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**FPL Energy.**

**Duane Arnold Energy Center**

July 31, 2007

NG-07-0588  
10 CFR 50.55a

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-0001

Duane Arnold Energy Center  
Docket 50-331  
License No. DPR-49

**Relief Request for Seal Weld Procedure Qualification**

Pursuant to 10 CFR 50.55a(a)(3)(ii), FPL Energy Duane Arnold, LLC, (hereafter, FPL Energy Duane Arnold) hereby requests NRC approval of the enclosed relief request from IWA-4221 to allow weld procedure specifications for seal welding of the installed and spare Main Steam Relief Valves (MSRVs) to be post-qualified in accordance with ASME Section IX requirements. This relief is requested for the Fourth Ten-Year Interval of the Inservice Inspection Program for the Duane Arnold Energy Center (DAEC), which began on November 1, 2006.

FPL Energy Duane Arnold requests approval of this request by the end of October 2007.

This letter contains no new commitments nor revises any previous commitments.

If you have any questions, please contact Steve Catron, Licensing Manager, at (319) 851-7234.

Gary Van Middlesworth  
Site Vice President, Duane Arnold Energy Center  
FPL Energy Duane Arnold, LLC

Enclosure

cc: Administrator, Region III, USNRC  
Project Manager, DAEC, USNRC  
Senior Resident Inspector, DAEC, USNRC

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**10 CFR 50.55a Request Number NDE-R012  
Seal Weld Procedure Qualification**

**Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)  
Hardship or Unusual Difficulty without Compensating Increase  
in Level of Quality and Safety**

**ASME Code Component(s) Affected**

Code Class: 1

Component Numbers: PSV-4400, PSV-4401, PSV-4402, PSV-4405, PSV-4406, PSV-4407, and six uninstalled spare Main Steam Relief Valves (MSRVs)

**Applicable Code Edition and Addenda**

ASME Code Section XI, 2001 Edition, 2003 Addenda

**Applicable Code Requirement**

**IWA-4221, Construction Code and Owner's Requirements**

IWA-4221, "Construction Code and Owner's Requirements," states that:

*"(a) An item to be used for repair/replacement activities shall meet the Owner's Requirements. Owner's Requirements may be revised, provided they are reconciled in accordance with IWA-4222. Reconciliation documentation shall be prepared.*

*(b) An item to be used for repair/replacement activities shall meet the Construction Code specified in accordance with (1), (2), or (3) below.*

*(1) When replacing an existing item, the new item shall meet the Construction Code to which the original item was constructed.*

*(2) When adding a new component to an existing system, the Owner shall specify a Construction Code that is no earlier than the earliest Construction Code used for construction of the system or of any originally installed component in that system.*

*(3) When adding a new system, the Owner shall specify a Construction Code that is no earlier than the earliest Construction Code used for other systems that perform a similar function.*

*(c) As an alternative to (b) above, the item may meet all or portions of the requirements of different Editions and Addenda of the Construction Code, or Section III when the Construction Code was not Section III, provided the requirements of IWA-4222 through IWA-4226, as applicable, are met. Construction Code Cases may also be used. Reconciliations required by this*

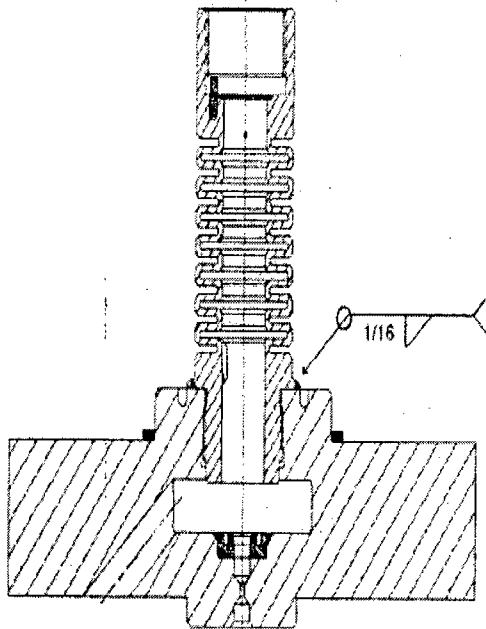
*Article shall be documented. All or portions of later different Construction Codes may be used as listed below:*

- (1) Piping, piping subassemblies, and their supports: B31.1 to B31.7 to Section III.*
- (2) Pumps, valves, and their supports: from B31.1 to Draft Code for Pumps and Valves for Nuclear Power to Section III.*
- (3) Vessels and their supports: Section VIII to Section III.*
- (4) Atmospheric and 0-15 psig (0-103 kPa) storage tanks and their supports: Section VIII, API 620, or API 650 to Section III."*

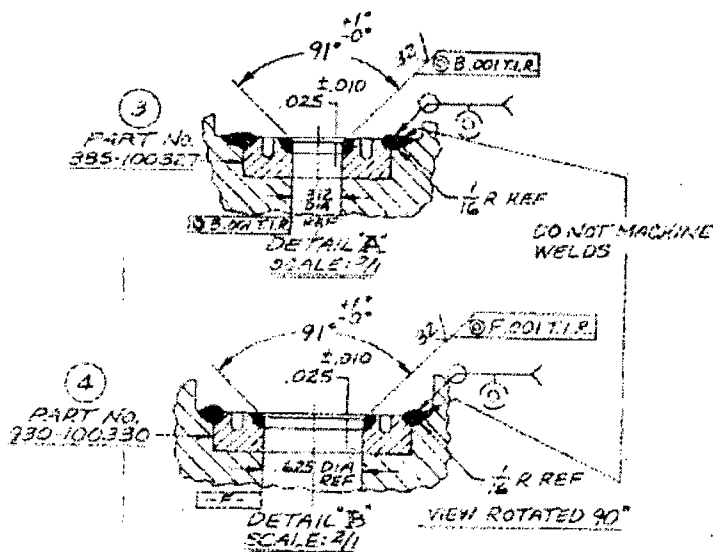
Installed and spare MSRVs were originally manufactured to the 1968 Edition, Winter 1968 Addenda of ASME, Section III, and General Electric Design Specification 21A9206 Rev. 6. All subsequent Repair/Replacement Activities were intended to meet the original construction code and design specification. All Repair/Replacement Activity seal welding was performed by the original Manufacturer (Target Rock) using the same Weld Procedure Specifications (WPSs) as used during original fabrication.

#### **Reason for Request**

Current weld procedure specifications for seal welding were qualified in accordance with the Manufacturer's standard rather than ASME requirements. The Manufacturer's standard included multiple surface Non-Destructive Examinations (NDE) and macro examinations of sectioned specimens. The three seal welds affected are the bellows-to-spacer plate seal weld, the pilot seat-to-body seal weld, and the second stage seat-to-body seal weld (see sketches; welds illustrated by black areas).



Bellows Seal Weld



Seat Seal Welds

The 1968 Edition, Winter 1968 Addenda of ASME Section III did not include fabrication requirements for valves or provide any requirements for seal welding.

The General Electric design specification required weld procedures to be qualified in accordance with ASME Section IX. However, the author of this design specification, and the original purchaser of the MSRVs (General Electric),

believed that this requirement was never intended to be applicable to seal welding.

It is reasonable to assume that the 1968 Edition of ASME Section IX should have been used to qualify seal welding procedures, since the 1968 Edition of ASME Section IX, paragraph Q-10 (b), requires all welding to be qualified using reduced section tension specimens and guided bend specimens.

Pursuant to 10 CFR 50.55a, "Codes and Standards," Paragraph (a)(3)(ii), the Duane Arnold Energy Center requests authorization to post-qualify those seal welding procedures in accordance with ASME Section IX requirements.

To qualify the weld procedures at this time in accordance with ASME requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety, as further described below:

First, in order to meet the ASME Code requirements to qualify weld procedures prior to production welding and subsequent code stamping, all seal welds would have to be removed and re-welded using the same welding procedure that is now pre-qualified.

Second, removal of existing seal welds would require that the MSRV be completely disassembled, the seat rings replaced, and the reassembled valve tested. This unnecessary welding evolution could potentially degrade the carbon steel casting. Therefore, replacement of existing seal welds is considered a hardship, or unusual difficulty, without a compensating increase in the level of quality and safety.

### **Proposed Alternative and Basis for Use**

Target Rock has completed three procedure qualification records (PQR's) using the same seal welding parameters as in the original seal welding procedures and weld coupons were tested in accordance with the 2004 Edition, 2006 Addenda, of ASME Section IX. All tensile and bend testing was found acceptable per ASME Section IX requirements, 2004 Edition, 2006 Addenda. All three seal weld WPSs have been revised to reference the new PQRs that were qualified via tensile and bend testing.

These post-qualifying PQRs verify that the seal welds made with the original seal welding WPSs meet all tensile and bend test requirements and justify continued use. The revised seal welding WPSs that now reference the new PQRs are planned to be used during future Repair/Replacement activities, if performed by Target Rock.

**Duration of Proposed Alternative**

The proposed alternative will be used for the entire Fourth Ten-Year Interval of the Inservice Inspection Program for Duane Arnold Energy Center.

**Precedents**

None