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UNION ELECTRIC

May 15, 1996

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U.S. Nuclear Regulatory Commission
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Gentlemen:

ULNRC-03378
TAC No. M90859

Callaway Plant
Docket Number 50-483
Inservice Inspection Plan Relief Requests

References: 1) ULNRC-3086 dated October 12, 1994
2) ULNRC-3255 dated August 18, 1995
3) NRC letter dated December 20, 1995

Union Electric submitted Revisions 0 and 1 of the second 10-year interval Inservice Inspection Program Plan via References 1 and 2, respectively. The NRC staff approved the relief requests associated with the second 10-year plan in Reference 3. However, two of the relief requests as approved by the NRC require clarification.

Relief Request ISI-09, Basis for Relief, states in paragraph 3 that "The Type A leakage test is performed three times in a ten year interval and the Type B and C tests are performed at intervals not greater than 24 months." The NRC has subsequently approved Option B of 10CFR50, Appendix J, which allows Local Leak Rate Tests for Type C penetrations to extend to a maximum interval of five years and Integrated Leak Rate Tests to extend to a maximum interval of ten years. Therefore, Relief Request ISI-09 is amended to state that primary reactor containment integrity is periodically verified by performing leakage tests in accordance with 10CFR50, Appendix J.

Relief Request ISI-07 was approved conditionally in Reference 3. The conditions that, "the licensee shall remove all existing removable insulation each

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refueling outage at bolted connections in systems borated for the purpose of controlling reactivity and perform a VT-2 visual examination for evidence of leakage" are more stringent than the frequencies specified for Class 2 category C-H piping. These, conditions negate the relief altogether. By specifying all "removable insulation" no relief is granted from IWA-5242. The majority of piping systems covered by ISI-07 use removable insulation to meet 10CFR50, Appendix A requirements for accessibility.

In addition, the visual inspections imposed by IWA-5242 would be performed on bolted connections that are not susceptible to boric acid corrosion. Relief Request ISI-07 defines the current programs that ensure bolting degradation is minimized.

We understand that the conditions imposed on Relief Request ISI-07 include criteria from ASME Code Case N-533. However, based on the design of the subject piping systems, the hardships incurred, and the negligible gain in nuclear safety, Union Electric requests reconsideration of Relief Request ISI-07 with the additional justification provided as described in the basis for relief, and without consideration of Code Case N-533. If you have any questions concerning this letter, please contact us.

Very truly yours,

Donald F. Schnell

CDN/WEK/MMR

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RELIEF REQUEST NUMBER: ISI-09A

COMPONENT IDENTIFICATION

Code Class: 2

Reference: Table IWC-2500-1

Examination Category: C-H

Item Numbers: C7.30, C7.40, C7.70, and C7.80

Description: Alternate Provisions for Pressure Testing Code Class 2 Piping and Valves at Containment Penetrations Where the Balance of the System is Outside the Scope of Section XI.

Component Numbers:

Line Number	Penetration	Description
BB-103-HCB-1"	P-62	Pressurizer relief tank gas line
BL-028-HCB-3"	P-25	Reactor water storage tank to RCP standpipes
BM-053-HBB-3"	P-78	Steam Generator drain
EC-067-HCB-6"	P-53	Fuel pool cooling return
EC-072-HCB-6"	P-54	Refueling pool to fuel pool cooling pump suction
EC-081-HCB-3"	P-55	Refueling pool to fuel pool skimmer pump
EM-071-BCB-3/4"	P-92	SIS pump test line return to Reactor water storage tank
GP-003-HBB-1"	P-51	ILRT test connection lines
GP-005-HBB-1"	P-51	ILRT test connection lines
GS-025-HBB-6"	P-65	Hydrogen purge subsystem to ESF filters
GT-007-HBB-36"	V-160	Containment shutdown purge
GT-004-HBB-36"	V-161	Containment shutdown purge
GT-029-HBB-18"	V-161	Containment shutdown purge
GT-034-HBB-18"	V-160	Containment shutdown purge
GT-033-HBB-18"	V-160	Containment shutdown purge
GT-030-HBB-18"	V-161	Containment shutdown purge
HB-015-HCB-3"	P-26	From reactor coolant drain tank heat exchanger
HB-025-HBB-3/4"	P-44	Reactor coolant drain tank to waste gas compressor
HD-015-HBB-2"	P-43	Auxiliary steam for reactor vessel head decontamination

Component Numbers (Cont.):

Line Number	Penetration	Description
KA-244-HCB-1 1/2"	P-30	Compressed air
KA-259-HCB-1 1/2"	P-30	Compressed air
KA-051-HBB-5"	P-63	Service air
KA-261-HBB-1"	P-63	Reactor building service air
KA-732-HBB-1"	N/A	Personnel hatch penetration test lines
KA-733-HBB-1"	N/A	Personnel hatch penetration test lines
KB-001-HCB-2"	P-98	Breathing air
KC-560-HBB-4"	P-67	Fire protection
LF-842-HCB-6"	P-32	Containment building floor drain header
SJ-002-BCB-1"	P-69	Nuclear sampling from pressurizer vapor space
SJ-003-ECB-1"	P-95	Nuclear sampling from accumulator tanks
SJ-001-BCB-1"	P-93	Loop 1 hot leg liquid sample to PASS
SJ-029-BCB-1"	P-93	Loop 1 hot leg liquid sample to PASS
SJ-021-BCB-1"	P-64	Loop 3 hot leg & pressurizer liquid sample to PASS
SJ-024-BCB-1"	P-57	PASS to reactor coolant drain tank
SJ-025-BCB-1"	P-58	PASS to reactor coolant drain tank

CODE REQUIREMENT

ASME Section XI, Table IWC-2500-1, Examination Category C-H, requires the performance of a visual VT-2 examination during a system pressure test on Code Class 2 pressure retaining components. Note 7 of this table states, "The pressure boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required."

BASIS FOR RELIEF

Union Electric Company requests relief from the requirement to perform a pressure test in accordance with ASME Section XI, Table IWC-2500-1, Examination Category C-H on the Code Class 2 lines listed above. Based on the discussion below, these pressure tests are considered redundant and without a compensating increase in the level of quality or safety.

The lines listed above are non-safety related portions of piping systems that penetrate the primary reactor containment. At each containment penetration, the process pipe is classified Code Class 2 and provided with isolation valves that are either locked closed during normal operation, capable of automatic closure, or capable of remote closure to support the containment integrity function. The piping and valves are considered part of the primary reactor containment and upgraded to Code Class 2 at the penetration only to support the primary reactor containment integrity function. Except for this, the lines listed above provide no safety function.

The primary reactor containment integrity, including all containment penetrations, is periodically verified by performing leakage tests in accordance with a 10 CFR 50, Appendix J. Each of the Code Class 2 lines listed above and its associated isolation valves are tested during an Appendix J Type A, B or C leakage test at a pressure not less than 48.1 psig, peak calculated containment pressure. Performance of these Appendix J leak tests will verify the integrity of the subject Code Class 2 lines at each respective penetration. Appendix J Option B test intervals will not exceed five years for an LLRT on Type C penetrations and ten years for an ILRT. The performance of ASME Section XI, Examination Category C-H pressure tests on these same lines will provide little, if any, additional verification of primary reactor containment integrity. Based on this, the performance of Examination Category C-H pressure tests on these lines is considered by Union Electric to be unnecessary and provides a negligible increase in the level of quality or safety.

This Relief Request mirrors the requirements of ASME Code Case N-522 which has not yet been approved in Regulatory Guide 1.147.

PROPOSED ALTERNATE PROVISIONS

Union Electric shall perform 10 CFR 50, Appendix J leakage tests on the primary reactor containment penetration lines listed above, and on their associated valves, in accordance with Callaway Technical Specification 3/4.6.

RELIEF REQUEST ISI-07A

COMPONENT FUNCTION

Code Class:	1 and 2
Reference:	IWA-5242(a)
Examination Category:	B-P and C-H
Item Numbers:	All Item Numbers Listed Under Examination Categories B-P and C-H
Description:	Alternate Rules for Insulation Removal During IWA-5000 Pressure Tests at Bolted Connections in Systems Borated for the Purpose of Controlling Reactivity
Component Numbers:	Bolted Connections in Systems Borated for the Purpose of Controlling Reactivity

CODE REQUIREMENTS

ASME Section XI, 1989 Edition, Paragraph IWA-5242(a) states, "For systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2."

BASIS FOR RELIEF

Relief is requested from the requirement to remove insulation for visual VT-2 examination of bolted connections during a system pressure test on systems borated for the purpose of controlling reactivity. Union Electric believes that removal of insulation at bolted connections for the sole purpose of visual examination is impractical and will result in hardship and unusual difficulty for the reasons listed below:

1) The visual VT-2 examination of the Reactor Coolant System (RCS) is performed following the majority of all outage maintenance activities and just prior to reactor criticality. The RCS is at a normal operating temperature and pressure (557°F and 2235 psig) during the pressure test as required by IWA-5000. Performance of a visual VT-2 examination, re-installation of insulation, and disassembly of scaffolding under these conditions is a personnel safety hazard.

2) The anticipated dose based on a best case analysis from past experience (best RCS cleanup) and plant history from check valve flow testing is 11 Person-Rem exposure during Refuel 8 for the sole purpose of supporting these visual exams. This is approximately 9% of the total budgeted dose for Refuel 8.

3) Differential thermal expansion occurs when insulation is removed from a bolted connection that creates a greater chance for leakage. When insulation is removed, the flanges expand at a rate greater than the bolts causing stress on the connection. Once the bolts expand, the stress has caused the equivalent of untorquing the connection. The less tightened connection then has a higher probability of leaking.

4) Code Class 1 and 2 systems borated for the purpose of controlling reactivity are extensive and large systems covering many areas inside and outside of containment on multiple elevations. Scaffolding will be required to access many of the bolted connections. In addition, many of the bolted connections are located in difficult to access areas and in medium to high radiation areas. Insulation removal combined with scaffolding requirements will increase outage costs. Approximately 590 insulator manhours and 428 scaffolder manhours will be required to be added to Refuel 8 to support the performance of these VT-2 exams. Based on craft hourly labor rates as of June, 1995 for outage work, this equates to $38,495. The VT-2 is performed between modes 3 and 2 ascending, which normally has a duration of six to eight hours. Under the new requirements, critical path time will be extended several hours to accommodate the insulation installation and scaffold removal inside the bio-shield wall and throughout containment after the examination is complete. Critical path cost is currently estimated at $207,000 per day.

Union Electric believes that the established Callaway programs described below in addition to the alternative examination proposed below, provide an acceptable level of safety and quality for bolted connections in systems borated for the purpose of controlling reactivity.

1) In response to NRC Generic Letter 88-05, Union Electric established a program for Engineering to inspect all boric acid leaks discovered in the containment building and to evaluate the impact of those leaks on carbon steel or low alloy steel components. All evidence of leaks, including boric acid crystals or residue, is inspected and evaluated regardless of whether the leak was discovered at power or during an outage. Issues such as the following are considered in the inspection and evaluation: 1) evidence of corrosion or metal degradation, 2) effect the leak may have on the pressure boundary, 3) possibility of boric acid traveling along the inside of insulation on piping, and 4) possibility of dripping or spraying on other components. Based on this evaluation, Engineering initiates appropriate corrective actions to prevent reoccurrence of the leak and to repair, if necessary, any degraded materials or components.

2) In addition to the nondestructive examinations required by ASME Section XI, Union Electric has committed to the bolting examination requirements of NRC Bulletin 82-02. In accordance with this Bulletin, at least two nondestructive examination techniques (e.g., ultrasonic, liquid penetrant, magnetic particle, or visual VT-1) are performed on bolted connections of the following components: Steam Generator primary manways, Pressurizer primary manway, Pressurizer safety valves, and a total of 22 Reactor Coolant System isolation valves that are greater than 6" NPS. As a minimum, two nondestructive examination techniques are used whenever the bolted connection of one of the subject components is disassembled for maintenance or other inspection. These additional examinations ensure that degradation mechanisms such as Stress Corrosion Cracking or corrosion do not go undetected in bolted connections critical to reactor safety.

3) All bolted connections on Callaway's Class 1 and 2 borated systems are either stainless materials SA-564 Grade 630 and SA-194 Grade 6 or superalloy SA-453 Grade 660. The stainless steels were designed to be resistant in corrosive applications. This is substantiated by documents such as EPRI NP-5679 which attests to the resistance of stainless steels to boric acid corrosion. The superalloy was designed for resistivity to acid corrosion environments due to its high nickel and chrome content and the inclusion of molybdenum specifically to inhibit inorganic acids such as boric acid. To ensure that degradation mechanisms in these metals are mitigated, Union Electric maintains a program at the Callaway Plant that controls materials (insulation, thread lubricant, boron, etc.) that may come in contact with safety related components, including bolting. This program ensures that impurities are not present in concentrations that would promote development of Stress Corrosion Cracking in stainless steel bolted connections. The only carbon steel bolted connections at the Callaway Plant on systems borated for the purpose of controlling reactivity are Steam Generators Manways, Reactor Coolant Pump Bolting and Pressurizer Manways. These areas will be inspected for leakage by plant programs with the insulation removed.

PROPOSED ALTERNATE EXAMINATION

Bolted connections fabricated of materials resistant to boric acid corrosion in systems borated for the purpose of controlling reactivity shall receive a visual VT-2 examination during the system pressure tests of IWB-5000 and IWC-5000 with the insulation installed. If evidence of leakage is detected, either by discovery of active leakage or evidence of boric acid crystals, the insulation shall be removed and the bolted connection shall be re-examined and, if necessary, evaluated in accordance with the corrective measures of Subarticle IWA-5250.

Carbon steel bolted connections within the Inservice Inspection boundaries will receive an inspection for boric acid residue with the insulation removed. In addition, a VT-2 inspection will be performed in accordance with ASME Section XI requirements with the insulation installed at normal operating pressure and temperature.

If insulation is removed for planned maintenance, repair, or other inspection at a bolted connection in a system borated for the purpose of controlling reactivity, a visual VT-2 examination shall be performed on the bolted connection prior to disassembly and, if evidence of leakage is discovered, evaluated in accordance with the corrective measures of Subarticle IWA-5250.