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Exelon Nuclear

November 1, 2007
BW070087

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

Braidwood Station, Unit 1
Facility Operating License No. NPF-72
NRC Docket No. STN 50-456

Subject: Pressurizer Weld Overlay Examination Results Related to Braidwood Station Relief Request I2R-48

References: (1) Letter from T. Coutu (Exelon Generation Company, LLC) to U. S. NRC, "Second 10-Year Inservice Inspection Interval, Relief Request I2R-48, Structural Weld Overlays on Pressurizer Spray, Relief, Safety and Surge Nozzle Safe-ends and Associated Alternative Repair Techniques," dated February 23, 2007

(2) Letter from R. Gibbs (U. S. NRC) to C. M. Crane, "Braidwood Station, Units 1 and 2 Evaluation of Inservice Inspection Program Relief Request I2R-48 Pertaining to Structural Weld Overlays on Pressurizer Spray, Relief, Safety, and Surge Nozzle Safe Ends (TAC NOS. MD4590, and MD4591)," dated September 17, 2007

The Reference 1 submittal proposed an alternative (i.e., Relief Request I2R-48), in accordance with 10 CFR 50.55a(a)(3)(i), to the repair/replacement requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, 1989 Edition, no Addenda, IWA-4000, for the structural weld overlays on the Braidwood Station pressurizer spray, relief, safety and surge nozzle safe-ends.

Reference 2 documents a commitment made in Reference 1 to provide the details of the ultrasonic examination results of the structural weld overlays on the pressurizer spray, relief, safety and surge nozzle safe-ends to the NRC within 14 days of the completion of the final ultrasonic examination. The commitment made in Reference 1 requires any repairs to the overlay material and/or base metal and the reason for the repairs also be discussed within the 14-day report.

In accordance with the Reference 1 commitment, EGC is providing the details of the repairs to the overlay material and/or base metal, the reason for these repairs, and the ultrasonic examination (UT) results of the structural weld overlays on the Braidwood Station Unit 1 pressurizer spray, relief, safety and surge nozzles in an attachment to this letter. The final weld overlay UT conducted during the Unit 1 Fall 2007 refuel outage was completed on October 18, 2007.

This submittal does not contain any new regulatory commitments.

Should you have any questions concerning this letter, please contact Mr. David Gullott, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,

Thomas Coutu
Site Vice President
Braidwood Station

Attachment: Unit 1 Fall 2007 Refuel Outage Repairs and Indications for Pressurizer Weld Overlays

ATTACHMENT
Unit 1 Fall 2007 Refuel Outage Repairs and Indications for Pressurizer Weld Overlays

The following is a summary of the results of the Braidwood Unit 1 weld overlay repair and inspection results.

After mirror insulation was removed, an initial bare metal visual (BMV) examination of the existing dissimilar metal welds was performed by Exelon certified VT-2 examiners to confirm there was no existing through-wall leakage. No leakage was identified on any of the six nozzle welds. After the BMV examinations were completed, the existing weld toes were identified and documented. The base metal was ground/cleaned approximately 1.5 inches beyond the overlay end on the stainless steel pipe/fitting side and a minimum 1.5 times the nozzle end thickness beyond the overlay end on the nozzle side. The cleaned surfaces were examined by the liquid penetrant (PT) method. Indications exceeding 1/16 inch were repaired in accordance with Code Case N-504-2 and reexamined by PT. Upon completion of base metal repairs (when required), a sacrificial weld layer was deposited over the existing base metal using ER309L in accordance with Code Case N-504-2 or Inconel 52MS in accordance with Relief Request I2R-48. The sacrificial layer was examined using visual, PT, and ultrasonic (UT) methods. The remaining layers of Inconel 52MS were applied until adequate deposit thickness was achieved to meet design and final inspection requirements. Overlay surfaces were prepared to meet surface requirements for UT examinations and final PT and UT examinations were performed.

The following tables provide the weld overlay repair and inspection results for Braidwood Unit 1 pressurizer spray, relief, safety and surge nozzles. Comments regarding in-process repair activities are based on entries provided through the welding vendor's "Anomoly Tracking Sheets".

Surge Nozzle (Overlay Weld Number PN-01-SW-01)		
Examination	**Results**	**Comments**
Base Metal BMV	NRI	No evidence of through-wall leakage noted.
Base Metal PT	NRI	No recordable indications noted.
In-process Repair	NRI	Stub-out (tungsten electrode stuck) on weld layer 4A2, 3rd bead between 180° and 270°. Ground area to sound metal to prepare to tie into remaining bead. Quality Control Inspectors (QC) visually examined the removal area.
In-process Repair	NRI	The two Surge nozzle welding machines collided resulting in a small deposit (1/2 inch diameter) of weld metal build-up (located at 120°, 1/2 inch down from nozzle). Ground down excessive reinforcement to sound metal, QC inspected ground area visually.
Final Overlay PT	One Indication	During final PT examination, linear indication (1/8 inch long, 1/32 inch wide located 36.5 inches from 0° location on the pipe-side outside diameter (OD), approximately 290°) was identified. Area was lightly blended, reexamined by PT, and found acceptable.
Final Overlay UT	NRI	No recordable indications noted.

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Unit 1 Fall 2007 Refuel Outage Repairs and Indications for Pressurizer Weld Overlays

Spray Nozzle (Overlay Weld Number PN-02-SW-02)		
Examination	**Results**	**Comments**
Base Metal BMV	NRI	No evidence of through-wall leakage noted.
Base Metal PT	NRI	No recordable indications noted.
In-process Repair	NRI	While starting first bead of weld layer 2, machine stubbed out on the sacrificial layer and the base metal at the 0° punch mark. The stub out ran on the nozzle approximately ½" from the final overlay weld toe. Area was lightly ground/buffed (approximately 1 ½ x 1 ½ inches and approximately 0.020 inches deep) and examined by PT, no indications noted.
Final Overlay PT	NRI	No recordable indications noted.
Final Overlay UT	NRI	No recordable indications noted.

Relief (PORV) Nozzle (Overlay Weld Number PN-03-SW-03)		
Examination	**Results**	**Comments**
Base Metal BMV	NRI	No evidence of through-wall leakage noted.
Base Metal PT	NRI	No recordable indications noted.
In Process Repair	NRI	On the 6th weld layer at 180° (intradose), lack of fusion (1 ½ inches long) was noted. The area in question was ground out and a visual inspection of the area was performed. No indications were noted.
In Process Repair	NRI	Tungsten stub-out on Layer 8A1, Bead 6. Area was ground to sound metal to tie into remaining weld bead. QC visually examined the removal area, no indications were noted.
Final Overlay PT	NRI	No recordable indications noted.
Final Overlay UT	NRI	No recordable indications noted.

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Unit 1 Fall 2007 Refuel Outage Repairs and Indications for Pressurizer Weld Overlays

"A" Safety Nozzle (Overlay Weld Number PN-04-SW-04)		
Examination	**Results**	**Comments**
Base Metal BMV	NRI	No evidence of through-wall leakage noted.
Base Metal PT	One Indication	One linear indication (3/16 inches long, 1/32 inches wide) was identified during initial base metal PT examination. Indication was located in the safe end to nozzle weld and was ground out (final excavation was 3 inches long, 1 ¾ inches wide, and 0.120 inches deep). Excavation was filled with ERNiCrFe-7 weld filler material, ground flush, and reexamined and accepted by visual and PT methods.
In-process Repair	NRI	During initiation of Inconel 52MS welding on the sacrificial layer of the nozzle, the 3rd weld bead was cold rolled onto the top of beads 1 and 2. All three beads were ground down flat to a 1/16-inch height above the base metal and beads were reapplied with the correct bead placement. There was no infringement into the base metal so PT examination was not required. A visual examination was performed prior to the start of the welding, no indications were noted.
In-process Repair	NRI	The second bead of the Inconel 52MS portion of the sacrificial layer was placed nearly directly on top of bead 1 for approximately 180° of the circumference. The bead was completely removed (ground-out) prior to continuing with the remainder of the layer. QC inspected the removal area to verify complete bead removal, leaving only bead 1. No indications were noted.
Final Overlay PT	NRI	No recordable indications noted.
Final Overlay UT	One Indication	No flaws exceeding ASME Section XI acceptance standards IWB-3514-2 (ferritic piping) or IWB-3514-3 (austenitic piping) were observed. A single laminar flaw (measured area of 0.3 square inches) was noted, acceptance standard is 7.5 square inches.

"B" Safety Nozzle (Overlay Weld Number PN-05-SW-05)		
Examination	**Results**	**Comments**
Base Metal BMV	NRI	No evidence of through-wall leakage noted.
Base Metal PT	NRI	No recordable indications noted.
In-Process Repair	One Indication	During PT examination of the sacrificial layer on the nozzle, one faint indication (approximately 1/2 inch in length) was noted at approximately 180°. The indication was lightly buff ground and reexamined by PT examination. No relevant indications were noted.
In-Process Repair	NRI	Stub-out on weld layer 5, bead 26, at 0° location. Stub-out area was excavated with a file grind, visually inspected, and rewelded. No indications were noted.
Final Overlay PT	Two Indications	During final PT examination, two indications (0.35 by 0.30 inches approximately 8 inches from the zero mark and 0.17 by 0.40 inches approximately 9.25 inches from the 0° mark) were noted at 170° and 175° respectively. The areas were buffed and reexamined by PT, no relevant indications were noted during reexamination.
Final Overlay UT	One Indication	No flaws exceeding ASME Section XI acceptance standards IWB-3514-2 or IWB-3514-3 were observed. A single laminar flaw (measured area of 0.5 square inches) was noted, acceptance standard is 7.5 square inches.

"C" Safety Nozzle (Overlay Weld Number PN-06-SW-06)		
Examination	**Results**	**Comments**
Base Metal BMV	NRI	No evidence of through-wall leakage noted.
Base Metal PT	One Indication	One indication (3/16 x 1/4 inches, characterized as "rounded" on data sheet) was identified during initial base metal PT examination in the austenitic stainless steel material. Indication was ground out (final excavation was 0.7 inches long, 0.4 inches wide, and 0.12 inches deep). Excavation was filled with ER309/309L weld filler material, ground flush, and reexamined by visual and PT methods. No indications were noted.
In-Process Repair	NRI	Tungsten stub-out at 270° on layer 8, bead 5 (1 inch from nozzle side of the weld toe). Area was ground to sound metal to prepare to tie in remaining weld bead. QC visually examined removal area, no indications were noted.
Final Overlay PT	One Indication	During final PT examination, one linear indication (0.500 inches long, 0.062 inches wide) was noted 4.75 inches to 5.25 inches from 0° location, approximately 95°-100°. The area was buffed and reexamined by PT. No indications were noted.
Final Overlay UT	NRI	No recordable indications were noted.

NRI – No recordable indication.