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ComEd

January 14, 1997

JSPLTR: 97-0006

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555

Subject: Dresden Nuclear Power Station, Unit 3
Weld Overlay on RWCU Non-Regenerative Heat Exchanger 3-1204AB Tubeside Inlet Nozzle.
NRC Docket No. 50-249

Reference: (1) J. Stephen Perry (ComEd) to U.S. NRC letter dated September 16, 1996, "Dresden Nuclear Power Station, Unit 3, Weld Overlay on RWCU Non-Regenerative Heat Exchanger 3-1204AB Tubeside Inlet Nozzle".

(2) J. Stephen Perry (ComEd) to U.S. NRC letter dated September 20, 1996, "Dresden Nuclear Power Station, Unit 3, Weld Overlay on RWCU Non-Regenerative Heat Exchanger 3-1204AB Tubeside Inlet Nozzle".

(3) REQUEST FOR ADDITIONAL INFORMATION (TAC NO. M96902) dated December 17, 1996 from John F. Stang, NRC Senior Project Manager.

The purpose of this letter is to provide additional information requested by the NRC in Reference 3. This information is contained in Attachment 1.

The second purpose of this letter is to notify the NRC of the intent to use the weld overlay until late April 1997. In the September 20, 1996 letter (Reference 2), ComEd indicated that the weld overlay would be abandoned along with the entire "A" train of heat exchangers within 6 months based on a start date of Dresden Unit 3's fourteenth refueling outage (D3R14) in early March 1997. However, because of a Unit 3 forced outage due a recirculation pump motor problem, ComEd desires to defer the start of D3R14 into late April 1997. This would increase the life of the limited service overlay by approximately two months. However, the impact of the additional time on the integrity of the weld

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overlay was assessed and found to be insignificant. During the forced outage, the RWCU system was operated at temperatures less than 150°F and 150 psig. Consequently, crack growth from both fatigue and IGSCC would be negligible during this time. The time that the weld overlay is subject to normal operating conditions of 225 °F and 1000 psig will still be less than 6 months.

If there are any questions concerning this letter, please refer them to Frank Spangenberg, Dresden Station Regulatory Assurance Manager, at (815) 942-2920, extension 3800.

Very truly yours,

J. Stephen Perry
Site Vice President
Dresden Station

Attachments:

cc: A. Bill. Beach, Regional Administrator, RIII
P. L. Hiland, Branch Chief, DRPS, RIII
J. F. Stang, Project Manager, NRR (Unit 2/3)
C. L. Vanderniet, Senior Resident Inspector, Dresden
J. A. Gavula, Region III.
Office of Nuclear Facility Safety - IDNS

ATTACHMENT #1

ComEd Response to
NRC's REQUEST FOR ADDITIONAL INFORMATION CONCERNING THE REACTOR WATER CLEANUP SYSTEM HEAT EXCHANGER REPAIR

COMMONWEALTH EDISON COMPANY
DRESDEN NUCLEAR POWER STATION, UNIT 3
DOCKET NO. 50-249

1. Provide a description of the flaw, including the size, location and a sketch of the exact location of the flaw.

Response: The attached Figure No. 1 contains a map and description of the flaws. The two indications closest to 0^0 in area 1 of this report are believed to be the throughwall flaws. Positive identification of throughwall flaws was not made since the flaws were not excavated.

2. Provide the as-measured weld overlay dimensions.

Response: The as-measured weld overlay dimensions are provided in Figure No. 2.

3. Provide the as-measured Ferrite content of the weld overlay including the number of measurements taken, data of each measurement and the location of each measurement.

Response: Delta ferrite measurements were taken on the seal layer and first structural layer. The delta ferrite readings taken on the first layer were less than 7.5%FN, therefore this layer was considered a seal layer only. Eight delta ferrite measurements were taken on the first structural layer and all readings were greater than 7.5%FN. The delta ferrite readings were taken at the same points as the thickness readings at locations E1 and E2 as shown on Figure No. 2. The 7.5%FN criteria was used based on recommendations in NUREG-0313, Rev. 2, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping".

4. How many layers were applied in the weld overlay?

Response: Five layers were applied, one seal layer and four structural layers.

5. Was the pipe filled with water during the overlay fabrication?

Response: No, the heat exchanger nozzle was completely drained prior to performing the weld overlay to facilitate interference removal.

6. Provide a description of how the through-wall crack was sealed prior to the fabrication of the weld overlay?

Response: A seal layer was used to seal the through-wall flaws and other surface flaws.

7. Identify the welding process and the material used in the weld overlay.

Response: The seal layer and the first structural layer were installed using the Gas Tungsten Arc Welding (GTAW) process with W/ER309L filler material as specified in Welding Procedure Specification (WPS) 8-8-B of ComEd's Special Process Procedures Manual (SPPM). Subsequent layers were installed using the GTAW process with W/ER308L filler material as specified in WPS 8-8-B of ComEd's SPPM.

8. Provide the results of the liquid penetrant test and the ferrite measurements performed on the first layer of the overlay.

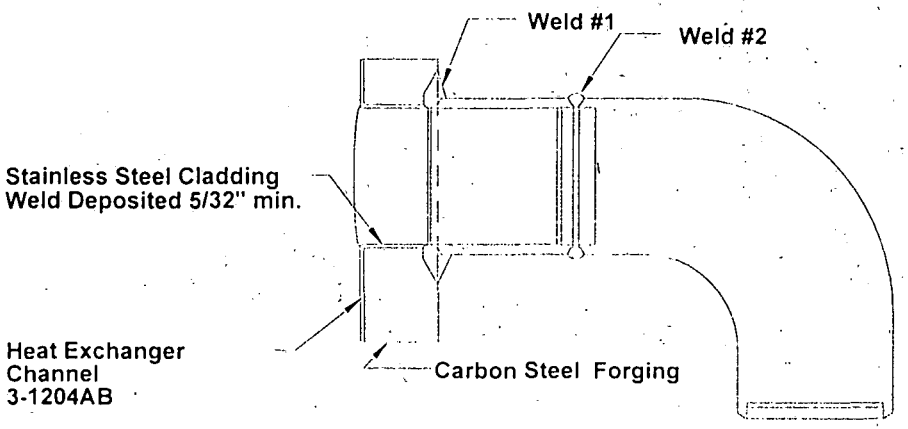
Response: No indications were found by the liquid penetrant test performed on Layer # 1. However, some delta ferrite measurements were less than 7.5%FN. Subsequently, Layer # 2 was applied. No indications were found by the liquid penetrant test performed on Layer # 2. All delta ferrite measurements for Layer # 2 were greater than 7.5%FN.

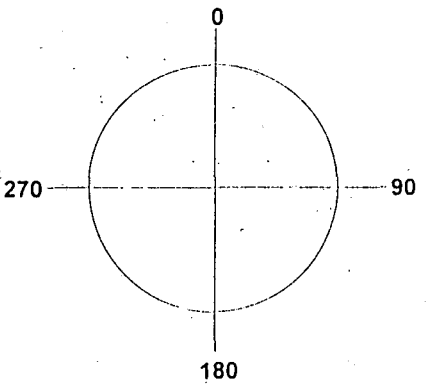
9. Provide the shrinkage measurement data resulting from the application of the weld overlay.

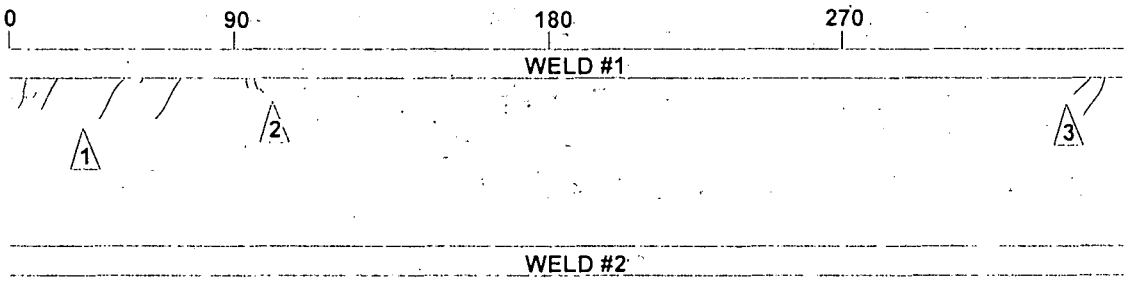
Response: Shrinkage measurements were taken at the four azimuths. Maximum shrinkage was 1/4". The impact of this shrinkage on pipe stress was evaluated and found acceptable.

10. Identify any deviations from the code case for the weld overlay repair in the design and fabrication of the subject weld overlay applied at Dresden, Unit 3.

Response: The design and fabrication of the weld overlay repair met the requirements of code case N-504-1 without exception. The overlay design thickness met the requirements of IWB-3640 for 100% through-wall flaws. The overlay design axial length and taper met the $.75\sqrt{Rt}$ and 45°, respectively. Details of the overlay fabrication are provided in the responses to questions 3 - 8 and demonstrate compliance with the fabrication requirements of the code case.



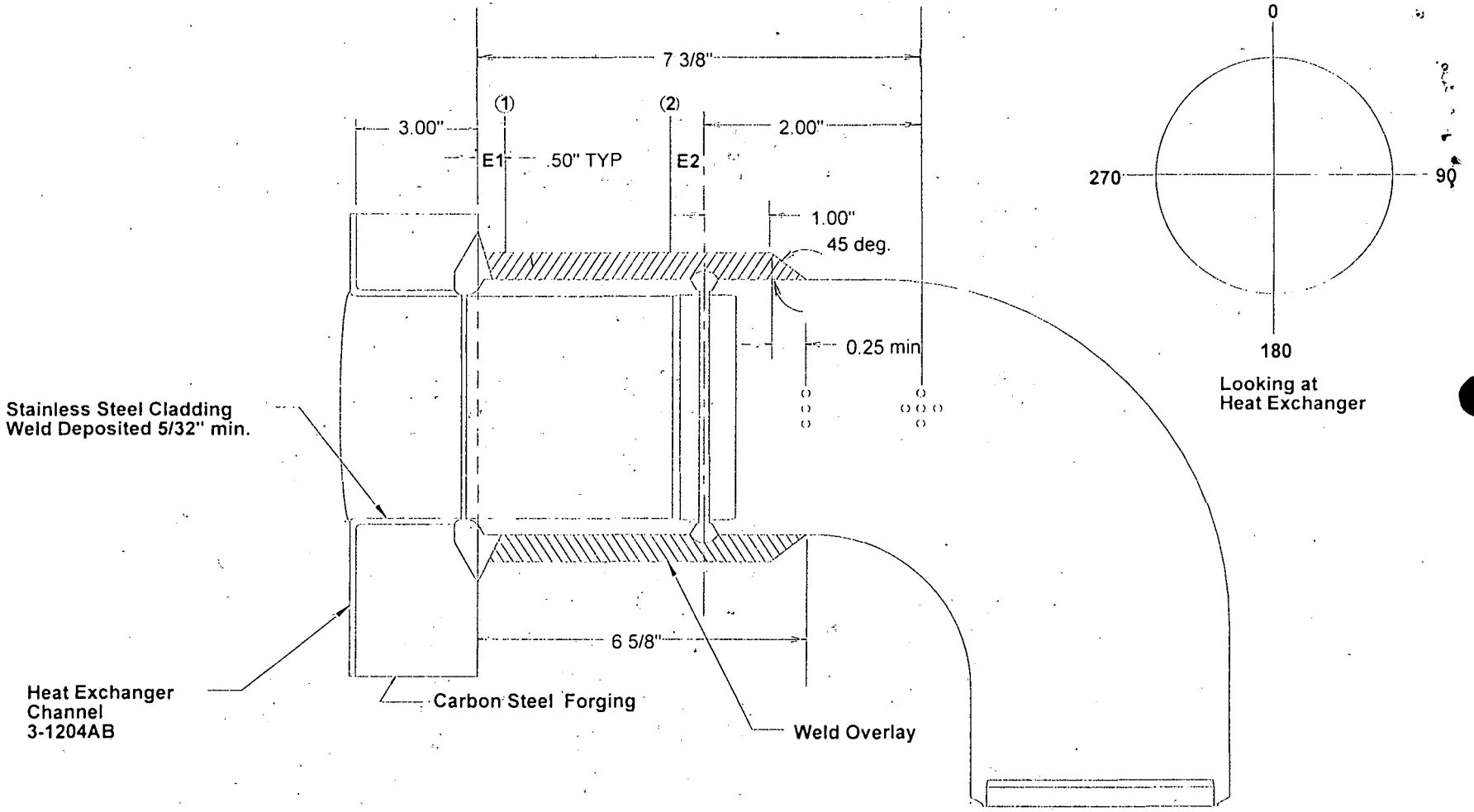




1. 5 linear indications ranging in size from 1/8" to 1". Indications extend from the toe of the weld on the pipe side.
2. 2 linear indications ranging in size from 1/4" to 5/8". Indications extend from the toe of the weld on the pipe side.
3. 2 linear indications ranging in size from 3/16" to 3/4". Indications extend from the toe of the weld on the pipe side at approximately 350 degrees.

Figure 1

Through Wall Indications on 3-1204-AB Inlet Nozzle



THICKNESS MEASUREMENT AFTER FIRST 2 LAYERS

	0	90	180	270
(1)	0.566	0.581	0.561	0.591
(2)	0.521	0.506	0.465	0.495

FINAL THICKNESS MEASUREMENT

	0	90	180	270
(1)	0.891	0.966	0.986	0.916
(2)	0.816	0.901	0.896	0.891

Figure 2

As Measured Overlay Dimensions