

**From:** Chawla, Mahesh  
**Sent:** Thursday, May 03, 2012 1:11 PM  
**To:** ERICKSON, JEFFREY S  
**Cc:** GUSTAFSON, OTTO W; Frankl, Istvan; Collins, Jay; Audrain, Margaret; Wallace, Jay; Rudland, David; Cumblidge, Stephen; Giessner, John; Taylor, Thomas; Lerch, Robert; Hills, David; Jones, Donald; Holmberg, Mel  
**Subject:** Palisades - Granting of Verbal Relief on the Relief Request - Proposed Alternative - Use of Alternate ASME Code Case N-770-1 Baseline Examination - ME8492

Mr. Erickson,

The purpose of this e-mail is to provide you the documentation of the teleconference which was conducted on May 2, 2012 between the Nuclear Regulatory Commission and Entergy Nuclear Operations, Inc. (the licensee) in reference to the subject relief request.

The meeting started with brief introductions initiated by the project manager at the NRC headquarters. After the completion of the introductions on both sides, it was turned over to Jay Collins, Acting Branch Chief of the Piping and Non-Destructive Examinations branch.

[Jay Collins speaking]

By letter dated April 26, 2012, as supplemented by letters dated April 30, 2012 and May 1st, 2012, Entergy Nuclear Operations, Inc., the licensee, proposed an alternative to Code Case N-770-1, Paragraph -2500, Examination Requirements, as conditioned by Title 10 of the Code of Federal Regulations Part 50 Paragraph (10CFR50) 50.55a(g)(6)(ii)(F) that essentially 100% volumetric inspection coverage must be achieved for the baseline and future required volumetric examinations. The licensee provided information on the hardship associated with obtaining full examination coverage of each weld. Therefore, the licensee requested authorization of their proposed alternative under the requirements of 10 CFR 50.55a(a)(3)(ii).

The staff reviewed the licensee's proposed alternative under the requirements of 10 CFR 50.55a(a)(3)(ii), such that:

“Compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.”

Without the proposed alternative, the licensee stated that they would need to mitigate or redesign each of the subject welds. This work has not been fully designed or planned, but the licensee estimated radiological doses that range between 23-90 rem for each of the welds included in the request, with a total estimated dose of 347 rem. The licensee performed an assessment of implementing Eddy Current Testing of the pressurizer nozzle to piping transition piece weld. It would require special tooling, a mockup, procedure development and qualification of the process, all of which would take significant time to develop and implement. In addition, the dose rate at the pressurizer manway is approximately 800 mrem/hr and would result in significant worker exposure. The licensee also provided information on performing an inside diameter surface examination for each of the remaining welds covered in this relief request. In all cases, performing a surface examination would require hardship, ranging from a full core offload to developing special tooling and qualification for each of the welds. The staff finds this radiological dose, unusual difficulty in performing a surface examination of these welds, and the potential risk of implementing an unplanned mitigation technique or repair to be a significant hardship in order to meet ASME Code inspection requirements. Therefore, the staff finds the licensee has identified sufficient hardship under 10 CFR 50.55a(a)(3)(ii).

The licensee proposes to address the inspection limitations for each of the welds during the current Spring 2012 refueling outage by conducting a system pressure test, ultrasonic examinations to the maximum extent practical, a boric acid corrosion control program walk-down to look for indications of leakage and by performing dye penetrant

surface examinations of each of the Inspection Item B welds.

In order to address the pressurizer nozzle to piping transition piece weld, the licensee also performed a postulated flaw analysis for crack growth due to Primary Water Stress Corrosion Cracking. The evaluation indicated that a postulated initial crack of a conservative size would take approximately 25 years to grow beyond the allowable flaw depth. The flaw analysis shows that even if a flaw were to have initiated when the weld was first put in service, leakage should not occur during the duration of the proposed alternative. NRC staff reviewed the licensee's flaw analysis and found it to have reasonably conservative assumptions regarding initial flaw size, residual stress profile and crack growth rate. Therefore, given the licensee's lack of coverage for axial flaws, the staff finds reasonable assurance of leaktightness for this weld during the period of the proposed alternative. Additionally, the staff performed a circumferential flaw analysis that provided reasonable assurance of the weld's structural integrity through the next cycle of operation.

For the Inspection Item B welds, the NRC staff notes that the current inspection requirements were recently imposed on the licensee. These inspections required the first volumetric examination of these welds during plant life. As these inspections are required to be performed by all licensees during the first refueling outage starting after January 20, 2012, the NRC expected licensees to complete these exams across the fleet by the Spring 2014 refueling outage season. The licensee's best effort inspection coverage combined with surface examinations and system walk downs provides confidence in the structural integrity and leaktightness of these component welds during this outage. As these welds are located in the cold loop, the average temperature significantly lowers the susceptibility of these welds to the initiation and crack growth rate of primary water stress corrosion cracking. Further, the licensee has not identified any indications of PWSCC in any dissimilar metal weld in the reactor coolant system covered by ASME Code Case N-770-1, including the more temperature susceptible welds in the hot leg and pressurizer locations. Therefore, given the licensee's hardship the staff finds extension of the baseline examination of the Inspection Category B welds of the licensee's proposed alternative for one cycle of operation acceptable.

In conclusion, the staff's review finds the licensee's proposed alternatives will provide reasonable assurance of structural integrity until the next scheduled refueling outage, when the licensee shall perform a permanent mitigation, repair or meet ASME Section XI Code Case N-770-1 baseline examinations for the dissimilar metal welds.

The staff notes that all other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

*Jay Collins provided his recommendation to Steve Frankl, Acting Branch Chief of Division of Operating Reactor Licensing, Branch 3-1 for approval of this temporary relief to PNP.*

[Steve Frankl speaking]

As Acting Chief of the Office of Nuclear Reactor Regulation's Plant Licensing Branch III-1, I concur with the conclusions of the Piping and Nondestructive Examination Branch (EPNB).

Therefore, given the hardship presented by the licensee in the licensee's letter dated April 26, 2012 as supplemented by letters dated April 30, 2012 and May 1, 2012, the NRC staff concludes that the licensee has provided sufficient technical basis to find that compliance with the regulatory requirements would cause an unnecessary hardship without a compensating increase in the level of quality and safety.

Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(ii), and is in compliance with the ASME Code's requirements. Therefore, the NRC authorizes the licensee's proposed alternative until the Fall 2013 refueling outage at the Palisades Nuclear Plant.

We expect to follow up formally in writing in the near future.

[Conclusion of discussion]

Participants in today's discussion were:

NRC

Steve Frankl, Acting Branch Chief, Plant Licensing Branch III-1, Division of Operating Reactor Licensing (DORL)  
Jay Collins, Acting Branch Chief, Piping and NDE Branch, Division of Engineering  
Mahesh Chawla, Palisades Project Manager, DORL  
Margaret Audrain, Piping and NDE Branch, Division of Engineering  
Jack Giessner, Branch Chief, Branch 4, from Region 3, Division of Reactor Projects.  
Robert Lerch, Project Engineer, Branch 4, from Region 3, Division of Reactor Projects.  
David Hills, Engineering Branch Chief, Division of Reactor Safety, Region 3  
Donald Jones, Reactor Inspector, Engineering Branch 1, Division of Reactor Safety, Region 3  
Melvin Holmberg, Senior Reactor Inspector, Engineering Branch 1, Division of Reactor Safety, Region 3

ENTERGY – Jim Miksa, William Sims, Jamie Gobell, Don Bemis, Paul Deeds, Jerry Nordby, Bob Allen, Dave Mannai, Dave King, Ron Williams, Bert Stacks, and Drew Peterson.

STRUCTURAL INTEGRITY ASSOCIATES – Stan Tang, Angah Miessi, Pete Riccardella, Jeff Erickson, and Barry Smith

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