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10 CFR 50.55a

December 19, 2001

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Subject: Second Ten-Year Interval Inservice Inspection (ISI) Program

References: 1) Letter from J. A. Hutton (PECO Energy Company) to U. S. Nuclear Regulatory Commission (USNRC), dated January 9, 2001

2) Letter from C. Gratton (USNRC) to O. D. Kingsley (Exelon Generation Company, LLC), dated May 4, 2001

3) Letter from J. A. Hutton (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission (USNRC), dated May 15, 2001

4) Letter from J. A. Hutton (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission (USNRC), dated May 23, 2001

5) Letter from J. A. Hutton (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission (USNRC), dated June 27, 2001

6) Letter from M. P. Gallagher (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission (USNRC), dated August 16, 2001

7) Letter from J. W. Clifford (USNRC) to O. D. Kingsley (Exelon Generation Company, LLC), dated September 12, 2001

8) Letter from M. P. Gallagher (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission (USNRC), dated September 20, 2001

9) Letter from M. P. Gallagher (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission (USNRC), dated October 26, 2001

Dear Sir/Madam:

In the Reference 1 letter, PECO Energy Company (now Exelon Generation Company, LLC) submitted proposed relief requests and alternatives for review and approval concerning the update of the Second Ten-Year Interval Inservice Inspection (ISI) Program for Limerick

A047

Generating Station (LGS), Units 1 and 2. Enclosed for your information are copies of the updated ISI Programs for LGS, Units 1 and 2, respectively.

If you have any questions, please contact us.

Very truly yours,

Michael P. Gallagher
Director, Licensing and Regulatory Affairs
Mid-Atlantic Regional Operating Group

Enclosure 1 - Limerick Generating Station, Unit 1
Inservice Inspection Program, Specification NE-042, Revision 3

Enclosure 2 - Limerick Generating Station, Unit 2
Inservice Inspection Program, Specification NE-027, Revision 2

cc: H. J. Miller, Administrator, Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS
C. Gratton, Senior Project Manager, USNRC

ENCLOSURE 1
LIMERICK GENERATING STATION, UNIT 1
INSERVICE INSPECTION PROGRAM
SPECIFICATION NO. NE-042

NUCLEAR SAFETY RELATED

SPECIFICATION FOR

LIMERICK GENERATING STATION

UNITS 1 AND COMMON

INSERVICE INSPECTION PROGRAM

System/Topic No. 101
Use of this Specification is not limited to the Systems/Topics listed above.

Responsible Organization
LEDX Branch

3		Issued per ECR LG 00-00332							
			ORIGINATOR	REVIEWER	APPROVAL	APPROVAL	APPROVAL	APPROVAL	APPROVAL
REV NO.	DATE	REASON FOR ISSUE	LEAD		NON-LEAD				

SUMMARY of CHANGES: REVISION No. 3

The following posted change documents are being incorporated in this revision:

1. ECR LG-98-02300, Revision 1
2. ECR LG 98-02304, Revision 0
3. ECR LG-99-00049, Revision 0
4. ECR LG-99-01540, Revision 1
5. ECR LG 99-02631, Revision 0

Specific changes within this revision include:

1. Miscellaneous Format corrections, updates, and changes.
2. ECR LG-98-02300, Revision 1
   Revised Program No. AUG-01, USNRC Generic Letter 88-01, to increase the scope of piping for the RWCU system and to add Note to explain that no examination is required for this piping.
3. ECR LG 98-02304, Revision 0
   Revised Program No. AUG-13, Snubber Examination and Testing Program, and AUG-14, Balance of Plant Snubber Examination Program, to reflect the new design settings for affected RWCU suction and discharge piping snubbers and to delete hanger numbers DCC-101-H025 and DCC-103-H032 from the ISI Program.
4. ECR LG-99-00049, Revision 0
   Revised Program No. AUG-13, Snubber Examination and Testing Program, and AUG-14, Balance of Plant Snubber Examination Program, to reflect the new thermal movements at each RWCU suction and discharge piping snubber.
   Note: ECR LG 99-00049 describes an interim plant configuration. Final plant configuration is described in ECR LG 98-02304.
5. ECR LG-99-01540, Revision 1
   Revised Program No. AUG-13, Snubber Examination and Testing Program, snubber listing to reflect that PSA ¼ and ½ snubbers were replaced with new hydraulic snubbers, with new testing criteria.
6. ECR LG 99-02631, Revision 0
   Revised Program Tables to reflect 2 new weld numbers associated with HV-050-1F045 valve, EBB-109-1 W2603 and EBB-109-1 W2604 and revised FIG-06-002 to reflect new weld numbers.
7. Program Text changes are described below:
   - Addressed scope to include IWE and IWL containment components and changed requirements resulting from updating from 1986 Edition to the 1989 edition of Section XI.
   - Revised table of contents to reflect additional requirements resulting from change of scope mentioned above.
   - Revised Section 1.0 to add information on the status of the inspection interval at LGS Unit 1.
   - Revised Section 1.1, Reference Documents, to include applicable USNCR SERs.
   - Revised Section 1.2, Definitions, to change definitions for Structural Discontinuity and Terminal End to agree with Specifications P-402 and P-403.
   - Revised Section 2.2.1, Applicability of Subsections IWE and IWL, to address 1996 USNRC changes to 10CFR50 establishing ASME Section XI as the standard for implementation of 10CFR50 Appendix J containment testing.
   - Revised Section 2.5.1 to add information to address how code cases will be used at LGS Unit 1.
   - Revised Table 2.5.1 to add information to update the code cases that are used at LGS Unit 1; reformatted Table 2.5.1.
   - Revised Section 2.5.2 to add information to address how subsequent editions of Section XI may be used to augment the current Inservice Inspection Program at LGS unit 1.
   - Revised Section 2.5.3 to add information to address how alternatives to or relief from the requirements of Section XI will be requested at LGS Unit 1.
   - Revised Section 3.3 to update examination methodology; reformatted section.
   - Revised Section 3.5, Examinations – General, to identify that component selection and scheduling is in accordance with the Program Text and Appendix D in lieu of the Program Tables, update

SUMMARY of CHANGES: REVISION No. 3

information pertaining to the examination of Class 1 longitudinal welds, Class 2 dissimilar metal welds, and multiple components, at LGS unit 1, and update information to describe how the Inservice Inspection Program will be implemented at LGS Unit 1; reformatted section.
- Revised Section 3.6 to reformat information on how relief from Section XI requirements will be requested at LGS Unit 1.
- Revised Section 3.8 to reformat information on how the Summary Report will be prepared at LGS Unit 1.
- Revised Section 9.0, Class 1, 2 and 3 Component Supports, to identify Augmented Inspection Program No. AUG-13 as the program used to satisfy T.S. 3/4.7.4 in lieu of superseding the T.S. Also, delete figure 9.1-1 in light of Figure AUG-13-1.
- Revised Section 9.0, Class 1, 2 and 3 Supports based on Code Case N-491-1 and Integrally Welded Attachments based on Code Case N-509.
- Revised Section 10.0 to add new program to describe how containment will be addressed at LGS Unit 1. This program defines containment and associated examination boundaries, examination requirements, acceptance criteria, and requirements for containment repair and replacement at LGS Unit 1.
- Revised Section 10.0, ISI Program Tables, to delete Figures 10.1-1 and 10.2-1 and move applicable field descriptions to Section 1.3, Abbreviations. Renumbered as Section 11.0 to allow insertion of new Containment ISI Program as Section 10.0.

8. Revised Appendix A, Relief Requests, as follows:
   - Revised status of Relief Request Nos. RR-02, RR-03, RR-04, RR-09, RR-14 through RR-22 to "Not Required/Submitted for Second Interval".
   - Revised status of Relief Request Nos. RR-06, RR-07, RR-12 and RR-13 and added Relief Request Nos. RR-24 through RR-31 based on submittal made to USNRC, dated January 9, 2001.
9. Revised Appendix B, Augmented Inspection Programs as follows:
   - Revised Appendix B to add augmented programs based on recent BWRVIP recommendations.
   - Program AUG-02, BWR Feedwater Nozzle Inspection, was updated to incorporate alternative requirements from BWROG report GE-NE-523-A71-0594, Alternate BWR Feedwater Nozzle Inspection Requirements.
   - Revised AUG-04, to add individual weld numbers to RPV jet pumps based on BWRVIP-41 convention and deleted ASME Code Category and Item Numbers based on classification in UFSAR and GE MPL B11-0000-A-1.
   - Revised AUG-10 to align inspections of non-nuclear safety related RPV internal components with BWRVIP Inspection and Evaluation Guidelines added as Augmented Inspection Program Nos. AUG-20 through AUG-30 (except AUG-22).
   - Deleted AUG-12, Inspection of jet pump sensing lines have been incorporated in AUG-04.
   - Revised AUG-20 to change core shroud inspection requirements from GL 94-03 to updated reference BWRVIP-76.
   - Added Program AUG-23, Core Plate, was written to comply with the recommendations of BWRVIP-25, BWR Core Plate Inspection and Flaw Evaluation Guidelines.
   - Added Program AUG-24, Standby Liquid Control and Core Plate ΔP Nozzle, was written to comply with the recommendations of BWRVIP-27, BWR Standby Liquid Control System/Core Plate ΔP Inspection and Flaw Evaluation Guidelines.
   - Added Program AUG-25, Core Shroud Support, was written to comply with the recommendations of BWRVIP-38, BWR Shroud Support Inspection and Flaw Evaluation Guidelines.
   - Added Program AUG-26, LPCI Coupling, was written to comply with the recommendations of BWRVIP-42, LPCI Coupling Inspection and Flaw Evaluation Guidelines.
   - Added Program AUG-27, Lower Plenum, was written to comply with the recommendations of BWRVIP-47, BWR Lower Plenum Inspection and Flaw Evaluation Guidelines.
   - Added Program AUG-28, Reactor Pressure Vessel ID Attachment Welds, was written to comply with the recommendations of BWRVIP-48, Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines.
   - Added Program AUG-29, Instrument Penetrations, was written to comply with the

SUMMARY of CHANGES: REVISION No. 3

recommendations of BWRVIP-49, Instrument Penetration Inspection and Flaw Evaluation Guidelines.
- Added Program AUG-30, Reactor Pressure Vessel Shell Welds, was written to comply with the recommendations of BWRVIP-05, BWR Reactor Pressure Vessel Shell Weld Inspection Recommendations.

10. Revised Appendix C to reflect new Containment Boundary Drawings.
11. Revised Appendix D, Selection Criteria, as follows:
    - Revised applicability to selection criteria for ASME Code examination categories that require sample selection. Deleted selection criteria for Augmented ISI Programs as this criteria is included in each of the Augmented Programs.
    - Revised attachments to Appendix D to reflect changes due to incorporation of posted change plant modifications on selection and population of components.
12. Revised Attachment 2, ISI Program Position Papers, to include PSL-00-001 for Snubber Operability Log and PSL-01-001 for Successive Inspections.
13. Added Attachment 3, Acceptance Criteria for ASME Subsections IWE and IWL.
14. Added Attachment 4, AUG-13 Visual Examination and Acceptance Criteria Tables and Figures, which relocated previously found information from Appendix B, AUG-13 to Attachment 4.

SUMMARY of CHANGES: REVISION No. 2

The following posted change documents are being incorporated in this revision:

1. Addendum No. 1 to Specification NE-042, Revision No. 1
2. Addendum No. 2 to Specification NE-042, Revision No. 1
3. Addendum No. 3 to Specification NE-042, Revision No. 1
4. ECR LG 94-11834, Revision 0
5. ECR LG 94-11835, Revision 0
6. ECR LG 94-11836, Revision 0
7. ECR LG 94-11979, Revision 0
8. ECR LG 95-00858, Revision 1
9. ECR LG 95-01807, Revision 0
10. ECR LG 95-02324, Revision 0
11. ECR LG 95-04921, Revision 0
12. ECR LG 95-05749, Revision 0
13. ECR LG 96-00247, Revision 0
14. ECR LG 96-00761, Revision 0
15. ECR LG 96-00845, Revision 0
16. ECR LG 96-02124, Revision 0
17. ECR LG 97-01211, Revision 2
18. ECR LG 97-01985, Revision 1
19. ECR LG 97-01987, Revision 1
20. ECR LG 97-01988, Revision 1
21. ECR LG 97-01989, Revision 1
22. ECR LG 97-02021, Revision 1
23. ECR LG 97-02067, Revision 0
24. ECR LG 97-02257, Revision 1
25. ECR LG 98-00127, Revision 2
26. ECR LG 98-00884, Revision 0
27. ECR LG 98-01069, Revision 0
28. NCR LG 95-00051, Revision 0

Specific changes within this revision include:

1. Miscellaneous format corrections, updates and changes.
2. Incorporated Addendum No. 1 to Specification NE-042, Revision No. 1
3. Incorporated Addendum No. 2 to Specification NE-042, Revision No. 1
4. Incorporated Addendum No. 3 to Specification NE-042, Revision No. 1
5. ECR LG 94-11834 -
   - Revised ISI Program Table for ESW HBC-081-1.
   - Added ISI Program Table for ESW HRC-001-01.
   - Revised Appendix C list of ASME Class 3 ESW Fabrication Isometric Drawings for new drawing, HRC-001-01.
6. ECR LG 94-11835 -
   - Revised ISI Program Table for RHR SW HBC-508-1.
   - Added ISI Program Table for ESW C-1078.
   - Revise Appendix C list of ASME Class 3 ESW Fabrication Isometric Drawings for new drawing, C-1078.
7. ECR LG 94-11836 -
   - Revised ISI Program Table for RHR SW HBC-091-1.
   - Added ISI Program Table for RHR SW HBC-563-1 added to ISI Program per Revision 1, Addendum 2.

SUMMARY of CHANGES: REVISION No. 2

- Revised ISI Program Table for RHR SW HBC-280-1.
- Revise Appendix C list of ASME Class 3 RHR SW Fabrication Isometric Drawings for new drawing, HBC-563-01.

8. Annotate commitments per LR-C-1, the PIMS Commitment Tracking Module and ECR LG 94-11979 as modified by ECR LG 95-05749 -
   - Program No. AUG-01; T01980 (CM-1), T02670 (CM-6) and T03995 (CM-1).
   - Program No. AUG-03; T02668 (CM-5 and T03843 (CM-5).
   - Program No. AUG-04; T02668 (CM-4 .
   - Program No. AUG-19; T02666 (CM-2 .
   - Program No. AUG-20; T03848 (CM-8 .
   - Program No. AUG-22; T03645 (CM-9 .
   - Relief Request No. RR-13; T03661 (CM-7).
   - Section 3.3.2; T02667 (CM-3).
9. ECR LG 95-02324 -
   - Revised Program No. AUG-01, Sections I.B.4 and IV.B, to change requirements for IGSCC examinations of Class 3 RWCU pipe welds per GL 88-01, Supplement 1.
10. ECR LG 95-04921 -
    - Revised ***References*** 1.1.5 and 1.1.6 and Exemptions, Section 2.3, to reflect changes to the ISI Exemption Calculations as a result of Power Rerate.
11. ECR LG 95-05749 -
    - Revised Table 2.5-1, Code Case Applicability to the ISI and Repair and Replacement Programs, to add Cases N-416-1 and N-498-1.
    - Revised Appendix A, Relief Requests to indicate USNRC submittal/approval status of Requests.
    - Revise Program No. AUG-13, 10% sample plan to 13.3% sample plan to match changes to T.S. 3/4.7.4.
    - Revised Program No. AUG-14, to include a 10-year visual examination frequency.
    - Added Position Paper PSC-95-001 to ISI Program, Attachment 2.
12. ECR LG 96-00247 -
    - Revised Program No. AUG-15, Shroud Head Bolt Cracks, to incorporate SIL-443, Supplement 1, which allows reduction in UT examination frequencies based on periodic visual verification of bolt latching/unlatching.
13. ECR LG 96-00761 -
    - Revised Program No. AUG-10 Table, Non-Q Reactor Pressure Vessel Internals, for Steam Dryer to add Notes referencing ECR/NCR LG 96-00761 and Unit 2 ECR/NCR LG 95-00051.
14. ECR LG 96-00845 -
    - Revised Program No. AUG-20 Table, Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors, for Shroud Weld H3 to add Notes referencing ECR/NCR LG 96-00845.
15. ECR LG 96-02124 -
    - Revised ISI Program Tables, Feedwater System, Drawing Nos. 05-101 and 05-103, for supports DLA-107 H3, DLA-107 H4, DLA-108 H3 and DLA-108 H4, to add Notes referencing ECR/DCR LG 96-02124.
16. ECR LG 97-01211 -
    - Revised ISI Program Table, High Pressure Coolant Injection System, Drawing No. 02-02. Delete weld HP 054 and replace it with weld EBB-108-2 FW261. Deleted weld HP 055R and replace it with weld EBB-108-2 FW262.
    - Revised posting in PIMS for affected ISI document. Closed posting against NE-042, SPEC DOC TYPE, for changes to drawing FIG-02-002, ISI DOC TYPE, by remarking the drawing changes, attaching the markup to this ECR and directly posting the drawing in PIMS (in lieu of posting the Spec) per the Affected Documents page in this ECR.
17. ECR LG 97-02021 -
    - Revised Section 1.1, Reference Documents, to add new ***references*** 1.1.9 and 1.1.19 for USNRC IEB Nos. 95-02 and 96-03.
    - Revised Appendix B to include new Augmented Inspection Program No. AUG-22.

SUMMARY of CHANGES: REVISION No. 2

- Revised Appendix C, List of ASME Section XI Class 1 and 2 Isometrics for new RHR and CS Suction Strainer supports.
- Revised Appendix D to include selection criteria basis for new Program No. AUG-22.
- Added ISI Program Tables, Residual Heat Removal System, for new Drawing Nos. 01-127, 01-128, 01-129 and 01-130.
- Added ISI Program Tables, Core Spray System, for new Drawing Nos. 04-108, 04-109, 04-110 and 04-111.

18. ECR LG 98-00127 -
    - Revised ISI Program Table, Residual Heat Removal System, Drawing No. 01-12. Add new welds HBB-118-1 FW1801 and HBB-118-1 FW1802.
    - Revised ISI Program Table, Residual Heat Removal System, Drawing No. 01-112. Delete support lug weld(s) HBB-118-H001(IA) and replace it with weld(s) HBB-118-1 FW1803.
    - Revised posting in PIMS for affected ISI document. Closed posting against NE-042, SPEC DOC TYPE, for changes to drawings FIG-01-012 and FIG-01-112, ISI DOC TYPE, by remarking the drawing changes, attaching the markups to this ECR and directly posting the drawings in PIMS (in lieu of posting the Spec) per the Affected Documents page in this ECR.
19. ECR LG 98-00884 -
    - Revised Program No. AUG-10 Table, Non-Q Reactor Pressure Vessel Internals, for Steam Dryer to add Notes referencing ECR/NCR LG 98-00884.
20. ECR LG 98-01069 -
    - Revised Augmented Inspection Program Nos. AUG-13 and AUG-14 as described in ECR LG 98-01069 and the specific snubber changes listed in Item 25, below.
21. Revised ISI Program Text as follows -
    - Revised Section 1.0, Introduction, to address Program applicability for the second inspection interval.
    - Revised Section 1.1, Reference Documents, to include applicable USNRC SERs.
    - Revised Section 1.2, Definitions, to delete reference to an ISI Implementing Plan. Also, change the definitions for Structural Discontinuity and Terminal End to agree with Specifications P-402 and P-403.
    - Revised Section 2.2.2, Applicability of Subsections IWE and IWL to address 1996 USNRC changes to 10CFR50 establishing ASME Section XI as the standard for implementation of 10CFR50 Appendix J containment testing.
    - Revised Table 2.5-1 and applicable Notes to update USNRC approval status per Reg. Guide 1.147, latest edition.
    - Revised Section 3.5, Examinations - General, to identify that component selection and scheduling is in accordance with the Program Text and Appendix D in lieu of the Program Tables.
    - Revised Section 9.0, Class 1, 2 and 3 Component Supports, to identify Augmented Inspection Program No. AUG-13 as the program used to satisfy T.S. 3/4.7.4 in lieu of superseding the T.S. Also, delete Figure 9.1-1 in light of Attachment 4, Figure AUG-13-1.
    - Revised Section 10.0, ISI Program Tables, to delete Figures 10.1-1 and 10.2-1 and move applicable field descriptions to Section 1.3, Abbreviations.
22. Revised Appendix A, Relief Requests, as follows -
    - Added new Table A-1, ISI Program Relief Request Approval Status, and reference to the Table in the header of each Relief Request.
    - Revised Relief Requests Nos. RR-01, RR-05, RR-11 and RR-12 based on submittal made to USNRC, dated January 30, 1998.
    - Revised status of Relief Request Nos RR-14, RR-15, RR-16, RR-20 and RR-22 to "Not Required".
23. Revised Appendix B, Augmented Inspection Program No. AUG-01, to add USNRC SER references and specific requirements for Class 3 RWCU welds and nozzle to safe end weld VRR1RD-1A N2H.
24. Revised Appendix B, Augmented Inspection Program Nos. AUG-03, AUG-04 and AUG-07 to update program references.
    - Revised Program No. AUG-03 Tables to add individual weld numbers to RPV internal Core Spay

SUMMARY of CHANGES: REVISION No. 2

piping based on BWRVIP-18 convention. Also, posted changes to drawings XI-BN-8, sheets 3 and 5, ISI DOC TYPE, by marking the drawing changes, attaching the markups to this ECR and directly posting the drawings in PIMS per the Affected Documents page in this ECR.

25. Revised Appendix B, Augmented Inspection Program No. AUG-13, as follows -
    - Added snubber functional test criteria to AUG-13 Program Tables. (***Reference*** BLP 40493, June 1, 1987, MOD 5316).
    - Added snubber design settings to AUG-13 Program Tables.
    - Revised AUG-13 Program Tables to delete snubbers per the following permanent snubber deletion MODs/ECRs:

    MOD P00017-1, ECR 97-01985, ECR 94-06219, ECR 97-02067, ECR 97-01989, ECR 97-01988, ECR 97-01987, ECR 95-01638, ECR 93-03185, ECR 93-02750 MOD P00466/ECR 95-01807.

    - Added summary of the method of disposition of visual inspection discrepancies identified during snubber visual inspections.

26. Revised Appendix B, Augmented Inspection Program No. AUG-14, as follows -
    - Added snubber functional test criteria to AUG-14 Program Tables. (***Reference*** BLP 40493, June 1, 1987, MOD 5316).
    - Added snubber design settings to AUG-14 Program Tables.
    - Revise AUG-14 Program Tables to delete snubbers per permanent snubber deletion ECRs, ECR 95-00858, ECR 97-02257.
27. Revised Appendix B, Augmented Inspection Program No. AUG-19, to identify Specification
    - P-305, Appendix L, as providing the requirements for marking NDE Reference Systems.
28. Revised Appendix B, Augmented Inspection Program No. AUG-20, to update program bases from GE SIL No. 572 to USNRC GL 94-03.
29. Revised Appendix D, Selection Criteria, as follows -
    - Added references to Specifications P-402 and P-403 and revised definitions for Structural Discontinuity and Terminal End.
    - Revised selection bases for Program No. AUG-20 from GE SIL No. 572 to USNRC GL 94-03.
    - Revised Attachment A, Multiple Component Group Table to include a description of each valve group's pressure-retaining bolting.
    - Revised Attachment C, Examination Category C-F-2 Weld Selection Tables, to reflect changes per MOD 6227-1, MOD 6240-1 and ECR LG 98-00127.
    - Revised Attachment D, Component Support Selection Tables, to reflect changes per MOD 6240-1, ECR LG 97-02021 and snubber reduction MODs identified in Item 25, above.
30. Deleted Attachment 1, Examination Reconciliation Report, for first inspection interval ASME Section XI Code effective date update from 1980/W81 to 1986.
31. Revised Attachment 2, ISI Program Position Papers, to add new position PSC-98-001for ASME Section XI Pressure Testing and Core Criticality.
32. Deleted component selection status and schedule information from Program Tables as in light of the selection criteria included in the ISI Program text and Appendix D, Component Selection Criteria.
33. ISI FIG-01-03 -
    - Replacement of the 1A RHR Heat Exchangers during 1R05 per MOD 6227-1 required the cut out of four (4) existing pipe welds and their replacement with four (4) new pipe welds. New weld numbers were assigned per ECR LG 93-01600 however the ECR did not indicate the use of the pipe spool number as part of the weld number as is physically marked at each weld. During MOD as-building the wrong prefix was annotated on the ISI drawing. Revised the affected weld numbers on the ISI drawing to use the pipe spool number as the prefix.
34. ISI FIG-01-06 -
    - Replacement of the 1B RHR Heat Exchangers during 1R05 per MOD 6227-1 required the cut out of three (3) existing pipe welds and their replacement with three (3) new pipe welds and the

SUMMARY of CHANGES: REVISION No. 2

addition of one (1) new pipe to pipe weld at a convenience cut. New weld numbers were assigned per ECR LG 93-01600 however the ECR did not indicate the use of the pipe spool number as part of the weld number as is physically marked at each weld. During MOD as-building the wrong prefix was annotated on the ISI drawing. Revised the affected weld numbers on the ISI drawing to use the pipe spool number as the prefix.

35. ISI FIG-01-12 and FIG-01-112 -
    - Alternate decay heat removal MOD P00781 installed new RHR shut down cooling valve 051-1193 during 1R07. ECR LG 98-00127 posted the change in the ISI Program. Revised the affected ISI drawings, based on the changes made per ECR LG 98-00127.
36. ISI FIG-01-14, FIG-01-114, FIG-01-20, FIG-02-01A and FIG-02-101A -
    - MOD 6240-1 approved the abandonment of the HPCI steam condensing mode of RHR during 1R05. Changes to HPCI piping and supports were made per ECR LG 98-02749. Changes to RHR piping and supports were made per ECR LG 98-02750. Revised the ISI Program and the affected ISI drawings, based on the changes made per ECR LG 98-02749 and ECR LG 98-02750.
37. ISI FIG-02-02 -
    - HPCI valve HV-055-1F001was replaced 1R07 per ECR LG 97-01211. Changes to the ISI Program and Tables were addressed per that ECR. Revised the affected ISI drawing, based on the changes made per ECR LG 97-01211.
38. ISI FIG-02-101 -
    - Snubber reduction MOD 6140-1 deleted five (5) snubbers from the HPCI steam supply line during 1R05. Changes to the CRL were made per ECR 94-06219. Revised the ISI Program and the affected ISI drawing, based on the changes made per ECR LG 94-06219.
39. ISI XI-1E-205 -
    - Replacement of the 1A and 1B RHR Heat Exchangers during 1R05 per MOD 6227-1 reduced the number of vessel shell courses from four (4) to three (3) requiring a change to the weld and support identification numbers. Revised the ISI Program Table, Residual Heat Removal System, Drawing No. XI-1E-205, and the affected ISI drawing as discussed in this disposition and as marked on the attachment, is authorized per this ECR

SUMMARY of CHANGES: REVISION No. 1, ADDENDUM No. 3

The following posted change documents are being incorporated in this addendum:

ECR LG 93-01600, Revision 0
ECR LG 93-02894, Revision 0
ECR LG 93-03730, Revision 0
ECR LG 93-03731, Revision 0
ECR LG 94-05946, Revision 1
NCR L90-00015

Specific changes within this addendum include:

1. Added Augmented Inspection Program No. AUG-20, Examination of the Reactor Pressure Vessel Core Shroud Welds. (A0800522, A0789777, ECR LG 93-03730)

2. Added Augmented Inspection Program No. AUG-21, Top Guide Cracking. (A0740544, A0778339, ECR LG 93-03731)

3. Revised Appendix "B" Table of Contents. A0800522, A0789777, A0740544, A0778339)

4. Revised Appendix C listing of applicable Calibration Blocks and their reference drawings. (A0746167, Q0003979)

5. Revised ISI Program Tables based on 1R05 Summary Report. (A0856913)

6. Revised Augmented Inspection Program No. AUG-13 Tables to reflect deletion of two (2) snubbers during 1R05. (ECR LG 94-05946, A0834527)

7. Revised ISI Program Tables to address General Electric SIL No. 551, Jet Pump Riser Brace Arm. NMD procedure MAG-CG-408 is being revised to change VT-3 examination a VT-1 examination. (A0800615)

8. Revised Appendix A to provide review/approval status of individual Relief Requests. (A0834495)

9. Revised ISI Program Tables for RHR system to address weld number changes due to RHR Heat Exchanger replacement per MOD 6227-1. (A0770094, ECR 93-01600)

SUMMARY of CHANGES: REVISION No. 1, ADDENDUM No. 2

The following posted change documents are being incorporated in this addendum:

N/A

Specific changes within this addendum include:

1. Revised ISI Program Table HBC-082-1 per MOD P-00166-2 (Unit 1 and Common work performed 2R03).
2. Revised ISI Program Table HBC-082-2 per MOD P-00166-2 and MOD P-00168-2 (Unit 1 and Common work performed 2R03).
3. Revised ISI Program Table HBC-183-1 per MOD P-00167-2 (Unit 1 and Common work performed 2R03).
4. Revised ISI Program Table HBC-507-1 per MOD P-00168-2 (Unit 1 and Common work performed 2R03).
5. Revised ISI Program Table HBC-509-1 per MOD P-00167-2 (Unit 1 and Common work performed 2R03).
6. Added new ISI Program Table C-1078 and revised Appendix C list of drawings per MOD P-00167-2 (Unit 1 and Common work performed 2R03).
7. Added new ISI Program Table HBC-563-1 and revised Appendix C list of drawings per MOD P-00168-2 (Unit 1 and Common work performed 2R03).
8. Added new ISI Program Table HRC-002-02 and revised Appendix C list of drawings per MOD P-00166-2 (Unit 1 and Common work performed 2R03).

SUMMARY of CHANGES: REVISION No. 1, ADDENDUM No. 1

The following posted change documents are being incorporated in this addendum:

A/R No. A0155701
A/R No. A0669588
A/R No. A0594033
A/R No. A0373448
A/R No. A0667255
NCR L90-125
A/R No. A0371655, Eval.03

Specific changes within this addendum include:

1. Added Attachment 2, "Program Position Papers". All Position Papers, issued to-date, are included. See A/R No. A0373448.

2. Revised Augmented Inspection Program, AUG-01, to incorporate the requirements of Generic Letter 88-01, Supplement 1. Incorporated the requirements and clarifications provided in Generic Letter 88-01, Supplement 1, including RWCU sampling examinations, additional examination requirements for Category D welds, and provisions for evaluation of system effects caused by repair and mitigation techniques. Also developed a position for dealing with incomplete examinations. See A/R Nos. A0667255, A0371655, and A0669588.

3. Deleted Augmented Inspection Program AUG-08. This augmented program was voluntarily developed and is not required to meet any Regulatory Commitment. Experience has shown that the examinations performed under this augmented program are burdensome, without a equitable increase in safety, the program has been deleted, see A/R No. A0155701.

4. Revised program tables to reflect the final disposition of NCR L90-125.

5. Incorporated A/R No.A0594033.

6. Revised "Reference Documents" section of program text to incorporate the latest revision of applicable documents. Referenced Generic Letter 88-01, Supplement 1. Updated referenced revision of Regulatory Guide 1.147.

7. Revised Section 9.3.7 to clarify the requirements for additional examinations of component supports.

8. Revised Augmented Inspection Programs AUG-13 and AUG-14. Deleted snubbers from the applicable augmented inspection program tables to reflect the progress of the snubber reduction program, as documented in the ISI Summary Report.

9. Revised Augmented Inspection Program, AUG-08 text. Corrected reference to number of jet pumps, and clarified that the inspections are not a requirement.

SUMMARY of CHANGES: REVISION No. 1

The following posted change documents are being incorporated in this revision:

N/A

Specific changes within this revision include:

The primary purpose of this revision is to incorporate the impact of the reconciliation of examinations completed under the original First Interval ISI Program (Spec P-500), with the overall first interval ASME Section XI requirements of the updated program.

A majority of the changes have occurred in the ISI Program Tables. The changes reflect adjustment made to the selection of components for examination for the purpose of identifying only those examinations required for the remainder of the interval. (Rev. 0 reflected a complete ten year program without consideration of examinations completed during the first three refueling outages).

1. Added Appendix D "Component Selection Criteria". This appendix provides guidance to both station and NESD personnel for performing selection of components for examination, and monitoring progress or adherence to program commitments.

2. Added a portion of the RWCU System to the Augmented Inspection Program, AUG-01, volumetric examination scope. This addition was required by the USNRC Safety Evaluation of the LGS Unit 1 Generic Letter 88-01 response and initiated by EWR A-0002908.

3. Deleted Relief Request RR-11. This deletion was precipitated by USNRC rejection of the corresponding relief request for LGS Unit 1 ISI Program. Its content will be re-evaluated following results of applicable examinations attempted during 1R04.

4. Revised content of Relief Request RR-12. This relief request was revised due to updating of Regulatory Guide 1.147, which adopted 2 of the Code Cases previously listed in Relief Request RR-12. Additionally new Code Cases were added to the Relief Request.

5. Revised the content of Relief Request RR-13. Deleted portions of this relief request addressing Class 2 inservice and functional testing due to clarification of Code intent received from recent ASME Section XI Code inquiry. Added P & ID references where applicable.

6. Revised PECO Energy's position on extent of required examinations for Class 1 and 2 integral attachment welds for Code Examination Category B-K-1 and C-C.

7. Correction of miscellaneous typographical errors and adjustment to format or presentation of various program elements.

8. Added Attachment 1, "Examination Reconciliation Report". This attachment identifies the extent of the first interval examination requirements that were satisfied during the first three refueling outages, utilizing the original ISI Program Specification. P-500.

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1.0 INTRODUCTION

This document contains the Inservice Inspection (ISI) Program for Limerick Generating Station Unit 1 and Common Plant (LGS Unit 1) as required by Title 10, Code of Federal Regulations, Part 50 (10CFR50), Section 50.55a, Codes and Standards.

On February 1, 1986, LGS Unit 1 began commercial operation, which marked the beginning of the Unit 1 first inspection interval. Inservice Inspection (ISI), Inservice Testing (IST), and Repair and Replacement Programs were developed to implement the requirements of the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel (B&PV) Code, Section XI. At the time these programs were implemented, ASME Section XI, 1980 Edition, including Addenda through Winter 1981, were used to develop the ISI, IST, and Repair and Replacement Programs, as required by 10CFR50.55a(g)(4)(i). The examination requirements for the first inspection period of the first inspection interval were identified and performed in accordance with Specifications 8031- P-500/501. These examinations were satisfied during the first and second refueling outages. Examinations completed during the third refueling outage, in accordance with Specifications 8031-P-500/501, were credited toward the requirements of the second inspection period.

By letter dated January 24, 1992, PECO Energy Company notified the USNRC that the LGS Unit 1 and Common ISI, IST, and Repair and Replacement Programs had been voluntarily upgraded to meet the requirements of the latest USNRC-approved version of ASME Section XI (i.e., 1986 Edition, no Addenda). This voluntary upgrade was adopted following the completion of the LGS Unit 1 third refueling outage, 1R03, and was used for the remainder of the first inspection interval. The voluntary upgrade was initiated to allow LGS Unit 1 to use the same ASME Section XI Edition as that required for LGS Unit 2 (i.e. 1986 Edition). This alignment of applicable Code Editions was developed to provide a uniform set of requirements for both units at LGS, and to preclude any confusion that could result from the use of different requirements for each unit.

The first inspection interval for LGS Unit 1 was scheduled to end on February 1, 1996. However, by letter dated April 6, 1995, PECO Energy notified the USNRC that the inspection interval would be extended until March 1, 1996, to accommodate the sixth refueling outage (1R06) schedule. Additionally, by letter dated January 5, 1996, PECO Energy notified the USNRC that the inspection interval would be further extended until February 1, 1997, to accommodate the preparation and implementation of ASME Code pressure tests that were now required as a result of the USNRC's conditional approval of Relief Request No. RR-13. The LGS Unit 1 second inspection interval was originally scheduled to begin at the end of the sixth refueling outage, 1R06. As required by 10CFR50.55a(g)(4)(ii), ASME Section XI, 1989 Edition, was required to be used to develop the LGS Unit 1 second inspection interval ASME Section XI Programs. Fulfilling this requirement would have again forced a misalignment of the program requirements between the two units at LGS (i.e., 1986 Code for Unit 2, 1989 Code for Unit 1).

Satisfying 10CFR50.55a(g)(4) would have required the development of a parallel set of implementation documents (e.g., procedures, guide lines, etc.), which would have been used at LGS Unit 1 for approximately three (3) to four (4) years. At that time, the LGS Unit 2 Program would be required to update to meet the requirements of the later Code for its second inspection interval.

In order to avoid the inherent and repetitive misalignment of the LGS ASME Section XI Programs, PECO Energy requested approval of the following.

In accordance with 10CFR50.55a(3)(i), PECO Energy proposed an alternative to the rules contained in 10CFR50.55a(g)(4)(ii), which require that: "Inservice examination of components and system pressure tests conducted during successive 120-month inspection intervals must comply with the requirements of the latest Edition and Addenda of the Code incorporated by reference in

paragraph (b) of this section 12 months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed in paragraph (b) of this section." Instead, PECO Energy proposed to begin the LGS Unit 1 (and Common Plant) second inspection interval, as normally scheduled, using the existing Code requirements (i.e., first inspection interval requirements), as described in ASME Section XI, 1986 Edition. In approximately three (3) to four (4) years following the start of the LGS Unit 1 second inspection interval, when LGS Unit 2 completes its first inspection interval, both Unit 1 and Unit 2 will be simultaneously updated to the latest approved Edition and Addenda of the ASME Section XI, which will be the Code requirements in effect 12 months prior to the start of LGS Unit 2 second inspection interval, as required by 10CFR50.55a(g)(4)(ii).

The USNRC approved this alternative per Reference 1.1.14.

The LGS Unit 1 refueling outage, 1R07, is the 1st refueling outage in the 1st Inspection Period (ASME Section XI IWB,C,D-2412) of the 2nd 120-Month Inspection Interval (ASME Section XI IWA-2413).

Pursuant to 10CFR50.55a(g)(4) and the above alternative, the ISI Program for Class 1, 2, 3, components and their supports meets the requirements of the 1989 Edition of ASME Section XI Code. This Edition was the Code incorporated by reference in 10CFR50.55a(b) 12 months prior to the start of the LGS Unit 2 2nd 120-Month Inspection Interval. The scope of the examinations to be performed each Inspection Period is established in accordance with Inspection Program B (IWB,C,D-2412) of the ASME Section XI Code.

Pursuant to 10CFR50.55a(g)(6)(ii)(B), the ISI Program for the Containment Vessel meets the requirements of the 1992 Edition with the 1992 Addenda of ASME Section XI Code, in conjunction with the modifications specified in 10CFR50.55a(b)(2)(ix). The examinations required to be performed during the 1st Inspection Period of the 1st 120-Month Inspection Interval were performed during 1R08.

This ISI Program details the technical basis of the program and provides an overall description of the activities planned to fulfill the ISI requirements for nuclear power plant components and their supports, as defined in ASME Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components. This ISI Program identifies the Class 1, 2, and 3 components (i.e., piping, pumps, valves, vessels) and their supports, subject to the examination and test requirements of ASME Section XI, Subsections IWB, IWC, IWD, IWE, IWF, and IWL. It identifies applicable containment components in section 10.0 of the ISI Program entitled "Containment", in response specifically to ASME Section XI, Subsections IWE and IWL requirements. It also identifies and details the programs established to satisfy augmented requirements imposed at LGS Unit 1 during the inspection interval.

This ISI Program consists of two parts: (1) the text with appendices and (2) a tables section. The text defines the bases of the ISI Program. It lists and explains the specific boundary, exemption, sample size, and component selection criteria used for Class 1, 2, 3, MC and CC components and their supports. The appendices contain Relief Requests, programs established to satisfy augmented requirements, and listings of the ASME Section XI Drawings including boundary drawings, isometric drawings, equipment drawings, and calibration block drawings. The tables section includes the ISI Program Tables and Augmented Inspection Program Tables. The ISI Program Tables contain an itemized listing of all nonexempt components within the Class 1, 2, 3, MC and CC boundaries depicted on the ASME Section XI Boundary P&IDs or other type of boundary drawing. The tables included for augmented programs identify the components within that specific augmented program scope.

1.1 REFERENCE DOCUMENTS

1.1.1 A-C-80, ASME Section XI Programs.

1.1.2 LGS Unit 1 Technical Specifications, Appendix "A" to License No. NPF-39.

1.1.3 LGS Specification No. ML-008, LGS Units 1 and 2 Pump and Valve Inservice Testing (IST) Program

1.1.4 Calculation MISC-41, ISI Exemption Diameters.

1.1.5 Calculation LM-0546, CRD Housing Weld Exclusion Evaluation.

1.1.6 Specification No. M-679, ASME Section XI Repair and Replacement Programs at PBAPS Units 2 & 3 and LGS Units 1 & 2.

1.1.7 BWRVIP–06, Safety Assessment of BWR Reactor Internals, EPRI Report TR-105707, dated October 1995.

1.1.8 BWRVIP-08, Bounding Assessment of BWR/2-6 Reactor Pressure Vessel Integrity Issues, EPRI Report TR-105908, dated November 1995.

1.1.9 BWRVIP-09, Quantitative Safety Assessment of BWR Reactor Internals, EPRI Report TR-106369, dated May 1997.

1.1.10 USNRC SER for Docket No. 50-352, First Ten-Year Interval Inservice Inspection Program, Limerick Generating Station, Unit 1 (TAC Nos. M84108, M86310 and M86311), dated March 1, 1994.

1.1.11 USNRC SER for Docket Nos. 50-352 and 50-353, Relief Request RR-12 (Revision 1), RR-22 (Revision 1), and RR-16 (Revision 1), Limerick Generating Station, Units 1 and 2 (TAC Nos. M91712 and M91713), dated June 29 1995.

1.1.12 CM-7 USNRC SER for Docket Nos. 50-352 and 50-353, Evaluation of Relief Request No. 13 for Limerick Generating Station, Units 1 and 2 (TAC Nos. M91714 and M91715), dated October 5, 1995. (T03661)

1.1.13 USNRC SER for Docket No. 50-352, Relief Request No. 23 for Limerick Generating Station, Unit 1 (TAC No. M93209), dated January 17, 1996.

1.1.14 USNRC SER for Docket Nos. 50-352 and 50-353, Evaluation of the Second Ten-Year Interval Inspection Program Plan, Request for Alternative to Inservice Inspection and Inservice Testing Programs Update for Limerick Generating Station, Units 1 and 2 (TAC Nos. M92393 and M92394), dated January 23, 1996.

1.1.15 USNRC SER for Docket Nos. 50-352 and 50-353, Relief Request for Use of ASME Code Case N-546 in the Inservice Inspection Program for, Limerick Generating Station, Units 1 and 2 (TAC Nos. M99343 and M99345), dated October 9, 1997.

1.1.16 USNRC SER for Docket Nos. 50-352 and 50-353, Safety Evaluation by the office of Nuclear Regulation of the First and Second 10-Year Interval Inservice Inspection Plan Request for Relief Nos. RR-01 (Parts 1 and 2), RR-05, RR-11, RR-12 (Parts 1 through 5), and RR-23 for Limerick Generating Station Units 1 and 2, PECO Energy Company (TAC Nos. MA0818 and MA08109) dated September 13, 1999.

1.1.17 See Augmented Programs for additional references.

1.2 DEFINITIONS

1.2.1 ASME Section XI Drawings - Those drawings, including Piping and Instrument Diagrams (P&ID's), isometrics, and component drawings, that delineate the specific boundaries, areas, or items

requiring nondestructive examination (NDE), test, repair, or replacement per ASME Section XI, and augmented NDE or tests.

1.2.2 Augmented Requirements - Those NDE or tests required or recommended by documents other than ASME Section XI, such as Regulatory Guides, NUREG's, NRC Generic Letters, I. E. Bulletins/Notices, UFSAR, Technical Specifications, manufacturer's recommendations, etc., as identified in Appendix B, Augmented Inspection Programs.

1.2.3 Authorized Nuclear Inservice Inspector (ANII) - A person employed and qualified by an Authorized Inspection Agency to verify that NDE, tests, repairs, and replacements, excluding welding and brazing, are performed in accordance with the rules of ASME Section XI.

1.2.4 Calibration Block Drawings - The drawings that detail the specific configuration of individual standards used for calibrating ultrasonic test equipment.

1.2.5 Code - ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," edition and addenda applicable to the individual PECO Energy nuclear plant programs.

1.2.6 Component - An item in a nuclear power plant, such as a vessel, pump, or valve, etc. This term may also be used to refer to systems or such portions of systems as welds, bolting, and supports.

1.2.7 Enforcement Authority - The State of Pennsylvania, which is empowered to enact and enforce Boiler and Pressure Vessel Code Legislation.

1.2.8 Form NIS-1, Owners' Data Report for Inservice Inspections - An ASME form that is used to document the results of Inservice Inspection examinations on Class 1 and 2 components. It is to be used as the certification page for submittal of the ISI Summary Report.

1.2.9 Form NIS-2, Owners' Report for Repairs or Replacements - An ASME form that is used to document the results of repair or replacement activities. It will be submitted as part of the ISI Summary Report at the end of each refueling outage.

1.2.10 Inservice Inspection (ISI) - That NDE, including visual examinations, performed on certain Class 1, 2, and 3, or equivalent, components and their supports throughout the operating life of the nuclear plant, as required by the Code, subsections IWA, IWB, IWC, IWD, IWF, and, as applicable, IWE and IWL.

1.2.11 Inservice Inspection Summary Report - The report that is prepared at the completion of each refueling outage, as specified in the Code.

1.2.12 Inservice Testing (IST) - Those tests conducted on certain pumps and valves to verify their operational readiness or integrity throughout the operating life of the nuclear plant, as required by the ASME OM Code.

1.2.13 Inspection Interval - As defined by regulations, a ten-year time interval during which the ISI/IST/R&R program is applicable using a specific edition and addenda of the Code and the ASME OM Code. The first ten-year inspection interval commences on the date of commercial operation, with the successive intervals beginning on the date that the previous interval ends. An inspection interval length may be increased or decreased by up to one year, to correspond with plant outages. Additionally, the interval may be extended for a period equivalent to an outage that extends continuously for six months or more.

1.2.14 Inspection Period - A time frame approximately equivalent to one-third of an interval. It is used for apportioning the implementation of ISI Program NDE during the interval.

1.2.15 ISI Program Document - The site/unit specific document, including applicable drawings, that addresses the overall ISI requirements during a ten-year interval.

1.2.16 ISI Tables - The unit-specific listing of the total population of such items as welds, bolting, components, RPV internals, supports, snubbers, and portions of systems that are subject to examination, pressure test, repair, and replacement during the ten-year interval, i.e., all nonexempt components. These listings are part of and included in the ISI Program.

1.2.17 ISI Outage Plan - A listing of those components that are required to be examined by the ISI Program Document during a particular outage.

1.2.18 Nominal Operating Pressure - For Class 1 systems, this is the system pressure under normal steady-state full-power operating conditions, as governed by the UFSAR.

1.2.19 Nondestructive Examination (NDE) - A visual, surface, or volumetric examination method that may be comprised of any of several physical, optical, chemical, electrical, or electromagnetic means used primarily to examine items for surface or internal defects without destroying the items or impairing their functions. NDE may be augmented by nondestructive testing (NDT).

1.2.20 PECO Energy Corporate ASME Section XI Administrative Manual - The document that defines and controls the all-encompassing effort of Preservice Inspection (PSI), Inservice Inspection (ISI), Preservice Testing (PST), Inservice Testing (IST), Repair and Replacement (R&R), and Augmented Requirements at PECO Energy's nuclear plants. This manual, formerly NGAP NA03I001, has been superseded by CNP A-C-80, ASME Section XI Programs, and any plant-specific guidance that may be included in the various ASME Programs.

1.2.21 Position Statement - An ISI/IST/R&R Program record that documents the details of positions taken by PECO Energy with respect to generalized Code requirements. These records amplify Code requirements and provide consistent guidance for the implementation of the requirements.

1.2.22 Preservice Inspection (PSI) - Those nondestructive examinations (NDE), including visual examinations, performed on certain ASME Class 1, 2, and 3, or equivalent, components and their supports, once, prior to initial plant operations as part of the Preservice Inspection Program, or following a component repair, replacement, or modification. PSI examination results provide a baseline for comparison to subsequent ISI examination results.

1.2.23 Pressure Test Program - A portion of the overall ISI Program that identifies the components and portions of piping in ASME Class 1, 2, and 3, or equivalent, systems, which are subject to various pressure tests during the ten-year interval. These test types include the hydrostatic, pneumatic, leakage, functional, or inservice tests.

1.2.24 Random Selections - Random selections pertain to those selections of components for examination made purely at random and not based on any Code-required parameter, such as component size, configuration, stress, etc. Random selection is used primarily when more than one component fulfills all selection criteria used to define which component will be selected for examination.

1.2.25 Regulatory Authority - The United States Nuclear Regulatory Commission, empowered to issue and enforce federal regulations pertaining to the design, construction, and operation of nuclear power plants.

1.2.26 Relief Request - A written request submitted to the regulatory authority that identifies specific components that would be impractical or impossible to be examined or tested in accordance with Code requirements. It includes the reason these requirements are impractical or impossible to meet and technical justification for performing an alternative to the requirements.

1.2.27 Root Valve - The first valve, in an instrument line, off of the main process line.

1.2.28 Snubber - A dynamic restraint device used in certain component supports. Snubbers can function by means of either a hydraulic or a mechanical mechanism.

1.2.29 Snubber Assembly - The functional unit of a snubber-type component support, including the snubber body, an extension piece or end bracket, and the load pins along with their retainers.

1.2.30 Source Document - Any document containing requirements to which PECO Energy is committed or that apply to PECO Energy by virtue of law, such as federal, state, and local laws and regulations.

1.2.31 Structural Discontinuity - Structural discontinuities (SD) generally include pipe to fitting/valve weld joints such as elbows, tees, reducers, flanges, etc., and pipe branch fitting connections to the main piping run.

1.2.32 Terminal End - Terminal ends (TE) are the extremities of piping runs. Generally these connect the piping to structures and components such as in-line anchors, flued heads at penetrations, and nozzles in vessels and pumps, each of which acts as a rigid restraint or provides at least two (2) degrees of restraint to piping thermal expansion. Also, for branch piping, the connection to the run piping branch fitting or tee may be considered a TE if the ratio of the run piping OD to the branch piping OD is ≥ 3 to 1.

1.3 ABBREVIATIONS

1.3.1	ALARA	-	As Low As Reasonably Achievable
1.3.2	ANII	-	Authorized Nuclear Inservice Inspector
1.3.33	ANS	-	American National Standard
1.3.4	ANSI	-	American National Standards Institute
1.3.5	ASME	-	American Society of Mechanical Engineers
1.3.6	ASNT	-	American Society for Nondestructive Testing
1.3.7	AUG	-	Augmented Examination Program
1.3.8	BWR	-	Boiling Water Reactor
1.3.9	BWRVIP-		Boiling Water Reactor Vessel and Internals Project
1.3.10	DISG	-	Examine one of a group when disassembled
1.3.11	DISS	-	Examine when disassembled
1.3.12	E1P	-	Examined first period
1.3.13	EOI	-	Examine by End of interval
1.3.14	ID	-	Interval distribution
1.3.15	IGSCC	-	Intergranular Stress Corrosion Cracking
1.3.16	ISI	-	Inservice inspection

1.3.17 ISO - Isometric

1.3.18 IST - Inservice testing

1.3.19 LGS - Limerick Generating Station

1.3.20 MT - Magnetic particle testing

1.3.21 NDE - Nondestructive examination

1.3.22 NPS - Nominal pipe size

1.3.23 NRC - United States Nuclear Regulatory Commission

1.3.24 PECO Energy- PECO Energy Company

1.3.25 P&ID - Piping and Instrument Diagram

1.3.26 PT - Liquid penetrant testing

1.3.27 RO - Refueling outage. Examine at 1st refueling outage and subsequent refueling outages at approximately 3-year intervals.
RO-ALL - Examine each refueling outage
RO-X(y) - Examine every (y) refueling outage
RO-1/3y - Examine during the first Refueling Outage and during subsequent refueling outages at approximately 3 year intervals

1.3.28 RPV - Reactor pressure vessel

1.3.29 R&R - Repair and replacement

1.3.30 RR - Relief request

1.3.31 RT - Radiographic testing

1.3.32 SIL - Service and Information Letter (GE)

1.3.33 t - Pipe wall thickness

1.3.34 UT - Ultrasonic testing

1.3.35 VT - Visual testing

1.3.36 P1, P2, P3 - Period. First period, second period, third period
P1 - Examine during 1st Period
P2 - Examine during 2nd Period
P3 - Examine during 3rd Period
P1, 3 - Examine 25% to 50% during the 1st period and the remainder by the end of the third period.
P1,2,3 - Examine each period

1.4 CODES AND STANDARDS

1.4.1 Title 10, Code of Federal Regulations, Part 50 (10CFR50), Section 50.55a, Codes and Standards.

1.4.2 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section V, Nondestructive Examination, 1989 Edition.

1.4.3 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: Rules for Inservice Inspection of Nuclear Power Plant Components, 1989 Edition.

1.4.4 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: Rules for Inservice Inspection of Nuclear Power Plant Components, 1992 Edition through and including 1992 Addenda.

1.4.5 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: Rules for Inservice Inspection of Nuclear Power Plant Components, 1995 Edition through and including 1996 Addenda.

1.4.6 Regulatory Guide 1.26, Revision 3, Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants.

1.4.7 SNT-TC-1A, 1984, Recommended Practice for Personnel Qualification in Non-destructive Testing.

1.4.8 ANSI N45.2.6, 1978, Qualification of Inspection, Examination, and Testing Personnel for Nuclear Power Plants.

1.4.9 Regulatory Guide 1.58, Revision 1 - Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel.

1.4.10 Regulatory Guide 1.65, Revision 0 - Materials and Inspection for Reactor Vessel Closure Studs.

1.4.11 Regulatory Guide 1.147, Latest Approved Revision - Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1.

1.4.12 Regulatory Guide 1.150, Revision 1 - Alternate Method Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination.

1.4.13 ASME/ANSI Operations and Maintenance Standard OM-1987 with OMc-1990 Addenda, Part 4 (including additional industry/committee studies).

2.0 REGULATORY REQUIREMENTS

2.1 CLASSIFICATION OF COMPONENTS

In accordance with 10CFR50.55a, an ASME classification has been assigned to plant components and systems for the purpose of applying the appropriate Code rules for Inservice Inspection. Classification has been applied in accordance with 10CFR50.2(v) for Class 1 systems and Regulatory Guide 1.26 Revision 3 and other commitments made in the UFSAR for Class 2 and 3 systems. Color-coded Code Boundary P&ID's referenced in this Program identify the classification of systems/components.

Classification of components as equivalent to ASME Classes 1, 2, or 3 implies equivalency for purposes of inservice inspection only and does not imply that the components were designed in accordance with ASME requirements.

2.2 ASME SECTION XI

In accordance with 10CFR50.55a(g)(4), this program is in compliance, to the extent practical, with the applicable requirements of the 1989 Code. Although the basic plant design is not totally

consistent with the examination requirements of later Codes, every attempt has been made to obtain maximum compliance. This program identifies the areas for which compliance cannot be achieved, with proposed alternative methods to obtain reasonable assurance of system integrity.

2.2.1 Applicability of Subsections IWE and IWL

1. Subsection IWE for Class MC components and IWL for Class CC components had not been endorsed for use by the NRC at the time this ISI Program was initially prepared. However, subsections IWE and IWL have since been endorsed by the USNRC per the following.

   A. Federal Register, Volume 61, No. 154, dated 08/08/96, 10CFR Part 50, Codes and Standards for Nuclear Power Plants; Subsection IWE and Subsection IWL.

   B. USNRC SECY-96-080, "Issuance of Final Amendment to 10 CFR §50.55a To Incorporate By Reference the ASME Boiler And Pressure Vessel Code (ASME Code), Section XI, Division 1, Subsection IWE and Subsection IWL," dated April 16, 1996.

2. The purpose of this Rule Making was to establish the Code as the standard for implementation of the inspections and tests required by 10CFR50, Appendix J, Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors.

   The USNRC has issued Information Notice 97-29, "Containment Inspection Rule," dated May 30, 1997, which requires the following.

   A. Incorporate the inspection and testing requirements of IWE and IWL into the plant's ISI Program and to complete the required first period inspections by September 9, 2001.

   B. Effective September 9, 1996, activities qualifying as repair or replacement of the containment vessel steel or concrete portions shall be conducted in accordance with Code Repair and Replacement rules, Subsections IWE and IWL.

3. The applicable Code effective dates are:

   American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Division 1, Section XI.

   A. 1992 Edition with 1992 Addendum for Subsection IWE, Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Plants, and

   B. 1992 Edition with 1992 Addendum for Subsection IWL, Requirements for Class CC Concrete Components for Light-Water Cooled Plants.

4. LGS Unit 1's Primary Containment Inservice Inspection Program as established at the inception of this ISI Program was reviewed and determined to meet the new USNRC requirements. This Program, as described below, remained in effect until full compliance with the rule making was achieved by transition to the updated Containment ISI Program before September 9, 2001.

   A. Testing, as required by the Code of Federal Regulations, 10CFR, Part 50, Appendix J, is being performed at LGS Unit 1 to verify the integrity of the containment.

   B. Repair, modification, or replacements of ASME Class MC components shall be in accordance with Specification M-679 (Reference 1.1.6). Leakage test following repair, modification, or replacement shall be in accordance with Article 2000 of Code Case N-236-1.

C. The baseline inspections required by 2.A. above were completed during the April 2000 refueling outage, 1R08.

D. The updated Containment ISI Program was included with Revision 3 of this specification.

2.2.2 Subsections IWP and IWV

Subsection IWP, Pump Testing, and Subsection IWV, Valve Testing, have been replaced by the ASME OM Code, and are not addressed in this program document. For information regarding these topics, see Reference 1.1.3.

2.3 EXEMPTIONS

Code rules allow certain components or portions of components and their supports that are classified as ASME Class 1, 2, or 3, or equivalent, to be exempt from Code examination requirements, except VT-2 visual examination. The specific Code exemptions that have been applied to the LGS Unit 1 ISI Program are detailed in the following.

2.3.1 Class 1 Exemptions

Discussion: The Class 1 exemptions used in this ISI Program are taken directly from the 1989 Code, Article IWB-1220, and are identified, with statements pertaining to their applicability at LGS Unit1, below.

Exemptions used:

1. Components that are connected to the reactor coolant system and part of the reactor coolant pressure boundary, and that are of such a size and shape so that upon postulated rupture the resulting flow of coolant from the reactor coolant system under normal plant operating conditions is within the capacity of makeup systems that are operable from on-site emergency power.

   For LGS Unit 1, this exemption is applicable to components and piping less than 1.39" inside diameter (ID) for water service and less than 2.78" ID for steam service, per Reference 1.1.4, and Control Rod Drive Housing welds, per Reference 1.1.5.

2. Piping of NPS 1 and smaller, along with components and their connections in piping of NPS 1 and smaller.

3. Reactor vessel head connections and associated piping, NPS 2 and smaller, made inaccessible by control rod drive penetrations.

2.3.2 Class 2 Exemptions

Discussion: The Class 2 exemptions are taken from 1989 Code, Article IWC-1220, and are identified below.

1. Exemptions used for components within residual heat removal (RHR), emergency core cooling (ECC), and containment heat removal (CHR) systems, or portions of these systems.

   a. Vessels, piping, pumps, valves, and other components NPS 4 and smaller and their supports.

   b. Component connections NPS 4 and smaller, including nozzles, socket fittings, and other connections, and their supports, in vessels, piping, pumps, valves, and other components of any size.

c. Piping and other components of any size beyond the last shutoff valve in open-ended portions of systems that do not contain water during normal plant operating conditions.

2. Exemptions used for components within systems or portions of systems other than RHR, ECC, and CHR systems.

   a. Vessels, piping, pumps, valves, and other components NPS 4 and smaller and their supports.

   b. Component connections NPS 4 and smaller, including nozzles, socket fittings, and other connections, and their supports, in vessels, piping, pumps, valves, and other components of any size.

   c. Vessels, piping, pumps, valves, other components, and component connections of any size, and their supports, in systems or portions of systems that operate, when the system function is required, at a pressure equal to or less than 275 psig and at a temperature equal to or less than 200°F

   d. Piping and other components of any size, and their supports, beyond the last shutoff valve in open-ended portions of systems that do not contain water during normal plant operating conditions.

3. Exemptions for Concrete-Encased Components:

   a. Piping support members and piping support components that are encased in concrete.

2.3.3 Class 3 Exemptions

Discussion: The Class 3 exemptions are taken from the Code, 1989 Edition, Article IWD-1220, and are identified below.

Exemptions used.

1. Integral attachments of supports and restraints to components that are NPS 4 and smaller within the system boundaries of Examination Categories D-A, D-B, and D-C of Table IWD-2500-1 shall be exempt from the visual examination VT-3.

   Position: Included in this exemption are non-pipe components for which neither the cumulative ID inlet nor cumulative ID outlet area exceeds the area of a 4" ID pipe.

2. Integral attachments of supports and restraints to components exceeding NPS 4 may be exempted from the visual examination VT-3 of Table IWD-2500-1, provided that

   a. The components are located in systems, or portions of systems, whose function is not required in support of reactor residual heat removal, containment heat removal, and emergency core cooling, and

   b. The components operate at a pressure of 275 psig or less and at a temperature of 200°F or less.

2.4 AUGMENTED REQUIREMENTS

For purposes of this ISI Program, augmented examinations are those scheduled examinations that are not required by the Code. These augmented requirements are typically pursuant to NRC Generic Letters, NRC Regulatory Guides, or NSSS supplier recommendations (SIL's), etc. The

LGS Unit 1 augmented inspection program examination requirements are explained in Appendix B. It should be noted that some components are subject to both ISI and augmented requirements. In these instances, the component's ISI requirements are identified in the ISI Program Tables, and a reference to applicable augmented inspection program is also provided.

2.5 ADDITIONAL BASES

In addition to published Code rules, Section XI Code Cases may be used in formulating the bases of the ISI program. Code Cases are periodically published by the ASME to either clarify the intent of existing Code requirements or to provide timely rules and requirements for circumstances not covered by existing Code rules. Table 2.5-1 lists the Code Cases that have been adopted for use by this LGS Unit 1 ISI Program.

2.5.1 Adoption of Code Cases

The use and adoption of Code Cases will be in accordance with the Code, IWA-2440, and 10CFR50.55a. The methodology for adopting Code Cases is divided into the four categories described below

1. Adoption of Code Cases Listed For Generic Use In Regulatory Guide 1.147

   Code Cases that are listed for generic use in Regulatory Guide 1.147 may be adopted for use during the Inspection Interval. These Code Cases are shown in Table 2.5-1 with a "Yes" under the column entitled "Approved by USNRC Reg. Guide 1.147". All conditions or limitations that are presented in Regulatory Guide 1.147 for a particular Code Case will apply.

2. Adoption of Code Cases Not Listed For Generic Use In Regulatory Guide 1.147

   Adoption of Code Cases that have been approved by the Board of Nuclear Codes and Standards, but that have not been listed for generic use in Regulatory Guide 1.147, may be submitted in the form of a Request for Alternative in accordance with 10CFR 50.55a(a)(3).

   Code Cases for which LGS is submitting a Request for Alternative are those shown in Table 2.5-1 with a "No" in the column entitled "Approved by Reg. Guide 1.147". In addition, Table 2.5-1 references the corresponding Request Number for these Code Cases. Per 10CFR50.55a, footnote 6, request for authorization and justification of use of these Code Cases is found in Appendix A, Relief Request No. RR-12.

3. Adoption of Code Cases Listed for Generic Use in Regulatory Guide 1.147 But Subsequently Annulled by ASME

   Under certain circumstances, it may be necessary to adopt a Code Case that has been listed for generic use in Regulatory Guice 1.147, but subsequently annulled by ASME. Therefore, LGS, Unit 1, endorses previous revisions of Regulatory Guide 1.147 up to and including the most recent revision. Endorsement of these revisions of Regulatory Guide 1.147 does not commit LGS, Unit 1, to all the Code Cases listed therein, but rather allows for the selection of a previously accepted Code Case The purpose of this endorsement is to identify all Code Cases that could potentially be incorporated into this Program in accordance with the Code, IWA-2441.

4. Adoption of Code Cases Issued Subsequent to Filing This Inservice Inspection Program

   Code Cases issued by ASME subsequent to filing this Program will be proposed for use in updated revisions to this Program in accordance with the Code, IWA-2441(d).

TABLE 2.5-1
LIMERICK GENERATING STATION, UNITS 1 AND 2,
CODE CASES APPLICABLE to the ISI AND REPAIR and REPLACEMENT PROGRAMS

Code Case Number	Title	Approved by USNRC Reg. Guide 1.147	Request Number	Notes
N-236-1	Repair and Replacement of Class MC Vessels	Yes	N/A	Note 1
N-307-1	Revised Ultrasonic Examination Volume for Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1, When the Examinations Are Conducted From the Center-Drilled Hole	Yes	N/A	
N-323-1	Alternative Examination for Welded Attachments to Pressure Vessels	No	RR-11	
N-389-1	Alternative Rules for Repairs, Replacements, or Modifications	Yes	N/A	
N-406	Alternate Rules for Replacement	Yes	N/A	
N-416-1	Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3	Yes	N/A	Note 4
N-435-1	Alternative Examination Requirements for Vessels with Wall Thickness 2 in. or Less	Yes	N/A	
N-460	Alternative Examination Coverage for Class 1 and Class 2 Welds	Yes	N/A	
N-461	Alternate Rules for Piping Calibration Block Thickness	Yes	N/A	
N-479-1	Boiling Water Reactor (BWR) Main Steam Hydrostatic Test	Yes	N/A	
N-491-1	Alternative Rules for Examination of Class 1, 2, 3, and MC Component Supports of Light-Water Cooled Power Plants	Yes	N/A	
N-495	Hydrostatic Testing of Relief Valves	Yes	N/A	
N-498-1	Alternative Rules for 10-Year Hydrostatic Pressure Testing	Yes	N/A	
N-508-1	Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing	No	RR-12 Table RR-12-6	Note 2

TABLE 2.5-1
LIMERICK GENERATING STATION, UNITS 1 AND 2,
CODE CASES APPLICABLE to the ISI AND REPAIR and REPLACEMENT PROGRAMS

Code Case Number	Title	Approved by USNRC Reg. Guide 1.147	Request Number	Notes
N-509	Alternative Rules for Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments.	Yes	N/A	Note 5
N-513	Evaluation Criteria for Temporary Acceptance of Flaws in Class 3 Piping	No	N/A	Note 6
N-516-1	Underwater Welding	No	RR-12 Table RR-12-7	Note 2, 3
N-523-1	Mechanical Clamping Devices for Class 2 and 3 Piping	No	N/A	Note 7
N-524	Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping	Yes	N/A	
N-532	Alternative Requirements to Repair and Replacement Documentative Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000.	No	RR-12 Table RR-12-8	Note 2
N-546	Alternative Requirements for Qualification of VT-2 Examination Personnel	No	RR-12 Table RR-12-3	Note 2
N-566	Corrective Action for Leakage Identified at Bolted Connections	No	RR-12 Table RR-12-5	Note 2
N-598	Alternative Requirements to Required Percentages of Examinations	No	RR-12 Table RR-12-9	Note 2
N-601	Extent and Frequency of VT-3 Visual Examination for Inservice Inspection of Metal Containments	No	RR-12 Table RR-12-10	Note 2
N-605	Alternative to the Requirements of IWE-2500(c) for Augmented Examination of Surface Areas	No	RR-12 Table RR-12-11	Note 2

NOTES:

1. Limited to Article 2000 for Leakage Test following repairs, replacements, or modifications. Effective September 9, 1996, all other aspects of Primary Containment repairs, replacements, or modifications shall be updated from the Code, Subsection IWC, 1986 Edition to Subsections IWE and IWL, 1992 Edition with 1992 Addenda per 10CFR50 Rule Making dated August 8, 1996.

2. This Code Case has not been endorsed for use by the USNRC in Reg. Guide 1.147. See Relief Request RR-12 for justification of its use in this program.

3. USNRC SER for Dockets Nos. 50-352 and 50-353, Alternative to ASME Section XI Code Requirements to Use Code Case N-516-1 for Underwater Welding, Limerick Generating Station, Units 1 and 2 (TAC Nos. M99346 and M99347), dated February 4, 1998; usage limited to installation of modified ECCS suction strainers per Specification M-679 and Augmented Inspection Program No. AUG-22. When welding is to be performed on high neutron fluence Class 1 material, then a mockup, using materials with similar fluence levels, should be welded to verify that adequate crack prevention measures were used.

4. The alternate provisions of Code Case N-416-1, Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3 may be used to perform pressure testing associated with Code repairs and replacements as follows.

   A. NDE shall be performed in accordance with the methods and acceptance criteria of the applicable Subsection of the 1992 Edition of ASME Section III.

   B. When performing repairs by welding, or the installation of replacement items by welding, on the pressure-retaining boundary of Class 3 components, NDE shall be performed In accordance with the methods and acceptance criteria of the 1992 Edition of ASME Section III. In addition for butt and socket welded joints, an additional surface examination (Magnetic Particle [MT] or Liquid Penetrant [PT]) shall be performed on the root pass layer when surface examination is required by the 1992 Edition of ASME Section III for the final weld. This provision does not apply to Class 1 and 2 components, since examinations will be performed in accordance with Code requirements.

   C. Prior to or immediately upon return to service, a VT-2 visual examination shall be performed in conjunction with a system leakage test, functional or inservice, in accordance with paragraph IWA-5000, with no hold times.

5. A minimum 10% sample of integrally welded attachments for each item in each code class per interval should be examined.

6. Approved for use per 10CFR50.55a. Application of Code Case N-513 requires application of all of its provisions subject to the following:

   A. When implementing Code Case N-513, the specific safety factors in paragraph 4.0 must be satisfied.

   B. Code Case N-513 may not be applied to:
      - Components other than pipe and tube, such as pumps, valves, expansion joints, and heat exchangers;
      - Leakage through a flange gasket;
      - Threaded connections employing nonstructural seal welds for leakage prevention (through seal weld leakage is not a structural flaw, thread integrity must be maintained); and
      - Degraded socket welds.

7. Approved for use per 10CFR50.55a. Application of Code Case N-523-1 requires application of all of its provisions.

2.5.2 Use of Subsequent Editions of Section XI

In accordance with 10CFR50.55a(g)(6)(v), components, including supports, may meet the requirements set forth in subsequent editions and addenda, or portions thereof, of the Code that are incorporated by reference in 10CFR50.55a(b), subject to the limitations and modifications listed therein. This Section of the Program is reserved for alternative requirements from approved subsequent Code editions and addenda that may be adopted during the In-Service Inspection interval. Should this occur, this Program would be amended for adoption of subsequent Code rules at that time.

2.5.3 Use of Requests for Alternatives and Relief Requests

The actual Requests for Alternatives and Relief Requests are provided in Appendix A of this ISI Program.

1. Alternatives to examinations that are required by the Code may be authorized by the Office of Nuclear Reactor Regulation (NRR), as allowed by 10CFR50.55a(a)(3), provided that testing or examinations performed in compliance with Code requirements would result in hardship without a compensating increase in the levels of quality and safety, or provided that the proposed alternative will assure an acceptable level of quality and safety. Specific exceptions may be documented in the form of a Relief Request and included in Appendix A of the ISI Program.

2. Relief Requests are written in accordance with 10CFR50.55a(g)(5)(iii) when specific Code requirements are determined to be impractical to implement due to factors such as physical restrictions, or they are written to address requirements that present a hardship without a compensating increase in the level of quality and safety. If examination requirements are determined to be impractical during the course of the interval, then requests for relief shall be submitted in accordance with 10CFR50.55a(g)(5)(iii), for review per 10CFR50.55a(g)(6)(i).

2.6 ASME SECTION XI DRAWINGS

The Code Drawings define the boundary or detail the extent of systems or components subject to Code rules. Additionally, they depict calibration standards used to implement the required examinations. An index of all Code Drawings, excluding component support design drawings, is contained in Appendix C.

2.6.1 ASME Section XI Boundary P&ID's

The Code Boundary P&ID's are drawings that have been color-coded to define the extent of the ASME classification boundaries and the portions therein that are exempt from the surface and volumetric examination requirements of the Code. In addition, these drawings indicate portions of systems that are outside the Code boundaries but subject to the LGS Unit 1 Code Repair and Replacement Program.

2.6.2 ASME Section XI Isometric Drawings

The Code Isometric Drawings are specially prepared drawings that are derived from design isometric drawings. They depict the ASME Class 1 and 2 systems and identify the components (e.g., supports, etc.), that are subject to examination within these systems. Class 3 components subject to ISI examinations may be found on the fabrication isometric (design) drawings. Unique Code Isometrics do not exist for Class 3 components.

2.6.3 ASME Section XI Component Drawings

The Code Component Drawings are specially prepared detailed drawings of components, which identify specific areas of these components (e.g., bolts, welds, supports, or surface areas) that are subject to examination in accordance with Code rules.

2.6.4 ASME Section XI Calibration Block Drawings

The Code Calibration Block Drawings are design/as-built drawings of the standards that are used for calibration of the ultrasonic examination equipment prior to the performance of the Code-required examinations.

2.6.5 Component Support Design Drawings

The Component Support Design Drawings, while not uniquely Code drawings, are an important informational source and are referenced in the ISI Tables. These design drawings detail the component support and generally contain a bill of materials that identifies the scope of items subject to the visual examination requirement of the Code.

2.7 SYSTEM IDENTIFICATION

Classification boundaries are as identified on the Code Boundary P&ID's, listed in Appendix C. The following is a list of the systems contained in the ISI Program including their acronym.

Acronym	**Title**
RPV	Reactor Pressure Vessel
CONT	Primary Containment
CRD	Control Rod Drive
CS	Core Spray
ESW	Emergency Service Water
FW	Feedwater
HPCI	High Pressure Coolant Injection
MS	Main Steam
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHR SW	Residual Heat Removal Service Water
RPV APP	Reactor Pressure Vessel Appurtenances
RR	Reactor Recirculation
RWCU	Reactor Water Clean Up
SLC	Standby Liquid Control

3.0 INSERVICE INSPECTION PROGRAM

3.1 RESPONSIBILITY

As Owner of LGS Unit 1, PECO Energy Company bears the overall responsibility for the performance of ISI. The required NDE may be performed by PECO Energy or by qualified examination vendors. The results and evaluations of the examinations performed by NDE vendors will be reported to PECO Energy, who shall retain responsibility for final evaluation and disposition of all NDE.

3.2 RECORDS

Records and documentation of all information and inspection results, which provide the basis for evaluation and facilitate comparison with results from previous and subsequent inspections, will be maintained and available for the active life of the plant in accordance with the Code, IWA-6000.

3.3 METHODS OF EXAMINATION

NDE methods to be used for the ISI Program include visual, surface, and volumetric examination. Personnel performing NDE will be qualified using a written procedure prepared in accordance with the Code, Article IWA-2300, and the following documents, as applicable for the techniques and methods used.

1. The American Society for Nondestructive Testing (ASNT), Recommended Practice No. SNT-TC-1A, June 1984 Edition.

2. American National Standard (ANS), ANSI/ASME N45.2.6, 1978 Edition as modified by Regulatory Guide 1.58, Rev. 1.

3. American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: Rules for Inservice Inspection of Nuclear Power Plant Components, 1995 Edition Appendix VIII, for Supplements 2, 3, and 8 (UT of austenitic, ferritic piping welds and bolting).

4. LGS Procedure No. A-C-080-03, "Certification of Personnel In Nondestructive Examination (NDE) Methods".

3.3.1 Visual Examination

Visual examinations (VT) will be performed in accordance with the Code, IWA-2210, which defines different types of VT examinations. These types of VT examinations are summarized as follows:

1. General Visual examinations are conducted either directly or remotely with sufficient illumination (natural or artificial) and resolution suitable for the local environment to assess the general condition of the containment surfaces from permanent vantage points, e.g. floors, roofs, platforms, ladders, etc. The objective of this examination is to detect evidence of damage, deterioration, etc. that may affect either containment structural integrity or leak tightness.

2. VT-1 visual examinations shall be conducted to determine the condition of the part, component, or surface examined. The examination shall determine conditions such as cracks, wear, corrosion, erosion, or physical damage on the surfaces of the part or component. This type of examination may be performed by direct or remote methods as defined in the Code, IWA-2211.

3. VT-2 visual examinations shall be conducted to locate evidence of leakage from pressure-retaining components, or abnormal leakage from components with or without leakage-collection systems, as required during the conduct of a system pressure or functional test.

4. VT-3 visual examinations shall be conducted to determine the general mechanical and structural condition of components and their supports, such as the verification of clearances, settings, physical displacements, loose or missing parts, debris, corrosion, wear, erosion, or the loss of integrity at bolted or welded connections. The VT-3 visual examination shall include examinations for conditions that could affect operability or functional adequacy of snubbers, and constant load and spring type supports. For component supports and

component interiors, the examination may be performed remotely with or without optical aids to verify the structural integrity of the component.

5. Requirements for the Containment Inspection Program (see Section 10.0) follow the visual standards listed above for IWE classified components in accordance with ASME Section XI, subsection IWE-3510. VT examinations for IWL classified components in accordance with subsection IWL-2300 of ASME Section XI are defined as follows:

   A. VT-1C examinations are conducted to determine concrete deterioration and distress for suspect areas detected by VT-3C, and conditions (e.g., cracks, wear, or corrosion) of tendon anchorage or strands. Minimum illumination, maximum direct examination distance, and maximum procedure demonstration lower case character height shall be as specified in IWA-2210 for VT-1 visual examination.

   B. VT-3C examinations are conducted to determine the general structural condition of concrete surfaces of containment by identifying areas of concrete deterioration and distress, such as defined in ACI 201.1 R-68. The minimum illumination, maximum direct examination distance, and maximum procedure demonstration lower case character height shall be as specified in IWA-2210 for VT-3 visual examination.

3.3.2 Surface Examination

A surface examination will be performed in accordance with the Code, IWA-2220, to detect the presence of surface cracks or discontinuities. It may be conducted by either magnetic particle (MT) or a liquid penetrant (PT) method where the surface conditions, material, and accessibility permit such an examination.

CM-3 Procedures for PT examinations should include a requirement to record the temperature of the examination surface. (T02667)

3.3.3 Volumetric Examination

A volumetric examination will be performed in accordance with the Code, IWA-2230, to detect the presence of discontinuities throughout the volume of material. Two acceptable volumetric methods are radiographic (RT) and ultrasonic (UT) examination. The UT method is primarily used for the planned examinations in this program; however, RT is used, as applicable, on certain components.

3.4 REPAIR AND REPLACEMENT

Repairs, replacements, and modifications of ASME Class 1, 2, 3, MC and CC components and their supports depicted on the ASME Section XI Boundary P&IDs will be performed in accordance with the Repair and Replacement Program (Reference 1.1.6).

3.5 EXAMINATIONS - GENERAL

The bulk of the ISI Program is the planned periodic examination of specific components as required by the Code. This section describes the Code requirements that have been used as criteria for determining which specific Class 1, 2, 3, MC and CC components require examination during the second and third inspection periods of the second inspection interval. It describes the philosophy used for selection and implementation of component examinations along with the basis used for performing the evaluation of examination results. Sections 4.0 through 10.0 provide a summary of the specific areas or groups of examinations (i.e. Code Examination Category and Item Number) planned for the Reactor Pressure Vessel; Class 1 and 2 welds, bolting and components, Class 3 components, pressure testing, component supports, and Containment; Class MC and CC pressure retaining components and integral attachments. Therefore, these sections describe how PECO Energy plans to implement the requirements of subsections IWB, IWC, IWD, IWE, IWF and IWL of the Code, for LGS Unit 1.

3.5.1 Examination and Test Requirements

Examination and test requirements for Class 1, 2, and 3 components will be in accordance with the 1989 Code, Tables IWB-, IWC-, and IWD-2500-1, for the specific Examination Category and Item Number.

3.5.2 Acceptance Standards

Acceptance standards for Class 1, 2, and 3 components will be in accordance with the 1989 Code, Tables IWB-, IWC-, and IWD-2500-1, for the specific Examination Category and Item Number.

3.5.3 Selection Basis

For a given population of items, those items that are selected for examination represent the minimum required number of items to be examined during the inspection interval to satisfy the Code requirements. Alternate selections may be made, provided that the minimum quantity of Code-required examinations is not reduced and that the Code-required selection criteria are not violated. Additionally, system modifications throughout the interval may change the component population in a particular Category or Item Number. These changes are typically minor such that there is minimal impact on sampling criteria. For the interval, Code credit shall be retained for completed examinations of components that are subsequently deleted and additional component selections are not required for added components provided that a baseline PSI has been performed on the added component in accordance with this Specification.

1. Class 1 Welds

   A. The extent of examination for Class 1 piping welds, Category B-J, is in accordance with the 1989 Edition of the Code. A representative sample of 25% of Class 1 piping welds has been selected for examination during the inspection interval. The sample includes;

      1. All terminal ends connected to vessels,

      2. Other terminal ends and weld joints connected to other components where stress levels exceed either of the following limits;

         A. Primary plus secondary stress intensity range of 2.4Sm
         B. Cumulative usage factor (U) of 0.4

      3. All dissimilar metal welds.

   B. Longitudinal welds intersecting any of the selected circumferential welds are also scheduled to be examined.

C. Dissimilar metal Class 1 welds have been assigned to Code Examination Category B-F, and shall be examined in accordance with the 1989 Code rules for that Examination Category.

2. Class 2 Welds

Selection of ISI Class 2 pressure-retaining welds is in accordance with the rules of the 1989 Code for Code Examination Categories

C-F-1 Pressure-Retaining Welds in Austenitic Stainless Steel or High Alloy Piping, and
C-F-2 Pressure-Retaining Welds in Carbon or Low Alloy Steel Piping

As such, the following rules are applied:

A. The welds selected for examination include 7.5%, but not less than 28 welds, of all austenitic stainless steel or high alloy welds for C-F-1, and all carbon and low alloy steel welds for C-F-2 not exempt by IWC-1220. Further, selection of welds for examination are subject to the following criteria.

1. The examinations shall be distributed among the Class 2 systems prorated, to the degree practicable, on the number of nonexempt austenitic stainless steel or high alloy welds for C-F-1, and carbon or low alloy welds for C-F-2, for each system.

2. Within a system, the examinations shall be distributed among terminal ends and structural discontinuities prorated, to the degree practicable, on the number of terminal ends and structural discontinuities in each system.

3. Within each system, examinations shall be distributed between line sizes, prorated to the degree practicable.

B. Class 2 dissimilar metal welds are not specifically addressed in the Category C-F-1 or C-F-2 rules. For the purposes of this program, all dissimilar metal welds have been included in Category C-F-1 and all will be selected for examination.

3. Multi-Component Concept

For Class 1, 2, and 3 components of similar design, size, function, and service; certain categories of examinations may be performed on only one of these multiple components, or divided among the components such that the total number of examinations performed is equivalent to the number that would be performed if only one of the components were completely examined. This multi-component concept is used in this ISI Program and is indicated in the applicable examination categories listed in Sections 4.0 through 10.0 of this document. Those items qualifying as multiple components are identified in the ISI Tables by listing the specific multi-component group number in the notes column of the table. Therefore, for those Code examination categories to which the multi-component concept applies, only one component, or the equivalent of one component, in a group of components, all of which have the same multi-component group numbers, will be selected for examination.

3.5.4 Implementation

In accordance with the Code, IWA-2430, all portions of the ISI Program conform to Inspection Program B of IWA-2432. Program B defines the inspection interval as ten years. All Code-required examinations identified in this ISI Program must be completed by the end of the inspection interval, unless the interval is extended in accordance with IWA-2430(d) and/or

IWA-2430(e). For the Unit 1 1st Inspection Interval, relief was requested and granted to extend the Inspection Interval for 1 year (reference 1.1.10).

Inspection Program B of the Code further divides the inspection interval into three periods. The duration of the periods are: First Period - 3 years; Second Period - 4 years; Third Period - 3 years. As allowed by IWB-2412(b), these durations may be decreased or extended by one year, to enable an examination to coincide with a plant outage, provided the net increase or decrease over the ten year interval does not exceed one year. The following table depicts how the outages are distributed over the first and subsequent 10-year intervals:

1st 10-Year Inspection Interval					
1st Period		2nd Period		3rd Period	
1R01 (1987)	1R02 (1989)	1R03 (1991)	1R04 (1992)	1R05 (1994)	1R06 (1996)
2/1/86 thru 1/31/91		2/1/91 thru 1/31/94		2/1/94 thru 1/31/97	

2nd 10-Year Inspection Interval					
1st Period		2nd Period		3rd Period	
1R07 (1998)	1R08 (2000)	1R09 (2002)		1R10 (2004)	1R11 (2006)
2/1/97 thru 1/31/01		2/1/01 thru 1/31/04		2/1/04 thru 1/31/07	

3rd 10-Year Inspection Interval					
1st Period		2nd Period		3rd Period	
1R12 (2008)	1R13 (2010)	1R14 (2012)		1R15 (2014)	1R16 (2016)
2/1/07 thru 1/31/11		2/1/11 thru 1/31/14		2/1/14 thru 1/31/17	

4th 10-Year Inspection Interval					
1st Period		2nd Period		3rd Period	
1R17 (2018)	1R18 (2020)	1R19 (2022)		1R20 (2024)	1R21 (2026)
2/1/17 thru 1/31/21		2/1/21 thru 1/31/24		2/1/24 thru 1/31/27	

In addition to completing all Code-required examinations by the end of the interval, the Code requires examinations to be completed progressively during the interval, in accordance with the following table:

TABLE 3.5-1 DISTRIBUTION of EXAMINATIONS DURING the INTERVAL	
Period	Examination Completion
1st	16% minimum and not to exceed 34% of the total examinations
2nd	50% minimum and not to exceed 67% of the total examinations. This includes the examinations performed during the 1st Period.
3rd	100% of all required examinations (total for all three periods).

Required examinations within this ISI Program shall be implemented in accordance with the interval distribution defined in the above table, unless otherwise stated. Exceptions to implementation by interval distribution for certain examinations or categories of examinations are provided in the Code and are as follows.

1. Certain examinations may only be conducted during a refueling outage. These examinations are noted as RO-1/3Y in the ISI Program, and are typically performed at the 1st refueling outage of the inspection interval and at subsequent refueling outages at approximately three-year intervals.

2. Examinations that must be conducted during a specific period. These examinations are noted as P1, P2, P3, as appropriate, in the ISI Program.

3. Examinations that may be conducted anytime during the interval, including deferral until the end of the interval. These examinations are noted as EOI for "End of Interval" in the ISI Program.

4. Examinations that must take place when the particular component is disassembled, or when disassembly of other components provides access to a normally inaccessible component. These examinations will be noted as DISS in the ISI Program. For items within a multi-component group, where only one of the multiple components is required to be examined at the time of disassembly, the examination will be noted as DISG in the ISI Program.

5. The alternative requirements of ASME Code Case N-598 may be used upon approval by the USNRC. See Relief Request No. RR-12 Table RR-12-9.

3.5.5 Successive Examinations

For Class 1 and 2 components, should component examination results require evaluation of flaw indications in accordance with IWB-3000/IWC-3000, and the component is analytically accepted for continued service, then the areas containing such flaw indications or relevant conditions will be scheduled in the ISI Program for successive examinations, in accordance with IWB-2420 and IWC-2420 for Class 1 and 2, respectively.

3.5.6 Additional Examinations

For Class 1 and 2 components where examinations reveal indications that exceed the Code acceptance standards, examinations will be extended to include additional examinations in accordance with IWB-2430 and IWC-2430 for Class 1 and Class 2, respectively.

3.6 RELIEF REQUESTS

In cases where the Code requirements have been determined to be impractical to comply with, requests for relief have been prepared, in accordance with 10CFR50.55a(g)(5)(iii). All requests for relief from the examination requirements of the Code, Subsections IWB, IWC, IWD, IWE, IWF and IWL will include the following, as a minimum:

1. A unique alphanumeric identifier for the Relief Request.

   The identifiers for Class 1, 2, and 3 Relief Requests will take the following format: RR-YZ

   Where: RR = Relief Request
   YZ = Sequentially assigned two-digit number

2. Identification of the component(s) for which relief from Code requirements is requested. This shall include a brief description of the component's function.

3. The ASME Code Class, Examination Category, and Item Number, when applicable.

4. The specific Code examination requirement(s) from which relief is requested.

5. Information that justifies the request for relief.

6. When applicable, a description of the alternate examination or test that will be performed in lieu of the Code requirements.

7. The schedule for implementation of the alternate examination or test.

8. Relief Requests can be found in Appendix A.

3.7 EVALUATION OF EXAMINATION RESULTS

Applicable ISI examination results will be evaluated in accordance with the Code, Article IWA-3100. If criteria are not specified in the Code, then the evaluation may use the criteria of the original Construction Code as allowed by IWA-3100(b).

3.8 REPORTS

Inservice Inspection Summary Reports for Class 1 and 2 pressure-retaining components and their supports will be prepared at the completion of each inspection conducted during a refueling outage. All examinations and tests conducted since the preceding Summary Report shall be included.

The Summary Report will be prepared in accordance with IWA-6220, and will include the following, as applicable. The alternative requirements of ASME Code Case N-532 may be used upon approval by the USNRC. See Relief Request No. RR-12 Table RR-12-8.

1. Numbers assigned to the components by the State, Municipality, or Province;

2. National Board Numbers assigned to the components by the manufacturer;

3. Name of the components and descriptions, including size, capacity, material, location, and drawings to aid identification;

4. Name and address of manufacturers;

5. Manufacturer's component identification numbers;

6. Date of completion of the examination, test, replacement, or repair;

7. Name of ANII who witnessed or otherwise verified the examinations, tests, replacements, or repairs, and the Inspector's employer and business address, when required;

8. Abstract of examinations, tests, replacements, or repairs performed; conditions recorded; and corrective measures recommended or taken;

9. Signature of ANII, when required;

10. Owner's Report for Inservice Inspections, Form NIS-1, and Owner's Report for Repairs or Replacements, Form NIS-2.

The Inservice Inspection Summary Report will be filed with enforcement and regulatory authorities within 90 days of completion of the examinations conducted during the outage.

4.0 REACTOR PRESSURE VESSEL EXAMINATIONS

Code Examination Categories and/or Item Numbers that apply exclusively to pressurized water reactor (PWR) plants are specifically excluded from this document.

4.1 EXAMINATION CATEGORY B-A - PRESSURE-RETAINING WELDS IN REACTOR VESSEL

1. Item Number B1.11 Shell Welds - Circumferential
   Item Number B1.12 Shell Welds - Longitudinal

   A. Scope of Examination - Essentially 100% of the weld length of all circumferential and longitudinal shell welds.

   B. Examination Schedule - End of Interval (EOI)

   C. Discussion - Complete examination of all reactor vessel shell welds is not practical due to plant design. Relief for specific Category B-A welds is requested in Relief Request No. RR-01. Also, examination of Circumferential Shell Welds is no longer required per Relief Request No. RR-01.

2. Item Number B1.21 Head Welds - Circumferential
   Item Number B1.22 Head Welds - Meridional

   A. Scope of Examination - Essentially 100% of the accessible weld length of all circumferential and meridional bottom head welds.

   B. Examination Schedule - End of Interval (EOI) - (Bottom Head Welds only)
   Interval Distribution (ID) - (Top Head Welds only)

   C. Discussion - Complete examination of all bottom head circumferential and meridional welds is not practical due to limited access due to control rod drives. The accessible length of these welds shall be examined per Table IWB-2500-1.

3. Item Number B1.30 Shell-to-Flange Weld

   A. Scope of Examination - Essentially 100% of the weld length of the shell-to-flange weld.

   B. Examination Schedule - Interval Distribution (ID); or First Period and Third Period (P1, P3). The examination of the shell-to-flange weld may either be performed in part throughout the inspection interval (i.e., Interval distribution) or during the first and third periods, to coincide with the Category B-D nozzle examinations. During the 2nd, 3rd, and 4th inspection intervals, at least 50% of the weld should be completed by the end of the first period, and the remaining portions completed during the third period.

   C. Discussion - Ultrasonic angle-beam examination of the shell-to-flange weld is not practical from the flange face, and therefore, will be performed from the shell side of the weld only. As provided by IWB-2500-1, straight beam examination techniques from the flange face will be used in examination of the shell-to-flange weld.

4. Item Number B1.40 Head-to-Flange Weld

   A. Scope of Examination - 100% of the weld length of the head-to-flange weld.

   B. Examination Schedule - Interval Distribution (ID)

   C. Discussion - The head-to-flange weld, unlike the other Category B-A welds, requires both a surface and volumetric examination.

5. Item Number B1.51 Repair Welds - Beltline Region

   A. Scope of Examination - All weld repair areas within the Beltline region.

   B. Examination Schedule - End of Interval (EOI)

   C. Discussion - All material (base metal) weld repairs in the beltline region, where repair depth exceeds 10% nominal of the vessel wall, shall be examined. If the location of the repair is not positively and accurately known, then the individual shell plate, forging, or shell course containing the repair shall be included in the examination.

      Note: As of the date of preparation of this document, there were no repair welds that qualify for these Item Numbers.

4.2 EXAMINATION CATEGORY B-D - FULL PENETRATION WELDS OF NOZZLES IN VESSELS - INSPECTION PROGRAM B

Note: Inspection Program A is not applicable to the LGS Unit 1 ISI Program.

1. Item Number B3.90 Nozzle to Vessel Welds
   Item Number B3.100 Nozzle Inside Radius Section

   A. Scope of Examination - 100% of all nozzle to vessel welds and nozzle inside radius sections.

   B. Examination Schedule - 1st Period (P1) - At least 25% but not more than 50% of the nozzles (both exams) shall be examined by the end of the first inspection period.

      2nd Period (P2) - See 3rd Period.

3rd Period (P3) - The remainder of nozzles, i.e., those not examined during the first period, shall be completed by the end of the 3rd Period, i.e., by the end of the inspection interval.

4.3 EXAMINATION CATEGORY B-E - PRESSURE-RETAINING PARTIAL PENETRATION WELDS IN VESSELS

1. Item Number B4.11 Partial Penetration Welds - Vessel Nozzles
   Item Number B4.12 Partial Penetration Welds - Control Rod Drive Nozzles
   Item Number B4.13 Partial Penetration Welds - Instrumentation Nozzles

   A. Discussion - See Section 8.1, Class 1 Pressure Test Program.

4.4 EXAMINATION CATEGORY B-F - PRESSURE-RETAINING DISSIMILAR METAL WELDS

Note: Category B-F welds will not be listed on the ISI Program Tables of the Reactor Pressure Vessel. Instead, all Category B-F welds will be identified on the ISI Program Tables of the system containing the subject weld. If a system does not exist, the welds will be listed under the title "RPV Appurtenances" (RPV-APP).

1. Item Number B5.10 NPS 4 or Larger Nozzle to Safe End Butt Welds
   Item Number B5.20 Less Than NPS 4 Nozzle to Safe End Butt Welds

   A. Scope of Examination - 100% of all nozzle-to-safe end butt welds that meet the dissimilar metal requirements.

   B. Examination Schedule - Interval Distribution (ID); or

      First Period, Third Period (P1, P3) - Reactor vessel nozzle safe end welds may be examined coincident with the vessel nozzle weld examinations required by Category B-D. See Paragraph 4.2.

   C. Discussion - There are dissimilar metal welds between the low alloy nozzle forgings and the piping system on all nozzles except those on the Main Steam and Feedwater Systems, and Head Spray and vent lines.

2. Item Number B5.30 Nozzle-to-Safe End Socket Welds

   Not applicable to LGS Unit 1. There are no Reactor Vessel nozzle-to-safe end dissimilar metal socket welds.

4.5 EXAMINATION CATEGORY B-G-1 - PRESSURE-RETAINING BOLTING GREATER THAN 2" IN DIAMETER

1. Item Number B6.10 Closure Head Nuts
   Item Number B6.20 Closure Studs, in place
   Item Number B6.30 Closure Studs, when removed
   Item Number B6.40 Threads in Flange
   Item Number B6.50 Closure Washers, Bushings

   A. Scope of Examination - All closure head nuts (B6.10), studs (B6.20, B6.30), threads in flange stud holes (B6.40), closure washers (B6.50). There are no bushings currently used in the Reactor Vessel flange at LGS Unit 1. Threads in flange stud holes only require examination in the event the connections are disassembled.

   B. Examination Schedule - Each of the following:

Interval Distribution (ID) - Closure head nuts, studs (in place) and washers.

Disassembly (DISS) - Closure head studs require both surface and volumetric examination when the studs are removed. Threads in base material of flanges are required to be examined only upon disassembly.

4.6 EXAMINATION CATEGORY B-G-2 - PRESSURE-RETAINING BOLTING, 2" AND LESS IN DIAMETER

1. Reactor Vessel
   Item Number B7.10 Bolts, Studs, and Nuts

   A. Scope of Examination - All bolts, studs, and nuts.

   B. Examination Schedule - Interval Distribution (ID).

   C. Discussion - Bolting may be examined in place under tension, when the connection is disassembled, or when the bolting is removed.

2. CRD Housings
   Item Number B7.80 Bolts, Studs, and Nuts

   A. Scope of Examination - All bolts, studs, and nuts on CRD housings.

   B. Examination Schedule - Only examined when disassembled (DISS).

4.7 EXAMINATION CATEGORY B-H - INTEGRAL ATTACHMENTS FOR VESSELS

1. Item Number B8.10 Integrally Welded Attachments

   A. Scope of Examination - 100% of the length of the RPV support skirt attachment weld and weld buildup, and all stabilizer bracket attachment welds.

   B. Examination Schedule - Interval Distribution (ID)

   C. Discussion – Alternative examination requirements have been established. See section 9.2, Class 1, 2, and 3 Integrally Welded Attachments and Appendix A, Relief Request No. RR-11.

4.8 EXAMINATION CATEGORY B-N-1 - INTERIOR OF REACTOR VESSEL, EXAMINATION CATEGORY B-N-2 - INTEGRALLY WELDED CORE SUPPORT STRUCTURES AND INTERIOR ATTACHMENTS TO REACTOR VESSELS

1. Item Number B13.10 Vessel Interior
   Item Number B13.20 Interior Attachments Within Beltline Region
   Item Number B13.30 Interior Attachments Beyond Beltline Region
   Item Number B13.40 Core Support Structure

   A. Scope of Examination - Accessible areas above and below the core of the vessel shell interior surfaces (B13.10), vessel interior attachment welds (B13.20, B13.30) and core support structure surfaces (B13.40).

B. Examination Schedule - Each of the following:

Refueling Outages (RO-1/3Y) - Vessel interior areas (B13.10) made accessible by removal of components during a refueling outage shall be examined at least once each inspection period.

End of Interval (EOI) - Applicable to interior attachment welds (B13.20, B13.30) and the Core Support Structure (B13.40) only.

C. Discussion – Examination Category B-N-1, Item No. B13.10 has been used previously to classify non-Code, nuclear safety related reactor internal components. This classification has been removed starting with Revision 3 of this Specification.

The BWRVIP has performed a safety assessment (Reference 1.1.7) and developed specific inspection and evaluation (I&E) guidelines for these components. The BWRVIP I&E Guidelines are addressed in the Augmented Inspection Programs contained in Appendix B of this Specification.

Accordingly, B-N-1/B13.10 classification shall apply only to vessel shell interior surfaces. The VT-3 inspection requirements are routinely satisfied in the course of Examination Category B-N-2, examinations of interior attachments.

4.9 EXAMINATION CATEGORY B-O - PRESSURE-RETAINING WELDS IN CONTROL ROD HOUSINGS

1. Item Number B14.10 Welds in CRD Housing

A. Scope of Examination - Pressure-retaining welds in 10% of the peripheral CRD Housings

B. Discussion - Welds in the peripheral CRD housings are exempted from examination per IWB-1220(a). See Reference 1.1.5 for calculation/justification.

4.10 EXAMINATION CATEGORY B-P - ALL PRESSURE-RETAINING COMPONENTS

Discussion - See Section 8.1, Class 1 Pressure Test Program.

5.0 CLASS 1 WELDS, BOLTING, AND COMPONENT EXAMINATIONS (EXCLUDING THE RPV)

This section applies to Class 1 welds, bolting, and component examinations other than the RPV. Examination categories applicable to the RPV are discussed in Section 4.0. Code Examination Categories or Item Numbers that apply exclusively to pressurized water reactor (PWR) plants are specifically excluded from this document, e.g., Exam Categories B-B and B-Q.

5.1 EXAMINATION CATEGORY B-F - PRESSURE-RETAINING DISSIMILAR METAL WELDS

Note: Category B-F welds will not be listed on the ISI Program Tables of the Reactor Pressure Vessel. Instead, all Category B-F welds will be identified on the ISI Program Tables of the system containing the subject weld. If a system does not exist, the welds will be listed under the title "RPV Appurtenances" (RPV-APP).

1. Item Number B5.130 NPS 4 or Larger Dissimilar Metal Butt Welds
Item Number B5.140 Less Than NPS 4 Dissimilar Metal Butt Welds
Item Number B5.150 Dissimilar Metal Socket Welds

A. Scope of Examination - All dissimilar metal nonexempt pipe welds.

B. Examination Schedule - Interval Distribution (ID)

C. Discussion - This category applies to dissimilar metal welds in piping systems. This includes combinations of carbon or low alloy steels to high alloy steels, carbon or low alloy steels to high nickel alloys, and high alloy steels to high nickel alloys. See Appendix A, Relief Request No. RR-10.

5.2 EXAMINATION CATEGORY B-G-1 - PRESSURE-RETAINING BOLTING GREATER THAN 2" IN DIAMETER

1. Piping

Item Number B6.150	Bolts and Studs
Item Number B6.160	Flange Surface when connection disassembled
Item Number B6.170	Nuts, Bushings, and Washers

Pumps

Item Number B6.180	Bolts and Studs
Item Number B6.190	Flange Surface when connection disassembled
Item Number B6.200	Nuts, Bushings, and Washers

Valves

Item Number B6.210	Bolts and Studs
Item Number B6.220	Flange Surface when connection disassembled
Item Number B6.230	Nuts, Bushings, and Washers

A. Scope of Examination - All studs, bolts, nuts, and washers. Should the flanged connection be disassembled, the threads in flange stud holes and 1" annular surface of the flange surrounding stud or bolt shall be examined. There are no bushings currently used in these bolted connections at LGS Unit 1.

The examinations of this category may be limited to the bolting of the pump selected for examination under category B-L-2.

B. Examination Schedule - Examine one in a group when disassembled (DISG) - Threads in flange stud holes and flange surfaces only; and

Interval Distribution (ID) - Bolts, studs, and nuts.

C. Discussion - Item Numbers B6.150, B6.160, B6.170, B6.210, B6.220 and B6.230 are not applicable to LGS Unit 1. There is no Class 1 bolting greater than 2" diameter for piping or valves used in the system design.

The Reactor Recirculation Pumps are the only Class 1 pumps. In accordance with the multi-component concept, examinations of bolts, studs and nuts will be performed on only one pump on Unit 1. Bolting may be examined in place under tension, when the connection is disassembled, or when the bolting is removed. Examination of threads in flange stud holes and flange surfaces will be performed whenever the pump is disassembled. See Appendix D, Attachment A, for multi-component group numbers.

5.3 EXAMINATION CATEGORY B-G-2 - PRESSURE-RETAINING BOLTING, 2" AND LESS IN DIAMETER

1. Piping
   Item Number B7.50 Bolts, Studs, and Nuts

   Pumps
   Item Number B7.60 Bolts Studs, and Nuts

   Not applicable to LGS Unit 1. There are no Class 1 Pumps that contain bolting 2" diameter or less.

   Valves
   Item Number B7.70 Bolts Studs, and Nuts

   A. Scope of examination - All bolts, studs, and nuts in nonexempt Class 1 piping and in certain selected Class 1 valves.

   B. Examination Schedule - Interval Distribution (ID)

   C. Discussion - For valve bolting, studs and nuts, examinations are limited to the valves selected for examination under Category B-M-2, i.e., one valve within a group of valves that are greater than 4 inch and of the same size, constructional design and manufacturing method, and that perform similar system functions. See Appendix D, Attachment A, for multi-component group numbers.

5.4 EXAMINATION CATEGORY B-J - PRESSURE-RETAINING WELDS IN PIPING

1.

Item Number B9.11	Welds in Piping ≥ NPS 4 - Circumferential
Item Number B9.12	Welds in Piping ≥ NPS 4 - Longitudinal
Item Number B9.21	Welds in Piping < NPS 4 - Circumferential
Item Number B9.22	Welds in Piping < NPS 4 - Longitudinal
Item Number B9.31	Branch Pipe Connection Welds ≥ NPS 4
Item Number B9.32	Branch Pipe Connection Welds < NPS 4
Item Number B9.40	Socket Welds

   A. Scope of Examinations – All terminal ends in each pipe or branch run connected to the vessel, and 25% of all nonexempt circumferential and branch connection pipe welds per the 1989 Edition of the Code. All longitudinal pipe welds intersecting any of the selected circumferential welds shall also be examined for a length of at least one (1) pipe diameter, but not more than 12 inches.

   B. Examination Schedule - Interval Distribution (ID)

   C. Discussion - Welds selected for examinations represent areas expected to experience higher stresses. See section 3.5.3 for Selection Criteria. The alternative requirements of Code Case N-524 may be applied to the examination of longitudinal welds.

      Note: All Class 1, dissimilar metal welds on piping have been designated as Code Category B-F welds and therefore have been scheduled for examination in accordance with the rules of Category B-F (see Section 5.1). Dissimilar metal piping welds are also required to be examined under code category B-J. These piping welds shall be included in the category B-J weld population. Examination methods and requirements are the same for both Code categories.

5.5 EXAMINATION CATEGORY B-K-1 - INTEGRAL ATTACHMENTS FOR PIPING, PUMPS, AND VALVES

1. Piping
Item Number B10.10 Integrally Welded Attachments

Pumps
Item Number B10.20 Integrally Welded Attachments

Valves
Item Number B10.30 Integrally Welded Attachments

Not applicable to LGS Unit 1. There are no integral attachments to Class 1 valves in the plant design.

A. Scope of Examination - 25% of all integrally welded attachments to piping required to be examined under Examination Category B-J and the welded attachments to pumps associated with this piping that meet the following conditions.

1. The attachment is on the outside surface of the pressure-retaining component;

2. The attachment provides component support as defined in NF-1110;

3. The attachment base material design thickness is 5/8 in. or greater; and

Note: The base material design thickness is the thickness of the plate or other material product form from which the integral attachment was fabricated. For tubular stanchions, the base material design thickness is the nominal wall thickness of the tubular stanchion.

4. The attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.

B. Examination Schedule - Interval Distribution (ID)

C. Discussion – Alternative examination requirements have been established. See Section 9.2, Class 1, 2, and 3 Integrally Welded Attachments and Appendix A, Relief Request No. RR-11.

5.6 EXAMINATION CATEGORY B-L-1 - PRESSURE-RETAINING WELDS IN PUMP CASINGS

1. Item Number B12.10 Pump Casing Welds

Not applicable to LGS Unit 1. There are no pressure-retaining welds in Class 1 pump casings.

5.7 EXAMINATION CATEGORY B-L-2 - PUMP CASINGS

1. Item Number B12.20 Pump Casings

A. Scope of Examination - Multi-component concept is applicable. Examinations are limited to the interior surface of one pump in each group of pumps performing similar functions within the system.

B. Examination Schedule – DISC. Examination of the internal pressure boundary shall be performed to the extent practicable. Examination is required only once during the inspection interval.

C. Discussion - The only pumps in this category subject to examination are those in the Reactor Recirculation System. See Appendix D, Attachment A, for multi-component group number. VT-3 examinations will be scheduled and performed when the pumps are disassembled for maintenance reasons.

5.8 EXAMINATION CATEGORY B-M-1 - PRESSURE-RETAINING WELDS IN VALVE BODIES

1. Item Number B12.30 Valves, Less Than NPS 4, Valve Body Welds
   Item Number B12.40 Valves NPS 4 or Larger, Valve Body Welds

Not applicable to LGS Unit 1. There are no valve body welds.

5.9 EXAMINATION CATEGORY B-M-2 - VALVE BODIES

1. Item Number B12.50 Valve Body, Exceeding NPS 4

A. Scope of Examination - Multi-component concept is applicable. Examinations are limited to one valve within a group of valves that are of the same functional design (globe, gate, check), manufacturing method, and that perform similar functions within the system.

B. Examination Schedule – DISC. Examination of the internal pressure boundary shall be performed to the extent practicable. Examination is required only once during the inspection interval.

C. Discussion - The VT-3 examination of the internal surfaces of one valve body from each multi-component group of valves will be performed when any valve from the group is disassembled for maintenance purposes. See Appendix D, Attachment A, for multi-component group number.

5.10 EXAMINATION CATEGORY B-P - ALL PRESSURE-RETAINING COMPONENTS

Discussion - See Section 8.1, Class 1 Pressure Test Program.

6.0 CLASS 2 WELDS, BOLTING, AND COMPONENT EXAMINATIONS

6.1 EXAMINATION CATEGORY C-A - PRESSURE-RETAINING WELDS IN PRESSURE VESSELS

1. Item Number C1.10 Shell Circumferential Welds
   Item Number C1.20 Head Circumferential Welds
   Item Number C1.30 Tubesheet to Shell Welds

Not applicable to LGS Unit 1. Plant design does not include tubesheet to shell welds.

A. Scope of Examination - Examination of 100% of the weld length of shell circumferential welds at a gross structural discontinuity, such as a shell to flange weld and head-to-shell circumferential welds.

B. Examination Schedule - Interval Distribution (ID)

C. Discussion - The multi-component concept is applicable in that the requirements may be limited to one vessel or distributed among vessels of similar size, design, and service. The only Class 2 vessels that are in scope for this examination category are the RHR Heat Exchangers. These heat exchangers qualify for the multi-component approach. The shell circumferential welds on the selected RHR Heat Exchanger will be examined to the extent possible as described in Appendix A, Relief Request No. RR-06. See Appendix D, Attachment A, for multi-component group numbers.

6.2 EXAMINATION CATEGORY C-B - PRESSURE-RETAINING NOZZLE WELDS IN VESSELS

1. Item Number C2.11 — Nozzles in Vessels ≤1/2 in. Nominal Thickness - Nozzle to Shell (or Head) Weld

   Item Number C2.21 — Nozzles Without Reinforcing Plate in Vessels >1/2 in. Nominal Thickness - Nozzle to Shell (or Head) Weld

   Item Number C2.22 — Nozzles Without Reinforcing Plate in Vessels >1/2 in. Nominal Thickness - Nozzle Inside Radius Section

   Item Number C2.31 — Nozzle With Reinforcing Plate in Vessels >1/2 in. Nominal Thickness - Reinforcing Plate Welds to Nozzle and Vessel

   Not applicable to LGS Unit 1. Plant design does not specify nozzles of these types.

   Item Number C2.32 — Nozzle With Reinforcing Plate in Vessels >1/2 in. Nominal Thickness - Nozzle-to-Shell (or Head) Welds When Inside of Vessel is Accessible

   Not applicable to LGS Unit 1. Plant design does not specify nozzles of these types.

   Item Number C2.33 — Nozzle With Reinforcing Plate in Vessels >1/2 in. Nominal Thickness - Nozzle-to-Shell (or Head) Welds When Inside of Vessel is Inaccessible

   Not applicable to LGS Unit 1. Plant design does not specify nozzles of these types.

   A. Scope of Examination - All nozzles integrally welded or cast to vessels that are connected to piping examined under Examination Category C-F-1 or C-F-2. Examinations shall include nozzle-to-shell (or head) weld and the nozzle inside radius section. The multi-component concept is applicable.

   B. Examination Schedule - Interval Distribution (ID)

   C. Discussion - See Appendix D, Attachment A, for multi-component group numbers.

6.3 EXAMINATION CATEGORY C-C - INTEGRAL ATTACHMENTS FOR VESSELS, PIPING, PUMPS AND VALVES

1. Pressure Vessels
   Item Number C3.10 — Integrally Welded Attachments

   Piping
   Item Number C3.20 — Integrally Welded Attachments

   Pumps
   Item Number C3.30 — Integrally Welded Attachments

Valves
Item Number C3.40 Integrally Welded Attachments

Not applicable to LGS Unit 1. There are no integral attachments to Class 2 valves.

A. Scope of Examination - 100% of all integral attachments to vessels, piping and pumps required to be examined under Examination Categories C-F-1, C-F-2, and C-G that meet the following conditions:

1. The attachment is on the outside surface of the pressure-retaining component;

2. The attachment provides component support as defined in NF-1110;

3. The attachment base material design thickness is 3/4 in. or greater; and

Note: The base material design thickness is the thickness of the plate or other material product form from which the integral attachment was fabricated. For tubular stanchions, the base material design thickness is the nominal wall thickness of the tubular stanchion.

4. The attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.

B. Examination Schedule - Interval Distribution (ID)

C. Discussion – Alternative examination requirements have been established. See Section 9.2, Class 1, 2, and 3 Integrally Welded Attachments and Appendix A, Relief Request No. RR-05.

6.4 EXAMINATION CATEGORY C-D - PRESSURE-RETAINING BOLTING GREATER THAN 2" IN DIAMETER

Not applicable to LGS Unit 1. Plant design does not specify pressure-retaining bolting greater than 2 inches in diameter on Class 2 systems.

6.5 EXAMINATION CATEGORY C-F-1 - PRESSURE-RETAINING WELDS IN AUSTENITIC STAINLESS STEEL OR HIGH ALLOY PIPING

1. Item Number C5.11 Welds in Piping ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4 - Circumferential

Item Number C5.12 Welds in Piping ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4 - Longitudinal

Item Number C5.21 Welds in Piping >1/5 in. Nominal Wall Thickness for Piping ≥ NPS 2 and ≤ NPS 4 - Circumferential

Not applicable to LGS Unit 1. Piping ≤ 4 NPS is exempt for BWR plants.

Item Number C5.22 Welds in Piping >1/5 in. Nominal Wall Thickness for Piping ≥ NPS 2 and ≤ NPS 4 - Longitudinal

Not applicable to LGS Unit 1. Piping ≤ NPS 4 is exempt for BWR plants.

Item Number C5.30 Socket Welds

Not applicable to LGS Unit 1. Plant design does not include socket welds greater than NPS 4.

Item Number C5.41 Pipe Branch Connection Welds of Branch Piping ≥ NPS 2 - Circumferential

Branch connections ≥ NPS 2 and ≤ NPS 4 are not applicable to LGS Unit 1. Piping ≤ NPS 4 is exempt for BWR plants.

Item Number C5.42 Pipe Branch Connection Welds of Branch Piping ≥ NPS 2 - Longitudinal

Branch connections ≥ NPS 2 and ≤ NPS 4 are not applicable to LGS Unit 1. Piping ≤ NPS 4 is exempt for BWR plants.

A. Scope of Examination - 7.5%, but not less than 28 circumferential pipe welds and branch connection welds (≥ 3/8 in. nominal wall thickness for piping > NPS 4) located on nonexempt piping. All longitudinal pipe welds intersecting any of the selected circumferential and branch connection welds shall also be examined for a length of at least 2.5t. The examination shall be distributed among the Class 2 systems, prorated on the number of nonexempt welds in each system. Examinations shall further be distributed and prorated on the number of terminal ends and structural discontinuities in each system and prorated between line sizes.

B. Examination Schedule - Interval Distribution (ID)

C. Discussion - See Table 2.5-1 for Code Case N-524 applicability.

6.6 EXAMINATION CATEGORY C-F-2 - PRESSURE-RETAINING WELDS IN CARBON OR LOW ALLOY STEEL PIPING

1. Item Number C5.51 Welds in Piping ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4 - Circumferential
   Item Number C5.52 Welds in Piping ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4- Longitudinal
   Item Number C5.61 Welds in Piping >1/5 in. Nominal Wall Thickness for Piping ≥NPS 2 and ≤ NPS 4 - Circumferential

Not applicable to LGS Unit 1. Piping ≤ NPS 4 is exempt for BWR plants.

Item Number C5.62 Welds in Piping >1/5 in. Nominal Wall Thickness for Piping ≥NPS 2 and ≤ NPS 4- Longitudinal

Not applicable to LGS Unit 1. Piping ≤ NPS 4 is exempt for BWR plants.

Item Number C5.70 Socket Welds

Not applicable to LGS Unit 1. Plant design does not include socket welds greater than NPS 4.

Item Number C5.81 Pipe Branch Connection Welds of Branch Piping ≥ NPS 2 - Circumferential

Branch connections ≥ NPS 2 and ≤ NPS 4 are not applicable to LGS Unit 1. Piping ≤ NPS 4 is exempt for BWR plants.

Item Number C5.82 Pipe Branch Connection Welds of Branch Piping ≥ NPS 2 - Longitudinal

Branch connections ≥ NPS 2 and ≤ NPS 4 are not applicable to LGS Unit 1. Piping ≤ NPS 4 is exempt for BWR plants.

A. Scope of Examination - 7.5%, but not less than 28 circumferential pipe welds and branch connection welds (≥ 3/8 in. nominal wall thickness for piping > NPS 4) located on nonexempt piping. All longitudinal pipe welds intersecting any of the selected circumferential and branch connection welds shall also be examined for a length of at least 2.5t. The examinations shall be distributed among the Class 2 systems, prorated on the number of nonexempt welds in each system. Examinations shall be further distributed and prorated on the number of terminal ends and structural discontinuities in each system and prorated between line sizes to the degree practicable.

B. Examination Schedule - Interval Distribution (ID)

C. Discussion - See Table 2.5-1 for Code Case N-524 applicability.

6.7 EXAMINATION CATEGORY C-G - PRESSURE-RETAINING WELDS IN PUMPS AND VALVES

1. Pumps
Item Number C6.10 Pump Casing Welds

Valves
Item Number C6.20 Valve Body Welds

Not applicable to LGS Unit 1. Plant design does not use Class 2 valves with pressure-retaining valve body welds.

A. Scope of Examination - Examination of 100% of the pressure-retaining welds in pump casings in each piping run examined under Category C-F-1 and C-F-2. The multi-component concept is applicable.

B. Examination Schedule - Interval Distribution (ID)

C. Discussion – The examinations may be performed from either the inside or outside surface of the component as per IWC-2500-1. Examinations shall be conducted as documented in Appendix A, Relief Request No. RR-07. See Appendix D, Attachment A, for multi-component group numbers.

6.8 EXAMINATION CATEGORY C-H - ALL PRESSURE-RETAINING COMPONENTS

Discussion - See Section 8.2, Class 2 Pressure Test Program.

7.0 CLASS 3 COMPONENT EXAMINATIONS

7.1 EXAMINATION CATEGORY D-A - SYSTEMS IN SUPPORT OF REACTOR SHUTDOWN FUNCTION

1. Item Number D1.10 Pressure-Retaining Components
Item Number D1.20 Integral Attachment - Component Supports and Restraints
Item Number D1.30 Integral Attachment - Mechanical and Hydraulic Snubbers

Item Number D1.40 Integral Attachment - Spring Type Supports
Item Number D1.50 Integral Attachment - Constant Load Type Supports

Not applicable to LGS Unit 1. Plant design does not specify these types of component supports in Class 3 systems.

Item Number D1.60 Integral Attachment - Shock Absorbers

Not applicable to LGS Unit 1. Plant design does not specify these types of component supports in Class 3 systems.

A. Discussion - See Section 8.3, Class 3 Pressure Test Program for Item Number D1.10. Alternative examination requirements have been established for Item Numbers D1.20, D1.30, and D1.40. See section 9.2, Class 1, 2, and 3 Integrally Welded Attachments.

7.2 EXAMINATION CATEGORY D-B - SYSTEMS IN SUPPORT OF EMERGENCY CORE COOLING, CONTAINMENT HEAT REMOVAL, ATMOSPHERE CLEANUP, AND REACTOR RESIDUAL HEAT REMOVAL

1. Item Number D2.10 Pressure-Retaining Components
Item Number D2.20 Integral Attachment - Component Supports and Restraints
Item Number D2.30 Integral Attachment - Mechanical and Hydraulic Snubbers
Item Number D2.40 Integral Attachment - Spring Type Supports
Item Number D2.50 Integral Attachment - Constant Load Type Supports

Not applicable to LGS Unit 1. Plant design does not specify these types of component supports in Class 3 systems.

Item Number D2.60 Integral Attachment - Shock Absorbers

Not applicable to LGS Unit 1. Plant design does not specify these types of component supports in Class 3 systems.

A. Discussion - See Section 8.3, Class 3 Pressure Test Program for Item Number D2.10. Alternative requirements have been established for Item Numbers D2.20, D2.30 and D2.40. See section 9.2, Class 1, 2 and 3 Integrally Welded Attachements.

7.3 EXAMINATION CATEGORY D-C - SYSTEMS IN SUPPORT OF RESIDUAL HEAT REMOVAL FROM SPENT FUEL STORAGE POOL

1. Item Number D3.10 Pressure-Retaining Components
Item Number D3.20 Integral Attachment - Component Supports and Restraints
Item Number D3.30 Integral Attachment - Mechanical and Hydraulic Snubbers
Item Number D3.40 Integral Attachment - Spring Type Supports
Item Number D3.50 Integral Attachment - Constant Load Type Support

Not applicable to LGS Unit 1. Plant design does not specify these types of component supports in Class 3 systems.

Item Number D3.60 Integral Attachment - Shock Absorbers

Not applicable to LGS Unit 1. Plant design does not specify these types of component supports in Class 3 systems.

A. Discussion - See Section 8.3, Class 3 Pressure Test Program for Item Number D3.10. Alternative examination requirements have been established for Item Numbers D3.20, D3.30, and D3.40. See Section 9.2, Class 1, 2, and 3 Integrally Welded Attachments.

8.0 PRESSURE TESTING

All pressure-retaining components within the Code Classification boundaries are subject to periodic pressure testing in accordance with the Code, IWA-5000.

8.1 CLASS 1 PRESSURE TEST PROGRAM

The Class 1 Pressure Test Program will be conducted in accordance with the Code, IWA-5000 and IWB-5000.

8.1.1 EXAMINATION CATEGORY B-E - PRESSURE-RETAINING PARTIAL PENETRATION WELDS IN VESSELS

1. Item Number B4.11 — Partial Penetration Welds - Vessel Nozzles
   Item Number B4.12 — Partial Penetration Welds - Control Rod Drive Nozzles
   Item Number B4.13 — Partial Penetration Welds - Instrumentation Nozzles

   A. Scope of Examination - Visually examine 25% of all nozzles within each of the above Items.

   B. Examination Schedule - End of Interval (EOI), concurrent with system hydrostatic test.

   C. Discussion - A VT-2 examination will be conducted for evidence of leakage of partial penetration welds in the RPV.

8.1.2 EXAMINATION CATEGORY B-P - ALL PRESSURE-RETAINING COMPONENTS

1. Reactor Vessel
   Item Number B15.10 — Pressure-Retaining Boundary (System Leakage Test)
   Item Number B15.11 — Pressure-Retaining Boundary (System Hydrostatic Test)

   Heat Exchangers
   Item Number B15.40 — Pressure-Retaining Boundary (System Leakage Test)

   Not applicable to LGS Unit 1. Plant design does not specify Class 1 Heat Exchangers applicable to these Items.

   Item Number B15.41 — Pressure-Retaining Boundary (System Hydrostatic Test)

   Not applicable to LGS Unit 1. Plant design does not specify Class 1 Heat Exchangers applicable to these Items.

   Piping
   Item Number B15.50 — Pressure-Retaining Boundary (System Leakage Test)
   Item Number B15.51 — Pressure-Retaining Boundary (System Hydrostatic Test)

   Pumps
   Item Number B15.60 — Pressure-Retaining Boundary (System Leakage Test)
   Item Number B15.61 — Pressure-Retaining Boundary (System Hydrostatic Test)

   Valves
   Item Number B15.70 — Pressure-Retaining Boundary (System Leakage Test)

Item Number B15.71 Pressure-Retaining Boundary (System Hydrostatic Test)

A. Scope of Examination - All Class 1 piping, pumps, valves, and the reactor vessel, including nozzles and safe ends, shall be examined, as applicable, concurrent with a leakage test and a hydrostatic test. Alternative test methods may be used as described in the Code, Article IWA-5000.

B Examination Schedule – Refueling Outages (RO) - Examination concurrent with a leakage test. End of Interval (EOI) - Examination concurrent with a hydrostatic test required to be performed at or near the end of interval.

1. System Leakage Test

Class 1 components will be subjected to a system leakage test of IWB-5221 prior to startup, following each reactor refueling outage at a test pressure not less than system nominal operating pressure (reference Paragraph 1.2.18) at 100% rated reactor power. The exempt and non-exempt Class 1 systems, or portions thereof, subject to a system leakage test are shown on the Code Boundary P&ID's.

Note: Nominal operating pressure corresponding to 100% rated reactor power is specified in LGS UFSAR, Figure 5.1-1.

2. System Hydrostatic Test

Class 1 components will be subjected to a system hydrostatic test of IWB-5222 at or near the end of the inspection interval. The exempt and non-exempt Class 1 systems, or portion, thereof, subject to a system hydrostatic test are shown on the Code Boundary P&ID's. Test temperature and pressure will be in accordance with the Code, Article IWB-5000.

8.2 CLASS 2 PRESSURE TEST PROGRAM

The Class 2 Pressure Test Program will be conducted in accordance with IWA- and IWC-5000.

8.2.1 EXAMINATION CATEGORY C-H - ALL PRESSURE-RETAINING COMPONENTS

1. Pressure Vessels
Item Number C7.10 Pressure-Retaining Components (System Inservice or Functional Test)
Item Number C7.20 Pressure-Retaining Components (System Hydrostatic Test)

Piping
Item Number C7.30 Pressure-Retaining Components (System Inservice or Functional Test)
Item Number C7.40 Pressure-Retaining Components (System Hydrostatic Test)

Pumps
Item Number C7.50 Pressure-Retaining Components (System Inservice or Functional Test)
Item Number C7.60 Pressure-Retaining Components (System Hydrostatic Test)

Valves
Item Number C7.70 Pressure-Retaining Components (System Inservice or Functional Test)
Item Number C7.80 Pressure-Retaining Components (System Hydrostatic Test)

A. Scope of Examination - All Class 2 pressure vessels, piping (other than open-ended portions of systems), pumps, and valves shall be examined, as applicable, concurrent with both the inservice or functional test and the hydrostatic test. Alternative test methods may be used, as described in the Code, IWA- and IWC-5000.

B. Examination Schedule -

1st Period (P1) - An examination during the first inspection period concurrent with an inservice or functional test.

2nd Period (P2) - Examination concurrent with an inservice, functional, or hydrostatic test.

3rd Period (P3) - Examination concurrent with an inservice, functional, or hydrostatic test.

Note: An inservice or functional test is required each period; however, these system pressure tests, as defined in IWC-5221, need not be performed in the period that the system hydrostatic test of IWC-5222 is performed. A hydrostatic test must be performed at least once during the ten year interval, either in the second or third period. A system hydrostatic test is acceptable in lieu of the system inservice or functional test.

1. System Inservice or Functional Test

Class 2 components will be subject to the system inservice or functional test requirements of IWC-5221. The exempt and non-exempt Class 2 systems, or portions thereof, subject to an inservice or functional test are shown on the Code Boundary P&ID's. Specific pressurization boundaries, i.e., test examination boundaries, are dependent on system configuration during normal service or system/component functional testing.

The inservice operating pressure is the actual pressure achieved during acceptable system operation and will be used as the test pressure for the system inservice pressure test. The nominal operating pressure achieved during Tech Spec surveillance testing, for functional test, should be used as the test pressure for the system functional pressure test.

2. System Hydrostatic Test

Class 2 components will be subject to the system hydrostatic test requirements of IWC-5222. The exempt and non-exempt Class 2 systems, or portions thereof, subject to a hydrostatic test are shown on the Code Boundary P&ID's. Test temperatures and pressure will be in accordance with Article IWC-5000.

8.3 CLASS 3 PRESSURE TEST PROGRAM

The Class 3 Pressure Test Program will be conducted in accordance with IWA- and IWD-5000.

1. EXAMINATION CATEGORY D-A - SYSTEMS IN SUPPORT OF REACTOR SHUTDOWN FUNCTION

Item Number D1.10	Pressure-Retaining Components (System Inservice or Functional Test and Hydrostatic Test)

EXAMINATION CATEGORY D-B - SYSTEMS IN SUPPORT OF EMERGENCY CORE COOLING, CONTAINMENT HEAT REMOVAL, ATMOSPHERE CLEANUP, AND REACTOR RESIDUAL HEAT REMOVAL

Item Number D2.10	Pressure-Retaining Components (System Inservice or Functional Test and Hydrostatic Test)

EXAMINATION CATEGORY D-C - SYSTEMS IN SUPPORT OF RESIDUAL HEAT REMOVAL FROM SPENT FUEL STORAGE POOL

Item Number D3.10 Pressure-Retaining Components (System Inservice or Functional Test and Hydrostatic Test)

A. Scope of Examination - All Class 3 pressure vessels, piping, pumps, and valves shall be examined, as applicable, concurrent with both inservice or functional tests and the hydrostatic test. Alternative test methods may be used, as described in The Code, IWA- and IWD-5000.

B. Examination Schedule -

1st Period (P1) - An examination during the first inspection period concurrent with an inservice or functional test.

2nd Period (P2) - Examination concurrent with an inservice, functional or hydrostatic test.

3rd Period (P3) - Examination concurrent with an inservice, functional or hydrostatic test.

Note: An inservice or functional test is required each period, however, these system pressure tests as defined in IWD-5221 need not be performed in the period that the system hydrostatic test of IWD-5223 is performed. A hydrostatic test must be performed at least once during the ten year interval, either in the second or third period. A system hydrostatic test is acceptable in lieu of the system inservice or functional test.

1. System Inservice or Functional Test

Class 3 components will be subjected to the system inservice or functional test requirements specified in IWD-5200. The exempt and non-exempt Class 3 systems, or portions thereof, subject to an inservice or functional test are shown on the Code Boundary P&ID's. Specific pressurization boundaries (i.e. test examination boundaries) are dependent on system configuration during normal service or system/component functional testing.

The inservice operating pressure is the actual pressure achieved during acceptable system operation and will be used as the test pressure for the system inservice pressure test. The nominal operating pressure achieved during Tech Spec surveillance testing (for functional tests) shall be used as the test pressure for the system functional pressure test.

2. System Hydrostatic Test

Class 3 components will be subject to a system hydrostatic test per IWD-5223. The exempt and non-exempt Class 3 systems, or portions thereof, subject to a system hydrostatic test are shown on the Code Boundary P&ID's. Test temperatures and pressures will be in accordance with Article IWD-5000.

9 CLASS 1, 2 AND 3 SUPPORTS AND INTEGRALLY WELDED ATTACHMENTS

9.1 CLASS 1, 2 AND 3 SUPPORTS

9.1.1 Scope

The ISI Program for component supports has been developed in accordance with the

requirements of Subsection IWF of the Code, 1989 Edition, and the alternative requirements of ASME Code Case N-491-1. See Table 2.5-1 for applicability.

The examination requirements shall apply to piping supports and supports other than piping supports. Details of the ISI Program for component supports are identified in this section of the ISI Program.

All non-exempt component supports, within the Code boundaries, are listed in the ISI Tables and are shown on the Section XI or Fabrication Isometric Drawings. This includes those non-exempt component supports containing snubbers, although only those portions excluding the pin to pin snubber assembly of these supports are subject to the examination requirements of this ASME Section XI ISI Program (See Attachment 4, Figure AUG-13-1).

Snubber Inspection Requirements

The snubber assemblies are subject to the examination and testing requirements of the LGS Unit 1 Technical Specifications. The existing technical specification surveillance requirements are satisfied by Appendix B, Augmented Inspection Program No. AUG-13.

The requirements of this section of the ISI Program apply to the examination and inspection of component supports, but not to the inservice test requirements of IWF-5000.

9.1.2 Supports Exempt from Examination

Component supports exempt from the examination requirements of this section are those connected to components and items exempted from examination under IWB-1220, IWC-1220 and IWD-1220, as identified in Section 2.3 of this ISI Program. In addition, portions of supports that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe are also exempt from the examination requirements of this section.

9.1.3 Support Examination Boundaries

The component support examination boundaries shall be in accordance with the Code, 1989 Edition, IWF-1300, as depicted on the Component Support Design Drawing and as itemized on the drawing Bill of Material List.

9.1.4 Examination and Inspections

Examination Categories

The Code, 1989 Edition, Table IWF-2500-1 identifies three Examination Categories for component supports; F-A, F-B, and F-C. Each of these Categories contain identical requirements (i.e. parts examined, examination method, frequency, etc.) and similar Item Numbers. Category F-C differs slightly, from the other categories, in that it also addresses spring and snubber type supports. Because of these similarities, this program groups all component supports into one Examination Category noted as F-A, Supports. In addition, the Category is subdivided into four (4) Item Numbers as identified on Table 9.1-1.

1. Preservice Inspection

   A. Initial Examination

      All examinations listed in Table 9.1-1 shall be performed completely, once, as a preservice examination. These preservice examinations shall be extended to include 100% of all supports not exempted by paragraph 9.1.2.

Examinations for systems that operate at a temperature greater than 200°F during normal plant operation shall be performed during or following initial system heatup and cooldown. Other examinations may be performed prior to initial system heatup and cooldown.

B. Adjustment, Repair, and Replacement

Prior to return of the system to service, the applicable examinations listed in Table 9.1-1 shall be performed on component supports that have been adjusted in accordance with paragraph 9.1.6, repaired, or replaced.

For systems that operate at a temperature greater than 200°F during normal plant operation, the Owner shall perform an additional preservice examination on the affected component supports during or following the subsequent system heatup and cooldown cycle unless determined unnecessary by evaluation. This examination shall be performed during operation or at the next refueling outage.

1. Inservice Inspection

A. Inspection Program

Inservice examinations shall be performed either during normal system operation or plant outages.

The required examinations shall be completed in accordance with the inspection schedule provided in Tables IWB-2412-2, IWC-2412-2 and IWD-2412-2.

The inspection period specified in Tables IWB-2412-2, IWC-2412-2 and IWD-2412-2 may be decreased or extended by as much as one year to enable an inspection to coincide with a plant outage, within the limitations of IWA-2400.

All component support examinations will be in accordance with Interval Distribution (ID) scheduling.

B. Successive Inspections

The sequence of component support examinations established during the first inspection interval shall be repeated during each successive inspection interval, to the extent practical.

When a component support must be subjected to corrective measures in accordance with Paragraph 9.1.6, that support shall be reexamined during the next inspection period. When additional corrective measures are not required during the next inspection period, the inspection schedule may revert to the sequence established during the first inspection interval.

C. Additional Examinations

1. When component supports must be subjected to corrective measures in accordance with paragraph 9.1.6, the component supports immediately adjacent to those for which corrective action is required shall be examined. Also, the examinations shall be extended to include additional supports within the system, equal in number and of the same type and function as those scheduled for examination during the inspection period.

2. When corrective measures in accordance with paragraph 9.1.6 are required as a result of the additional examinations, the remaining component supports within the

system of the same type and function as in (1) above shall be examined.

3. When corrective measures in accordance with paragraph 9.1.6 are required as a result of the additional examinations in (2) above, examinations shall be extended to include all nonexempt supports potentially subject to the same failure modes that required corrective measures in accordance with (1) and (2) above.

   These additional examinations shall include nonexempt component supports in other systems when support failures requiring corrective measures indicate non-system-related support failure modes.

4. When corrective measures are required by (3) above, those exempt component supports that could be affected by the same observed failure modes and could affect nonexempt components shall be examined.

5. When the results of a selected non-piping support examinations require corrective measures in accordance with IWF-3000, the rules of IWF-2430 of the Code, 1989 Edition, shall be followed.

9.2.4 Examination Requirements

1. The following shall be examined in accordance with Table 9.1-1:
   A. mechanical connections to pressure retaining components and building structure;
   B. weld connections to building structure;
   C. weld and mechanical connections at intermediate joints in multiconnected integral and nonintegral supports;
   D. clearances of guides and stops, alignment of supports, and assembly of support items;
   E. hot or cold settings of spring supports and constant load supports.
   F. accessible sliding surfaces.

2. Supports Selected for Examination

   Component and piping supports shall be examined in accordance with Table 9.1-1. Component supports to be examined shall be the supports of those components that are required to be examined under IWB-2500, IWC-2500, IWD-2500, and IWE-2500 by volumetric, surface, or visual (VT-1 or VT-3) examination methods. Piping supports to be examined shall be the supports of piping not exempted under IWB-1220, IWC-1220, IWD-1220, and IWE-1220.

   Selection of specific piping supports to fill the sample population shall consider the piping support "type" as a primary factor. All LGS Unit 1 piping supports have been assigned to the following functional types:

   A. Anchor (A) – provides restraint in three (3) orthogonal directions including the moments about those directions.
   B. Mechanical or Hydraulic Snubber (M) – provides restraint to dynamic loads and allows thermal movement.
   C. Rigid (R) – provides restraint in one (1) or two (2) orthogonal directions including the moments about those directions.
   D. Variable (V) – spring type support where the load varies with thermal movement.
   E. Constant (C) – spring type support where the load remains constant with thermal movement.

   Accordingly, the specific piping supports, selected to fill the sample population, shall be distributed within each class by system and type, proportional to the number of supports of each type within each system.

Selection of supports other than piping supports shall use the multiple component concept. For multiple components, other than piping, within a system of similar design, function and service; the supports of only one of the components will be selected for examination.

3. Extent of Examination

The extent of examination of piping supports shall be a sampling as follows:

Class 1 piping supports	25% of the nonexempt population
Class 2 piping supports	15% of the nonexempt population
Class 3 piping supports	10% of the nonexempt population

The extent of examination of supports other than piping supports will be 100% of the nonexempt population utilizing the multiple component concept.

4. Method of Examination

The methods of examination shall comply with those in Table 9.1-1. Alternative methods of examination meeting the requirements of IWA-2240 may be used.

All component support examinations will be performed utilizing the VT-3 visual examination method in accordance with paragraph 3.3.1.

9.1.6 Evaluation of Examination Results

1. Preservice Inspections

The preservice examinations performed to meet the requirements of Table 9.1-1 shall be evaluated by comparing the examination results with acceptance standards specified in paragraph 9.1.8.

A. Acceptance by Examination.

Component supports whose examinations do not reveal conditions described in paragraph 9.1.8.1 shall be acceptable for service.

B. Acceptance by Correction.

Component supports whose examinations reveal conditions described in paragraph 9.1.8.1 shall be unacceptable for service until such conditions are corrected by one or more of the following:

1. adjustment and reexamination in accordance with paragraph 9.1.4 for conditions such as
   - detached or loosened mechanical connections;
   - improper hot or cold settings of spring supports and constant load supports;
   - misalignment of supports; or
   - improper displacement settings of guides and stops.
2. repair in accordance with IWA-4000 and reexamination in accordance with paragraph 9.1.4;
3. replacement in accordance with IWA-7000 and reexamination in accordance with paragraph 9.1.4.

C. Acceptance by Evaluation or Test

1. As an alternative to the requirements of (B) above, a component support or a portion

of a component support containing relevant conditions that do not meet the acceptance standards of paragraph 9.1.8 shall be acceptable for service without corrective measures if an evaluation or test demonstrates the component support is acceptable for service.

2. If a component support or a portion of a component support, has been evaluated or tested and determined to be acceptable for service in accordance with (C1) above, corrective measures to restore the component support to its original design condition may be performed. The requirements of paragraph 9.1.4 are not applicable after corrective measures of (B1) above, are performed.

3. Records and reports shall meet the requirements of IWA-6000.

2. Inservice Inspections

Inservice nondestructive examinations performed during or at the end of successive inspection intervals to meet the requirements of Table 9.1-1 and conducted in accordance with the procedures of IWA-2200 shall be evaluated by comparing the results of examinations with the acceptance standards specified in paragraph 9.1.8.

A. Acceptance by Examination

Component supports whose examinations do not reveal conditions described in paragraph 9.1.8.1 shall be acceptable for continued service. Verified changes or conditions from prior examinations shall be recorded in accordance with IWA-6220.

B. Acceptance by Correction

Component supports whose examinations reveal conditions described in paragraph 9.1.8.1 shall be unacceptable for service until such conditions are corrected by one or more of the following:

1. adjustment and reexamination in accordance with paragraph 9.1.4 for conditions such as:
   - detached or loosened mechanical connections;
   - improper hot or cold settings of spring supports and constant load supports;
   - misalignment of supports; or
2. improper displacement settings of guides and stops.
3. repair in accordance with WA-4000 and reexamination in accordance with paragraph 9.1.4;
4. replacement in accordance with IWA-7000 and reexamination in accordance with paragraph 9.1.4.

C. Acceptance by Evaluation or Test

1. As an alternative to the requirements of (B) above, a component support or a portion of a component support containing relevant conditions that do not meet the acceptance standards of paragraph 9.1.8 shall be acceptable for continued service without corrective measures if an evaluation or test demonstrates the component support is acceptable for continued service.

2. If a component support or a portion of a component support, has been evaluated or tested and determined to be acceptable for continued service in accordance with (C1) above, corrective measures to restore the component support to its original design condition may be performed. The requirements of paragraph 9.1.4 are not applicable after corrective measures of (B1) above, are performed.

3. Records and reports shall meet the requirements of IWA-6000.

9.1.7 Supplemental Examinations

Examinations that detect conditions that require evaluation in accordance with the requirements of Paragraph 9.1.6 may be supplemented by other examination methods and techniques (IWA-2000) to determine the character of the flaw (i.e., size, shape, and orientation). Visual examinations that detect surface flaw that exceed paragraph 9.1.8 criteria shall be supplemented by either surface or volumetric examinations.

9.1.8 Acceptance Standards - Component Support Structural Integrity

1. Component support conditions which are unacceptable for continued service shall include the following:
   A. deformations or structural degradations of fasteners, springs, clamps, or other support items;
   B. missing, detached, or loosened support items;
   C. arc strikes, weld splatter, paint scoring, roughness, or general corrosion on close tolerance machined or sliding surfaces;
   D. improper hot or cold settings of spring supports and constant load supports;
   E. misalignment of supports;
   F. improper clearances of guides and stops.

2. The following are examples of non-relevant conditions:
   A. fabrication marks (e.g., from punching, layout, bending, rolling, and machining);
   B. chipped or discolored paint;
   C. weld splatter on other than close tolerance machined or sliding surfaces;
   D. scratches and surface abrasion marks;
   E. roughness or general corrosion which does not reduce the load bearing capacity of the support;
   F. general conditions acceptable by the material, Design, or Construction Specifications.

9.2 CLASS 1, 2 AND 3 INTEGRALLY WELDED ATTACHMENTS

9.2.1 Scope

The ISI Program for Class 1 and 2 integrally welded attachments has been developed in accordance with the requirements of ASME Section XI, 1995 Edition with 1996 Addenda, and the alternative requirements of ASME Code Case N-509. The ISI Program for Class 3 integrally welded attachments has been developed in accordance with the requirements of ASME Section XI, 1989 Edition, and the alternative requirements of ASME Code Case N-509. See Table 2.5-1 for Code Case applicability and Appendix A, Relief Request Numbers RR-05 and RR-11 for Code Edition applicability.

These requirements apply to examination and sample selection of Class 1, 2, and 3 integrally welded attachments of vessels, piping, pumps, and valves listed in Tables 9.2-1, 9.2-2 and 9.2-3 as follows:

1. Table 9.2-1, Examination Category B-K shall be used for Class 1 integrally welded attachments in Examination Categories B-H and B-K-1 of IWB.

2. Table 9.2-2, Examination Category C-C shall be used for Class 2 integrally welded attachments in Examination Category C-C of IWC.

3. Table 9.2-3, Examination Category D-A shall be used for Class 3 integrally welded attachments in Examination Categories D-A, D-B, and D-C of IWD.

All non-exempt component integrally welded attachments, within the Code boundaries, are listed in the ISI Tables and are shown on the Section XI or Fabrication Isometric Drawings.

9.2.2 Exemption Criteria

The exemption criteria provided in IWB-1220, IWC-1220, and IWD-1220 may be applied to Class 1, 2, and 3 components respectively, with integrally welded attachments, required to be examined in accordance with Tables 9.2-1, 9.2-2 and 9.2-3.

Class 1, 2, and 3 integrally welded attachment examinations performed as a result of component support deformation cannot be credited under the requirements of IWB-2411 or IWB-2412, IWC-2411 or IWC-2412, and IWD-2411 or IWD-2412, respectively.

9.2.3 Inspection Schedule

Class 1, 2, or 3 integrally welded attachments selected for examination by sample selection criteria in accordance with Tables 9.2-1, 9.2-2 and 9.2-3, Examination Categories B-K, C-C, and D-A, shall meet the requirements of IWB-2412, IWC-2412, IWD-2412, respectively.

9.2.4 Additional and Successive Examinations

Class 1, 2, and 3 additional and successive examination requirements of IWB-2430 and IWB-2420 for Class 1, IWC-2430 and IWC-2420 for Class 2 and 3 as applicable, shall be applied to integrally welded attachments whose examinations reveal flaws or relevant conditions that exceed the acceptance standards IWB-3000, IWC-3000, and IWD-3000, respectively.

When integrally welded attachments are examined as a result of identified component support deformation and the results of these examinations exceed the applicable acceptance standards listed above, additional or successive examinations shall be performed when determined necessary based on an evaluation by engineering.

TABLE 9.1-1
EXAMINATION CATEGORY F-A, SUPPORTS

Item No.[1]	Description of Component	Number of Components	Examination Requirements/ Figure No.	Examination Method	Acceptance Standard	Request Number	Examination Extent and Frequency[4]
F1.10	Class 1 Piping Supports	364	IWF-1300-1	Visual, VT-3	Paragraph 9.1.8	N/A	25% of Class 1[2] Each Inspection Interval
F1.20	Class 2 Piping Supports	782	IWF-1300-1	Visual, VT-3	Paragraph 9.1.8	N/A	15% of Class 2[2] Each Inspection Interval
F1.30	Class 3 Piping Supports	997	IWF-1300-1	Visual, VT-3	Paragraph 9.1.8	N/A	10% of Class 3[2] Each Inspection Interval
F1.40	Supports Other than Piping Supports (Class 1, 2, 3, and MC)	55	IWF-1300-1	Visual, VT-3	Paragraph 9.1.8	N/A	100% of the Supports[3] Each Inspection Interval

NOTES:
1. Item Numbers shall be categorized to identify support types by component support function:
2. The total percentage sample shall be comprised of supports from each system where the individual sample sizes are proportional to the total number of nonexempt supports of each type and function within each system.
3. For multiple components other than piping, within a system of similar design, function and service, the supports of only one of the multiple components are required to be examined.
4. To the extent practical, the same supports selected for examination during the first inspection interval shall be examined during each successive inspection interval.

TABLE 9.2-1
EXAMINATION CATEGORY B-K, INTEGRAL ATTACHMENTS FOR CLASS 1 VESSELS, PIPING, PUMPS AND VALVES

Item No.	Description of Component[1]	Number of Components	Examination Requirements/ Figure No.	Examination Method	Acceptance Standard	Request Number	Examination Extent[2,3] and Frequency[6]
B10.10	Pressure Vessels Integrally Welded Attachments	10	IWB-2500-13, -14 and -15 95Ed/96Add Case N-323-1	Surface	IWB-3516 95Ed/96Add	RR-11	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
B10.20	Piping Integrally Welded Attachments	36	IWB-2500-13, -14 and -15 95Ed/96Add	Surface	IWB-3516 95Ed/96Add	RR-11	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
B10.30	Pumps Integrally Welded Attachments	8	IWB-2500-13, -14 and -15 95Ed/96Add	Surface	IWB-3516 95Ed/96Add	RR-11	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
B10.40	Valves Integrally Welded Attachments	0	IWB-2500-13, -14 and -15 95Ed/96Add	Surface	IWB-3516 95Ed/96Add	RR-11	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]

TABLE 9.2-1
EXAMINATION CATEGORY B-K, INTEGRAL ATTACHMENTS FOR CLASS 1 VESSELS, PIPING, PUMPS AND VALVES

NOTES:

1. Examination is limited to those integrally welded attachments that meet the following conditions:
   - the attachment is on the outside surface of the pressure retaining component;
   - the attachment provides component support as defined in ASME Section III, NF-1110;
   - the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component
2. The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination. Per Relief Request Number RR-11, the examination of surface areas shown on Figures IWB-2500-13 and IWB-2500-14 (Case N-323-1) may be limited to the accessible side (outside the vessel skirt) of the attachment weld. For the examination of surface areas shown on Figure IWB-2500-15 (95Ed/96Add) may be limited to those areas that are accessible without removal of support members.
3. Selected samples of integrally welded attachments shall be examined each inspection interval.
4. In the case of multiple vessels of similar design, function and service, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination. USNRC exception per RG 1.147, Rev. 12: A minimum 10% sample of integrally welded attachments for each item in each code class shall be examined per interval.
5. For piping, pumps and valves, a sample of 10% of the welded attachments associated with the component supports selected for examination under the 1990 Addenda, IWF-2500 shall be examined.
6. Examination is required whenever component support member deformation (e.g. broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.
7. For the configuration shown in Figure No. IWB-2500-14, a volumetric examination of volume A-B-C-D from side B-C of the circumferential welds may be performed in lieu of the surface examination of surfaces A-D and B-C.

TABLE 9.2-2
EXAMINATION CATEGORY C-C, INTEGRAL ATTACHMENTS FOR CLASS 2 VESSELS, PIPING, PUMPS AND VALVES

Item No.	Description of Component[1]	Number of Components	Examination Requirements/ Figure No.	Examination Method	Acceptance Standard	Request Number	Examination Extent[2,3] and Frequency[6]
C3.10	Pressure Vessels Integrally Welded Attachments	16	IWC-2500-5 95Ed/96Add	Surface	IWC-3512 95Ed/96Add	RR-05	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
C3.20	Piping Integrally Welded Attachments	434	IWC-2500-5 95Ed/96Add	Surface	IWC-3512 95Ed/96Add	RR-05	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
C3.30	Pumps Integrally Welded Attachments	4	IWC-2500-5 95Ed/96Add	Surface	IWC-3512 95Ed/96Add	RR-05	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
C3.40	Valves Integrally Welded Attachments	0	IWC-2500-5 95Ed/96Add	Surface	IWC-3512 95Ed/96Add	RR-05	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]

TABLE 9.2-2
EXAMINATION CATEGORY C-C, INTEGRAL ATTACHMENTS FOR CLASS 2 VESSELS, PIPING, PUMPS AND VALVES

NOTES:

1. Examination is limited to those integrally welded attachments that meet the following conditions:
   - the attachment is on the outside surface of the pressure retaining component;
   - the attachment provides component support as defined in ASME Section III, NF-1110;
   - the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.
2. The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination. Per Relief Request Number RR-05, the examination of surface areas shown on Figure IWC-2500-5 (95Ed/96Add) may be limited to those areas that are accessible without removal of support members.
3. Selected samples of integrally welded attachments shall be examined each inspection interval.
4. In the case of multiple vessels of similar design, function and service, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination.
5. For piping, pumps and valves, a sample of 10% of the welded attachments associated with the component supports selected for examination under the 1990 Addenda, IWF-2500 shall be examined.
6. Examination is required whenever component support member deformation (e.g. broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

TABLE 9.2-3
EXAMINATION CATEGORY D-A, INTEGRAL ATTACHMENTS FOR CLASS 3 VESSELS, PIPING, PUMPS AND VALVES

Item No.	Description of Component[1]	Number of Components	Examination Requirements/ Figure No.	Examination Method	Acceptance Standard	Request Number	Examination Extent[2,3,4,5] and Frequency[3,4,5,6]
D1.10	Pressure Vessels Integrally Welded Attachments	0	IWD-2500-1	Visual, VT-3	IWD-3000	N/A	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
D1.20	Piping Integrally Welded Attachments	272	IWD-2500-1	Visual, VT-3	IWD-3000	N/A	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
D1.30	Pumps Integrally Welded Attachments	0	IWD-2500-1	Visual, VT-3	IWD-3000	N/A	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]
D1.40	Valves Integrally Welded Attachments	0	IWD-2500-1	Visual, VT-3	IWD-3000	N/A	100% of required areas of each welded attachment. Each identified occurrence and each inspection interval[4]

TABLE 9.2-3
EXAMINATION CATEGORY D-A, INTEGRAL ATTACHMENTS FOR CLASS 3 VESSELS, PIPING, PUMPS AND VALVES

NOTES:

1. Examination is limited to those integrally welded attachments that meet the following conditions:
   - the attachment is on the outside surface of the pressure retaining component;
   - the attachment provides component support as defined in ASME Section III, NF-1110;
   - the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.
2. The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.
3. Selected samples of integrally welded attachments shall be examined each inspection interval. All integrally welded attachments selected for examination shall be on systems that are subject to corrosion, i.e., ESW and RHRSW.
4. In the case of multiple vessels of similar design, function and service, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination.
5. For piping, pumps and valves, a sample of 10% of the welded attachments shall be selected for examination. The percentage sample shall be proportional to the total number of nonexempt integrally welded attachments connected to piping, pumps and valves located within each system subject to examinations.
6. Examination is required whenever component support member deformation (e.g. broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

10.0 CONTAINMENT

10.1 INTRODUCTION AND PROGRAM DESCRIPTION

10.1.1 In the Federal Register dated August 8, 1996, the NRC amended its regulation to 10CFR50.55a to include the examination of concrete and metal containment structures. Effective September 9, 1996, the NRC endorsed Subsections IWE and IWL of the Code, 1992 Edition including 1992 Addenda. These subsections contain inservice inspection and repair and replacement rules for metal containment vessels and metallic liners of concrete containment vessels (Class MC) and for concrete containment vessels (Class CC). Since the LGS Unit 1 containment vessel is a freestanding concrete containment with liner plate, both subsections IWE and IWL apply.

10.1.2 This Primary Containment Inservice Inspection (CISI) Program, hereafter referred to as the Program, describes the requirements for inservice inspection of Class MC and Class CC pressure-retaining components and their integral attachments at Limerick Generating Station Unit 1.

10.1.3 This Program was developed in accordance with the Code, 1992 Edition through 1992 Addenda, Subsections IWA, IWE, and IWL, for Inspection Program B. The definitions used in this Program are in accordance with ASME Section XI.

10.1.4 This Program will be effective from February 1, 1997, through and including January 31, 2007. This represents the 1st 10-year Inspection Interval for containment components at LGS Unit 1. Successive 10-year Inspection Interval shall follow respective to the dates listed above. The following table further describes the breakdown of the 10-year Inspection Intervals by outage:

1st 10-Year Containment Inspection Interval				
1st Period		2nd Period	3rd Period	
1R07 (1998)	1R08 (2000)	1R09 (2002)	1R10 (2004)	1R11 (2006)
2/1/97 thru 1/31/01		2/1/01 thru 1/31/04	2/1/04 thru 1/31/07	

2nd 10-Year Containment Inspection Interval				
1st Period		2nd Period	3rd Period	
1R12 (2008)	1R13 (2010)	1R14 (2012)	1R15 (2014)	1R16 (2016)
2/1/07 thru 1/31/11		2/1/11 thru 1/31/14	2/1/14 thru 1/31/17	

3rd 10-Year Containment Inspection Interval				
1st Period		2nd Period	3rd Period	
1R17 (2018)	1R18 (2020)	1R19 (2022)	1R20 (2024)	1R21 (2026)
2/1/17 thru 1/31/21		2/1/21 thru 1/31/24	2/1/24 thru 1/31/27	

10.1.5 In addition to completing all Code-required examinations by the end of the interval, the Code requires examinations to be completed progressively during the interval, in accordance with the following table:

TABLE 3.5-1 DISTRIBUTION of EXAMINATIONS DURING the INTERVAL	
Period	Examination Completion
1st	16% minimum and not to exceed 34% of the total examinations
2nd	50% minimum and not to exceed 67% of the total examinations. This includes the examinations performed during the 1st Period.
3rd	100% of all required examinations (total for all three periods).

Required examinations within this ISI Program shall be implemented in accordance with the interval distribution defined in the above table, unless otherwise stated. Exceptions to implementation by interval distribution for certain examinations or categories of examinations are provided in the Code. In accordance with 10CFR50.55a(g)(6)(ii)(B), the first period requirements shall be completed by September 9, 2001.

10.2 REFERENCES

10.2.1 Engineering Specifications and Documents

1. C-061 Specification for Furnishing and Delivery of Onsite Concrete
2. C-039 Furnishing, Detailing, Fabricating, and Delivering Reinforcing Steel
3. C-078 Specification for Installation of Containment Structural Instrumentation
4. C-002 Specification for Furnishing, Detailing, Fabricating, and Erecting the Primary Containment Liner
5. C-115 Specification for Civil and Structural Design Criteria
6. C-112 Specification for Primary Containment Structural Integrity Test
7. NE-075 Penetration Seals in Hazard Barriers
8. NE-101 Coating Inspection and Repair of the Suppression Chambers at Limerick Generating Station Units 1 and 2
9. M-081 Design Specification for Primary Containment Vacuum Relief Valve Assemblies and MSRV Discharge Line Vacuum Relief Valves for LGS Units 1 & 2 and PBAPS Units 2 & 3
10. A61-4130-L-001 Suppression Pool Water Quality Specification
11. LGS Design Basis Document L-S-25A, "Primary Containment Pressure Suppression System".
12. LGS Design Basis Document L-T-02, "Containment".

10.2.2 Engineering Analysis

1. N-00E-177-0000x NEDC-32225P, Power Rerate Safety Analysis Report for Limerick Generating Station Units 1 and 2
2. N-00E-177-00003 NEDC-32265P, Power Rerate Engineering Report, LGS Units 1 and 2
3. C-002-01278 Containment Stress Analysis

10.2.3 Technical Specifications

1. 3/4.6.1 Containment Systems - Primary Containment Vent and Suppression System
2. 3/4.4.2 Reactor Coolant System - Safety/Relief Valves
3. 3/4.5.1 Emergency Core Cooling Systems - Operating
4. 3/4.7.3 Plant Systems - Reactor Core Isolation Cooling System
5. 3/4.6.2.3 Containment Systems - Suppression Pool Cooling
6. 3/4.6.2 Containment Systems - Depressurization System, Suppression Chamber
7. 3/4.6.6 Containment Systems - Primary Containment Atmosphere Control and Primary Containment Hydrogen Recombiner Systems
8. 3/4.6.1.7 Drywell Average Air Temperature
9. 3/4.6.1.6 Containment Systems - Drywell and Suppression Chamber Internal Pressure
10. 3/4.6.4.1 Vacuum Relief Suppression Chamber - Drywell Vacuum Breakers
11. 3/4.5.3 Emergency Core Cooling Systems - Suppression Chamber
12. 3/4.5.2 Emergency Core Cooling System - Shutdown

10.2.4 Updated Final Safety Analysis Report

1. LGS Units 1 and 2 Updated Final Safety Analysis Report, Section 3.8.1, "Concrete Containment"

10.2.5 Procedures

1. LGS Procedure No. ST-4-060-970-1 (2), "Containment Structures Inservice Inspection".
2. LGS Procedure No. A-C-200, "Coatings Program for Nuclear Facilities".
3. Maintenance Procedure No. MAG-CG-425, "Visual Examination of Containment Vessels and Internals".

10.2.6 Codes and Standards

1. EPRI Guideline CG-110698, "Containment Inspection Program Guide (ASME Subsections IWE and IWL)", Draft, dated September 1998.
2. NRC Letter, "Responses to NEI's Topics and Specific Issues Related to Containment Inspection Requirements", dated May 30, 1997.
3. BWR CIP, "BWR Owner's Group Model Containment Inspection Program", dated October 26, 1993.
4. American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: "Rules for Inservice Inspection of Nuclear Power Plant Components", 1992 Edition through 1992 Addenda.

5. ASME Boiler and Pressure Vessel Code, Section III, Subsection B, Requirements for Class B Vessels, 1968 and 1971 Editions, and 1974 Edition with Addenda through 1976

6. ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, Class 1 Components, 1977 Edition with Addenda through Summer 1979

7. ASME Boiler and Pressure Vessel Code, Section III, Subsection NC, Class 2 Components, 1971 and 1974 Editions, and 1977 Edition with Addenda through Summer 1978

8. ASME Boiler and Pressure Vessel Code, Section III, Subsection NE, Class MC Components, 1977 Edition with Addenda through Winter 1978

9. ASME Boiler and Pressure Vessel Code, Section III, Division 2, Article CC-6000, Structural Integrity Test of Concrete Containment Structures, July 1980 Edition

10. ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Pressure Vessels, 1968, 1971, and 1974 Editions, and 1977 Edition with Addenda through Summer 1978

11. American Concrete Institute (ACI) Standard ACI 301, Specifications for Structural Concrete for Buildings, 1966 Edition

12. American Concrete Institute (ACI) Standard ACI 318, Building Code Requirements for Reinforced Concrete, 1971 Edition

13. American Institute of Steel Construction (AISC) Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings, 1969 Edition and Supplement #1 (1970), Supplement #2 (1971), and Supplement #3 (1974)

14. ANSI N101.2, Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities, 1972

15. ASTM D3843-93, Standard Practice for Quality Assurance for Protector Coatings Applied to Nuclear Facilities

16. American Society for Nondestructive Testing, "Recommended Practice," SNT-TC-1A, 1980 and 1984.

10.2.7 Regulations

1. Federal Register, Vol. 61, No. 154, "Codes and Standards for Nuclear Power Plants; Subsection IWE and Subsection IWL", dated August 8, 1996.

2. Title 10, Code of Federal Regulations, Part 50 (10CFR50), Article 55a, "Codes and Standards".

3. Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division I", latest revision.

10.3 FEDERAL AND ASME REQUIREMENTS FOR CLASS MC COMPONENTS

10.3.1 Included within 10CFR50.55a are modifications and supplements to the Code, Subsection IWE. As stated in 10CFR50.55a(b)(2)(x) "Examination of Metal Containments and Liners of Concrete Containments", these modifications and supplements are as follows:

1. For Class MC applications, the licensee shall evaluate the acceptability of inaccessible areas

when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:

A. A description of the type and estimated extent of degradation, and the conditions that led to the degradation;

B. An evaluation of each area, and result of the evaluation, and;

C. A description of necessary corrective actions.

10.3.2 If the examinations reveal flaws or areas of degradation exceeding the acceptance standards of Table IWE-3410-1, an evaluation shall be performed to determine whether additional component examinations are required. For each flaw or area of degradation identified that exceeds acceptance standards, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:

1. A description of each flaw or area, including the extent of degradation, and the conditions that led to the degradation;

2. The acceptability of each flaw or area, and the need for additional examinations to verify that similar degradation does not exist in similar components,

3. A description of necessary corrective actions, and;

4. The number and type of additional examinations to ensure detection of similar degradation in similar components.

10.3.3 When remotely performing the visual examinations required by Subsection IWE, the maximum direct examination distance specified in Table IWA-2210-1 may be extended, and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.

10.3.4 The examinations specified in Examination Category E-B, Pressure-Retaining Welds, and Examination Category E-F, Pressure-Retaining Dissimilar Metal Welds, are optional, and therefore, LGS has chosen not to inspect components that may fall in those categories.

10.3.5 Section 50.55a(b)(2)(x)(D) may be used as an alternative to the requirements of IWE-2430. Requests for alternatives can be found in Specification No. NE-042, Appendix A.

10.3.6 A general visual examination as required by Subsection IWE shall be performed once each period.

10.3.7 This section of the Program does not address the examinations required by the Code, Subsections IWB, IWC, IWD and IWF. The examination of Class 1, 2 and 3 components and supports is addressed separately in other sections of LGS Specification No. NE-042.

10.4 FEDERAL AND ASME REQUIREMENTS FOR CLASS CC COMPONENTS

10.4.1 Subsection IWL, "Requirements for Class CC Concrete Components" is different from other Classes of components addressed in the Code. The format allows the Owner more discretion in developing a containment ISI program and flexibility in performing the containment examinations. The intent is to develop and implement a program that detects containment degradation before margins are seriously eroded. The lack of prescriptive requirements in this subsection is addressed by the education, knowledge, and experience of the Responsible Engineer who is a Registered Professional Engineer.

It should be further noted that the Final Rule in 10CFR50.55a(b)(2)(ix) contains modifications and supplements for: grease cap examinations, evaluation of tendon restressing forces, wire elongation problems, reporting requirements and evaluation of inaccessible areas. Since the LGS containment is a reinforced concrete type, that does not include a post tensioning system, only the reporting requirement and evaluation of inaccessible areas apply as follows.

1. If the examinations reveal flaws or areas of degradation exceeding the acceptance standards of the Containment Design Specification, an evaluation shall be performed to determine whether additional component examinations are required. For each flaw or area of degradation identified that exceeds acceptance standards, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:

   A. A description of each flaw or area, including the extent of degradation, and the conditions that led to the degradation;

   B. The acceptability of each flaw or area, and the need for additional examinations to verify that similar degradation does not exist in similar components,

   C. A description of necessary corrective actions, and;

   D. Number and type of additional examinations to ensure detection of similar degradation in similar components.

10.4.2 This section of the Program does not address the examinations required by the Code, Subsections IWB, IWC, IWD and IWF. The examination of Class 1, 2 and 3 components and supports is addressed separately in other sections of LGS Specification No. NE-042.

10.4.3 Alternative requirements to the Code are set forth in this section. Alternative requirements are in accordance with 10CFR50.55a and the Code. Requests for alternatives can be found in Specification No. NE-042, Appendix A.

10.4.4 CISI shall be performed for Class CC components as outlined in the Code, Paragraph IWL-2512. In accordance with 10CFR50.55a(g)(6)(ii)(B), the first period requirements shall be completed by September 9, 2001.

The Final Rule specifies implementing the inservice examinations that correspond to the number of years of operation that are specified in Subsection IWL. As detailed in IWL-2400, this ties the examinations to the date of completion of the Structural Integrity Test (SIT).

At the completion of the SIT, specified in the respective plant's code of record, the concrete has to be visually examined at 1, 3, and 5-years (+/- 6 months) and every 5-years thereafter. Additionally, for the 1, 3, and 5-year examinations, if operating conditions prevent examination of portions of the concrete during this period, the portions not examined can be deferred until the next scheduled outage. For the 10-year and subsequent examinations they must be completed within plus or minus (+/-) one (1) year of the specified date.

As clarified in a letter from the NRC (to Mr. Robert F. Sammataro, Proto-Power Corporation, dated July 10, 1997, from Mr. Lawrence C. Shao, Director, Division of Engineering Technology, Office of Nuclear Regulatory Research), "Per the Final Rulemaking, the first examination of concrete may be performed at any time between September 9, 1996 and September 9, 2001." Therefore, the first concrete examination is to be an inservice examination that will serve as the baseline (the same purpose for operating plants as the preservice examination specified for plants not yet in operation), and their is no tie to Subsection IWL-2410 or the Structural Integrity Test (SIT); i.e., the concrete examination may be performed any time during the 5-year expedited implementation period.

> "The examination of the concrete and the liner plates of concrete containments (per Subsection IWE) may be performed at any time during the 5-year expedited implementation. This examination of the concrete and liner plate provides the baseline. Coordination of these schedules in future examinations is left to each licensee." (Reference 10.2.6.1)

10.5 INSPECTOR CERTIFICATION REQUIREMENTS (CLASS MC AND CC)

10.5.1 Inspector certification requirements are addressed in IWE-3510.1 for Class MC components. It states "the General Visual Examination shall be performed by, or under the direction of, a Registered Professional Engineer or other individual, knowledgeable in the requirements for design, inservice inspection, and testing of Class MC and metallic liners of Class CC components. The examination shall be performed either directly or remotely, by an examiner with visual acuity sufficient to detect evidence of degradation that may affect either the containment structural integrity or leak tightness".

10.5.2 Inspector certification requirements are also addressed for concrete components in IWL-2510(b). The Visual, VT-1C and VT-3C examinations are to be performed by or under the direction of the Registered Professional Engineer designated as the Responsible Engineer. If this inspection is performed by the RPE, then that individual shall be certified per the owner's written practice for Visual, VT-1C and/or VT-3C examinations. The RPE may use inspection guidelines ACI 349.3R-96 and ACI 201.1R-68 for examining and evaluating the concrete surface condition. These guidelines are recommended for use by the NRC Inspection Manual, Inspection Procedure 62003.

The Designated Responsible Engineer shall be responsible for:

1. cross-discipline review of inspection procedures and plans for the examination of concrete surfaces,

2. oversight of approval, instruction, and training of concrete examination personnel, and;

3. and, if directed by the Acceptance Criteria found in Attachment 3,

   a. evaluation of examination results,

   b. cross-discipline review of repair procedures, and

   c. submittal of report to the Owner documenting results of examinations and repairs.

These responsibilities shall serve to fulfill the requirements set forth under subsections IWL-2320, IWL-2510(b), IWL-3211, and IWL-3310 of the ASME Section XI Code.

The Designated Responsible Engineer shall not be responsible for Class MC components including any evaluations required by Class MC acceptance criteria. For Class MC components, LGS shall recognize an "individual, knowledgeable in the requirements for design, inservice

inspection, and testing of Class MC and metallic liners of Class CC components," as allowed by IWE-3510.1.

10.6 CONTAINMENT EXAMINATION BOUNDARIES

10.6.1 The examination boundaries for containment components subject to the Code examinations are described in this section. These boundaries are shown pictorially on drawings listed in Appendix C. The primary containment is structurally separated from the surrounding reactor enclosure. The concrete dimensions of the primary containment are as follows:

1. Inside diameter

   A. Suppression chamber - 88'-0"
   B. Base of drywell - 86'-4"
   C. Top of drywell - 36'-4 1/2"

2. Height

   A. Suppression chamber - 52'-6"
   B. Drywell - 87'-9"

3. Thickness

   A. Base foundation slab - 8'-0"
   B. Containment wall - 6'-2"

10.6.2 The containment system boundary includes the following:

1. the containment vessel,

2. all penetration assemblies or appurtenances attached to the containment vessel,

3. all piping, pumps, and valves attached to the containment vessel, or to penetration assemblies out to and including any valves required to isolate the system and to provide a pressure boundary for the containment function that are not otherwise classified as ASME Class 1, 2, or 3, and therefore, included in the Inservice Inspection (ISI) Program.

10.6.3 In addition to these components, the Code, Table IWE-2500-1, Examination Category E-A, requires the following items to be included in the containment examination boundaries.

1. Structures that are part of reinforcing structure, such as stiffening rings, manhole frames, and reinforcement around openings.

2. Attachment welds between structural attachments and the pressure-retaining boundary or reinforcing structure, except for nonstructural and temporary attachments as defined in ASME Section III, NE-4435, and minor permanent attachments as defined in ASME Section III, CC-4543.4. Examination shall include the weld metal and the base metal for ½ in. beyond the edge of the weld.

3. Flow channeling devices within containment vessels.

10.6.4 Specific Containment-classified components can be found in the component tables in specification NE-042. Further detail on the containment boundary components are as follows:

1. Containment Wall - The containment wall is reinforced with #18, Grade 60 rebar at the inner and outer faces. The inner rebar curtain consists of two meridional layers and one hoop layer.

The outer rebar curtain consists of the one meridional layer, two hoop layers, and two helical layers. Radial shear reinforcement consists of #6 horizontal and inclined ties. Cadweld splices are used for splicing all main reinforcing bars.

2. Liner Plate and Anchorages - The steel liner plate is ¼ inch thick, and is anchored to the concrete wall by vertical stiffeners using structural tees spaced horizontally every 2 feet, or less. Horizontal plate stiffeners provide additional stiffening. Drawings C-282 and 285 show details of the liner plate and anchorages.

   Loads from internal containment attachments, such as beam seats and pipe restraints, are transferred directly into the containment concrete wall. This is accomplished by thickening the liner plate, and attaching structural weldments that transfer any type of load to the concrete, without relying on the liner plate or its anchorages. Where internal containment attachment loads are large, the structural weldments penetrate the liner plate, rather than being welded to opposite sides of the liner plate. This eliminates the possibility of lamellar tearing.

3. Reactor Pedestal and Base Liner Anchorages - Drawing C-281 show the base foundation slab liner anchorages for the reactor pedestal. Cadweld sleeves are welded to the top and bottom surfaces of the thickened base liner to permit anchoring of the pedestal vertical rebar into the base foundation slab. Metal studs are welded to the top and bottom surfaces of the thickened base liner in order to transfer radial and tangential shear forces from the pedestal to the base foundation slab.

4. Penetrations - Services and communications between the inside and the outside of the containment are performed through penetrations. Basic penetration types include pipe penetrations, electrical penetrations, and access hatches (equipment hatches, personnel lock, suppression chamber access hatches, and CRD removal hatch). Each penetration consists of a pipe sleeve with an annular ring welded to it. The ring is embedded in the concrete wall, and provides an anchorage for the penetration to resist normal operating and accident loads. The pipe sleeve is also welded to the containment liner plate to provide a leak-tight penetration.

   Meridional and hoop reinforcement is bent around typical penetrations. Additional local reinforcement in the hoop and diagonal directions is added at all large penetrations. Local thickening of the containment wall at penetrations is generally not required.

   A portion of each of the penetration sleeves extends beyond the containment wall, and is not backed by concrete. The entire length of any penetration sleeve, therefore, is considered an MC component, and, as such, is designed in accordance with ASME Section III, subsection B. All Class MC boundaries for penetrations to containment were determined based on criteria listed in ASME Section III Subsection NE-1000. Penetrations with capped ends are included in this Program. Caps are classified as Class MC and are therefore also subject to inspection and repair and replacement rules in accordance with the requirements set forth in ASME Section XI Subsection IWE.

   The boundaries at containment penetrations differ depending on the type of penetration and class of piping penetrating containment. Listed below are the classification boundaries (i.e., between IWE Class MC and the associated component classification) for containment penetrations at LGS Unit 1. Drawings of different "Penetration Types," referred to below, can be found in LGS UFSAR Figures 3.8-21 sheets 1 through 8. In order to match the UFSAR Penetration Type with an individual penetration ID, refer to drawing C-280 for Unit 2 and C-279 for Unit 1.

   A. Penetration Type I – Class MC boundary extends to include the entire penetration sleeve up to and including welds to the hatch assemblies, the connecting hatch, hatch seal, and hatch bolting. The MC boundary also includes the portion of the penetration sleeve inside

containment that is welded to the drywell liner and not backed by concrete.

B. Penetration Type III, IV, V, XXII, and XXVI – Class MC boundary extends to include the entire penetration sleeve up to and including the first weld to the attached flued head and ½ inch (beyond the first weld) of the flued head material. The ASME classification of the process pipe includes the attached flued head up to within ½ inch of the weld to the penetration sleeve to meet the adjacent Class MC portion. The MC boundary also includes the portion of the penetration sleeve inside containment that is welded to the liner plate and not backed by concrete.

   Note: Penetration sleeves, including the penetration sleeve to flued head weld outside containment are Pennsylvania special.

C. Penetration Type VI, VII, XXIII, XXIV, and XXV – Class MC boundary includes the entire penetration sleeve (on the inside and outside of the containment wall) up to and including the first weld and ½ inch of pipe base material of an adjoining ASME classified boundary. The Class MC boundary also includes the penetration sleeve portions welded to the containment liner inside containment.

   Note: Penetration sleeves used without flued heads, including the first weld outside containment are Pennsylvania special, except where the penetration sleeve is part of an ASME Class 2 pressure boundary. When the penetration sleeve is part of an ASME Class 2 pressure boundary, (i.e. the Pennsylvania special sleeve joins ASME piping inside containment to ASME piping outside containment) the first weld both inside and outside containment shall be in accordance with ASME Class 2.

D. Penetration Type VIII – Class MC boundary includes the entire penetration sleeve up to and including the first flange assembly, seal, and associated bolting on the outside of containment. The Class MC boundary also includes the portion of the penetration sleeve inside containment that is welded to the liner.

E. Penetration Type X – Class MC boundary includes the entire penetration sleeve and portions welded to the inside and outside containment liner plates (i.e. the weld and ½ inch of the pipe base material beyond the edge of the weld).

F. Penetration Type XXI – Class MC boundary includes the entire penetration sleeve up to and including the flange assembly, seals, and associated bolting. The Class MC boundary also includes the portion of the penetration sleeve inside containment and the associated weld to the containment liner.

G. Electrical Penetrations – All portions of the electrical penetrations are subject to the requirements set forth in Category E-A under ASME Section XI. This includes the radiation shield box outside containment that covers the penetration and assembly, and the penetration sleeve including welded portions to the inside containment liner. Examination of sealant and other internal components of the penetration assembly are inaccessible due to installed radiation shielding and are therefore exempt under IWE-1220.

5. Drywell Head Assembly - The drywell head provides a removable closure at the top of the containment for reactor access during refueling operations. The drywell head assembly consists of a 2:1 hemi-ellipsoidal head and a cylindrical lower flange. The lower flange is supported on the top of the drywell wall. The head is made of 1½ inch thick plate and is secured with eighty 2¾ inch diameter bolts at the 4 inch thick mating flange. The head-to-lower flange connection is made leak-tight by two replaceable gaskets. The space between the gaskets is provided with test connections to allow pneumatic testing from a remote location, outside the primary containment. The inside diameter of the drywell head at the mating flange is 37 feet 7½ inches.

A double-gasketed manhole is provided in the drywell head.

6. Equipment Hatches and Personnel Lock - Two 12 foot diameter equipment hatches are furnished in the drywell wall to permit the transfer of equipment and components into and out of the drywell. One hatch consists of a double-gasketed flange and a bolted dished door. The other hatch is furnished with a personnel lock welded to the removable door. The personnel lock is an 8'-7" diameter cylindrical pressure vessel, with inner and outer flat bulkheads. Interlocked doors, 2'-6" wide by 6' high, with double tongue-and-groove single element compression seals, are furnished in each bulkhead. A quick-acting, equalizing valve vents the personnel lock to the drywell to equalize the pressure in the two systems when the doors are opened and then closed. The two doors in the personnel lock are mechanically interlocked to prevent them from being opened simultaneously, and to ensure that one door is closed before the opposite door can be opened. The personnel lock has an ASME Code N-stamp.

6. Suppression Chamber Access Hatches - Two 4'-4" diameter access hatches are furnished in the suppression chamber wall to permit personnel access, and the transfer of equipment and components into and out of the suppression chamber. Each hatch consists of a double-gasketed flange and a bolted flat cover.

8. Control Rod Drive Removal Hatch - One 3 foot diameter CRD removal hatch is furnished in the drywell wall to permit transfer of the CRD assemblies into and out of the drywell. The hatch is furnished with a double-gasketed flange and a bolted flat cover.

9. Diaphragm Slab Embedments - The diaphragm slab is attached to the containment wall by a structural weldment at the junction of the two components, as shown on drawing C-0284. Radial force and bending moment carried by the diaphragm slab main reinforcement, are transferred to the containment wall by Cadwelding the diaphragm slab rebar to the top and bottom flanges of the structural weldment. The top and bottom flanges of the structural weldment are embedded in the containment concrete wall, and are anchored using structural steel anchors. Flexural shear in the diaphragm slab is transferred to the containment wall through the web of the structural weldment, which is welded to opposite sides of the thickened containment liner plate.

10. Seismic Truss Support Embedments - The seismic truss provides lateral support for the reactor vessel and reactor shield. A typical seismic truss support embedment in the drywell wall is shown on drawing C-286.

11. Suppression Chamber Strainers - Suppression chamber strainers are not part of the primary containment pressure boundary, and are not subject to the requirements of the Code. However, repairs and replacements of these strainers shall be performed in accordance with the augmented requirements stated in LGS Specification M-679.

    The connected piping that penetrates the suppression chamber is pressure-retaining Class 2 outside the suppression chamber. Inside the suppression chamber, the piping is non-pressure-retaining Class 2 (i.e., exempt) up to bolted connection to strainers for Unit 1. Beyond that point, the strainer and associated piping is non-classed for examination purposes. However, repairs and replacements of these strainers shall be performed in accordance with the augmented requirements stated in LGS Specification M-679. The boundary at the containment penetration is the same as other Class 2 piping penetrations. Therefore, guidance for establishing jurisdictional boundaries has been taken from ASME Section III, Subsection NE, Paragraphs NE-1131 and NE-1132.2. In accordance with these paragraphs, the weld between the containment pressure boundary and the process pipe will be classified as Class MC, subject to the requirements of the Code, Subsection IWE. Although the classification boundary between the containment weld and the process pipe will be at the surface of the pipe, the Subsection IWE examination boundary will be extended to include the weld and ½ in. of the pipe base material beyond the edge of the weld.

12. Containment Attachments - For structural attachments welded to the containment pressure boundary or reinforcing structure, he weld metal and base material for ½ in. beyond the edge of the weld will be subject to examination per Subsection IWE. To establish which containment attachments are subject to this examination requirement, guidance has been taken from ASME Section III, Subsection NE. In accordance with ASME Section III, Subsection NE, Paragraph NE-1132.1 (d), structural attachments are those attachments that perform a pressure-retaining function or are in the containment vessel support load path. Therefore, examinations will be required on welded attachments associated with the containment vessel supports, such as the RPV pedestal. However, examinations will not be required on welded attachments associated with components that are not pressure-retaining or are not in the containment vessel support load path, such as pipe supports, stairways and structural steel.

    There are no major external structural attachments to the primary containment wall, except brackets providing vertical support for some of the reactor enclosure floor beams. These floor beams support checkered plate blowout panels, and are small enough to not cause any vertical interaction between the containment structure and the reactor enclosure. In addition, the beam-to-bracket connections are sliding connections, preventing horizontal interaction between the containment structure and the reactor enclosure.

13. Steel Components Not Backed by Structural Concrete - Descriptions of steel portions of the primary containment that are not backed by concrete, such as the drywell head, equipment hatches, personnel lock, suppression chamber access hatches, CRD removal hatch, and piping and electrical penetrations, are given in section 3.8.2 of UFSAR.

14. Containment Vent System - Major components in the containment vent system include the vent pipe system (downcomers) connecting the drywell and wetwell, and the vacuum relief system.

    The vent pipe system consists of 87, 24 inch OD, steel pipe downcomers running vertically down from the diaphragm slab. The downcomers are embedded in the diaphragm slab and extend downward to elevation 193'-11", which is approximately 12 feet below high water level. Jet deflectors are provided in the drywell at the inlet of each downcomer to prevent possible damage to the piping assemblies from a "jet force" that might accompany a pipe break in the drywell, and to prevent overloading any single vent. All downcomers are supported laterally at elevation 203'-5" by the downcomer bracing system. Any vertical loads are transmitted by the bracing system to the downcomers and therefore to the diaphragm slab.

    The downcomer bracing system is designed as a two-dimensional truss system to provide horizontal support for 87 downcomers, 14 MSRV discharge lines, and other miscellaneous piping in the suppression pool. The bracing system is supported vertically by the 87 downcomers and at 12 anchor points around the RPV pedestal wall. The bracing system is made of stainless steel members connected to carbon steel collars at the downcomers and embedment plates at the pedestal wall by high strength stainless steel bolts. The bracing members consist of 10 inch and 12-inch diameter schedule 160 pipe sections, and 3¼-inch end connection plates.

    The bracing system is not part of or integrally attached to the containment pressure-retaining boundary and is therefore not included in the Containment ISI Program.

    In order to limit the degree to which suppression chamber pressure can exceed drywell pressure, four primary containment vacuum relief valve assemblies are provided. The assemblies are located in the suppression chamber, each assembly being mounted on the side of a downcomer. Each assembly consists of two 24-inch (nominal diameter) vacuum relief valves mounted in series. When the suppression chamber pressure exceeds the drywell pressure by a specified amount, the vacuum relief valves open automatically, allowing gases

from the suppression chamber to enter the downcomer and flow upward into the drywell, thereby equalizing pressure above and below the diaphragm slab.

10.7 ACCESS TO CONTAINMENT COMPONENTS

10.7.1 As stated in Section 10.3 of this Specification, 10CFR50.55a(b)(2)(x) established modifications and supplements to the Code. As required by 10CFR50.55a(b)(2)(x)(A), an engineering evaluation shall be performed to address the acceptability of inaccessible surface areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. If conditions do not exist in accessible areas that could indicate the presence of or result in degradation to inaccessible areas, then the inaccessible area does not require an engineering evaluation. Inaccessible surface areas that are evaluated for acceptability shall be identified in the ISI Summary Report required by IWA-6000, along with the following information:

1. A description of the type and estimated extent of degradation, and conditions that led to the degradation.

2. An evaluation of each area, and the results of the evaluation.

3. A description of necessary corrective actions.

10.7.2 VT-3 visual examinations performed in accordance with the Code, Table IWE-2500-1, Examination Category E-A, Code Item Nos. E1.12 and E1.20, shall be performed on essentially 100% of the non-embedded surfaces, Footnote (1) of Table IWE-2500-1, Examination Category E-A allows an examination from either side to satisfy examination requirements. Reasonable means shall be used to gain access to obstructed areas, but the removal of permanent plant structures is not required, per 10CFR50.55a(g)(4). The portion of the containment membrane that cannot be examined from either side is less than 5%, which satisfies the requirement of IWE-1231 (a)(4).

10.7.3 In accordance with the Code, IWE-1220 and IWL-1220, the following components are exempt from the examination requirements of IWE-2000 and IWL-2000:

1. Vessels, parts, and appurtenances that are outside the boundaries of the containment as defined in the Design Specifications;

2. Embedded or inaccessible portions of containment vessels, parts, and appurtenances that met the requirements of the original Construction Code.

3. Portions of containment vessels, parts, and appurtenances that become embedded or inaccessible as a result of vessel repairs or replacement if the conditions of IWE-1232 and IWE-5220 are met.

4. Piping, pumps, and valves that are part of the containment system, or that penetrate or are attached to the containment vessel. These components shall be examined in accordance with the rules of IWB, or IWC, as appropriate to the classification defined by the Design Specification. Piping located in the suppression pool includes a classification in accordance with ANSI B31.1. This piping is exempt under 10CFR50 Appendix J leak rate testing due to the fact that it has a water seal, and therefore, it is also exempt from Class MC classification due to the fact that it does not impact the pressure-retaining boundary of containment.

5. Portions of the concrete surface that are covered by the liner, foundation material, or backfill, or are otherwise obstructed by adjacent structures, components, parts, or appurtenances. Note that the Final Rule requires evaluation of the acceptability of inaccessible areas when conditions in accessible areas that could indicate the presence of or result in degradation to

such inaccessible areas. This does not apply to repair and replacement activities performed per the requirements of IWL-4000, IWL-5000 and IWL-7000.

6. Vacuum Breaker seals and bolting are exempt from category E-D and E-G, respectively, on the basis that they do not perform a containment pressure retaining function. They only serve to relieve differential pressure between the drywell and the suppression pool within the primary containment boundary. However, the vacuum breakers will be visually examined, as they are a part of the vent system inside containment.

7. There are 12 Steel Columns that support the Diaphragm Slab inside containment. These were mainly used as construction aids and abandoned in place. They are not directly in the containment support load path and therefore are not in the Program.

10.7.4 Although a majority of the containment components are accessible for examination, there are areas that are inaccessible due to interference with permanent plant structures per 10CFR50.55a(g)(4). The following inaccessible areas have been identified at LGS Unit 1.

1. All Areas of drywell or wet well are accessible except for surfaces of wet well below reactor building floor elev. 177'-0". This surface area of the wet well is buried in soil and hence cannot be accessed.

2. All Electrical Penetrations have sealant that is inaccessible due to radiation shielding that covers the penetration per IWE-1220 and IWE-1232; hence, these penetrations are subject to visual examination under the requirements of Category E-A only and internal components are not categorized under Category E-D for Seals, Gaskets, and Moisture Barriers. However, all Electrical Penetrations internal components (i.e. the sealant, the penetration sleeve and assembly) are subject to Repair and Replacement rules of IWE-4000.

10.8 AUGMENTED INSERVICE INSPECTION REQUIREMENTS

10.8.1 The definition of a mandatory augmented examination is somewhat different for containment components (Class MC and CC) than it is for Class 1, 2 and 3 piping system components. For Class 1, 2 and 3 components, mandatory augmented examinations are those that are not required by the Code, but are required due to another type of commitment (e.g., regulatory, BWRVIP, etc.). For class MC and CC components, the Code establishes criteria for augmented examinations. Therefore, for the Containment Program ISI, mandatory augmented examinations are those that are required by the Code in Examination Category E-C.

10.8.2 In accordance with the Code, IWE-1241, augmented examinations are to be performed on those surface areas that are likely to experience accelerated degradation and aging. For Unit 1, this includes the wetted (i.e., immersion zone) and submerged portions of the suppression chamber. These areas have undergone examinations in the past to quantify and evaluate potential coating problems and pitting. Results of examinations performed in both Units revealed no significant pitting or degraded coatings. Therefore, the examination of the immersion zone and submerged surfaces in the suppression chamber in both units are not required to be classified as augmented examination areas subject to Examination Category E-C.

10.8.3 There was no other Examination Category E-C augmented examination surfaces identified during the development of this Containment ISI Program, as of its issuance. This conclusion was based on a review of design documents, and satisfactory results from thorough, documented examinations.

10.9 ACCEPTANCE CRITERIA (see Attachment 3)

10.10 REPAIRS AND REPLACEMENTS (CLASS MC AND CC)

10.10.1 Repairs, replacements, and modifications on Class MC components and additional components depicted on the drawings listed in Appendix C, will be performed in accordance with the LGS Repair and Replacement Program, contained in Specification M-679.

10.10.2 In accordance with 10CFR50.55a(g)(4)(v)(C), the IWL-7000 requirements are not applicable. A containment pressure test is required to be conducted at the design basis accident pressure P_a after a repair or replacement unless:

1. The structural integrity of the containment in the existing unrepaired condition has not been reduced below the original design criteria as demonstrated in the Engineering Evaluation Report (IWL-3310).

2. Only the cover concrete external to the outermost layer of reinforcing steel is affected.

3. A leakage rate test is performed per IWE-5000 if the repair or replacement penetrates the metallic liner or otherwise breaches the containment.

4. If R/R is performed while the plant is shutdown, the pressure test has to be performed prior to operation. If the plant is in operation during the R/R, the pressure test may be deferred until the next scheduled integrated leak-rate test.

10.10.3 A detailed written procedure prepared under the direction of the Responsible Engineer is required for performing the pressure test. A Visual, VT-1C examination of the R/R concrete surface is required prior to start of pressurization, at test pressure, and after depressurization. Other examinations and tests are to be conducted as specified by the Responsible Engineer.

10.10.4 The Responsible Engineer shall direct the preparation of a pressure test report, which may be in addition to the Engineering Evaluation Report (IWL-3310). The report shall include the pressure test procedures, examination results, if the R/R is acceptable, and if the R/R is not acceptable, the report shall specify corrective measures.

10.10.5 Corrective measures are required prior to returning the containment to service if the surface examinations do not satisfy the requirements specified by the Responsible Engineer.

10.11 CONTAINMENT INSERVICE INSPECTION BOUNDARY DRAWINGS (see Appendix C)

10.12 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLES

This Section provides a summary listing of all Containment Components subject to the ISI and Repair and Replacement Programs at LGS, Unit 1.

10.12.1 CONTAINMENT INSERVICE INSPECTION

The Containment Inservice Inspection Summary Tables, for LGS Unit 1 components, provides the following information:

1. Examination Category

   This column lists the examination category as identified in the Code, Table IWE-2500-1. Only those examination categories that are applicable to LGS, Unit 1 are identified.

2. Number of Components

   This column lists the population of components potentially subject to examination. The number of components actually examined during the inspection interval will be based on the Code requirements for the subject item number.

The numbers listed correspond to the main components that comprise primary containment. To simplify the documentation of examinations, some of the larger components may be administratively subdivided. The specific component identification numbers may be found in the component tables of NE-042.

3. Examination Method

   This column lists the examination method(s) required by the Code, Table IWE-2500-1, or alternative examinations as described by notes within the Summary Table.

4. Examination Frequency

   This column describes the frequency and extent of containment inspections. Information in this column was identified using ASME Code, Table IWE-2500-1.

4. Request Number

   This column lists applicable Relief Requests. If a request number is identified, see the corresponding Request for Alternative or Relief Request in Appendix A of this Program.

5. Comments

   The comments column refers to the notes provided after each Examination Category. These notes supplement and clarify the notes provided in the Code, Table IWE-2500-1, but they do not supersede them. For these requirements, reference the 1992 Edition through 1992 Addenda of the Code.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY E-A

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXTENT AND EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
E-A Containment Surfaces	E1.11	Containment Vessel - Pressure Retaining Boundary Accessible Surface Areas	11	General Visual (See Note 1)	100% prior to each Type A test		See Notes 2,3,4,7,8,9, 11, and 12
	E1.12	Containment Vessel - Pressure Retaining Boundary Accessible Surface Areas	13	Visual, VT-3	100% End of Interval	RR-12 Table RR-12-10	See Notes 2,3,4,5,7, 8,10,and 12
	E1.20	Vent System Accessible Surface Areas	4	Visual, VT-3	100% End of Interval	RR-12 Table RR-12-10	See Notes 3,4,6,7,8, 10, and 12

NOTES:

1. A VT-3 visual examination may be performed in lieu of the general visual examination. The VT-3 examination will meet or exceed the requirements specified in the Code for a general visual examination.
2. The containment vessel is comprised mainly of the drywell and suppression chamber separated by a diaphragm slab.
3. Examination shall include structures that are parts of reinforcing structure, such as stiffening rings, manhole frames, and reinforcement around openings.
4. Examination shall include the attachment welds between structural attachments and the pressure boundary or reinforcing structure, except for non-structural and temporary attachments as defined in NE-4435 and minor permanent attachments as defined in CC-4543.4. Examination shall include the weld metal and the base metal for ½ in. beyond the edge of the weld.
5. In addition to the drywell, suppression chamber and vent lines, the eight (8) stabilizer shear lugs on the interior of the drywell at elevation 312 ft 8 ¾ in. have been uniquely identified as E1.12 components.
6. The vent system, including flow-channeling devices, is comprised of eighty-seven (87) downcomers and four (4) vacuum breakers.
7. Examination may be made from either the inside or outside surface.
8. Examination shall include structures that are parts of reinforcing structure, such as stiffening rings, manhole frames, and reinforcement around openings.
9. Not including surface areas that are submerged or insulated.
10. Including the wetted surfaces of submerged areas and the portions of insulated surface areas that are necessary to meet the requirements of IWE-1231(a)(4).
11. Refer to IWE-5220 for test requirements.
12. Deferral of inspection is not permissible in the 4th and successive intervals.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY E-B

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
E-B Pressure Retaining Welds	N/A	N/A	N/A	N/A	N/A	N/A	See Note 1

NOTES:
1. In accordance with 10CFR50.55a (b)(2)(x)(C), the examinations specified in Examination Category E-B are optional. These optional examinations will not be performed at LGS Unit 1.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY E-C

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
E-C Containment Surfaces Requiring Augmented Examination	E4.11	Containment Surface Areas Visible Surfaces	0	Visual, VT-1	100% of Surface areas Identified by IWE-1242	N/A	See Notes 1, 2, 3, 4, And 5
	E4.12	Containment Surfaces Areas Surface Area Grid, Minimum Wall Thickness Location	0	Volumetric	100% of min. Wall thickness Locations during each Inspection period	RR-12 Table RR-12-11	See notes 2, 4, and 5

NOTES.

1. Examinations suppression, when required, shall be performed on the wetted (i.e., immersion zone) and submerged surfaces of the suppression chamber. In association with the VT-1 visual examination, pit depth measurements shall be taken on at least one evaluation area that was previously measured and evaluated.

2. See Section 10.8 of this Program for additional details

3. Containment surface areas requiring augmented examination are those identified in IWE-1240.

4. The extent of examination shall be 100% for each inspection period until the areas examined remain essentially unchanged for three consecutive inspection periods. Such areas no longer require augmented examination in accordance with IWE-2420(c).

5. Deferral of inspection is not permissible in the 4^{th} and successive inspection intervals.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY E-D

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
E-D Seals, Gaskets and Moisture Barriers	E5.10	Seals	13	Visual, VT-3	100% of each Item, Interval Distribution	RR-24	See notes 1 and 5
	E5.20	Gaskets	0	Visual, VT-3	100% of each Item, Interval Distribution	RR-24	See notes 1 and 5
	E5.30	Moisture Barriers	0	Visual, VT-3	100% of each Item, Interval Distribution	N/A	See notes 2,3,4, and 5

Notes:

1. Examination shall include seals and gaskets on airlocks, hatches, and other devices that are required to assure containment leak-tight integrity.

2. Examination shall include internal and external containment moisture barrier materials at concrete-to-metal interfaces intended to prevent intrusion of moisture against the pressure retaining metal containment shell or liner.

3. Containment moisture barrier materials include caulking, flashing, and other sealants used for this application.

4. Examination shall include all accessible surfaces of internal and external containment moisture barriers.

5. Deferral of inspection is not permissible in the 4th and successive inspection intervals.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY E-F

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
E-F Pressure Retaining Dissimilar Metal	N/A	N/A	N/A	N/A	N/A	N/A	See Note 1

NOTES:
1. In accordance with 10CFR50.55a (b)(2)(x)(C), the examinations specified in Examination Category E-F are optional. These optional examinations will not be performed at LGSS Unit 1.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY E-G

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
E-G Pressure Retaining Bolting	E8.10	Bolted Connections	13	Visual, VT-1	100% of each Bolted connection, Interval Distribution	RR-31	See notes 1,2,3,4, And 6
	E8.20	Bolted Connections	13	Bolt Torque or Tension Test	100% of bolts, Interval Distribution	RR-31	See note 5

Notes:

1. Examination shall include bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments between threaded stud holes.

2. Examination of bushings, threads, and ligaments in base material of flanges is required only when the connection is disassembled.

3. Examination shall not be deferred when the connection is disassembled or when the bolting is removed.

4. All visible surfaces shall be examined. Bolting may remain in place under tension when disassembly is not otherwise required.

5. Bolt torque or tension test is required only for bolted connections that have not been disassembled and reassembled during the inspection interval.

6. Deferral of inspection is not permissible in the 4^{th} and successive inspection intervals.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY E-P

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
E-P All Pressure Retaining Components	E9.10	Containment Vessel Pressure-Retaining Boundary	1	10CFR50 Appendix J Type A	Each repair, Modification, or replacement		See Notes 1, 2, 3, 4, and 5
	E9.20	Containment Vessel Containment Penetration Bellows	0	10CFR50 Appendix J Type B	10CFR50 Appendix J Type B		See Notes 1, 2, 3, And 5
	E9.30	Containment Vessel Airlocks	1	10CFR50 Appendix J Type B	10CFR50 Appendix J Type B		See Notes 1, 2, 3, And 5
	E9.40	Containment Vessel Seals and Gaskets	13	10CFR50 Appendix J Type B	10CFR50 Appendix J Type B		See Notes 1, 2, and 3

NOTES:

1. Pressure-retaining containment components (e.g., drywell, suppression chamber, penetrations, etc.) that are subject to the leakage tests required by the Code, Subsection IWE, are identified on the Containment Inservice Inspection Boundary Drawings, Appendix C of this Specification.

2. Pressure tests required following repairs or replacements are described by IWE-5000. Periodic testing to satisfy ASME XI is not required per IWE-5210.

3. The testing program to satisfy 10CFR50 App. J is described by PECO Energy Procedure A-C-122, "Primary Containment Leakage Testing".

4. Leakage tests may be deferred until the next scheduled leakage test, if allowed by IWE-5222.

5. If leak chase channels are utilized, they shall be unplugged or tested in accordance with 10CFR50, Appendix J, Type B test.

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY L-A

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
L-A	L1.11	All Concrete Surfaces	3	Visual, VT-3C	100% of non-Exempt Surfaces	RR-26	See notes 1,2,3, 4 and 5
Concrete	L1.12	Suspect Areas	0	Visual, VT-1C	100% of non-Exempt Surfaces	N/A	See notes 1,2,3, 4 and 5

NOTES:

1. A Visual, VT-3C examination is required of all concrete surface areas, including coated areas, except for the concrete surface areas exempted by IWL-1200 (b). The reference to IWL-1200 (b) should be IWL-1220 (b). The exempt areas include "portions of the concrete surface that are covered by the liner, foundation material, or backfill, or are otherwise obstructed by adjacent structures, components, parts, or appurtenances." Additionally, the "suspect areas" (Item L1.12) are required to be Visual, VT-1C examined.

2. The Visual, VT-1C and VT-3C examinations are to be performed by or under the direction of the Registered Professional Engineer designated as the Responsible Engineer. If this inspection is performed by the RPE, then that individual shall be certified per the owner's written practice for Visual, VT-1C and/or VT-3C examinations. The NRC Inspection Manual, Inspection Procedure 62003, states, "The use of guidelines given in ACI 349.3R-96, in addition to ACI 201.1R-68, will be useful in examining and evaluating the concrete surface condition."

3. The Visual, VT-3C examinations may be performed from permanent vantage points, such as, floors, roofs, platforms, walkways, ladders, ground surface, etc., unless close-in access is required by the inspection plan.

4. The Final Rule, 50.55a(b)(2)(x)(B) states, "When performing remotely the visual examinations required by Subsection IWE, the maximum direct examination distance specified in Table IWA-2210-1 may be extended and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination." However, this provision was not provided for under 50.55a(b)(2)(ix), Examination of Concrete Containments. The above requirements are the subject of relief request RR-26.

5. The NRC Inspection Manual, Inspection Procedure 62003, states, "If the VT-3C or VT-1C examination of the concrete surfaces, or the liner surface examination (in accordance with Subsection IWE), indicates a flaw, degradation, or corrosion in the accessible areas that could indicate the existence of a flaw, degradation, or corrosion in the inaccessible area, the condition needs to be evaluated and documented in the ISI summary report, as required by 10CFR50.55a(b)(2)(ix)(E) of the rule".

LGS UNIT 1 CONTAINMENT INSERVICE INSPECTION SUMMARY TABLE
EXAMINATION CATEGORY L-B

EXAMINATION CATEGORY	ITEM NUMBER	DESCRIPTION OF COMPONENT	NUMBER OF COMPONENTS	EXAMINATION METHOD	EXAMINATION FREQUENCY	REQUEST NUMBER	COMMENT
L-B Unbonded Post Tensioning System	N/A	N/A	N/A	N/A	N/A	N/A	See Note 1

Notes:

1. The LGS containment is made of a reinforced concrete type that does not include a post tensioning system.

11.0 ISI PROGRAM TABLES

11.1 GENERAL

The ISI Program Tables, contained in this document, present an itemized listing of all nonexempt components that are subject to examination, (selected and non-selected) under the rules of the Code. Additionally, they provide reference to important pieces of information that apply to some of the listed components (i.e. relief requests, augmented requirements, etc.).

The ISI Program Tables are sorted by system, class and drawing number, whereby all components (i.e., welds, bolting, equipment and component supports) that are depicted on a specific drawing are grouped and listed for that drawing, within the system.

Finally, in addition to the ISI Program Tables, Augmented Inspection Program Tables are contained in this document for the snubber inspection/testing programs AUG-13 and AUG-14. These tables provide additional information necessary to define the visual setting and testing acceptance criteria for snubbers.

APPENDIX A
RELIEF REQUESTS
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APPENDIX A
RELIEF REQUESTS

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TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-01	B-A	Pressure Retaining Welds in Reactor Vessel	B1.11 B1.12	Shell Circumferential Welds Shell Longitudinal Welds	Revision 2 approved for the life of the current license per Reference 10.
RR-02	B-L-2	Pump Casings (Internal Surfaces)	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-03	B-M-2	Valve Bodies (Internal Surfaces)	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-04	F-A	Inservice Inspection Requirements for Snubbers	N/A	N/A	Revision 2 submitted June 2001. Approval for 2nd Interval pending.
RR-05	C-C	Integral Attachments for Vessels, Piping, Pumps and Valves	C3.1 0 C3.20 C3.30	Pressure Vessels Integrally welded attachments Piping Integrally welded attachments Pumps Integrally welded attachments	Revision 2 approved for 2nd Interval per Reference 10.
RR-06	C-A	Pressure Retaining Welds in Pressure Vessels	C1.10	Shell circumferential welds	Approved for 1st Interval per References 1 and 2. Revision 1 submitted January 2001. Approval for 2nd Interval pending.

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-07	C-G	Pressure Retaining Welds in Pumps and Valves	C6.1 0	Pump casing welds	Approved for 1st Interval per References 1 and 2. Revision 1 submitted January 2001. Approval for 2nd Interval pending.
RR-08	B-D	Full Penetration Welds of Nozzles in Vessels (Inspection Program B)	B3.90	Reactor Vessel Nozzle to vessel welds	Approved for 1st Interval per References 1 and 2. Revision 1 of this Relief Request has NOT BEEN SUBMITTED for the second interval and should be ASBUILT at the end of the interval.
RR-09	F-A F-B F-C	Plate And Shell Type Supports Linear Type Supports Component Standard Supports	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-10	B-F	Pressure Retaining Dissimilar Metal Welds	B5.130	Piping NPS 4 or Larger Dissimilar Metal Butt Welds	Approved for 1st Interval per References 1 and 2. Revision 1 of this Relief Request has NOT BEEN SUBMITTED for the second interval and should be ASBUILT at the end of the interval.

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-11	B-H	Integral Attachments For Vessels	B8.10	Reactor Vessel Integrally Welded Attachments	Revision 1 approved for 2nd Interval per Reference 10.
	B-K-1	Integral Attachments for Piping, Pumps and Valves	B10.10	Piping Integrally Welded Attachments	
			B10.20	Pumps Integrally Welded Attachments	
			B10.30	Valves Integrally Welded Attachments	

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-12	N/A	ASME Code Case(S) Authorization Request	N/A	N/A	Revision 2 approved for 2nd Interval Use of Code Cases N-416-1, N-498-1, N-546, N-524 and N-566 per Reference 10. Code Cases N-416-1, N-498-1 and N-524 subsequently approved per Reg. Guide 1.147 Rev 12. Relief No Longer Required Revision 3 submitted January 2001. Approval for 2nd Interval use of Code Cases N-508-1, N-516-1, N-532 and N-598 (Class 1, 2 & 3) pending. Revision 3 approved for 2nd Interval use of Code Cases N-598 (Class MC), N-601 and N-605 per Reference 11.

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-13	C-H	All Pressure Retaining Components		Pressure Vessels	Approved for 1st Interval per References 2 and 6. Revision 3 submitted January 2001. Approval for 2nd Interval pending.
		All Pressure Retaining Components	C7.10	Pressure Retaining Components	
			C7.20	Pressure Retaining Components	
				Piping	
			C7.30	Pressure Retaining Components	
			C7.40	Pressure Retaining Components	
				Pumps	
			C7.50	Pressure Retaining Components	
			C7.60	Pressure Retaining Components	
				Valves	
			C7.70	Pressure Retaining Components	
			C7.80	Pressure Retaining Components	
	D-A	Systems In Support Of Reactor Shutdown Function	D1.10	Pressure Retaining Components	
	D-B	Systems In Support Of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, And Reactor Residual Heat Removal	D2.10	Pressure Retaining Components	
	D-C	Systems In Support Of Residual Heat Removal From Spent Fuel Storage Pool	D3.10	Pressure Retaining Components	
RR-14	N/A	Augmented Examination Programs	N/A	N/A	Not Submitted/Required for 2nd Interval.

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-15	N/A	ASME Code Case Authorization Request	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-16	N/A	ASME Code Case Authorization Request	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-17	N/A	ASME Code Case Authorization Request	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-18	N/A	ASME Code Case Authorization Request	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-19	N/A	Not Used	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-20	N/A	ASME Code Case Authorization Request	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-21	N/A	Not Used	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-22	N/A	ASME Code Case Authorization Request	N/A	N/A	Not Submitted/Required for 2nd Interval.
RR-23	N/A	ASME Code Case Authorization Request	N/A	N/A	Approved for 1st Interval per References 7 and 10. Revision 1 approved for 2nd Interval per Reference 10.

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-24	E-D	Seals, Gaskets and Moisture Barriers	E5.10 E5.20	Seals Gaskets	Revision 0 approved for 2nd Interval per Reference 11.
RR-25	E-A E-C E-D E-G E-P L-A	Containment Surfaces Containment Surfaces Requiring Augmented Examinations Seals, Gaskets and Moisture Barriers Pressure Retaining Bolting All Pressure Retaining Components Concrete	All Item Numbers	All Item Numbers	Revision 0 approved for 2nd Interval per Reference 11.
RR-26	L-A	Concrete	L1.11 L1.12	Concrete Surface All Areas Concrete Surface Suspect Areas	Revision 0 approved for 2nd Interval per Reference 11.
RR-27	E-A	Containment Surfaces	E1.10	Containment Vessel Pressure Retaining Boundary	Revision 0 approved for 2nd Interval per Reference 11.
RR-28	E-A	Containment Surfaces	E1.10	Containment Vessel Pressure Retaining Boundary	Revision 0 approved for 2nd Interval per Reference 11.
RR-29	E-A E-C E-D E-G	Containment Surfaces Containment Surfaces Requiring Augmented Examinations Seals, Gaskets and Moisture Barriers Pressure Retaining Bolting	All Item Numbers	All Item Numbers	Revision 0 approved for 2nd Interval per Reference 11.
RR-30	E-A E-C E-D E-G	Containment Surfaces Containment Surfaces Requiring Augmented Examinations Seals, Gaskets and Moisture Barriers Pressure Retaining Bolting	All Item Numbers	All Item Numbers	Revision 0 approved for 2nd Interval per Reference 11.

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

RELIEF REQUEST No.	EXAMINATION CATEGORY		ITEM No.		USNRC APPROVAL STATUS for UNIT 1 and UNIT 2
RR-31	E-G	Pressure Retaining Bolting	E8.10 E8.20	Bolted Connections (Examination) Bolted Connections (Test)	Revision 0 approved for 2nd Interval per Reference 11.

TABLE A-1
INSERVICE INSPECTION PROGRAM
RELIEF REQUESTS APPROVAL STATUS

References:

1. USNRC SER for Docket No. 50-353, First Ten Year Interval Inservice Inspection Program, Limerick Generating Station, Unit 2 (TAC No. 7609), dated April 23, 1991.

2. USNRC SER for Docket No. 50-352, First Ten Year Interval Inservice Inspection Program, Limerick Generating Station, Unit 1 (TAC Nos. M84108, M86310 and M86311), dated March 1, 1994.

3. USNRC SER for Docket No. 50-353, Inspection Program Regarding Dry Welding Requirements, Limerick Generating Station, Unit 2 (TAC No. M90498), dated October 28, 1994.

4. USNRC SER for Docket No. 50-353, Approval of Code Case N-416-1 as an Alternate to the Required Hydrostatic Pressure Test (RR-17) Limerick Generating Station, Unit 2 (TAC No. M91230), dated February 1, 1995.

5. USNRC SER for Docket Nos. 50-352 and 50-353, Relief Request RR-12 (Revision 1), RR-22 (Revision 1), and RR-16 (Revision 1), Limerick Generating Station, Units 1 and 2 (TAC Nos. M91712 and M91713), dated June 29, 1995.

6. USNRC SER for Docket Nos. 50-352 and 50-353, Evaluation of Relief Request No. 13 for Limerick Generating Station, Units 1 and 2 (TAC Nos. M91714 and M91715), dated October 5, 1995.

7. USNRC SER for Docket No. 50-352, Relief Request No. 23 for Limerick Generating Station, Unit 1 (TAC No. M93209), dated January 17, 1996.

8. USNRC SER for Docket Nos. 50-352 and 50-353, Evaluation of the Second Ten-Year Interval Inspection Program Plan Request for Alternative to Inservice Inspection and Inservice Testing Programs Update for, Limerick Generating Station, Units 1 and 2 (TAC Nos. M92393 and M92394), dated January 23, 1996.

9. USNRC SER for Docket Nos. 50-352 and 50-353, Relief Request for Use of ASME Code Case N-546 in the Inservice Inspection Program for, Limerick Generating Station, Units 1 and 2 (TAC Nos. M99343 and M99345), dated October 9, 1997.

10. USNRC SER for Docket Nos. 50-352 and 50-353, Safety Evaluation by the Office of Nuclear Regulation of the First and Second 10-Year Interval Inservice Inspection Plan Request for Relief Nos. RR-01 (Parts 1 and 2), RR-05, RR-11, RR-12 (Parts 1 through 5), and RR-23 for Limerick Generating Station, Units 1 and 2, PECO Energy Company, (TAC Nos. MA0818 and MA08109) dated September 13, 1999.

11. USNRC SER for Docket Nos. 50-352 and 50-353, Limerick Generating Station, Units 1 and 2, Evaluation of Relief Requests RR-12-9 Through RR-12-11 and RR-24 Through RR31: Implementation of Subsections IWE and IWL of ASME Code, Section XI for Containment Inspection (TAC Nos. MB1018 and MB1019), dated September 12, 2001.

RELIEF REQUEST No. RR-01
Revision 2
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 1 pressure retaining circumferential and longitudinal shell welds in the reactor pressure vessel, Examination Category B-A, Item Numbers B1.11 and B1.12 respectively.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1989 Edition, Examination Category B-A requires a volumetric examination of essentially 100% of the weld length of all circumferential and longitudinal shell welds during the First Inservice Inspection (ISI) Interval. The Limerick Generating Station ASME Section XI ISI Programs and later approved Editions of the ASME Section XI Code require that these same examinations be performed during the successive (Second) Inspection Interval. Examinations shall be performed in accordance with Figures IWB-2500-1and 2 (as applicable) and the nondestructive examination requirements of ASME Section V, Article 4, paragraph T-441.3.2. The ASME requirements are supplemented by Regulatory Guide 1.150, issued by the US Nuclear Regulatory Commission (USNRC).

Section XI of the ASME Boiler and Pressure Vessel Code requires Inservice Inspection (ISI) of Reactor Pressure Vessel (RPV) assembly welds. At Limerick, these Examinations were performed using Ultrasonic (UT) techniques. Section XI requires "essentially 100%" of the weld lengths to be examined. The Code of Federal Regulations, 10CFR50.55a, was amended on September 8, 1992. The new rulemaking defined "Essentially 100%" as any amount greater than 90% of the weld length. The rule also requires submittal of information and proposed alternative examinations when the > 90% requirement can not be met. The rule applies to Code Category

B-A, Item No. B1.10, welds. Item B1.10 welds are the assembly welds in the reactor pressure vessel shell.

The RPV design at Limerick prohibits examining 100% of the ASME Weld and Required Volume (WRV) of some welds. Code Case N-460 defines how the "essentially 100%" requirement is to be calculated. An additive limitation of up to 10% of the weld length is permitted. USNRC Regulatory Guide 1.147 approved Code Case N-460 for use by Licensees. In accordance with 10CFR50.55a, a relief request is necessary for welds where the > 90% requirement can not be met.

Relief is requested from the First Inspection Interval requirement for complete examination of LGS Unit 1 shell circumferential weld "AD" and for approval to use the proposed alternative Second Inspection Interval plan for LGS Units 1 and 2 Examination Category B-A welds as listed in Table RR-01-1. Complete Code examination of these welds is not practical due to limitations imposed by reactor pressure vessel design and radiation exposure to examination personnel.

III. BASIS FOR RELIEF

Complete examination of the subject welds is not practical due to scanning limitations and access restrictions from various RPV appurtenances (such as adjacent RPV nozzles, integral attachments and the biological shield wall) and for ALARA considerations.

RELIEF REQUEST No. RR-01
Revision 2, continued

Exelon Generation Company, LLC, intended to perform RPV examinations with an automated Ultrasonic (UT) system, wherever possible, at Limerick. During the Preservice Inspection (PSI), it became apparent that manual examinations were required in areas where access for the automated system was restricted. The manual exams were performed to assure the maximum possible coverage for these Baseline examinations. It was recognized that this might not be possible during ISI.

Many manual examinations were required on LGS Units 1 and 2 to achieve the required coverage during the First Inspection Interval. This resulted in a significant increase in personnel radiation exposure, above what was planned. Additionally, insulation had to be removed to allow access to the manual exam areas, also resulting in a significant increase in personnel radiation exposure. In many cases, the insulation was not designed to be removed. This resulted in several areas of crushed and otherwise damaged mirror insulation. Also, some non-removable insulation supports interfere with a major portion of one weld (circumferential weld "AD").

Exelon Generation Company, LLC, working with its NDE contractor, jointly developed a philosophy that addressed issues such as manual exams, equipment improvements, possible alternative examinations, etc. It was decided that changes to RPV examination methods should result in increased examination coverage and decreased radiation exposure to personnel. Manual examinations would not be routinely performed in interference areas. Rather, each case would be analyzed to determine whether manual exams could reach the stated goal of increasing coverage to >90% without significant increase in personnel exposure. Where it was possible to achieve the required coverage, without exceeding ALARA planning goals for the weld, manual examinations were performed.

Changes, except for the switch to the GE/IS 2000 digital UT system, were made incrementally. Lessons learned from examinations on Unit 1 were applied to Unit 2 and vice versa. Because of the lessons learned on Unit 1, fewer manual examinations were performed on Unit 2. This accounts for the slight differences in coverage for identical welds on each Unit.

The refinement of scanning equipment was ongoing during the First Inspection Intervals. Major improvements include a Mini-scanner that can access areas where manual examinations were required previously, an in-line search unit package that allows access to some restricted areas, and a re-design of the standard search unit package to improve coverage.

The result of these activities has been a continuing improvement in overall performance, during the First Inspection Interval. There has been a noticeable increase in examination coverage and a significant decrease in personnel exposure. It is expected that this philosophy and scanning equipment refinements will continue to be applied throughout each Unit's Second Inspection Interval.

The RPV assembly welds for Limerick Units 1 and 2 are contained in three (3) sub-assemblies. The locations and identification of each weld is shown on the Weld Maps. The sub assemblies are identified as the Closure (Top) Head, the Bottom Head, and the Vessel Shell. The total weld lengths for each sub-assembly are listed below, along with the percentage examined. There are minor differences between Unit 1 and 2. These are identified in Table RR-01-1 and are described below.

RELIEF REQUEST No. RR-01
Revision 2, continued

RPV Closure Head, Units 1 and 2

The RPV Closure Head was fabricated using two (2) circumferential and six (6) meridional welds. The total circumferential weld length is 1272.1". The total meridional weld length is 483.0". All welds are considered to be accessible. Essentially 100% of each weld has been examined during the First Inspection Interval in accordance with ASME Section XI requirements.

The total length of all welds in the Closure Head is 1755.1".

RPV Bottom Head, Unit 1

The RPV Bottom Head was fabricated using one (1) circumferential and seven (7) meridional welds. The circumferential weld length is 688.0". The total meridional weld length is 721.0", of which 462.0" is accessible for examination. Essentially 100% of the accessible portion of each weld has been examined during the First Inspection Interval in accordance with ASME Section XI requirements.

The major portion of weld DG, the dollar plate meridional weld, is made inaccessible by Control Rod Drive (CRD) housings. Weld DG is 262.0" long, with 75.0" (37.5" at each end) accessible. Table IWB-2500-1 requires examination of the "accessible portion" of meridional welds. 75.0" (the accessible portion) of the weld was examined. Essentially 100% of this weld has been examined during the First Inspection Interval in accordance with ASME Section XI requirements.

A portion of welds DA, DB, DC, DD, DE, and DF, the side plate meridional welds, was made inaccessible by the Support Skirt Knuckle (an attachment weld) welded over the seams. These welds are 76.5" long, with 64.5"accessible. Table IWB-2500-1 requires examination of the "accessible portion" of meridional welds. 64.5" (the accessible portion) of each weld was examined. Essentially 100% of each weld has been examined during the First Inspection Interval in accordance with ASME Section XI requirements.

The total length of all welds in the Bottom Head is 1409.0". The "accessible portion" of these welds is 1150.0".

RPV Bottom Head, Unit 2

The RPV Bottom Head was fabricated using one (1) circumferential and eight (8) meridional welds. The circumferential weld length is 688.0". The total meridional weld length is 914.2", of which 462.0" is accessible for examination. Essentially 100% of the accessible portion of each weld has been examined during the First Inspection Interval in accordance with ASME Section XI requirements.

The major portion of welds DG-13 and DG-14, the dollar plate meridional welds, is made inaccessible by Control Rod Drive (CRD) housings. These welds are 227.6" long, with 75.0" accessible. Table IWB-2500-1 requires examination of the "accessible portion" of meridional welds. 75.0" (the accessible portion) of the weld was examined. Essentially 100% of this weld has been examined during the First Inspection Interval in accordance with ASME Section XI requirements.

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Revision 2, continued

A portion of welds DA, DB, DC, DD, DE, and DF, the side plate meridional welds, was made inaccessible by the Support Skirt Knuckle (an attachment weld) welded over the seams. These welds are 76.5″ long, with 64.5″accessible. Table IWB-2500-1 requires examination of the "accessible portion" of meridional welds. 64.5″ (the accessible portion) of each weld was examined. Essentially 100% of each weld has been examined during the First Inspection Interval in accordance with ASME Section XI requirements.

The total length of all welds in the Bottom Head is 1602.2″. The "accessible portion" of these welds is 1150.0″.

RPV Shell, Units 1 and 2

The RPV Shell was fabricated using six (6) circumferential and thirteen (13) longitudinal welds. The total circumferential weld length is 5028.9″. The total longitudinal weld length is 1590.6″. All welds are considered to be accessible. With the exception of Unit 1 circumferential weld "AD" , essentially 100% of each weld has been examined during the First Inspection Interval in accordance with ASME Section XI and 10CFR50 augmented requirements.

Nozzle N17B was installed directly through longitudinal weld BF. While this shell course is 137.0″ high, only 101.9″ of the weld remains. Coverage calculations for this weld are based on the 101.9″ length.

The total length of all welds in the RPV Shell is 6619.5″. The "accessible portion" of these welds is 6584.4″.

The technical basis for this request for inspection relief is documented in the report "BWR Vessel and Internals Project, BWR Reactor Pressure Vessel Shell Weld Inspection Recommendations (BWRVIP-05)", that was transmitted to the NRC in September 1995.

The independent NRC assessment of BWRVIP-05 utilized the FAVOR code to perform a probabilistic fracture mechanics (PFM) analysis to estimate RPV failure probabilities. Three key assumptions in the PFM analysis are; 1)the neutron fluence was that estimated to be end-of-license mean fluence; 2)the chemistry values are mean values based on vessel types and; 3)the potential for beyond design basis events is considered. Although BWRVIP-05 provides the technical basis supporting the relief request, the following information is provided to show the conservatisms of the NRC analysis relative to the Reactor Pressure Vessels.

LGS Units 1 and 2 are defined as ASTM E-185-73, Case "A" plants, since the vessels have a predicted shift in the reference nil-ductility temperature (ΔRT_{NDT}) of less than 100°F and will be exposed to a neutron fluence of less than $5x10^{18}$ n/cm^2 over the design lifetime of the plant. The expected low RPV 1/4T 32 EFPY beltline fluence ($<<5x10^{18}$ n/cm^2) results in a low predicted shift in the reference nil-ductility temperature, RT_{NDT} (<60°F at 32 EFPY).

The chemistry factor, ART, NDT, margin term, mean ART, and upper bound ART are calculated consistent with the guidelines of Regulatory Guide 1.99, Rev. 2. The combination of the Ni% and Cu% were used to determine the Chemistry Factor, which is itself bounded by the NRC Independent Assessment.

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Revision 2, continued

Considering the expected shift in RT_{NDT} (ΔRT_{NDT}) is small and the excellent LGS Units 1 and 2 plate and weld chemistry, embrittlement due to fluence effects have a negligible affect on the LGS Units 1 and 2 reactor pressure vessel weld failure probabilities.

At an August 8, 1997 meeting with the industry, the NRC staff indicated that the potential for, and consequences of, non-design basis events not addressed in the BWRVIP-05 report should be considered. In particular, the NRC staff stated that non-design basis, cold, over-pressure transients should be considered. It is highly unlikely that a BWR would experience a cold, over-pressure transient. At the August 8, 1997 meeting, the NRC staff described several types of events that could be precursors' to BWR RPV cold, over-pressure transients. These were identified as precursors because no cold, over-pressure event has occurred at a U.S. BWR. Also at the August 8 meeting, the NRC staff identified one actual cold, over-pressure event that occurred during shutdown at a non-U.S. BWR. This event apparently included several operational errors that resulted in a maximum RPV pressure of 1150 psi with a temperature range of 79°F to 88°F.

As provided in the following discussion, Exelon Generation Company, LLC, has in place procedures which monitor and control reactor pressure, temperature, and water inventory during all aspects of cold shutdown which would minimize the likelihood of a Low Temperature Over-Pressurization (LTOP) event from occurring. Additionally, these procedures are reinforced through operator training.

The Leakage Pressure Test and the Hydrostatic Pressure Test procedures which have been used at LGS, have sufficient procedural guidance to prevent a cold, over-pressurization event. The Leakage Pressure Test is performed at the conclusion of each outage, while the Hydrostatic Pressure Test is performed once every ten years. The leakage and hydrotests are infrequently-performed, complex tasks, and the test procedures are considered Plant Evolution / Special Tests. As such, a requirement is included in them for operations management to perform a "pre-briefing" with all essential personnel. This briefing details the anticipated testing evolution with special emphasis on-conservative decision making, plant safety awareness, lessons learned from similar in-house or industry operating experiences, the importance of open communications, and, finally, the process in which the test would be aborted if plant systems responded in an adverse manner. Vessel temperature and pressure are required to be monitored throughout these tests to ensure compliance with the Technical Specification pressure-temperature curve. Also, the procedures require the designation of a Test Coordinator for the duration of the test who is a single point of accountability, responsible for the coordination of testing from initiation to closure, and maintaining Shift Management and line management cognizant of the status of the test.

Additionally, to ensure a controlled, deliberate pressure increase, the rate of pressure increase is administratively limited throughout the performance of the test. If the pressurization rate exceeds this limit, direction is provided to remove the CRD pumps, which are used for pressurization, from service.

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Revision 2, continued

With regard to inadvertent system injection resulting in an LTOP condition, the high pressure make-up systems (High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) systems, as well as the normal feedwater supply (via the Reactor Feedwater Pumps)) at LGS are all steam driven. During reactor cold shutdown conditions, no reactor steam is available for the operation of these systems. Therefore, it is not possible for these systems to contribute to an over-pressure event while the unit is in cold shutdown.

In the case of low pressure system initiation, the shutoff head for the LGS Core Spray and Residual Heat Removal Pumps are sufficiently low that the potential for an over-pressurization event which would significantly exceed the Tech Spec pressure-temperature limits, due to an inadvertent actuation of these systems, is very low.

Procedural control is also in place to respond to an unexpected or unexplained rise in reactor water level which could result from a spurious actuation of an injection system. Actions specified in this procedure include preventing condensate pump injection, securing ECCS system injection, tripping CRD pumps, terminating all other injection sources, and lowering RPV level via the RWCU system.

In addition to procedural barriers, Licensed Operator Training has been held which further reduces the possibility of the occurrence of LTOP events. Initial Licensed Operator Training and Simulator Training of plant heatup and cooldown includes performance of surveillance tests which ensure pressure-temperature curve compliance. In addition, operator training has been provided on the expectations for procedural compliance, as provided for in the Station's Operations Manual.

In addition to the above, continuous review of industry operating plant experiences is conducted to ensure that the Exelon Generation Company, LLC, procedures consider the impact of actual events, including LTOP events. Appropriate adjustments to the procedures and associated training are then implemented, to preclude similar situations from occurring at LGS.

Based upon the above, the probability of a cold over-pressure transient is considered to be less than or equal to that used in the NRC analysis.

The NRC staff has recently transmitted a Request for Additional Information (RAI) regarding the BWRVIP-05 report to the BWR Vessel and Internals Project (BWRVIP). The BWRVIP plans to provide a response to that RAI in the near future that will include additional information on the BWRVIP Probabilistic Fracture Mechanics (PFM) analysis, comparisons to the NRC staff PFM analysis and additional information regarding beyond design basis cold over-pressure transients. Exelon Generation Company, LLC, will work with the BWRVIP to resolve the longer term issues in this area, but believes BWRVIP-05 and the NRC analysis provide sufficient basis to support this relief request.

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 automated examination coverage.

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Revision 2, continued

Based on the documentation in BWRVIP-05, the risk-informed independent assessment performed by the NRC staff and the discussion above, Exelon Generation Company, LLC, believes that relief from the First Inspection Interval requirement for complete examination of LGS Unit 1 shell circumferential weld "AD" and approval to use the proposed alternative Second Inspection Interval plan for LGS Units 1 and 2 Examination Category B-A welds as listed in Table RR-01-1, is justified.

IV. ALTERNATE PROVISIONS

Pursuant to 10CFR50.55a(a)(3)(i), Exelon Generation Company, LLC, considers the following alternate provisions to be practical for the subject weld examinations. Exelon Generation Company, LLC, believes that, with the enhancements in ultrasonic scanning equipment that Exelon Generation Company, LLC, has supported during the First Inspection Interval, ASME Code coverage can be achieved with automated UT systems without the need for supplemental manual examinations. However, due to the limited experience with the full compliment of improved scanners, the Second 10 Year Interval Planned Coverage listed in Table RR-01-1 identifies only the absolute minimum examination coverage that will be achieved.

RPV Shell Welds

Circumferential Welds

Weld AA Perform entire weld with automated system. No manual exams should be required.

Weld AB Perform entire weld with automated system. No manual exams should be required.

Weld AC Perform entire weld with automated system. No manual exams should be required.

Weld AD Perform limited (≅ 75%) of weld volume with automated system. File Relief Request for 25% of the weld volume due to insulation, bioshield and stabilizer design. Note that 100% of the weld length is examined, but scan distance is affected. No manual exams should be performed.

Weld AE Perform entire weld with automated system. No manual exams should be required.

Weld AF Perform Bottom Side of weld with automated system. Continue 0° from sealing surface.

Longitudinal Welds

Shell Course 1 Welds BA, BB, and BC Perform entire weld with automated system. No manual exams should be required.

Shell Course 2 Welds BD, BE, and BF Perform entire weld with automated system. No manual exams should be required.

Shell Course 3 Welds BG, BH, and BJ Perform entire weld with automated system. No manual exams should be required.

Shell Course 4 Welds BK and BM Perform entire weld with automated system. No manual exams should be required.

Shell Course 5 Welds BN and BP Perform entire weld with automated system. No manual exams should be required.

RELIEF REQUEST No. RR-01
Revision 2, continued

Closure Head Welds

Circumferential Welds

Welds AG and AH Continue manual examinations.

Side Plate Meridional Welds DH, DJ, DK, DM, DN, and DP Continue manual examinations.

Bottom Head Welds

Circumferential Weld

Weld AJ Continue manual examinations.

Side Plate Meridional Welds DA, DB, DC, DD, DE, and DF Continue manual examinations.

Dollar Plate Meridional Welds DG13 and DG14 Continue manual examinations

TABLE RR-01-1
SHELL CIRCUMFERENTIAL WELDS and SHELL TO FLANGE WELD

Weld ID	Code Item	Weld Length	Automated Coverage	Manual Coverage	First 10 Year Interval Actual Coverage	Second 10 Year Interval Planned Coverage
AA	B 1.11	835.3"	Unit 1: 56.2% Unit 2: 89.5%	Unit 1: 43.8% Unit 2: 10.5%	Unit 1: Composite = 100% Unit 2: Composite = 100%	Automated = 89.5%
AB	B 1.11	835.3"	Unit 1: 97.7% Unit 2: 96.1%	Unit 1: 0.0% Unit 2: 0.0%	Unit 1: Composite = 97.7% Unit 2: Composite = 96.1%	Automated = 96.1%
AC	B 1.11	835.3"	Unit 1: 90.2% Unit 2: 86.8%	Unit 1: 9.8% Unit 2: 6.4%	Unit 1: Composite = 100% Unit 2: Composite = 93.2%	Automated = 86.8%
AD	B 1.11	837.3"	Unit 1: 59.6% Unit 2: 77.0%	Unit 1: 28.3% Unit 2: 18.9%	Unit 1: Composite = 87.9% Unit 2: Composite = 95.9%	Automated = 77.0%
AE	B 1.11	842.0"	Unit 1: 77.7% Unit 2: 80.2%	Unit 1: 22.3% Unit 2: 19.7%	Unit 1: Composite = 100% Unit 2: Composite = 99.9%	Automated = 80.2%
AF	B 1.30	842.0"	Unit 1: 0% Unit 2: 21.6%	Unit 1: 99.1% Unit 2: 75.0%	Unit 1: Manual = 99.1% Unit 2: Composite = 96.6%	Composite = 96.6%

TABLE RR-01-1, continued
SHELL LONGITUDINAL WELDS

Weld ID	Code Item	Weld Length	Automated Coverage	Manual Coverage	First 10 Year Interval Actual Coverage	Second 10 Year Interval Planned Coverage
BA	B 1.12	137"	Unit 1: 85.4% Unit 2: 85.8%	Unit 1: 14.6% Unit 2: 14.2%	Unit 1: Composite = 100% Unit 2: Composite = 100%	Automated = 85.8%
BB	B 1.12	137"	Unit 1: 85.2% Unit 2: 84.9%	Unit 1: 14.8% Unit 2: 15.1%	Unit 1: Composite = 100% Unit 2: Composite = 100%	Automated = 85.2%
BC	B 1.12	137"	Unit 1: 72.8% Unit 2: 70.3%	Unit 1: 27.2% Unit 2: 29.7%	Unit 1: Composite = 100% Unit 2: Composite = 100%	Automated = 72.8%
BD	B 1.12	137"	Unit 1: 100% Unit 2: 100%	Unit 1: 0% Unit 2: 0%	Unit 1: Automated = 100% Unit 2: Automated = 100%	Automated = 100%
BE	B 1.12	137"	Unit 1: 100% Unit 2: 100%	Unit 1: 0% Unit 2: 0%	Unit 1: Automated = 100% Unit 2: Automated = 100%	Automated = 100%
BF	B 1.12	103"	Unit 1: 77.2% Unit 2: 89.8%	Unit 1: 22.8% Unit 2: 10.2%	Unit 1: Composite = 100% Unit 2: Composite = 100%	Automated = 89.8%
BG	B 1.12	137"	Unit 1: 85.9% Unit 2: 81.7%	Unit 1: 14.1% Unit 2: 16.1%	Unit 1: Composite = 100% Unit 2: Composite = 97.8%	Automated = 81.7%

TABLE RR-01-1, continued
SHELL LONGITUDINAL WELDS

Weld ID	Code Item	Weld Length	Automated Coverage	Manual Coverage	First 10 Year Interval Actual Coverage	Second 10 Year Interval Planned Coverage
BH	B 1.12	137"	Unit 1: 92.5% Unit 2: 92.5%	Unit 1: 0% Unit 2: 0%	Unit 1: Automated = 100% Unit 2: Automated = 100%	Automated = 92.5%
BJ	B 1.12	137"	Unit 1: 90.4% Unit 2: 96.4%	Unit 1: 9.6% Unit 2: 0%	Unit 1: Composite = 100% Unit 2: Automated = 96.4%	Automated = 96.4%
BK	B 1.12	86"	Unit 1: 51.3% Unit 2: 28.3%	Unit 1: 48.7% Unit 2: 71.7%	Unit 1: Composite = 100% Unit 2: Composite = 100%	Automated = 51.3%
BM	B 1.12	86"	Unit 1: 50.0% Unit 2: 28.0%	Unit 1: 50.0% Unit 2: 72.0%	Unit 1: Composite = 100% Unit 2: Composite = 100%	Automated = 50.0%
BN	B 1.12	92.8"	Unit 1: 0% Unit 2: 76.5%	Unit 1: 100% Unit 2: 23.5%	Unit 1: Manual = 100% Unit 2: Composite = 100%	Automated = 76.5%
BP	B 1.12	92.8"	Unit 1: 0% Unit 2: 98.8%	Unit 1: 100% Unit 2: 0%	Unit 1: Manual = 100% Unit 2: Composite = 98.8%	Automated = 98.8%

TABLE RR-01-1, continued
CLOSURE HEAD CIRCUMFERENTIAL WELDS, MERIDIONAL WELDS and HEAD to FLANGE WELD

Weld ID	Code Item	Weld Length	Automated Coverage	Manual Coverage	First 10 Year Interval Actual Coverage	Second 10 Year Interval Planned Coverage
AG	B 1.40	765.3"	Unit 1: 0% Unit 2: 0%	Unit 1:100%MT 92.3% UT Unit 2:100%MT 92.3% UT	Unit 1: MT = 100% Manual UT= 92.3% Unit 2: MT = 100% Manual UT= 92.3%	MT = 100% Manual = 92.3%
AH	B 1.21	506.8"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DH	B 1.22	80.5"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DJ	B 1.22	80.5"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DK	B 1.22	80.5"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DM	B 1.22	80.5"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DN	B 1.22	80.5"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DP	B 1.22	80.5"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%

TABLE RR-01-1, continued
BOTTOM HEAD CIRCUMFERENTIAL WELDS and MERIDIONAL WELDS

Weld ID	Code Item	Weld Length	Automated Coverage	Manual Coverage	First 10 Year Interval Actual Coverage	Second 10 Year Interval Planned Coverage
AJ	B 1.21	688.0"	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DA	B 1.22	76.5" *64.4" Accessible Length Due to Knuckle Weld	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DB	B 1.22	76.5" *64.4" Accessible Length Due to Knuckle Weld	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DC	B 1.22	76.5" *64.4" Accessible Length Due to Knuckle Weld	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DD	B 1.22	76.5" *64.4" Accessible Length Due to Knuckle Weld	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DE	B 1.22	76.5" *64.4" Accessible Length Due to Knuckle Weld	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
DF	B 1.22	76.5" *64.4" Accessible Length Due to Knuckle Weld	Unit 1: 0% Unit 2: 0%	Unit 1: 100% Unit 2: 100%	Unit 1: Manual = 100% Unit 2: Manual = 100%	Manual = 100%
Unit 1 only DG 0° DG 180°	B 1.22	262.0" *75.0" Accessible Length Due to CRD Housings	Unit 1: 0%	Unit 1: 100%	Unit 1: Manual = 100%	Manual = 100%
Unit 2 only DG13 0° DG13 180°	B 1.22	227.6" *52.0" Accessible Length Due to CRD Housings	Unit 2: 0%	Unit 2: 100%	Unit 2: Manual = 100%	Manual = 100%
Unit 2 only DG14 0° DG14 180°	B 1.22	227.6" *52.0" Accessible Length Due to CRD Housings	Unit 2: 0%	Unit 2: 100%	Unit 2: Manual = 100%	Manual = 100%

RELIEF REQUEST No. RR-02
Revision 1
Refer to Tat le A-1 for Approval Status

This Relief Request is NO LONGER REQUIRED. ASME Section XI 1989 Edition, Table IWB-2500-1 Examination Category B-L-2, Note 2 requires a VT-3 visual examination of the internal surfaces of at least one (1) of the two (2) Reactor Recirculation pump casings during the inspection interval only when the pumps are disassembled for maintenance, repair or volumetric examination.

RELIEF REQUEST No. RR-03
Revision 1
Refer to Tat le A-1 for Approval Status

This Relief Request is NO LONGER REQUIRED. ASME Section XI 1989 Edition, Table IWB-2500-1 Examination Category B-M-2 requires a VT-3 visual examination of the internal surfaces of one (1) 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 inspection interval only when the valves are disassembled for maintenance, repair or volumetric examination.

RELIEF REQUEST No. RR-04
Revision 2
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

ASME Class 1, 2, and 3 snubber assemblies, Code Examination Category F-A, Item Numbers F1.10 through F1.40.

This relief request is applicable to the snubber assembly only, which includes the snubber body and attachments out to and including the load pins and their retainers.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

The 1989 Edition of ASME Section XI, Subsection IWF provides requirements for inspection and testing of Class 1, 2, 3, and MC component supports. Article IWF-2000 provides the examination rules for component supports they are summarized in Table IWF-2500-1, Examination Category F-A, which specifies VT-3 visual examination of supports, each inspection interval.

Article IWF-5000 provides the inservice inspection requirements for snubbers. Paragraph IWF-5300(a) specifies that inservice examinations shall be performed in accordance with the first Addenda to ASME/ANSI OM-1987, Part 4 (published in 1988) using the VT-3 visual examination method in IWA-2213. IWF-5300(b) specifies that inservice tests shall be performed in accordance with the first Addenda to ASME/ANSI OM-1987, Part 4 (published in 1988).

Pursuant to 10CFR50.55a(a)(3)(i), an alternative is requested to perform snubber examinations and tests in accordance with the requirements of LGS, Unit 1 Technical specification (TS) 3/4.7.4 on the basis that the proposed alternative provides an acceptable level of quality and safety.

III. BASIS FOR RELIEF

Limerick Generating Station (LGS), Unit 1 TS 3/4.7.4 establishes the surveillance requirements for snubbers. The TS snubber visual examination program requires a sample size of all safety related snubbers and incorporates the alternate snubber visual examination requirements delineated in USNRC Generic Letter (GL) 90-09, "Alternate Requirements for Snubber Visual Inspection Intervals and Corrective Actions." The TS functional testing program is based on the ASME/ANSI OM-1990 Addenda to ASME ANSI OM-1987, Part 4, "Examination and Performance Testing of Nuclear Power Plant Dynamic Restraints (Snubbers)".

The purpose of the Augmented Inservice Inspection Program described in the LGS, Unit 1 TS 3/4.7.4 is to assure and demonstrate operational readiness and structural integrity of snubbers through testing and examination. The examination criteria for snubbers from pin-connection to pin-connection meet this objective. Therefore, performance of the ASME Section XI, examinations on snubber assemblies would be redundant.

Limerick Generating Station, Unit 1 has procedures in place to implement the program described in the TS 3/4.7.4. The examinations are performed by qualified personnel and meet the intent of the inspections and tests of ASME Section XI. Based on the above discussion, LGS has determined that the implementation of TS 3/4.7.4 for Unit 1 will assure an acceptable level of quality and safety.

IV. ALTERNATE PROVISIONS

The examination and functional testing of snubber assemblies from the pin-connection to the pin-connection at Limerick Generating Station, Unit 1, will be performed in accordance with Technical Specification 3/4.7.4. These examinations will be performed in lieu of the inspection and test requirements of IWF-2000 and IWF-5000. The general requirements of Subsection IWA, such as examination methods, personnel qualifications, etc., still apply.

RELIEF REQUEST No. RR-05
Revision 2
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 integrally welded attachments for vessels, and pumps, Examination Category C-C.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1989 Edition, Examination Category C-C requires a surface examination of 100% of required areas of each welded attachment to vessels, piping, pumps and valves. In the case of multiple vessels, only the integrally welded attachments of one (1) vessel in a group of vessels of similar design and service (or the equivalent of one vessel) need be examined. Examinations shall be performed in accordance with Figure IWC-2500-5 using the nondestructive examination (NDE) requirements of ASME Section V.

Relief is requested to perform the required examinations in accordance with ASME Section XI, 1995 Edition with the 1996 Addenda, Table IWC-2500-1, Examination Category C-C.

III. BASIS FOR RELIEF

Access for examination equipment is limited by component configuration or installed support members.

During the First Inspection Interval, attempts to perform alternate NDE methods, e.g. Liquid Penetrant (PT) or Ultrasonic Testing (UT) Class 2 integral attachment welds proved unsuccessful. Neither NDE method resulted in an increase in examination coverage (in fact UT resulted in less coverage). In addition, there was a significant increase in radiation exposure to both examination and support personnel due to the weld surface preparation requirements and increased examination times associated with these methods. Also, installed support members caused the same access limitations regardless of the NDE method used.

All welds were examined to the maximum extent practical. Increased examination coverage is not possible without undue hardship, such as a plant modification.

The 1995 Edition of ASME Section XI has recognized these generic access limitations and has appropriately modified the Examination Requirements. Table IWC-2500-1, Examination Category C-C, has also include Note (6) which requires examination of the integral attachment welds whenever component support member deformation is identified.

RELIEF REQUEST No. RR-05
Revision 2, continued

Adoption of Exelon Generation Company, LLC's, proposed alternative will result in a reduction in radiation exposure to examination and support personnel and will reduce the number of welds requiring relief requests due to incomplete examination coverage based solely on the requirements of the 1989 Edition of the ASME Section XI Code. These alternative rules are based on the 1995 Edition of the Code, and as such, provide an acceptable level of quality and safety which does not compromise the adequacy of the LGS Units 1 and 2 ASME Section XI Programs in meeting the intent of the ASME Code.

IV. ALTERNATE PROVISIONS

Exelon Generation Company, LLC, will perform the required examinations of Class 2 integral attachment welds in accordance with ASME Section XI, 1995 Edition with the 1996 Addenda, Table IWC-2500-1, Examination Category C-C.

RELIEF REQUEST No. RR-06
Revision 1
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 Residual Heat Removal (RHR) heat exchanger pressure retaining shell circumferential welds; Examination Category C-A, Item Number C1.10.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1989 Edition, Examination Category C-A requires volumetric examination of 100% of the pressure retaining shell circumferential welds at gross structural discontinuities of one (1) heat exchanger (or the equivalent of one heat exchanger) during the inservice inspection interval. Examinations shall be performed in accordance with Figure IWC-2500-1 and the nondestructive examination requirements of ASME Section XI, Appendix I.

Pursuant to 10CFR50.55a(g)(6)(i) Exelon Generation Company, LLC, requests relief from complete examination of
the shell to flange weld due to limited access resulting from component design.

III. BASIS FOR 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. The limitations to complete volumetric examinations are also applicable to surface examination techniques. Disassembly of the flange mechanical connection, to facilitate complete examination, is not practical due to significant radiation exposure and significant man hours required for disassembly/re-assembly as well as the potential for creating a leakage path for reactor coolant.

IV. ALTERNATE PROVISIONS

No alternate examinations are proposed for the subject weld. Ultrasonic examination shall be performed to the maximum extent practical.

RELIEF REQUEST No. RR-07
Revision 1
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 Residual Heat Removal (RHR) pumps, 1A-P202, 1B-P202, 1C-P202 and 1D-P202, pressure retaining pump casing welds, Examination Category C-G, Item Number C6.10.

Class 2 Core Spray pumps, 1A-P206, 1B-P206, 1C-P206, 1D-P206, pressure retaining pump casing welds, Examination Category C-G, Item Number C6.10.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1989 Edition, Examination Category C-G requires surface examination of 100% of pressure retaining pump casing welds of one (1) pump in each group of multiple pumps (of similar design, size, function, service), during the inservice inspection interval. Examinations shall be performed in accordance with Figure IWC-2500-8 and the nondestructive examination requirements of ASME Section V.

Welds on each of the four (4) RHR and four (4) Core Spray pumps are encased in concrete and are inaccessible for surface examination.

Pursuant to 10CFR50.55a(g)(6)(i) Exelon Generation Company, LLC, requests relief from examination of inaccessible pressure retaining pump casing welds on the RHR and Core Spray pumps due to plant/component design.

III. BASIS FOR RELIEF

The welds on each of the four (4) RHR and four (4) Core Spray pumps are encased in concrete and are inaccessible for surface examination. Therefore, it is impracticable to perform the surface weld examination without destruction of the concrete resulting in unnecessary cost and radiation exposure without a compensating increase in safety. Additionally, 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 examinations performed from the inside surface of the welds. This effort, in the absence of any other necessary pump maintenance, represents a significant expenditure of man hours and radiation exposure to plant personnel, without a compensating increase in plant safety.

IV. ALTERNATE PROVISIONS

In the event the subject welds become accessible upon disassembly of any one (1) of the pumps, the welds will be surface examined from the inside surface or a VT-1 visual examination will be performed for that particular pump group to the maximum extent practicable. The examination method will be determined by Exelon Generation Company, LLC, based on radiation environment data at the time access is enabled. 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 assurance of pump structural integrity.

RELIEF REQUEST No. RR-08
Revision 1
Refer to Table A-1 for Approval Status
This Relief Request has NOT BEEN SUBMITTED for the second interval and should be ASBUILT at the end of the interval. Examination coverages are estimated.

I. IDENTIFICATION OF COMPONENTS

Class 1 Full Penetration Welds of Nozzles in the Reactor Pressure Vessel, Code Examination Category B-D, Item Number B3.90.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1989 Edition, Code Category B-D requires a volumetric examination of all reactor pressure vessel full penetration nozzle to vessel shell or head welds during the inservice inspection interval. The examinations shall be performed in accordance with the examination requirements of Figure IWB-2500-7(b) and the nondestructive examination requirements of ASME Section V.

Pursuant to 10CFR50.55a(g)(6)(i) Exelon Generation Company, LLC, requests relief from complete examination of the nozzle to vessel welds listed in Table RR-08-1 due to access limitations imposed by reactor pressure vessel design and/or component configuration.

III. BASIS FOR RELIEF

The LGS Unit 1 reactor pressure vessel has thirty-four (34) nozzles, the welds of which require volumetric (ultrasonic) examination per Code Examination Category B-D. 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.

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 scanner design. Table RR-08-1 lists the LGS 1 nozzle to vessel welds and quantifies the effect of nozzle configuration on Code required examination coverage.

In addition to component configuration certain nozzle to vessel weld examinations are further limited by reactor pressure vessel design obstructions (such as, RPV appurtenances). These welds are also detailed in Table RR-08-1. Examination coverage as indicated in Table RR-08-1 is to the maximum extent feasible for the given configuration. Also, for all nozzle configurations, except N4D, the critical inner 25% of the nozzle thickness was effectively examined with both 45 and 60 degree beam angles.

IV. ALTERNATE PROVISIONS

No alternate provisions are practical for the subject welds. Examinations are performed to the maximum extent feasible.

RELIEF REQUEST No. RR-08
Revision 1, continued

TABLE RR-08-1
EXAMINATION CATEGORY B-D
ULTRASONIC EXAMINATION COVERAGE

		Volume Examined Due to Nozzle Forging Configuration		
Nozzle ID[1]	Description	Transverse[2] Scans %	Parallel[3] Scans %	Circumference Examined % Nature of Limitation
N1A,B	Recirculation Outlet	Fully Examined 79.29 Partially Examined 6.80 Unexamined 13.91	50	
N2A-H, J, K	Recirculation Inlet	Fully Examined 77.55 Partially Examined 7.80 Unexamined 14.65	50	
N3A, B, C, D	Main Steam	Fully Examined 73.26 Partially Examined 6.30 Unexamined 20.44	50	
N4A, B, C, E, F	Feedwater	Fully Examined 77.55 Partially Examined 7.80 Unexamined 14.65	50	
N4D	Feedwater	Fully Examined 77.55 Partially Examined 7.80 Unexamined 14.65	50	88.9 Nozzle N11B
N5A, B	Core Spray	Fully Examined 77.55 Partially Examined 7.80 Unexamined 14.65	50	
N6A, B	Head Spray	Fully Examined 72.36 Partially Examined 9.67 Unexamined 17.97	50	
N7	Head Vent	Fully Examined 76.24 Partially Examined 7.27 Unexamined 16.49	50	
N8 A, B	Jet Pump Instrument	Fully Examined 78.22 Partially Examined 7.65 Unexamined 14.13	50	
N9	CRD Return capped	Fully Examined 78.22 Partially Examined 7.65 Unexamined 14.13	50	
N17 A, B, C, D	RHR - LPCI	Fully Examined 77.55 Partially Examined 7.80 Unexamined 14.65	50	

RELIEF REQUEST No. RR-08
Revision 1, continued

TABLE RR-08-1

NOTES:

1. Unless otherwise noted, data provided is generic to all nozzles of a given identification number. Where the restriction varied, data is provided for the worst case.

2. The following applies to all nozzle transverse scans:

   Fully examined - the percent of the Code required volume that is able to be examined utilizing both the 45 and 60 degree beam angles.

   Partially examined - the percent of the Code required volume that can be examined by the 60 degree beam angle only.

   Unexamined - the percent of the Code required volume that was unable to be examined by either the 45 or 60 degree beam angle.

3. Parallel scans could not be performed on the nozzle side of all the welds.

RELIEF REQUEST No. RR-09
Revision 1
Refer to Table A-1 for Approval Status

This Relief Request is NO LONGER REQUIRED. Code Case N-491-1, the basis for Relief Request No. RR-09, was approved for use without limitations per Reg. Guide 1.147, Inservice Inspection Code Case Applicability, ASME Section XI, Division 1, Revision 12, dated May 1999.
See Section 9.0 of the ISI Program for implementation details.

RELIEF REQUEST No. RR-10
Revision 1
Refer to Table A-1 for Approval Status
This Relief Request has NOT BEEN SUBMITTED for the second interval and should be AS BUILT at the end of the interval. Examination coverages are estimated.

I. IDENTIFICATION OF COMPONENTS

Class 1 pressure retaining dissimilar metal welds, Examination Category B-F, Item Number B5.130.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1989 Edition, Examination Category B-F requires a volumetric and surface examination of all piping dissimilar metal butt welds, NPS 4 or larger, during the inservice inspection interval. Examinations shall be in accordance with Figure IWB-2500-8 and the nondestructive examination requirements of ASME Section XI, Appendix III.

Pursuant to 10CFR50.55a(g)(6)(i) Exelon Generation Company, LLC, requests relief from complete volumetric examination of the Examination Category B-F components listed in Table RR-10-1. Complete volumetric examination of these welds is not practical due to component configuration and/or plant design.

III. BASIS FOR RELIEF

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 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.

Partial ultrasonic examination coupled with complete surface examination and routine visual examination in accordance with Examination Category B-P provide adequate assurance of piping pressure boundary structural integrity.

IV. ALTERNATE PROVISIONS

No alternate examination provisions are practical for the subject welds. Existing ultrasonic examination coverage is adequate such that use of alternate volumetric examination techniques (i.e. radiography) offers no improvements in examination effectiveness.

RELIEF REQUEST No. RR-10
Revision 1, continued

TABLE RR-10-1
EXAMINATION CATEGORY B-F
ULTRASONIC EXAMINATION COVERAGE

Weld Identification Number	Description / System	Examination % Complete
RHA 013	Valve to Flued Head / RHR	85%
RHB 013	Valve to Flued Head / RHR	85%
RHC 013	Valve to Flued Head / RHR	85%
RHD 013	Valve to Flued Head / RHR	85%
CSA 015	Valve to Flued Head / CS	80%

RELIEF REQUEST No. RR-11
Revision 1
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 1, integrally welded attachments to the reactor pressure vessel, Examination Category B-H, and integrally welded attachments to piping, pumps and valves, Examination Category B-K-1.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1989 Edition, Examination Categories B-H and B-K-1 require a surface examination of essentially 100% of the weld length of all Class 1 integrally welded attachments. Volumetric examinations may be performed in lieu of surface examinations as specified in the applicable Table IWB-2500-1, Notes. Examinations shall be in accordance with Figures IWB-2500-13, 14 and/or 15 as applicable using the nondestructive examination (NDE) requirements of ASME Section V.

Relief is requested to perform the required examinations in accordance with ASME Section XI, 1995 Edition with the 1996 Addenda, Table IWB-2500-1, Examination Category B-K as supplemented by Code Case N-323-1, Alternative Examination for Welded Attachments to Pressure Vessels, for Figure Nos. IWB-2500-13 and IWB-2500-14.

III. BASIS FOR RELIEF

Access to the reactor pressure vessel stabilizer bracket attachment welds is limited due to mirror insulation support members affixed to the stabilizer bracket lugs and the stabilizer assembly support members. These support members 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 build-up. The configuration of the RPV skirt knuckle to the bottom head limits access for complete examination of the underside of the weld.

Access for examination of Class 1 piping integral attachment welds is limited due to installed support members.

During the First Inspection Interval, attempts to perform both Liquid Penetrant (PT) and Ultrasonic Testing (UT) of the reactor pressure vessel integral attachment welds proved unsuccessful. Neither NDE method resulted in an increase in examination coverage (in fact UT resulted in less coverage). Also, there was a significant increase in radiation exposure to both examination and support personnel due to the weld surface preparation requirements and increased examination times associated with these methods.

In the case of the piping integral attachment welds, the installed support members caused the same access limitations regardless of the NDE method used.

RELIEF REQUEST No. RR-11
Revision 1, continued

The 1995 Edition of ASME Section XI (and Code Case N-323-1) has recognized these generic access limitations and have appropriately modified the Examination Requirements. Table IWB-2500-1, Examination Category B-K , has also included Note (6) which requires examination of the integral attachment welds whenever component support member deformation is identified.

Adoption of Exelon Generation Company, LLC,'s proposed alternative will result in a reduction in radiation exposure to examination and support personnel and will reduce the number of welds requiring relief requests due to incomplete examination coverage based solely on the requirements of the 1989 Edition of the ASME Section XI Code. These alternative rules are based on the 1995 Edition of the Code, and as such, provide an acceptable level of quality and safety which does not compromise the adequacy of the LGS Units 1 and 2 ASME Section XI Programs in meeting the intent of the ASME Code.

IV. ALTERNATE PROVISIONS

Exelon Generation Company, LLC, will perform the required examinations of Class 1 integral attachment welds in accordance with ASME Section XI, 1995 Edition with the 1996 Addenda, Table IWB-2500-1, Examination Category B-K as supplemented by Code Case N-323-1, Alternative Examination For welded Attachments to Pressure Vessels (for Examination Requirements / Figure Nos. IWB-2500-13 and IWB-2500-14).

RELIEF REQUEST No. RR-12
Revision 3
Refer to Section III (Below) for Approval Status

I. SCOPE

This relief request is applicable to those ASME Code Cases adopted for use in the LGS Units 1 and 2 ASME Section XI Programs which have not been specifically endorsed for use by the USNRC in Regulatory Guide 1.147.

II. DISCUSSION

Code Cases are periodically published by the ASME for the purpose of either clarifying the intent of 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 non-mandatory Code Cases for inservice inspection is subject to USNRC acceptance of the Code Case(s); Regulatory Guide 1.147 lists those Codes Cases that have been reviewed by the NRC and are generally acceptable for implementation in an ASME Section XI Program. Other Code Cases may be used provided specific authorization is requested pursuant to 10CFR50.55a.

The purpose of this relief request is to request authorization of the adoption of specific Code Cases for implementation in the LGS ASME Section XI Programs.

III. CODE CASES REQUIRING AUTHORIZATION

The following Code Cases require specific authorization for use in the LGS ASME Section XI Programs:

A. N-416-1 Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3.

This Relief Request is NO LONGER REQUIRED. Code Case N-416-1 was approved for use with limitations per Reg. Guide 1.147, Inservice Inspection Code Case Applicability, ASME Section XI, Division 1, Revision 12, dated May 1999.

See Table 2.5-1 for applicability and limitations to the LGS Unit 1 and 2 ASME Section XI Programs.

B. N-498-1 Alternative Rules for 10-Year Hydrostatic Pressure Testing

This Relief Request is NO LONGER REQUIRED. Code Case N-498-1 was approved for use without limitations per Reg. Guide 1.147, Inservice Inspection Code Case Applicability, ASME Section XI, Division 1, Revision 12, dated May 1999.

See Table 2.5-1 for applicability to the LGS Unit 1 and 2 ASME Section XI Programs.

RELIEF REQUEST No. RR-12
Revision 3, continued

C. N-546 Alternative Requirements for Qualification of VT-2 Examination Personnel

See Table RR-12-3 for discussion on applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case was authorized per USNRC SER for Docket Nos. 50-352 and 50-353, Relief Request for Use of ASME Code Case N-546 in the Inservice Inspection Program for, Limerick Generating Station, Units 1 and 2 (TAC Nos. M99343 and M99345), dated October 9, 1997.

D. N-524 Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping.

This Relief Request is NO LONGER REQUIRED. Code Case N-524-1 was approved for use without limitations per Reg. Guide 1.147, Inservice Inspection Code Case Applicability, ASME Section XI, Division 1, Revision 12, dated May 1999.
See Table 2.5-1 for applicability to the LGS Unit 1 and 2 ASME Section XI Programs.

E. N-566 Corrective Action for Leakage Identified at Bolted Connections.

See Table RR-12-5 for discussion on applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case was authorized per USNRC SER for Docket Nos. 50-352 and 50-353, Safety Evaluation by the Office of Nuclear Regulation of the First and Second 10-Year Interval Inservice Inspection Plan Request for Relief Nos. RR-01 (Parts 1 and 2), RR-05, RR-11, RR-12 (Parts 1 through 5), and RR-23 for Limerick Generating Station, Units 1 and 2, PECO Energy Company, (TAC Nos. MA0818 and MA08109) dated September 13, 1999.

F. N-508-1 Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing

See Table RR-12-6 for discussion on applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case is pending USNRC approval. Exelon Generation Company, LLC's, request for approval was submitted January 2001 for consideration by the Staff.

G. N-516-1 Underwater Welding

See Table RR-12-7 for discussion on applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case is pending USNRC approval. Exelon Generation Company, LLC's, request for approval was submitted January 2001 for consideration by the Staff.

RELIEF REQUEST No. RR-12
Revision 3, continued

H. N-532 Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000

See Table RR-12-8 for discussion on applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case is pending USNRC approval. Exelon Generation Company, LLC's, request for approval was submitted January 2001 for consideration by the Staff.

I. N-598 Alternative Requirements to Required Percentages of Examinations

See Table RR-12-9 for discussion on applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case for Class 1, 2, and 3 components is pending USNRC approval. Exelon Generation Company, LLC's, request for approval was submitted January 2001 for consideration by the Staff.

Use of this Code Case for Class MC components was authorized per USNRC SER for Docket Nos. 50-352 and 50-353, Limerick Generating Station, Units 1 and 2, Evaluation of Relief Requests RR-12-9 Through RR-12-11 and RR-24 Through RR31: Implementation of Subsections IWE and IWL of ASME Code, Section XI for Containment Inspection (TAC Nos. MB1018 and MB1019), dated September 12, 2001.

J. N-601 Extent and Frequency of VT-3 Visual Examination for Inservice Inspection of Metal Containments

See Table RR-12-10 for discussion or applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case was authorized per USNRC SER for Docket Nos. 50-352 and 50-353, Limerick Generating Station, Units 1 and 2, Evaluation of Relief Requests RR-12-9 Through RR-12-11 and RR-24 Through RR31: Implementation of Subsections IWE and IWL of ASME Code, Section XI for Containment Inspection (TAC Nos. MB1018 and MB1019), dated September 12, 2001.

K. N-605 Alternative to the Requirements of IWE-2500(c) for Augmented Examination of Surface Areas

See Table RR-12-11 for discussion on applicability to the LGS Unit 1 and 2 ASME Section XI Programs.
Use of this Code Case was authorized per USNRC SER for Docket Nos. 50-352 and 50-353, Limerick Generating Station, Units 1 and 2, Evaluation of Relief Requests RR-12-9 Through RR-12-11 and RR-24 Through RR31: Implementation of Subsections IWE and IWL of ASME Code, Section XI for Containment Inspection (TAC Nos. MB1018 and MB1019), dated September 12, 2001.

RELIEF REQUEST No. RR-12
Revision3, continued

IV. ALTERNATE PROVISIONS

The alternative rules of the Code Cases ir III above shall be incorporated into the Code Bases for the LGS Units 1 and 2 ASME Section XI Prog ams and shall be implemented in accordance with Relief Request RR-12 until such time as the Code Cases are incorporated into Regulatory Guide 1.147 or an approved version of the Section XI Coc e.

V. BASIS FOR ALTERNATIVE

All of the Code Cases discussed in III abo e represent technically acceptable alternative rules to ASME Section XI Code requirements. The fact that these Code Cases have not been endorsed in the Regulatory Guide in no way detracts from their technical adequacy since the major reason for their omission is the timing of their publication with respect to the most recent revision of the Regulatory Guide. That is, the subject Code Cases are relatively recent and it is expected that these Code Cases will be accepted in a subsequent revision of the Regulatory Guide.

Adoption of these alternative rules provide s an acceptable level of quality and safety and does not compromise the adequacy of the LGS Units 1 and 2 ASME Section XI Programs in meeting the intent of the ASME Code.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-1
Code Case N-416-1

This Relief Request is NO LONGER REQUIRED. Code Case N-416-1 was approved for use with limitations per Reg. Guide 1.147, Inservice Inspection Code Case Applicability, ASME Section XI, Division 1, Revision 12, dated May 1999.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-2
Code Case N-498-1

This Relief Request is NO LONGER REQUIRED. Code Case N-498-1 was approved for use without limitations per Reg. Guide 1.147, Inservice Inspection Code Case Applicability, ASME Section XI, Division 1, Revision 12, dated May 1999.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-3
Code Case N-546

I. IDENTIFICATION OF COMPONENTS

None

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, IWA-2300, requires that personnel performing VT-2 visual examinations be qualified in accordance with comparable levels of competency as defined in SNT-TC-1A and the Employer's written Practice.

Exelon Generation Company, LLC, requests approval to implement Code Case N-546, "Alternative Requirements for Qualification of VT-2 Examination Personnel," which is not yet approved by reference in

Regulatory Guide 1.147, Revision 12, "Inservice Inspection Code Case Acceptability - ASME, Section XI, Division 1".

III. BASIS FOR ALTERNATIVE

Code Case N-546 allows experienced plant personnel such as licensed and non-licensed operators, local leak rate personnel, system engineers, and inspection and nondestructive examination personnel to perform VT-2 visual examinations without having to be certified to comparable levels of competency defined in SNT-TC-1A. The Exelon Generation Company, LLC, individuals performing the visual examinations will be subject to the conditions provided in Code Case N-546.

Specifically, the examination personnel will have at least 40 hours of plant walk down experience, receive a minimum of four hours of training on Section XI requirements and plant specific procedures for VT-2 visual examinations, and will pass the vision test requirements of IWA-2321, 1995 Edition. In addition to the requirements in Code Case N-546, Exelon Generation Company, LLC, has procedures to assure that consistent VT-2 visual examinations are performed. Exelon Generation Company, LLC, will continue to document the qualifications, training, and visual acuity of persons selected to perform the VT-2 examinations and maintain records that verify all of the requirements in the Code Case as specified herein, are met. This alternative to the current code requirements alleviates the need to contract certified VT-2 personnel to perform these examinations and reduces the administrative burden of maintaining an extensive Section XI qualification and certification program for VT-2 examination personnel.

Relief is requested in accordance with 10CFR50.55a(a)(3)(i). Code Case N-546 represents technically acceptable alternative rules to ASME Section XI Code requirements. The fact that this Code Case has not been endorsed in the Regulatory Guide in no way detracts from its technical adequacy since the major reason for its omission is the timing of its publication with respect to the most recent revision of the Regulatory Guide. That is, the subject Code Case is relatively recent and it is expected that it will be accepted in a subsequent revision of the Regulatory Guide.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-3 continued
Code Case N-546

Adoption of this alternative rule provides an acceptable level of quality and safety and does not compromise the adequacy of the LGS ASME Section XI Programs in meeting the intent of the ASME Code.

IV. ALTERNATE PROVISIONS

Exelon Generation Company, LLC, will meet the requirements contained in Code Case N-546 in its entirety as an alternative to the requirements of Section XI, IWA-2300 for qualifying VT-2 visual examiners. Additionally, Exelon Generation Company, LLC, has formal procedures so that consistent VT-2 visual examinations are performed, and will document and maintain records to verify that persons selected as VT-2 examiners are qualified. Use of this code case will provide a comparable level of quality and safety to that currently in place for VT-2 visual examinations.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-4
Code Case N-524

This Relief Request is NO LONGER REQUIRED. Code Case N-524 was approved for use without limitations per Reg. Guide 1.147, Inservice Inspection Code Case Applicability, ASME Section XI, Division 1, Revision 12, dated May 1999.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-5
Code Case N-566

1. IDENTIFICATION OF COMPONENTS

ASME Class 1, 2, and 3 Pressure Retaining Bolted Connections.

2. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Code, Section XI, 1989 Edition, IWA-5250(a)(2) requires that if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA -3100.

3. BASIS FOR ALTERNATIVE

Removal of pressure retaining bolting at mechanical connections for visual, VT-3 examination and subsequent evaluation, in locations where leakage has been identified, is not always the most discerning course of action to determine the acceptability of the bolting. The Code requirement to remove, examine, and evaluate bolting in this situation does not allow Exelon Generation Company, LLC, to consider other factors which may indicate the acceptability of mechanical joint bolting.

Other factors which should be considered when evaluating bolting acceptability when leakage has been identified at a mechanical joint include, but are not limited to: joint bolting material, service age of joint bolting materials, location of the leakage, history of leakage at the joint, evidence of corrosion with the joint assembled, and corrosiveness of process fluid.

Performance of the pressure test while the system is in service may identify leakage at a bolted connection that, upon evaluation, may conclude the integrity and pressure retaining ability of the joint is not challenged. It would not be prudent to negatively impact the availability of a safety system by removing the system from service to address a leak that does not challenge the system's ability to perform its safety function.

Code Case N-566 represents technically acceptable alternative rules to ASME Section XI Code requirements. The fact that this Code Case has not been endorsed in the Regulatory Guide in no way detracts from its technical adequacy since the major reason for its omission is the timing of its publication with respect to the most recent revision of the Regulatory Guide. That is, the subject Code Case is relatively recent and it is expected that it will be accepted in a subsequent revision of the Regulatory Guide.

Adoption of this alternative rule provides an acceptable level of quality and safety and does not compromise the adequacy of the LGS ASME Section XI Programs in meeting the intent of the ASME Code.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-5 continued
Code Case N-566

4. ALTERNATIVE PROVISIONS

Pursuant to 10CFR50.55a(a)(3)(i) Exelon Generation Company, LLC, proposes to implement the provisions of ASME Section XI Code Case N-566, Corrective Action for Leakage Identified at Bolted Connections, which allows the conduct an engineering evaluation of all leaking connections to determine whether any bolting requires removal and inspection, as an alternative to the corrective measure requirements of IWA-5250(a)(2).

When leakage is identified at Class 1, 2, or 3 bolted connections by VT-2 visual examination during system pressure testing, an evaluation will be performed to determine the susceptibility of the bolting to corrosion and assess the potential for failure. The evaluation will, at a minimum, consider the following factors:

A. Bolting materials
B. Corrosiveness of process fluid leaking
C. Leakage location
D. Leakage history at connection or other system components
E. Visual evidence of corrosion at connection (while connection is assembled)
F. Service age of bolting materials

When the pressure test is performed on a system that is in service or that Technical Specifications require to be operable, and the bolting is susceptible to corrosion, the evaluation shall address the connection's structural integrity until the next component/system outage of sufficient duration. If the evaluation concludes the system can perform its safety related function, removal of the bolt closest to the source of the leakage and a VT-1 not a VT-3 visual examination of the bolt will be performed and evaluated as stated below when the system or component is taken out of service for a sufficient duration (to accomplish other system maintenance activities).

For bolting that is susceptible to corrosion, and when the initial evaluation indicates that the connection cannot conclusively perform its safety function until the next component/system outage of sufficient duration, the bolt closest to the source of the leakage will be removed, and a VT-1 not a VT-3 visual examination will be performed and evaluated as follows:

Exelon Generation Company, LLC, shall apply the Class 1 requirements of IWB-3142.4, including the requirement for subsequent examinations on an increased frequency per IWB-2420(b) and (c) to bolting in Class 1, 2, and 3 components when acceptance of a relevant condition for continued service is based on analytical evaluation. When the engineering evaluation determines that bolting in Class 1, 2, and 3 components is to be removed to determine if the condition is relevant then Exelon Generation Company, LLC, shall perform a VT-1 visual examination using the acceptance criteria defined in ASME Section XI, IWB-3517, Standards for Examination Category B-G-1, Pressure Retaining Bolting Greater Than 2 Inch in Diameter, and Examination Category B-G-2, Pressure Retaining Bolting 2 Inch and Less in Diameter for the bolting removed for visual examination.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-5 continued
Code Case N-566

If any of the factors used for the evaluation indicates a potential for degradation of the bolting due to corrosion, then the most susceptible bolting will be removed and VT-1 (not VT-3) examined for corrosion, and evaluated in accordance with IWB-3517. When the removed bolt has evidence of degradation, additional bolting in the connection will be removed in accordance with IWB-2430, receive a VT-1 examination, and an evaluation in accordance with IWB-3517. If the results of the engineering evaluation indicate that bolting degradation is not expected, bolting need not be removed.

Performance of the pressure test while the system is in service may identify leakage at a bolted connection that, upon evaluation, may conclude the integrity and pressure retaining ability of the joint is not challenged. Further, if evidence exists which indicates that the leakage found is not a preexisting condition and the leakage is stopped, the concern for corrosion of the bolting material is reduced.

Exelon Generation Company, LLC's, proposal to perform a VT-1 examination instead of a VT-3 when bolting is removed and to apply Class 1 requirements for acceptance criteria, subsequent, and additional examinations when evaluating leakage at bolted connections in Class 1, 2, and 3 components meets or exceeds the requirements of Code Case N-566 and exceeds the requirements of the requirements of the ASME Section XI Code. The examination method is superior to the ASME Section XI Code requirement.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-6
(PBAPS RR-29)
Code Case N-508-1

I. IDENTIFICATION OF COMPONENTS

ASME Class 1, 2, and 3 Snubbers and Relief Valves Subject to Testing.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Code, Section XI, IWA-7000, provides the requirements that must be implemented whenever an item is replaced. IWA-7000 establishes both technical and administrative criteria.

Pursuant to 10CFR50.55a(a)(3)(i) Exelon Generation Company, LLC, proposes to implement the provisions of ASME Section XI Code Case N-508-1, "Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing", which is not yet approved by reference in Regulatory Guide 1.147.

III. BASIS FOR ALTERNATIVE

Adoption of Code Case N-508-1 will eliminate burdensome administrative controls and documentation requirements associated with an ASME Section replacement incurred solely from satisfying the testing requirements of snubbers and pressure relief valves.

Currently, when a snubber or relief valve is removed for the purposes of testing, the following two options are available:

A. Maintain the system or portion of the system in a degraded condition, while complying with Limerick Generating Station Technical Specification, until the removed item is tested, refurbished if required, and reinstalled.
B. Replace the item being tested with a "like" item, and test the removed item at a later date.

Per ASME, Section XI, the rotation of snubbers and relief valves, as addressed in the second option, is required to be treated as a Code replacement that must meet the requirements of IWA-7000. This entails the use of Replacement Programs, Replacement Plans, suitability evaluations, review and concurrence by the ANII, and maintenance of NIS-2 forms or other Section XI documentation to record the replacement. Such controls are appropriate when items are replaced for the purpose of design changes, failures, or expiration of component life, but are excessive for the removal and installation of snubbers and relief valves solely for the purpose of testing. Code Case N-508-1 addresses this inconsistency in the Code. Due to the nine provisions within the Code Case, the alternative criteria eliminates the burdensome administrative controls and documentation requirements associated with an ASME Section replacement. All other aspects of the replacement such as design, manufacture, ASME Section XI pressure testing requirements, operational limits and settings are still maintained. In addition, the implementation of Code Case N-508-1 does not change the testing requirements provided in the Limerick Generating Station Technical Specifications.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-6 continued
(PBAPS RR-29)
Code Case N-508-1

Code Case N-508-1 does not alter any Section XI requirements if a removed item requires any repair or replacement of Code parts. As required by paragraph (i) of the Code Case, repair or replacement of the removed item, when required, shall be performed in accordance with IWA-4000 for repairs and IWA-7000 for replacements. Because of this requirement, if the removed item requires the repair or replacement of a Code item, then this activity will be treated as a Section XI repair or replacement, and the required Section XI documentation will be generated.

The use of ASME Code Case N-508-1 as an alternative to IWA-7000 for the rotation of snubbers and relief valves for the purpose of testing, provides a reduction in burdensome administrative requirements and documentation. All technical requirements (e.g., design, fabrication, installation, testing, etc.) are still maintained in a manner that provides an acceptable level of quality and safety that is consistent with the criteria of ASME, Section XI.

IV. ALTERNATIVE PROVISIONS

Exelon Generation Company, LLC, proposes to use the alternative provisions of Code Case N-508-1, for the rotation of snubbers and relief valves for the purpose of testing, in its entirety.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-7
(PBAPS RR-30)
Code Case N-516-1

I. IDENTIFICATION OF COMPONENTS

ASME Class 1, 2, and 3 Components Subject to Underwater Repair or Replacement Activities.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Code, Section XI, IWA-4000 and IWA-7000, provide the general requirements for performing repairs and replacements. Specific criteria on performing underwater welding are not addressed. Pursuant to 10CFR50.55a(a)(3)(i) Exelon Generation Company, LLC, proposes to implement the provisions of ASME Section XI Code Case N-516-1, "Underwater Welding", which is not yet approved by reference in Regulatory Guide 1.147.

III. BASIS FOR ALTERNATIVE

ASME, Section XI, IWA-4000 and IWA-7000, do not address the requirements for welded repair or installation of replacement items by welding on ASME Class 1, 2 and 3 pressure boundary components when welding is performed underwater. To address this issue, ASME, Section XI, has issued Code Case N-516-1, "Underwater Welding". Code Case N-516-1 provides welding methods and requirements that may be used when welding for a repair or replacement activity is performed underwater.

Code Case N-516-1 was approved by the ASME Boiler and Pressure Vessel Code Committee on December 31, 1996, but is not yet endorsed in the most recent listing of NRC approved code cases provided in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1". The previous version of the Code Case, N-516, is endorsed in Revision 12 of Regulatory Guide 1.147. However, this version of the subject Code Case is only applicable for use on P-No. 8 and P-No. 4X materials. Revision 1 of the Code Case extends the applicability to underwater repairs and replacements made on components made of P-No.1, carbon steel materials as well. Authorization to utilize the guidance provided in Revision 1 of the subject Code Case will allow Exelon Generation Company, LLC, to control the performance of underwater welding in accordance with an appropriate industry standard.

Exelon Generation Company, LLC, considers the requirements for underwater welding provided in Code Case N-516-1 to be an improvement over existing requirements and as such will enhance the performance of repairs, replacements and modifications of the safety related components in its nuclear facilities. The Code Case will provide appropriate controls over the welding processes that are needed to implement such repairs, replacements, and modifications in a safe and effective manner. Exelon Generation Company, LLC, therefore regards these requirements as providing an acceptable level of quality and safety.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-7 continued
(PBAPS RR-30)
Code Case N-516-1

IV. ALTERNATIVE PROVISIONS

Exelon Generation Company, LLC, will use Code Case N-516-1 in its entirety with the following added limitation:

When welding is to be performed on high neutron fluence Class 1 material, then a mockup, using material with similar fluence levels, should be welded to verify that adequate crack prevention measures were used.

Performance qualifications shall be in accordance with Paragraph 3.2 in Code Case N-516-1 except that immediate retest following a failed mechanical bend test shall be in accordance with ASME Section IX, QW-320.

Procedure qualification shall be in accordance with Paragraph 3.1 in Code Case N-516-1. The Alternative Procedure Qualification Requirements of 5.0 shall not be used except as noted in Paragraph 4.(b)(4) for the additional requirements for qualification of filler metal.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-8
(PBAPS RR-31)
Code Case N-532

I. IDENTIFICATION OF COMPONENTS

ASME Class 1, 2, and 3 Components Subject to Inservice Inspection, Repair or Replacement.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME, Section XI, IWA-6200, requires the preparation of Inservice Inspection (ISI) Summary Reports, which contain completed Form NIS-1, "Owner's Report for Inservice Inspection" and Form NIS-2, "Owner's Report for Repair or Replacement". In accordance with IWA-6230, the ISI Summary Report is required to be submitted to the enforcement and regulatory authorities having jurisdiction at the plant within 90 days of the completion of the inservice inspections conducted each refueling outage.

ASME, Section XI, IWA-4800 and IWA-7500, reiterate the requirement of IWA-6000 to complete NIS-2 forms for repairs and replacements.

Pursuant to 10CFR50.55a(a)(3)(i) Exelon Generation Company, LLC, proposes to implement the provisions of ASME Section XI Code Case N-532, "Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000", including replacement activities per IWA-7000, which is not yet approved by reference in Regulatory Guide 1.147.

III. BASIS FOR ALTERNATIVE

ASME, Section XI, has recently reevaluated the Code criteria for reporting inservice inspection results, repairs and replacements. To address this issue, ASME, Section XI, has issued Code Case N-532, "Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000". Code Case N-532 provides an alternative to the current ASME, Section XI, repair and replacement documentation requirements as well as regulatory reporting requirements relating to inservice inspection. This alternative is intended to reduce the resources required to prepare NIS-2 forms and prepare and submit the ISI Summary Report required by ASME, Section XI, 1989 Edition, after each refueling outage. This is a significant reduction in the administrative burden required by ASME, Section XI, IWA-6000. The use of Code Case N-532 only affects documentation and reporting requirements and does not affect the level of quality or safety provided by the Inservice Inspection Program.

Code Case N-532 was approved by the ASME Boiler and Pressure Vessel Code Committee on December 12, 1994, but is not yet endorsed in the most recent listing of NRC approved code cases provided in Regulatory Guide 1.147.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-8 continued
(PBAPS RR-31)
Code Case N-532

The NRC Staff has made recommendations supporting the development of Code Case N-532 in SECY-94-093, "NRC Staff Assessment of Reporting Requirements for Power Reactor Licensees". The use of Code Case N-532 is consistent with the recommendations of SECY-94-093 and provides more meaningful documentation to the regulatory and enforcement authorities having jurisdiction at the plant.

This request to use Code Case N-532 includes compliance with the Code Case with the following clarification regarding reporting of "corrective measures". ASME, Section XI, uses the term "corrective measures" in two different ways. One use of the term involves Code required activities such as repairs and replacements. The other use of the term, as found in IWX-3000, involves maintenance activities that do not involve repairs or replacements. With this clarification, Exelon Generation Company, LLC, proposes not to report corrective measures which only include routine maintenance activities such as tightening threaded fittings to eliminate leakage, torquing of fasteners to eliminate leakage at bolted connections replacing valve packing due to unacceptable packing leakage, tightening loosened mechanical connections on supports, adjusting and realigning supports, cleaning up corrosion on components resulting from leakage, etc.

Including these routine maintenance activities in the Owner's Activity Report Form OAR-1 required by Code Case N-532 would be a significant expansion of current requirements. In addition, it would be an unnecessary reporting and review burden which provides little benefit. Reporting of these minor maintenance corrective measures has no safety significance and clutters the reporting of meaningful information on repairs, replacements, and evaluations performed to accept flaws and relevant conditions exceeding Section XI acceptance criteria. Corrective measures that refer to Code required activities, such as repairs and replacements, will be reported in compliance with Code Case N-532.

Exelon Generation Company, LLC, considers the alternative documentation and reporting requirements of Code Case N-532 to be an improvement to existing requirements. Because the use of this alternative only affects documentation and reporting requirements, Exelon Generation Company, LLC, considers this alternative to provide an acceptable level of quality and safety.

IV. ALTERNATIVE PROVISIONS

Exelon Generation Company, LLC, will use Code Case N-532 in its entirety with the clarification stated above regarding the provision in paragraph 2(c) of the Code Case for reporting corrective measures.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-9
(PBAPS CRR-08 and RR-33)
Code Case N-598

I. IDENTIFICATION OF COMPONENTS

ASME Class 1, 2, 3 and MC Components and Supports Subject to Inservice.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME, Section XI, Tables IWB-2412-1, IWC-2412-1, IWD-2412-1, IWE-2412-1 and Code Case N-491-1, Table -2410-2, list the required percentages of examinations that must be performed per period in accordance with Inspection Program B. These tables do not apply to those examinations that may be deferred until the end of the inspection interval as allowed by the Code. Per these tables, the number of examinations to be completed during the first period shall be between 16% and 34%. For the second period, the total number of examinations to be completed shall be between 50% and 67%, and by the end of the third period, 100% of the examinations for the interval shall be completed.

Code Case N-491-1, Table -2410-2, is being referenced because this Code Case is being implemented for the examination of supports. The percentages stated in Code Case N-491-1, Table -2410-2, are identical to those stated in Tables IWB-2412-1, IWC-2412-1, IWD-2410-2 and IWE-2412-1.

Pursuant to 10CFR50.55a(a)(3)(i) Exelon Generation Company, LLC, proposes to implement the provisions of ASME Section XI Code Case N-598, "Alternative Requirements to Required Percentages of Examinations" which is not yet approved by reference in Regulatory Guide 1.147.

III. BASIS FOR ALTERNATIVE

The ASME Code and Code Case N-491-1 tables referenced above were originally established such that approximately one third of the non-deferred examinations would be performed each period. Over the past 10 years, it has become increasingly more difficult to meet these percentages. The emergence of longer fuel cycles increases the likelihood that one of the periods will only have one refueling outage in it. In addition, efforts to shorten refueling outages have limited the amount of time available to perform examinations. These factors have made it difficult to complete the Code required percentages of examinations in the allotted time.

Code Case N-598 was developed to address this issue. It expands the range of examination completion percentages to allow examinations to be distributed more evenly between outages. This minimizes the need to schedule an excessive number of examinations during one outage just to meet the percentages required by ASME, Section XI, Tables IWB-2412-1, IWC-2412-1, IWD-2412-1, IWE-2412-1 and Code Case N-491-1, Table -2410-2. In addition, Code Case N-598 allows for a more uniform distribution between outages that is more conducive to performing quality examinations.

RELIEF REQUEST No. RR-12
Rev sion 3, continued
Table RR-12-9 continued
(PBAPS CRR-08 and RR-33)
Code Case N-598

During the development of Code Case N-598, two additional factors were considered when evaluating the impact of the Code Case on plant safety. The first was that the existing tables allow up to 50% of the examinations to be performed in the second and third periods, but only 34% can be performed in the first period. Therefore, the Inspection Plan B schedule is biased towards delaying examinations until the end of the interval. The more flexible percentages stated in Code Case N-598 allows for more examinations to be performed earlier in the interval. This should improve safety because any problems, should they exist, would be detected earlier in the interval.

The second factor that was considered when developing Code Case N-598 was that some minimum amount of examinations should be required in each period. To address this consideration, the Code Case, including Note (1), is structured such that examinations will be required during all three periods. Due to the factors documented above, Exelon Generation Company, LLC, considers that the alternative criteria of Code Case N-598 provide an acceptable, or improved, level of quality and safety.

IV. ALTERNATIVE PROVISIONS

Exelon Generation Company, LLC, will use Code Case N-598 for the required percentages of examinations for all Class 1, 2, 3 and MC components and supports.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-10
(PBAPS CRR-09)
Code Case N-601

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components Examination Category E-A, Item Numbers E1.12 and E1.20.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, 1992 Edition through 1992 Addenda, requires that a VT-3 visual examination be performed 100% at the end of the interval for Items E1.12 and E1.20.

An alternative is requested from the requirement to perform the VT-3 visual examinations entirely at the end of the interval for Items E1.12 and E1.20.

Pursuant to 10CFR50.55a(a)(3)(i) Exelon Generation Company, LLC, proposes to implement the provisions of ASME Section XI Code Case N-601, "Extent and Frequency of VT-3 Visual Examination for Inservice Inspection of Metal Containments" which is not yet approved by reference in Regulatory Guide 1.147.

III. BASIS FOR ALTERNATIVE

Code Case N-601, "Extent and Frequency of VT-3 Visual Examination for Inservice Inspection of Metal Containments" provides an alternative to the Code requirement of performing 100% of the VT-3 examinations on Items E1.12 and E1.20 at the end of the interval. Exelon Generation Company, LLC, believes it is more important to perform visual examinations on the accessible surfaces of the containment structure and vent system during the course of the interval rather than at the end. This way, the integrity of the containment and vent system at the Limerick Generating Station, Units 1 and 2, can be better monitored between the 10CFR50, Appendix J testing, and the visual examinations required by Table IWE-2500-1. The successive inspection requirements of IWE-2420 will be maintained. Therefore, this alternative will provide an acceptable level of quality and safety as compared to the current requirements.

IV. ALTERNATE PROVISIONS

Exelon Generation Company, LLC, will perform the VT-3 visual examinations on accessible surface areas of the containment structure and vent system in accordance with Code Case N-601. This code case provides an alternative to perform the visual examinations at any time during the interval, provided the requirements for successive inspections stated in IWE-2420 are met.

RELIEF REQUEST No. RR-12
Rev sion 3, continued
Table RR-12-11
(PBAPS CRR-10)
Code Case N-605

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components Examination Category E-C, Item Number E4.12

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, 1992 Edition through 1992 Addenda, IWE-2500(c)(3) requires one foot square grids be used when ultrasonic thickness measurements are performed on augmented examination surface areas. The number and location of the grids is determined by the Owner. IWE-2500(c)(4) requires that the minimum wall thickness within each grid be determined.

An alternative is requested from the requirement to use one foot square grids for augmented examination areas, and the requirement to determine the minimum wall thickness within each grid.

Pursuant to 10CFR50.55a(a)(3)(i) Exelon Generation Company, LLC, proposes to implement the provisions of ASME Section XI Code Case N-605, "Alternative to the Requirements of IWE-2500(c) for Augmented Examination of Surface Areas" which is not yet approved by reference in Regulatory Guide 1.147.

III. BASIS FOR ALTERNATIVE

IWE-2500(c)(3) and IWE-2500(c)(4) of the 1992 Edition, 1992 Addenda of ASME Section XI require that the minimum thickness within each one foot square grid of surface areas requiring augmented examination be marked such that periodic reexamination of the location can be performed. Thickness readings are point readings. Numerous readings are necessary to identify the minimum thickness within each grid. This only identifies the thinnest area. Periodic examination of the minimum thickness point only monitors that point. It may not be the area that is the most susceptible to accelerated degradation.

In Code Case N-605, Table -2500-2, "Ultrasonic Thickness Measurements for Augmented Examinations", provides the proposed alternative to the one foot square grid area required by IWE-2500(c)(3). Table -2500-2 requires examination at the grid intersections. The grid line intersections may not exceed 12 inches, and may be as small as 2 inches.

For a sample area of 50 square feet, Code Case N-605, Table -2500-2 requires a minimum 100 locations be monitored. In this instance, utilizing Table -2500-2 monitors more locations than required by IWE-2500(c)(3).

For sample areas greater than 100 square feet, Code Case N-605, Table -2500-2 requires that sufficient points be monitored to ensure at least a 95% confidence level that the thickness of the base metal is reduced by no more than 10% of the nominal plate thickness at 95% of the grid line intersections. Table -2500-2 also requires additional examinations when any measurement reveals that the wall thickness is reduced by more than 10% of the nominal plate thickness.

RELIEF REQUEST No. RR-12
Revision 3, continued
Table RR-12-11 continued
(PBAPS CRR-10)
Code Case N-605

For all examination areas, should the measurements at a grid line intersection reveal that the base material is reduced by more than 10% of the nominal plate thickness, Code Case N-605, Table -2500-2 requires that the minimum wall thickness within each adjoining grid be determined. This is similar to the examination requirements of IWE-2500(c)(4) except that Table -2500-2 focuses resources on areas that have exhibited degradation rather than areas that have not exhibited degradation. Therefore, this proposed alternative will provide an acceptable level of quality and safety.

IV. ALTERNATE PROVISIONS

Exelon Generation Company, LLC, will use Code Case N-605 to determine examination requirements for ultrasonic thickness measurements on areas requiring augmented examination.

RELIEF REQUEST No. RR-13
Revision 3
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 (exempt and non-exempt) pressure retaining components within the pressure retaining boundary of pressure vessels, piping, pumps, and valves, Examination Category C-H, Item Numbers C7.10 through C7.80 inclusive.

Class 3 (exempt and non-exempt) pressure retaining components within the pressure retaining boundary, Examination Categories D-A, D-B, and D-C, Item Number D1.10, D2.10, and D3.10, respectively.

The specific Class 2 and 3 components covered by this relief request are detailed in Tables RR-13-1 through RR-13-8.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI 1989 Edition, Examination Category C-H requires the pressure retaining components within each system boundary be subjected to the system pressure tests of IWC-5000 and visually (VT-2) examined.

ASME Section XI 1989 Edition, Examination Categories D-A, D-B, and D-C require the pressure retaining components within each system boundary be subjected to the system pressure tests of IWD-5000 and visually (VT-2) examined.

The required system pressure tests shall be performed during the inservice inspection interval in accordance with Table IWC-2500-1 or Table IWD-2500-1, as applicable.

Pursuant to 10CFR50.55a(a)(3)(ii) Exelon Generation Company, LLC, request relief from meeting the subject pressure test requirements for the specific components listed in Tables RR-13-1 through RR-13-8 due to hardship imposed by plant design and/or redundant testing. Individual test requirements requiring relief are as detailed in the Tables.

III. BASIS FOR ALTERNATIVE

Pressure testing in accordance with some or all of the requirements of IWC-5000 or IWD-5000, as applicable, for the affected components is impractical due to plant/system design and/or redundant test requirements as detailed in Table(s) RR-13-1 through RR-13-8.

In all cases, plant modification to facilitate the required testing represents undue hardship and/or alternate testing provides adequate assurance of pressure boundary integrity.

RELIEF REQUEST No. RR-13
Revision 3, continued

IV. ALTERNATE PROVISIONS

Any alternate test provisions, where practical, are as proposed in Tables RR-13-1 through RR-13-8.

Exelon Generation Company, LLC, shall perform the required leakage tests at the peak calculated containment pressure using a test procedure that provides for the detection and location of through-wall leakage in the pipe segments being tested. CM-7

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-1
(Formerly Table RR-13-1.2)
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 3 Nuclear Boiler Vessel instrumentation tubing to drywell pressure instrumentation outboard of HV-42-147A, B, C, and D. (Reference P&ID: ISI-M-42, Sheet 1, ISI-M-57, Sheet 1, ISI-M-59, Sheet 1)

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWD-5221, System Inservice Test and
IWD-5223, System Hydrostatic Test

III. BASIS FOR ALTERNATIVE

Normal Drywell pressure is less than 1 psig. The pressurizing fluid is nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than 1 psig driving pressure would be inconclusive.

LGS Technical Specifications require channel checks every 12 hours to verify drywell pressure instrumentation operability. This is performed by verifying proper pressure readings. A significant tubing leak will cause an improper reading, and will be corrected and retested. The tubing and components are also included in the Integrated Leak Rate Test (ILRT) boundary.

IV. ALTERNATE PROVISIONS

LGS Technical Specification operability checks and Integrated Leak Rate Testing provide assurance of component integrity and will be utilized to satisfy ASME Section XI requirements.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-2
(Formerly Table RR-13-1.3)
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 RCIC Turbine Exhaust Vacuum Breaker lines HBB-101 and HBB-145 between and including valves HV-49-1F084, HV-49-1F080, HV-49-1F060 and 49-1F001.
(Reference P&ID: ISI-M-49, Sheet 1)

Class 2 RCIC Vacuum Pump Exhaust to Suppression Pool, HBB-150 between 49-1F028 and HV-49-1F002, 49-1038 and 49-1F055. (Reference P&ID: ISI -M-49, Sheet 1)

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWC-5221, System Pressure Test During System Functional/Inservice Tests and,
IWC-5222, System Hydrostatic Test

III. BASIS FOR ALTERNATIVE

Normal Drywell pressure is less than one (1) psig. The pressurizing fluid is nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than one (1) psig driving pressure would be inconclusive.

Appendix J Local Leak Rate Tests (LLRTs) are performed once per Refuel Outage. During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a periodic system functional test. As such, the LLRT offers the following advantages over system pressure tests:

A. LLRTs are performed more frequently than periodic system functional tests and the ten year hydrostatic test.

B. LLRTs have the ability to quantify leakage that is not feasible with VT-2 inspections on this essentially gas-filled piping.

C. LLRTs conservatively include through valve leakage that would not be identified in a VT-2 inspection.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-2 continued

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakage. In the event the LLRT fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-3
(Formerly Table RR-13-1.4)
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 HPCI Turbine Exhaust Vacuum Breaker lines HBB-108 and HBB-144 between and including valves HV-55-1F095, HV-55-1F093, HV-55-1F072 and 55-1F021. (Reference P&ID: ISI-M-55, Sheet 1)

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWC-5221, System Pressure Test During System Function/Inservice Tests and,
IWC-5222, System Hydrostatic Test.

III. BASIS FOR ALTERNATIVE

Normal Drywell pressure is less than one (1) psig. The pressurizing fluid is nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than one (1) psig driving pressure would be inconclusive.

Appendix J LLRTs are performed once per Refuel Outage. During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a periodic system functional test. As such, the LLRT offers the following advantages over system pressure tests:

A. LLRTs are performed more frequently than periodic system functional tests and the ten year hydrostatic test.

B. LLRTs have the ability to quantify leakage that is not feasible with VT-2 inspections on this essentially gas-filled piping.

C. LLRTs conservatively include through valve leakage that would not be identified in a VT-2 inspection.

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakage. In the event the LLRT fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-4
(Formerly Table RR-13-1.5)
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 3 Containment Atmospheric Control tubing to suppression pool pressure and level instrumentation outboard of SV-57-101. (Reference P&ID: ISI-M-57, Sheet 1, ISI-M-52, Sheet 1)

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWD-5221, System Inservice Test and
IWD-5223, System Hydrostatic Test.

III. BASIS FOR ALTERNATIVE

Normal suppression pool pressure is less than one (1) psig. The pressurizing fluid is nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than one (1) psig driving pressure would be inconclusive.

LGS Technical Specifications require monitoring suppression pool pressure every 12 hours to verify proper pressure. Additionally, Technical Specifications require channel checks every 24 hours to verify operability of the suppression pool level indicators. This is performed by verifying proper level readings. A significant tubing leak will give an improper reading, and will be corrected and retested. Also, the tubing and components are included in the Integrated Leak Rate Test (ILRT) boundary.

IV. ALTERNATE PROVISIONS

LGS Technical Specification suppression pool instrumentation operability checks and Integrated Leak Rate Test (ILRT) provide assurance of component integrity and will be utilized to satisfy ASME Section XI requirements.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-5
(Formerly Table RR-13-1.6)
Refer to Table A-1 for Approval Status

I. Identification of Components

Class 2 Post-LOCA Recombiner piping HBB-128 and HBB-127 between and including "A" Recombiner and valves HV-57-161 and HV-57-162. HBB-126 and HBB-124 between and including "B" Recombiner and valves HV-57-163 and HV-57-164. (Reference P&ID: ISI-M-57, Sheets 1, 2)

Class 2 hydrogen/oxygen sampling lines HCB-116 and HCB-117, between connections on the Combustible Gas Analyzer Package 10-S205, and valves SV-57-159, SV-57-141, SV-57-142 and SV-57-147B, SV-57-143, SV-57-144 and SV-57-146B, and SV-57-145(HCB-117). HCB-116 and HCB-117, between connections on the Combustible Gas Analyzer Package 10-S206, and valves SV-57-184 and SV-57-146A, SV-57-186 and SV-57-147A, SV-57-195, SV-57-190 and 57-1090, and SV-57-185(HCB-117). (Reference P&ID: ISI-M- 57, Sheets 1, 2, 3).

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWC-5221, System Pressure Test During System Functional/Inservice Tests and,
IWC-5222, System Hydrostatic Test.

III. BASIS FOR ALTERNATIVE

During normal plant operation, this piping is either isolated or less than one (1) psig (normal containment pressure). The pressurizing fluid is essentially nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than one (1) psig driving pressure would be inconclusive.

System Contaminated Pipe Inspection (CPI) is performed once per Refuel Outage on post-LOCA Recombiner piping. During CPI testing associated with the Leak Reduction Program (UFSAR 6.2.8), this piping is pressurized to 44 psig. CPIs for this system are performed similar to 10CFR50 Appendix J Local Leak Rate Testing and, as such, offer the following advantages over system pressure tests:

A. CPIs are performed more frequently than periodic system functional tests and the ten year hydrostatic tests.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-5, continued

B. CPIs have the ability to quantify leakage that is not feasible with a VT-2 inspection on this air filled piping.

C. CPIs conservatively include through valve leakage that would not be identified in a VT-2 inspection.

In addition, for the hydrogen/oxygen sampling lines the combustible gas analyzer continuously samples containment. A tubing leak will cause improper (high) readings that would be corrected and retested.

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakage. In the event the CPI fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

System Contaminated Pipe Inspection (CPI) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-6
(Formerly Table RR-13-1.7)
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 Primary Containment Atmospheric Control piping, as follows:

Hydrogen/oxygen sample lines HCB-116, between and including containment penetrations X-28A and X-28B and valves SV-57-142, SV-57-143, SV-57-144 and SV-57-195. Reference P&ID ISI-M-57, Sheets 1 and 2.

Drywell low flow nitrogen makeup line HCB-116, between and including containment penetration X-62 and valves HV-57-116 and SV-57-159. Reference P&ID ISI-M-57, Sheet 1.

Hydrogen/oxygen sample lines HCB-116, between and including containment penetrations X-221A and valves SV-57-141 and SV-57-184. Reference P&ID ISI-M-57, Sheets 1 and 2.

Nitrogen purge line HBB-125, between and including valves HV-57-109, HV-57-121 and HV-57-131. Reference P&ID ISI-M-57, Sheet 1.

Drywell air purge line HBB-124, between and including valves HV-57-123 and HV-57-135. Reference P&ID ISI-M-57, Sheet 1.

Suppression pool air purge line HBB-126, between and including valves HV-57-124 and HV-57-147. Reference P&ID ISI-M-57, Sheet 1.

Drywell purge to standby gas treatment line HBB-127, between and including valves HV-57-114 and HV-57-115, and line HCB-117, between and including connection to line HBB-127 and valve SV-57-145. Reference P&ID ISI-M-57, Sheets 1 and 2.

Suppression pool low flow nitrogen makeup line HCB-116, between and including containment penetration X-220A, valve SV-57-190 and connection to drywell low flow nitrogen makeup line HCB-116. Reference P&ID ISI-M-57, Sheets 1 and 2.

Hydrogen/oxygen sample line HCB-116, between and including containment penetration X221B and valves SV-57-186 and HV-55-126. Reference P&ID's ISI-M-57, Sheet 2, and ISI-M-55, Sheet 1.

Drywell purge exhaust bypass line HBB-127, between and including valves 57-1807 and HV-57-117. Reference P&ID ISI-M-57, Sheet 2.

Suppression pool purge exhaust bypass line HBB-128, between and including valves 57-1810 and HV-57-118. Reference P&ID ISI-M-57, Sheet 2.

Suppression pool purge air exhaust lines HBB-128 and HCB-117, between and including valves HV-57-104, HV-57-112 and SV-57-185. Reference P&ID ISI-M-57, Sheet 2.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-6, continued

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWC-5221, System Pressure Test During System Functional/Inservice Tests and,
IWC-5222, System Hydrostatic Test.

III. BASIS FOR ALTERNATIVE

During normal plant operation, this piping is either isolated or less than one (1) psig (normal containment pressure). The pressurizing fluid is essentially nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than one (1) psig driving pressure would be inconclusive.

Appendix J LLRTs are performed once per Refuel Outage. During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a periodic system functional test. As such, the LLRT offers the following advantages over system pressure tests:

A. LLRTs are performed more frequently than periodic system functional tests.

B. LLRTs have the ability to quantify leakage that is not feasible with VT-2 inspection on this essentially gas-filled piping.

C. LLRTs conservatively include through valve leakage that would not be identified in a VT-2 inspection.

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakage. In the event the LLRT fails to meets its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-7
(Formerly Table RR-13-1.10)
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 Plant Process Radiation Monitoring System piping HCB-128, between and including valves 26-1009, 26-1011, SV-26-190A & B, and 26-1010, 26-1012, SV-26-190C & D. (Reference P&ID: ISI-M-26, Sheets 1, 2)

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWC-5221, System Pressure Test During System Functional/Inservice Tests and,
IWC-5222, System Hydrostatic Test.

III. BASIS FOR ALTERNATIVE

During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a system pressure test. As such, the LLRT offers the following advantages over system pressure tests:

A. LLRTs are performed more frequently than periodic system pressure tests and the ten year hydrostatic test.

B. LLRTs have the ability to quantify leakage that is not feasible with VT-2 inspections on air systems.

C. LLRTs conservatively test some unclassified piping and includes through valve leakage that would not be identified in a VT-2 inspection.

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakage. In the event the LLRT fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance would be performed, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-8
(Formerly Table RR-13-1.11)
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2 Primary Containment Instrument Gas System piping, as follows:

HCB-124 piping and components at penetration X-3D, between and including valves HV-59-151B and 59-1111.

HCB-124 piping and components at penetration X-27A, between and including valves HV-59-151A and 59-1129.

HCB-110 piping and components at penetration X-3B, between and including valves HV-59-129B and 59-1005B.

HCB-110 piping and components at penetration X-40H, between and including valves HV-59-129A and 59-1005A.

Tubing and components from and including valves XV-59-141A, B, C, D, & E; to penetrations X-35C, D, E, F, & G respectively.

HCB-110 piping and components at penetration X-35B, between and including valves HV-59-131 and 59-1056.

HCB-109 piping and components at penetration X-40F, between and including valves HV-59-102 and HV-59-101.

HCB-110 piping and components at penetration X-218, between and including valves HV-59-135 and 59-1001. (Reference P&ID: ISI-M-59, Sheet 1).

RELIEF REQUEST No. RR-13
Revision 3, continued

Table RR-13-8, continued

II. CODE REQUIREMENT FROM WHICH AN ALTERNATIVE IS REQUESTED

IWC-5221, System Pressure Test During System Functional/Inservice Tests and,
IWC-5222, System Hydrostatic Test.

III. BASIS FOR ALTERNATIVE

10CFR50 Appendix J Local Leak Rate Testing (LLRT) meets the intent of the ASME requirement.

Although Local Leak Rate tests use a lower pressure (44 psig) than normal Containment Instrument Gas pressure, they offer the following advantages over system pressure tests:

A. LLRTs are performed more frequently than periodic system pressure tests and the ten year hydrostatic test.

B. LLRTs have the ability to quantify leakage that is not feasible with VT-2 inspections on air systems.

C. LLRTs conservatively test some ur classified piping and includes through valve leakage that would not be identified in a VT-2 in spection.

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakage. In the event the LLRT fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance would be performed, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST No. RR-14
Revision 0

This Relief Request is NO LONGER REQUIRED.

RELIEF REQUEST No. RR-15
Revision 0

This Relief Request is NO LONGER REQUIRED.

RELIEF REQUEST No. RR-16
Revision 0

This Relief Request is NO LONGER REQUIRED.

RELIEF REQUEST No. RR-17
Revision 1

This Relief Request is NO LONGER REQUIRED.

RELIEF REQUEST No. RR-18
Revision 0

This Relief Request is NO LONGER REQUIRED.

RELIEF REQUEST No. RR-19
Revision 0

NOT USED

RELIEF REQUEST No. RR-20
Revision 0

This Relief Request is NO LONGER REQUIRED

RELIEF REQUEST No. RR-21
Revision 0

NOT USED

RELIEF REQUEST No. RR-22
Revision 1

This Relief Request is NO LONGER REQUIRED.

RELIEF REQUEST No. RR-23
Revision 1
Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class 2, High Pressure Coolant Injection (HPCI) Pump Turbine - steam supply / exhaust lines, and associated drains, vents, and lube oil cooler supply/outlet lines (see Figures RR-23-1 and RR-23-2)

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI Code Case, N-498-1 was approved for use at Limerick Generating Station (LGS), Unit 1, by NRC Safety Evaluation, dated June 29, 1995. Code Case 498-1 allows a system pressure test to be conducted on safety Class 2 components as an alternative to the ten-year system hydrostatic test, required by the ASME Section XI Code, Examination Category C-H. The system pressure test alternative provided by the Code Case however, requires a 4 hour hold time at test pressure, before performing the required visual examination, for components which are insulated. Since the components identified above are insulated, a 4 hour hold time would be required for this test. Therefore, a reduction in the 4 hour hold time, for LGS Unit 1, is the requirement from which relief is being requested.

III. BASIS FOR RELIEF

As a part of the Emergency Core Cooling System (ECCS), the HPCI System is not required to operate during normal plant operation. This system is however periodically tested in accordance with other applicable requirements. These periodic tests are conducted to verify the operability of the applicable components. The functional test conducted for the HPCI Pump and associated turbine steam supply and exhaust system normally includes approximately 90 minutes of pump run time. In order to satisfy the 4 hour hold time requirement of Code Case N-498-1, the test would require a HPCI Pump run in excess of 5 hours (hold time plus examination time). Running the HPCI System functional test for this length of time is not practical, and represents an undue hardship on the facility, without a compensating increase in the level of quality and safety.

Operating the HPCI Pump for the period of time required to satisfy the 4 hour time, would subject the facility to unnecessarily excessive heat loads. Control of these heat loads, would require the operation of additional safety related equipment, and challenge the Technical Specification limitations placed on the maximum allowable Suppression Pool water temperature.

Removal of the insulation from the subject components, in order to qualify for the 10 minute hold time allowed by the Code Case, would be equally burdensome. The cost associated with insulation removal and reinstallation, including resource diversion, radiation exposure, and additional radwaste would not be warranted.

Additionally, the Section XI periodic pressure test requirements, which have been imposed on this system during the first inspection interval (Functional Test, per IWA-5211 (b)), only require a 10 minute hold time.

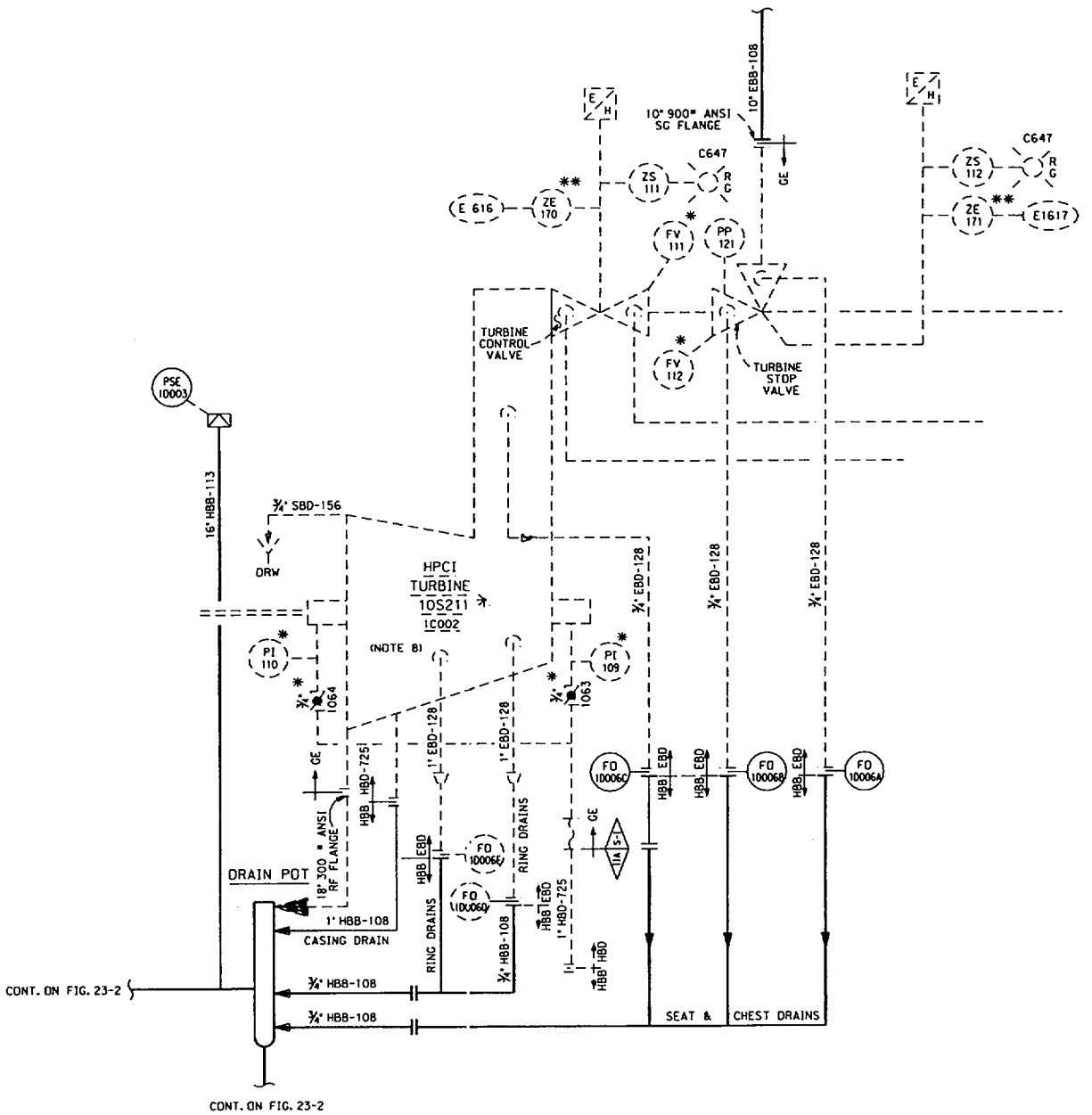
RELIEF REQUEST No. RR-23
Revision 111 continued

Further, the ASME Section XI Committee is in the process of revising Code Case N-498-1 to remove the 4 hour hold time requirement. This proposed revision is in recognition of the unusual difficulties and hardship imposed by the 4 hour hold time on certain systems.

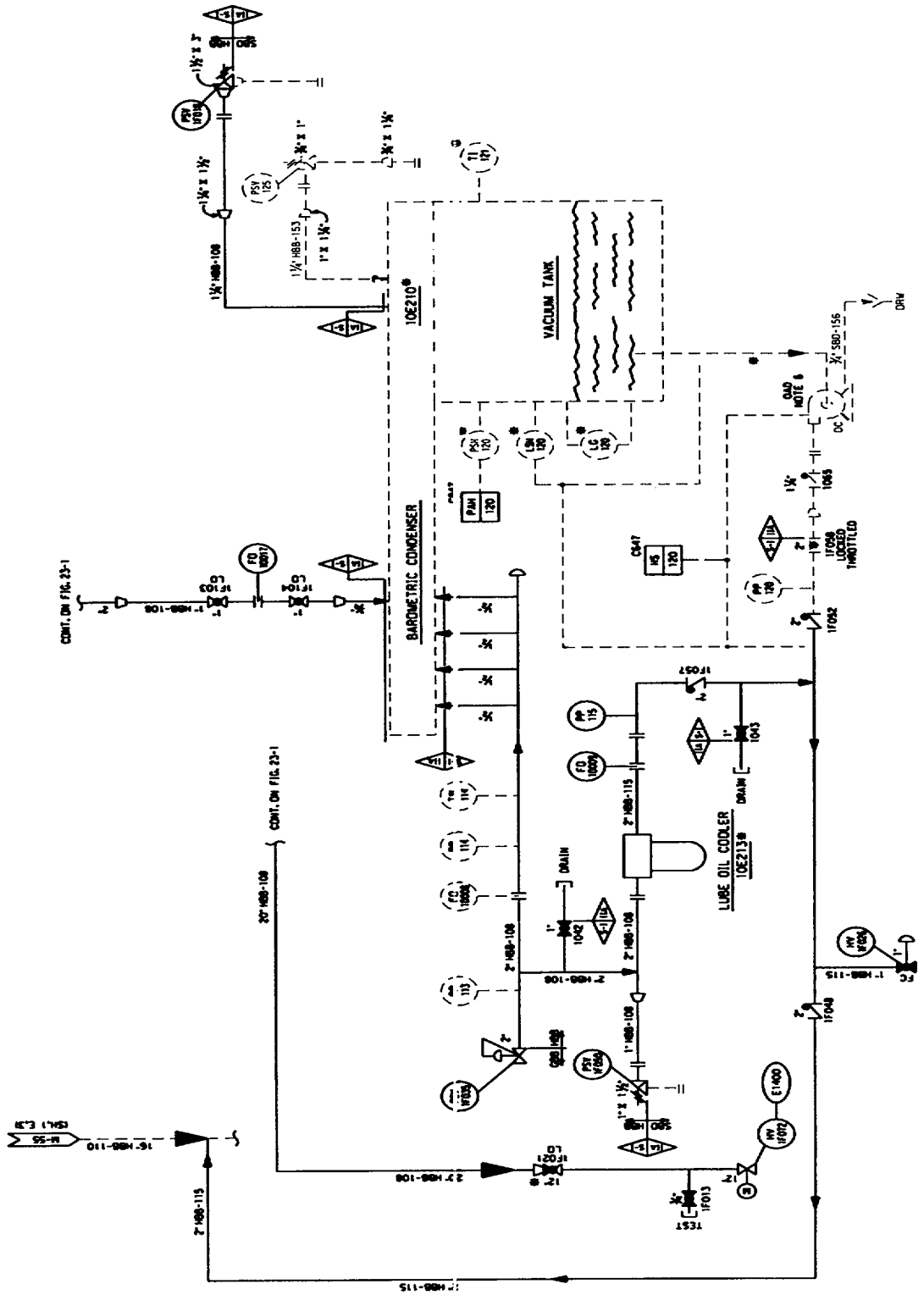
IV. ALTERNATE PROVISIONS

The system pressure test described in Code Case N-498-1 will be conducted as required, except that a 10 minute hold time will be used in lieu of the 4 hour hold time requirement. This 10 minute hold time will match the hold time which has been required for the previous Section XI ISI Program pressure testing of this system.

RELIEF REQUEST No. RR-23
Figure RR-23-1



RELIEF REQUEST No. RR-23
Figure RR-23-2



RELIEF REQUEST No. RR-24
(PBAPS CRR-01)
Alternative Criteria for VT-3 Visual Examination of Seals and Gaskets
Revision 0

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Category E-D, Seals, Gaskets and Moisture Barriers, Item Numbers E5.10, Seals, and E5.20, Gaskets.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Table IWE-2500-1, Examination Category E-D requires a visual examination, VT-3, of seals and gaskets on airlocks, hatches, and other devices that are required to assure containment leak-tight integrity. Examination of 100% of each component is required once each inspection interval.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from performing the Code-required visual examination, VT-3, of containment seals and gaskets.

III. BASIS FOR ALTERNATIVE

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Seals and gaskets receive a 10CFR50 Appendix J test. As noted in 10CFR50 Appendix J, the purpose is to measure leakage of containment or penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. Although not required by the Code, practical examination considerations of seals and gaskets require the joints, which are proven adequate through Appendix J testing, to be disassembled. For electrical penetrations, this would involve a pre-maintenance Appendix J test, determination of cables at electrical penetrations if enough cable slack is not available, disassembly of the joint, removal and examination of the seals and gaskets, reassembly of the joint, re-termination of the cables if necessary, post maintenance testing of the cables, and a post maintenance Appendix J test of the penetration. The work required for the Containment Hatches would be similar except for the de-termination, re-termination, and testing of cables. This imposes the risk that equipment could be damaged. The 1992 Edition, 1993 Addenda, of Section XI recognizes that disassembly of joints to perform these examinations is not warranted. Note 1 in Examination Category E-D was modified in the 1995 Edition of Section XI to state that sealed or gasket connections need not be disassembled solely for performance of examinations. However, without disassembly, most of the surface of the seals and gaskets would be inaccessible.

For those penetrations that are routinely disassembled, a Type B test is required upon final assembly and prior to start-up. Since the Type B test will assure the leak tight integrity of primary containment, the performance of the visual examination would not increase the level of safety or quality.

RELIEF REQUEST No. RR-24
(PBAPS CRR-01)
Revision 0, continued

Seals and gaskets are not part of the containment pressure boundary under current Code rules (NE-1220 (b)). When the airlocks and hatches containing these materials are tested in accordance with 10CFR50, Appendix J, degradation of the seal or gasket material would be revealed by an increase in the leakage rate. Corrective measures would be applied and the component retested. Repair or replacement of seals and gaskets is not subject to Code (1992 Edition, 1992 Addenda) rules in accordance with Paragraph IWA-4111(b)(5) of ASME Section XI.

The visual examination of seals and gaskets in accordance with IWE-2500, Table IWE-2500-1 is a burden without any compensating increase in the level of safety or quality. This requirement was removed in the 1997 Addenda of ASME Section XI, and is not included in the 1998 Edition. Relief is requested in accordance with 10CFR50.55a(a)(3)(i). Compliance with the specified requirements of this section will provide an acceptable level of quality and safety. Testing the seals and gaskets in accordance with 10CFR50 Appendix J will provide adequate assurance of the leak-tight integrity of the seals and gaskets.

IV. ALTERNATE PROVISIONS

The leak-tightness of seals and gaskets will be tested in accordance with 10CFR50, Appendix J. No additional alternatives to the visual examination, VT-3, of the seals and gaskets will be performed.

RELIEF REQUEST No. RR-25
(FBAPS CRR-02)
Alternative Requirements for Qualification and Certification of Nondestructive Examination Personnel
Revision 0

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components and Class CC Concrete Components, Examination Categories E-A, E-C, E-D, E-G, E-P and L-A, all Item Numbers.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Subarticle IWA-2300 requires NDE personnel to be qualified and certified using a written practice in accordance with CP-189, Standard for Qualification and Certification of Nondestructive Testing Personnel, as amended by ASME Section XI.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from the provisions of Subarticle IWA-2300, requiring qualification and certification to a written practice in accordance with CP-189 as amended by the requirements of this Division.

III. BASIS FOR ALTERNATIVE

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. A written practice based on the requirements of CP-189, as amended by the requirements of the Subarticle IWA-2300, to implement Subsections IWE and IWL duplicates efforts already in place for all other subsections. 10 CFR 50.55a references the 1989 Edition of ASME Section XI for all other subsections. Subarticle IWA-2300 of the 1989 Edition requires a written practice based on SNT-TC-1A, as amended by the requirements of Subarticle IWA-2300. Further, Subarticle IWA-2300 of the 1992 Edition, 1992 Addenda, states, "Certification based on SNT-TC-1A are valid until recertification is required." Visual examination is the primary nondestructive examination method required by Subsections IWE and IWL. Neither CP-189 nor SNT-TC-1A specifically includes visual examination; thus, the Code requires qualification and certification to comparable levels as defined in CP-189 or SNT-TC-1A, as applicable, and the Employer's written practice. Development and administration of a second program would not enhance safety or quality and would constitute a burden, particularly in developing a second written practice, tracking of certifications, and duplication of paperwork. This duplication would also apply to NDE vendor programs. Updating to CP-189 as referenced in the 1992 Edition, 1992 Addenda, for Subsections IWB, IWC, etc., would require a similar request for relief. Therefore an alternative is requested in accordance with 10CFR50.55a(a)(3)(i) The alternative will provide an acceptable level of quality and safety.

IV. ALTERNATE PROVISIONS

Examinations required by Subsection IWE and IWL shall be conducted by personnel qualified and certified to a written practice based on SNT-TC-1A in accordance with the 1989 Edition of ASME Section XI, which is the Code of record for Subsections IWB, IWC, IWD and IWF at LGS for the current (i.e., second) interval.

RELIEF REQUEST No. RR-26
Revision 0
Alternative Requirements for Remote Visual Examinations

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class CC Concrete Components, Examination Category L-A, Concrete, Item Number L.1.11, Concrete Surface All Areas, and Item Number L1.12, Concrete Surface Suspect Areas.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Table IWL-2500-1 requires visual examination, VT-3C, of all containment concrete surface areas and visual examination, VT-1C, of selected containment concrete surfaces with suspected indications of damage or degradation. The VT-1C and VT-3C methods of examinations shall be performed in accordance with paragraphs IWL-2310, Visual Examination and Personnel Qualification and IWA-2210, Visual Examinations. Paragraph IWA-2210 requires specific minimum illumination and maximum direct examination distance for performing the visual examinations.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from the requirements of paragraph IWA-2210, Visual Examinations, for minimum illumination and maximum direct examination distance when examining Class CC components under Paragraph IWL-2310.

III. BASIS FOR RELIEF

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. In addition to the requirements of Subsection IWL, the rulemaking also imposes the requirements of Subsection IWA of the 1992 Edition, 1992 Addendum, of ASME Section XI for minimum illumination and maximum direct examination distance of Class CC components, specifically for the examination of concrete under Paragraph IWL-2510.

Accessibility to portions of the containment structure make it a hardship to obtain the maximum direct examination distance and minimum illumination requirements. The installation of extensive temporary scaffold systems or a climbing scaffold system to access these portions of the containment would be necessary. These scaffolds would provide limited access due to containment geometry restrictions as well as structural and equipment interferences. The installation and removal of these scaffolds would increase both worker radiation exposure and challange personnel safety in order to meet Paragraph IWA-2210 requirements.

The NRC staff received seven comments that were consolidated into Public Comment # 2.3 in Part III of Attachment 6A to SECY-96-080. The Staff response to these concerns is as follows, "Comments received from ASME members on the containment committees indicate that the newer, more stringent requirements of IWA-2210 were not intended to be used for the examination of containments and were inadvertently included in Subsection IWL. The NRC agrees that remote examinations are the only practical method for inspecting much of the containment surface area. § 50.55a(b)(2)(x)(B) has been added to the final rule which contains alternative lighting and resolution requirements which may be used in lieu of the requirements contained in IWA-2210-1."

RELIEF REQUEST No. RR-26
Revision 0, continued

However, as specified within 50.55a(b)(2)(x)(B) of the final rule, this alternative for lighting and resolution requirements applies only to Subsection IWE. An alternative is requested in accordance with 10CFR50.55a(a)(3)(i) for Subsection IWL. The Responsible Engineer will identify minimum size of indications of interest. A demonstration of the procedure and equipment to be used for remote visual examination capable of resolving these minimum indications to the satisfaction of the Responsible Engineer and the Authorized Nuclear Inservice Inspector (ANII), as allowed per IWA-2240, shall be documented. The use of the alternative lighting and resolution requirements allowed for IWE remote visual examinations per 10CFR50.55a(b)(2)(B) for the IWL remote visual examinations will provide an acceptable level of quality and safety.

IV. ALTERNATE PROVISIONS

When performing remotely the visual examinations required by Subsection IWL, Paragraph IWL-2510, the maximum direct examination distance specified in Table IWA-2210-1 may be extended, and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.

RELIEF REQUEST No. RR-27
(FBAPS CRR-03)
Alternative Criteria for Preservice Inspection of Reapplied Paint and Coatings
Revision 0

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Category E-A, Containment Surfaces, Item Number E1.10, Containment Vessel Pressure Retaining Boundary.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Subarticle IWE-2200(g) requires that when paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the preservice examination records.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from the requirement to perform a preservice inspection of new paint or coatings.

III. BASIS FOR ALTERNATIVE

Paint and coatings are not part of the containment pressure boundary under current Code rules because they are not associated with the pressure retaining function of the component (Paragraph NE-2110(b) of ASME Section III). Neither paint nor coatings contribute to the structural integrity or leak tightness of the containment. Furthermore the paint and coatings on the containment pressure boundary were not subject to Code rules when they were originally applied and are not subject to ASME XI rules for repair or replacement. The adequacy of applied coatings is verified through the Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities. Recording the condition of reapplied coating in the preservice record does not substantiate the containment structural integrity. Should deterioration of the coating in the reapplied area occur, the area will require additional evaluation regardless of the preservice record. Recording the condition of new paint or coating in the preservice records does not increase the level of quality and safety of the containment.

SECY 96-080, response to Comment 3.2 about IWE-2200(g) states, "In the NRC's opinion, this does not mean that a visual examination must be performed with every application of paint or coating. A visual examination of the topcoat to determine the soundness and the condition of the topcoat should be sufficient." This is currently accomplished through the Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities. Recording the condition of new paint or coatings in the preservice record is redundant to the requirements of the Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities, and as such is an administrative burden without a compensating increase in safety.

The Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities provides an adequate level of quality and safety. The Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities limits the quantity of unqualified coatings and degraded qualified coatings not removed/repaired/replaced in locations requiring Service Level 1 coating systems to below licensing basis limits and prevents the impairment due to detached coatings obstructing the flow paths of any fluid system, required to operate if needed to mitigate a design basis accident.

RELIEF REQUEST No. RR-27
(PBAPS CRR-03)
Revision 0, continued

IV. ALTERNATE PROVISIONS

The paint and coatings in the containment are considered safety-related and as such they will be applied and inspected in accordance with the Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities. The Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities is subject to the requirements of the Limerick Generating Station (LGS), Units 1 and 2, 10CFR50, Appendix B Quality Assurance Program. The LGS QA Program is described in Section 17.2 of the LGS, Units 1 and 2 Updated Safety Analysis Report (USFAR). Appendix 17.2.II of the Appendix B Quality Assurance Program endorses ASTM D3843-93, "Standard Practice for Quality Assurance for Protective Coatings Applied to Nuclear Facilities". ASTM D3843-93 replaces Regulatory Guide 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants," and ANSI Standard N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities." Accordingly, the Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities shall control those essential coating program elements that are necessary to ensure the quality application and inspection of Service Level 1 coating systems.

While performing Service Level 1 coating work, Exelon Generation Company, LLC, shall use one or more procedures as necessary to ensure satisfactory application of the coating systems, including surface preparation, inspection and documentation of the coating work.

Exelon Generation Company, LLC, shall comply with ASTM D3843-93, Standard Practice for Quality Assurance for Protective Coatings applied to Nuclear Facilities, for safety-related protective coating work in Service Level 1 areas, to fulfill 10C FR50, Appendix B requirements with the following additional clarifications:

1. For coating formulations developed prior to issuance of ASTM D3843-93, Service Level 1 qualification based on ANSI N5.9 (Revised as ANSI N512-1974) and ANSI N101.2 remains valid.

2. The quality assurance requirements of Sections 6 and 7 of ASTM D3843-93, applicable to the coating manufacturer, are imposed on the coating manufacturer through the procurement process.

3. Coating application procedures are developed based on the manufacturer's recommendations for application of the selected coating systems.

4. Coating applicators are qualified to demonstrate their ability to satisfactorily apply the coatings in accordance with the manufacturer's recommendations.

5. Quality Verification (QV) personnel qualified in accordance with ANSI N45.2.6-1978 and ASTM D 4537-91 perform inspections to verify conformance to the coating application procedures and perform examinations of previously applied coatings. Section 10 of ASTM D3843-93 is used as a guideline in the establishment of the inspection program.

6. Alternatively, personnel qualified in accordance with ASNT SNT-TC-1A (8/84) supplemented with appropriate coatings training, perform examinations of previously applied coatings.

RELIEF REQUEST No. RR-27
(FBAPS CRR-03)
Revision 0, continued

7. Section 10.1 of ASTM D3843-93, last sentence, instead of references to ANSI 45.2 and NQA-1, inspections will be documented for record purposes as required by 10CFR50, Appendix B, and LGS QA Program. Documentation demonstrating conformance to the above is maintained.

8. Limitations on use of coatings and cleaning materials that contain elements, which could contribute to corrosion, intergranular cracking, or stress corrosion cracking of safety-related stainless steel, will be followed as described in Section C.4 of Regulatory Guide 1.54, June 1973.

A visual coatings examination of accessible and immersed surfaces of the drywell and suppression pool is performed at least every four (4) to six (6) years in accordance with 10CFR50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." These periodic examinations will identify evidence of flaking, blistering, peeling, discoloration, or other signs of coating distress which might be indicative of degradation of the containment structural integrity.

If degradation of the coating is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Although repairs to paint or coatings are not subject to the repair/replacement rules of ASME XI (Inquiry 97-22), repairs to the primary containment boundary, not including coatings, if required, would be conducted in accordance with ASME Section XI Code rules.

RELIEF REQUEST No. RR-28
(PBAPS CRR-04)
Alternative Criteria for Visual Examination of Paint or Coating Prior to Removal
Revision 0

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Category E-A, Containment Surfaces, Item Number E1.10, Containment Vessel Pressure Retaining Boundary.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Subarticle IWE-2500(b) requires that when paint or coatings are to be removed, the paint or coatings shall be visually examined in accordance with Table IWE-2500-1 prior to removal.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from the requirement to visually examine paint or coatings on containment surfaces prior to removal.

III. BASIS FOR ALTERNATIVE

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Paint and coatings are not part of the containment pressure boundary under current Code rules because they are not associated with the pressure retaining function of the component (Paragraph NE-2110(b) of ASME Section III). The interiors of containments are painted to prevent rusting. Neither paint nor coatings contribute to the structural integrity or leak tightness of the containment. Furthermore the paint and coatings on the containment pressure boundary were not subject to Code rules when they were originally applied and are not subject to ASME XI rules for repair or replacement. Degradation or discoloration of the paint or coating materials on containment could be an indicator of potential degradation of the containment pressure boundary. Additional measures would have to be employed to determine the nature and extent of any degradation, if present. The application of ASME XI rules for removal of paint or coatings when unrelated to a Section XI repair or replacement activity, is a burden without a compensating increase in quality or safety.(1)

The Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities currently provides an adequate level of quality and safety. The Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities limits the quantity of unqualified coatings and degraded qualified coatings not removed/repaired/replaced in locations requiring Service Level 1 coating systems to below licensing basis limits and prevents the impairment due to detached coatings obstructing the flow paths of any fluid system, required to operate if needed to mitigate a design basis accident.

RELIEF REQUEST No. RR-28
(PBAPS CRR-04)
Revision 0, continued

IV. ALTERNATE PROVISIONS

The paint and coatings in the containment are considered safety-related and as such they will be applied and inspected in accordance with the Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities. The Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities is subject to the requirements of the Limerick Generating Station (LGS), Units 1 and 2, 10CFR50, Appendix B Quality Assurance Program. The LGS QA Program is described in Section 17.2 of the LGS, Units 1 and 2 Updated Safety Analysis Report (USFAR). Appendix 17.2.II of the Appendix B Quality Assurance Program endorses ASTM D3843-93, "Standard Practice for Quality Assurance for Protective Coatings Applied to Nuclear Facilities". ASTM D3843-93 replaces Regulatory Guide 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants," and ANSI Standard N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities." Accordingly, the Limerick Generating Station Units 1 and 2, Coatings Program for Nuclear Facilities shall control those essential coating program elements that are necessary to ensure the quality application and inspection of Service Level 1 coating systems.

While performing Service Level 1 coating work, Exelon Generation Company, LLC, shall use one or more procedures as necessary to ensure satisfactory application of the coating systems, including surface preparation, inspection and documentation of the coating work.

Exelon Generation Company, LLC, shall comply with ASTM D3843-93, Standard Practice for Quality Assurance for Protective Coatings applied to Nuclear Facilities, for safety-related protective coating work in Service Level 1 areas, to fulfill 10CFR50, Appendix B requirements with the following additional clarifications:

1. For coating formulations developed prior to issuance of ASTM D3843-93, Service Level 1 qualification based on ANSI N5.9 (Revised as ANSI N512-1974) and ANSI N101.2 remains valid.

2. The quality assurance requirements of Sections 6 and 7 of ASTM D3843-93, applicable to the coating manufacturer, are imposed on the coating manufacturer through the procurement process.

3. Coating application procedures are developed based on the manufacturer's recommendations for application of the selected coating systems.

4. Coating applicators are qualified to demonstrate their ability to satisfactorily apply the coatings in accordance with the manufacturer's recommendations.

5. Quality Verification (QV) personnel qualified in accordance with ANSI N45.2.6-1978 and ASTM D 4537-91 perform inspections to verify conformance to the coating application procedures and perform examinations of previously applied coatings. Section 10 of ASTM D3843-93 is used as a guideline in the establishment of the inspection program.

6. Alternatively, personnel qualified in accordance with ASNT SNT-TC-1A (8/84) supplemented with appropriate coatings training, perform examinations of previously applied coatings.

RELIEF REQUEST No. RR-28
(FBAPS CRR-04)
Revision 0, continued

7. Section 10.1 of ASTM D3843-93, last sentence, instead of references to ANSI 45.2 and NQA-1, inspections will be documented for record purposes as required by 10CFR50, Appendix B, and LGS QA Program. Documentation demonstrating conformance to the above is maintained.

8. Limitations on use of coatings and cleaning materials that contain elements, which could contribute to corrosion, intergranular cracking, or stress corrosion cracking of safety-related stainless steel, will be followed as described in Section C.4 of Regulatory Guide 1.54, June 1973.

A visual coatings examination of accessible and immersed surfaces of the drywell and suppression pool is performed at least every four (4) to six (6) years in accordance with 10CFR50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." These periodic examinations will identify evidence of flaking, blistering, peeling, discoloration, or other signs of coating distress which might be indicative of degradation of the containment structural integrity.

If degradation of the coating is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Although repairs to paint or coatings are not subject to the repair/replacement rules of ASME XI (Inquiry 97-22), repairs to the primary containment boundary, not including coatings, if required, would be conducted in accordance with ASME Section XI Code rules.

(1) This requirement does not exist in the 1998 Edition of ASME Section XI.

RELIEF REQUEST No. RR-29
Revision 0
Alternative Criteria for VT-2 Visual Examination Following Repair, Replacement or Modification

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Categories E-A, E-C, E-D and E-G, all Item Numbers.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Paragraph IWE-5240 requires the performance of a visual examination, VT-2, in accordance with the requirements of Paragraph IWA-5240 following repair, replacement, or modification.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from the Paragraph IWE-5240 requirement to perform a VT-2 visual examination in connection with system pressure testing following repair, replacement or modification under Article IWE-5000.

III. BASIS FOR RELIEF

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Paragraph IWE-5210 states that except as noted within Paragraph IWE-5240, the requirements of Article IWA-5000 are not applicable to Class MC or Class CC components. Paragraph IWE-5240 states that the requirements of Paragraph IWA-5240 (corrected from IWA-5246 to IWA-5240 in the 1993 Addenda) for visual examinations are applicable. Paragraph IWA-5240 identifies a "VT-2" visual examination. VT-2 examinations are conducted to detect evidence of leakage from pressure retaining components, with or without leakage collection systems, as required during the conduct of a system pressure test. In addition, personnel performing VT-2 examinations are required to be qualified in accordance with Subarticle IWA-2300 of ASME Section XI.

Table IWE-2500-1, Examination Category E-P, identifies the examination method of 10CFR50, Appendix J and does not specifically identify a VT-2 visual examination. 10CFR50, Appendix J provides requirements for testing as well as acceptable leakage criteria. These tests are performed by Appendix J "Test" personnel and utilize calibrated equipment to determine acceptability. Additionally, 10CFR50.55a(b)(2)(x)(E) requires a general visual examination of the containment each period that would identify any structural degradation that may contribute to leakage. Performance of the visual VT-2 examination, during the conduct of these pressure tests, is in most cases impractical, due to accessibility. Access to perform the visual examination of the repaired/replaced area is normally prohibited by either encapsulation of the pressure test boundary (i.e. Local Leak Rate Test) or personnel access restrictions into containment during testing (Integrated Leak Rate Test). VT-2 examination of the repaired/replaced area from the outside surface of the LGS Units 1 and 2 containments during the pressure test would not be meaningful or practical since the majority of the containment outside surface is concrete. A "VT-2" visual examination will not provide additional assurance of safety beyond that of current Appendix J practices.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested. Pressure testing in accordance with 10CFR50, Appendix J, provides an adequate level of quality.

RELIEF REQUEST No. RR-29
Revision 0, continued

IV. ALTERNATE PROVISIONS

Testing shall be conducted in accordance with 10CFR50, Appendix J, in lieu of Paragraph IWE-5240 of ASME Section XI. In addition examinations following repairs or replacements on containment components will be performed in accordance with the Exelon Generation Company, LLC, ASME Section XI Repair/Replacement Program, Specification M-679.

Specification M-679 provides the administrative guidance for satisfying the requirements of the Section XI Code, as applicable to repairs and replacements of Class 1, 2, 3, MC and CC components and their supports. Sections 8, 9, and 10 of this specification address the need for satisfying the construction code requirements. Section 12 addresses pressure testing of components following repair or replacement, and Section 13 addresses Preservice Inspections (PSI) required of repaired or replaced components. Accordingly, a repair/replacement of a Class MC or Metallic Liner of a Class CC component shall be implemented, as required by the Exelon Generation Company, LLC, Repair/Replacement Program, Specification M-679, in accordance with the rules of the original construction code. After completion of the repair/replacement, the original construction code-required NDE shall be performed. Following this, the ASME Section XI requirement for Preservice Inspection (PSI) shall be performed, in accordance with the Containment portion of the ISI Program. As required by Section XI, the method of inspection for the PSI shall be the method originally used to detect the condition which required the repair/replacement, and the method required for subsequent Inservice Inspections (ISI).

The examinations required by the Exelon Generation Company, LLC, Repair/Replacement Program, Specification M-679, will confirm the structural integrity of the repaired or replaced area of the containment. Confirmation of the leak-tight integrity of the area will then be verified by a pressure test in accordance with the requirements of IWE-5220. The system pressure testing shall be conducted, as applicable, in the area of the repair or replacement, per 10CFR50, Appendix J. The pressure testing shall be conducted by personnel trained in the methods of testing the containment vessel, as required by Appendix J, utilizing equipment and procedures routinely used for the periodic pressure testing of the containment. 10CFR50, Appendix J acceptance criteria for the results of the pressure testing assures that the leak tight integrity of the containment vessel will support NRC safety goals.

After any repair or replacement affecting the containment pressure boundary, if a pressure test (Type A, Type B, or Type C) is performed to verify the leak tight integrity of the affected pressure boundary, a VT-3 examination of the accessible areas shall be performed during or after the pressure test to ensure the overall integrity of the repaired/replaced component with the containment.

For any repair or replacement affecting the containment pressure boundary, where a pressure test is deferred or not performed, a VT-1 or detailed visual examination shall be performed to ensure the overall integrity of the repaired/replaced component with the containment.

The above-described examinations and testing assure that the structural integrity and leak-tight integrity of the primary containment will be maintained following any repairs or replacements of the pressure boundary. Nevertheless, a VT-2 visual examination will be performed from the outside surface of the containment, whenever access from the outside surface is available in the area of the repair or replacement being pressure tested.

RELIEF REQUEST No. RR-30
(PBAPS CRR-06)
Alternative Criteria for Successive Examination of Repaired Areas
Revision 0

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Categories E-A, E-C, E-D and E-G, all Item Numbers.

II. CODE REQUIREMENTS FROM WHICH AN ALTERNATIVE IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Paragraphs IWE-2420(b) and IWE-2420(c) requires that when component examination results require evaluation of flaws, evaluation of areas of degradation, or repairs in accordance with Article IWE-3000, and the component is found to be acceptable for continued service, the areas containing such flaws, degradation, or repairs shall be reexamined during the next inspection period listed in the schedule of the inspection program of Paragraph IWE-2411 or Paragraph IWE-2412, in accordance with Table IWE-2500-1, Examination Category E-C.

In accordance with 10CFR50.55a(a)(3)(ii), an alternative is requested from the requirement of Paragraphs IWE-2420(b) and IWE-2420(c) to perform successive examination of repairs.

III. BASIS FOR ALTERNATIVE

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. The purpose of a repair is to restore the component to an acceptable condition for continued service in accordance with the acceptance standards of Article IWE-3000. Paragraph IWA-4150 requires the Owner to conduct an evaluation of the suitability of the repair including consideration of the cause of failure.

If the repair has restored the component to an acceptable condition, successive examinations are not warranted. If the repair was not suitable, then the repair does not meet code requirements and the component is not acceptable for continued service. Neither Paragraph IWB-2420(b), Paragraph IWC-2420(b), nor Paragraph IWD-2420(b) requires a repair to be subject to successive examination requirements. Furthermore, if the repair area is subject to accelerated degradation, it would still require augmented examination in accordance with Table IWE-2500-1, Examination Category E-C. The successive examination of repairs in accordance with Paragraphs IWE-2420(b) and IWE-2420(c) constitutes a burden without a compensating increase in quality or safety.[1]

In their resolution to public comment # 3.3 the NRC stated, "The purpose of IWE-2420(b) is to manage components found to be acceptable for continued service (meaning no repair or replacement at this time) as an Examination Category E-C component... If the component had been repaired or replaced, then the more frequent examination would not be needed."

An alternative is requested in accordance with 10 CFR 50.55a(a)(3)(ii). Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

RELIEF REQUEST No. RR-30
(PBAPS CRR-06)
Revision 0, continued

IV. ALTERNATE PROVISIONS

Successive examinations in accordance with Paragraphs IWE-2420(b) and IWE-2420(c) are not required for repairs made in accordance with Article IWA-4000.

(1) Repair was deleted in Paragraphs IWE-2420(b) and IWE-2420(c) in the 1997 Addenda of ASME Section XI, and is not included in the 1998 Edition.

RELIEF REQUEST No. RR-31
Revision 0
Alternative Criteria for Examination and Testing of Bolted Connections

Refer to Table A-1 for Approval Status

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Category E-G, Pressure Retaining Bolting, Item Numbers E8.10, Bolted Connections (Examination) and E8.20, Bolted Connections (Test).

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1992 Edition through the 1992 Addenda, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item Number E8.10, requires that Class MC bolted connections be subject to a VT-1 visual examination.

ASME Section XI, 1992 Edition through the 1992 Addenda, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item Number E8.20, requires that Class MC bolted connections be subject to a bolt torque or tension test.

In accordance with 10CFR50.55a(a)(3)(ii), an alternative is requested from the requirements of ASME Section XI 1992 Edition with the 1992 Addenda, Table IWE-2500-1 Examination Category E-G, Pressure Retaining Bolting, Item Numbers E8.10 and E8.20.

III. BASIS FOR RELIEF

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Per the 1992 Edition though 1992 Addenda of ASME Section XI, pressure retaining bolted connections require a VT-1 visual examination.

Examination Category E-G visual examinations of pressure-retaining bolting may be performed with the bolting in place under tension and do not require removal or disassembly of the bolted connection solely for the purpose of performing the examination. Only those exposed surfaces of the bolting materials need be examined. However, containment surfaces, including bolted connections, are already subject to visual examination in accordance with Table IWE-2500-1, Examination Category E-A. Bolted connections in containment are also subject to the performance of 10CFR50 Appendix J testing.

Containment bolting is not subject to a known degradation mechanism, primarily because it is not in contact with a corrosive environment. There have been no problems with containment bolting identified within the industry. Accordingly, Examination Category E-G has been eliminated from Table IWE-2500-1 in the 1998 Edition of ASME Section XI and the examination requirements for pressure-retaining bolting have been consolidated into Category E-A.

RELIEF REQUEST No. RR-31
Revision 0, continued

The performance of visual examinations on bolted connections in accordance with the 1992 Edition through 1992 Addenda of ASME Section XI, Examination Category E-G represents a hardship with no compensating increase in the level of quality and safety. The reexamination of bolted connections that are already examined as part of Examination Category E-A, and tested in accordance with 10CFR50, Appendix J, unnecessarily increases the number of inservice examinations and the associated radiation exposure to personnel.

In addition to the visual examination of bolted connections, the 1992 Edition through 1992 Addenda of ASME Section XI requires that bolt torque or tension testing be performed on bolted connections that have not been disassembled and reassembled during the inspection interval. Determination of the torque or tension value would require that the bolting be un-torqued and then re-torqued or re-tensioned. The performance of a 10CFR50, Appendix J, Type B test proves that the bolt torque or tension remains adequate to provide a leak rate that is within acceptable limits. The torque or tension value of bolting only becomes an issue if the leak rate is excessive. Once a bolt is torqued or tensioned, it is not subject to dynamic loading that could cause it to experience significant change. Verification of torque or tension values on bolted joints that are proven adequate through Appendix J testing and visual inspection is adequate to demonstrate that design function is met. Torque or tension testing is not required on any other ASME Section XI, Class 1, 2, or 3 bolted connections or their supports as part of the inservice inspection program.

In accordance with 10CFR50.55a(a)(3)(ii), an alternative is requested. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

IV. ALTERNATE PROVISIONS

The following examinations and tests required by Subsection IWE ensure the structural integrity and the leak-tightness of Class MC pressure retaining bolting, and, therefore, no additional alternative examinations are proposed:

1. Exposed surfaces of bolted connections shall receive a VT-3 examination in accordance with the requirements of Table IWE-2500-1, Examination Category E-A, Containment Surfaces. If an area is found to be suspect, then a VT-1 examination shall be performed to determine the magnitude and extent of degradation. If required, the bolted connection shall be disassembled to support the VT-1 examination; and,

2. Bolted connections shall meet the pressure test requirements of 10CFR50, Appendix J.