

August 24, 2015

AEP-NRC-2015-88
10 CFR 50.55a

Docket No.: 50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 2
Response to Request for Additional Information Regarding Proposed Alternative to
the American Society of Mechanical Engineers Code, Section XI
Repair Requirements

References:

1. Letter from Q. S. Lies, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC) Document Control Desk, "Donald C. Cook Nuclear Plant Unit 2, Proposed Alternative to the American Society of Mechanical Engineers Code, Section XI Repair Requirements," dated August 23, 2015.
2. E-mail from T. A. Beltz, NRC, to H. L. Kish, I&M, "Donald C. Cook Nuclear Plant, Unit 2 - Proposed Alternative to the ASME Code, Section XI, Repair Requirements," dated August 23, 2015.

By Reference 1, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant Unit 2, proposed an alternative to the repair requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI. Specifically, I&M has proposed to apply a weld overlay, with a deviation from ASME Code Case N-666, to a defect in the boric acid makeup system piping. By Reference 2, the U. S. Nuclear Regulatory Commission staff provided a Request for Additional Information to complete the review of Reference 1. Enclosure 1 to this letter provides I&M's response to Reference 2.

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There are no new or revised commitments identified in this letter. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,



Joel P. Gebbie
Site Vice President

HLK/ams

Enclosure

- c: T. A. Beltz, NRC, Washington, D.C.
A. W. Dietrich, NRC, Washington, D.C.
J. T. King – MPSC
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NRC Resident Inspector
C. D. Pederson, NRC, Region III
A. J. Williamson, AEP Ft. Wayne, w/o enclosure

Enclosure to AEP-NRC-2015-88

10 CFR 50.55a Request Number ISIR-4-06

Response to Request for Additional Information on Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii) Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety

Introduction

By Letter dated August 23, 2015, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Unit 2, proposed an alternative to the repair requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI. Specifically, I&M has proposed to apply a weld overlay, with a deviation from ASME Code Case N-666, to a defect in the boric acid makeup system piping. Specifically, the affected component is socket weld FW-17 attaching a flange fitting to a 2" Chemical Volume Control Boric Acid Makeup System ASME Code Class III piping downstream of a flow indication instrument, 2-QFI-420, in CNP Unit 2.

By E-mail dated August 23, 2015, the U. S. Nuclear Regulatory Commission (NRC) staff provided a Request for Additional Information (RAI) to complete the review of I&M's proposed alternative to the repair requirements of the ASME Boiler and Pressure Vessel Code, Section XI, for socket weld, FW-17. Below is a restatement of the RAI followed by I&M's response. Attachment 1 to this Enclosure provides the reference material attached to the NRC RAI and referenced in the NRC RAI.

NRC RAI

The NRC staff has requires additional clarification related to your August 23, 2015, request associated with the Indiana Michigan Power Company (I&M) proposed alternative to the American Society of Mechanical Engineers (ASME) Code, Section XI, repair requirements to apply a weld overlay, with a deviation from ASME Code Case N-666, to a defect in the boric acid makeup system piping. Please refer to the attached document regarding socket welds.

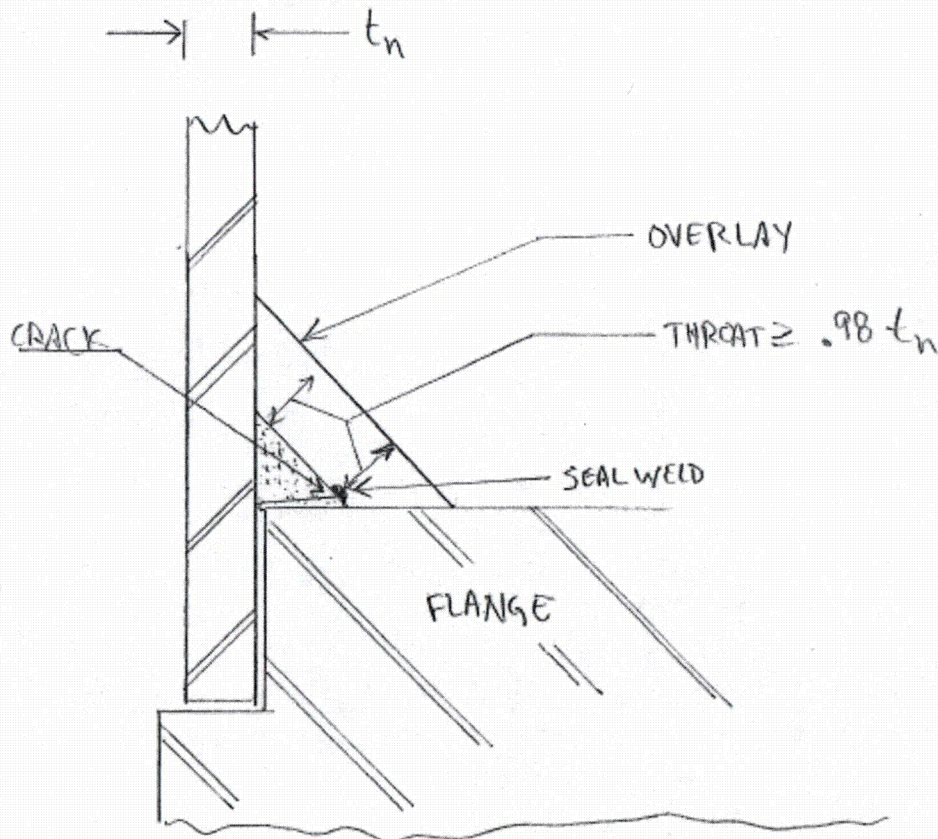
Item C-1 (two drawings on left) are slip-on flanges. Item C-2 (single drawing on right) is flange socket weld. Item C-3 is another socket weld. The August 23, 2015, application indicates the affected component is socket weld FW-17. However, based on the attached drawings, the drawing supplied in Section 7 of your application does not clearly represent a socket weld. This, at the very least, indicates that I&M may require two alternatives from the code case: 1) a mechanism other than fatigue, and 2) apply socket weld code case to a weld that is not a socket weld.

Therefore, the NRC staff requires a better drawing of the subject component to clearly indicate if it is a slip-on flange or a socket weld flange. In other words, if this is a socket weld then a better drawing is requested. If it is not a socket weld, then you need to revise your request to reflect that the weld in question is not a socket weld and provide further discussion regarding that alternative to the code case.

I&M's RAI Response

Below is a revised sketch of the socket weld arrangement and proposed weld overlay for CNP Unit 2 socket weld, FW-17. The sketch previously provided was intended to show a simplified sketch of the weld overlay itself and not the actual type of flange and existing weld arrangement. This revised sketch shows the actual flange and weld arrangement for socket weld FW-17 with the proposed weld overlay.

Sketch of FW-17 Socket Weld



Proposed Overlay

Attachment to

Enclosure to AEP-NRC-2015-88

Reference Material Attached to the NRC RAI and Referenced in the NRC RAI

NC-3660 DESIGN OF WELDS

NC-3661 Welded Joints

NC-3661.1 General Requirements. Welded joints shall be made in accordance with NC-4200.

NC-3661.2 Socket Welds²⁸

- (a) Socket welded piping joints shall be limited to pipe sizes of NPS 2 (DN 50) and less.
- (b) Socket welds shall comply with the requirements of NC-4427.
- (c) Drains and bypasses may be attached to a valve or a fitting using socket welded joints up to a maximum of NPS 4 (DN 100).

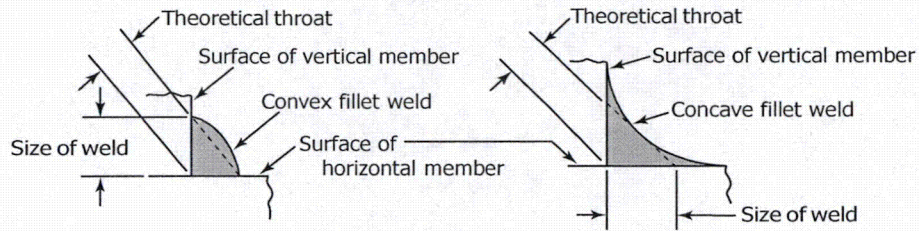
NC-3661.3 Fillet Welds and Partial Penetration Welds for Branch Connections²⁹

- (a) Fillet welds and partial penetration welds may be used within the limitations of NC-3643.1(c).
- (b) For fillet welds, the size of the weld shall be specified on the design drawings.
- (c) For partial penetration welds, the size of the weld, the depth of the weld groove, and the groove angle shall be specified on the design drawings.

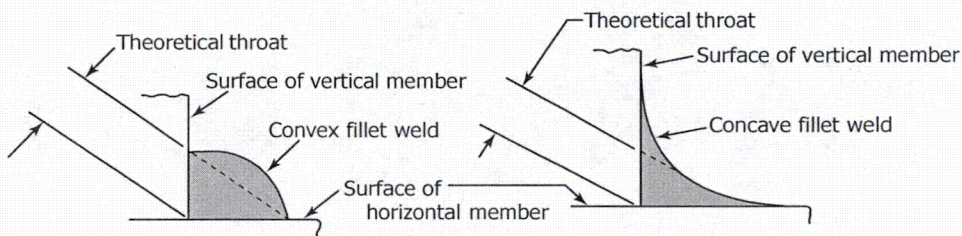
28 Socket welds should not be used where the existence of crevices could accelerate corrosion.

29 Fillet and partial penetration welds should not be used where severe vibration is expected.

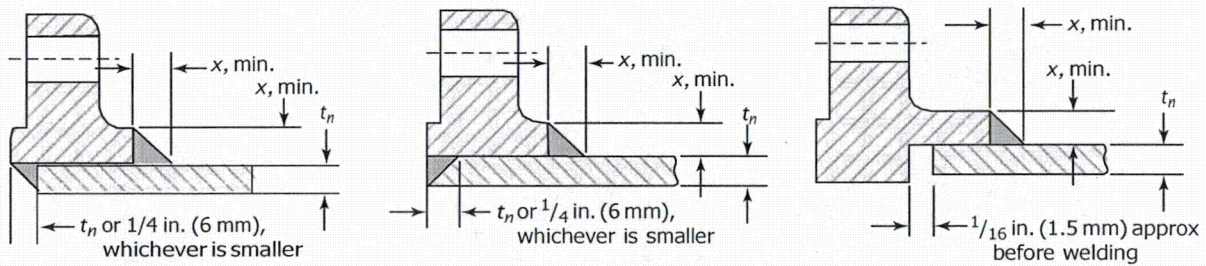
FIG. NC-4427-1 FILLET AND SOCKET WELD DETAILS AND DIMENSIONS



(a) Equal Leg Fillet Weld [Note (1)]



(b) Unequal Leg Fillet Weld [Note (2)]

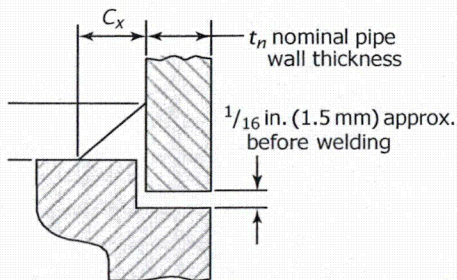


Front and back weld

Face and back weld

(c-1) Slip-On Flange [Note (3)]

(c-2) Socket Welding Flange [Note (3)]



(c-3) Socket Welding Fittings [Note (4)]

NOTES:

- (1) The size of an equal leg fillet weld is the leg length of the largest inscribed right isosceles triangle. Theoretical throat = $0.7 \times \text{size of weld}$
- (2) The size of an unequal leg fillet weld is the shorter leg length of the largest right triangle that can be inscribed within the fillet weld cross-section.
- (3) $x, \text{ min.} = 1.4 t_n$ or the thickness of the hub, whichever is smaller, but not less than $1/8 \text{ in. (3 mm)}$, where t_n = nominal pipe wall thickness
- (4) $C_x, \text{ min.} = 1.09 t_n$ where t_n = nominal pipe wall thickness