February 10, 1987

Docket Nos. 50-271

Mr. R. W. Capstick
Licensing Engineer
Vermont Yankee Nuclear Power
Corporation
1671 Worcester Road
Framingham, Massachusetts 01701

Dear Mr. Capstick:

By letter dated November 27, 1984, Vermont Yankee Nuclear Power Corporation (VYNPC) submitted its inservice inspection/inservice testing (ISI/IST) program for the second inspection interval for Vermont Yankee Nuclear Power Station. By letters dated December 30, 1985 and August 1, 1986 VYNPC submitted responses to NRC staff questions concerning the ISI portion of the program. We have completed our review of the ISI portion of the program. As indicated in the enclosed Safety Evaluation (SE), we have concluded that certain of the relief requests should be granted, some conditionally granted and others denied. We have also concluded that relief is not required for some of the items for which relief was requested. The enclosed SE provides the details of of our review and Attachment 1 to the SE provides a summary tabulation of our conclusions concerning each request.

We have determined pursuant to 10 CFR Part 50.55a(g)(6)(i), that the granting of this relief is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. In making this determination, we have given due consideration to the burden that could result if these requirements were imposed on the facility.

We have determined that the ISI portion of the program is acceptable for implementation. We have not completed our review of the IST portion of the program. However, by letter dated January 5, 1987 we have requested that you provide additional information in order for us to complete our review of IST.

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It would facilitate our review, if in the future you would separate submittals pertaining to inservice inspection from submittals pertaining to inservice testing.

Sincerely,

Original signed by
Daniel R. Muller

Daniel R. Muller, Director
BWR Project Directorate #2
Division of BWR Licensing

Enclosure:
Safety Evaluation

cc: with Enclosure
See next page

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE INSPECTION PROGRAM AND REQUESTS FOR RELIEF

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO.: 50-271

INTRODUCTION

The Technical Specification for the Vermont Yankee Nuclear Power Station states that inservice examination of ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission. Some plants were designed in conformance to early editions of this Code Section, consequently certain requirements of later editions and addenda of Section XI are impractical to perform because of the plants' design, component geometry, material of construction or the need for extensive temporary modifications and the resultant substantial exposure to plant personnel. Regulation 10 CFR 50.55a(g)(6)(i) authorizes the Commission to grant relief from those requirements upon making the necessary findings.

By letters dated November 27, 1984, December 30, 1985, and August 1, 1986 Vermont Yankee Nuclear Power Corporation (licensee) submitted its inservice inspection program, and additional information related to requests for relief from certain Code requirements determined to be impractical to perform on the Vermont Yankee Nuclear Power Station during the second inspection interval. The program is based on the requirements of the 1980 Edition through Winter 1981 Addenda of Section XI of the ASME Code, and remains in effect until November 30, 1992 unless the program is modified or changed prior to the interval end date.

EVALUATION

The inservice inspection program and the requests for relief from the requirements of Section XI that have been determined to be impractical to perform have been reviewed by the staff's contractor, Science Applications International Corporation. Presented in attachment 2 is the contractor's Technical Evaluation Report, which is their evaluation of the licensee's inservice inspection program plan and relief requests. Also included in the TER are their conclusions and recommendations. The staff has reviewed the TER and agrees with the evaluations and conclusions. A summary of the relief request determinations made by the staff is presented in the tables of attachment 1. The granting of relief is based upon the fulfillment of any commitments made by the licensee in its basis for the relief request and the alternate proposed examinations.

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Q PDR

CONCLUSION

Based on the review of the inservice inspection program and relief requests summarized, the staff concludes, that relief granted from the code-required examination and testing requirements and with the alternate methods imposed through this document, will still provide reasonable assurance of the piping and component pressure boundary and support structural integrity. The staff has determined that pursuant to 10 CFR 50.55a(g)(6)(i) granting relief where the Code requirements are impractical is authorized by law and will not endanger life or property, or the common defense and security. The staff has also concluded that granting relief is otherwise in the public interest considering the burden that could result if the requirements were imposed on the facility. During the review of the licensee's inservice inspection plan the staff has not identified any significant misinterpretation or omissions of Code requirements. Thus the inservice inspection plan is acceptable for implementation.

Principal Contributor: B. Turovlin

Dated: February 10, 1987

Attachments:
As stated

ATTACHMENT 1

TABLE 1

CLASS 1 COMPONENTS

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
B-1	B1.11	B-A	Reactor Vessel	Circumferential Shell welds	Volumetric	None for B1.11	Granted See Note 1
	B1.12			Longitudinal Shell Welds	Volumetric	Accessible Length of B1.12 100% Each Inspection Interval	
B-3	B8.10	B-H	Reactor Vessel	Integrally Welded attachment	Volumetric or Surface as applicable	Accessible portion of vessel support skirt exam by volumetric and surface from outside skirt enclosure. Upper portion of stabilzer brackets exam by surface	Granted

TABLE 1

CLASS 1 COMPONENTS (CONTINUED)

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500. EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
B-4	B9.11& B9.21	B-J	Piping-Containment Penetration Pipe-to-Flued Head welds. Main steam A, B, C & D Feedwater A and B RHR Supply RHR Return B and C HPCI Steam Supply RCIC Steam Supply Core Spray A and B	Circumferential Welds, B9.11: Nominal Pipe Size 4 in. & Greater, B9.21:	B9.11: Surface & Volumetric B9.21: Surface	First accessible process pipe weld outside containment. Volumetric once interval. Visual during hydrostatic within containment.	Granted
B-5	B9.11	B-J	Piping Main Steam Line Welds A4 and D4	Nominal Pipe Size 4 in. & Greater, B9.11: Circumferential Welds,	Surface & Volumetric	Visual during Hydrostatic test Volumetric to extent practical if supports removed	Granted

TABLE 2

CLASS 2 COMPONENTS

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
C-1	C2.20	C-B	Nozzle in Vessels > ½ in. Nom. Thickness				
	C2.21		RHR Heat Exchanges	Nozzle-to-Shell	Surface and Volumetric	Surface and Volumetric on reinforcement saddle-to-nozzle and saddle-to-vessel	Granted
C-2	C3.40	C-C	Piping	Integrally Welded attachments.	Surface	Visual	Granted see note 2
H-1	C7.21	C-H	Pressure Retaining components	Suction and Discharge piping from Torus to fixed shutoff valve. RHR, CS, HPC1, RCIC systems	Visual VT-2 During system Hydrostatic Pressure Test.	Visual during monthly surveillance testing	Relief not needed.
H-2	C7.21	C-H	Pressure Retaining Components	Piping between valves V11-11 and V11-41 SLC pumps	Visual, VT-2 during system Hydrostatic pressure	Visual during monthly surveillance testing and operator rounds.	Granted

TABLE 2

CLASS 2 COMPONENTS (continued)

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
H-3	C7.21	C-H	Pressure Retaining Components	Piping between valves V11-15 and V11-16 and connection of V11-16 to V11-36	Visual VT-2 during hydrostatic pressure test at 1.10 times system pressure.	Test connect-Class 1 hydro	Granted
H-4	C7.21	C-H	Same as above	Piping Radwaste Piping to RHR system from reactor bldg. floor drain downstream valves 319A to D	Same as above	Containment isolation portions	Granted
H-5	C7.21	C-H	Same as above	Piping Radwaste Drywell Sump Pump Discharge from penetrations X-18 and X-19 to valves AO-83 and AO-95	Same as above	Same as above	Denied. Insufficient Justification

TABLE 2

CLASS 2 COMPONENTS (continued)

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
H-6	C7.21	C-H	Pressure Retaining Components	Piping line CUW-55 between valves V12-63 and V12-62	Visual, VT-2 during system hydro static pressure test at 1.10 times Systems Pressure	Line CUW-55 between valves V12-62 will be included in Class 3 1.23 P_{sv} test of line CUW-54	Denied. Insufficient Justification
H-7	C7.21	C-H	Same as above	Piping down-stream of HPCI MOV23-19 and RCIC MOV13-21	Same as above	Subject lines tested during feedwater system test.	Relief not needed
H-8	C7.21	C-H	Pressure Retaining Components	Piping-Service and Instru-ment Air Systems	Same as above	Periodic pneumatic leak rate test	Denied. Insufficient Justification
H-9	C7.21	C-H	Same as above	Piping Atmos-phere Control system	Same as above	Containment isolation portions of system tested at 44 psig during type "A" leak rate test every 33 1/3 years	Denied. Insufficient Justification

TABLE 2

CLASS 2 COMPONENTS (continued)

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
H-10	C7.21	C-H	Pressure Retaining Components	Piping-Containment Air Sampling System	Visual, VT-2 during system hydrostatic pressure test at 1.10 times system pressure	Containment isolation portions of system tested at 44 psig during type "A" leak rate test 3 1/3 years	Denied. Insufficient Justification
H-11	C7.21	C-H	Same as above	Piping-Air Dilution System containment penetration to second outboard isolation valve	Same as above	Same as above	Denied. Insufficient Justification
H-12	C7.21	C-H	Same as above	Piping-CRD water piping and hydraulic control units	Same as above	Substantial Portions of piping experience hydrostatic test at 1080 psig. Balance of system functions at 1040 1500 psig.	Denied.

TABLE 2

CLASS 2 COMPONENTS (continued)

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
H-13	C7.21	C-H	Pressure Retaining Components	Piping-Standby Gas Treatment System Containment purge lines	Visual, VT-2 during system hydrostatic pressure tests at system pressure	Containment isolation portion tested to 44 psig during type "A" leak rate test every 3 1/2 years	Denied. Insufficient Justification
H-16	C7.21	C-H	Same as above	Recirculation Pump Seal Purge System	Same as above	Same as above	Same as above
H-17	C7.21	C-H	Same as above	Condensate Storage Tank (CST) suction lines from MOVHCPI-17 and RCIC-18 to check valves	Same as above	Piping experiences constant static head 6-25 psig. Piping is visible during routine surveillance	Granted
H-19	C7.21	C-H	Same as above	RHR By pass line RHR-13H -13B between valves V10-69A -69B and V10-16A--16B	Same as above	Piping included in lower pressure pump suction hydrostatic test	Denied

TABLE 2

CLASS 2 COMPONENTS (continued)

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
H-20	C7.20	C-H	Pressure Retaining Components	CRD Scram Discharge lines	Visual, VT, during system pressure test	Manual scram not initiated. After all reactor scram events, visual for leaks	See Note 3
H-21	C7.21	C-H	Same as above	Same as above 89 3/4 in. lines between scram outlet valves and V13-112 manual valves	Visual, VT, during system hydro static test at 1.10 times system pressure	After all reactor scrams events, visual for leaks.	Granted
H-18	C7.21	C-11	Pressure Retaining Components	Turbine Steam Line System	Visual, VT-2 during system hydro static pressure test at 1.10 times system pressure	Piping will be included in 188 psig test of turbine casing and exhaust lines	Granted

TABLE 2

CLASS 2 COMPONENTS (continued)

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
			EXEMPTIONS				
Exemptions from examination of portions of following systems RCIC, SLC Sampling, CAD, HPCI, RWC, CRD, Radwaste, and RHR			Licensee Basis is exemptions are allowed by 1974 Edition Summer 1975 Addenda				Denied. Insufficient Supporting data of chemistry control

TABLE 3

CLASS 3 COMPONENTS

LICENSEE'S REQUEST NO.	IWB-2500-1 ITEM NO.	IWB-2500 EXAM CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATE EXAMINATION	RELIEF REQUEST STATUS
H-14	D1.10	D-A	Pressure Retaining Components	Piping Service Water return and service water supply to fire protection systems between valves V70-5A and 5B	Visual, VT-2 during system pressure test.	Operator Surveillance	Granted
H-18	D2.10	D-B	Pressure Retaining Components	Turbine Steam Line System	Visual, VT during system pressure test.	Piping will be included in 188 psig test of turbine casing and exhaust lines	Granted
H-15	D1.10	D-A	Same as above	Advanced off-gas (AOG) System guard beds and absorbers	Visual, VT during hydro static pressure test at 1.10 times system pressure	In leakage flow detected by instruments.	Granted

Note 1.

Relief is granted provided that the examination of the accessible Category B-A, Item B1.20 head welds is increased to achieve (1) an examination sample whose total weld length is equal to that required for the Category B-A, Items B1.11 and B1.12 welds for which relief was requested; or (2) 100% of the length of each accessible Category B-A, Item B1.20 weld, whichever is less.

Note 2.

Relief is granted provided that:

(a) the outermost welds at each end of each saddle are Code examined.

(b) All subject welds are visually examined during system pressure tests for evidence of leakage.

Note 3.

Relief is not granted from the performance of the Code-required functional tests. However, schedular relief is granted to perform the three tests any time during the interval, thus increasing the chance of actual reactor scrams occurring. Functional tests will include visual (VT-2) examination by a qualified inspector.

If at least three reactor scrams do not occur during the interval three manual scrams should be initated and the subject VT-2 examinations should be performed by the end of the interval.

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Science Applications International Corporation

SAIC-86/1633

TECHNICAL EVALUATION REPORT
SECOND INTERVAL INSERVICE INSPECTION PROGRAM
VERMONT YANKEE NUCLEAR POWER PLANT

Submitted to

U.S. Nuclear Regulatory Commission
Contract No. 03-82-096

Submitted by

Science Applications International Corporation
Idaho Falls, Idaho

November 1986

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CONTENTS

TECHNICAL EVALUATION REPORT
SECOND INTERVAL INSERVICE INSPECTION PROGRAM

VERMONT YANKEE NUCLEAR POWER PLANT

INTRODUCTION

This report evaluates requests for relief from certain examination and pressure test requirements of Section XI of the Boiler and Pressure Vessel Code* by the licensee, Vermont Yankee Nuclear Power Corporation (VYNPC), of the Vermont Yankee Nuclear Power Plant, a boiling water reactor. The relief requests cover the second 120-month inspection interval starting November 30, 1982. The Code of record referenced in 10 CFR 50.55a(b) is the 1977 Edition of Section XI of the ASME Boiler and Pressure Vessel Code with Addenda to Summer 1979. However, 10 CFR 50.55a(g)(4)(iv) allows updating the inservice inspection (ISI) program to subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b). As such, the requests are based upon the 1980 Edition with Addenda through Winter 1980.

The rest of this introduction summarizes (a) the scope of this report, (b) the previous review of relief requests by Science Applications International Corporation (SAIC),[1] and (c) the history of Vermont Yankee since the earlier review.[2-10]

The current revision to 10 CFR 50.55a requires that ISI programs be updated each 120 months to meet the requirements of newer editions of Section XI. Specifically, each program is to meet the requirements (to the extent practical) of the edition and addenda of the Code incorporated in the regulation by reference in paragraph (b) 12 months prior to the start of the current 120-month interval.

The regulation recognizes that the requirements of later editions and addenda of the Code might not be practical to implement at facilities because of limitations of design, geometry, and materials of construction of components and systems. Therefore, the regulation permits exceptions to impractical examination or testing requirements to be evaluated. Relief from these requirements can be granted, provided the health and safety of the public are not endangered, giving due consideration to the burden placed on the licensee if the requirements were imposed. This report only evaluates requests for relief dealing with inservice examinations of components and with system pressure tests relating to Vermont Yankee's second ISI interval. The inservice test programs for pumps and valves (IST programs) are being evaluated separately.

---

*Hereinafter referred to as Section XI or Code.

The current revision of the regulation also provides that ISI programs may meet the requirements of subsequent Code editions and addenda, incorporated by reference in paragraph (b) and subject to Nuclear Regulatory Commission (NRC) approval. Portions of such editions or addenda may be used, provided that all related requirements of the respective editions or addenda are met. If applicable, these are addressed on a case-by-case basis in the body of this report.

Finally, Section XI of the Code provides for certain components and systems to be exempted from its requirements. In some instances, these exemptions are not acceptable to NRC or are only acceptable with restrictions. As appropriate, these instances are also discussed in this report.

In a Technical Evaluation Report (TER) dated September 2, 1982,[1] and an Addenda dated November 1984,[2] SAIC evaluated relief requests for Vermont Yankee covering the last 60 months of the first inspection interval (November 30, 1977, to November 29, 1982). These requests were based on the 1974 Edition of the Code with Addenda through Summer 1975. On May 19, 1983, the NRC issued its formal Safety Evaluation Report (SER)[3] which included SAIC's TER as an appendix. Additional first interval relief requests were submitted on January 18, 1983.[4] In November 1984, SAIC issued a TER Addenda[2] evaluating the additional relief requests. On October 15, 1985,[5] the NRC issued an SER evaluating the additional relief requests, with SAIC's TER Addenda as an appendix.

The ISI program for the second interval, including relief requests, was submitted November 27, 1984.[6] On October 18, 1985,[7] and May 27, 1986,[8] the NRC requested additional information to complete the review of the relief requests. The information was furnished in letters dated December 30, 1985,[9] and August 1, 1986.[10] Reference 10 also withdrew two relief requests.

In response to Question 1 in Reference 8 which asked why relief requests B-2, H-2, H-4, H-7, and H-19 were not submitted in the first interval, the licensee responded in Reference 10 that Vermont Yankee was not required to implement a Section XI ISI program until January 30, 1980, approximately 70% into the first interval. VYNPC goes on to state that these new relief requests were submitted for the second interval, following additional evaluation and fine-tuning of the ISI program. Relief request B-2 has been withdrawn, and relief request H-7 is not required as noted in this report. However, it appears that relief requests H-2, H-4, and H-19 are still required for the first interval. The licensee should therefore formally notify the NRC per 10 CFR 50.55a(g)(5)(iv) of all outstanding first interval relief requests.

As a result of the above submittals, 29 second-interval relief requests have been identified as requiring disposition. These requests are evaluated in the following sections of this report.

Where relief is recommended in the following report section, it is done so on the assumption that the proposed alternative examination and all applicable Code examinations for which relief has not been requested will be performed on the subject component. Where additional examinations beyond proposed alternatives and Code requirements are deemed necessary, these are included as conditions for recommending relief.

The material included in the paragraphs titled Code Relief Request, Proposed Alternative Examination, and Licensee's Basis for Requesting Relief is quoted directly from the relief request except for minor editorial changes such as removing references to figures and tables not included in this report.

I. CLASS 1 COMPONENTS

A. Reactor Vessel

1. Relief Request B-1, Reactor Vessel Shell Welds, Category B-A, Items B1.11 and B1.12

Code Requirement

One circumferential and one longitudinal beltline region weld shall be volumetrically examined in accordance with Figure IWB-2500-1 and -2 once each interval. For each weld, the examination shall include essentially 100% of weld length. The selected welds shall be located at design structural discontinuities, if any, and be reexamined during successive intervals. Examinations may be performed at or near the end of the interval.

Code Relief Request

Relief is requested from examining the beltline region welds in the reactor vessel.

Proposed Alternative Examination

Accessible length of B1.12 longitudinal welds will be 100% examined during each inspection interval. In addition, the reactor vessel is subjected to a system leakage test before startup after each refueling outage, and to a hydrostatic pressure test at least once each inspection interval.

Licensee's Basis for Requesting Relief

With the exception of portions of the two longitudinal seam welds adjoining the vessel shell-to-flange weld, vessel shell welds are inaccessible due to mirror insulation/ bio-shield configuration. Insulation is not designed to be easily removable and only 8-1/2 in. of clearance exists between the outside of the insulation and the inside of the shield wall. Nozzle inspection ports do not provide sufficient access to reach shell welds.

Evaluation

Imposition of the Code requirements would necessitate the removal of portions of the biological shield and the permanently installed insulation to perform the required examination of the subject welds from the vessel exterior.

The reactor vessel is presently being monitored for radiation damage in the beltline region by a surveillance program that meets the intent of Appendix H, 10 CFR 50. Any changes in the fracture toughness properties of vessel material over its service lifetime would be detected and corrective action could be taken to minimize the risk of material failure.

Adhering to Category B-A Item numbers B1.11 and B1.12 Code requirements is impractical due to existing plant design and geometry. To maintain the extent of examination, however, an alternative inservice inspection program should be implemented. The volumetric examination of accessible head welds, Category B-A, Item B1.20 should be increased to achieve (1) an examination sample whose total weld length is equal to that required for the Category B-A, Items B1.11 and B1.12 welds for which relief was requested; or (2) 100% of the length of each accessible Category B-A, Item B1.20 weld, whichever is less. In addition, the visual examination for gross leakage as required by examination category B-P will be performed during each system pressure test. The visual and volumetric examination will provide adequate assurance of the reactor vessel weld integrity.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the welds discussed above, the Code requirements are impractical. It is further concluded that the alternative examination discussed above will provide necessary added assurance of structural reliability. Therefore, the following is recommended:

Relief should be granted from volumetric examination of the identified welds for the 10-year inspection interval provided that the examination of the accessible Category B-A, Item B1.20 head welds is increased to achieve (1) an examination sample whose total weld length is equal to that required for the Category B-A, Items B1.11 and B1.12 welds for which relief was requested; or (2) 100% of the length of each accessible Category B-A, Item B1.20 weld, whichever is less.

References

Reference 6.

2. Relief Request B-3, Reactor Vessel Integrally Welded Supports, Category B-H, Item B8.10

Code Requirement

Reactor vessel integrally welded attachments shall be volumetrically or surface examined as applicable in accordance with Figure IWB-2500-13, -14, and -15 during the first and second intervals. The examination is limited to attachment welds with a design thickness of 5/8 in. or greater. The examination shall include essentially 100% of the length of the weld to the reactor vessel, as applicable. One-hundred percent of the welding of each lug on the vessel is included in the examination.

Code Relief Request

Relief is requested from 100% volumetric or surface examination of the integrally welded reactor vessel supports.

Proposed Alternative Examination

(1) The accessible portions of the vessel support skirt weld will be inspected by volumetric and surface methods from outside the skirt enclosure during the second inspection interval, and the total weld length required for the second interval will be examined by surface methods from inside the enclosure.

(2) The upper portion of each stabilizer bracket attachment weld will be examined by surface methods during the second inspection interval.

Licensee's Basis for Requesting Relief

The reactor vessel support skirt-to-vessel weld is only partially accessible from outside the skirt enclosure at two locations, approximately 4 ft long and 180-degrees apart. The balance of the weld is covered by non-removable mirror insulation.

The reactor vessel stabilizer brackets are attached to the vessel with vee-prep fillet-type welds. A volumetric inspection of these welds would not be meaningful. The bottom side of the stabilizer weld is inaccessible due to its location behind the top of the bio-shield wall. Radiation levels inside the bio-shield wall, against the bottom head are 1-10 R/h. Estimated personnel exposures would be 10-100 manrem during the insulation removal, examination, and insulation replacement process.

Evaluation

Access to all reactor vessel integrally welded supports is impeded by the reactor vessel insulation, structural support components, and the biological shield. The licensee has committed to volumetric or surface examination of the accessible support skirt and stabilizer bracket welds from outside the support skirt enclosure. In addition, the total support skirt weld length requiring examination will be surface examined from inside the enclosure.

Performing the required volumetric examination from the outside surface would result in excessive radiation exposure without resulting in a significant increase in establishing weld integrity over that obtained from the proposed alternative examination of a combined volumetric and surface examination.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the welds discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

Reference 6.

B. Pressurizer

Not applicable to BWRs.

C. Heat Exchangers

No Class 1 relief requests.

D. Piping Pressure Boundary

1. Relief Request B-4, Primary Containment Penetration Process Pipe-to-Flued Head Welds, Category B-J, Items B9.11 and B9.21 (Category B-J, Item B4.5 in 1974 Summer 1975)

Code Requirement

As allowed by 10 CFR 50.55a(b)(2)(ii), the licensee has elected to use the 1974 Edition, Summer 1975 Addenda of the Code to determine the extent of piping examinations under Category B-J. This Code requires that examinations be performed on all the area of 25% of the circumferential weld joints each interval. The areas to be examined include the circumferential welds and the base metal for one wall thickness beyond the edge of the weld. A different 25% sample is required in successive intervals. In piping 4 in. and greater, the 1980 Code, Winter 1980 Addenda requires surface and volumetric examinations of circumferential piping welds in accordance with Figure IWB-2500-8. Only surface examinations are required for pipes less than 4 in. in diameter.

Code Relief Request

Relief is requested from the volumetric examination of the circumferential pipe-to-flued head welds in the following containment penetrations:

1. Main Steam A, B, C, and D -- 18"
2. Feedwater A and B -- 16"
3. RHR A Supply -- 20"
4. RHR B and C Return -- 24"
5. HPCI Steam Supply -- 10"
6. RCIC Steam Supply -- 3"
7. Core Spray A and B -- 8"

Proposed Alternative Examination

The first accessible process pipe weld outside of each listed penetration will be volumetrically examined once each inspection interval. In addition, during the primary coolant boundary hydrostatic pressure test at or near the end of each interval, visual inspection from within the primary containment will be performed to detect leakage from internal welds. During operation, routine surveillance of process monitoring instrumentation will detect significant leakage.

Licensee's Basis for Requesting Relief

Each of the above lines enters the primary containment via a penetration assembly. In each case, the Class 1 process pipe has one circumferential pressure-retaining weld which is inaccessible for ultrasonic examination. In addition, the complex design of the penetration makes double-wall radiography extremely difficult and unreliable. Meaningful volumetric examination of these welds is not possible.

Evaluation

The identified welds are completely inaccessible for volumetric or surface examination because the welds are located inside a containment penetration. Each primary containment penetration assembly, due to its design, leaves one pressure retaining piping weld inaccessible for examination by either surface or volumetric means. The welds can only be examined by inspecting for evidence of leakage during system hydrostatic tests.

The initial design of the assemblies did not provide for accessibility for inservice examinations. If it is assumed, though, that the workmanship and quality assurance of the welding as well as the preservice examinations were adequate, then an examination of the first pressure boundary weld outside the containment should reflect service-induced failures for that particular piping section. Thus, the first pressure boundary weld outside the containment on each of these process pipes should be volumetrically examined, where practical, over 100% of its length during each inspection interval as proposed by the licensee. Such an examination would maintain sample size. Also, as proposed, the licensee should conduct visual examinations at these penetrations which would provide initial evidence of leakage from a through-wall penetration.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the welds discussed above, the Code requirements are impractical. It is further concluded that the alternative examination discussed above will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

References 6 and 10.

2. Relief Request B-5, Main Steam Line Welds at Joints A4 and D4, Category B-J, Item B9.11 (Category B-J, Item B4.5 in 1974 S75)

Code Requirement

As allowed by 10 CFR 50.55a(b)(2)(ii), the licensee has elected to use the 1974 Edition, Summer 1975 Addenda of the Code to determine the extent of piping examinations under Category B-J. This Code requires that examinations be performed on all the area of 25% of the circumferential weld joints each interval. The areas to be examined include the circumferential welds and the base metal for one wall thickness beyond the edge of the weld. A different 25% sample is required in successive intervals. In piping 4 in. and greater, the 1980 Code, Winter 1980 Addenda requires surface and volumetric examinations of circumferential piping welds in accordance with Figure IWB-2500-8.

Code Relief Request

Relief is requested from the Category B-J requirements to examine Welds A4 and D4 in the main steam system.

Proposed Alternative Examination

These welds will be visually examined for leakage during the primary coolant system hydrostatic pressure test. In addition, they will be volumetrically examined, to the extent practical, if the support components are removed for any reason.

Licensee's Basis for Requesting Relief

Welds A4 and D4 are pipe-to-valve welds which are inspectable from the pipe side only, as discussed in Relief Request B-4. However, most of the weld crown and several inches of base metal on the pipe side are covered by a support ring. These rigid supports cannot be removed because the only other restraints on each line are the penetration at one end, several spring hangers and a snubber along the run, and the vessel nozzle at the other end. Removal would introduce unnecessary stress into the piping and remaining support components. Consequently, volumetric examination of these welds is not practical.

Evaluation

The subject welds are covered by support rings that cannot be removed without overstressing the pipe or other supports. The condition of the limited surface area that is exposed will not allow meaningful UT results. Therefore, the examination requirements are impractical.

The licensee has, however, committed to volumetrically examining these welds, to the extent practical, if support components are removed for any reason. This commitment should be accepted. Also, visual examinations for leakage during the hydrostatic pressure test should be performed as proposed.

Conclusions and Recommendations

Based upon the above evaluation, it is concluded that for the welds discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examinations will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

References 6 and 10.

E. Pump Pressure Boundaries

No relief requests.

F. Valve Pressure Boundaries

No relief requests.

II. CLASS 2 COMPONENTS

A. Pressure Vessels and Heat Exchangers

1. Relief Request C-1, Residual Heat Removal (RHR) Heat Exchanger Nozzle Welds, Category C-B, Item C2.20

Code Requirement

The nozzle-to-shell (or head) welds and inside radius sections of all nozzles in vessels over 1/2 in. in nominal thickness at terminal ends of piping runs shall be examined in accordance with Figure IWC-2520-4 during each inspection interval. Nozzle-to-shell (or head) welds shall be surface and volumetrically examined; only a volumetric examination is required for nozzle inside radius sections. Terminal ends include nozzles welded to or integrally cast in vessels that connect to piping runs (manways and handholes are excluded). Only those piping runs selected for examination under Examination Category C-F are included.

Code Relief Request

Relief is requested from the volumetric examination of the nozzle-to-vessel welds on the RHR heat exchangers.

Proposed Alternative Examination

Surface and visual examinations shall be performed on the reinforcement saddle-to-nozzle and reinforcement saddle-to-vessel welds.

Licensee's Basis for Requesting Relief

Nozzle design configuration prohibits useful volumetric examination of the nozzle welds since each weld is 100% covered by a reinforcement saddle.

Evaluation

Volumetrically examining the subject welds is impractical because they are covered by a reinforcement saddle that is not bonded to the weld surface. This configuration would return poor

UT results. The welds that attach the saddle to the nozzle and vessel are fillet-type welds whose configurations would also return poor UT results. The Winter 1981 Addenda to the 1980 Code recognizes that the reinforced design exists and has in these cases, specified that the saddle-to-pressure boundary welds be surface examined. The newer Code also requires the proposed visual examination of each joint during pressure tests.

Hence, it would be reasonable to follow the newer Code requirements to surface examine all applicable saddle-to-pressure boundary fillet welds and do the proposed visual VT-2 examination during pressure tests.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the welds discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

Reference 6.

B. Piping

1. Relief Request C-2, Fillet-Welded Pipe Attachments, Category C-C, Item C3.40

Code Requirement

The surfaces of 100% of each integrally welded attachment in piping shall be surface examined in accordance with Figure IWC-2500-5 during each inspection interval. Examination is limited to integrally welded attachments whose base material design thickness is 3/4 in. or greater. In addition, examinations are limited to attachments of those components required to be examined under Examination Categories C-F and C-G.

Code Relief Request

Relief is requested from the surface examination requirements on the fillet-welded attachments between some Class 2 piping and some special protection saddles.

Proposed Alternative Examination

Visual examination will be performed on all fillet-welded saddles.

Licensee's Basis for Requesting Relief

Saddles are provided to prevent damage to piping caused by excessive lateral deflection. They mainly perform a positional rather than a load-bearing function. The saddles are designed to transmit those loads that do exist in a predominantly compressional mode. Therefore, the intermittent or continuous fillet welds used to join the saddles to the pipe serve to hold them in place but do not contribute significantly to their load-bearing capability.

The saddle configuration is such that access to these welds is severely limited and surface examination is, consequently, impractical or impossible. The "best effort" examinations which result require considerable work and provide negligible benefit in terms of improved plant safety, reliability, and quality.

Evaluation

The configuration of these supports precludes access to most of the fillet-welded attachments. The licensee has stated that best-effort surface examinations on the accessible welds would "require considerable work and provide negligible benefit in terms of improved plant safety...." But because these welds are points of stress concentration in the pipe membrane, it would be preferable to determine the condition of at least some of the welds. Therefore, the outermost welds at each end of each saddle should be examined. Relief would be needed, however, for inaccessible welds. A visual examination of all the subject attachment welds during system pressure tests would provide initial evidence of leakage from a through-wall perforation.

Conclusions and Recommendations

Based upon the above evaluation, it is concluded that for the inaccessible attachment welds discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination (discussed in the evaluation) will provide necessary added assurance of structural reliability. Therefore, it is recommended that relief be granted from the surface examination requirements of those subject attachment welds that are inaccessible provided that

(a) The outermost welds at each end of each saddle are Code examined.

(b) All subject welds are visually examined during system pressure tests for evidence of leakage.

References

Reference 6.

C. Pumps

No relief requests.

D. Valves

No relief requests.

III. CLASS 3 COMPONENTS

No relief requests.

IV. PRESSURE TESTS

A. Class 1 Pressure Tests

No relief requests.

B. Class 2 Pressure Tests

1. Relief Request H-1, Hydrostatic Test of Suction and Discharge Piping from Torus to First Shutoff Valve, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(c) states that for the purposes of the test, open ended portions of a suction or drain line from a storage tank extending to the first shutoff valve shall be considered as an extention of the storage tank.

Code Relief Request

Relief is requested from the requirements of hydrostatic testing the suction and discharge piping from torus to the first shutoff valve for the Residual Heat Removal, Core Spray, High Pressure Coolant Injection, and Reactor Core Islation Cooling systems.

Proposed Alternative Examination

Piping experiences a static head pressure of 5-6 psig with the torus filled to its normal operating level. Visual examinations will be made during monthly surveillance testing to verify absence of leakage.

Licensee's Basis for Requesting Relief

Piping is non-isolable from primary containment, which has a design pressure of 56 psia.

Evaluation

IWC-5222(c) states that for the purpose of the test, open ended portions of a suction or drain line from a storage tank extending to the first shutoff valve shall be considered as an extension of the storage tank. The section of piping for which relief was requested falls under the definition of IWC-5222(c). Based upon Section IWC-5222(c), it is appropriate to perform the hydrostatic pressure test on the suction and discharge piping from the torus to the first shutoff valve at the same time the torus is pressure tested. Therefore, the proposed examination is in compliance with Code.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the hydrostatic tests discussed above, the licensee is in compliance with Code. Therefore, relief is not required and should not be granted.

References

Reference 6.

2. Relief Request H-2, Standby Liquid Control, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from the requirements of hydrostatic testing the Standby Liquid Control (SLC) lines between valves V11-11 and V11-41 to the SLC pumps.

Proposed Alternative Examination

Piping experiences a static head of 3-5 psig from the SLC tank, since V11-11 is normally open. Evidence of leakage would be detectable during surveillance testing and operator rounds.

Licensee's Basis for Requesting Relief

This piping has no test connection between the valves and the positive-displacement SLC pumps. The suction piping upstream of the valves is open to atmosphere through the SLC tanks, and provides no boundary.

Evaluation

The only ways to test the subject piping sections to Code requirements are to install hydrostatic pump fittings. In past evaluations, SAIC has recommended that similarly configured Class 1 piping be modified so that pressure tests can be performed. Because these sections will be Code examined by nondestructive examinations, however, modification of the subject Class 2 lines in order to perform the required hydrostatic test would be an undue burden. Also, the alternative examination of a visual examination for evidence of leakage at static head pressure from the SLC tank is acceptable in lieu of the Code-required test.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the examinations discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examinations will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

References 6 and 10.

3. Relief Request H-3, Standby Liquid Control System, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested to perform the hydrostatic test on the Standby Liquid Control System piping between valves V11-15 and V11-16 and the test connection downstream of V11-16 to V11-36 to the Class 1 test requirements rather than the Class 2 requirements.

Proposed Alternative Examination

The test connection is hydrostatically examined during the Safety Class 1 vessel hydro.

Licensee's Basis for Requesting Relief

Pressurization of this piping to 1.10 x P_{SV} (1595 psig) would also pressurize the Class 1 portion of SLC-11 to valve V11-18. The latter piping forms part of the reactor coolant pressure boundary, and as such is only required to be tested at 1.02 x PO (1018 psig).

Evaluation

Valve V11-16 is a check valve whose upstream side forms the boundary between the Class 1 and Class 2 portions of the Standby Liquid Control piping. The valve controls flow in the wrong direction to allow isolation of the Class 2 piping from the Class 1 piping during hydrostatic testing. To use check valves as block valves against allowed flow direction is a major undertaking involving (1) dismantling of the valve, (2) installation of temporary blocking or hold-down devices, (3) removal of these devices, and (4) performing necessary nondestructive testing to assure the integrity and operational reliability of the valves before returning them to service. The licensee proposes to pressure test the Class 2 piping at the same time the Class 1 piping is tested. This will result in slightly reduced test pressures; however, the pressure test should be adequate, along with required system leakage tests (IWC-5221) to confirm the structural integrity of the system.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the examinations discussed above, the Code requirements are impractical. It is further concluded that the alternative examination discussed in the evaluation will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

References 6.

4. Relief Request H-4, Radwaste, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from performing the Code required hydrostatic testing on the radwaste piping to RHR system from reactor building floor drains downstream of valves 319A--D.

Proposed Alternative Examination

Containment isolation portions of this sytem are tested to 44 psig during the Type "C" leak rate test each refueling outage and are tested during the Type "A" leak rate test every 3-1/3 years.

Licensee's Basis for Requesting Relief

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Evaluation

The design pressure of the subject piping is 150 psig. Since the piping is open-ended to containment atmosphere, the Code hydrostatic test is impractical. The alternative examination proposed by the licensee will provide necesssary assurance of structural reliability during this interval.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination will provide necessary assurance of structural reliability. Therefore, relief is recommended as requested.

References

References 6 and 10.

5. Relief Request H-5, Radwaste, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

Code Relief Request

Relief is requested from performing the Code required hydrostatic testing on the radwaste Drywell Sump Pump Discharge from penetrations X-18 and X-19 to valves AO-83 and AO-95.

Proposed Alternative Examination

Containment isolation portions of this system are tested to 44 psig during the Type "C" leak rate test each refueling and are tested during the Type "A" leak rate test every 3-1/3 years.

Licensee's Basis for Requesting Relief

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Evaluation

The licensee has not given any technical reason the required test can't be performed. Because these lines may carry radioactively contaminated water and are subject to the shutoff pressure of the drywell sump pumps, they should be tested to the Code requirements for pressure tests.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping section discussed above, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief is not recommended.

References

Reference 6.

6. Relief Request H-6, Reactor Water Cleanup, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested to perform the hydrostatic pressure test on the Class 2 line CUW-55 between valves V12-63 and V12-62 during the Class 3 pressure test of line CUW-54.

Proposed Alternative Examination

The portion of line CUW-55 between valves V12-63 and V12-62 will be included in the Class 3 1.25 P_{sv} test of line CUW-54.

Licensee's Basis for Requesting Relief

The portion of line CUW-55 between valves V12-63 and V12-62 cannot be isolated from the Safety Class 3 line CUW-54. Extending the 1.25 x P_d (2375 psig) test boundary beyond valve V12-63 would overpressurize line CUW-54, which require testing at 1.25 x P_{sv} (1813 psig).

Evaluation

As shown on flow diagram G-191178, Sheet 1, valve V12-62 is a check valve whose upstream side forms the boundary between CUW-55 (Class 2) and CUW-54 (Class 3). Valve V12-62 is on the Class 2 side of the boundary and checks flow in the Class 2 to Class 3 direction. The licensee has not provided any pressure specifications for valve V12-62. However, it appears that valve V12-62 can be used as a boundary for the Class 2 hydrostatic pressure test. Even if V12-62 does not hold the Class 2 pressure, it is backed up by check valve V12-62A which would avoid overpressurizing the entire Class 3 system. Therefore, the test should be performed as required.

Conclusions and Recommendations

Based upon the above evaluation, it is concluded that for the piping section discussed, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief is not recommended.

References

Reference 6.

7. Relief Request H-7, HPCI and RCIC Pump Discharge to Feedwater Systems, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from performing the hydrostatic test requirements for the piping downstream of HPCI MOV23-19 and RCIC MOV13-21, with the HPCI and RCIC hydrostatic pressure test.

Proposed Alternative Examination

The subject lines will be tested during the feedwater system test.

Licensee's Basis for Requesting Relief

Portions downstream of HPCI MOV23-19 and RCIC MOV13-21 are non-isolable from feedwater piping.

Evaluation

The subject lines are unisolable from feedwater system piping. However, as shown in Table H-1, Section E of the ISI program,[6] the required hydrostatic test pressure for the feedwater system is the same as that required of the HPCI and RCIC lines for which relief is requested (2375 psig). Therefore, the proposed hydrostatic test during the feedwater system test meets the requirements of the Code.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, the Code requirements are being met. Therefore, relief is not required and should not be granted.

References

References 6 and 10.

8. Relief Request H-8, Service and Instrument Air System, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

Code Relief Request

Relief is requested from the Code requirement to pressure test the Service and Instrument Air systems.

Proposed Alternative Examination

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Licensee's Basis for Requesting Relief

Containment isolation portions of this sytem are tested to 44 psig during the Type "A" leak rate test every 3-1/3 years.

Evaluation

The licensee's proposed alternative examination is inadequate to provide the same information that is given by hydrostatic test as to the integrity of these air lines. This is recognized in the Code, which makes a clear distinction between

leak tests at normal operating pressures and hydrostatic tests at higher than normal pressures. The containment leak test provides no information on the integrity of any process pipe whose system pressure is greater than the test pressure. The licensee has not provided sufficient justification for declaring the Code requirements impractical.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief from the Code requirements on hydrostatic pressure testing should not be granted.

References

Reference 6.

9. Relief Request H-9, Atmospheric Control System, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the atmospheric control system.

Proposed Alternative Examination

Containment isolation portions of this sytem will be tested to 44 psig during the Type "A" leak rate test every 3-1/3 years.

Licensee's Basis for Requesting Relief

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Evaluation

The licensee's proposed alternative examination is inadequate to provide the same information that is given by a hydrostatic test as to the integrity of these air lines. This is recognized in the Code, which makes a clear distinction between leak tests at normal operating pressures and hydrostatic

tests at higher than normal pressures. The containment leak test provides no information on the integrity of any process pipe whose normal system pressure is greater than the test pressure. The licensee has not provided sufficient justification for declaring the Code requirements impractical.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief from the Code requirements on hydrostatic pressure testing should not be granted.

References

Reference 6.

10. Relief Request H-10, Containment Air Sampling System, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the Containment Air Sampling system.

Proposed Alternative Examination

Containment isolation portions of this system will be tested to 44 psig during the Type "A" leak rate test every 3-1/3 years.

Licensee's Basis for Requesting Relief

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Evaluation

The licensee's proposed alternative examination is inadequate to provide the same information that is given by a hydrostatic test as to the integrity of these air lines. This is recognized in the Code, which makes a clear distinction

between leak tests at normal operating pressures and hydrostatic tests at higher than normal pressures. The containment leak test provides no information on the integrity of any process pipe whose normal system pressure is greater than the test pressure. The licensee has not provided sufficient justification for declaring the Code requirements impractical.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief from the Code requirements on hydrostatic pressure testing should not be granted.

References

Reference 6.

11. Relief Request H-11, Containment Air Dilution System, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the containment penetration to the second outboard isolation valve.

Proposed Alternative Examination

Containment isolation portions of this system will be tested to 44 psig during the Type "A" leak rate test every 3-1/3 years.

Licensee's Basis for Requesting Relief

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Evaluation

The licensee's proposed alternative examination is inadequate to provide the same information that is given by a hydrostatic test as to the integrity of these air lines. This

is recognized in the Code, which makes a clear distinction between leak tests at normal operating pressures and hydrostatic tests at higher than normal pressures. The containment leak test provides no information on the integrity of any process pipe whose normal system pressure is greater than the test pressure. The licensee has not provided sufficient justification for declaring the Code requirements impractical.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief from the Code requirements on hydrostatic pressure testing should not be granted.

References

Reference 6.

12. Relief Request H-12, Control Rod Drive (CRD) Hydraulic Piping, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from performing the Code required pressure testing on the CRD water piping and hydraulic control units.

Proposed Alternative Examination

Substantial portions of this piping will experience a hydrostatic test pressure of 1018 psig during the reactor vessel hydrotest. The balance of the system functions at a normal operating pressure of between 1040 and 1500 psig, and any evidence of leakage would be detected by routine operator surveillance.

Licensee's Basis for Requesting Relief

Isolation of this piping for hydrostatic testing would involve repositioning and independent verification of approximately 450 valves before and after the test. The slight increase in reliability assurance provided by a once-per-interval 1.1 x Pd hydrotest versus that provided by the much more frequent online inspections and surveillance at operating pressures in excess of 1000 psig does not justify the effort required to place the system in the test configuration.

Evaluation

The safety implications of a pressure boundary failure in the CRD hydraulic system go beyond normal loss of coolant concerns. A rupture in these lines could result in a loss of reactivity control, and may even lead to an undesirable reactivity addition accident with attendant power excursion. For this reason, the CRD hydraulic system should be pressure-tested to the full extent of the applicable Class 2 Code requirements.

The risk of leaving one or more system valves in test position (as concerns the licensee) could be minimized by adequate administrative controls for valve tag-outs and pre-startup valve alignments.

Conclusions and Recommendations

Based on the above evaluation, relief from the Code requirements on hydrostatic pressure-testing should not be granted.

References

Reference 6.

13. Relief Request H-13, Standby Gas Treatment System, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the containment purge lines to the Standby Gas Treatment units.

Proposed Alternative Examination

Containment isolation portions of this system will be tested to 44 psig during the Type "A" leak rate test every 3-1/3 years.

Licensee's Basis for Requesting Relief

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Evaluation

The licensee's proposed alternative examination is inadequate to provide the same information that is given by a hydrostatic test as to the integrity of these air lines. This is recognized in the Code, which makes a clear distinction between

leak tests at normal operating pressures and hydrostatic tests at higher than normal pressures. The containment leak test provides no information on the integrity of any process pipe whose normal system pressure is greater than the test pressure. The licensee has not provided sufficient justification for declaring the Code requirements impractical.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief from the Code requirements on hydrostatic pressure testing should not be granted.

References

References 6 and 10.

14. Relief Request H-16, Recirculation Pump Seal Purge System, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the Recirculation Pump Seal Purge System.

Proposed Alternative Examination

Containment isolation portions of this system will be tested to 44 psig during the Type "A" leak rate test every 3-1/3 years.

Licensee's Basis for Requesting Relief

The safety function of the piping is to contain primary containment atmosphere. Piping integrity in this service is adequately demonstrated by periodic pneumatic leak rate testing.

Evaluation

The licensee's proposed alternative examination is inadequate to provide the same information that is given by a hydrostatic test as to the integrity of these air lines. This is recognized in the Code, which makes a clear distinction between leak tests at normal operating pressures and hydrostatic tests at higher than normal pressures. The containment leak test provides

no information on the integrity of any process pipe whose normal system pressure is greater than the test pressure. The licensee has not provided sufficient justification for declaring the Code requirements impractical.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, there is not sufficient justification for declaring the Code requirements impractical. Therefore, relief from the Code requirements on hydrostatic pressure testing should not be granted.

References

Reference 6.

15. Relief Request H-17, HPCI and RCIC Condensate Suction Lines, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the Condensate Storage Tank (CST) suction lines from motor-operated valves (MOV) HPCI-17 and RCIC-18 to check valves immediately downstream.

Proposed Alternative Examination

Since MOV HPCI-17 and RCIC-18 and associated CST manual shut-off valves are normally open, this piping experiences a constant static head of 6--25 psig from the CST. Piping is not insulated and leakage would be visible during routine surveillance and operator rounds.

Licensee's Basis for Requesting Relief

Piping cannot be effectively pressurized from HPCI/RCIC side due to blockage by check valves, and cannot be pressurized from CST side due to check valves opening on flow from the CST.

Evaluation

The RCIC/HPCI lines in question are isolable from the condensate storage tank using valves V13-17 and V23-23. However, the location of check valves that control flow in the wrong direction and the lack of available pressure connection taps create the inability to pressurize the subject lines to the required pressure. In past evaluations, SAIC has recommended that similarly configured Class 1 piping be modified so that tests can be performed. However, because these Class 2 sections will be Code examined by nondestructive examinations and considering the burden that would be placed on the facility if the Code requirements were imposed, the relief requested and the proposed alternative examinations should be accepted.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the examinations discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examinations will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

References 6 and 10.

16. Relief Request H-19, Residual Heat Removal (RHR) Bypass Line, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test of lines RHR-13A and -13B between valves V10-69A and -69B and V10-16A and -16B.

Proposed Alternative Examination

This piping will be included in the lower-pressure pump suction hydrostatic test.

Licensee's Basis for Requesting Relief

The piping contains no test connection for pressurization. Opening of V10-69A and -69B places this piping in communication with lower-pressure RHR suction piping through the centrifugal RHR pumps, while piping downstream of V10-16A and -16B is open-ended to the torus.

Evaluation

Based on a review of flow diagram G-191172, the subject lines can be tested during the RHR pump discharge piping hydrostatic test by opening valves V-69A and -69B and closing valves V16A and 16B. According to Drawing G-191172, opening V69A and -69B does not put the piping in communication with the suction piping. Therefore, the Code requirements are not impractical, and the subject lines should be hydrostatically tested along with the RHR pump discharge piping as required.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the lines discussed above, the Code requirements are not impractical. Therefore, relief is not recommended.

References

Reference 6.

17. Relief Request H-20, Control Rod Drive (CRD) Scram Discharge Lines, Category C-H, Item C7.20

Code Requirement

Piping pressure-retaining boundaries (other than open-ended portions of systems) shall be visually examined (VT-2) during the system leakage test performed in accordance with IWC-5221 during each inspection period. No components within the pressure-retaining boundary are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. Where portions of a system are subject to system pressure tests associated with two different system functions, the VT-2 examination need only be performed during the test conducted at the higher of the test pressures of the respective system function. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required. A system hydrostatic test (IWC-5222) and accompanying VT-2 examination are acceptable in lieu of the system pressure test (IWC-5221) and VT-2 examination.

Code Relief Request

Relief is requested from the requirement of performing a functional test on the subject system once each inspection period.

Proposed Alternative Examination

Manual scrams will not be initiated. However, following all reactor scram events, operators will conduct visual inspections for evidence of leakage.

Licensee's Basis for Requesting Relief

This system would receive a functional test only during reactor scrams. Since the Vermont Yankee FSAR limits the number of scrams permitted during the life of the plant, Vermont Yankee has discontinued the practice of initiating manual scrams at each refueling outage. Consequently, although it is unlikely, a reactor scram may not be experienced once each inspection period.

Evaluation

Since the FSAR limits the number of reactor scrams during the life of the plant, initiating manual scrams at each refueling outage is not totally warranted. Table IWC-2500-1 requires one hydrostatic test and three functional tests (one each period) during the interval. Table IWC-2500-1 also allows performance of a system hydrostatic test in lieu of the functional test.

The licensee has also requested relief (RR H-21) from the hydrostatic test requirements of this piping. Granting relief for this request and for RR H-21 could result, even though unlikely, in no pressure testing of the subject piping. Therefore, complete relief from performing the required functional tests should not be granted. However, schedular relief could be granted to perform the functional tests any time during the 120-month interval, thus, increasing the chances of a reactor scram occurring.

It is considered very unlikely that at least three reactor scrams won't occur during the 120 months of the second 10-year interval. However, if the scrams don't occur, three additional manual scrams will not be significant compared with the total number of expected scrams. Therefore the licensee should perform the Code-required functional tests. However, schedular relief should be granted to perform the three tests any time during the first interval, thus increasing the chances of actual reactor scrams occurring. Functional tests should include a visual (VT-2) examination by a qualified inspector. If at least three reactor scrams do not occur during the interval, three manual scrams should be initiated and the subject VT-2 examinations should be performed by the end of the interval.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that performance of functional pressure tests on the CRD scram discharge lines is not impractical. The following is therefore recommended:

(a) Relief should not be granted from performance of the Code-required functional tests. However, schedular relief should be granted to perform the three tests any time during the first interval, thus increasing the chances of actual reactor scrams occurring.

(b) Functional tests will include a visual (VT-2) examination by a qualified inspector.

(c) If at least three reactor scrams do not occur during the interval, three manual scrams should be initiated and the subject VT-2 examinations should be performed by the end of the interval.

References

Reference 6.

18. Relief Request H-21, Control Rod Drive (CRD) Scram Discharge Lines, Category C-H, Item C7.21

Code Requirement

Piping pressure-retaining boundaries (other than open ended portions of systems) shall be visually examined (VT-2) during the system hydrostatic test performed in accordance with IWC-5222 during each inspection period. No components within the pressure-retaining boundary [as defined by Note (7)] are exempt or excluded from the examination requirements, except as specified in IWA-5214(c) for repairs and replacements. The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B. The pressure-retaining boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

IWC-5222(a): The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from performing the required hydrostatic test on 89 3/4-in. scram discharge lines, between scram outlet valves and V13-112 manual valves.

Proposed Alternative Examination

Hydrotesting is required only once every 10 years. Reactor scrams occur more frequently, and this piping is subjected to reactor pressure during scram events. Evidence of leakage would be visible during post-scram visual inspections by operators.

Licensee's Basis for Requesting Relief

General Electric Company recommends not pressurizing against the scram outlet valves to a pressure of 1563 psig, to avoid possible damage. Since there is only one check valve between the scram outlet valves and the manual valves, it is prudent to close the 89 manual valves prior to pressurizing the scram discharge headers, instrument volumes, and associated 3/4-in. discharge piping to 1563 psig.

In a letter to the licensee dated August 5, 1986,[11] General Electric states:

> "With the V112 valve opened, the scram discharge riser pipe would be pressurized up to the HCU scram discharge check valve (V114). However, due to the slight leakage that is likely to occur through the check valve, the scram outlet valve would be subjected to the HCU hydrostatic pressure. During normal reactor operation, the bottom side of the scram outlet valve plug is subjected to reactor presssure. On the other hand, the HCU hydro static pressure acts on the top side of the valve plug and in turn, exerts additional load against the valve seat. This added load may lead to subsequent valve leakages during normal reactor operation. Furthermore, the scram outlet valve purchase specification depicts a maximum operating differential pressure of 1250 psi. Therefore, for added precaution it is deemed good engineering practice to isolate the HCUs via closure of the V112 valve during the HCU hydrostatic pressure test."

Evaluation

General Electric recommends not pressurizing the scram outlet valves to the hydrostatic test pressure of 1563 psig because of possible damage. This documentation was provided by the licensee by letter dated August 22, 1986.[12] It would therefore not be in the interest of safety to expose these valves to a potentially damaging pressure for test purposes only. The licensee's alternative examination of performing the required functional test on the subject piping will provide adequate assurance of the structural reliability of the subject pressure boundary.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the examinations discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination will provide necessary added assurance of structural reliability. Therefore, relief is recommended as requested.

References

References 6, 10, 11, and 12.

19. Relief Request H-18, HPCI and RCIC Turbine Steam Line System, Categories C-H and D-B, Items C7.21 and D2.10

Code Requirement

IWC-5222(a) and IWD-5223(a): For Class 2 and 3 systems, the system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested. For systems (or portions of systems) not provided with safety or relief valves, the system design pressure P_d shall be substituted for P_{sv}.

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the HPCI turbine steam supply line from the stop valve to the turbine casing and the HPCI turbine steam drain lines. Relief is also requested for the RCIC turbine supply line from the stop valve to the turbine casing.

Proposed Alternative Examination

Piping will be included in the 188 psig pressure test of the turbine casing and exhaust lines.

Licensee's Basis for Requesting Relief

Piping cannot be effectively isolated from 150 P_d turbine casing and exhaust lines.

Evaluation

Articles IWC-5222(a) and IWD-5223(a) of the Code provide for a piping section to be tested according to the setting of the lowest set relief valve that protects it. Since these lines are not isolable from the turbine casing, the turbine's relief valves

govern the test pressure of the lines in question. The testing of these lines, then, should be conducted only in accordance with whatever pressure tests are appropriate for the turbines.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the hydrostatic tests discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination will provide necessary added assurance of structural reliability during this interval. Therefore, relief is recommended as requested.

References

Reference 6.

C. Class 3 Pressure Tests

1. Relief Request H-14, Service Water System, Category D-A, Item D1.10

Code Requirement

The pressure-retaining components in the pressure-retaining boundary shall be visually examined (VT-2) during the system pressure test IWA-5000/IWD-5221 each inspection period. A system hydrostatic test (IWD-5223) and accompanying VT-2 examination are acceptable in lieu of the system pressure test and VT-2 examination. The system hydrostatic test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval for Inspection Program B. The system boundary extends up to and including the first normally closed valve or valve capable of automatic closure as required to perform the safety-related system function. There are not exemptions or exclusions from these requirements except as specified in IWA-5214(c).

Code Relief Request

Relief is requested from the Code requirement to pressure test the service water return subsystem and the service water supply piping to the fire protection systems between valves V70-5A and -5B.

Proposed Alternative Examination

The visible portions of the service water system are observed during normal operation. The system runs approximately 100% of the time. Routine operator surveillance would detect evidence of leakage.

Licensee's Basis for Requesting Relief

Isolation of this supply piping for testing would simultaneously exclude the Fire Protection System from pressurization by the service water pumps and station fire water pumps, effectively disabling the Fire Protection System for the duration of the test. Isolation of the common return piping would disable both trains of several plant safety systems for the duration of the test. At least one train of these systems must be operable, or available to operate, during all modes of plant operation, and service water is required to remove waste heat resulting from their operation.

Evaluation

Configuring the plant to allow the total shutdown of the service water system would require excessive downtime of the plant. Also, a failure in the return section of the system would not prevent the cooling of vital components. Thus, securing the system solely for performing the Code-required pressure test is considered impractical. Disabling the Fire Protection System in order to perform the required hydrostatic test on a portion of the service water supply system is not warranted considering the risk involved. There are times, however, when service water must be secured for component replacement or other maintenance. Whenever the system needs to be down for maintenance, the Code-required pressure test should be performed on any section that cannot be tested while the system is operating.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination will provide necessary added assurance of structural reliability. Therefore, relief should be granted from the Code requirement to pressure test this piping, provided that if the service water system needs to be totally shut down or this section of the system must be isolated for maintenance, the Code-required hydrostatic test should be performed.

References

Reference 6.

2. Relief Request H-15, Advanced Off-Gas System, Category D-A, Item D1.10

Code Requirement

The pressure-retaining components in the pressure-retaining boundary shall be visually examined (VT-2) during the system pressure test IWA-5000/IWD-5221 each inspection period. A system hydrostatic test (IWD-5223) and accompanying VT-2 examination are acceptable in lieu of the system pressure test and VT-2 examination. The system hydrostatic test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval for Inspection Program B. The system boundary extends up to and including the first normally closed valve or valve capable of automatic closure as required to perform the safety-related system function. There are not exemptions or exclusions from these requirements except as specified in IWA-5214(c).

Code Relief Request

Relief is requested from performing the required hydrostatic pressure test on the Advanced Off-Gas (AOG) System guard beds and absorbers.

Proposed Alternative Examination

The AOG System operates under vacuum. In-leakage would result in increased flow which would be detected by flow elements located downstream of vacuum pumps.

Licensee's Basis for Requesting Relief

The Gaseous Radwaste System must continuously operate during all modes of station operation and cannot be isolated for testing.

Evaluation

Shutdown of the vacuum system would result in an unacceptable increase of non-condensible gases in the condenser. The licensee's proposed alternative examination of monitoring flow elements for increased flow will indicate any leakage in the vacuum system. Thus, securing the guard beds and absorber lines

of the AOG system is considered unnecessary and impractical. There may be times, however, during the life of the plant that these lines must be secured for component replacement or maintenance. Whenever the system is down for such maintenance or replacements, the Code-required hydrostatic test should be performed.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that for the piping discussed above, the Code requirements are impractical. It is further concluded that the proposed alternative examination will provide necessary added assurance of structural reliability. Therefore, relief should be granted from the Code requirements to pressure test the guard beds and absorbers of the system provided that if the AOG System needs to be totally shut down or this section of the system must be isolated for maintenance, the Code-required hydrostatic test should be performed.

References

Reference 6.

V. GENERAL

No relief requests.

VI. SUPPORTS

No relief requests.

VII. EXEMPTED COMPONENTS

1. Exemptions 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, and 21, Pressure-Retaining Welds in Class 2 Piping

Code Requirement

Paragraph IWC-1220 of the 1974 Edition with Addenda through Summer 1975 deals with exempted Class 2 components and is specifically cited as a requirement for Emergency Core Cooling systems in 10 CFR 50.55a(b)(2)(iv)A. Subparagraph (c) states in regard to these systems:

> "Components which perform an emergency core cooling function may be exempted from examination requirements for Class 2 components listed elsewhere in Subsection IWC, provided the control of the chemistry of contained fluid is verified by periodic sampling and test."

According to an accompanying footnote, the control of fluid chemistry is intended to minimize corrosive effects, particularly stress corrosion.

Exemption Request

The licensee claims exemption from examination of portion of the following systems: RCIC, SLC, Sampling, CAD, HPCI, RWC, CRD, Radwaste, and RHR.

Licensee's Basis for Requesting Exemption

Although not present in later versions of Section XI, the use of this exemption is clearly allowed by the 1974 Edition, Summer 1975 Addenda.

Evaluation

In accordance with 10 CFR 50.55a(b)(2)(iv)A, the extent of examination (specifically exemptions from Code) of Emergency Core Cooling (ECC) systems shall be determined by the requirements of paragraph IWC-1220 in the 1974 Edition, Addenda through Summer 1975. Emergency Core Cooling systems cannot be exempted in accordance with paragraph IWC-1220 of the 1980 Edition, Winter 1980 Addenda.

The licensee wishes to exempt certain portions of the ECC system in accordance with paragraph IWC-1220(c) in the 1974 Edition, Summer 1975 because chemistry control is provided to the extent that corrosive effects, particularly stress corrosion, are minimized. No supporting data were submitted to prove that the control of the chemistry of the contained fluid is verified by periodic sampling and test, which would result in minimized corrosive effects. The chemistry control provision was deleted from paragraph IWC-1220 in the 1977 and subsequent editions of Section XI because practical evaluation, review, and acceptance standards could not be defined.

Therefore, this exemption should be denied unless the licensee submits sufficient proof that the control of the chemistry of the contained fluid is verified by periodic sampling and test, which would result in minimized corrosive effects.

Conclusions and Recommendations

Based on the above evaluation, it is concluded that this exemption should be denied unless the licensee submits sufficient proof that control of the chemistry of the contained fluid is verified by periodic sampling and test, which would result in minimized corrosive effects.

References

Reference 6.

REFERENCES

1. Vermont Yankee Nuclear Power Station Inservice Inspection Program Technical Evaluation Report, SAI Report No. 186-028-24, September 2, 1982.

2. Vermont Yankee Addendum to Technical Evaluation Report, Inservice Inspection Program, SAI Report No. 186-028-24 Addendum, November 1984.

3. D. B. Vassallo (NRC) to J. B. Sinclair (VYNPC), May 19, 1983; first interval inservice inspection program Safety Evaluation Report.

4. J. B. Sinclair (VYNPC) to D. B. Vassallo (NRC), January 18, 1983; Revision 7 to ISI Program.

5. NRC to VYNPC, October 15, 1985; Safety Evaluation Report on additional first interval relief requests.

6. W. P. Murphy (VYNPC) to NRC, November 27, 1984; second interval inservice inspection program.

7. NRC to VYNPC, October 18, 1985; preliminary request for additional information on the inservice inspection program.

8. V. L. Rooney (NRC) to R. W. Capstick (VYNPC), May 27, 1986; request for additional information on the inservice inspection program.

9. W. P. Murphy (VYNPC) to NRC, December 30, 1985; response to preliminary request for additional information.

10. R. W. Capstick (VYNPC) to NRC, August 1, 1986; response to May 27, 1986 request for additional information.

11. B. Y. Ghio (GE) to R. L. Smith (VYNPC), August 5, 1986; advises against pressurizing the scram outlet valves to 1563 psig.

12. R. W. Capstick (VYNPC) to V. L. Rooney (NRC), August 22, 1986; provides further justification for relief request H-21 (Reference 11 attached).