

Dave Morey  
Vice President  
Farley Project

Southern Nuclear  
Operating Company  
P.O. Box 1295  
Birmingham, Alabama 35201  
Tel 205.992.5131



Energy to Serve Your World™  
10CFR50.55a(g)(6)(ii)(A)

September 8, 1997

US Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Docket No.: 50-348

Joseph M. Farley - Unit 1  
Request for Alternative to 10 CFR 50.55a(g)(6)(ii)(A)  
Augmented Examination of Reactor Pressure Vessel Welds

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.55a(g)(6)(ii)(A), the reactor pressure vessel (RPV) shell welds on Plant Farley Unit 1 were examined during the Spring 1997 refueling outage. For one of the RPV circumferential welds, physical limitations prevented Southern Nuclear Operating Company from meeting the requirement to examine more than 90% of the examination volume of that weld.

Based on the information and justification provided in the enclosure, Southern Nuclear Operating Company requests NRC authorization of an alternative examination per the provisions of 10 CFR 50.55a(g)(6)(ii)(A)(5) for this one weld.

If you have any questions, please advise.

Respectfully submitted,

*DM Morey*  
Dave Morey

*JE10 1/1*

SOM/maf: RPVLET.doc  
Enclosures

cc: Mr. L. A. Reyes, Region II Administrator  
Mr. J. I. Zimmerman, NRR Project Manager  
Mr. T. M. Ross, Plant Sr. Resident Inspector



9709150015 970908  
PDR ADOCK 05000348  
PDR

## Enclosure

### Request for Alternative to 10 CFR 50.55a (g)(6)(ii)(A)

Southern Nuclear Operating Company (SNC) has determined that the augmented examinations of the Plant Farley Unit 1 reactor pressure vessel (RPV) cannot be performed to the extent required by 10 CFR 50.55a(g)(6)(ii)(A) without undue hardship. In accordance with 10 CFR 50.55a(g)(6)(ii)(A)(5), SNC requests NRC authorization of an alternative examination based on other pertinent examinations performed to date which provide an acceptable level of quality and safety.

#### 1. Required Examinations

10 CFR 50.55a(g)(6)(ii)(A) requires all licensees to augment their RPV examinations by implementing once, as part of the inservice inspection interval in effect on September 8, 1992, the extent of examinations for reactor vessel shell welds specified in Item B1.10 of Examination Category B-A, "Pressure Retaining Welds in Reactor Vessel," in Table IWB-2500-1 of Subsection IWB of the 1989 Edition of ASME Section XI, Division 1 of the ASME Boiler and Pressure Vessel Code. To meet the requirements of 10 CFR 50.55a(g)(6)(ii)(A), "more than 90% of the examination volume of each weld" shall be examined.

#### 2. Completed Examinations

Southern Nuclear Operating Company contracted the NSSS vendor to perform these examinations. The ultrasonic examinations (UT) were performed utilizing a remote reactor vessel inspection tool to satisfy the requirements of the 1983 Edition of ASME Section XI with Addenda through Summer 1983. Additionally, the requirements of Regulatory Guide 1.150 were followed.

On Unit 1, a total of seven RPV shell welds, three circumferential and four longitudinal, were examined to satisfy the requirements of both the augmented RPV shell weld rule and ASME Code Section XI. The examination results for these welds revealed no recordable indications that exceed the allowable standards of ASME Code Paragraph IWB-3500. See Table 1 for actual coverage obtained on Unit 1.

#### 3. Alternative Examination

The augmented examination of weld 1100-8 (the lower shell to bottom head circumferential weld) was limited based on physical configuration. Four core support lugs permanently attached to the inner surface of the vessel limit access to the weld, thereby, prohibiting greater than 90% examination. The weld received an 89.2% examination volume coverage. Enclosed Figure 1 shows the configuration of the weld. Prior to the outage, SNC and the NSSS vendor personnel originally estimated the examination coverage of weld 1100-8 to be 83%. As a result, SNC investigated options that could potentially maximize the examination coverage of this weld.

Option 1 Supplemental Examination Of The Weld From The Outer Diameter (OD) Of The Vessel. The evaluation for an OD examination showed that almost no increase in coverage would be obtained. Additionally, a significant burden would be involved with the radiation dose and the effort to correlate the inner and outer diameter coverage plots. Therefore, a significant burden would be placed on SNC without a compensating increase in safety.

Option 2 Supplemental Examination Of The Weld From The Inner Diameter (ID) Using Multiple Scans. SNC estimated that coverage could be maximized to approximately 92% through the use of transducer repositioning and by performing additional scans beyond those required by the ASME Code.

It was decided that SNC would pursue Option 2; however, the fillet welds on the core support lugs were larger than expected, which resulted in the final coverage of 89.2%.

#### 4. Conclusion

These completed examinations provide reasonable assurance that unacceptable service-induced flaws have not developed in these welds and that RPV shell weld integrity is maintained. The examinations were performed to the maximum extent practical using state-of-the-art equipment and techniques within the limitations of design and access of the RPV. All welds, except weld 1100-8, received 100% Code required examination coverage and SNC believes that if a pattern of degradation exists in this one weld, that the UT examination coverage of 89.2% would have detected it. Furthermore, the likelihood of a significant defect existing in the unexamined portion is extremely small.

Additionally, weld 1100-8 is not located in the beltline region and is therefore not as susceptible to irradiation embrittlement as are the beltline welds. As discussed above, the beltline welds were fully examined with no limitations.

The examination of the Farley Unit No. 1 RPV shell welds provides an acceptable level of quality and safety, and SNC concludes that the public health and safety will not be endangered by approval of this alternative.

TABLE 1

AUGMENTED EXAMINATION OF REACTOR PRESSURE VESSEL

ULTRASONIC EXAMINATION COVERAGE

CIRCUMFERENTIAL WELDS

Weld No.	Weld Description	Item No.	Volumetric Coverage
1100-2	Upper Shell-To-Middle Shell Circumferential Weld	B1.11	100%
1100-5	Middle Shell-To-Lower Shell Circumferential Weld	B1.11	100%
1100-8	Lower Shell-To-Bottom Head Circumferential Weld	B1.11	89.2%

AVERAGE VOLUMETRIC COVERAGE - 96.4%

LONGITUDINAL WELDS

Weld No.	Weld Description	Item No.	Volumetric Coverage
1100-3	Middle Shell Course Longitudinal Weld	B1.12	100%
1100-4	Middle Shell Course Longitudinal Weld	B1.12	100%
1100-6	Lower Shell Course Longitudinal Weld	B1.12	100%
1100-7	Lower Shell Course Longitudinal Weld	B1.12	100%

AVERAGE VOLUMETRIC COVERAGE - 100%

