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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUEST NO. 13

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-352 AND 50-353

1.0 INTRODUCTION

The Technical Specifications for Limerick Generating Station, Units 1 and 2 state that the inservice inspection of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). It is stated in 10 CFR 50.55a(a)(3) that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Limerick Generating Station, Units 1 and 2, first 10-year inservice inspection (ISI) interval is the 1986 Edition. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to

10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed. In letters dated October 4, 1994, and October 25, 1994, Philadelphia Electric Company submitted to the NRC its first ten-year interval inservice inspection program plan, Request for Relief No. 13, Revision 2 and Revision 1 for the Limerick Generating Station, Units 1 and 2 respectively.

2.0 EVALUATION AND CONCLUSIONS

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the information provided by the licensee in support of its first ten-year interval inservice inspection program plan, Request for Relief No. 13, Revisions 2 and 1 for the Limerick Generation Station, Units 1 and 2, respectively.

Based on the information submitted, the staff adopts the contractor's conclusions and recommendations presented in the Technical Letter Report attached.

Limerick, Unit 1, Requests for Relief Nos. RR-13-1.2 and RR-13-1.5 were previously granted pursuant to 10CFR50.55a(g)(6)(i) by the NRC in a Safety Evaluation dated March 1, 1994. Requests for Relief Nos. RR-13-1.1 and RR-13-1.8 were withdrawn for both Limerick, Units 1 and 2. Request for Relief RR-13-1.9 was withdrawn for Limerick, Unit 1 and Request for Relief RR-13-1.11 was withdrawn for Limerick, Unit 2.

The staff concluded based on the evaluation of the alternatives contained in Request for Relief RR-13, Revision 2 (Unit 1) and Request for Relief RR-13, Revision 1 (Unit 2) that the licensee's proposed alternatives will provide an acceptable level of quality and safety. Therefore, the licensee's proposed alternatives to the Code requirements contained in Unit 1, Requests for Relief RR-13-1.3, -.4, -.6, -.7, -.10, and -.11, are authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

Furthermore, the licensee's proposed alternatives to the Code requirements contained in Unit 2, Requests for Relief RR-13-1.2, -.3, -.4, -.5 -.6, -.7, -.9, and -.10, are authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee perform the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

Attachment: Technical Letter Report

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Date: October 5, 1995

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TECHNICAL LETTER REPORT ON THE FIRST 10-YEAR INSERVICE INSPECTION INTERVAL REQUEST FOR RELIEF RR-13, REVISION 2, FOR LIMERICK GENERATING STATION, UNIT 1 AND REQUEST FOR RELIEF RR-13, REVISION 1 FOR LIMERICK GENERATING STATION, UNIT 2 PHILADELPHIA ELECTRIC COMPANY DOCKET NUMBERS 50-352 AND 50-353

1.0 INTRODUCTION

By letters dated October 4, 1994, and October 25, 1994, Philadelphia Electric Company submitted Request for Relief RR-13, Revision 2 for Limerick Generating Station, Unit 1, and Request for Relief RR-13, Revision 1, for Limerick Generating Station, Unit 2, respectively. These requests for relief were divided into 11 subgroups each. The Idaho National Engineering Laboratory (INEL) staff has evaluated the relief requests in the following section.

2.0 EVALUATION

The Code of record for the Limerick Generating Station, Units 1 and 2, first 10-year inservice inspection interval, is the *American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code*, Section XI, 1986 Edition. The information provided by the licensee in support of the requests for relief from Code requirements has been evaluated and the bases for disposition from those requirements are documented below.

A. Request for Relief RR-13-1.1, Revision 2 (Unit 1) and Request for Relief RR-13-1.1, Revision 1 (Unit 2)

The licensee stated that these requests for relief are withdrawn.

B. Request for Relief RR-13-1.2, Revision 2 (Unit 1), Paragraphs IWD-5221 and IWD-5223, System Pressure Tests of the Nuclear Boiler Vessel Instrumentation Tubing

Note: Request for Relief RR-13-1.2, Revision 2 (Unit 1) was previously evaluated and approved by the Nuclear Regulatory Commission (NRC), in a Safety Evaluation Report, dated March 1, 1994. Therefore, this request for relief is not included in this evaluation.

C. Request for Relief RR-13-1.2, Revision 1 (Unit 2), Paragraphs IWD-5221 and IWD-5223, System Pressure Tests of the Nuclear Boiler Vessel Instrumentation Tubing

Code Requirement: Section XI, Table IWD-2500-1, Examination Categories D-A and D-B, Items D1.10 and D2.10 respectively, require a VT-2 visual examination during the performance of the system inservice test (IWD-5221) and the system hydrostatic test (IWD-5223) for Class 3 pressure retaining components.

Attachment

Licensee's Code Relief Request: Relief is requested from performing the Code-required pressure tests and VT-2 visual examinations of the Class 3 Nuclear Boiler Vessel instrumentation tubing to drywell pressure instrumentation outboard of Valves HV-42-247A, B, C, and D.

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

"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. Note: valves HV-42-247A, B, C, and D shall remain 'Open' during the performance of the Appendix 'J' ILRT."

Licensee's Proposed Alternative Examination (as stated):

"LGS Technical Specification operability checks and Integrated Leak Rate Test (ILRT) provide assurance of component integrity and will be utilized to satisfy ASME Section XI requirements."

Evaluation: The Code requires that the subject Class 3 pressure retaining piping receive system inservice and system hydrostatic pressure tests. The licensee has proposed the Technical Specification-required channel checks, performed every 12 hours, and the 10 CFR 50 Appendix J, ILRT, as alternative examinations.

The system pressure leakage test required in Table IWD-2500-1, Examination Categories D-A and D-B, Items D1.10 and D2.10 respectively, require a VT-2 visual examination during the performance of the system inservice test (IWD-5221) and the system hydrostatic test (IWD-5223) for Class 3 pressure retaining components for periodic verification of the leak-tight integrity of Class 3 piping systems or segments once ever 40 months.

Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurance that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2, with the attaching lines classified as Class 3. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the

safety function performed by penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

D. Request for Relief RR-13-1.3, Revision 2 (Unit 1) and Request for Relief RR-13-1.3, Revision 1 (Unit 2), Paragraph IWC-5220, Pressure Testing of Reactor Core Isolation Cooling (RCIC) Turbine Exhaust Vacuum Breaker Line

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the Unit 1, Class 2, RCIC Turbine Exhaust Vacuum Breaker Lines HBB-145 between and including Valves HV-49-1F084, HV-49-1F081, and 1019; and Unit 2, Class 2, RCIC Turbine Exhaust Vacuum Breaker Lines HBB-245 between and including Valves HV-49-2F084, HV-49-2F081, and 2018.

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

"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.

"10 CFR 50 Appendix J Local Leak Rate Testing is performed once per Refuel Outage.

"During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a system functional test. As such, the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests and the ten-year hydrostatic tests.

2) LLRTs have the ability to quantify leakage, which is not feasible with VT-2 inspection on this essentially gas-filled piping.

3) LLRTs conservatively include through-valve leakage, which would not be identified in a VT-2 inspection."

Licensee's Proposed Alternative Examination (as stated):
"10 CFR 50 Appendix J Local Leak Rate (LLRT) provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and redundant tests performed on the subject line, the licensee has proposed to perform a pressure test of the subject line in conjunction with the 10 CFR 50 Appendix J LLRT once per refueling outage.

Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurance that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

E. Request for Relief RR-13-1.4, Revision 2 (Unit 1) and Request for Relief RR-13-1.4, Revision 1 (Unit 2), Paragraph IWC-5220, Pressure Testing of High Pressure Coolant Injection (HPCI) Turbine Exhaust Vacuum Breaker Lines

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the Unit 1, Class 2, HPCI Turbine Exhaust Vacuum Breaker Line HBB-144 between and including Valves HV-55-1F095, HV-55-1F094, and 55-1026; and Unit 2, Class 2, HPCI Turbine Exhaust Vacuum Breaker Line HBB-244 between and including Valves HV-55-2F095, HV-55-2F094, and 55-2026.

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

"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.

"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 system functional test. As such, the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests and the ten-year hydrostatic tests.

2) LLRTs have the ability to quantify leakage, which is not feasible with VT-2 inspection on this essentially gas-filled piping.

3) LLRTs conservatively include through-valve leakage, which would not be identified in a VT-2 inspection."

Licensee's Proposed Alternative Examination (as stated):

"10 CFR 50 Appendix J Local Leak Rate (LLRT) provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and redundant tests performed on the subject line, the licensee has proposed to perform a pressure test of the subject line in conjunction with the 10 CFR 50 Appendix J LLRT once per refueling outage.

Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurances that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

F. Request for Relief RR-13-1.5, Revision 2 (Unit 1), Paragraphs IWD-5221 and IWD-5223, System Pressure Tests of the Containment Atmospheric Control Tubing

Note: Request for Relief RR-13-1.5, Revision 2 (Unit 1) was previously evaluated and approved by the NRC in a Safety Evaluation Report, dated March 1, 1994. Therefore, this request for relief is not included in this evaluation.

G. Request for Relief RR-13-1.5, Revision 1 (Unit 2), Paragraphs IWD-5221 and IWD-5223, System Pressure Tests of the Containment Atmospheric Control Tubing

Code Requirement: Section XI, Table IWD-2500-1, Examination Categories D-A and D-B, Items D1.10 and D2.10 respectively, require a VT-2 visual examination during the performance of the system inservice test (IWD-5221) and the system hydrostatic test (IWD-5223) for Class 3 pressure retaining components.

Licensee's Code Relief Request: Relief is requested from performing the Code-required pressure tests and VT-2 visual examinations of the Class 3

Containment Atmospheric Control tubing to the suppression pool pressure and level instrumentation outboard of Valve SV-57-201.

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

"Normal suppression pool 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 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 pressure 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. Note: Valve SV-57-201 shall remain 'Open' during the performance of the Appendix 'J' ILRT."

Licensee's Proposed Alternative Examination (as stated):

"LGS Technical Specification suppression pool instrumentation operability checks and the Integrated Leak Rate Test (ILRT) provide assurance of component integrity and will be utilized to satisfy ASME Section XI requirements."

Evaluation: The Code requires that the subject Class 3 pressure retaining piping receive system inservice and system hydrostatic pressure tests. The licensee has proposed the Technical Specification-required channel checks and the 10 CFR 50 Appendix J, ILRT, as alternative examinations.

The system pressure leakage test required in Table IWD-2500-1, Examination Categories D-A and D-B, Items D1.10 and D2.10 respectively, require a VT-2 visual examination during the performance of the system inservice test (IWD-5221) and the system hydrostatic test (IWD-5223) for Class 3 pressure retaining components for periodic verification of the leak-tight integrity of Class 3 piping systems or segments once ever 40 months.

Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurance that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

H. Request for Relief RR-13-1.6, Revision 2 (Unit 1) and Request for Relief RR-13-1.6, Revision 1 (Unit 2), Paragraph IWC-5220, Pressure Testing of Post-Loss Of Coolant Accident (LOCA) Recombiner Piping and Combustible Gas Analyzer, Hydrogen/Oxygen Sampling Lines

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the following Unit 1, Class 2, system lines; Post-LOCA Recombiner piping Lines HBB-128 and HBB-127 between and including "A" Recombiner and Valves HV-57-161 and HV-57-162, and Lines HBB-126 and HBB-124 between and including "B" Recombiner and Valves HV-57-163, and HV-57-164; and Unit 2, Class 2, Post-LOCA Recombiner piping Lines HBB-228 and HBB-227 between and including "A" Recombiner and Valves HV-57-261 and HV-57-262, and Lines HBB-226 and HBB-224 between and including "B" Recombiner and Valves HV-57-263, and HV-57-264.

Relief is also requested for the Unit 1, Class 2, hydrogen/oxygen sampling Lines HCB-116 and HCB-117, between connections on the Combustible Gas Analyzer Package 10S205, and Valves SV-57-159, SV-57-141, SV-57-142 & SV-57-147B, SV-57-143, SV-57-144 & SV-57-146B, and SV-57-145 (HCB-117) and for Lines HCB-116 and HCB-117, between connections on the Combustible Gas Analyzer Package 10S206, and Valves SV-57-184 & SV-57-146A, SV-57-186 & SV-57-147A, SV-57-195, SV-57-190 & 57-1090, SV-57-185 (HCB-117); and Unit 2, Class 2, hydrogen/oxygen sampling Lines HCB-216 and HCB-217, between connections on the Combustible Gas Analyzer Package 20S205, and Valves SV-57-259, SV-57-241, SV-57-242 & SV-57-247B, SV-57-243, SV-57-244 & SV-57-246B, and SV-57-245 (HCB-117) and for Lines HCB-216 and HCB-217, between connections on the

Combustible Gas Analyzer Package 20S206, and Valves SV-57-284 & SV-57-246A, SV-57-286 & SV-57-247A, SV-57-295, SV-57-290 & 57-2090, and SV-57-285 (HCB-217).

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

"During normal plant operation, this piping is either isolated or less than 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 1 psig driving pressure would be inconclusive.

"System Containment Pipe Inspection (CPI) is performed once per refuel 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 similarly to 10 CFR 50 Appendix J local leak rate testing and, as such, they offer the following advantages over system pressure tests:

1) CPIs are performed more frequently than periodic system functional tests and the ten-year hydrostatic tests.

2) CPIs have the ability to quantify leakage, which is not feasible with VT-2 inspection on this air filled piping.

3) CPIs conservatively include through-valve leakage, which would not be identified in a VT-2 inspection.

"The combustible gas analyzer continuously samples containment. A tubing leak will cause improper (high) readings which would be corrected and retested."

Licensee's Proposed Alternative Examination (as stated):

"System Contaminated Pipe Inspection (CPI) and monitoring of the combustible gas analyzers provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and tests performed on the subject lines discussed in the basis, the licensee has proposed to perform a pressure test of the subject lines similar to the 10 CFR 50 Appendix J, LLRT once per refueling outage.

Appendix J pressure tests provide verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurances that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related

to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping similar to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by the proposed pressure test, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing the proposed tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

I. Request for Relief RR-13-1.7, Revision 2 (Unit 1) and Request for Relief RR-13-1.7, Revision 1 (Unit 2), Paragraph IWC-5220, Pressure Testing of Containment Atmospheric Control Piping

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the Class 2 Containment Atmospheric Control piping (illustrated in Figures RR-13-1.7a & b in the licensee's submittal).[1]

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

"During normal plant operation, this piping is either isolated or less than 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 1 psig driving pressure would be inconclusive.

"10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) provides assurance of component integrity.

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[1]Figures provided by the licensee are not included with this evaluation.

"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 system functional test. As such, the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests.

2) LLRTs have the ability to quantify leakage, which is not feasible with VT-2 inspection on this essentially gas-filled piping.

3) LLRTs conservatively include through-valve leakage, which would not be identified in a VT-2 inspection."

Licensee's Proposed Alternative Examination (as stated):

"10 CFR 50 Appendix J Local Leak Rated Testing (LLRT) provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and redundant tests performed on the subject line, the licensee has proposed to perform a pressure test of the subject line in conjunction with the 10 CFR 50 Appendix J LLRT once per refueling outage.

Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurances that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative

pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

J. Request for Relief RR-13-1.8, Revision 2 (Unit 1) and Request for Relief RR-13-1.8, Revision 1 (Unit 2).

The licensee stated that these requests for relief are withdrawn.

K. Request for Relief RR-13-1.9, Revision 2 (Unit 1)

The licensee stated that this request for relief is withdrawn.

L. Request for Relief RR-13-1.9, Revision 1 (Unit 2), Paragraph IWC-5220, Pressure Testing of Plant Process Radiation Monitoring System Piping

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the Class 2, Plant Process Radiation Monitoring System piping HCB-228, between and including Valves 26-2009, 26-2011, SV-26-290A & B, and 26-2010, 26-2012, SV-26-290C & D.

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

"During normal plant operation, this piping is exposed to containment pressure. The pressurizing fluid is essentially nitrogen gas. A VT-2 inspection looking for a nitrogen leak with less than 1 psig driving pressure would be inconclusive. 10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) is performed once per Refuel Outage for leakage.

"During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a system functional test. As such, the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests or the ten-year hydrostatic tests.

2) LLRTs have the ability to quantify leakage, which is not feasible with VT-2 inspections on air systems.

3) LLRTs conservatively include through-valve leakage, which would not be identified in a VT-2 inspection."

Licensee's Proposed Alternative Examination (as stated):

"10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and redundant tests performed on the subject line, the licensee has proposed to perform a pressure test of the subject line in conjunction with the 10 CFR 50 Appendix J LLRT once per refueling outage.

Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurances that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

M. Request for Relief RR-13-1.10, Revision 2 (Unit 1), Paragraph IWC-5220, Pressure Testing of Plant Process Radiation Monitoring System Piping

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the 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.

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

"During normal plant operation, this piping is exposed to containment pressure. The pressurizing fluid is essentially nitrogen gas. A VT-2 inspection looking for a nitrogen leak with less than 1 psig driving pressure would be inconclusive. 10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) is performed once per Refuel Outage for leakage.

"During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a system functional test. As such, the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests or the ten-year hydrostatic tests.

2) LLRTs have the ability to quantify leakage, which is not feasible with VT-2 inspections on air systems.

3) LLRTs conservatively include through-valve leakage, which would not be identified in a VT-2 inspection."

Licensee's Proposed Alternative Examination (as stated):

"10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and redundant tests performed on the subject line, the licensee has proposed to perform a pressure test of the subject line in conjunction with the 10 CFR 50 Appendix J LLRT once per refueling outage.

Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurances that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining

containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, the licensee's alternative, in combination with the conditions stated above, will provide an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

N. Request for Relief RR-13-1.10, Revision 1 (Unit 2), Paragraph IWC-5220, Pressure Testing of Primary Containment Instrument Gas System Piping

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the Class 2 Primary Containment Instrument Gas System piping as follows:

HCB-209 piping and components at Penetration X-40F, between and including Valves HV-59-202 and 59-201.

Tubing and components from and including Valves XV-59-241A, B, C, D, & E, to Penetrations X-35C, D, E, F, & G respectively.

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

"During normal plant operation, this piping is exposed to containment pressure. The pressurizing fluid is essentially nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than 1 psig driving pressure would be inconclusive. 10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) is performed once per Refuel Outage for leakage. The Local Leak Rate tests offer the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests or the ten-year hydrostatic tests.

2) LLRTs have the ability to quantify leakage, which is not feasible with VT-2 inspections on air systems.

3) LLRTs conservatively test some unclassified piping and includes through valve leakage which would not be identified in a VT-2 inspection."

4) LLRTs are at higher pressure (44 psig) than normal operation."

Licensee's Proposed Alternative Examination (as stated):

"10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and redundant tests performed on the subject line, the licensee has proposed to perform a pressure test of the subject line in conjunction with the 10 CFR 50 Appendix J LLRT once per refueling outage.

The system pressure leakage test required in Table IWC-2500-1, Category C-H provides periodic verification of the leak-tight integrity of Class 2 piping systems or segments once ever 40 months. Some pipe segments that penetrate containment are designed and examined as Class 2 pipe, in order to protec' the integrity of containment. Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurance that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the CIVs and connected piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee perform the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, in combination with the conditions stated above, an acceptable level of quality and safety will be provided. Therefore, it is recommended that the licensee's proposed alternative pressure test be

authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

O. Request for Relief RR-13-1.11, Revision 2 (Unit 1), Paragraph IWC-5220, Pressure Testing of Primary Containment Instrument Gas System Piping

Code Requirement: Section XI, Table IWC-2500-1, Examination Category C-H, requires that the pressure retaining components within each system boundary be subjected to a VT-2 visual examination during system functional/inservice tests (IWC-5221) and a system hydrostatic test (IWC-5222).

Licensee's Code Relief Request: Relief is requested from performing the Code-required system functional and hydrostatic pressure tests and VT-2 visual examination of the Class 2 Primary Containment Instrument Gas System piping as follows:

HCB-109 piping and components at Penetration X-40F, between and including Valves HV-59-102 and 59-101.

Tubing and components from and including Valves XV-59-141A, B, C, D, & E, to Penetrations X-35C, D, E, F, & G, respectively.

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

"During normal plant operation, this piping is exposed to containment pressure. The pressurizing fluid is essentially nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than 1 psig driving pressure would be inconclusive. 10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) is performed once per Refuel Outage for leakage. The Local Leak Rate tests offer the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests or the ten-year hydrostatic tests.

2) LLRTs have the ability to quantify leakage, which is not feasible with VT-2 inspections on air systems.

3) LLRTs conservatively test some unclassified piping and includes through valve leakage which would not be identified in a VT-2 inspection.

4) LLRTs are at higher pressure (44 psig) than normal operation."

Licensee's Proposed Alternative Examination (as stated):

"10 CFR 50 Appendix J Local Leak Rate Testing (LLRT) provides assurance of component integrity."

Evaluation: The Code requires that the subject Class 2 piping receive a system pressure test once every inspection period and a system hydrostatic test once every interval. However, because of the low operating pressure (1 psig) and redundant tests performed on the subject line, the licensee has proposed to perform a pressure test of the subject line in conjunction with the 10 CFR 50 Appendix J LLRT once per refueling outage.

The system pressure leakage test required in Table IWC-2500-1, Category C-H provides periodic verification of the leak-tight integrity of Class 2 piping systems or segments once ever 40 months. Some pipe segments that penetrate containment are designed and examined as Class 2 pipe, in order to protect the integrity of containment. Appendix J pressure tests provides verification of the leak-tight integrity of the primary reactor containment, and systems and components that penetrate containment. Appendix J test frequencies provide assurance that the containment pressure boundary is being maintained at an acceptable level while monitoring for deterioration of seals, valves and piping.

The Class 2 containment isolation valves (CIVs) and connecting pipe segment must withstand the peak calculated containment internal pressure (Pa) related to the maximum design containment pressure during Appendix J tests. The containment penetration piping is classified as Class 2. Because these lines are extensions of the containment pressure boundary and maintaining containment integrity is the safety function performed by the penetration piping, it is logical to test this piping to Appendix J criteria.

The INEL staff believes that the pressure retaining integrity of the CIVs and connected piping and their associated safety functions may be verified by Appendix J tests, provided that the licensee performs the leak test at the peak calculated containment pressure and that a test procedure is implemented that provides for detection and location of through-wall leakages in the pipe segments that are being tested.

Based on the above evaluation, the INEL staff believes that when performing Appendix J tests, in combination with the conditions stated above, an acceptable level of quality and safety will be provided. Therefore, it is recommended that the licensee's proposed alternative pressure test be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

P. Request for Relief RR-13-1.11, Revision 1 (Unit 2)

The licensee stated that this request for relief is withdrawn.

3.0 CONCLUSION

The INEL staff has reviewed Request for Relief RR-13, Revision 2 (Unit 1) and Request for Relief RR-13, Revision 1 (Unit 2). Based on this evaluation, it

is recommended that for Unit 1, Requests for Relief RR-13-1.3, -.4, -.6, -.7, -.10, and -.11, the licensee's proposed alternative to Code requirements be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee performs the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented. For Unit 2, Requests for Relief RR-13-1.2, -.3, -.4, -5 -.6, -.7, -.9, -.10, it is recommended that the licensee's proposed alternative to Code requirements be authorized pursuant to 10 CFR 50.55a(a)(3)(i), provided that the licensee perform the leak test at the peak calculated containment pressure and a test procedure that provides for detection and location of through-wall leakages in the pipe segments being tested is implemented.

For Unit 1, Requests for Relief RR-13-1.2 and RR-13-1.5 were previously granted by the NRC in a Safety Evaluation Report dated March 1, 1994. Requests for Relief RR-13-1.1 and RR-13-1.8 were withdrawn for both Units 1 and 2. Request for Relief RR-13-1.9 was withdrawn for Unit 1 and Request for Relief RR-13-1.11 was withdrawn for Unit 2.

Date: October 5, 1995