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May 16, 1988

W3P88-0095
A4.05
QA
Attachment

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Evaluation of Indications from Reactor
Vessel Inservice Inspection

During the Waterford 3 second refueling outage, an ultrasonic examination was performed on the reactor vessel welds and flange ligaments in accordance with the Waterford 3 Ten Year Inservice Inspection Program and Section XI of the ASME Code. The scope of the work included one hundred percent (100%) examination of the two (2) hotleg (outlet) nozzle-to-shell welds, fifty percent (50%) of the flange-to-shell weld, and fifty percent (50%) of the flange ligaments. The examinations were performed in accordance with the 1980 Edition through Winter 1981 Addenda of ASME Section XI. The examinations were completed on May 9, 1988.

During the inservice ultrasonic examination of the hot leg nozzle to shell weld located at 0 degree vessel axis three recordable indications were noted. Two (2) of the indications were detected with a 0 degree, 2.25 MHz longitudinal wave examination from the nozzle bore, and the remaining indication was detected with a 20 degree, 2.25 MHz longitudinal wave examination from the nozzle bore. These indications are clearly located within the weld at or near the weld/nozzle forging fusion line. The 0 degree longitudinal wave indications were determined to meet the acceptance standards in Table IWB-3512-1 of the ASME Code Section XI, 1980 Edition through the 1981 Addenda, while the 20 degree longitudinal wave indication exceeded the allowable limits of Table IWB-3512-1.

In an effort to further characterize these indications, particularly the 20 degree longitudinal wave indication, supplemental examinations were performed using the Dynacon Ultrasonic Data Recording and Processing System (UDRPS).

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The UDRPS system is a known automated data recording and processing system which has the capability of recording, storing, processing, and imaging ultrasonic test data. UDRPS allows for more extensive recording of data, better visualization of examination data through the use of color-coded images, more flexible manipulation of data, and more consistent examination quality and archival retrieval of past examinations for comparison purposes. With UDRPS, the indications appeared to be rounded, volumetric-type reflectors, most probably deposited during the fabrication process. The indications were evaluated using the six (6) dB amplitude drop sizing rather than the fifty percent (50%) DAC sizing. These indications were determined to exceed the acceptance standards in Table IWB-3512-1 of the ASME Section XI, 1980 Edition through the 1981 Winter Addenda.

Accordingly, a fracture mechanics analysis, using the rules of IWB-3600 and the guidelines of Appendix A, Section XI, 1980 Edition through Winter 1981 Addenda, was performed for the three (3) indications. The three (3) indications identified by both the conventional ultrasonic examinations and the UDRPS examinations have been determined to be acceptable by fracture mechanics analysis using the rules of IWB-3600. In accordance with IWB-2420(b), the indications will be re-examined during the next three (3) inspection periods.

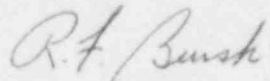
Provided with this letter is Enclosure 1, titled, "Handbook on Flaw Evaluation Waterford Unit 3 Reactor Vessel Outlet Nozzle to Shell Welds." This enclosure provides a detailed discussion of the fracture mechanics analysis including code acceptance criteria, fracture and fatigue growth analysis methodology and evaluation of transients, including Pressurized Thermal Shock and Low Temperature Over-pressure Protection. Appendix A of the enclosure provides a detailed discussion of the fabrication radiographs, the results of the baseline ultrasonic examination, supplemental information about UDRPS examinations, a graphical representation of the indications and acceptance criteria based on the results of the fracture mechanics analysis and applicable figures.

Louisiana Power and Light herewith submits, pursuant to Section XI, IWB-3125(b), Enclosure 1, documenting the acceptability of the three (3) indications. Louisiana Power and Light furthermore requests that the NRC approve the acceptable disposition of these three (3) indications based on this evaluation analysis as required by Section XI, IWB-3610(b).

The current schedule for Modes 1 and 2 is May 29 and 27, 1988 respectively. Louisiana Power and Light respectfully requests that approval be granted expeditiously so as to preclude extension of the outage beyond the current schedule.

Pursuant to 10CFR170.21, the required application fee of \$150.00 is enclosed. Please contact me or N.S. Carns should there be any questions concerning this submittal.

Very truly yours,

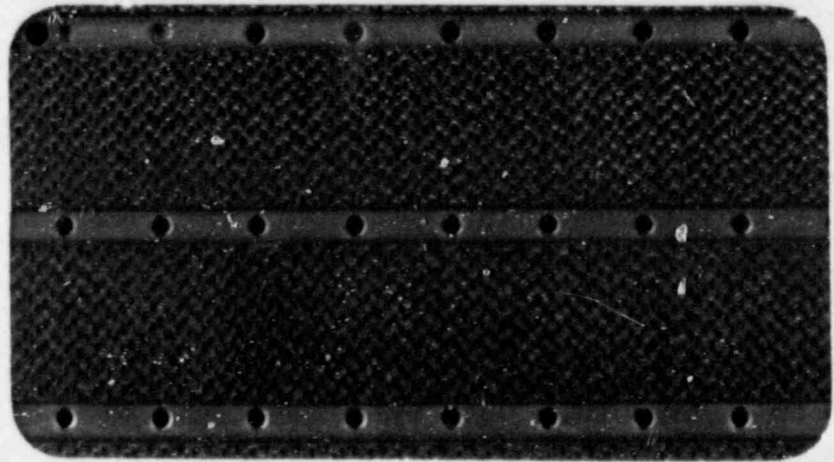


R.F. Burski
Manager -
Nuclear Safety & Regulatory Affairs

RFB:RJM:ssf

Attachment

cc: R.D. Martin, NRC Region IV
J.A. Calvo, NRC-NRR
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NRC Resident Inspectors Office
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HANDBOOK ON FLAW EVALUATION
WATERFORD UNIT 3 REACTOR VESSEL
OUTLET NOZZLE TO SHELL WELDS

May, 1988

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