

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/92021(DRP)

Docket No. 50-483

License No. NPF-30

Licensee: Union Electric Company
Post Office Box 149 - Mail Cod 100
St. Louis, MO 63166

Meeting Conducted: November 24, 1992

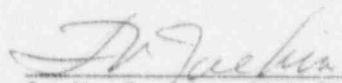
Meeting At: Region III Office, Glen Ellyn, Illinois

Type of Meeting: Enforcement Conference

Inspection Conducted: October 26-30, 1992

Inspectors: B. L. Bartlett
D. R. Calhoun

Approved By:


J. N. Jackiw, Chief
Reactor/Projects, Section 3A

12-5-92
Date

Meeting Summary

Enforcement Conference on November 24, 1992, (Report No. 50-483/92021(DRP))

Areas Discussed: A review of the apparent violation and areas of concern identified during the inspection, and corrective actions taken or planned by the licensee. The enforcement options pertaining to the apparent violation were also discussed with the licensee.

DETAILS

1. Persons Present at the Conference

Union Electric Company

D. F. Schnell, Senior Vice President, Nuclear
G. L. Randolph, Vice President, Nuclear Operations
W. R. Campbell, Manager, Callaway Plant
J. V. Laux, Manager, Quality Assurance

U. S. Nuclear Regulatory Commission

A. B. Davis, Regional Administrator, RIII
W. L. Forney, Deputy Director, Division of Reactor Projects, RIII
L. R. Greger, Chief, Reactor Projects, Branch 3, RIII
I. N. Jackiw, Chief, Reactor Projects, Section 3A, RIII
B. L. Bartlett, Senior Resident Inspector, Callaway, RIII
P. R. Pelke, Enforcement Specialist, RIII
B. A. Berson, Regional Counsel, RIII
J. W. McCormick-Barger, Chief, EP & NPR Section, RIII
J. N. Hannon, Director, Project Directorate III-3, NRR
L. R. Wharton, Licensing Project Manager, NRR/PDIII-3

2. Enforcement Conference

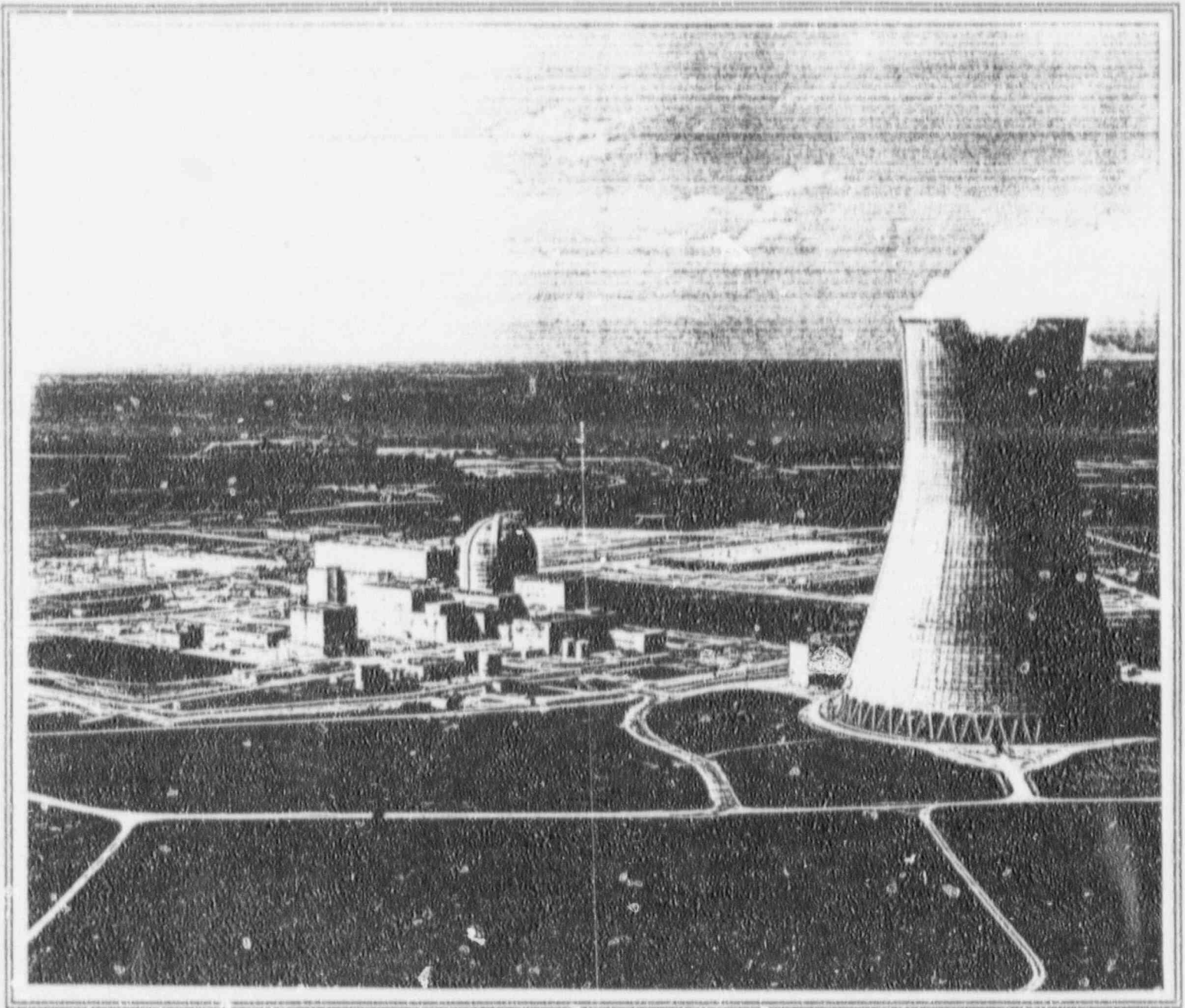
An enforcement conference was held in the NRC Region III office on November 24, 1992. This conference was conducted as a result of the preliminary findings of the inspection conducted on October 26-30, 1992, in which an apparent violation of NRC regulations and license conditions was identified. The findings related to the loss of annunciator event on October 17, 1992, and the failure to declare an Alert in accordance with the Callaway Emergency Plan Implementing Procedure. Inspection findings were documented in Inspection Report No. 50-483/92020, transmitted to the licensee by letter dated November 18, 1992.

The purpose of this conference was to: (1) discuss the apparent violation, causes, and the licensee's corrective actions; (2) discuss several areas of concern; (3) determine if there were any escalating or mitigating circumstances; and (4) obtain any information which would help determine the appropriate enforcement action.

The licensee's representatives did not contest the apparent violation and were in agreement with the NRC's understanding of the areas of concern. The licensee discussed the results of their internal investigation of the event including the following root causes: inadequate knowledge of the annunciator system, poor teamwork and communications, less than adequate work control practices, and lack of a questioning attitude. They also discussed the safety significance of the event, presented event specific and generic corrective actions, and

provided an evaluation of previous loss of annunciator events. In summary, the corrective actions included: (1) improving the training program for licensed operators, instrument and control technicians, and engineering personnel; (2) developing off-normal and system troubleshooting procedures; (3) providing additional work controls to address retest guidance, prejob briefings, and supervisory presence; (4) modifying the annunciator system to improve reliability, and provide direct indication of a degraded system status; and (5) revising emergency action level criteria to conform with NUMARC guidelines. Copies of the licensee's and NRC's presentation material are included as Attachments A and B, respectively, to this report.

At the conclusion of the conference, the licensee was informed that they would be notified in the near future of the final enforcement action.



NRC ENFORCEMENT CONFERENCE
NOVEMBER 24, 1992

LOSS OF ANNUNCIATOR EVENT
CALLAWAY PLANT

Agenda for NRC Enforcement Conference
November 24, 1992

Loss of Annunciator Event
Callaway Plant

I. Results of Union Electric Investigation W. R. Campbell

II. Event - Specific W. R. Campbell

A. Event - Specific Corrective Actions

1. Training
2. Compensatory Actions/
Guidance
3. Work Controls
4. System Design
5. EAL Classification Criteria

B. Event Significance

(continued)

III. Generic Corrective Actions

- A. Important Non-Safety Systems
- B. Management Controls
- C. Procedural Adherence
- D. Teamwork/Communications

IV. Evaluation of Previous Events

- A. Evaluation of Previous Events
- B. Actions to Improve Corrective Action Program

V. Summary

G. L. Randolph

RESULTS OF UNION ELECTRIC INVESTIGATION

PRINCIPLE ROOT CAUSE:

- Knowledge of the Annunciator System

SECONDARY ROOT CAUSES:

- Teamwork and Communications
 - no prejob brief
 - inadequate questioning or followup on verbal communications
 - pieces of knowledge held by individuals within and outside the Control Room not fully utilized

(continued)

Secondary Root Causes (continued)

- Work Control Practices
 - confusion as to who was responsible for job supervision
 - Engineer and technicians did not review the work package
 - inadequate documentation of work completion
 - inadequate retest specified following fuse replacement for the field power supplies
- Questioning Attitude
 - assumption of operability was based on previous practice or experience
 - knowledge gap not clearly identified and resolved

(continued)

Secondary Root Causes (continued)

- System Design
 - interdependence of power supplies
 - potential for undetectable failures

EVENT SPECIFIC CORRECTIVE ACTIONS

TRAINING

General Training:

- General Training for Nuclear Division Personnel
 - Video 3/1/93

Licensed Operator Training:

- Requal Training for Operations Personnel
 - Requal training on system and 10/17/92 event 1/1/93
- Initial Training of Licensed Operators
 - Systems training for annunciator system 4/1/93
(lesson plan)
 - Off-normal procedure simulator and classroom 7/1/93
(lesson plan & simulator scenarios)

(continued)

Training (continued)

- Team Skills Training for Licensed Operators
 - Modify to incorporate lessons learned 7/1/93
(lesson plan)

Instrumentation and Control Technicians

- Initial and Requalification Training
 - Upgrade to address troubleshooting 4/1/93
(lesson plan)
 - Revised Job Task Analysis for initial and requalification training Complete

Engineering Personnel

- Incorporate into Engineer Industry Events Retraining 4/1/93

EVENT SPECIFIC CORRECTIVE ACTIONS

COMPENSATORY ACTIONS AND GUIDANCE

- Develop Off-normal Procedure Complete
- Develop System Troubleshooting Procedure 12/15/92

EVENT SPECIFIC CORRECTIVE ACTIONS

WORK CONTROLS

- Retest Guidance
 - Planning notes in the Callaway Equipment List Complete
 - Generic guidance for power supply replacements Complete
- Prejob Briefings
 - Issue guidance for conduct and content 12/1/92
- Supervisory Presence
 - Issue guidance for when direct supervision is required 12/1/92
 - Clarify role of supervisor versus engineering support 12/1/92

(continued)

Work Controls (continued)

- Preplanned Work Packages for
Annunciator Power Supply
Replacement
 - Field power supplies Complete
 - Logic power supplies 2/1/93

EVENT SPECIFIC CORRECTIVE ACTIONS

SYSTEM DESIGN

- Improve Reliability of Power Supplies and Reduce Single Failure Potential
- Provide Direct Indication to Operators of Degraded System Status
- Reduce Potential for Undetectable Failures
 - Issue design change package 1/1/93
 - Implementation Refuel 6
(Fall, 1993)
 - Interim weekly PM Implemented

EVENT SPECIFIC CORRECTIVE ACTIONS

EAL CLASSIFICATION CRITERIA

- Provide additional guidance in off-normal procedure Complete
- Review EALs to identify those requiring additional guidance 1/1/93
- Submit revision of EALs to conform with NUMARC guidelines 7/1/93

EVENT SIGNIFICANCE

- Not considered in any plant's Safety Analysis
- Automatic Safety Systems available
- Comperatory alarms and non-alarming indications available
 - ESF status panels
 - SPDS
 - DRPI, power range instruments, control rod group position
 - Partial trip status panel
 - Permissive/interlock status panel
 - RRIS and RM-11 system
 - Main Control Board instruments and indications
 - Plant computer CRT displays and alarm typers (2836 inputs)

Conclusion: No threat to public or plant safety

GENERIC CORRECTIVE ACTIONS

IMPORTANT NON-SAFETY SYSTEMS

- Identify 2/1/93
- Evaluate need for off-normal procedures 4/1/93
(identification)
4/1/94
(implementation)
- Knowledge/Training 4/1/93
(identify needs)
1/1/95
(implementation)
- Plant Computer
 - Upgrade off-normal procedures 2/1/93
 - Single failure design review 4/1/93

GENERIC CORRECTIVE ACTIONS

MANAGEMENT CONTROLS

- Clarify Emergency Duty Officer (EDO) notification criteria Complete
- Expand self-checking program 7/1/93

GENERIC CORRECTIVE ACTIONS

PROCEDURAL ADHERENCE

- Reinforce Management Expectations 1/1/93
- Evaluate Levels of Procedural Adherence 1/1/93
- Procedure Revalidation 4/1/93
*(action plan/
priorities)*

1/1/97
(completion)
- Revise and Simplify Procedure Structure 1/1/93
*(action plan/
priorities)*

1/1/97
(completion)
- Nuclear Division Objective for 1993

GENERIC CORRECTIVE ACTIONS

TEAMWORK/COMMUNICATIONS

- Simulator Scenarios Designed to Evaluate Team Skills, Communications and Decision Making 7/1/93
(implementation)
- Licensed Operator Survey 2/1/93
- Revised EDO Coverage/Qualifications Completed Prior to Event
- Licenses/Certification for Key Positions 1/1/97
- Nuclear Division Objective - Communications 1/1/93
(action plan developed)
- Nuclear Division Objective - Teamwork 1/1/93
(action plan developed)

EVALUATION OF PREVIOUS EVENTS

- Operations Responses - did not recognize full scope of affected annunciators
- Engineering Responses - focused only on the equipment reliability aspects of the events
- Emergency Planning - prepared a response to the 1991 event, but did not recommend any changes in EAL classification criteria

Root Cause of Failure to Previously Identify

- Independent, uncoordinated responses with no overview
- Lack of system knowledge
- Incomplete responses

ACTIONS TO IMPROVE CORRECTIVE ACTION PROGRAM

- Improve Screening of SOSs
Selected for ORC Review
 - critical non-safety systems
 - utilize priority threshold

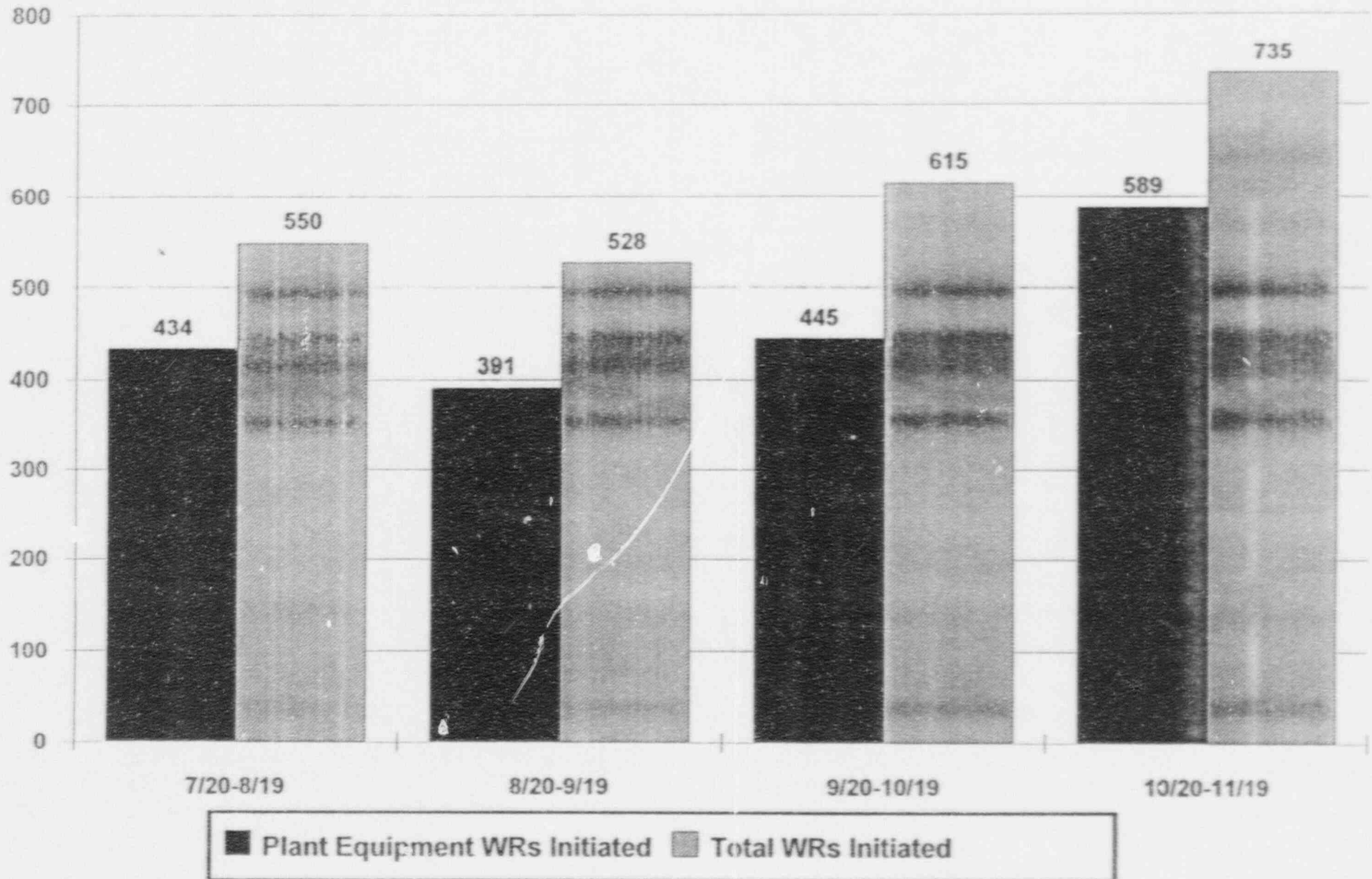
- Strengthen Management Review
of SOS Responses
 - selected EDO/Manager review
of SOS responses associated
with Event Review Teams

SUMMARY

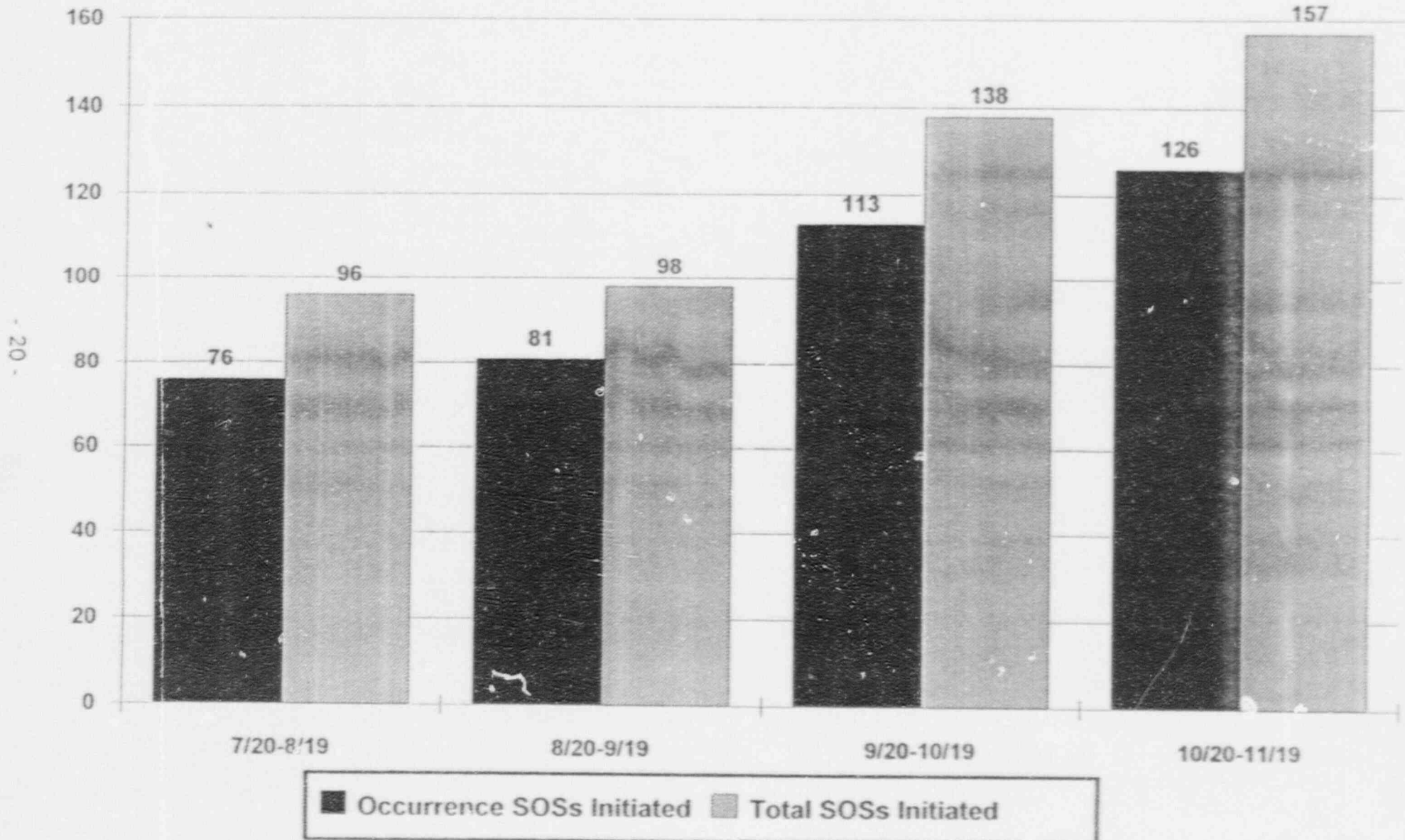
- "Eye-Opening Event" for Callaway
- Event Specific Corrective Actions
- Generic Corrective Actions

WORK REQUEST RESULTS

- 19 -



SOS RESULTS



EXAMPLES

Questioning Attitude:

- Loose parts monitoring alarm
- Condensate pump seal water return line small leak
- MOVATS result on EF-HV-66
- PK ground on 'B' main feed pump trip solenoid
- Heater drain pump cooling water line fatigue crack
- NN12 voltage fluctuations/noise

NUCLEAR REGULATORY COMMISSION

ENFORCEMENT CONFERENCE

NOVEMBER 24, 1992

UNION ELECTRIC COMPANY

CALLAWAY PLANT

LOSS OF ANNUNCIATOR EVENT

on

OCTOBER 17, 1992

AGENDA

OPENING REMARKS

A. B. DAVIS

- INTRODUCTIONS
- PURPOSE

NRC PRESENTATION

- SEQUENCE OF EVENTS
- PROPOSED VIOLATION

B. L. BARTLETT

- OVERVIEW / CONCERNS

W. L. FORNEY

LICENSEE PRESENTATION

UNION ELECTRIC

- ROOT CAUSES / CONTRIBUTING FACTORS
- CORRECTIVE ACTIONS

CLOSING REMARKS

A. B. DAVIS

SEQUENCE OF EVENTS

6:40 PM OCTOBER 16, 1992 POWER SUPPLY NUMBER 2 FAILS RESULTING IN "NUMEROUS" (40 - 50) ANNUNCIATORS LIGHTS BEING LIT.

12:58 AM OCTOBER 17, 1992 FIELD CONTACT POWER SUPPLY NUMBER 2 REPLACED AND ANNUNCIATOR LIGHTS RETURNED TO NORMAL.

1:00 AM ACCIDENTAL SHORT OCCURS RESULTING IN APPROXIMATELY ONE HALF OF THE ANNUNCIATORS BEING LIT AND ALL OF THE ANNUNCIATORS BEING INOPERABLE.

1:56 AM ALL FOUR FIELD CONTACT POWER SUPPLY FUSES REPLACED. ANNUNCIATORS RETURN TO THEIR "NORMAL" STATUS WITH A COUPLE OF APPARENT EXCEPTIONS. 129 ANNUNCIATORS REMAIN INOPERABLE.

7:37 PM ALL FAILED ANNUNCIATOR FUSES REPLACED AND THE ANNUNCIATOR SYSTEM RESTORED OPERABLE.

PROPOSED VIOLATION

10 CFR 50.54(q) states that a licensee authorized to possess and operate a nuclear power reactor shall follow and maintain in effect emergency plans.

Callaway Plant Radiological Emergency Response Plan (RERP), Revision 15, issued June 4, 1992, Section 3.2, states that the Emergency Plan Implementing Procedures provide detailed action steps, in procedure format, necessary to be performed in order to implement the commitments/requirements as stated in the RERP.

The Callaway Emergency Plan Implementing Procedure EIP-ZZ-00101, "Classification of Emergencies," Revision 12, dated June 4, 1992, Section 4.0, requires in part, that when abnormal or emergency conditions (real or potential) occur, the Shift Supervisor shall, using the indications available and Attachment 1 (Emergency Action Levels), determine the appropriate emergency classification and declare the emergency classification that is listed. Attachment 1 to EIP-ZZ-00101 Group 3, "Safety System Functions," Item K, lists an emergency classification of Alert for a loss of most or all alarms (annunciators) during all modes.

Contrary to the above, on October 17, 1992, from 1:00 a.m. to 1:56 a.m., a loss of all annunciators occurred and the Shift Supervisor did not declare an Alert.

NRC CONCERNS

- A. INADEQUATE KNOWLEDGE OF THE ANNUNCIATOR SYSTEM
- B. LACK OF A QUESTIONING ATTITUDE / COMPLACENCY
- C. LESS THAN ADEQUATE WORK PERFORMANCE
- D. POOR COMMUNICATIONS AND LACK OF TEAMWORK
- E. FAILURE TO LEARN FROM PREVIOUS OCCURRENCES