3222.4(e)(5)] did not exceed 0.1. Perry's skirt weld met these requirements with a stress intensity of 23.4 KSI versus an allowable of 80.1 KSI and a usage factor of 0.456.

"Design, procurement and operational provisions to protect against nil ductile failure of the subject welds remain as described in the Perry USAR.

"For reactor vessel integral attachments that are configured like that of Figure IWB-2500-14, Note 4 of Table IWB-2500-1, Category B-H allows volumetric examination from the outside surface in lieu of surface examination. In a similar manner, Perry will supplement the outside surface examination of the vessel to skirt weld with ultrasonic examination. The supplemental ultrasonic examination will not cover the entire weld volume, but will provide coverage of the weld and heat affected zones at the inside surface. By performing all the vessel to skirt weld examinations from the outside surface, it is estimated that as much as 1 REM can be saved over the course of the inspection interval.

"In summary, because of the acceptable initial condition, low stress intensity and usage factor at the inside surface of the weld, protection against brittle failure, the capability to examine 100% of the required outside surface areas, and the performance of supplemental ultrasonic examinations it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Evaluation: The Code requires 100% surface or volumetric examination, as applicable, of the subject RPV integral attachment support skirt welds. Examination of the inside surface of these RPV bottom head to skirt attachment welds requires personnel access inside the vessel skirt. The area under the bottom head is considered a confined space and must be accessed through a manway. As shown on the drawing provided by the licensee, the rigid insulation panels affixed to the inside of the skirt must be disassembled and removed to provide access to the inside surface of the attachment weld. The interior weld surfaces must be mechanically cleaned of surface rust, dirt and scale prior to examination. The dose rates inside the skirt (i.e., the bottom head area) range from 40 mr/hr to 100 mr/hr. Dose rates outside the skirt average about 5 mr/hr. Therefore, requiring performance of the interior surface examination for these welds would constitute a considerable hardship on the licensee.

The licensee proposes to perform ultrasonic (UT) examinations of the subject weld volumes from the outside of the skirt to provide coverage of the inside surface in lieu of the interior surface examinations. This combination of OD surface and volumetric examinations from the outside of the skirt should detect significant patterns of degradation and provides reasonable assurance of the continued structural integrity of these welds.

The licensee has provided information to support the determination that the Code requirement for surface examination of the interior surface of the RPV bottom head to skirt attachment welds presents a hardship without a compensating increase in safety; therefore, it is recommended that the alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

T. Request for Relief No. IR-043, Rev. 0, Examination Category B-M-1, Item B12.30, Class 1, Valve Body Welds (valves less than NPS 4)

Code Requirement: Examination Category B-M-1, Item B12.30, requires 100% surface examination of the valve body welds for valves less than NPS 4 as defined by Figure IWB-2500-17.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from code required surface examination of the valve body welds for valve IG33-FI0I.

The Licensee Stated:

> "In lieu of categorizing the IG33-FI0I valve in a group by itself, it will be grouped with the IG33-FI00 and IG33-FI06 valves. Of these 3 valves, IG33-FI00 has exhibited the lowest contact dose rates and will be the valve selected for examination in accordance with Note 3 of Table IWB-2500-1, Category B-M-1. Also in accordance with the table, the 4" body weld of IG33-FI00 will receive a volumetric examination. In accordance with IWB-2430, should examination of the body weld of IG33-FI00 reveal indications exceeding the acceptance standards of Table IWB-3410- 1, the examinations will be extended to the IG33-FI06 and IG33-FI0I valves."

Licensee's Basis for Requesting Relief (as stated):

> "The subject valve is a 3" maintenance isolation valve within the Reactor Water Cleanup System. It is a Borg Warner gate valve with a forged body welded to a forged neck. The valve is located downstream of the reactor bottom head drain and has had contact dose rates ranging from 10 REM to in excess of 100 REM dependent upon system operational and flush status. As such, the valve represents a severe radiological hazard and it is heavily shielded during refueling outages. It is the only 3" maintenance isolation valve in the Reactor Water Cleanup System. As such, and interpreting Note 3 of Table IWB-2500-1, Category B-M-1 literally, it is in a group by itself and its body weld requires examination.

"The structural integrity of the pressure boundary was demonstrated during construction by meeting the requirements of the ASME Code Section III. The subject weld was examined in accordance with the appropriate Code requirements, weld techniques and welders were qualified in accordance with Code requirements, and materials were purchased and traced in accordance with the appropriate Code and NRC requirements and guidelines.

"The pressure boundary passed the required hydrostatic test and first interval inservice system pressure tests, and has operated for a total of about 2,662 equivalent full power days between November 1987 and March 1998, without leakage indication attributable to t-he subject weld.

"Design, procurement and operational provisions against nil ductile failure of the subject weld remain as described in the Perry USAR.

"There are two other maintenance isolation valves within the Reactor Water Cleanup System that are also Borg Warner gate valves with welded necks. They are IG33-F100 and IG33-FI06. At 4", they are only slightly different in size than the IG33-FI0I valve. The contact dose rates on these valves are considerably less than those of the IG33-FI0I valve. Therefore, in lieu of categorizing the IG33-FI0I valve in a group by itself, it will be grouped with the IG33-F100 and IG33-FI06 valves. Of these 3 valves, IG33-FI00 has exhibited the lowest contact dose rates and will be the valve selected for examination in accordance with Note 3 of Table IWB-2500-1, Category B-M-1. Also in accordance with the table, the 4" body weld of IG33-FI00 will receive a volumetric examination. In accordance with IWB-2430, Additional Examinations, should examination of the body weld of IG33-FI00 reveal indications exceeding the acceptance standards of Table IWB-3410-1, the examinations will be extended to the IG33-FI06 and IG33-FI0I valves.

"In summary, because of the acceptable initial condition, successful preservice hydrotest and first interval inservice pressure tests, protection against brittle failure, and the ability to fully examine another valve that is of essentially the same design, manufacturer and function it is concluded that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety."

Evaluation: The Code requires 100% surface examination of the body welds for the subject valve. This 3" valve is for maintenance isolation of a portion of the Reactor Water Cleanup (RWCU) system. It is a Borg Warner gate valve with a forged body welded to a forged neck. It is located downstream of the reactor bottom head drain. This valve presents extremely high contact dose rates and poses a severe radiological hazard to examiners. Table IWB-2500-1, Category B-M-1, Note 3 requires that this valve be grouped by itself and therefore, its body weld requires examination. Requiring

performance of surface examination for these valve body welds would constitute a considerable hardship on the licensee.

The licensee proposes to group this valve with two similar valves in the RWCU system, valves IG33-F100 and IG33-FI06. These valves are slightly larger at 4" in diameter. Valve IG33-F100 exhibits the lowest contact dose rate so it would be selected for surface examination. Additionally, the body weld of IG33-F100 will be examined volumetrically. Corrective actions will be taken according to the Code requirements if indications are revealed and valves IG33-F101 and IG33-FI06 would be examined as required. The licensee's proposal to group these valves to perform surface and volumetric examinations as described on IG33-F100, in combination with the Code-required VT-2 pressure tests, provides reasonable assurance of structural integrity and an adequate alternative to the Code requirements.

The licensee has provided information to support the determination that the Code requirement for surface examination of valve body welds for valve IG33-FI0I presents a hardship without a compensating increase in safety; therefore, it is recommended that the alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

U. Request for Relief No. PT-001, Rev. 1, System Pressure Tests - Test Condition Holding Time Prior to VT-2 Examinations of Certain Class 2 Systems/Components

Code Requirement: Subsection IWC-5210(a)(2) requires that systems required to operate during normal plant operation be pressure tested during a system inservice test. IWA-5213(c) requires no holding time prior to system inservice tests provided the system has been in operation for at least 4 hours.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(i), the licensee requested to substitute IWA-5213(a) for IWA-5213(c) and IWB-5210(a)(1) for IWC-5210(a)(2) for examination of Class 2 systems/components attached to the reactor coolant system (RCS) pressure boundary that are not equipped with either pressure or test isolation provisions as listed in the licensee's ISI program table.

The Licensee Stated:

"For those Class 2 systems/components attached to the Reactor Coolant Pressure Boundary (Class 1) which are not provided with either pressure or test isolation, pressure testing will be conducted in accordance with IWA-5213(a) and IWB-5210(a)(1) in lieu of IWA-5213(c) and IWC-5210(a)(2)."

Licensee's Basis for Requesting Relief (as stated):

"Numerous components attached to the reactor coolant pressure boundary are covered by the provisions of 10 CFR 50.55a(c) Reactor Coolant Pressure Boundary. The following excerpt from 10 CFR 50a(c) is provided:

"(2) Components which are connected to the reactor coolant system and are part of the reactor coolant pressure boundary as defined in Section 50.2 need not meet the requirements of paragraph (c)(1) of this section, Provided:

"(i) In the event of postulated failure of the component during normal reactor operation, the reactor can be shut down and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system; or

"(ii) The component is or can be isolated from the reactor coolant system by two valves in series (both closed, both open, or one closed and the other open). Each open valve must be capable of automatic actuation and, assuming the other valve is open, its closure time must be such that, in the event of postulated failure of the component during normal reactor operation, each valve remains operable and the reactor can be shut down and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system only.

"The piping systems and their associated components connected to the reactor coolant pressure boundary and less than 1 inch in diameter were constructed to the requirements of ASME Code, Section III, Subsection NC, and identified as Safety Class 2 for inservice inspection. The associated components and component parts are identified by valve number and listed below. These piping systems shall be pressurized during the Class 1 reactor coolant pressure boundary System Leakage Test and a VT-2 Visual Examination will be performed. The System Leakage Test frequency and pressure will be that required for a Class 2 System Inservice Test. Although the system will not have been in operation for four hours prior to commencing the examinations, the time required to bring the reactor coolant system up to test pressure will allow for the detection of leakage.

Within ASME Section XI the test conditions (i.e., pressure, temperature and hold time) between the reactor coolant pressure boundary and other safety systems are different. Although there are differences, all the system pressure tests ensure leak tightness. Therefore, the substitution of IWA-5213(a) for

IWA-5213(c) and the substitution of IWB-5210(a)(1) for IWC-5210(a)(2) satisfies the intent of the Code.

> "The NRC (reference TAC No. M75334, dated 2/14/92) approved revision 0 of this relief request, which requested the same relief for Perry's first 10-year inspection interval."

Evaluation: IWA-5213(c) states that a system inservice test requires no holding time, provided the system has been in operation for at least 4 hours. IWC-5210(a)(2) requires a system pressure test conducted during a system inservice test (IWA-5211(c)) for those systems required to operate during normal plant operations. The licensee has proposed to use the requirements of IWB-5210(a)(1) in lieu of the requirements of IWC-5210-(a)(2). IWB-5210(a)(1) requires the use of system leakage test, in accordance with IWA-5211(a). IWA-5213(a) states that a system leakage test requires no holding time after attaining test pressure and temperature conditions.

The system inservice test can be performed without a holding time provided the system has been in operation for at least four hours. It is the opinion of the INEEL staff that the four hour operation time is similar to the hydrostatic test four hour hold time requirements. The purpose of the hold time is to allow system leakage, if present, to penetrate through insulated portions of the system, facilitating visual detection of leakage. The proposed system leakage test requires no holding time after attaining test pressure and temperature. System leakage, if present, may not have time to penetrate insulated portions of the system. Thereby, visual detection of leakage may not be possible. Therefore, it is the INEEL staff's opinion that the licensee's proposed alternative does not provide an acceptable level of quality as the code requirements and the proposed alternative should not be authorized.

V. Request for Relief No. PT-006, Rev. 1, Use of Code Case N-546, Alternative Requirements for Qualification of VT-2 Examination Personnel, Section XI, Division 1

Code Requirement: Section XI, IWA-2300, requires that personnel performing VT-2 visual examinations be qualified in accordance with comparable levels of competency as defined in ANSI N45.2.6.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed to use Code Case N-546 in lieu of the requirements of IWA-2300 for VT-2 visual examination personnel. The licensee also committed to provide for consistent, quality VT-2 visual examinations, by performing the examinations using standard procedures and to review, evaluate, and document the VT-2 visual examination results on the examination records.

The Licensee Stated:

> "CEI proposes to perform VT-2 examinations utilizing personnel qualified in accordance with the provisions of Code Case N-546 in lieu of personnel who are qualified and certified to comparable levels of qualification as defined in SNT-TC-IA. The qualification provisions specified in Code Case N-546 are as follows:
>
> > "(1) Personnel must have at least 40 hours of plant walkdown experience, such as that gained by licensed and nonlicensed operators, local leak rate personnel, system engineers, and inspection and nondestructive examination personnel.
> >
> > "(2) Personnel must receive at least 4 hours of training on Section XI requirements and plant specific procedures for VT-2 examination.
> >
> > "(3) Personnel must meet the vision test requirements of IWA-2321, 1995 Edition.
>
> "Training and qualification of VT-2 personnel will be documented and the records will be maintained.
>
> "Additionally, to provide for consistent, quality VT-2 visual examinations, the examinations will be performed using standard procedures. An independent review and evaluation of the VT-2 visual examination results will be performed and documented on the examination records."

Licensee's Basis for Requesting Relief (as stated):

> "The use of Code Case N-546 will eliminate the need to treat VT-2 examination personnel as NDE personnel. The Abstract of SNT-TC-LA states, "This standard applies to personnel whose specific tasks or jobs require appropriate knowledge of the technical principals underlying nondestructive testing (NDT) methods for which they have responsibilities within the scope of VT-1 and VT-3 examination methods." VT-2 requires no special knowledge of technical principals underlying its performance. It is simply the straight forward examination for leakage. No special skills or technical training are required in order to observe water dripping from a component or bubbles forming on a joint

wetted with leak detection solution. As such, qualification in accordance with the provisions of the Code Case does not present any reduction in quality or safety. In fact, it will facilitate the qualification of those personnel most familiar with the walkdown of plant systems.

"Additionally, there is a cost benefit of approximately $12,000 per operating cycle realized by eliminating the formal certification of Perry and contracted VT-2 examination personnel.

"In summary, approval of this request would be in accordance with 10 CFR 50.55a(a)(3)(i), as compliance with Code Case N-546 will provide an essentially equivalent alternative to the IWA-2300 requirements. It would also provide relief from the administrative and financial burdens of certification, which do not provide any compensating increase in the level of quality or safety."

Evaluation: The Code requires that VT-2 visual examination personnel be qualified to levels of competency comparable to those identified in ANSI N45.2.6. The Code also requires that the examination personnel be qualified for near and far distance vision acuity. In lieu of the Code requirements, the licensee proposed to implement Code Case N-546 for personnel performing VT-2 visual examinations.

The qualification requirements in Code Case N-546 are not significantly different from those for VT-2 visual examiner certification. Licensed and non-licensed operators, local leak rate personnel, system engineers, and inspection and nondestructive examination personnel typically have a sound working knowledge of plant components and piping layouts. This knowledge makes them acceptable candidates for performing VT-2 visual examinations.

In addition to meeting the requirements contained in Code Case N-546, the licensee has committed to perform the examinations using standard procedures and to perform an independent review and evaluation of the VT-2 visual examination results. The results of the review will be documented on the examination records. Based on a review of Code Case N-546 and the additional commitments made by the licensee, the INEEL staff believes that the proposed alternative to the Code requirements will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's request to implement Code Case N-546 with the additional commitments be authorized

pursuant to 10 CFR 50.55a(a)(3)(i). Use of this Code Case should be authorized until such time as the Code Case is published in a future revision of Regulatory Guide 1.147. At that time, if the licensee intends to continue to implement this Code Case, the licensee is to follow all provisions in Code Case N-546 with limitations issued in Regulatory Guide 1.147, if any.

W. Request for Relief No. PT-007, Rev. 1, IWD-5223(f), Pneumatic Testing of Class 3 Safety/Relief Valve Discharge Lines to Suppression Pool

Code Requirement: Section XI, IWD-5223(f), requires pneumatic testing at a pressure that is 90% of the pipe submergence head of water for safety and relief valve piping that discharges into the containment pressure suppression pool in lieu of system hydrostatic test for the demonstration of leakage integrity.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee has requested to implement an alternative in lieu of performing the required pneumatic test of Class 3 safety or relief valve piping that discharges into the suppression pool.

The Licensee Stated:

> "As an alternative to the hydrostatic/pressure test requirement of section IWD-5223(f), CEI proposes to perform the hydrostatic/pressure test requirements of section IWD-5223(d). Confirmation of adequate flow in accordance with section IWD-5223(d) will satisfy the inspection requirements of: extent of examination (pressure retaining material), examination method (visual, VT-2), and frequency of examination (each inspection interval)."

Licensee's Basis for Requesting Relief (as stated):

> "ASME Code, Section XI, Table IWD-2500-1, requires hydrostatic testing of Class 3 pressure retaining components. For safety or relief valve piping which discharges into the containment pressure suppression pool, section IWD-5223(f) states that a pneumatic test (at a pressure of 90% of the pipe submergence head of water) that demonstrates leakage integrity shall be performed in lieu of system hydrostatic tests.
>
> "The reactor coolant system has a total of 19 safety/relief valve discharge lines. These lines are used to direct steam from the main steam lines to the suppression pool allowing removal of the latent heat through condensing of the steam within the suppression pool. The valve discharge piping and associated valves (i.e., vacuum breakers) are designated ISI Safety Class 3 from the

safety/relief valve discharge ports to the end of the submerged quenchers. Each line's multiple vacuum breakers (i.e., simple check valves) eliminate the pressure differential created between the drywell atmosphere and piping following a safety/relief valve actuation. Therefore, the discharge piping pressure retaining boundary is not leaktight.

"The safety/relief valves are routinely (i.e., each refueling outage) used during valve testing and expected to see service during unplanned plant transient conditions (i.e., reactor scrams). The proper operation of the relief system ensures the integrity of the piping to perform its design function.

"The Cleveland Electric Illuminating Company (CEI) has determined that performing hydrostatic testing results in a hardship without a compensating increase in the level of quality and safety. The following hardships would be encountered with the performance of hydrostatic testing in accordance with the Code. First, the hydrostatic test pressure conditions are unique to these discharge lines, and therefore, special test equipment will need manufacturing (e.g., blank flanges with test ports). Additionally, the VT-2 examination during the pressurization of the pneumatic test pressure boundary would include the application of leak checking solution (i.e., snoop) to over 35 welds and mechanical connections for each of the 19 discharge lines. To perform the snooping approximately 35 feet of scaffolding would be needed for each of the 19 discharge pipes within the drywell structure. Portions of the drywell scaffolding would have to be erected in high radiation fields. The total effect on radiation exposure can not be easily estimated due to the massive task being undertaken. However, dose calculations have been estimated as an additional 5.0 man rem, for the staging (i.e., scaffolding) work, for the examinations and test equipment, for the performance of the VT-2 exams, and for restoration. Therefore, preparation and performance of a system hydrostatic tests at 90% of submergence pressure (i.e., approximately 5.4 psig) involves considerable time, expense, manpower and radiation dose without a compensating increase in the level of quality or safety.

"Since the 1989 Edition, the ASME Subcommittee XI concluded that the requirements of section IWD-5223(f) served no useful purpose and the pressure test has been exempted. Section XI, section IWD-5223(f), 1992 Addenda, states that open ended Class 3 safety or relief valve discharge lines including safety and relief valve piping which discharges into the containment pressure suppression pool, are exempt from hydrostatic test.

"Industry experience has demonstrated that inservice leaks are not discovered as a result of hydrostatic pressures propagating an existing flaw through-wall. Also, since the purpose of these discharge lines is to direct steam flow, and not provide a leaktight barrier, determining the location of flaws would not provide a compensating increase in the level of quality and safety.

"The safety/relief valve discharge lines are basically open ended piping, that function to direct the steam flow to the quencher, and are not a leaktight

pressure retaining boundary. Therefore, rather than performing the 90% submergence pressure test of Section XI, section IWD-5223(f), 1989 Edition, performing the requirements for open ended portions of discharge lines as stated in section IWD-5223(d) of the same Code Edition would be appropriate. Section IWD-5223(d) requires confirmation of adequate flow during system operation in lieu of performing system hydrostatic testing."

Evaluation: The Code requires pneumatic testing at a pressure that is 90% of the pipe submergence head of water for safety and relief valve piping that discharges into the containment pressure suppression pool for demonstration of leakage integrity. The subject system consists of 19 safety/relief valve discharge lines that direct reactor steam below the surface of the water level in the suppression pool for quenching. Vacuum breaker valves are installed in the downcomer lines above the water level to prevent the development of a vacuum in the lines as the residual steam condenses following a discharge.

Testing the system according to the Code would entail manufacturing and installation of special blank flanges with test ports. Leak testing would then be an extensive effort for the over 35 welds and mechanical connections in each of the 19 discharge lines. It would also entail construction of scaffolding for each of the discharge pipes within the drywell structure and expenditure of radiation dose. Therefore, this testing would involve considerable time, manpower and radiation dose, and represents a significant hardship for the licensee.

The licensee proposes to perform system flow tests in accordance with IWD-5223(d), in lieu of the pneumatic tests required by the Code for the subject Class 3 discharge lines. The licensee has stated that these lines are routinely flow-tested during relief valve testing that normally occurs at each refueling outage. Given the hardship that would be incurred for a pneumatic test, and the assurance of operational readiness that can be verified during a system flow test, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

3. CONCLUSION

The INEEL staff evaluated the licensee's submittal and concluded that certain

examinations cannot be performed to the extent required by the Code at the Perry Nuclear Power Plant, Unit 1. For Requests for Relief Nos. IR-002, IR-004, IR-005, IR-007, IR-009, IR-0012, IR-0013, IR-0015, IR-0018, IR-0019, and IR-0024, the licensee has demonstrated that the Code examination coverage requirements are impractical. Therefore, pursuant to 10 CFR 50.55a(g)(6)(i), it is recommended that relief be granted for these requests, provided the licensee comply with the specific alternative conditions described for each evaluation, if present.

For Request for Relief Nos. IR-001, IR-0021, IR-0025, IR-0026, IR-0027, IR-0029, IR-0042, IR-0043, and PT-007, the licensee has demonstrated that the Code examination coverage requirements are a hardship without a compensating increase in quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), it is recommended that the proposed alternatives be authorized.

Request for Relief No. IR-023 regards inservice inspection requirements for snubbers. This request has been forwarded to NRC MEB for evaluation and will be assessed under separate cover.

The INEEL staff concludes that the licensee's proposal in Request for Relief No. PT-006, to implement ASME Code Case N-546, provides an equivalent or acceptable level of quality as the code requirements. Therefore, it is recommended that the alternative be authorized according to 10 CFR 50.55a(a)(3)(i). Use of this Code Case should be authorized until such time as the Code Case is published in a future revision of Regulatory Guide 1.147. At that time, if the licensee intends to continue to implement this Code Case, the licensee is to follow all provisions in Code Case N-546 with limitations issued in Regulatory Guide 1.147, if any.

The INEEL staff concludes that the licensee's proposal in Request for Relief No. PT-001 does not provide an equivalent or acceptable level of quality. Therefore, it is recommended that the proposed alternative should not be authorized.

PACKAGE DIVIDER

DRF-003