

REFUEL 2

INSERVICE INSPECTION

SUMMARY

for the

UNION ELECTRIC

CALLAWAY PLANT

Callaway Plant

P.O. Box 620

Fulton, MO 65251

Inspection Dates:

April 19, 1986-November 15, 1987

Union Electric Co.

1901 Gratiot Street

St. Louis, MO 63166

Report Date:

February 12, 1988

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## EXAMINATION ABSTRACT

for the

CALLAWAY REFUEL 2

INSERVICE INSPECTION

### INTRODUCTION

This abstract presents an overview of the Inservice Inspections (ISI) performed during the period between Refuel I and Refuel II at the Union Electric Callaway Plant. This abstract presents a number of items, included is the identification of;

- The organizations involved with ISI at Callaway and the specific responsibilities of each organization.
- The codes, Regulatory Guides, and NUREGS used within the ISI.
- The specific reports generated.
- The responsible inspection agency.

### ORGANIZATION AND RESPONSIBILITIES

The ISI at the Callaway Plant was accomplished by a number of organizations performing specific tasks. These organizations and responsibilities are listed below;

- Nuclear Energy Services Incorporated (NES):

Responsibilities: program development for the ISI of the reactor vessel (RV) and the Balance of Plant (BOP), procedure development and qualification for the non-destructive examination (NDE) performed by NES, and the performance of NDE on components not examined by any other organization.

- Combustion Engineering:

Responsibilities: program development for the ultrasonic examinations performed from the outside surface on the centrifugally cast and static cast materials in the main loop piping and the Boron Injection Tank, procedure development and qualification, and the performance of inspections.

- Union Electric Nuclear Operations Quality Control (UENO QC):

Responsibilities: procedure development for the visual examinations defined in the NES BOP Program, the performance of the visual examinations defined in the NES BOP Program but not performed by others, and procedure development and inspection performance of selected BOP welds by liquid penetrant.

- Union Electric Nuclear Engineering Systems:

Responsibilities: identification of welds to be inspected by NES, review of vendor procedures, and field supervision of NES, Westinghouse, and Combustion Engineering.

CODES

ASME Section XI 1980 Edition, Winter 1981 Addenda was the governing Code for the performance of the inspections. This code year and addenda also applied to those components which were examined because of FSAR or Callaway Technical Specification requirements.

The codes used for component selection are as follows;

BOP Class 1 and 3 Piping: 1980 edition, Winter 1981 addenda

BOP Class 2 Piping: 1974 edition, Summer 1975 addenda as required by 10 CFR 50.55a.

Reactor Vessel and Class 1, 2, and 3 components: 1980 edition,  
winter 1981  
addenda

REGULATORY GUIDES AND NUREGS

The listing in this section presents the specific regulations used within the ISI of Callaway;

U.S. Nuclear Regulatory Commission Standard Review Plan, Sections 3-6-1 and 6.6 (NUREG-0800-1981).

U.S. Nuclear Regulatory Commission Regulatory Guide 1.26.

U.S. Nuclear Regulatory Commission Regulatory Guide 1.50.

## REFUEL II ISI REPORTS

The results of the ISI at Callaway are compiled into two reports. These are the Inservice Inspection Summary and the NIS-1 Data Report.

The ISI Summary is composed of a number of separate final reports or summaries. This is due to the number of organizations that were involved with the Callaway ISI. The summary does not contain reports on the snubber inspections or eddy current inspections of the steam generators since each has separate reporting requirements described in the Callaway Technical Specifications. Each report was separately generated and then compiled into the Summary. The report or summary for Vendor activities also presents the procedures used, equipment used, personnel certifications, and equipment calibration records. This support information is not provided for UENO-QC activities since all such documents are permanently maintained by Union Electric. The particular volumes for each report are located at the Callaway Plant.

The NIS-1 Data Report presents the required information by referencing existing documents. These references are; the Refuel I ISI Summary, the Owner's N-3 Report, the Installer's N-5 Report, and the N-5 Addenda I. These references are also located at the Callaway Plant.

The Summary and the NIS-1 references are available for review upon request to the Manager, Union Electric Nuclear Engineering.

## INSPECTION AGENCY

The inspection agency responsible for the duties assigned by ASME Section XI for ISI is Hartford Steam Boiler Inspection and Insurance Company.

## SUMMARY

This Examination Abstract has been presented as the sole document describing the ISI performed between 18 April 1986 and 10 February 1987 at Callaway. Any questions concerning this abstract or the ISI program should be directed to the Manager, Union Electric Nuclear Engineering.

GENERAL SUMMARY  
For The  
CALLAWAY REFUEL II  
INSERVICE INSPECTION

INTRODUCTION

This General Summary presents overall and significant results of the Refuel II ISI at the Callaway Plant. This summary has been generated from other specific summaries or reports contained in the Refuel II ISI Summary. Specifics not identified in this summary are identified in the specific summaries or reports.

CONDITIONS OBSERVED AND ACTIONS TAKEN

Piping:

No degrading trends or rejectable indications were identified. The pipe inspections encompassed over 180 circumferential welds, 40 longitudinal welds, and 19 bolted connections. Over 420 ultrasonic, dye penetrant, magnetic particle, and visual inspections were performed.

Components:

Steam Generators: No degrading trends or rejectable indications were identified on Steam Generators A and B. This encompassed the examination of 4 shell welds, 1 feedwater nozzle weld, 24 support pad bolts, and 64 primary manway bolts. Over 100 ultrasonic, dye penetrant, and visual examinations were performed.

Pressurizer: No degrading trends or rejectable indications were identified. The inspections were identified. The inspections encompassed 2 shell welds, 3 spray nozzle welds, and one seismic lug attachment. Over 13 ultrasonic, magnetic particle, and visual examinations were performed.

Residual Heat Removal Pump A: No degrading or rejectable indications were identified. The inspections encompassed 1 nozzle weld and 3 support attachments. A total of 4 dye penetrant examinations were performed.

Boron Injection Tank: No degrading trends were identified. However, a rejectable surface indication was identified in an I-beam support attached to the tank. The indication was removed with minor grinding. The indication was evaluated to be an acceptable manufacturing surface blemish with no reportability required. An additional inspection was performed on a similar support and no indications were

identified. The inspections encompassed 2 support welds and 1 circumferential tank weld. A total of 5 ultrasonic and dye penetrant examinations were performed.

Reactor Vessel: No degrading trends or rejectable indications were identified. The inspections encompassed: the inner radius of the 4 outlet nozzles; the 4 outlet nozzles to vessel welds; 6 closure head welds; the vessel to closure flange weld; 21 closure studs; 21 closure nuts; and 21 closure washers.

Over 120 ultrasonic magnetic particle, and visual inspections were performed.

#### Component and Piping Supports:

No degrading trends or rejectable indications identified. A total of 180 individual supports were visually inspected.

#### Component and Piping Leakage:

No pressure retaining boundary leakage was identified. This encompassed over 350 visual inspections on hundreds of components and valves and thousands of feet of pipe.

#### CONCLUSION

Refuel II ISI at Callaway encompassed more than 1,100 nondestructive examinations. These examinations and those performed during Refuel I meet or exceed the minimum percentage of inspections required by ASME Section XI during the first 40 months (Period 1) of plant operation. Welds and Components above the minimum percentages which were scheduled for examination and deferred, will be performed at a later date as allowed by ASME Section XI. Relief Requests will be submitted for any welds or component which could not be examined as required by ASME Section XI.

As a result of the examinations performed and of the conditions found, there exists no general safety concern for the pressure retaining integrity of plant safety systems.

## REPAIR/REPLACEMENT

### ABSTRACT

For The

CALLAWAY PLANT

#### INTRODUCTION

This abstract presents an overview of the ASME Section XI Repair/Replacement activities performed on ASME Class 1, 2 and 3 components and systems at the Callaway Plant. This abstract presents information on the following items;

- Time period for which this abstract is applicable.
- Organizations involved with repairs/replacements and specific responsibilities.
- The ASME Codes applied to repair/replacements.
- The responsible inspection agency.

#### TIME PERIOD

This abstract applies to the time period between refuel I completion on 18 April 1986 and refuel II completion on 15 November 1987.

#### ORGANIZATIONS AND RESPONSIBILITIES

ASME repair/replacements were performed by various organizations that were assigned with certain responsibilities. These organizations and responsibilities are listed below;

- Union Electric Company (UE):

Responsibilities; establish a repair/replacement program during construction and similarly for plant operation, ensure implementation of the programs, review all contractor repair/replacement work performed for Callaway, performance of repair/replacement work after initial construction, and certification of all repair/replacement work.

- Suppliers and Vendors

Responsibilities; perform repair/replacement work on equipment supplied to UE as requested by UE and allowed by particular nuclear authorizations, and perform repair/replacement work for UE under UE procedures.

### ASME CODES AND CODE CASES

The performance of repair/replacement work at the Callaway Plant is performed to ASME Section XI. The 1980 edition, winter 1981 addenda of Section XI is the governing edition and addenda.

Code cases used are described in the Callaway Plant FSAR.

### REPORTS

Every ASME Section XI repair/replacement performed at Callaway has been reported on an NIS-2 Report. The use of the NIS-2 report is not required by the governing addenda of the Code. However, Union Electric employs this method of reporting to provide additional review of repair/replacement activities to ensure code compliance.

A complete compilation of all repair/replacement activities performed at Callaway is documented in the N-5 Addenda II. This document has been generated for the period of time identified above and is part of the Refuel I Inservice Inspection Summary.

### INSPECTION AGENCY

The inspection agency responsible for the duties assigned by ASME Section XI for repair/replacement activities is Hartford Steam Boiler Inspection and Insurance Company.

### SUMMARY

This Repair/Replacement Abstract has been presented as the sole document describing the repair/replacement activities performed at the Callaway Plant. Any questions concerning this abstract or the Section XI repair/replacement program in general should be directed to the Manager, Union Electric Nuclear Engineering.