

FEB 5 1991

Docket No. 50-304

Commonwealth Edison Company  
ATTN: Mr. Cordell Reed  
Senior Vice President  
Licensing Department-Suite 300  
Opus West III  
1400 Opus Place  
Downers Grove, IL 60515

Gentlemen:

This refers to the special safety inspection conducted by the NRC NDE Mobile Team of the NRC's Region I office on April 30 through May 10, 1990, of activities at the Zion Nuclear Power Station, Unit 2, authorized by NRC Operating License No. DPR-48 and to the discussion of their findings with Mr. G. Beale and others of your staff at the conclusion of the inspection. Due to an administrative oversight, this report was not issued in a timely manner at the end of the inspection in May 1990. We are issuing the report today to ensure complete documentation and distribution of the findings.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

No violations of NRC requirements were identified during the course of this inspection.

In accordance with 10 CFR 2.750 of the Commission's regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Original Signed by Mark A. Ring

M. A. Ring, Chief  
Engineering Branch

Enclosure: Inspection  
Report No. 50-304/90012(DRS)

See Attached Distribution

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Distribution

cc w/enclosure:

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Braidwood, Zion  
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Counsel, State of Illinois Center

U. S. NUCLEAR REGULATORY COMMISSION  
REGION 1

Report No. 50-304/90-12

Docket No. 50-304

License No. DPR-48

Licensee: Commonwealth Edison Company  
P. O. Box 767  
Chicago, Illinois 60690

Facility Name: Zion Nuclear Power Sta'

Inspection At: Zion, Illinois

Inspection Conducted: April 30 - May 10, 1990

Inspectors: H. W. Kerch  
H. W. Kerch, Project Manager NDE

6/28/90  
date

Richard H. Harris  
R. H. Harris, NDE Technician

6/28/90  
date

Approved by: R. Strosnider  
R. Strosnider, Chief, Materials, and  
Processes Section, EPB, DRS, Region 1

6/29/90  
date

Inspection Summary and Conclusion: A routine, announced inspection was conducted by the NRC Mobile Nondestructive Examination (NDE) Team at Zion Nuclear Power Station on April 30 through May 10, 1990. (Report No. 50-304/90-012)

The inspection focused on inservice inspection related activities, steam generator indications, modifications, erosion-corrosion and pipe supports.

Implementation of the ISI program and the ISI contractor's performance were good.

~~9007200268~~ 10/77

## DETAILS

### 1.0 Persons Contacted (30703)

#### Commonwealth Edison Company (CECO)

- \*G. Beale, Regulatory Assurance
- \*T. Saksefski, Engineer ISI
- \*T. Reick, Technical Support
- W. T'Naim, Technical Staff Supervisor
- \*G. Ponce, Quality Control (NDE)
- \*D. Chrzanowski, Nuclear Engineering ISI
- \*R. Wulf, Technical Staff ISI
- \*T. Van De Voore, Quality Assurance Supervisor
- \*R. Tolentino, Coordinator ISI
- \*J. W. Yost, Quality Control Inspector
- \*J. Madden, Technical Staff

#### Westinghouse Nuclear Services Division (NSD)

- \*B. Lefebre, Coordinator, ISI
- \*J. A. Johnson, Coordinator

#### U.S. Nuclear Regulatory Commission

- \*R. S. Leeman, Sr. Resident Inspector, RII
- \*K. Ward, Reactor Inspector, RII

\*Denotes those attending entrance and exit meeting.

The above listed personnel were present at the exit meeting. The inspector also contacted other administrative and technical personnel during the inspection.

### 2.0 Independent Measurements - NRC Nondestructive Examination and Quality Records Review of Safety Related Systems

During the period of April 30 through May 10, 1990, an onsite independent inspection was conducted at Zion Nuclear Power Station. The inspection was conducted by NRC regional based inspectors. The objectives of this inspection were to assess the adequacy of the licensee's inservice inspection program, steam generator shell inspection activities, welding quality control program, pipe modification program and the licensee's actions regarding maintaining the "as-built" configuration of pipe hangers and supports. This was accomplished by repeating examinations performed by the licensee in accordance with applicable regulations and codes and then comparing the results of the independently performed NRC inspections with the results of the licensee's inspections. The following paragraphs define the scope of the examinations performed and the results.

## 2.1 Nondestructive Examination (NDE)

### 2.2 Visual Examination (57050)

Seven (7) safety related pipe weldments and adjacent base material (1/2 inch on either side of the weld) were visually examined in accordance with NRC procedure NDE-10, Rev. 1, Appendix A; the licensee's procedure entitled "Visual Examination of Pipe Systems and Attached Components," and associated QC documents, isometric and as-built drawings. During this inspection, ASME Class 2 pipe weldments were selected from the Safety (SI), Main Steam (MS), and Feedwater (FW) systems. The examinations were performed specifically to identify any cracks or linear indications, gouges, leakage, arc strikes with craters, or corrosion which may infringe upon the minimum pipe wall thickness. Mirrors, flashlights and weld gauges were used to aid in the inspection and evaluation of the weldments.

Results: The welding and overall workmanship inspected were satisfactory. No violations were identified.

### 2.3 Visual Inspection Hanger/Support (57050)

During this inspection, twenty-one (21) safety related piping hangers and supports were visually inspected per NRC procedure NDE-10, Revision 1, Appendix A and B, in conjunction with site procedures for visual examination of pipe systems and attached components, QC documents and associated isometric drawings. Included in this inspection were hangers and supports selected from the Main Steam (MS), Service Water (SW), Component Cooling Water (CCW), and Auxiliary Feedwater (AF) Systems. In the area of welds, the accessible surface area and adjacent base metal for a distance of an inch on either side of the weld were examined. In the area of component integrity, specific attributes inspected were proper installation, configuration or modification of supports; evidence of mechanical or structural damage; and corroded, bent, missing or broken members. Attachment 2 is a list of specific hangers and supports inspected.

Results: Welding and overall workmanship were acceptable. No violations were identified.

### 2.4 Liquid Penetrant Examination (57060)

Two (2) safety related pipe weldments and adjacent base material (1/2 inch on either side of the weld) were examined using the visible dye, solvent removable liquid penetrant method per NRC procedure NDE-9, Revision 0, in conjunction with the licensee's procedure and associated QC records. Included in this inspection were ASME Class 2 stainless steel weldments selected from the Safety Injection (SI) System.

Results: The surface areas examined were properly prepared for the examination. No violations were identified.



## 2.5 Magnetic Particle Examination (57070)

Six (6) safety related pipe weldments and adjacent base material (1/2 inch on either side of the weld) were examined using the direct contact magnetic particle method (Yoke), with dry powder as the inspection medium. The examination was performed in accordance with NRC procedure NDE-6, Revision 1 in conjunction with the licensee's procedure and associated QC records. Included in this examination were ASME Class 2 pipe weldments selected from the Main Steam (MS) and Feedwater (FW) Systems.

Results: No violations were identified.

## 2.6 Ultrasonic Examination (57080)

Six (6) safety related pipe weldments were ultrasonically examined using a Krautkramer USL-48 ultrasonic flaw detector in accordance with NRC procedure NDE-1, Revision 1; site procedures and associated ultrasonic test data. Instrument calibration (linear verification) was performed using NRC procedure NDE-2, Revision 1. A distance amplitude correction curve (DAC) was constructed using the licensee's calibration standard CWE-3. To ensure repeatability of the ultrasonic examinations, instrument settings and search units (transducers) were matched as near possible to those indicated by the licensee's ultrasonic data reports.

Results: No violations were identified.

## 2.7 Erosion-Corrosion (57080)

Twenty (20) pipe components were examined for erosion-corrosion using a nova D-100 digital thickness gauge. The method and procedures used were in accordance with NRC procedure NDE-11, Revision 0, the licensee's procedures, and quality assurance records. The erosion-corrosion examinations were performed on selected pipe components to determine if wall thinning was present and, if so, was it being properly evaluated and monitored by the licensee. The thickness measurements were taken at predetermined locations on the systems selected and were on a 1 inch, 2 inch, or 3 inch grid pattern depending on the diameter of the component. Included in this inspection were various size components selected from the Feed Water (FW), Heater Drain (HD) and Condensate (CD) systems.

Results: Based on the inspections performed, there were no violations identified. The licensee's erosion-corrosion program appeared to be effective based on site documentation and repeatability of results.

## 2.8 Steam Generator Shell Inspection (57080/57060)

This inspection was performed to evaluate the licensee's activities related to the inspection, evaluation and disposition of indications found by the licensee's contractor on the shell of Steam Generator "D". A magnetic particle examination was performed by the NRC on the inside surface of the steam generator shell using the direct contact magnetic particle method (yoke) with dry powder as the inspection medium. The NRC also performed an ultrasonic examination on the outside (OD) surface of Steam Generator "D" using a Sonic Mark 1 ultrasonic flaw detector. The aforementioned examinations were performed using the NRC approved procedures in conjunction with the licensee's procedures and associated quality control records. A distance amplitude correction curve was established using the licensee's calibration block CWE-32. The specific areas examined are as follows.

<u>STM. GEN.</u>	<u>ISO/DWG</u>	<u>WELD</u>	<u>AREA</u>	<u>TYPE INSP.</u>
"D"	STM. GEN. "D"	3-6	ID	MT/VT
"D"	STM. GEN. "D"	3-6	OD	UT/VT

Results: After metal conditioning and reexamination, the results of the magnetic examination on the inside surface of the steam generator determined that there were no indications either by the magnetic particle or the visual examination. As a result of the ultrasonic and visual examination on the outside surface (OD), it was verified that the indications recorded by the licensee's ultrasonic technicians were as stated in the ultrasonic data reports. No apparent visual indications were found.

## 3.0 Inservice Inspection ISI Program (73753)

The inspector reviewed the following documents to ascertain compliance with applicable ASME code requirements, licensee commitments and regulatory requirements.

- ISI Summary of Interval 1, dated January 22, 1986
- ISI Schedule and Plan for 2nd Interval, dated 1984-1994
- ISI Relief Requests
- NDE Personnel Qualifications
- Technical Specifications, Section 4.2
- Program Plan for Interval 2, Period 2, Outage 2F

Based on the foregoing, it was determined that the licensee's ISI program is intended to meet the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1980 Edition through winter 1981 addenda.

Results: The inspector concluded that Zion's ISI Program was adequately staffed by appropriately qualified site and contractor personnel to properly execute the program.

ASME Section XI, article IWA-2600 and mandatory Appendix III, Supplement 2, requires that a marking system be established to provide a reference to the centerline of the welds requiring volumetric examination. The inspector found that the licensee has not marked the centerline of welds within the ISI program. Piping welds on Attachment 1 have not had the centerlines marked. The licensee stated that they are not required to physically mark the centerline of welds for piping in the ISI program. They also feel that they have an exemption from the pre-service examination (centerline marking) requirements due to their (construction permit prior to January 1, 1971). This item is considered as unresolved pending determination of the licensee's exemption status. (50-304/90-12-01)

Results: No violations were identified.

#### Examination Data

The inspector observed that limitations listed on the ultrasonic (UT) examination reports are not limitations but are scan obstructions. Site personnel have stated that the words "limitations" on the ultrasonic reports will be changed to "scan obstruction" this will take care of the problem.

Results: No violations were identified.

#### 4.0 Review Of Site NDE Procedures and Manuals

The following procedures were reviewed in the regional office during this inspection period for compliance to the licensee's FSAR commitments and applicable codes, standards and specifications.

##### Commonwealth Edison Company (CECO) Inservice Inspection Nondestructive Examination Procedures

<u>Procedure title</u>	<u>Number/Revision</u>
VT-3/4 Visual Inspection Performed for Section XI	VT-3/4-1, Rev. 1
Nondestructive Testing Procedure	NDT-C-42, Rev. 0
Inservice Inspection/BOP	TSS 15.6.20



Westinghouse Nuclear Services Integrated Division (NSID)

Visual Examination	ISI-8, Rev. 9
Liquid Penetrant Examination	ISI-11, Rev. 10
Manual Ultrasonic Examination of Welds in Vessels	ISI-47, Rev. 4
Magnetic Particle Examination	ISI-70, Rev. 2
Manual Ultrasonic Examination of Welds	ISI-206, Rev. 1

Impell Corporation

Erosion corrosion U.T. Inspection Program Expansion	0593-129-PI-01
Ultrasonic Inspection Data Sheet and Field Work-Monitoring Requirements	0593-129-PI-02

Results: No violations were identified. The inspector identified a concern in that the procedures reviewed may not effectively assure that changes in piping configurations are reflected in the ISI program. The licensee stated that procedure T&S 15.6.20 will be changed to include how changes made as a result of repairs or replacements will be incorporated in the ISI Program.

5.0 Attachments

Attachment No. 1 is a tabulation of specific pipe weldments and components examined and the results. Attachment No. 2 is a tabulation of hanger and support components examined and the results. Attachment No. 3 is a tabulation of specific areas examined, selected from the site erosion-corrosion plan, and the results.

6.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items or violations. An unresolved item is identified in Section 3.0.

7.0 Management Meetings (30703)

Licensee management was informed of the scope and purpose of the inspection at the entrance interview on January 8, 1990.

The findings of the inspection were discussed with the licensee representatives during the course of the inspection and presented to licensee management at the exit interview. (see paragraph 1.0 for attendees)

At no time during the inspection was written material provided to the licensee by the inspector. The licensee did not indicate that proprietary information was involved within the scope of this inspection.





