May 2, 2002

Mr. John L. Skolds, President
and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2, EVALUATION OF RELIEF REQUESTS RR-06; RR-07; RR-12, TABLES RR-12-8 AND RR-12-9; AND RR-13, TABLES RR-13-1 THROUGH RR-13-8 (TAC NOS. MB1018 AND MB1019)

Dear Mr. Skolds:

By letter dated January 9, 2001, PECO Energy Company (PECO), the then licensee, submitted proposed alternatives to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, concerning the second 10-year inservice inspection (ISI) programs at Limerick Generating Station, Units 1 and 2 (LGS). PECO was succeeded by Exelon Generation Company (EGC or the licensee) as the licensed operator of LGS on January 12, 2001. By letter dated January 30, 2001, EGC requested that the Nuclear Regulatory Commission (NRC) staff continue to process and disposition all licensing actions previously docketed and requested by PECO. By letter dated August 16, 2001, the licensee provided revised proposed relief requests (RR) that incorporated editorial changes due to the acquisition of LGS by EGC.

This NRC staff safety evaluation applies to relief requests RR-06, Revision 1 (RR-06); RR-07, Revision 1 (RR-07); RR-12, Revision 3 (RR-12), Tables RR-12-8 and RR-12-9 (for American Society of Mechanical Engineers (ASME) Class 1, 2, and 3 components and supports subject to ISI); and RR-13, Revision 3 (RR-13), Tables RR-13-1 through RR-13-8. The NRC staff requested additional information about the subject RRs in a conference call with EGC on June 21, 2001. EGC responded to the request for additional information in a letter dated September 20, 2001.

Your letter dated January 9, 2001, contained RRs other than those evaluated in this letter. The NRC staff documented the evaluation of RR-12, Tables RR-12-9 (for metal containment components and supports subject to ISI), RR-12-10, RR-12-11, and RR-12-24 through RR-12-31, in a letter dated September 12, 2001. Similarly, the NRC staff documented the evaluation of RR-12, Table RR-12-7, in a letter dated February 14, 2002. The NRC staff is reviewing RR-12, Table RR-12-6, and will forward the results of our evaluation under separate cover.

Based on the information provided, the NRC staff concludes that for RR-06, due to the impracticality of meeting the 100% volumetric examination required by the ASME Boiler and Pressure Vessel Code, Section XI (the Code), gaining access for examination of the subject welds would require design modifications and result in an undue hardship on the licensee. The staff determined that any existing patterns of degradation would have been detected by the

examinations already completed, and the examinations performed provide assurance of structural integrity of the subject welds. Therefore, the Commission grants relief pursuant to 10 CFR 50.55a(g)(6)(i) for the second 10-year ISI interval at each unit. For RR-12, Tables RR-12-8 and RR-12-9, the NRC staff concludes that the proposed alternatives will provide an acceptable level of quality and safety. Therefore, the NRC staff authorizes the licensee's use of the proposed alternatives pursuant to 10 CFR 50.55a(a)(3)(i) for the second 10-year ISI interval at each unit. For RR-07, and RR-13, Tables RR-13-1 through RR-13-7, the NRC staff concludes that the imposition of the Code requirements would result in hardship without a compensating increase in the level of quality and safety. The staff concludes that the proposed alternatives provide reasonable assurance of structural integrity of the subject components in the licensee's RRs. Therefore, the NRC staff authorizes the licensee's use of the proposed alternatives pursuant to 10 CFR 50.55a(a)(3)(ii) for the second 10-year ISI interval. For RR-13, Table RR-13-8, the NRC staff concludes that the licensee's proposed alternative will not provide an acceptable level of quality and safety as compared to the tests required by the Code. The staff concludes that the licensee did not demonstrate that compliance with the Code would result in a hardship other than an unspecified radiation exposure to examination personnel. Therefore, the NRC staff denies the licensee's request for relief described in RR-13, Table RR-13-8. The NRC staff's safety evaluation is enclosed.

If you have any questions, please contact your Project Manager, Christopher Gratton, at 301-415-1055.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-352 and 50-353

Enclosure: As stated

cc w/encl: See next page

examinations already completed, and the examinations performed provide assurance of structural integrity of the subject welds. Therefore, the Commission grants relief pursuant to 10 CFR 50.55a(g)(6)(i) for the second 10-year ISI interval at each unit. For RR-12, Tables RR-12-8 and RR-12-9, the NRC staff concludes that the proposed alternatives will provide an acceptable level of quality and safety. Therefore, the NRC staff authorizes the licensee's use of the proposed alternatives pursuant to 10 CFR 50.55a(a)(3)(i) for the second 10-year ISI interval at each unit. For RR-07, and RR-13, Tables RR-13-1 through RR-13-7, the NRC staff concludes that the imposition of the Code requirements would result in hardship without a compensating increase in the level of quality and safety. The staff concludes that the proposed alternatives provide reasonable assurance of structural integrity of the subject components in the licensee's RRs. Therefore, the NRC staff authorizes the licensee's use of the proposed alternatives pursuant to 10 CFR 50.55a(a)(3)(ii) for the second 10-year ISI interval. For RR-13, Table RR-13-8, the NRC staff concludes that the licensee's proposed alternative will not provide an acceptable level of quality and safety as compared to the tests required by the Code. The staff concludes that the licensee did not demonstrate that compliance with the Code would result in a hardship other than an unspecified radiation exposure to examination personnel. Therefore, the NRC staff denies the licensee's request for relief described in RR-13, Table RR-13-8. The NRC staff's safety evaluation is enclosed.

If you have any questions, please contact your Project Manager, Christopher Gratton, at 301-415-1055.

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Enclosure: As stated

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SECOND 10-YEAR INSERVICE INSPECTION INTERVAL

REQUESTS FOR RELIEF

LIMERICK GENERATING STATION, UNITS 1 AND 2

EXELON GENERATING COMPANY, LLC

DOCKET NOS. 50-352 AND 50-353

1.0 INTRODUCTION

By letter dated January 9, 2001, PECO Energy Company (PECO), the then licensee, submitted proposed alternatives to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, concerning the second 10-year inservice inspection (ISI) programs at Limerick Generating Station (LGS). This Nuclear Regulatory Commission (NRC) staff safety evaluation applies to relief requests RR-06, Revision 1 (RR-06); RR-07, Revision 1 (RR-07); RR-12, Revision 3 (RR-12), Tables RR-12-8 and RR-12-9 (for American Society of Mechanical Engineers Boiler and Pressure Vessel Code (Code or ASME Code) Class 1, 2, and 3, components and supports subject to ISI); and RR-13, Revision 3 (RR-13), Tables RR-13-1 through RR-13-8.

The staff previously approved RR-12, Tables RR-12-9 (for metal containment components and supports subject to ISI), RR-12-10, RR-12-11, and RR-12-24 through RR-12-31, in a letter dated September 12, 2001. Similarly, the NRC staff approved RR-12, Table RR-12-7, in a letter dated February 14, 2002. The staff will document its review of RR-12, Table RR-12-6, under separate cover.

2.0 BACKGROUND

Inservice inspection of the ASME Code Class 1, 2, and 3, components is to be performed in accordance with Section XI of the ASME Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). As stated in 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3, components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The

regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ASME Code of record for LGS Units 1 and 2, second 10-year ISI interval is the 1989 Edition of the ASME Code, Section XI.

3.0 EVALUATION

The NRC staff, with technical assistance from Brookhaven National Laboratory (BNL), has reviewed the information concerning ISI program requests for relief for the second 10-year interval for LGS Units 1 and 2, provided in PECO's letter dated January 9, 2001. Exelon Generating Company, LLC, the current licensee, provided additional information in its letter dated September 20, 2001.

Attachment 1 lists each relief request and the status of approval. The conclusions for each evaluation are summarized below. The NRC staff adopts the evaluations and recommendations for authorizing alternatives and granting relief contained in the Technical Letter Report (TLR), included as Attachment 2, which was prepared by BNL.

For LGS, Units 1 and 2, the NRC staff determined that because of the access limitations, the ASME Code requirement of 100% volumetric examination is impractical to perform for the subject welds discussed in RR-06. To gain access for examination of the subject welds would require design modifications. Imposition of this requirement would create an undue burden on the licensee.

The licensee has volumetrically examined a significant portion of the subject welds, obtaining 87.5% volumetric coverage. Based on the coverage obtained, the staff determined that any existing patterns of degradation would have been detected by the examinations completed, and the examinations performed provide assurance of structural integrity of the subject welds.

For RR-12, Tables RR-12-8 and RR-12-9, the NRC staff determined that the licensee's proposed alternatives to use ASME Code Cases N-532 and N-598, respectively, provide reasonable assurance of quality and safety.

For RR-07; and RR-13, Tables RR-13-1 through RR-13-7; the NRC staff determined that, for the components identified, compliance with the ASME Code would result in a hardship or unusual difficulty without a compensating increase in the level quality and safety. Furthermore, the staff found that the licensee's proposed alternatives provide assurance of structural integrity of the subject components in the licensee's requests for relief.

For RR13, Table RR-13-8, the NRC staff determined that the subject piping and components see a system operating pressure of 100 psig during normal operation. The staff found that the ASME Code-required tests could be performed. The proposed alternative test at 44 psig may not be sufficient in these small instrumentation lines to detect and locate through-wall leakage that would be detected at 100 psig or 130 psig. In addition, the licensee did not demonstrate that compliance with the ASME Code would result in hardship other than unspecified radiation exposure to examination personnel.

4.0 CONCLUSION

The NRC staff, with the assistance of its contractor, BNL, has reviewed requests for relief RR-06; RR-07; RR-12, Tables RR-12-8 and RR-12-9; and RR-13, Tables RR-13-1 through RR-13-8, from the ASME Code requirements. The TLR provides BNL's evaluation of these requests for relief. The staff has reviewed the TLR and adopts the evaluations and recommendations for granting relief. BNL's evaluation of each RR is provided in Attachment 2.

The staff concludes that certain inservice examinations cannot be performed to the extent required by the ASME Code at LGS Units 1 and 2. For the items discussed in RR-06, the ASME Code requirements are impractical to meet, and reasonable assurance of the structural integrity of the subject components has been provided by the examinations that have been completed. Therefore, the Commission grants relief pursuant to 10 CFR 50.55a(g)(6)(i) for the second 10-year ISI interval. The NRC staff has determined that the granting of relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

The NRC staff concludes that for RR-12, Tables RR-12-8 and RR-12-9, the licensee's proposed alternatives to use ASME Code Cases N-532 and N-598, respectively, provide an acceptable level of quality and safety. Therefore, the NRC staff authorizes the licensee's use of the proposed alternatives pursuant to 10 CFR 50.55a(a)(3)(i) for the second 10-year interval or until such time the code cases are referenced in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement ASME Code Cases N-532 and N-598 the licensee should follow all provisions in the subject code cases with the limitations (if any) listed in RG 1.147.

For the alternatives contained in RR-07; and RR-13, Tables RR-13-1 through RR-13-7; the imposition of the ASME Code requirements would result in hardship without a compensating increase in the level of quality and safety. The staff concludes that the proposed alternatives provide reasonable assurance of structural integrity of the subject components in the licensee's requests for relief. Therefore, the NRC staff authorizes the licensee's use of the alternatives pursuant to 10 CFR 50.55a(a)(3)(ii) for the second 10-year ISI interval.

For RR13, Table RR-13-8, the licensee did not demonstrate that compliance with the ASME Code would result in hardship other than unspecified radiation exposure to examination personnel. In addition, the licensee's proposed alternative did not provide an acceptable level of quality as compared to the Code-required tests. Therefore, the NRC staff denies the request for relief.

Attachments: 1. Status of Relief Requests
2. Technical Letter Report

Principle Contributor: T. McLellan

Date:

TABLE 1
SUMMARY OF RELIEF REQUESTS

Relief Request Number	TLR Sec.	System or Component	Exam Category	Item No.	Volume or Area to be Examined	Required Method	Licensee Proposed Alternative	Relief Request Status
RR-06	2.1	RHR Heat Exchangers	C-A	C1.10	Shell Circumferential Welds	Volumetric Examination	UT performed to the maximum practical	Granted 10 CFR 50.55a(g)(6)(i)
RR-07	2.2	RHR and Core Spray Pumps	C-G	C6.10	Pump Casing Welds	Surface Examination	Remote visual, VT-1 when disassembled, and VT-2 during functional tests	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-12, Table RR-12-8	2.3	Class 1, 2 & 3 Components	-	-	ISI Summary Reports	Completion of NIS-1 & NIS-2 Forms	Code Case N-532: Forms NIS-2A & OAR-1	Authorized 10 CFR 50.55a(a)(3)(i)
RR-12, Table RR-12-9	2.4	Class 1, 2, 3, & MC Components	-	-	Percentage of Examination in each ISI Period	Table IWX-2412-1 and Code Case N-491-1 (Table 2410-2)	Code Case N-598: Uniform distribution between outages	Authorized 10 CFR 50.55a(a)(3)(i)
RR-13, Table RR-13-1	2.5	Drywell	D-A	D1.10	Class 3 Instrument tubing	System pressure and hydrostatic tests	Channel test and Integrated Leak Rate Tests	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-13, Table RR-13-2	2.6	RCIC Turbine	C-H	C7.30, C7.40 C7.70, C7.80	Class 2 piping and valves	System pressure and hydrostatic tests	Local Leak Rate Tests	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-13, Table RR-13-3	2.7	HPCI Turbine	C-H	C7.30, C7.40 C7.70, C7.80	Class 2 piping and valves	System pressure and hydrostatic tests	Local Leak Rate Tests	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-13, Table RR-13-4	2.8	Cont. Atmos. Control	D-A	D1.10	Class 3 instrument tubing	System pressure and hydrostatic tests	Pool pressure and level indicator and Integrated Leak Rate Tests	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-13, Table RR-13-5	2.9	Post-LOCA Recombiner	C-H	C7.30, C7.40 C7.70, C7.80	Class 2 piping and valves	System pressure and hydrostatic tests	Contaminated Pipe Inspection (Local Leak Rate Tests)	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-13, Table RR-13-6	2.10	Cont. Atmos. Control	C-H	C7.30, C7.40 C7.70, C7.80	Class 2 piping and valves	System pressure and hydrostatic tests	Local Leak Rate Tests	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-13, Table RR-13-7	2.11	Plant Process Rad. Monitor	C-H	C7.30, C7.40 C7.70, C7.80	Class 2 piping and valves	System pressure and hydrostatic tests	Local Leak Rate Tests	Authorized 10 CFR 50.55a(a)(3)(ii)
RR-13, Table RR-13-8	2.12	Cont. Instr. Gas	C-H	C7.30, C7.40 C7.70, C7.80	Class 2 piping and valves	System pressure and hydrostatic tests	Local Leak Rate Tests	Relief Request is denied

TECHNICAL LETTER REPORT
SECOND 10-YEAR INSERVICE INSPECTION INTERVAL
REQUEST FOR RELIEF
FOR
EXELON GENERATION COMPANY, LLC
LIMERICK GENERATING STATION, UNITS 1 AND 2
DOCKET NUMBERS: 50-352 AND 50-353

1.0 SCOPE

By letter dated January 9, 2001, PECO Energy Company (the previous licensee) submitted multiple requests for relief from the requirements of the ASME Code, Section XI, for the Limerick Generating Station (LGS), Units 1 and 2. These relief requests are for the second 10-year inservice inspection (ISI) interval. Exelon Generating Company, LCC, the current licensee, provided additional information its letter dated September 20, 2001. Brookhaven National Laboratory (BNL) reviewed the information submitted by the licensee and the evaluation of the subject requests for relief are discussed in the following section.

2.0 EVALUATION

The information provided by the current licensee in support of the multiple requests for relief from ASME Code requirements and the current licensee's response to a request for additional information (RAI) in a letter dated September 20, 2001, have been evaluated and the bases for disposition are documented below. The Code of Record for the Limerick Generating Station, Units 1 and 2, second 10-year ISI interval, which began on January 8, 2000, is the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

2.1 Request for Relief No. RR-06, Revision 1

Code Requirement: 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.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from complete examination of the shell to flange weld due to limited access resulting from component design.

Licensee's Basis for Requesting Relief (as stated): "LGS Units 1 and 2, each have two (2) RHR heat exchangers. Code Examination Category C-A requires the volumetric (ultrasonic) examination of the equivalent of the welds of one heat exchange (*sic)* per Unit. Complete ultrasonic examination of the shell to flange weld (on all heat exchangers) 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."

In response to the staff's RAI, the licensee stated that the RHR heat exchanger shell to channel connection is a mechanical joint comprised of 64 (1-1/8") studs each secured with two heavy hex nuts. The diameter of the bolt circle is 58-5/8" and the shell outside diameter in the area of the flange bolting is 55-5/8" for LGS Unit 1 and 55-1/8" for LGS Unit 2. This places the nut for the shell to channel connection in the base metal portion of the weld and required volume (WRV) of the shell to flange weld with the height of the nut interfering with access to the weld portion of the WRV. These restrictions prevent surface examinations of the shell to flange welds.

Ultrasonic examinations for reflectors parallel to the weld seam (axial scans) are performed from the shell side of the weld and are essentially complete using a sufficiently long examination beam path to provide coverage of the WRV in two beam path directions. Ultrasonic examinations for reflectors transverse to the weld seam (parallel scans) are performed on the accessible portions of the weld crown between the heavy hex nuts using one-half V path techniques.

The WRV adjacent to the 64 heavy hex nuts is inaccessible to ultrasonic scans due to the heavy hex nuts covering portions of the base metal and the height of the nut blocking access to portions of the weld seam. Therefore, the 87.5% coverage is an estimate based on the obstructions created by bolting, which prevents obtaining the required code coverage. The use of magnetic particle and liquid penetrant examination methods does not result in an increase of Code coverage since these same limitations to ultrasonic parallel scans preclude access to the WRV for surface preparation.

Licensee's Proposed Alternative Examination (as stated): "No alternate examinations are proposed for the subject weld. Ultrasonic examination shall be performed to the maximum extent practical."

Evaluation: The Code requires essentially 100% volumetric examination of the RHR heat exchanger pressure-retaining shell-to-flange circumferential welds. The licensee provided the sketches showing the layout and limitations associated with the subject weld. As stated by the licensee and as evidenced by the sketch, complete examination coverage is limited due to access restrictions from the flange bolting of the shell to channel connection. This condition makes 100% volumetric examination impractical for the weld 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.

Ultrasonic examinations for reflectors parallel to the weld (axial scan) are performed from the shell side of the weld and are essentially complete using a sufficiently long

examination beam path to provide coverage of the required 100% volume in two beam path directions. Ultrasonic examinations for reflectors transverse to the weld seam (parallel scans) are performed on the accessible portions of the weld crown between the heavy hex nuts using one-half V path techniques. Based on the obstructions created by bolting, an estimated coverage of 87.5% of the required volume is covered. The use of magnetic and liquid penetrant examination methods do not result in an increase of Code coverage due to similar access limitations. Based on the volumetric coverage obtained, it is concluded that any existing patterns of degradation would have been detected by the examination coverage, and reasonable assurance of structural integrity has been provided. Imposition of the 100% coverage requirement would create a significant burden on the licensee.

Therefore, based on the impracticality of meeting the Code examination for the subject weld, and the reasonable assurance of structural integrity provided by the examination coverage of 87.5%, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.2 Request for Relief No. RR-07, Revision 1

Code Requirement: ASME Section XI 1989 Edition, Examination Category C-G requires surface examination of 100% of the 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.

LGS Units 1 and 2 each have four (4) RHR and four (4) Core Spray pumps. Per Code Examination Category C-G, surface examination is required on the equivalent of one (1) RHR pump and one (1) CS pump per Unit. However, welds on each of the four (4) RHR and four (4) Core Spray pumps per Unit are encased in concrete and are inaccessible for surface examination.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the surface examination of inaccessible pressure retaining pump casing welds on the RHR and the CS pumps due to plant/component design.

Licensee's Basis for Requesting Relief (as stated): "The welds on each of the four (4) RHR and four (4) Core Spray pumps per Unit are encased in concrete and inaccessible for surface examination. Therefore, it is impractical 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 welds. This effort, in the absence of any other necessary pump maintenance, represents a significant expenditure of man hours and radiation exposure to the plant personnel, without a compensating increase in plant safety."

In response to the staff's RAI, the licensee stated that the RHR and CS pumps are deep well vertical shaft pumps. The RHR pumps are Ingersoll-Dresser model 34APKD four stage enclosed impeller pumps. The CS pumps are Ingersoll-Dresser model 25APKD six stage enclosed impeller pumps. The number in the model identifier corresponds to the pump diameter. The pumps are supported in the vertical position by a mounting flange that is welded to the shell. The shell, which is fabricated from welded plate, encloses the pumping element and provides for immediate containment of the liquid being pumped. The shell contains a suction nozzle that is flanged for connection to the piping system.

The deep well construction of the pumps has resulted in the outside surface of all shell fabrication welds being encased in concrete. Access to these welds is only enabled from inside the shell when the pump is disassembled and the pumping element is removed. Pump disassembly and removal of the pumping elements results in a significant breach in emergency core cooling system piping. However, when removal is required for pump maintenance or repair, radiological conditions may necessitate leaving the shell filled with water in order to provide a level of shielding to keep dose to personnel as low as reasonably achievable. The shell, filled with water, precludes access to the inside surface of the welds to surface examination techniques; however, remote visual examinations can be performed of the weld and adjacent base metal in accordance with IWA-2210.

Licensee's Proposed Alternative Examination (as stated): "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 examination will be performed for that particular pump group to the maximum extent practicable. The examination method will be determined 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."

Evaluation: The Code requires that Class 2 pump casing welds receive a 100% surface examination from either the inside or outside surface of the component. Review of the sketches provided by the licensee shows that all four (4) RHR pump casing welds and four (4) Core Spray pump casing welds are inaccessible due to encasement in concrete. These pumps are deep well vertical shaft pumps and are supported in the vertical position by a mounting flange that is welded to the shell. The shell, which is fabricated from welded plate, encloses the pumping element and provides for immediate containment of the liquid being pumped. The shell contains a suction nozzle that is flanged for connection to the piping system.

As shown in the sketches submitted by the licensee, each pump casing contains an axial weld along the vertical axis, a circumferential weld of the bottom hemispherical head, a circumferential weld at the flange connection at the top, and the suction nozzle connection weld and the suction nozzle flange weld. The deep well construction of the pump has resulted in the outside surface of all these shell fabrication welds being encased in concrete. Access to these welds is only enabled from inside the casing when the pumping element is removed. Even when removal of the pump for maintenance or repair is required, radiological conditions may necessitate leaving the casing filled with water to provide shielding to keep the dose to personnel as low as reasonably achievable. The shell, filled with water, precludes access to the inside

surface of the welds to surface examination techniques. However, the licensee suggests that remote visual examinations (e.g., boroscopes) can be performed on the weld and adjacent base metal in accordance with IWA-2210.

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 examination will be performed for that particular pump group to the maximum extent practicable. 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. Disassembly of the pumps solely for the purpose of additional surface examinations would result in a hardship without a compensating increase in the level of quality and safety for the licensee.

The remote 100% visual examination of all welds, coupled with VT-1 examinations performed when the pumps are disassembled and VT-2 examinations during system leakage and system hydrostatic tests, will detect significant patterns of degradation that may be present and will provide reasonable assurance of the continued structural integrity of the subject pump casings. Therefore, it is recommended that the licensee's proposed alternative coupled with remote 100% visual examinations of the weld and adjacent base metal in accordance with IWA-2210, be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

2.3 Request for Relief No. RR-12, Revision 3 (Table RR-12-8, Code Case N-532)

Code Requirement: 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.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(i), the licensee requested relief from 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." Alternatively, the licensee 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.
Licensee's Basis for Requesting Relief (as stated): "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 not yet endorsed in the most recent listing of NRC approved code cases provided in Regulatory Guide 1.147."

"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, PECO Energy 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."

"PECO Energy 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, PECO Energy considers this alternative to provide an acceptable level of quality and safety."

Licensee's Proposed Alternative Examination (as stated): "PECO Energy 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."

Evaluation: The BNL staff reviewed the proposed alternative documentation requirements of Code Case N-532 and determined that although the required forms

have changed, the information required by the Code remains available for review. 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," includes replacement activities per IWA-7000, which is not yet approved by reference in Regulatory Guide 1.147. The Code Case requires preparation of the Repair/Replacement Certification Record, Form NIS-2A, which shall be certified by an Authorized Nuclear Inservice Inspector (ANII). Furthermore, the Owner's Activity Report Form, OAR-1 shall be prepared and certified by an ANII upon completion every refueling outage. The OAR-1 form shall contain an abstract of applicable examinations and tests, a list of item(s) with flaws or relevant conditions that require evaluation to determine acceptability for continued service, and an abstract of repair, replacement and corrective measures performed as a result of unacceptable flaws or relevant conditions. Hence, the information provided in the documentation required by Code Case N-532 can be used to assess the safety implications of Code activities performed during an outage.

The alternative proposed by the licensee only affects documentation and reporting requirements specified in the Code. A review using the information as prescribed by the Code Case will, therefore, provide the same or improved level of quality and safety as reviews conducted using the Code reporting requirements. Therefore, it is recommended that the use of this alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the second ten-year inservice inspection interval or until such time Code Case N-532 is approved for general use by reference in Regulatory Guide 1.147. At that time, if the licensee intends to continue to implement Code Case N-532, the licensee must follow the conditions, if any, specified in the regulatory guide.

2.4 Request for Relief No. RR-12, Revision 3 (Table RR-12-9, Code Case N-598)

Code Requirement: 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 percentage 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-2412-1 and IWE-2412-1.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(i), the licensee requested relief from the examination percentages listed in Tables IWB-2412-1, IWC-2412-1, IWD-2412-1 and IWE-2412-1. Alternatively, the licensee 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.

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

"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, PECO Energy considers that the alternative criteria of Code Case N-598 provide an acceptable, or improved, level of quality and safety."

Licensee's Proposed Alternative Examination (as stated): "PECO Energy will use Code Case N-598 for the required percentages of examinations for all Class 1, 2, 3 and MC components and supports."

Evaluation: In lieu of meeting the requirements of examination percentages for each inservice inspection period listed in 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, the licensee proposed an alternative to use the percentages of examinations recommended in Code Case N-598 for all ASME Class 1, 2, 3 and MC Components and Supports.

The staff finds that the completion range of examination percentages based on Code Case N-598 allows examinations to be distributed more evenly between refueling outages. The staff also finds that this uniform distribution between outages is more

conducive to performing quality examinations. On this basis, the staff concludes that the licensee's proposed alternative criteria per Code Case N-598 provide an acceptable level of quality and safety, and it is recommended that the use of this alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the second ten-year inservice inspection interval, or until such time Code Case N-598 is approved for general use by reference in Regulatory Guide 1.147. At that time, if the licensee intends to continue to implement Code Case N-598, the licensee must follow the conditions, if any, specified in the regulatory guide.

2.5 Request for Relief No. RR-13, Revision 3, (Table RR-13-1)

Code Requirement: 1989 ASME Section XI, IWD-5221 and IWD-5223 require a System Inservice Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject tubing and components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Inservice Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 3 Nuclear Boiler Vessel instrumentation tubing to drywell pressure instrumentation outboard of the following:

> LGS Unit 1: 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),
> LGS Unit 2: HV-42-247A, B, C, and D (Reference P&ID: ISI-M-42, Sheet 3, ISI-M-57, Sheet 4, ISI-M-59, Sheet 3).

In lieu of these tests, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject tubing and components will be verified by the channel checks required by the plant technical specifications and by the Integrated Leak Rate Test (ILRT).

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."

In response to the staff's RAI, the licensee stated that procedures require that valves HV-42-1(2)47A,B,C,D be open to perform the Integrated Leak Rate Test (ILRT). Therefore, the instrument tubing is subject to the pressure required by the ILRT and is within the ILRT boundary. The Unit 1 ILRT was performed on 08/03/84, 08/13/87, 11/23/90, and 05/17/98. It is currently on a 10-year frequency, as allowed by 10 CFR 50 Appendix J Option B. The Unit 2 ILRT was performed on 05/08/89, 03/12/93, and 5/22/99. It is currently also on a 10-year frequency, as allowed by 10 CFR 50 Appendix J Option B.

In addition, there are no test taps on the subject instrument tubing and plant modifications would be required in order to perform the ASME Section XI pressure tests resulting in a hardship. An additional pressure test once every inspection period and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is also a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to perform channel checks of the remote pressure indicators to verify drywell pressure instrumentation operability every 12 hours in accordance with the plant Technical Specifications, and the use 10 CFR 50 Appendix J, Option B Integrated Leak Rate Testing provides adequate assurance of structural integrity of the tubing and components, and therefore an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "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."

Evaluation: For ASME Class 3, Code Category D-A, Item Number D1.10 pressure retaining components, ASME Section XI, IWD 2500-1 of the Code requires a system pressure test (IWD-5221) in each inspection period and a system hydrostatic test (IWD-5223) in each inspection interval to be conducted in accordance with IWA-5000 requirements. The normal system operating pressure is less than 1 psig and the pressurizing fluid is nitrogen gas. The Code-required System Inservice Test and System Hydrostatic Test would be performed at close to 1 psig. A VT-2 inspection looking for a nitrogen gas leak with approximately 1 psig system pressure would be inconclusive and would not effectively detect a leak, if any.

The proposed alternative includes the channel checks every 12 hours to verify drywell pressure instrumentation operability by verifying pressure readings and the Integrated Leak Rate Test (ILRT) for any leaks in the system. For the channel checks, a significant leak will cause an improper reading, which will be corrected and retested. For the ILRT, valves HV-42-1(2)47A, B, C, D remain open during the test in order to pressurize the subject system to 44 psig, a substantially higher pressure than that during a system pressure test or a system hydrostatic test. The ILRT test would effectively detect a leak, if any. The combination of channel checks and ILRT tests would ensure that system's structural integrity and leakage integrity are maintained. Therefore, the proposed alternative will provide an equivalent or higher level of quality and safety.

The Code-required System Inservice Test and System Hydrostatic Test would be performed at close to 1 psig. The test results would likely be inconclusive. However, the staff believes that an acceptable level of quality and safety is provided by the licensee's proposed alternative since the ILRT tests will be performed at a much higher pressure which would effectively detect leaks and ensure maintaining the Code-required structural and leakage integrity. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.6 Request for Relief No. RR-13, Revision 3, (Table RR-13-2)

Code Requirement: 1989 ASME Section XI, IWC-5221 and IWC-5222 require a System Pressure Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Pressure Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 2 RCIC Turbine Exhaust Vacuum Breaker Lines and Class 2 RCIC Vacuum Pump Exhaust to Suppression Pool as follows:

LGS Unit Number	System Identification	Components	Reference P&ID
1	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	ISI-M-49, Sheet 1
		Vacuum Pump Exhaust to Suppression Pool, HBB-150 between 49-1F028 and HV-49-1F002, 49-1038 and 49-1F055	ISI-M-49, Sheet 1
2	RCIC	Turbine Exhaust Vacuum Breaker lines HBB-201 and HBB-245 between and including valves HV-49-2F084, HV-49-2F080, HV-49-2F060 and 49-2F001	ISI-M-49, Sheet 2
		Vacuum Pump Exhaust to Suppression Pool, HBB-250 between 49-2F028 and HV-49-2F002, 49-2038 and 49-2F055	ISI-M-49, Sheet 2

In lieu of the System Pressure Test and the System Hydrostatic Test, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject lines will be verified by the Local Leak Rate Test (LLRT) performed once each refueling outage.

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

"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."

In response to the staff's RAI, the licensee stated that the Local Leak Rate Testing (LLRT) is performed in accordance with 10 CFR 50 Appendix J, Option B. Currently,

the LLRTs for the subject piping are performed every refuel outage (24 month cycle). The LLRT boundary is identified in surveillance test procedures, and includes the subject vacuum breaker and exhaust lines.

In addition, the subject piping and components are required to be LLRT tested under 10 CFR 50 Appendix J, Option B, as part of the containment penetration boundary. An additional pressure test once every inspection period, and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to use 10 CFR 50 Appendix J, Option B Local Leak Rate Testing provides adequate assurance of structural integrity and therefore an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements."

Evaluation: For ASME Class 2 pressure retaining components, Code Category C-H, Item Numbers C7.30 and C7.40 for piping and C7.70 and C7.80 for valves, ASME Section XI, IWC 2500-1 of the Code requires a system pressure test (IWC-5221) in each inspection period and a system hydrostatic test (IWC-5222) in each inspection interval to be conducted and VT-2 visual examination performed in accordance with IWA-5240 requirements. The normal system operating pressure is less than 1 psig and the pressurizing fluid is nitrogen gas. The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. A VT-2 inspection looking for a nitrogen gas leak with approximately 1 psig system pressure would be inconclusive and would not effectively detect a leak, if any.

The proposed alternative includes the Appendix J Local Leak Rate Tests (LLRTs) for any leaks in the system once per refueling outage (24 month cycle). The subject piping is pressurized to 44 psig, a substantially higher pressure than that during a system pressure test or a system hydrostatic test. 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 then be performed. Therefore, the LLRT test would effectively detect a leak, if any. The combination of visual examinations and LLRT tests would ensure that the system's structural integrity and leakage integrity are maintained. Therefore, the proposed alternative will provide an acceptable level of quality and safety.

The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. The test results would likely be inconclusive. However, the staff believes that an acceptable level of quality and safety is provided by the licensee's proposed alternative since the LLRT tests will be performed at a much higher pressure which would effectively detect leaks and ensure maintaining the Code-required structural and leakage integrity. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.7 Request for Relief No. RR-13, Revision 3, (Table RR-13-3)

Code Requirement: 1989 ASME Section XI, IWC-5221 and IWC-5222 require a System Pressure Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Pressure Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 2 HPCI Turbine Exhaust Vacuum Breaker Lines as follows:

LGS Unit Number	System Identification	Components	Reference P&ID
1	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	ISI-M-55, Sheet 1
2	HPCI	Turbine Exhaust Vacuum Breaker lines HBB-208 and HBB-244 between and including valves HV-55-2F095, HV-55-2F093, HV-55-2F072, and 55-2F021	ISI-M-55, Sheet 2

In lieu of the System Pressure Test and the System Hydrostatic Test, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject lines will be verified by the Local Leak Rate Test (LLRT) performed once each refueling outage.

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

"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."

In response to the staff's RAI, the Local Leak Rate Testing (LLRT) is performed in accordance with 10 CFR 50 Appendix J, Option B. Currently, the LLRTs for the subject

piping are performed every refuel outage (24 month cycle). The LLRT boundary is identified in surveillance test procedures, and includes the subject vacuum breaker and exhaust lines.

In addition, the subject piping and components are required to be LLRT tested under 10 CFR 50 Appendix J, Option B, as part of the containment penetration boundary. An additional pressure test once every inspection period and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to use 10 CFR 50 Appendix J, Option B Local Leak Rate Testing provides adequate assurance of structural integrity and therefore an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements."

Evaluation: For ASME Class 2 pressure retaining components, Code Category C-H, Item Numbers C7.30 and C7.40 for piping and C7.70 and C7.80 for valves, ASME Section XI, IWC 2500-1 of the Code requires a system pressure test (IWC-5221) in each inspection period and a system hydrostatic test (IWC-5222) in each inspection interval to be conducted and VT-2 visual examination performed in accordance with IWA-5240 requirements. The normal system operating pressure is less than 1 psig and the pressurizing fluid is nitrogen gas. The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. A VT-2 inspection looking for a nitrogen gas leak with approximately 1 psig system pressure would be inconclusive and would not effectively detect a leak, if any.

The proposed alternative includes the Appendix J Local Leak Rate Tests (LLRTs) for any leaks in the system once per refueling outage (24 month cycle). The subject piping is pressurized to 44 psig, a substantially higher pressure than that during a system pressure test or a system hydrostatic test. 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 then be performed. Therefore, the LLRT test would effectively detect a leak, if any. The combination of visual examinations and LLRT tests would ensure that the system's structural integrity and leakage integrity are maintained. Therefore, the proposed alternative will provide an acceptable level of quality and safety.

The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. The test results would likely be inconclusive. However, the staff believes that an acceptable level of quality and safety is provided by the licensee's proposed alternative since the LLRT tests will be performed at a much higher pressure which would effectively detect leaks and ensure maintaining the Code-required structural and leakage integrity. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.8 Request for Relief No. RR-13, Revision 3, (Table RR-13-4)

Code Requirement: 1989 ASME Section XI, IWD-5221 and IWD-5223 require a System Inservice Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject tubing and components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Inservice Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 3 Containment Atmospheric Control tubing to suppression pool pressure and level instrumentation outboard of the following:

LGS Unit 1: SV-57-101 (Reference P&ID: ISI-M-57, Sheet 1, ISI-M-52, Sheet 1),
LGS Unit 2: SV-57-201 (Reference P&ID: ISI-M-57, Sheet 4, ISI-M-52, Sheet 3).

In lieu of these tests, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject tubing and components will be verified by the channel checks required by the plant technical specifications and by the Integrated Leak Rate Test (ILRT).

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 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."
In response to the staff's RAI, the licensee stated that the procedures require that valves SV-57-1(2)01 be open to perform the Integrated Leak Rate Test (ILRT). Therefore, the instrument tubing is subject to the pressure required by the ILRT and is within the ILRT boundary. The Unit 1 ILRT was performed on 08/03/84, 08/13/87, 11/23/90, and 05/17/98. It is currently on a 10-year frequency, as allowed by 10 CFR 50 Appendix J Option B. The Unit 2 ILRT was performed on 05/08/89, 03/12/93, and 5/22/99. It is currently also on a 10-year frequency, as allowed by 10 CFR 50 Appendix J, Option B.

In addition, there are no test taps on the subject instrument tubing and plant modifications would be required in order to perform the ASME Section XI pressure tests resulting in a hardship. An additional pressure test once every inspection period and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is also a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to perform channel checks of the remote pressure indicators every 12 hours and the use 10 CFR 50 Appendix J, Option B Integrated Leak Rate Testing provides adequate assurance of structural integrity and therefore an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "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."

Evaluation: For ASME Class 3, Code Category D-A, Item Number D1.10 pressure retaining components, ASME Section XI, IWD 2500-1 of the Code, requires a system pressure test (IWD-5221) in each inspection period and a system hydrostatic test (IWD-5223) in each inspection interval to be conducted in accordance with IWA-5000 requirements. The normal system operating pressure is less than 1 psig and the pressurizing fluid is nitrogen gas. The Code-required System Inservice Test and System Hydrostatic Test would be performed at close to 1 psig. A VT-2 inspection looking for a nitrogen gas leak with approximately 1 psig system pressure would be inconclusive and would not effectively detect a leak, if any.

The proposed alternative includes monitoring suppression pool pressure every 12 hours and channel checks every 24 hours to verify operability of the suppression pool level indicators, and the Integrated Leak Rate Test (ILRT) to identify any leaks in the system. For the monitoring suppression pool pressure and channel checks, a significant leak will cause an improper reading, which will be corrected and retested. For the ILRT, valves SV-57-1(2)01 remain open during the test in order to pressurize the subject system to 44 psig, a substantially higher pressure than that during a system pressure test or a system hydrostatic test. The ILRT test would effectively detect a leak, if any. The combination of monitoring suppression pool pressure and ILRT tests would ensure that system's structural integrity and leakage integrity are maintained. Therefore, the proposed alternative will provide an acceptable level of quality and safety.

The Code-required System Inservice Test and System Hydrostatic Test would be performed at close to 1 psig. The test results would likely be inconclusive. However, the staff believes that an acceptable level of quality and safety is provided by the licensee's proposed alternative since the ILRT tests will be performed at a much higher pressure which would effectively detect leaks and ensure maintaining the Code-required structural and leakage integrity. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.9 Request for Relief No. RR-13, Revision 3, (Table RR-13-5)

Code Requirement: 1989 ASME Section XI, IWC-5221 and IWC-5222 require a System Pressure Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Pressure Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 2 Post-LOCA Recombiner piping and Class 2 hydrogen/oxygen sampling lines as follows:

LGS Unit Number	System Identification	Components	Reference P&ID
1	Post-LOCA Recombiner	Piping HBB-128 and HBB-127 between and including "A" Recombiner and valves HV-57-161 and HV-57-162, and piping HBB-126 and HBB-124 between and including "B" Recombiner and valves HV-57-163 and HV-57-164	ISI-M-57, Sheets 1,2
	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), and lines 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)	ISI-M-57, Sheets 1,2,3
2	Post-LOCA Recombiner	Piping HBB-228 and HBB-227 between and including "A" Recombiner and valves HV-57-261 and HV-57-262, and piping HBB-226 and HBB-224 between and including "B" Recombiner and valves HV-57-263 and HV-57-264	ISI-M-57, Sheets 4,5
	Hydrogen/Oxygen sampling	Lines HCB-216 and HCB-217, between connections on the Combustible Gas Analyzer Package 20-S205, and valves SV-57-259, SV-57-241, SV-57-242 and SV-57-247B, SV-57-243, SV-57-244 and SV-57-246B, and SV-57-245 (HCB-217), and lines HCB-216 and HCB-217, between connections on the Combustible Gas Analyzer Package 20-S206, and valves SV-57-284 and SV-57-246A, SV-57-286 and SV-57-247A, SV-57-295, SV-57-290 and 57-2090, and SV-57-285 (HCB-217)	ISI-M-57, Sheets 4,5,6

In lieu of the System Pressure Test and the System Hydrostatic Test, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject lines will be verified by the Local Leak Rate Test (LLRT) performed once each refueling outage.

Licensee's Basis for Requesting Relief (as stated): "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 (LLRT) 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 test.

B. CPIs have the ability to quantify leakage that is not feasible with 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 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."

In response to the staff's RAI, the licensee stated that the inspections associated with the Contaminated Pipe Inspection (CPI) procedures for the subject piping and components are performed on a 24 month frequency. The subject piping and components are identified in surveillance test procedures for LGS, Units 1 and 2. The Contaminated Pipe Inspection Program is the Leak Reduction Program as described in UFSAR 6.2.8 ("Leakage Reduction Program"). The term "Contaminated Pipe Inspection" comes from the surveillance test procedure used to satisfy the Leak Reduction Program as described in UFSAR Section 6.2.8.

Also, the subject piping and components are inspected as part of the CPI Program as required by Limerick Generating Station, Units 1 and 2 Technical Specification 6.8.4.a, and described in UFSAR Section 6.2.8. The applicable CPI boundaries are identified in surveillance test procedures and includes the subject sampling lines.

In addition, the subject lines HBB-127, HBB-128, HBB-227, and HBB-228 and components within those lines, as described in the relief request, are required to be LLRT tested under 10 CFR 50 Appendix J, Option B, and are also required to be examined under the Contaminated Pipe Inspection Program. The subject lines HBB-116, HBB-117, HBB-216, and HBB-217 and components within those lines, as described in the relief request, are required to be examined under the Contaminated Pipe Inspection Program as required by Technical Specification 6.8.4.a and as described in UFSAR Section 6.2.8. An additional pressure test once every inspection period and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to use 10 CFR 50 Appendix J, Option B, Local Leak Rate Testing and Contaminated Pipe Inspections as described above provides adequate assurance of structural integrity and, therefore, an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "System Contaminated Pipe Inspection (CPI) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements."

Evaluation: For ASME Class 2 pressure retaining components, Code Category C-H, Item Numbers C7.30 and C7.40 for piping and C7.70 and C7.80 for valves, ASME Section XI, IWC 2500-1 of the Code, requires a system pressure test (IWC-5221) in each inspection period and a system hydrostatic test (IWC-5222) in each inspection interval to be conducted and VT-2 visual examination performed in accordance with IWA-5240 requirements. The normal system operating pressure is less than 1 psig and the pressurizing fluid is nitrogen gas. The Code-required System Pressure Test and

System Hydrostatic Test would be performed at close to 1 psig. A VT-2 inspection looking for a nitrogen gas leak with approximately 1 psig system pressure would be inconclusive and would not effectively detect a leak, if any.

The proposed alternative includes examining the post-LOCA recombiner piping under the Contaminated Pipe Inspection (CPI) Program once every refueling outage. CPIs for this system are performed similar to 10CFR50, Appendix J Local Leak Rate Tests (LLRTs). The hydrogen/oxygen sampling lines in the combustible gas analyzer continuously sample the containment atmosphere. A tubing leak will cause improper (high) readings that would be repaired and retested. Also, the subject piping is pressurized to 44 psig, a substantially higher pressure than that during a system pressure test or a system hydrostatic test. 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 then be performed. Therefore, the CPI would effectively detect a leak, if any. The combination of visual examinations and CPI would ensure that the system's structural integrity and leakage integrity are maintained. Therefore, the proposed alternative will provide an acceptable level of quality and safety.

The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. The test results would likely be inconclusive. However, the staff believes that an acceptable level of quality and safety is provided by the licensee's proposed alternative since the CPI will be performed at a much higher pressure which would effectively detect leaks and ensure maintaining the Code-required structural and leakage integrity. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.10 Request for Relief No. RR-13, Revision 3, (Table RR-13-6)

Code Requirement: 1989 ASME Section XI, IWC-5221 and IWC-5222 require a System Pressure Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Pressure Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 2 Primary Containment Atmospheric Control piping as follows:

LGS Unit Number	System Identification	Components	Reference P&ID
1	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	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	ISI-M-57, Sheet 1
	Hydrogen/ oxygen sample	Line HCB-116, between and including containment penetration X-221A and valves SV-57-141 and SV-57-184	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	ISI-M-57, Sheet 1

LGS Unit Number	System Identification	Components	Reference P&ID
	Drywell air purge	Line HBB-124, between and including valves HV-57-123 and HV-57-135	ISI-M-57, Sheet 1
	Suppression pool air purge	Line HBB-126, between and including valves HV-57-124 and HV-57-147	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	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 HBC-116	ISI-M-57, Sheets 1 and 2
	Hydrogen/ oxygen sample	Line HCB-116, between and including containment penetration X-221B and valves SV-57-186 and HV-55-126	ISI-M-57, Sheet 2 & ISI-M-55, Sheet 1
	Drywell purge exhaust bypass	Line HBB-127, between and including valves 57-1807 and HV-57-117	ISI-M-57, Sheet 2
	Suppression pool purge exhaust bypass	Line HBB-128, between and including valves 57-1810 and HV-57-118	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	ISI-M-57, Sheet 2
2	Hydrogen/ oxygen sample	Lines HCB-216, between and including containment penetrations X-28A and X-28B and valves SV-57-242, SV-57-243, SV-57-244 and SV-57-295	ISI-M-57, Sheets 4 and 5
	Drywell low flow nitrogen makeup	Line HCB-216, between and including containment penetration X-62 and valves HV-57-216 and SV-57-259	ISI-M-57, Sheet 4
	Hydrogen/oxygen sample	Line HCB-216, between and including containment penetration X-221A and valves SV-57-241 and SV-57-284	ISI-M-57, Sheets 4 and 5
	Nitrogen purge	Line HBB-225, between and including valves HV-57-209, HV-57-221 and HV-57-231	ISI-M-57, Sheet 4
	Drywell air purge	Line HBB-224, between and including valves HV-57-223 and HV-57-235	ISI-M-57, Sheet 4
	Suppression pool air purge	Line HBB-226, between and including valves HV-57-224 and HV-57-247	ISI-M-57, Sheet 4
	Drywell purge to standby gas treatment	Line HBB-227, between and including valves HV-57-214 and HV-57-215, and line HCB-217, between and including connection to line HBB-227 and valve SV-57-245	ISI-M-57, Sheets 4 and 5
	Suppression pool low flow nitrogen makeup	Line HCB-216, between and including containment penetration X-220A, valve SV-57-290 and connection to drywell low flow nitrogen makeup line HBC-216	ISI-M-57, Sheets 4 and 5
	Hydrogen/oxygen sample	Line HCB-216, between and including containment penetration X-221B and valves SV-57-286	ISI-M-57, Sheet 5
	Drywell purge exhaust bypass	Line HBB-227, between and including valves 57-2815 and HV-57-217	ISI-M-57, Sheet 5
	Suppression pool purge exhaust bypass	Line HBB-228, between and including valves 57-1818 and HV-57-218	ISI-M-57, Sheet 5

LGS Unit Number	System Identification	Components	Reference P&ID
	Suppression pool purge air exhaust	Lines HBB-228 and HCB-217, between and including valves HV-57-204, HV-57-212 and SV-57-285	ISI-M-57, Sheet 5

In lieu of the System Pressure Test and the System Hydrostatic Test, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject lines will be verified by the Local Leak Rate Test (LLRT) performed once each refueling outage.

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

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."

In response to the staff's RAI, the licensee stated that the Local Leak Rate Testing is performed in accordance with 10 CFR 50 Appendix J, Option B. Currently, the LLRT procedures for this subject piping are performed every refuel outage (24 month cycle). The subject piping and valves are included in the LLRT boundaries described in various procedures.

In addition, the subject piping and components are required to be LLRT tested under 10 CFR 50 Appendix J, Option B, as part of the containment penetration boundary. An additional pressure test once every inspection period and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to use 10 CFR 50 Appendix J, Option B Local Leak Rate Testing provides adequate assurance of structural integrity of the primary containment atmospheric control piping, and therefore an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements."

Evaluation: For ASME Class 2 pressure retaining components, Code Category C-H, Item Numbers C7.30 and C7.40 for piping and C7.70 and C7.80 for valves, ASME Section XI, IWC 2500-1 of the Code, requires a system pressure test (IWC-5221) in each inspection period and a system hydrostatic test (IWC-5222) in each inspection interval to be conducted and VT-2 visual examination performed in accordance with IWA-5240 requirements. The normal system operating pressure is less than 1 psig and the pressurizing fluid is nitrogen gas. The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. A VT-2 inspection looking for a nitrogen gas leak with approximately 1 psig system pressure would be inconclusive and would not effectively detect a leak, if any.

The proposed alternative includes the Appendix J Local Leak Rate Tests (LLRTs) for any leaks in the system once per refueling outage (24 month cycle). The subject piping is pressurized to 44 psig, a substantially higher pressure than that during a system pressure test or a system hydrostatic test. 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 then be performed. Therefore, the LLRT test would effectively detect a leak, if any. The combination of visual examinations and LLRT tests would ensure that the system's structural integrity and leakage integrity are maintained. Therefore, the proposed alternative will provide an acceptable level of quality and safety.

The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. The test results would likely be inconclusive. However, the staff believes that an acceptable level of quality and safety is provided by the licensee's proposed alternative since the LLRT tests will be performed at a much higher pressure which would effectively detect leaks and ensure maintaining the Code-required structural and leakage integrity. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.11 Request for Relief No. RR-13, Revision 3, (Table RR-13-7)

Code Requirement: 1989 ASME Section XI, IWC-5221 and IWC-5222 require a System Pressure Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Pressure Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 2 Plant Process Radiation Monitoring System piping as follows:

LGS Unit Number	System Identification	Components	Reference P&ID
1	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	ISI-M-26, Sheets 1,2

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	ISI-M-26, Sheets 7,8

In lieu of the System Pressure Test and the System Hydrostatic Test, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject lines will be verified by the Local Leak Rate Test (LLRT) performed once each refueling outage.

Licensee's Basis for Requesting Relief (as stated): "During Local Leak Rate Tests (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 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, and an appropriate retest would be performed."

In response to the staff's RAI, the licensee stated that the LLRT procedures for this subject piping are performed every refuel outage (24 month cycle). The subject piping and valves are included in the LLRT boundaries described in surveillance test procedures. In addition, the plant process radiation monitoring system piping is required to be LLRT tested under 10 CFR 50 Appendix J, Option B, as part of the containment penetration boundary. An additional pressure test once every inspection period and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to use 10 CFR 50 Appendix J, Option B Local Leak Rate Testing provides adequate assurance of structural integrity of the plant process radiation monitoring system piping, and therefore an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements."

Evaluation: For ASME Class 2 pressure retaining components, Code Category C-H, Item Numbers C7.30 and C7.40 for piping and C7.70 and C7.80 for valves, ASME Section XI, IWC 2500-1 of the Code, requires a system pressure test (IWC-5221) in

each inspection period and a system hydrostatic test (IWC-5222) in each inspection interval to be conducted and VT-2 visual examination performed in accordance with IWA-5240 requirements. The normal system operating pressure is less than 1 psig and the pressurizing fluid is nitrogen gas. The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. A VT-2 inspection looking for a nitrogen gas leak with approximately 1 psig system pressure would be inconclusive and would not effectively detect a leak, if any.

The proposed alternative includes the Appendix J Local Leak Rate Tests (LLRTs) for any leaks in the system once per refueling outage (24 month cycle). The subject piping is pressurized to 44 psig, a substantially higher pressure than that during a system pressure test or a system hydrostatic test. 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 then be performed. Therefore, the LLRT test would effectively detect a leak, if any. The combination of visual examinations and LLRT tests would ensure that the system's structural integrity and leakage integrity are maintained. Therefore, the proposed alternative will provide an acceptable level of quality and safety.

The Code-required System Pressure Test and System Hydrostatic Test would be performed at close to 1 psig. The test results would likely be inconclusive. However, the staff believes that an acceptable level of quality and safety is provided by the licensee's proposed alternative since the LLRT tests will be performed at a much higher pressure which would effectively detect leaks and ensure maintaining the Code-required structural and leakage integrity. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.12 Request for Relief No. RR-13, Revision 3, (Table RR-13-8)

Code Requirement: 1989 ASME Section XI, IWC-5221 and IWC-5222 require a System Pressure Test during each inspection period and a System Hydrostatic Test during each inspection interval for the subject components, respectively.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from both the System Pressure Test during each inspection period and the System Hydrostatic Test during each inspection interval, for the Class 2 Primary Containment Instrument Gas System piping as follows:

LGS Unit Number	Components	Reference P&ID
1	HCB-124 piping and components at penetration X-3D, between and including valves HV-59-151B and 59-1111	Not Available
	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-59-129AB 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	

LGS Unit Number	Components	Reference P&ID
	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 59-101	
	HCB-110 piping and components at penetration X-218, between and including valves HV-59-135 and 59-1001	ISI-M-59, Sheet 1
2	HCB-224 piping and components at penetration X-3D, between and including valves HV-59-251B and 59-2111	Not Available
	HCB-224 piping and components at penetration X-27A, between and including valves HV-59-251A and 59-2129	
	HCB-210 piping and components at penetration X-3B, between and including valves HV-59-229B and 59-2005B	
	HCB-210 piping and components at penetration X-40H, between and including valves HV-59-229AB and 59-2005A	
	Tubing and components from and including valves XV-59-241A, B, C, D, & E; to penetrations X-35C, D, E, F, & G respectively	
	HCB-210 piping and components at penetration X-35B, between and including valves HV-59-231 and 59-2056	
	HCB-209 piping and components at penetration X-40F, between and including valves HV-59-202 and 59-201	
	HCB-210 piping and components at penetration X-218, between and including valves HV-59-235 and 59-2001	ISI-M-59, Sheet 3

In lieu of the System Pressure Test and the System Hydrostatic Test, the licensee proposes an alternative to verify the leakage from the subject pressure retaining components. The integrity of the subject lines will be verified by the Local Leak Rate Test (LLRT) performed once each refueling outage.

Licensee's Basis for Requesting Relief (as stated): "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 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 air systems.

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."

In response to the staff's RAI, the licensee stated that the LLRT procedures for the primary containment instrument gas system piping are performed every refuel outage (24 month cycle). All subject piping and valves are included in the LLRT boundaries described in surveillance test procedures.

Also, during normal plant operation, this piping is nominally at 100 psig. Although LLRT testing is performed at the containment peak design pressure, nominally 44 psig, there is sufficient driving force during the LLRT for the detection and location of through wall leakage thus making the test results conclusive. LLRT testing of the subject piping and components is adequate because the tests are performed more frequently than ASME Section XI periodic system pressure tests and the 10-year hydrostatic test. Also, LLRTs have the ability to quantify leakage that is not feasible with VT-2 inspections on air systems. LLRT testing of the subject piping and components is conservative because the LLRT boundary includes some unclassified piping and through seat valve leakage that would not be identified in a VT-2 inspection.

In addition, the subject piping and components are required to be LLRT tested under 10 CFR 50 Appendix J, Option B, as part of the containment penetration boundary. An additional pressure test once every inspection period and a hydrostatic test once every inspection interval to satisfy ASME Section XI requirements is a hardship in that the ASME Section XI pressure tests would present a redundant testing situation that would result in additional radiation exposure to examination personnel without a compensating increase in the level of quality and safety. The proposed alternative to use 10 CFR 50 Appendix J, Option B, Local Leak Rate Testing provides adequate assurance of structural integrity and therefore an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): "10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements."

Evaluation: For ASME Class 2 pressure retaining components, Code Category C-H, Item Numbers C7.30 and C7.40 for piping and C7.70 and C7.80 for valves, ASME Section XI, IWC 2500-1 of the Code, requires a system pressure test (IWC-5221) in each inspection period and a system hydrostatic test (IWC-5222) in each inspection interval to be conducted, with a VT-2 visual examination performed in accordance with IWA-5240 requirements.

The proposed alternative includes the Appendix J Local Leak Rate Tests (LLRTs) for any leaks in the system once per refueling outage (24 month cycle). The subject piping is pressurized to 44 psig during the LLRT tests. The normal operating pressure for these lines is 100 psig. The Code-required system pressure test and system hydraulic test would be at 100 psig and 130 psig respectively. The proposed alternative test at 44 psig may not be sufficient in these small instrumentation lines for detecting and locating through-wall leakage that would be detected at 100 psig or 130 psig. Therefore, the proposed alternative did not provide an acceptable level of quality as compared to the Code-required tests.

The subject piping and components are under 100 psig during normal operation. The Code-required tests can be performed. In addition, the licensee did not demonstrate that compliance with the Code would result in hardship other than unspecified radiation exposure to examination personnel. No detail has been provided as to the level of radiation exposure that would incur during the Code-required tests. Therefore, impracticality or hardship in performing the Code-required tests has not been demonstrated.

It is concluded that the proposed alternative will not provide an acceptable level of quality and safety as compared to the Code-required tests. In addition, the Code-required pressure tests are not impractical to perform and that imposition of these requirements does not create a hardship or significant burden on the licensee. Therefore, it is recommended that the relief request be denied.