

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

REPORT/DOCKET NO.: 50-247/93-03

LICENSE NO.: DPR-26

LICENSEE: Consolidated Edison Company of New York
Broadway and Bleakley Avenue
Buchanan, New York 10511

FACILITY NAME: Indian Point 2 Nuclear Power Station

INSPECTION AT: Buchanan, New York

INSPECTION DATES: February 8-11, 1993 and March 9-12, 1993

INSPECTOR:

H. J. Kaplan
H. J. Kaplan, Sr. Reactor Engineer,
Materials Section, EB, DRS

3/30/93
Date

APPROVED BY:

E. H. Gray
E. Harold Gray, Chief, Materials Section,
Engineering Branch, DRS

3/30/93
Date

Areas Inspected: Ultrasonic inspection of steam generator 21 upper girth weld, and the current ISI program.

Results: The ultrasonic inspection of the upper girth weld in steam generator 21 did not disclose any rejectable indications in the recently deposited weld metal. The ISI program was found to be well organized and in accordance with code requirements as demonstrated by surface (MT) and volumetric examinations (UT) of a boiler feed line weld. Preliminary eddy current inspection results of the steam generator indicated that tube degradation was minimal and had not increased significantly since 1984. No violations or deviations were found during the inspection.

1.0 STEAM GENERATOR GIRTH WELD ULTRASONIC EXAMINATION

1.1 Scope

The inspector reviewed the ultrasonic examination (UT) results of the upper girth weld in steam generator (SG) #21. Consolidated Edison (Con Ed) had agreed to perform this examination in a meeting held with the NRC on September 24, 1991. The girth welds in all four SGs had been modified in the spring 1991 outage by removing the stress corrosion cracking found on the inner diameter (I.D.) surface. The cracking was caused by a combination of high residual stresses, high oxygen content, and a susceptible material with high manganese sulfide content which led to pitting and cracking. The modification consisted of milling out a six inch wide by 3/4 inch deep groove in each SG (that portion which contained the cracks) and filling the groove to the original surface with low sulfur weld metal, in addition to providing a smooth radius I.D. contour and controlling the oxygen content in the condensate storage tank. The original cracks, which originated on the I.D. surfaces, were found both by magnetic particle testing (MT) of the I.D. and UT examination from the outside surface. The refurbished girth welds had seen approximately eighteen months of service.

1.2 Findings

Upon arrival at the plant site, the inspector was informed that the UT examination covering 360° of the girth weld (six inches above and fourteen inches below the weld) had been completed. No code rejectable conditions were detected, and particularly, no crack-like indications were found in the newly deposited weld metal. At the inspector's request, Con Ed repeated the UT examination in two zones which had previously been found to contain two indications identified as #12 and #37 in the 1991 outage. These indications, which were located approximately mid wall in the original weld metal, were considered to be manufacturing defects. They were believed to be due to weld defects (slag and porosity) that originated in the original fabrication of the vessel as determined previously by Con Ed's review of the manufacturer's radiographs.

The UT examination, as witnessed by the inspector, was performed by MQS (NDE contractor) personnel in accordance with MQS Procedure IPP-ISI-22.A.615-45. The inspector verified that the MQS procedure, and their NDE examiners' qualifications were reviewed by Con Ed's NDE Level III engineer. The examination results using the 45 degree angle beam duplicated the data (#93-JSI-006) obtained on 2/4/93, which demonstrated that indications #12 and #37 had not increased in size as compared to the 1991 examination results, using essentially the same UT procedure employed previously, and that the new weld metal was free of crack-like indications. Con Ed stated that in reviewing all the UT data covering 360° of the girth weld, they concluded that there was no evidence of UT indications that could be construed to be stress corrosion cracks of the type observed prior to depositing the new weld metal in the girth weld in the spring 1991 outage. The inspector witnessed the calibration of the UT instrument using a 3-1/2 inch SA-533 Class 1 block with 3/16"

diameter hole. The pedigree of the block which represented the SG material characteristics was confirmed by a review of an appropriate mill test report. As permitted by Con Ed's QA program, surveillance of the girth weld examination activities had been performed by Con Ed's Level III examiners.

1.3 Conclusion

Ultrasonic examination of the upper girth weld in SG 21 was found to be in accordance with ASME Section XI requirements. No evidence of cracking was observed in the new, recently deposited weld metal.

2.0 INSERVICE INSPECTION (Inspection Module 73753)

2.1 Scope

The inspector reviewed Con Ed's ISI program which covered the third period of the 2nd 10-year interval. The program was approved by NRR in a letter, dated March 16, 1989. The program complies with the requirements of ASME Section XI Code, 1980 Edition through winter 1981 Addenda.

2.2 Findings

The inspector reviewed the program requirements with Con Ed's key personnel. Inspections and examination activities were being provided by Dynamic Systems, a Westinghouse subsidiary, whose personnel qualifications were reviewed and approved by Con Ed's Level III examiner. Also reviewed was Con Ed's program for handling and tracking rejectable NDE conditions in the form of open item reports by QA Procedure QA-760-14. The status, scheduled examination, and NDE results were being tracked by the ISI coordinator using a computerized program. The inspector reviewed the following NDE procedures and found them to be in accordance with code requirements--IPP-ISI-70-Magnetic Particle Examination, IPP-ISI-11 - Liquid Penetrant Examination, and IPP-ISI-206-Manual Ultrasonic Examination of Welds.

The inspector witnessed one of the first scheduled examinations which included MT and UT of weld #6/10 in an 18 inch diameter carbon steel boiler feed line. The inspector verified that the MT and UT examinations were performed in accordance with the appropriate procedures. The examinations did not reveal any indications. The UT and MT instruments were calibrated as required by procedures using a calibration block for UT and a magnetic particle indicator for the MT. The inspector also witnessed the calibration of the UT instrument for a 14-inch auxiliary coolant line weld (B-206670-04) and observed no discrepancies.

The inspector also reviewed the preliminary results of the eddy current inspection of the four steam generators that was performed during the present outage. Of the three thousand eight hundred (3,800) tubes in each SG, the number of tubes inspected full length in each SG ranged between 568-707 in addition to 100% inspection to the first support plate. On the basis of a 40% through wall rejection criteria, 56 tubes were to be plugged (13 - SG #21, 12 - SG #22, 16 - SG #23, and 15 - SG #24). The total number of tubes plugged since start of operation are 207 - SG #21, 338 - SG #22, 255 - SG #23, and 268 - SG #24. On the basis of the above data, Con Ed concluded that tube degradation was minimal and had not increased significantly since 1984.

2.3 Conclusion

The ISI program was found to be in accordance with ASME Section XI requirements. The program was well organized and managed by knowledgeable personnel.

3.0 QUALITY ASSURANCE

Quality Assurance activities, including both surveillance and auditing, are performed by several groups, namely, Con Ed's corporate QA auditor, Authorized Nuclear Inspector (ANI) and Con Ed's Level III examiner. The QA program, as approved by NRC on June 8, 1992, features the role of the Level III examiner. He is a member of the Test and Performance Group, and performs surveillances and monitors activities. The Test and Performance Group reports to the Chief Plant Engineer who is independent of the General Manager Nuclear Power Generation, and is responsible for plant operations.

The inspector reviewed pertinent documents involving the programs and noted two minor deficiencies which Con Ed acknowledged and agreed to take appropriate corrective action. These were failure of the Level III examiner to document his surveillance activities and failure to employ a check list.

4.0 EXIT MEETING

An exit meeting was held on February 11, and March 12, 1993, at which time the inspector summarized the results of the inspection with the attendees listed in Attachment 1. No violations or deviations were observed in this inspection.

ATTACHMENT 1List of AttendeesConsolidated Edison Company of New York

Barlok, J.	Asst. Manager, Test and Performance
Bram, S.	Vice President, Nuclear Power
Deeds, P.	QA Engineer, Test and Performance
Etzweiler, J.	Senior Engineer, Nuclear Safety & Licensing
Hugo, G.	Manager, Test and Performance
Jackson, C.	Manager, Nuclear Safety & Licensing
Miele, M.	General Manager, Technical Services
Mullin, V.	Manager, Plant Engineering
O'Toole, W.	Supervising Engineer, Systems Engineering
Quinn, S.	General Manager, Nuclear Power Generation
Ryff, G.	Managing Field Engineer - Nuclear
Schwartz, J.	QA Engineer, Test and Performance
Wasilenko, G.	Manager, Quality Projects
Whitney, M.	Senior Engineer, Nuclear Safety & Licensing

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Hunegs, G.	Sr. Resident Inspector
Kaplan, H.	Sr. Reactor Engineer