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CP-201200978
TXX-12129

Ref. # 10CFR50.55a(a)(3)(ii)

August 23, 2012

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

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NO. 50-445
RELIEF REQUEST NO. C-2 FOR THE UNIT 1 REACTOR PRESSURE VESSEL
LEAK-OFF FLANGE (THIRD ISI INTERVAL START DATE: AUGUST 13, 2010)

- REFERENCES:**
1. Letter logged TXX-10156 dated December 15, 2010, from Rafael Flores to the NRC submitting Relief Request No. C-9 for the Unit 1 Second 10 Year ISI Interval From 10CFR50.55a Inspection Requirements Due to Hardship (Second Interval Start Date: August 13, 2000)(ML103560595)
 2. Letter logged TXX-11128 dated October 13, 2011, from Rafael Flores to the NRC, Supplement to Relief Request No. C-9 for Alternative Pressure Testing Requirements for Reactor Vessel Flange Leak-off Piping (ML11292A052)
 3. NRC Letter dated December 19, 2011, from Michael T. Markley to Rafael Flores concerning Comanche Peak Nuclear Power Plant, Unit 1 - Approval of Relief Request No. C-9 for the Second 10-Year Inservice Inspection Interval (TAC No. ME5214) (ML113100092)

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(a)(3)(ii), Luminant Generation Company LLC (Luminant Power) is submitting Relief Request C-2 for Comanche Peak Nuclear Power Plant (CPNPP) Unit 1 for the third ten year inservice inspection interval. Luminant Power has determined that compliance with certain inspection requirements of ASME Section XI would result in an unnecessary hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The Reactor Pressure Vessel flange leak-off piping configuration precludes system pressure testing when the reactor vessel head is removed. The configuration also precludes pressurizing the line externally when the head is installed. A visual examination of the accessible areas was performed during the second interval on the unpressurized subject piping as part of the Class 2 leakage test. No evidence of leakage has been identified for the subject component. No undue risk to the public health and safety is presented by this request.

This relief request was previously submitted to the NRC via References 1 and 2 and reviewed via Reference 3.

A member of the STARS Alliance

Callaway · Comanche Peak · Diablo Canyon · Palo Verde · San Onofre · South Texas Project · Wolf Creek

AD47
NRK

Luminant Power requests approval of this relief request by March 29, 2013, to support the upcoming CPNPP Unit 1 refueling outage.

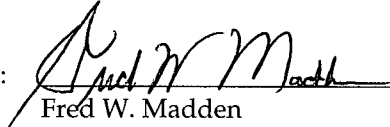
This communication contains no new commitments regarding CPNPP Unit 1.

Should you have any questions, please contact Mr. Jack Hicks at (254) 897-6725.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: 
Fred W. Madden
Director, Oversight & Regulatory Affairs

Attachment:s: (1) Relief Request C-2 (Third Interval Start Date: August 13, 2010)
(2) Reactor Pressure Vessel Seal Leak-off Details

c - E. E. Collins, Region IV
B. K. Singal, NRR
Resident Inspectors, Comanche Peak
Jack Ballard, ANIL, Comanche Peak

Luis Ponce
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COMANCHE PEAK NUCLEAR POWER PLANT UNIT 1
RELIEF REQUEST NUMBER – C-2 FOR THE REACTOR PRESSURE VESSEL LEAK-OFF PIPING
(THIRD 10-YEAR ISI INTERVAL START DATE: AUGUST 13, 2010)

1. ASME Code Component Affected:

ASME Code Class:	Code Class 2
References:	ASME Section XI, Table IWC-2500-1 and IWC-5222
Examination Category:	C-H (All Pressure Retaining Components)
Item Number:	C7.10
Description:	Alternative Pressure Testing Requirements for the RPV Flange Leak-Off Piping
Component:	NPS ¾" RPV Flange Seal Leak-Off Piping
Plant Drawings:	BRP-RC-1-RB-038, BRP-RC-1-RB-039, BRP-RC-1-RB-040, BRP-RC-1-RB-041, M1-0250

2. Applicable Code Edition and Addenda:

The applicable ASME Boiler and Pressure Vessel Code (hereafter referred to as the "Code") edition and addenda is ASME Section XI, "Rules for Inservice of Nuclear Power Plant Components," 1998 Edition through 2000 Addenda.

3. Applicable Code Requirement:

IWC-2500, Table IWC-2500-1, Code Category C-H, Item Number C7.10 requires that all Class 2 pressure retaining components be subject to a system leakage test with a Visual, VT-2 examination each inspection period. The system leakage test is performed at the pressure obtained while the subject portion of the system is performing its normal operating function or during a comparable test.

Per IWC-5222(a), the pressure retaining boundary includes the portion of the system required to operate or support the safety function up to and including the first normally closed valve.

4. Reason for Request: Impracticality of Compliance (10CFR50.55a(a)(3)(ii))

As discussed in 3, "Applicable Code Requirements," ASME Section XI, 1998 Edition through 2000 Addenda requires that Class 2 pressure boundary piping shall be pressure tested once each inspection period. The Reactor Pressure Vessel (RPV) head flange seal leak detection piping is separated from the reactor coolant pressure boundary by one passive membrane, which is an O-ring located on the inner vessel flange as shown in Attachment 2 to TXX-12129. A second O-ring is located on the outside of the tap in the vessel flange. Failure of the inner O-ring is the only condition under which this line is pressurized. Therefore, the line is not expected to be pressurized during the system pressure test following a refueling outage.

The configuration of this piping precludes system pressure testing while the vessel head is removed because the time required by personnel for the installation and removal of a threaded plug in the flange face to act as a pressure boundary for the test would incur significant dose (estimated 20 – 40 mRem/min), which would be an ALARA concern. This activity would also present a Foreign Material Exclusion issue for the 1/8" plug that would be required to be installed to complete a leakage test at pressure.

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The configuration also precludes pressurizing the line externally with the head installed. The top head of the vessel contains two grooves that hold the O-rings. The o-rings are held in place by a series of retainer clips that are housed in recessed cavities in the flange face. If a pressure test were to be performed with the head on, the inner O-ring would be pressurized in a direction opposite to its design function. This test pressure would result in a net inward force on the inner O-ring that would tend to push it into the recessed cavity that houses the retainer clips. The thin O-ring material would likely be damaged by the inward force.

5. **Burden Caused by Compliance:**

Purposely failing or not installing the inner O-ring in order to perform a pressure test would require a new O-ring set and the time and radiation exposure associated with removing and reinstalling the RPV head to replace the O-rings would be an undue hardship. Therefore, compliance with the IWC-5222(b) system pressure test requirements results in an unnecessary hardship without a sufficient compensating increase in the level of quality and safety.

6. **Proposed Alternative and Basis for Use:**

In lieu of the requirements of IWC-5222(b), a VT-2 visual examination of the accessible areas will be performed each period on the piping subjected to the static pressure head when the reactor cavity is filled. This test will be part of the reactor coolant Class 2 leakage test.

If the inner O-ring should leak during the operating cycle it will be identified by an increase in temperature of the leak-off line above ambient temperature. This high temperature would actuate an alarm in the Control Room, which would be closely monitored by procedurally controlled operator actions allowing identification of any further compensatory actions required. This leakage would be collected in the Reactor Coolant Drain Tank.

Additionally, the flange seal leak-off line is essentially a leakage collection/detection system and the line would only function as a Class 2 pressure boundary if the inner O-ring fails, thereby pressurizing the line. If any significant leakage does occur in the leak-off line piping itself during this time of pressurization then it would clearly exhibit boric acid accumulation and be discernable during the proposed VT-2 visual examination that will be performed unpressurized as proposed in this request.

7. **Duration of Proposed Alternative:**

This alternative is requested for the Third Inservice Inspection Interval, which began on August 13, 2010.

8. **Precedents:**

- (1) Comanche Peak Nuclear Power Plant, Second Inspection Interval Relief Request C-9. "Alternative Pressure Testing Requirements for the RPV Flange Leak-Off Piping", as reviewed by the NRC
- (2) LaSalle County Station Third Inspection Interval Relief Request I3R-08. "Pressure Testing of the Reactor Vessel Head Flange Leak Detection System", as approved by the NRC in a letter dated January 30, 2008 (ADAMS Accession No. ML073610587)

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- (3) Susquehanna Steam Electric Station Third 10-Year Inservice Inspection (ISI) Interval Program Plan Request for Relief 3RR-07 "Exemption for Pressure Testing Reactor Pressure Vessel Head Flange Seal Leak Detection System", approved by the NRC in a letter dated September 24, 2004 (ADAMS Accession No. ML 042680078)

The following precedents were for same lines that were designated Class 1:

- (4) Millstone Power Station Unit 3 Relief Request IR-3-11, "Alternative Pressure Testing Requirements for the RPV Flange Leak-Off Piping", approved by the NRC Letter dated April 29, 2010 (ADAMS Accession No. ML101040042)
- (5) North Anna Unit 1 Relief Request SPT-013, "Examination Category B-P Pressure Retaining Components in the Reactor Coolant System," approved by NRC letter dated February 9, 2006 (ADAMS Accession No. ML060450517)
- (6) Limerick Second Interval Relief Request RR-33, "Pressure Testing of the Reactor Vessel Head Flange Leak Detection System (Unit 1 only)", (ADAMS Accession Nos. ML080370257, ML082550270 and ML090060218), as approved by the NRC in a letter dated January 27, 2009
- (7) Limerick Third Interval Relief Request I3R-08, "Reactor Pressure Vessel (RPV) Head Flange Seal Leak Detection System Pressure Testing", (ADAMS Accession No. ML080500584) as approved by the NRC in a letter dated March 11, 2008

9. **Reference:**

Code Case N-805, "Alternative to Class1 Extended Boundary End of Interval or Class 2 System Leakage Testing of Reactor Vessel Head Flange O-ring Leak Detection System," was issued to the 2010 Edition of the ASME Section XI Code and is listed in Supplement 6 for Code Cases. However, Code Case N-805 has not been approved by the NRC and is not identified in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1."

Reactor Pressure Vessel Seal Leak-Off Details

**Luminant Power
Comanche Peak Nuclear Power Plant**

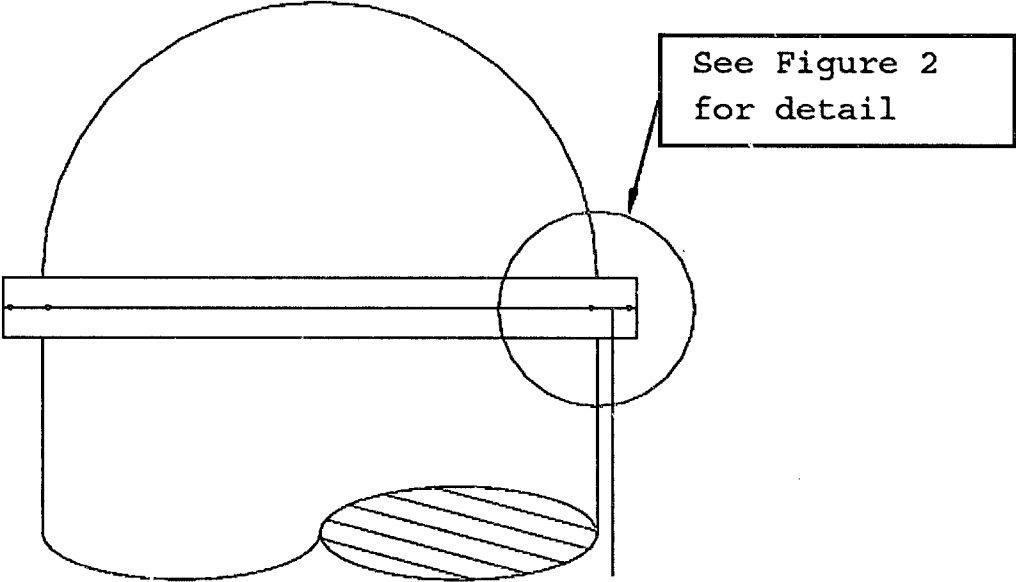


Figure 1:
REACTOR PRESSURE VESSEL HEAD FLANGE
LEAK-OFF LINE CONFIGURATION

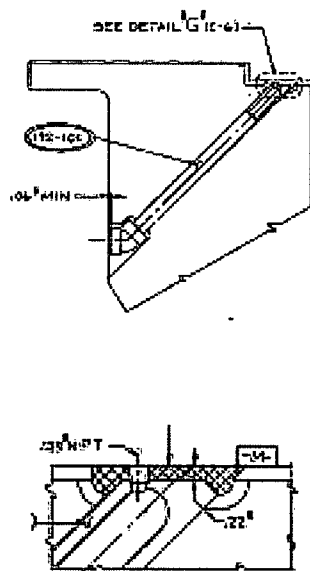


Figure 2

Reactor Pressure Vessel Head Flange
Leak-Off Line Details