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SOUTHERN COMPANY
Energy to Serve Your World

April 20, 2009

NL-09-0635

Docket Nos.: 50-424
50-425

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

Vogtle Electric Generating Plant
Second 10-year Interval Inservice Inspection Report
Request for Additional Information

Ladies and Gentlemen:

On March 23, 2009, Southern Nuclear Operating Company received a letter (ADAMS Accession No. ML090760122) requesting additional information regarding Relief Requests 44 and 47 previously submitted on May 30, 2008. These relief requests are coverage relief requests where it is impractical to obtain more than 90 percent coverage and there is reasonable assurance of structural integrity.

Enclosure 1 contains the SNC response to the NRC questions.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

Mark J Ajluni

M. J. Ajluni
Manager, Nuclear Licensing

MJA/TAH/daj

Enclosure: 1. Response to NRC Request for Additional Information Regarding Relief Request 44 and 47 for the Second 10-Year Interval Inservice Testing Program

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. T. E. Tynan, Vice President – Vogtle
Ms. P. M. Marino, Vice President – Engineering
RType: CVC7000

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Vogtle
Mr. M. Cain, Senior Resident Inspector – Vogtle

Vogtle Electric Generating Plant
Response to NRC Request for Additional Information
Regarding Relief Request 44 and 47 for the Second 10-Year Interval
Inservice Testing Program

Enclosure 1

Request for Additional Information Response

Enclosure 1

Request for Additional Information Response

RAI

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated May 30, 2008, Southern Nuclear Operating Company, Inc. (SNC), submitted requests for relief for the Vogtle Electric Generating Plant, Units 1 and 2, for the Second 10-Year Interval Inservice Inspection Program. The NRC staff has reviewed your application and finds that additional information is needed on the nature of the limitations to the examination coverage for five welds. These include two welds described in Relief Request 44, ID Nos. 11201-005-8 and 11201-009-1 and three welds described in Relief Request 47, ID Nos. 11204-023-15-RI, 21204-023-15R-RI and 21204-023-16R-RI.

For each of these welds SNC's submittal summarizes limited examinations performed during the second 10-year ISI interval, and provides calculated coverage for each component. However, in order to show the impracticality of examining 100 percent of the American Society of Mechanical Engineers (ASME) Code required volumes, SNC's submittal provides only "typical" figures that do not describe or depict the specific limitations for the welds listed above.

The NRC staff requests that SNC submit detailed and specific information to support the basis for each limited examination on the above mentioned welds and therefore, demonstrate impracticality. Include descriptions (written and/or sketches, as necessary) of the interferences to applied nondestructive examination (NDE) techniques. As applicable, provide a description of NDE equipment, showing accessibility limitations, and discussion of whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

SNC Response for Cast Stainless Steel Welds (Relief Request 44)

Weld 11201-005-8 joins a cast stainless steel elbow to a cast stainless steel pump nozzle. This weld was examined in 1999 (pre-Appendix VIII) using the requirements of Appendix III of the 1989 Edition of ASME Section XI, which requires that the examination volume receives two-directional coverage. An industry recommended 1 MHz 45^0 dual-element, Refracted Longitudinal (RL) Wave transducer was used for the examination of the cast stainless steel components and weld. Referencing Figure 1 (Figure 1 was drawn from a field sketch of the actual examination volume), when scanning from the elbow side for detection of circumferentially-oriented flaws there were no limitations and the coverage was 100%. However, when scanning from the nozzle side for detection of circumferentially-oriented flaws, the nozzle curvature prevented the transducer from being moved back to the extent necessary to pass the sound beam through the complete nozzle side examination volume. As a result, only about 60% of the volume was examined from the nozzle side, as depicted by the blue lines. Therefore approximately 80% of the examination volume received two-directional coverage and 20% received one-directional coverage when scanning for circumferentially-oriented flaws. When scanning for axially-oriented flaws there were no scanning limitations identified.

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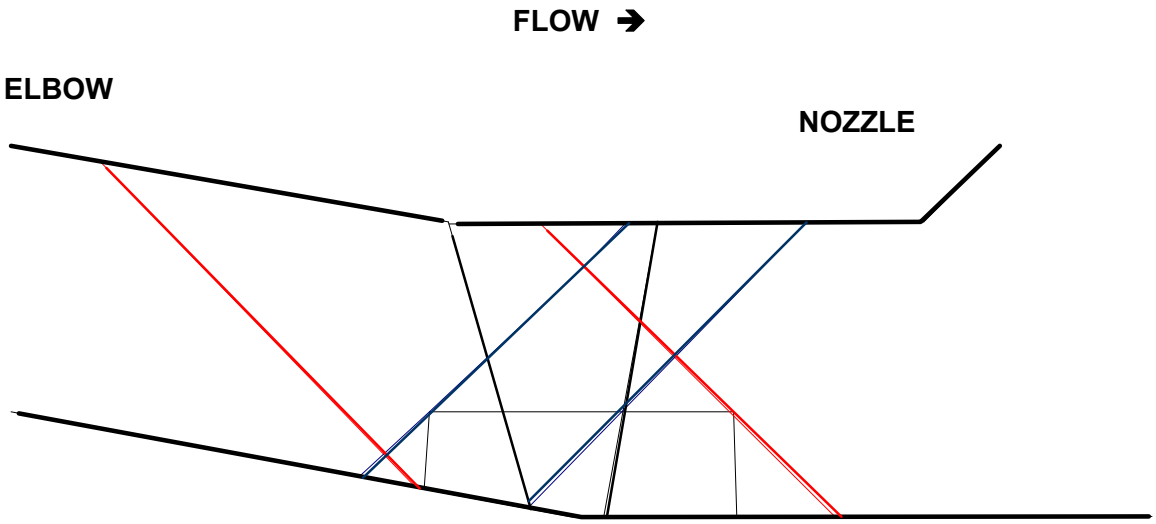
Request for Additional Information Response

Because of the nozzle taper, it is considered impractical to obtain additional examination coverage using alternative methods or advanced technologies. This nozzle is an integral part of the overall pump casting and to appreciably increase the coverage would require replacement of the pump with one having a modified nozzle configuration.



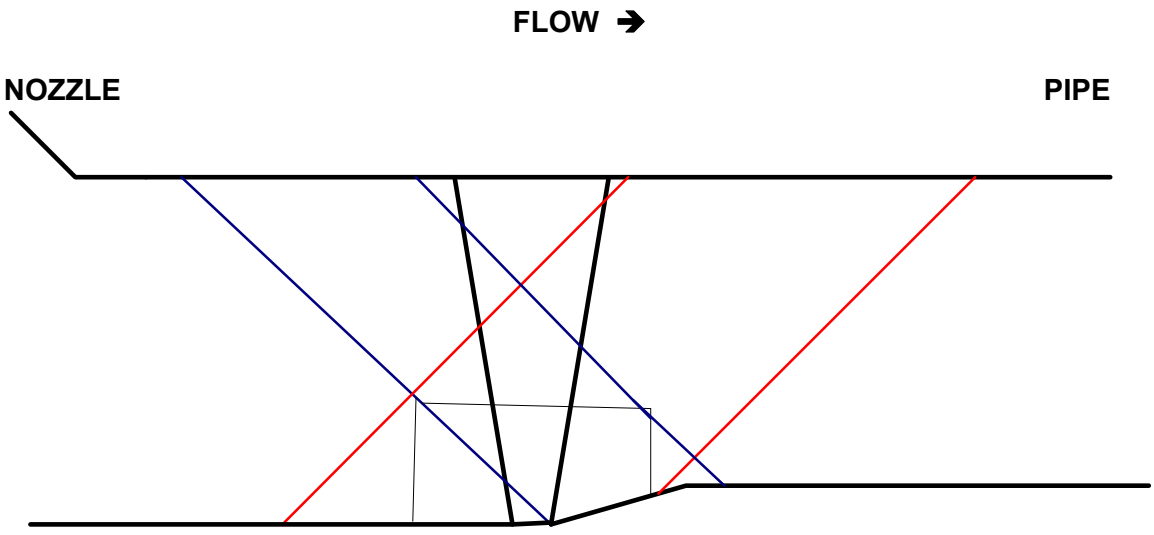
Weld 11201-005-8
Figure 1

Enclosure 1

Request for Additional Information Response

Weld 11201-009-1 joins a cast stainless steel pipe to a cast stainless steel pump nozzle. This weld was examined in 1999 (pre-Appendix VIII) using the requirements of Appendix III of the 1989 Edition of ASME Section XI, which requires that that the examination volume receives two-directional coverage. An industry recommended 1 MHz 45^0 dual-element RL Wave transducer was used for the examination of the cast stainless steel components and weld. Referencing Figure 2 (Figure 2 was drawn from a field sketch of the actual examination volume), when scanning from the pipe side for detection of circumferentially-oriented flaws there was 100% coverage. However, when scanning from the nozzle side for detection of circumferentially-oriented flaws, the nozzle curvature prevented the transducer from being moved back to the extent necessary to pass the sound beam through the complete nozzle side examination volume. As a result, only about 60% of the volume was examined from the nozzle side, as depicted by the blue lines. Therefore, approximately 80% of the examination volume received two-directional coverage and 20% received one-directional coverage when scanning for circumferentially-oriented flaws. When scanning for axially-oriented flaws there were no scanning limitations identified.

Because of the nozzle taper, it is considered impractical to obtain additional examination coverage using alternative methods or advanced technologies. This nozzle is an integral part of the overall pump casting and to appreciably increase the coverage would require replacement of the pump with one having a modified nozzle configuration.



Weld 11201-009-1
Figure 2

Enclosure 1

Request for Additional Information Response

SNC Response for Austenitic Stainless Steel Pipe to Valve Welds (Relief Request 47)

Weld 11204-023-15-RI is a 6" austenitic stainless steel pipe to valve weld that was examined in 2003 after the implementation of Appendix VIII; however, due to the valve taper examination was only performed from the pipe side. Additionally, when scanning from the pipe side of the weld, the transducer travel was stopped at the edge of the weld because of the weld configuration as shown in Figure 3. Weld crown conditioning was not performed because:

- Per Section 5.4 of Performance Demonstration Initiative (PDI) generic procedure PDI-UT-2, t*he weld crown condition may be examined in the "as-welded" condition provided the "as-welded" crown width is not excessive. Excessive "as-welded" crown width is defined as when the weld crown width is greater than 3 times the nominal material thickness or when the weld crown condition prohibits adequate volumetric coverage from the base material surface in either the axial or circumferential scanning directions (e.g., weld repair sites, excessive or offset weld width or reinforcement on one side of the weld).* The weld crown width was not considered to be excessive.

- For austenitic welds, 10 CFR 50.55a(b)(2)(xv)(A)(2) requires that when examination from both sides is not possible (as is the case for this weld), full coverage from a single side may be claimed only after completing a successful single-sided Appendix VIII demonstration using flaws on the opposite side of the weld. Since the industry has not qualified single-sided examinations, SNC cannot claim Code coverage on the far side of the weld. Therefore, the maximum Code coverage is 50%. While weld crown reduction may have improved the ability to scan over the weld, Code coverage would not have increased.

As described above, 50% Code coverage is the maximum coverage for this weld; however, as described in Figure 3, only 15" of the required 19" of the required area was scanned on the pipe side due to support steel interference. This interference reduced the Code coverage to 40%.

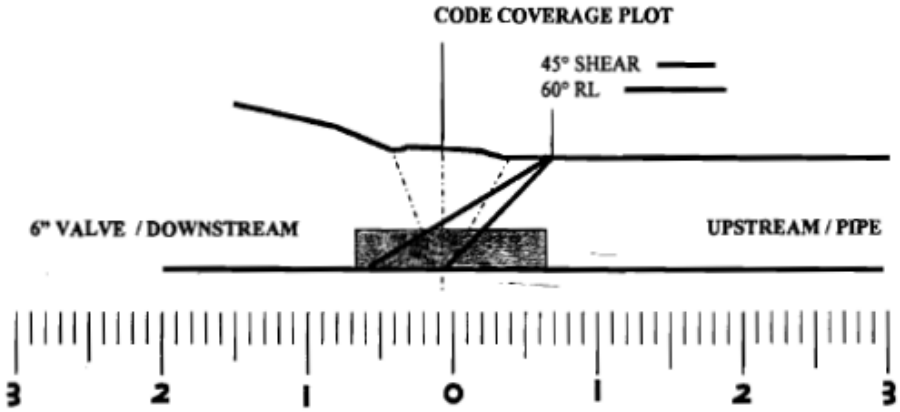
In addition to the 45^0 shear wave, a 60^0 RL-wave transducer was used as a supplemental examination to scan for circumferentially-oriented cracking on the far side of the weld and no flaws were detected. This 60^0 RL-wave examination could not be credited for Code coverage on the far side of the weld; however, it did provide additional assurance of the structural integrity of the weld.

Because examinations have not been qualified for the far side of the weld, it is considered impractical to obtain additional examination coverage using alternative methods or advanced technologies. As this time, to appreciably increase coverage, replacement of the valve with one having a modified configuration to allow examination from both sides would be required.

Enclosure 1

Request for Additional Information Response

← FLOW



The best available techniques, as qualified through the Performance Demonstration Initiative for Supplement 2 with demonstrated best effort for single side examination was used from the accessible side of the weld. In addition, only 15" of the 19"of required area was scanned on the pipe side due to support steel interference. 40% was given to the weld for Code Coverage (A generic 50% minus 10% of unscanned area on the pipe side.

Request for Relief Required

Weld 11204-023-15-RI
Figure 3

Enclosure 1

Request for Additional Information Response

Welds 21204-023-15R-RI and 21204-023-16R-RI are 6" austenitic stainless steel pipe to valve welds. These configurations are essentially identical and the discussion below applies to both welds.

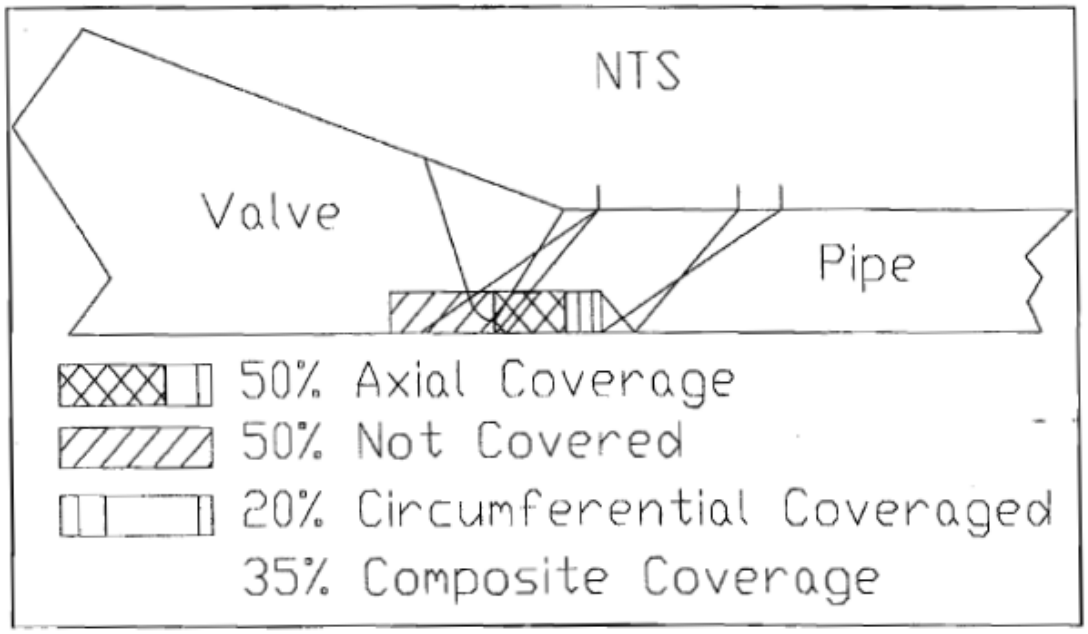
The weld was examined in 2007 after the implementation of Appendix VIII; however, the configuration only allowed examination from the pipe side due to the valve and weld taper. Additionally, when scanning from the pipe side of the weld, the transducer travel was stopped at the edge of the weld because of the sharp taper as shown in Figure 4. Therefore, the 45^0 shear wave examination was limited to approximately 50% coverage when scanning for circumferentially-oriented flaws and approximately 20% coverage when scanning for axially-oriented flaws.

In addition to the 45^0 shear wave, a 60^0 RL-wave transducer was used as a supplemental examination to scan for circumferentially-oriented cracking on the far side of the weld and no flaws were detected. However, this 60^0 RL-wave examination could not be credited for coverage on the far side of the weld because of the requirements set forth in 10 CFR 50.55a(b)(2)(xv)(A)(2). Per 10 CFR 50.55a(b)(2)(xv)(A)(2), when examination from both sides of an austenitic weld is not possible, full coverage from a single side may be claimed only after completing a successful single-sided Appendix VIII demonstration using flaws on the opposite side of the weld. Since the industry has not qualified single-sided examinations for austenitic welds, SNC cannot claim Code coverage on the far side of the weld. However, this supplemental examination did provide additional assurance of the structural integrity of the weld.

The weld was evaluated for weld crown conditioning and it was determined that it would not appreciably increase the coverage because of the tapered configuration. Because of this taper, it is considered impractical to obtain additional examination coverage using alternative methods or advanced technologies. To appreciably increase coverage, replacement of the valve with one having a modified configuration to allow examination from both sides would be required.

Enclosure 1

Request for Additional Information Response



Welds 21204-023-15R-RI and 21204-023-16R-RI
Figure 4