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## TECHNICAL EVALUATION REPORT

TECHNICAL EVALUATION REPORT ON THE FIRST 10-YEAR  
INTERVAL INSERVICE INSPECTION PROGRAM PLAN:  
PHILADELPHIA ELECTRIC COMPANY,  
LIMERICK GENERATING STATION, UNIT 2,  
DOCKET NUMBER 50-353

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*Prepared for the*  
U.S. NUCLEAR REGULATORY COMMISSION

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## ABSTRACT

This report presents the results of the evaluation of the Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection (ISI) Program, Revision 0, submitted February 26, 1990, including the requests for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI requirements that the Licensee has determined to be impractical. The Limerick Generating Station, Unit 2, First 10-Year Interval ISI Program is evaluated in Section 2 of this report for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of examination sample, (c) correctness of the application of system or component examination exclusion criteria, and (d) compliance with ISI-related commitments identified during the Nuclear Regulatory Commission (NRC) review before granting an operating license. The requests for relief are evaluated in Section 3 of this report.

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Review of ISI for ASME Code Class 1, 2, and 3 Components

## SUMMARY

The Licensee, Philadelphia Electric Company, has prepared the Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection (ISI) Program, Revision 0, to meet the requirements of the 1986 Edition of the ASME Code Section XI except that the extent of examination for Code Class 1 piping welds has been determined by the 1974 Edition, Summer 1975 Addenda as permitted by 10 CFR 50.55a(b). The first 10-year interval began January 8, 1990 and ends January 7, 2000.

The information in the Limerick Generating Station, Unit 2, First 10-Year Interval ISI Program, Revision 0, submitted February 26, 1990, was reviewed. Included in the review were the requests for relief from the ASME Code Section XI requirements that the Licensee has determined to be impractical.

Based on the review of the Limerick Generating Station, Unit 2, First 10-Year Interval ISI Program, Revision 0, and the recommendations for granting relief from the ISI examination requirements that have been determined to be impractical, it is concluded that the Limerick Generating Station, Unit 2, First 10-Year Interval ISI Program, Revision 0, with the exception of Requests for Relief RR-11 and RR-12 (in part), is acceptable and in compliance with 10 CFR 50.55a(g)(4).



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TECHNICAL EVALUATION REPORT ON THE  
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1. INTRODUCTION

Throughout the service life of a water-cooled nuclear power facility, 10 CFR 50.55a(g)(4) (Reference 1) requires that components (including supports) that are classified as American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, Class 2, and Class 3 meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components" (Reference 2), to the extent practical within the limitations of design, geometry, and materials of construction of the components. This section of the regulations also requires that inservice examinations of components and system pressure tests conducted during the initial 120-month inspection interval shall comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the date of issuance of the operating license, subject to the limitations and modifications listed therein. The components (including supports) may meet requirements set forth in subsequent editions and addenda of this Code which are incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein. The Licensee, Philadelphia Electric Company, has prepared the Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection (ISI) Program, Revision 0, to meet the requirements of the 1986 Edition of the ASME Code Section XI except that the extent of examination for Class 1 piping welds has been determined by the 1974 Edition, Summer 1975 Addenda as permitted by 10 CFR 50.55a(b). The first 10-year interval began January 8, 1990 and ends January 7, 2000.

As required by 10 CFR 50.55a(g)(5), if the licensee determines that certain Code examination requirements are impractical and requests relief from them,

the licensee shall submit information and justifications to the Nuclear Regulatory Commission (NRC) to support that determination.

Pursuant to 10 CFR 50.55a(g)(6), the NRC will evaluate the licensee's determinations that Code requirements are impractical; alternatively, pursuant to 10 CFR 50.55a(a)(3), the licensee must demonstrate that either (i) the proposed alternatives would provide an acceptable level of quality and safety or that (ii) code compliance would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety. The NRC may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

The information in the Limerick Generating Station, Unit 2, First 10-Year Interval ISI Program, Revision 0 (Reference 3), submitted February 26, 1990, was reviewed, including the requests for relief from the ASME Code Section XI requirements that the Licensee has determined to be impractical. The review of the ISI Program Plan was performed using the Standard Review Plans of NUREG-0800 (Reference 4), Section 5.2.4, "Reactor Coolant Boundary Inservice Inspections and Testing," and Section 6.6, "Inservice Inspection of Class 2 and 3 Components."

The Limerick Generating Station, Unit 2, First 10-Year Interval ISI Program is evaluated in Section 2 of this report for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of examination sample, (c) correctness of the application of system or component examination exclusion criteria, and (d) compliance with ISI-related commitments identified during the NRC's review before granting an operating license.

The requests for relief are evaluated in Section 3 of this report. Unless otherwise stated, references to the Code refer to the ASME Code, Section XI, 1986 Edition. Specific inservice test (IST) programs for pumps and valves are being evaluated in other reports.



## 2. EVALUATION OF INSERVICE INSPECTION PROGRAM PLAN

This evaluation consisted of a review of the applicable program documents to determine whether or not they are in compliance with the Code requirements and any license conditions pertinent to ISI activities. This section describes the submittals reviewed and the results of the review.

### 2.1 Documents Evaluated

Review has been completed on the following information provided by the Licensee:

- (a) Limerick Generating Station, Unit 2, Inservice Inspection Program First Ten Year Interval (2 volume set), Revision 0; and
- (b) Limerick Generating Station, Unit 2, Inservice Inspection Program First Ten Year Interval Reference Drawings (2 volume set).

### 2.2 Compliance with Code Requirements

#### 2.2.1 Compliance with Applicable Code Editions

The Inservice Inspection Program Plan shall be based on the Code editions defined in 10 CFR 50.55a(g)(4) and 10 CFR 50.55a(b). Based on the operating license date of June 22, 1989 for Limerick Generating Station, Unit 2, the Code applicable to the first 10-year interval ISI program plan is the 1986 Edition of Section XI. As stated in Section 1 of this report, the Licensee has written the Limerick Generating Station, Unit 2, First 10-Year Interval ISI Program, Revision 0, to meet the requirements of the 1986 Edition of ASME Code Section XI except that the extent of examination for Code Class 1 piping welds has been determined by the 1974 Edition, Summer 1975 Addenda as permitted by 10 CFR 50.55a(b).

### 2.2.2 Acceptability of the Examination Sample

Inservice volumetric, surface, or visual examinations shall be performed on ASME Code Class 1, 2, and 3 components and their supports using weld selection criteria, sampling sizes, and schedules described in Section XI of the ASME Code and 10 CFR 50.55a(b). Sample size and weld selection have been implemented in accordance with the Code and appear to be correct.

### 2.2.3 Exclusion Criteria

The criteria used to exclude components from examination shall be consistent with Paragraphs IWB-1220, IWC-1220, IWC-1230, IWD-1220, and 10 CFR 50.55a(b). The exclusion criteria have been applied by the Licensee in accordance with the Code as discussed in Paragraph 2.3 of the ISI Program and appear to be correct.

### 2.2.4 Augmented Examination Commitments

In addition to the requirements specified in Section XI of the ASME Code, the Licensee has committed to perform augmented examinations per the following documents:

- (a) NRC Generic Letter 88-01, "Intergranular Stress Corrosion Cracking" (Reference 5);
- (b) NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking" (Reference 6);
- (c) IE Bulletin No. 80-13, "Cracking in Core Spray Spargers" (Reference 7);
- (d) NUREG/CR-3052, "Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure" (Reference 8);

- (e) USNRC Mechanical Engineering Branch (MEB) Technical Position MEB 3-1 (NUREG-0800, "No Break" Boundaries) (Reference 9);
- (f) Outboard Feedwater Check Valves HV-41-2F074A and B;
- (g) SIL No. 455, "Recommendation for Additional ISI of Alloy 182 Nozzle Weldments" (Reference 10);
- (h) Extended Examination Volume for Code Category B-D (response to NUREG-0619);
- (i) Examination of the Reactor Pressure Vessel Closure Head Lifting Lugs;
- (j) "Non-Q Reactor Pressure Vessel Internal Components," FSAR Table 3.2-1 (Reference 11);
- (k) SIL No. 409, "Incore Dry Tube Cracks" (Reference 12);
- (l) SIL No. 420, "Inspection of Jet Pump Sensing Lines" (Reference 13);
- (m) Snubber Examination and Testing Program (Technical Specification Snubbers) (Reference 14); and
- (n) Snubber Examination Program (BOP Snubbers).

### 2.3 Conclusions

Based on the review of the documents listed above, it is concluded that the Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection Program, Revision 0, is acceptable and in compliance with 10 CFR 50.55a(g)(4).

### 3. EVALUATION OF RELIEF REQUESTS

The requests for relief from the ASME Code requirements that the Licensee has determined to be impractical for the Limerick Generating Station, Unit 2, first 10-year inspection interval are evaluated in the following sections.

#### 3.1 Class 1 Components

##### 3.1.1 Reactor Pressure Vessel

###### 3.1.1.1 Request for Relief RR-01, Examination Category B-A, Items B1.11, B1.12, and B1.22, Reactor Pressure Vessel Welds

Code Requirement: ASME Section XI, Table IWB-2500-1, Examination Category B-A requires a volumetric examination of 100% of the weld length of all reactor pressure vessel (RPV) circumferential and longitudinal shell welds and all meridional bottom head welds during the first inservice inspection interval. These examinations shall be performed as defined in Figures IWB-2500-1, -2, and -3, as applicable.

Licensee's Code Relief Request: Relief is requested from examining 100% of the Code-required volume (CRV) of the following RPV welds:

<u>Weld Ident.</u>	<u>Code Item No.</u>	<u>CRV Examinable</u>
AA	B1.11	89.4 %
AC	B1.11	89.2 %
AE	B1.11	88.3 %
BA	B1.12	85.65%
BB	B1.12	85.65%
BC	B1.12	85.2 %
BF	B1.12	76.0 %
BG	B1.12	79.3 %
BK	B1.12	49.0 %
BM	B1.12	47.9 %
BN	B1.12	74.5 %
BP	B1.12	75.1 %

(continued)

Weld Ident.	Code Item No.	CRV Examinable
DA	B1.22	84.3 %
DB	B1.22	84.3 %
DC	B1.22	84.3 %
DD	B1.22	84.3 %
DE	B1.22	84.3 %
DF	B1.22	84.3 %

Licensee's Proposed Alternative Examination: None. The Code-required volumetric examination will be performed to the maximum extent practical.

Licensee's Basis for Requesting Relief: Complete examination of the subject welds is not practical due to scanning limitations and access restrictions from various RPV appurtenances (e.g., adjacent RPV nozzles and attachments, the biological shield wall, and control rod drive housings).

The circumferential and longitudinal shell welds are examined using automated ultrasonic examination techniques to the maximum extent practical. Supplemental manual examinations may yield increases in examination coverage; however, these increases come at a cost of increased personnel radiation exposure. Therefore, due to ALARA considerations, supplemental manual ultrasonic examinations are not being considered to augment examination coverage.

Manual ultrasonic examination of the bottom head welds are performed to the maximum extent practical.

The Licensee states that any significant improvement in automated or manual examination coverage cannot be achieved without major plant redesign.



Evaluation: As confirmed by review of the table attached to the relief request and drawings of the RPV, the volumetric examination of the RPV shell and head welds listed above is limited by adjacent nozzles and attachments, the biological shield wall, and control rod drive housings. The reactor vessel design, therefore, makes the volumetric examinations impractical to perform to the extent required by the Code. In order to examine the welds in accordance with the requirements, the reactor vessel would have to be redesigned, fabricated, and installed. Imposition of the requirements on Philadelphia Electric Company would cause a burden that would not be compensated significantly by an increase in safety above that provided by the proposed examination.

The Licensee has stated that the volumetric examinations of the subject RPV welds will be performed to the maximum extent practical. The percentages (listed above) of the Code-required volumetric examinations that can and will be completed are significant and are consistent with other plants of similar design. The limited Section XI volumetric examinations will provide adequate assurance that unallowable inservice flaws have not developed in the subject reactor vessel welds or that they will be detected and removed or repaired prior to the return of the reactor vessel to service.

Conclusions: It is concluded that the volumetric examination of the subject welds is impractical to perform at Limerick, Unit 2, to the extent required by Section XI of the ASME Code and that public health and safety will not be endangered by allowing the limited Section XI volumetric examination to be performed in lieu of the Code requirement. Therefore, it is recommended that relief be granted as requested.

3.1.1.2 Request for Relief RR-08, Examination Category B-D, Item B3.90,  
Reactor Pressure Vessel Nozzle-to-Vessel Welds

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-D, Item B3.90 requires a 100% volumetric examination of all RPV nozzle-to-vessel welds during the first inservice inspection interval. These examinations shall be performed as defined by Figure IWB-2500-7(b).

Licensee's Code Relief Request: Relief is requested from examining 100% of the Code-required volume (CRV) of the following RPV nozzle-to-vessel welds:

<u>Nozzle Identification</u>	<u>Transverse Scan CRV Examenable</u>	<u>Parallel Scan CRV Examenable</u>
N1A,B	79.29%	50%
N2A-H,J,K	77.55%	50%
N3A,B,C,D	73.26%	50%
N4A,B,C,D,E,F	77.55%	50%
N5A,B	77.55%	50%
N6A,B	72.36%	50%
N7	76.24%	50%
N8A,B	78.22%	50%
N9	78.22%	50%
N17A,B,C,D	77.55%	50%

Licensee's Proposed Alternative Examination: None. The Code-required volumetric examination will be performed to the maximum extent practical.

Licensee's Basis for Requesting Relief: The above subject nozzles have access limitations imposed by the reactor pressure vessel design and/or component configuration.

The Limerick Generating Station, Unit 2, reactor pressure vessel has 34 nozzles, the welds of which require volumetric examination per the Code. Due to the nozzle forging configuration, portions of the Code-required examination volume cannot be completely examined. The curvature of the blend radius of the nozzle forging is such that ultrasonic scanning

of the weld is interrupted due to loss of contact of the ultrasonic search unit. This limitation affects both transverse and parallel scanning of the Code-required examination volume.

The Licensee also reports that in support of ALARA, 28 of the 34 nozzle-to-vessel welds are examined utilizing remote automatic ultrasonic techniques. These techniques, however, further limit the examination coverage due to scanning limitations caused by the scanner design.

Evaluation: The nozzle forging configuration is such that the volumetric examination of the subject RPV nozzle-to-vessel welds is restricted. Therefore, the volumetric examinations are impractical to perform to the extent required by the Code. In order to examine the welds in accordance with the requirements, the nozzles, and thus the reactor vessel, would require redesign. Imposition of the requirement on Philadelphia Electric Company would, therefore, cause a burden that would not be compensated significantly by an increase in safety above that provided by the limited examination.

The Licensee has stated that the volumetric examination of these welds will be performed to the maximum extent practical. The percentages (listed above) of the Code-required volume that can and will be completed are consistent with other plants of similar design. The limited Section XI volumetric examination of these welds will provide reasonable assurance of the continued inservice structural integrity.

Conclusions: It is concluded that the volumetric examinations of the subject RPV nozzle-to-vessel welds are impractical to perform at Limerick, Unit 2, to the extent required by Section XI of the ASME Code and that public health and safety will not be endangered by allowing the limited Section XI

examination to be performed in lieu of the Code requirement. Therefore, it is recommended that relief be granted as requested.

3.1.1.3 Request for Relief RR-11, Examination Category B-H, Item B8.10, Reactor Pressure Vessel Integrally Welded Attachments

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-H, Item B8.10 requires a 100% surface examination of all RPV integrally welded attachments as defined by Figure IWB-2500-13, -14, or -15, as applicable.

Licensee's Code Relief Request: Relief is requested from examining 100% of the Code-required surface (CRS) of the following RPV integrally welded attachments:

<u>Component Identification</u>	<u>CRS Examinable</u>
45° Stabilizer Bracket	61.3%
135° Stabilizer Bracket	61.3%
225° Stabilizer Bracket	61.3%
315° Stabilizer Bracket	61.3%
FR (RPV skirt attach.)	75%

Licensee's Proposed Alternative Examination: In addition to the Code-required surface examination being performed to the maximum extent practical, a VT-1 visual examination will be performed to the extent practical in areas where the required surface examinations are incomplete.

Licensee's Basis for Requesting Relief: Access to four of eight stabilizer bracket attachment welds is limited due to mirror insulation support brackets affixed to the stabilizer bracket lugs. These insulation support brackets preclude equipment access necessary for complete magnetic particle examination of the weld and required area.

Access for examination equipment is also limited in the area of skirt attachment weld buildup. The configuration of the RPV

skirt knuckle to the bottom head limits access for complete examination of the underside of the weld.

Evaluation: As described by the Licensee, the Code-required surface examination of the subject welds may be impractical because of the physical size of magnetic particle equipment. However, the Licensee has not discussed the impracticality of performing the Code-required surface examination using liquid penetrant testing techniques.

Conclusions: Based on evaluation of the Licensee's submittal of request for relief RR-11 and review of Drawings XI-BH-3 (RPV Stabilizer Brackets) and XI-BN (RPV Layout), it is concluded that the surface examination of the subject welds is not impractical to perform to the extent required by the Code using liquid penetrant testing techniques. Therefore, it is recommended that relief be denied.

3.1.2 Pressurizer (Does not apply to BWRs)

3.1.3 Heat Exchangers and Steam Generators (No relief requests)

3.1.4 Piping Pressure Boundary

3.1.4.1 Request for Relief RR-10, Examination Category B-F, Item B5.130, Class 1 Dissimilar Metal Piping Welds

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-F, Item B5.130 requires a 100% volumetric and surface examination of Class 1 pressure retaining dissimilar metal welds as defined by Figure IWB-2500-8.

Licensee's Code Relief Request: Relief is requested from examining 100% of the Code-required volume (CRV) of the following Class 1 pressure retaining dissimilar metal welds:



<u>Weld Identification</u>		<u>CRV Examinable</u>
DLA-212-1	FW1	85%
DLA-212-2	FW1	85%
DLA-212-3	FW1	85%
DLA-212-4	FW1	85%
DLA-211-1	FW7	80%

Licensee's Proposed Alternative Examination: None. In addition to the Code-required surface examination, the Code-required volumetric examination will be performed to the maximum extent practical (see above table).

Licensee's Basis for Requesting Relief: The Licensee reports that complete examination of the required examination volume of Figure IWB-2500-8 is not practical utilizing current ultrasonic examination techniques. Nonparallel surfaces within the required axial scan path on certain valves and fittings limit complete examination of the base material adjacent to the weld.

A complete ultrasonic examination scanning parallel to the weld and a complete surface examination can be performed on the affected welds. Axial scanning of the weld and required volume will be performed to the maximum extent practical.

Evaluation: All five of the subject welds are valve-to-flued head welds which limit volumetric examinations due to component configuration. Therefore, the volumetric examination of the subject Class 1 pressure retaining dissimilar metal welds is impractical to perform to the extent required by the Code. In order to examine the welds in accordance with the requirement, these components would require design modifications. Imposition of the requirement on Philadelphia Electric Company would, therefore, cause a burden that would not be compensated significantly by an increase in safety above that provided by the proposed examination.

The Licensee has stated that the Code-required surface examination will be performed and that the volumetric examination will be performed to the maximum extent practical. A significant percentage (80% or greater) of the Code-required volumetric examination can and will be performed. Therefore, the limited Section XI volumetric examination, along with the Code-required surface examination, will provide adequate assurance that unallowable inservice flaws have not developed in the subject welds or that they will be detected and removed or repaired prior to the return of the piping to service.

Conclusions: It is concluded that the volumetric examination of the subject dissimilar metal welds is impractical to perform at Limerick, Unit 2, to the extent required by Section XI of the ASME Code and that public health and safety will not be endangered by allowing the proposed examination to be performed in lieu of the Code requirement. Therefore, it is recommended that relief be granted as requested.

### 3.1.5 Pump Pressure Boundary

#### 3.1.5.1 Request for Relief RR-02, Examination Category B-L-2, Item B12.20, Reactor Recirculation Pump Casings

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-L-2, Item B12.20 requires a 100% VT-3 visual examination of the internal surfaces of at least one of the two reactor recirculation pump casings during the first inservice inspection interval.

Licensee's Code Relief Request: Relief is requested from performing the Code-required VT-3 visual examination of the reactor recirculation pump casings.

Licensee's Proposed Alternative Examination: The Code-required VT-3 visual examinations will be performed on the accessible internal surfaces of one reactor recirculation pump should the required inspection area of either pump become accessible as a result of disassembly of the pump for other purposes.

Licensee's Basis for Requesting Relief: The Licensee reports that, in the absence of any other required maintenance on either of the reactor recirculation pumps, the hardships associated with pump disassembly, solely for the purpose of visual inspection of the internal surfaces, far exceed any safety benefits resulting from such an inspection.

The disassembly of a reactor recirculation pump at Limerick Generating Station, Unit 2, constitutes a maintenance task of major proportions measured both in terms of manhours and associated personnel exposure.

Evaluation: The visual examination is performed to determine if unanticipated severe degradation of the casing is occurring due to phenomena such as erosion, corrosion, or cracking. However, experience with similar pumps at other plants has not shown any significant degradation of pump casings. Because of this, later editions and addenda of the ASME Code (1988 Addenda) have eliminated disassembly of pumps for the sole purpose of performing examinations of the internal surfaces and state that only pumps that are disassembled for reasons such as maintenance, repair, or volumetric examination must have their internal surfaces examined.

Philadelphia Electric Company has stated that the Code-required visual examination will be performed on the internal pressure boundary surface of one reactor recirculation pump if one of the two pumps is disassembled such that access for conducting the examination is provided.

Examination of internal surfaces of pumps necessitates complete disassembly of the pump which, in addition to the possibility of damage to the pump, would result in personnel receiving excessive radiation exposure. The disassembly of the reactor recirculation pumps for the sole purpose of visual examination of the casing internal surfaces is a major effort and requires many manhours from skilled maintenance and inspection personnel. The increase in plant safety would not compensate for the burden placed on the Licensee that would result from imposition of the requirement.

Since no major problems have been reported in the industry with regard to pump casings, the Licensee's proposal will provide adequate assurance of the continued inservice structural integrity.

Conclusions: The disassembly of a pump for the sole purpose of inspection is impractical to perform at Limerick, Unit 2, because this activity, in addition to the possibility of damage to the pump, would result in personnel receiving excessive radiation exposure. Imposition of the requirements on Philadelphia Electric Company would cause a burden that would not be compensated significantly by an increase in safety above that provided by the proposed examination. Therefore, it is concluded that public health and safety will not be endangered by allowing the proposed examination to be performed in lieu of the Code requirement. It is recommended that relief be granted provided that, if the pump has not been disassembled, this fact should be reported by the Licensee in the ISI Summary Report at the end of the interval.

### 3.1.6 Valve Pressure Boundary

#### 3.1.6.1 Request for Relief RR-03, Examination Category B-M-2, Item B12.50, Class 1 Valve Bodies

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-M-2, Item B12.50 requires a 100% VT-3 visual examination of the internal surfaces of one valve within each group of valves that are of the same constructional design and manufacturing method and that perform similar functions in the system, once during the first inservice inspection interval.

Licensee's Code Relief Request: Relief is requested from performing the Code-required VT-3 visual examination of valve body internal surfaces.

Licensee's Proposed Alternative Examination: If, in the course of plant maintenance activities, the internal surfaces of the body of an Examination Category B-M-2 valve, within any of the valve groupings, becomes accessible, then a VT-3 visual examination will be performed on that valve to meet the examination requirements for that grouping.

Licensee's Basis for Requesting Relief: The Licensee states that the requirement to disassemble Class 1 valves solely for the purpose of performing a visual examination of the internal surfaces of the valve body is impractical. The hardships and potential hazards associated with disassembly far outweigh any foreseeable increase in plant safety resulting from the examination.

Many of the subject valves are nonisolatable from the reactor pressure vessel and would require off-loading of fuel and draining the reactor pressure vessel prior to disassembly for examination. Other valves would require the installation of



plugs in associated system piping. Personnel radiation exposure to perform disassembly of any of the valves is also a major consideration.

Evaluation: The visual examination is performed to determine if unanticipated severe degradation of the valve body is occurring due to phenomena such as erosion, corrosion, or cracking. However, experience with similar valves at other plants has not shown any significant degradation of valve bodies. Because of this, later editions and addenda of the ASME Code (1988 Addenda) have eliminated disassembly of valves for the sole purpose of performing examinations of the internal surfaces and state that only valves that are disassembled for reasons such as maintenance, repair, or volumetric examination must have their internal surfaces examined.

Philadelphia Electric Company has stated that the Code-required visual examination will be performed on the internal pressure boundary surface of one valve in each of the groups of valves if maintenance activities require disassembly of a valve such that access for conducting the examination is provided.

Examination of internal surfaces of a valve body necessitates complete disassembly of the valve which, in addition to the possibility of damage to the valve, would result in personnel receiving excessive radiation exposure. The disassembly of the subject valves for the sole purpose of visual examination of the valve body internal surfaces is a major effort and requires many manhours from skilled maintenance and inspection personnel. The increase in plant safety would not compensate for the burden placed on the Licensee that would result from imposition of the requirement.

Since no major problems have been reported in the industry with regard to valve bodies, the Licensee's proposal will provide

adequate assurance of the continued inservice structural integrity.

Conclusions: The disassembly of a valve for the sole purpose of inspection is impractical to perform at Limerick, Unit 2, because this activity, in addition to the possibility of damage to the valve, would result in personnel receiving excessive radiation exposure. Imposition of the requirements on Philadelphia Electric Company would cause a burden that would not be compensated significantly by an increase in safety above that provided by the proposed examination. Therefore, it is concluded that public health and safety will not be endangered by allowing the proposed examination to be performed in lieu of the Code requirement. It is recommended that relief be granted provided that, if the valve has not been disassembled, this fact should be reported by the Licensee in the ISI Summary Report at the end of the interval.

### 3.1.7 General (No relief requests)

## 3.2 Class 2 Components

### 3.2.1 Pressure Vessels

#### 3.2.1.1 Request for Relief RR-06, Examination Category C-A, Item C1.10, Residual Heat Removal Heat Exchanger Shell Circumferential Welds

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-A, Item C1.10 requires a 100% volumetric examination of Class 2 pressure vessel shell circumferential welds at gross structural discontinuities as defined by Figure IWC-2500-1. Examination is required on only one residual heat removal (RHR) heat exchanger.

Licensee's Code Relief Request: Relief is requested from examination of 100% of the Code-required volume of the shell-to-flange weld on one of the two Class 2 RHR heat exchangers.

Licensee's Proposed Alternative Examination: None. The Code-required volumetric examination will be performed to the maximum extent practical.

Licensee's Basis for Requesting Relief: Complete ultrasonic examination of the shell-to-flange weld (on either heat exchanger) is limited due to access restrictions from the flange bolting. Bolting protruding through the vessel flange prohibits completion of the required ultrasonic scanning parallel to the weld. Transverse scans can be performed from the shell side of the weld, thereby providing approximately 87.5% coverage of the Code-required volume. Disassembly of the flange mechanical connection, to facilitate complete examination, is not practical and represents significant hardship in exchange for minimal benefit.

Evaluation: The volumetric examination of the subject RHR heat exchanger shell-to-flange weld is impractical to perform to the extent required by the Code because of the obstruction of the bolting protruding through the vessel flange. The Licensee has stated that the volumetric examination of the RHR heat exchanger shell-to-flange weld will be performed to the maximum extent practical. A significant percentage (87.5%) can and will be examined. In order to examine the remaining 12.5% of the weld, the flange connection would have to be disassembled. In addition to ALARA concerns, the disassembly would be a significant effort and would require many manhours from skilled maintenance and inspection personnel. Imposition of this requirement on Philadelphia Electric Company would cause a burden that would not be compensated significantly by an

increase in safety above that provided by the proposed examination.

Thus, the limited Section XI volumetric examination will provide adequate assurance that unallowable inservice flaws have not developed in the weld or that they will be detected and removed or repaired prior to the return of the RHR heat exchanger to service.

Conclusions: It is concluded that the volumetric examination of the subject weld is impractical to perform at Limerick, Unit 2, to the extent required by Section XI of the ASME Code and that public health and safety will not be endangered by allowing the limited volumetric examination to be performed in lieu of the Code requirement. Therefore, it is recommended that relief be granted as requested.

### 3.2.2 Piping (No relief requests)

### 3.2.3 Pumps

#### 3.2.3.1 Request for Relief RR-07, Examination Category C-G, Item C6.10, Residual Heat Removal and Core Spray Pump Casing Welds

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-G, Item C6.10 requires a 100% surface examination of Class 2 pressure retaining pump casing welds of one pump in each group of multiple pumps (of similar design, size, function, and service) during the first inspection interval. Examination shall be as defined by Figure IWC-2500-8.

Licensee's Code Relief Request: Relief is requested from performing the Code-required surface examination of the pressure retaining pump casing welds on the RHR and core spray pumps.

Licensee's Proposed Alternative Examination: In the event any or all of the subject welds become accessible upon disassembly of any one of the pumps, the welds will be surface examined from the inside surface to meet the Section XI requirements for that particular pump group. Alternatively, in support of ALARA, a VT-1 visual examination will be performed in lieu of a surface examination. The examination method will be determined by the Licensee based on radiation environment data at the time of access.

Licensee's Basis for Requesting Relief: Welds on each of the RHR and core spray pumps (four welds on RHR and four welds on core spray) are encased in concrete and are totally inaccessible for surface examination. Due to the design of the subject pumps, access to the affected welds can only be achieved through disassembly of the pump, removal of the pump internals, and the required surface examination performed from the inside surface of the welds.

Evaluation: As stated by the Licensee, four of the welds on each of the subject pumps are encased in concrete. Therefore, the Code-required surface examination of the subject welds is impractical to perform. The disassembly of the pumps for the sole purpose of inspection is a major effort and could result in damage to the pumps. Requiring Philadelphia Electric Company to disassemble the pump and remove the pump internals to perform the Code-required surface examination would cause a burden that would not be compensated significantly by an increase in safety above that provided by the proposed alternative.

The Licensee's proposed alternative is to examine these welds if any of the subject pumps are disassembled for repair or maintenance. The remaining accessible casing welds in each of one RHR and one core spray pump will be surface examined to Section XI requirements. In addition, all pumps are subject to the visual examination requirements of Examination Category C-H



and the functional test requirements of Section IWP, thereby providing reasonable assurance of the continued inservice structural integrity.

Conclusions: It is concluded that the surface examination required by Section XI of the ASME Code for the subject welds is impractical to perform at Limerick, Unit 2, and that public health and safety will not be endangered by allowing the alternative examination to be performed in lieu of the Code requirement. Therefore, it is recommended that relief be granted provided that, if the pumps have not been disassembled, this fact should be reported by the Licensee in the ISI Summary Report at the end of the interval.

3.2.4 Valves (No relief requests)

3.2.5 General

3.2.5.1 Request for Relief RR-05, Examination Category C-C, Items C3.10 and C3.30, Integrally Welded Attachments to Class 2 Pressure Vessels and Pumps

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-C, Items C3.10 and C3.30 both require surface examination of 100% of required areas of each welded attachment to vessels and pumps during the first inservice inspection interval. In the case of multiple vessels, only the integrally welded attachments of one vessel in a group of vessels of similar design and service (or the equivalent of one vessel) need be examined. The examinations shall be as defined by Figure IWC-2500-5.

Licensee's Code Relief Request: Relief is requested from examining 100% of the Code-required surface (CRS) of each of the following integrally welded attachments to Class 2 pressure vessels and pumps:

<u>RHR Heat Exchanger Tie Down Brackets</u>		
Attachment	CRS	
<u>Identification</u>	<u>Examinable</u>	
2AE-205 TD-1	0%	(Relief for interior welds only)
2BE-205 TD-2	0%	
2AE-205 TD-3	0%	
2BE-205 TD-4	0%	

<u>RHR Heat Exchanger Mounting Supports</u>		
Attachment	CRS	
<u>Identification</u>	<u>Examinable</u>	
2BE-205 MS-1	75%	(Relief for outside welds only)
2AE-205 MS-2	75%	
2JE-205 MS-3	75%	
2AE-205 MS-4	75%	

<u>RCIC Pump Mounting Support</u>		
Attachment	CRS	
<u>Identification</u>	<u>Examinable</u>	
20P-203 PS-1	84%	
20P-203 PS-2	84%	
20P-203 PS-3	84%	
20P-203 PS-4	84%	

Licensee's Proposed Alternative Examination: None. The Code-required surface examination will be performed to the maximum extent practical.

Licensee's Basis for Requesting Relief: Examination of the interior welds on the tiedown brackets for the RHR heat exchanger is limited due to insertion of the tiedown anchor plates; the outside welds are completely accessible. Examinations are limited on both RHR heat exchangers.

Examination of the outside attachment welds on the mounting support attachments for the RHR heat exchanger is limited by the supporting "I" beam. The inside welds are completely accessible. Examinations are limited on both RHR heat exchangers.

Examination of the bottom portion of the mounting support attachment welds on the RCIC pump is limited due to proximity to the pump pedestal.

The Licensee reports that increased examination coverage is not possible without undue hardship, such as a plant modification.

Evaluation: The configuration and location of support attachments are such that the surface of the subject integral attachment welds cannot be fully examined. Therefore, the surface examination of the subject integrally welded attachments is impractical to perform to the extent required by the Code. In order to examine the welds in accordance with the requirements, the plant/components would require design modifications. Imposition of the requirement on Philadelphia Electric Company would, therefore, cause a burden that would not be compensated significantly by an increase in safety above that provided by the proposed examination.

The Licensee has stated that the surface examination of these welds will be performed to the maximum extent practical. Based on the design, a reasonable percentage of the Code-required surface examination can and will be performed, thereby, providing reasonable assurance of the continued inservice structural integrity.

Conclusions: It is concluded that the surface examination of the subject integrally welded attachments is impractical to perform at Limerick, Unit 2, to the extent required by Section XI of the ASME Code and that public health and safety will not be endangered by allowing a limited surface examination to be performed in lieu of the Code requirement. Therefore, it is recommended that relief be granted as requested.

3.3 Class 3 Components (No relief requests)

3.4 Pressure Tests (No relief requests)

### 3.5 General

#### 3.5.1 Ultrasonic Examination Techniques (No relief requests)

#### 3.5.2 Exempted Components (No relief requests)

#### 3.5.3 Other

##### 3.5.3.1 Request for Relief RR-04, Examination Category F-C, Item F3.50, Snubber Functional Testing

NOTE: The functional testing of snubbers is not included in this evaluation. Functional tests are not in the scope of this document and will be evaluated elsewhere.

##### 3.5.3.2 Request for Relief RR-09, Examination Category F-A, Sampling Plan For Class 1, 2, and 3 Piping Supports

Code Requirement: Section XI, Paragraph IWF-2510 requires that component supports selected for examination be supports of those components that are required to be examined under IWB, IWC, and IWD during the first inspection interval. These component supports shall be examined in accordance with Table IWF-2500-1.

Section XI, Paragraph IWF-2430 details the steps to be taken should additional examinations be required as a result of component support examinations requiring corrective actions per IWF-3000.

Licensee's Code Relief Request: Relief is requested from the IWF-2510 rules for component support selection and the IWF-2430 rules for additional examination.

Licensee's Proposed Alternative Examination: The Licensee proposes a sampling plan based on selection of a specified percentage of the nonexempt population of component supports; the exact percentage is determined by the Class of the component support.

Within the population, each individual component support is categorized by a support type which identifies its function (e.g., anchor, mechanical snubber, rigid, variable).

The required number of component support selections shall be distributed within each class by system and type, proportional to the number of supports of each type within each system.

Licensee's Basis for Requesting Relief: The Code does not provide specific guidance for component support selection and, therefore, user interpretation of the rules, as written, may not meet the intent of the Code. In addition, the rules for additional examinations are general and cannot effectively complement the selection basis, nor target specific failure modes.

While IWF-2510 implies that component supports be selected for examination, specific criteria for this selection has not been provided. Interpretation of these requirements is inconsistent and may vary by Code Category of the supported component.

Also, the current provisions in the Code for additional examinations are random and may or may not target a potential failure mode to a specific support population. Enhancement of the component support selection basis should also include a complementary plan for selection of additional examinations.

Evaluation: Review has been completed on Attachment 1 to Relief Request RR-09 titled "Class 1, 2, and 3 Piping Supports Sampling Plan." This document provides the specific details of



the sampling plan to be applied to Limerick Generating Station, Unit 2, with regard to the component supports selected for examination and the rules that apply when additional support examinations are required.

The ASME Code has recognized the need for a more definitive selection basis for component supports and has been looking at several different sampling plans for inclusion in a later edition of the Code. It is reported that the sampling plan discussed in the Licensee's submittal parallels the plan recently approved by the ASME Section XI Main Committee. This sampling plan is expected to be included in addenda to Section XI in the near future. Thus, the Licensee's proposed alternative will provide an acceptable level of quality and safety.

Conclusions: It is concluded the the Licensee's proposed alternative for the selection of Class 1, 2, and 3 supports to be examined provides an acceptable level of quality and safety as it meets or exceeds the intent of the Code requirements. Therefore, pursuant to 10 CFR 50.55a(a)(3), it is recommended that relief be granted as requested.

3.5.3.3 Request for Relief RR-12, Authorization Request for Use of ASME Code Case(s)

Code Requirement: Code Cases are periodically published by ASME for the purpose of either clarifying the intent of the Code rules or for providing rules and regulations for circumstances which are not currently covered by existing Code rules but need to be addressed in a timely manner. Use of these nonmandatory Code Cases for inservice inspection is subject to NRC acceptance of the Code Case(s). USNRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," lists those Code

Cases that have been reviewed by the NRC and are generally acceptable for implementation in an ISI Program. Pursuant to 10 CFR 50.55a other Code Cases may be used provided specific authorization is requested.

Licensee's Code Relief Request: The purpose of this relief request is to request authorization of the adoption of ASME Code Cases N-460, N-461, and N-479, not referenced in Regulatory Guide 1.147, for implementation in the Limerick Generating Station, Unit 2, ISI Program.

Licensee's Proposed Alternative Examination: The following Code Cases are requested to be used in the Limerick Generating Station, Unit 2, ISI Program:

- (a) ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds;"
- (b) ASME Code Case N-461, "Alternative Rules for Piping Calibration Block Thickness;" and
- (c) ASME Code Case N-479, "Boiling Water Reactor (BWR) Main Steam System Hydrostatic Test."

Licensee's Basis for Requesting Relief: ASME Code Case N-460 will reduce the number of welds requiring relief requests due to incomplete examination coverage resulting from structural or geometric interferences which reduce the examination volume or area by less than 10%. Additional relief is requested to extend the applicability of this Code Case to Class 3 examination. Provided adequate examination documentation is prepared, the reduced coverages allowed for Class 1 and 2 welds can also be extended to Class 3 welds with no compromise of Code intent.

ASME Code Case N-461 permits a plus or minus 25% tolerance for piping calibration block thicknesses. The minus 25% tolerance allowed by this Code Case is consistent with the requirements of ASME Section V, Article 5. The plus 25% tolerance could

slightly increase the examination sensitivity which would result in a more conservative examination. The adoption of this Code Case will provide for use of existing calibration blocks for a greater latitude of material thicknesses.

ASME Code Case N-479 permits hydrostatic testing Class 2 portions of the main steam system in BWRs, in which the boundary valve between the Class 2 portion and the Class 1 portion is not capable of isolating the Class 2 portion from the Class 1 portion, at the Class 1 hydrostatic test pressure.

Evaluation: ASME Code Case N-460 provides for an alternative examination coverage for Class 1 and Class 2 welds. This code case was approved by the ASME Code Committee on July 27, 1988. The code case was approved in Revision 8 of USNRC Regulatory Guide 1.147 (Reference 15) for generic use. Use of ASME Code Case N-460 is, therefore, acceptable for Class 1 and Class 2 welds. With regard to applying this code case to Class 3 welds, the code case is applicable for surface and volumetric examinations only and, since the Code does not require surface or volumetric examinations of Class 3 welds, cannot be applied to the Class 3 requirements.

ASME Code Case N-461 allows any calibration block thickness to be used that is within  $\pm 25\%$  of the pipe wall thickness to be examined. This code case was approved by the ASME Code Committee on November 30, 1988. The code case was approved in Revision 8 of NRC Regulatory Guide 1.147 for generic use with the following supplemental requirement: Thickness measurements and weld joint contour of the pipe/component must be known and used by the inspector who conducts the UT examination. Use of ASME Code Case N-461 is, therefore, acceptable with the condition stated above.

ASME Code Case N-479 permits the hydrostatic test pressure for the Class 2 portion to meet the requirements of IWA-5000 and IWB-5222. This code case was approved by the ASME Code Committee on July 24, 1989. The NRC has not approved Code Case N-479 for general usage by acceptance in Regulatory Guide 1.147, Revision 8. Therefore, this Code Case must be reviewed by the NRC staff on a case-by-case basis.

Conclusions: It is concluded that public health and safety will not be endangered by allowing ASME Code Cases N-460, N-461, and N-479 to be used at Limerick, Unit 2. Therefore, pursuant to 10 CFR 50.55a(a)(3), it is recommended that approval to use these Code Cases be granted, with the exception of applying Code Case N-460 to Class 3 welds.



#### 4. CONCLUSION

Pursuant to 10 CFR 50.55a(g)(6) or, alternatively, 10 CFR 50.55a(a)(3), it has been determined that certain Section XI required inservice examinations cannot be performed to the extent required by the Code. In all cases for which relief is requested, except Requests for Relief RR-11 and RR-12 (in part), the Licensee has demonstrated that specific Section XI requirements are impractical or that alternative examinations should be performed. For Requests for Relief RR-11 and RR-12 (in part), it is concluded that the Licensee has not provided information to support the determination that the Code requirement is impractical and that requiring the Licensee to comply with the Code requirement would not result in hardship.

This technical evaluation has not identified any practical method by which the Licensee can meet all the specific inservice inspection requirements of Section XI of the ASME Code for the existing Limerick Generating Station, Unit 2, facility. Requiring compliance with all the exact Section XI required inspections would require redesign of a significant number of plant systems, sufficient replacement components to be obtained, installation of the new components, and a baseline examination of these components. Even after the redesign efforts, complete compliance with the Section XI examination requirements probably could not be achieved. Therefore, it is concluded that the public interest is not served by imposing certain provisions of Section XI of the ASME Code that have been determined to be impractical. Pursuant to 10 CFR 50.55a(g)(6), relief is allowed from these requirements which are impractical to implement, or alternatively, pursuant to 10 CFR 50.55a(a)(3), alternatives to the Code-required examinations may be granted provided that either (i) the proposed alternative provides an acceptable level of quality and safety or that (ii) Code compliance would result in hardship or unusual difficulty without a compensating increase in safety. Relief may be granted only if granting the relief will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.



The development of new or improved examination techniques should continue to be monitored. As improvements in these areas are achieved, the Licensee should incorporate these techniques in the ISI program plan examination requirements.

Based on the review of the Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection Program, Revision 0, and the recommendations for granting relief from the ISI examination requirements that have been determined to be impractical, it is concluded that the Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection Program Plan, Revision 0, with the exception of Requests for Relief RR-11 and RR-12 (in part), is acceptable and in compliance with 10 CFR 50.55a(g)(4).

## 5. REFERENCES

1. Code of Federal Regulations, Title 10, Part 50.
2. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Division 1:  
1974 Edition through Summer 1975 Addenda  
1986 Edition
3. Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection Program, Revision 0, dated February 20, 1990.
4. NUREG-0800, Standard Review Plans, Section 5.2.4, "Reactor Coolant Boundary Inservice Inspection and Testing," and Section 6.6, "Inservice Inspection of Class 2 and 3 Components," July 1981.
5. Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," January 25, 1988.
6. NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," November 1980.
7. IE Bulletin 80-13, "Cracking in Core Spray Spargers," April 4, 1980.
8. NUREG/CR-3052 (Closeout of IE Bulletin 80-07), "BWR Jet Pump Assembly Failure," November 1984.
9. NRC Mechanical Engineering Branch Technical Position MEB 3-1, July 1981, "Protection Against Postulated Piping Failures in Fluid Systems Outside Containment" (NUREG 0800).
10. GE SIL No. 455, "Recommendation for Additional ISI of Alloy 182 Nozzle Weldments," Revision 1, Supplement 1, Category 1, June 23, 1989.
11. Limerick Generating Station Final Safety Analysis Report (FSAR).
12. GE SIL No. 409, "Incore Dry Tube Cracks," Revision 1, Category 2, July 31, 1986.
13. GE SIL No. 420, "Inspection of Jet Pump Sensing Lines," Category 1, March 28, 1985.
14. Limerick Generating Station, Unit 2, Technical Specifications 3/4.7.4, Snubbers.
15. USNRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI Division 1," Revision 8, November 1990.

BIBLIOGRAPHIC DATA SHEET

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11. ABSTRACT (200 words or less)

This report presents the results of the evaluation of the Limerick Generating Station, Unit 2, First 10-Year Interval Inservice Inspection (ISI) Program, Revision 0, submitted February 26, 1990, including the requests for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI requirements that the Licensee has determined to be impractical. The Limerick Generating Station Unit 2, First 10-Year Interval ISI Program is evaluated in Section 2 of this report for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of examination sample, (c) correctness of the application of system or component examination exclusion criteria, and (d) compliance with ISI-related commitments identified during the Nuclear Regulatory Commission (NRC) review before granting an operating license. The requests for relief are evaluated in Section 3 of this report.

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