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U.S. Nuclear Regulatory Commission
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Subject: Duke Energy Company
Oconee Nuclear Station, Units 1, 2 and 3
Docket Nos. 50-269, -270, -287
Third Ten Year Inservice Inspection Interval
Request for Alternative No. 2001-013, Revision 1

Pursuant to 10 CFR 50.55a(a)(3)(ii), attached is a Request for Alternative from requirements specified by the ASME Boiler and Pressure Vessel Code, Section XI.

Specifically, the attached Request for Alternative addresses use of ultrasonic examination in lieu of hydrostatic pressure tests on certain Main Steam system valves. These valves are currently scheduled for replacement during the upcoming refueling outages: Unit 3 EOC19, scheduled to begin 11/10/01, Unit 1 EOC20 scheduled for 4/26/02, and Unit 2 EOC19, scheduled for 10/14/02.

Duke Energy Corporation (DEC) previously submitted this request by letter of September 12, 2001. This letter submits a revised request, which has been modified to address comments from the NRC staff.

DEC requests approval of this alternative prior to 11/15/01 in order to avoid impact to the Unit 3 EOC19 outage activities.

If there are any questions, please contact R. P. Todd at (864) 885-3418.

Very truly yours,

FOR

W. R. McCollum, Jr.
Site Vice President

Attachment

A047

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DUKE ENERGY CORPORATION
Oconee Nuclear Station, Unit 1,2, and 3

Request for Alternative to the Requirements of the ASME Boiler and Pressure Vessel Code, Section XI

Component Description

During the Unit 3 refueling outage 3EOC-19, ten Main Steam Isolation valves are scheduled to be replaced. The equivalent valves on Units 1 and 2 are also scheduled for replacement during upcoming outages 1EOC20 and 2EOC19. Therefore this request also applies to those similar Main Steam valve replacements on Units 1 and 2. Valves 1,2,3 MS-82 and 1,2,3 MS-84 are ASME XI Class 2 on the upstream side and ASME XI Class 3 on the downstream side. The other valves referenced are isolations between ASME Section XI Code piping and non-safety related piping, the upstream side of these valves is ASME XI and the downstream side is non-safety related. The normal operating temperature and pressure for these valves is 1050 PSIG @ 630 degrees F. The valves, piping, and welding filler material are carbon steel. The plan is to install only the new valves but a potential exists that short sections of pipe may also be added to avoid obstructions in the field that might interfere with future ISI inspections. The butt welds on the valves and piping on the Section XI Class 2 side of the valves are the subjects of this request. The welds cannot be isolated from the steam generators. The existing welds on the components being replaced were originally fabricated and installed per USAS B31.1.0, 1967 Edition. The new valves will be installed per ASME B31.1, 1998 Edition, no addenda. As previously stated, these welds are classified as ASME Section XI class 2.

VALVE TAG NUMBER	SIZE	SCHEDULE OF END PREP	ASME XI CLASS
1,2,3MS-0017	12"	.562 (schedule 60)	2/NA
1,2,3MS-0024	6"	.432 (schedule 80)	2/NA
1,2,3MS-0026	12"	.562 (schedule 60)	2/NA
1,2,3MS-0033	6"	.432 (schedule 80)	2/NA
1,2,3MS-0035	8"	.500 (schedule 80)	2/NA
1,2,3MS-0036	8"	.500 (schedule 80)	2/NA
1,2,3MS-0076	12"	.562 (schedule 60)	2/NA
1,2,3MS-0079	12"	.500 (schedule 80)	2/NA
1,2,3MS-0082	6"	.432 (schedule 80)	2/3
1,2,3MS-0084	6"	.432 (schedule 80)	2/3

Description of Code Requirements for Which an Alternative is Requested

Paragraph 137.8.3 of 1998 Edition, No Addenda, of ASME B31.1 requires that a system hydrostatic test be performed in accordance with paragraph 137.3.2.

However, for systems governed by Section XI, the pressure testing requirements of ASME Section XI take precedence over the other construction code requirements for repairs and replacements.

Subsection IWA-4700 of the 1989 Edition, No Addenda, of ASME Section XI requires that "after repairs by welding on the pressure containing boundary, a system hydrostatic test shall be performed in accordance with IWA-5000, System Pressure Test."

Duke Energy Corporation (DEC) considers compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and

safety. Therefore, DEC requests approval of an Alternative to the hydrostatic test required by Subsection IWA-4700 of the 1989 Edition, No Addenda, of ASME Section XI.

Basis for Relief

The subject valves will be replaced beginning with the Unit 3 refueling outage 3EOC-19 and upcoming Unit 1 EOC20 and Unit 2 EOC19 respectively. These valves will be installed to ASME B31.1 1998 with no addenda. The mandatory minimum NDE specified by table 136.4 of ASME B31.1 for welds with a design temperature of 630 degrees F and pressure of 1050 psig with a thickness of ¾"of a inch or less is a visual inspection. All of the replacement welds meet these criteria. Paragraph 137.8.3 of ASME B31.1 requires that repairs or additions to nonboiler piping be retested in accordance with the provisions of paragraph 137.3.2. Paragraph 137.3.2 allows the owner as an alternative to hydrostatic testing, to leak test the additions.

However, the subject replacements are also classified as ASME XI Class 2. Subsection IWA-4700 of the 1989 Edition, No Addenda, of ASME Section XI requires that "after repairs by welding on the pressure containing boundary, a system hydrostatic test shall be performed in accordance with IWA-5000, System Pressure Test." This requirement takes precedence over the requirements of ASME B31.1.

Performing a hydrostatic test on the replacement welds for the subject valves would require filling and pressurizing the secondary side of the steam generators as well as several hundred feet of feedwater and main steam piping associated with each generator. Well over 200 man-hours would be used (for each outage) just to prepare for and recover from the hydrostatic test. This time is need for such items as:

1. Installing additional supports for the main steam lines prior to the hydrostatic pressure test and restoration afterwards.

2. Adjusting approximately 20 spring hangers for the main steam lines and restoration afterwards.

3. Gagging 16 relief valves for the higher pressure and restoration after the test.

4. Repacking approximately 100 valves after the hydrostatic test (required due to both the higher hydrostatic test pressure and the use of water on valves designed for steam).

5. Isolating over 30 instruments and restoring them afterwards.

6. Inspecting at least 10 other valves (relief valves and stop valves) after completion of the hydrostatic test.

This work would extend each outage at least 5 days and cost approximately 3 million dollars in lost revenues. In granting several previous requests, the NRC has concurred that compliance with the specified requirements for a hydro of this system would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. For example, reference Oconee Request for Relief 94-06, requested by letter of July 18, 1994 and approved by letter of April 12, 1995 (NRC TAC No. 91173).

DEC proposes to perform an ultrasonic inspection of the subject welds. The ultrasonic examination will be performed in accordance with the requirements of ASME Section V, Article 5, with acceptance standards of ASME Section III, NC-5330 1992 Edition of ASME Section III. Additional NDE in the form of a dye penetrant inspection of the root pass of each weld and a magnetic particle examination of the external surface of each final weld will be performed per paragraph 5340 and 5350 of the 1992 Edition of ASME Section III. A visual inspection of the interior surface of the root pass of each weld will be performed. A system leakage test, (VT-2) will be performed prior to operation.

DEC has concluded that the proposed alternative provides an acceptable level of quality and safety while avoiding any hardship or unusual difficulty and therefore would meet requirements for NRC approval. Therefore, DEC believes the proposed alternative is the most desirable option for the examination of the subject welds.

Relief is requested in accordance with 10CFR50 55a(a) (3 (ii) for the reasons described, compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase level in quality.

Description of Proposed Alternative

Duke Energy proposes that the initial root pass of the subject welds will receive a dye penetrant examination on the exterior and a visual examination of the inside surface. In addition, the internal quality of the root of the welds will be visually monitored through completion of the weld.

The completed welds will receive a surface magnetic particle examination and ultrasonic examination. The ultrasonic examination will be performed in accordance with the requirements of ASME Section V, Article 5, T-522 "Written Procedure Requirements" and T-542.8, "Ferritic Welds in Ferritic Pipe", 1992 Edition with no addenda. Since access for the examination will only be from the pipe side 45-degree and 60-degree shear wave beam angles will be used with a full V-path calibration to examine the full volume of weld metal. The acceptance standards of ASME Section III, NC-5330, 1992 Edition will be applied. In addition, the ultrasonic procedure will be qualified through a blind test as described in Attachment B. The dye penetrant and magnetic particle examinations will be performed in accordance with ASME Section V, Article 6 and 7 respectively. The acceptance standards of ASME Section III, NC-5340 and NC-5350, 1992 Edition will be applied.

Prior to or immediately upon return to service, a visual examination (VT-2) shall be performed in conjunction with a system leakage test, using the 1992 Edition of Section XI, in accordance with paragraph IWA-5000, at nominal operating pressure and temperature.

The proposed alternative provides a reasonable assurance that no unallowable flaws will exist in the welds and meets the criteria for alternatives that provide an acceptable level of quality and safety per 10 CFR 50.55a (a)(3)(ii).

These welds will be subject to inclusion in the ISI program for the upcoming interval.

Duration/ Implementation of the Proposed Alternatives

The proposed alternative is applicable to the Unit 3 Main Steam Isolation Valve butt welds scheduled to be replaced during Unit 3, EOC19, which is scheduled to begin 11/10/01. The proposed alternative examinations will be performed prior to unit start-up activities scheduled for 11/28/01. As stated earlier, this request will also apply to similar Main Steam Isolation valve replacements for Unit 1, EOC20, scheduled for 4/26/02 and Unit 2 EOC19, scheduled for 10/14/02.

Duke Energy requests approval of this alternative prior to 11/15/01 in order to avoid impact to the Unit 3 EOC19 outage activities.

Originated By: C.R. Henson 10-24-01
C.R. Henson Date

Reviewed By George T. Hamrick 10-24-01
George T. Hamrick Date

Ultrasonic Qualification Test Protocol

Test Specimens

1.1 The qualification test sample set shall consist of welded ferritic pipe with implanted fabrication flaws. The flaws shall include as a minimum the following conditions:

Cracks

Lack of Fusion

Slag

Incomplete Penetration

Porosity

1.2 The piping used for the qualification test set shall have minimum and maximum diameters of the piping referenced in the relief request. The qualification test set shall have thickness' ± 0.25 inch of the piping thickness' referenced in the relief request.

1.3 The qualification test sample set shall contain a minimum weld length of 125 inches. Not more than 25 inches of weld length shall contain flaws.

Qualification Acceptance Criteria

2.1 The procedure/personnel will be considered qualified when at least 80% of the flaws have been detected and characterized.

2.2 Flaws shall be considered detected when the examiner locates the flaw within ¾ inch of its true location, (x and y). All other reported flaws shall be considered false calls.

2.3 The cumulative length of false calls shall not exceed 10% of the unflawed length of the weld.

2.4 Flaw length estimates shall be – 0.5 inch to + 1.0 inch of the true length.

Conduct of Qualification Test

3.1 Specimen identification and flaw location shall be obscured in order to maintain a "blind test" condition.

3.2 The examiner must complete all examinations prior to grading the test.