UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TEXAS 76011

JUN 5 1992

Docket No. 50-285
License No. DPR-40

Omaha Public Power District
ATTN: W. G. Gates, Division Manager
Nuclear Operations
444 South 16th Street Mall
Mail Stop 8E/EP4
Omaha, Nebraska 68102-2247

Gentlemen:

This refers to the management meeting conducted at Region IV's request at the Omaha Public Power District corporate office on June 3, 1992. This meeting related to activities authorized by NRC License DPR-40 for the Fort Calhoun Station and was attended by those on the attached attendance list.

The subjects discussed at the meeting are described in the enclosed Meeting Summary.

It is our opinion that the meeting was beneficial and provided a better understanding of your lessons learned after completion of the recent refueling outage and the results of your overall performance self-assessment. In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter will be placed in the NRC's Public Document Room.

Should you have any questions concerning this matter, we will be pleased to discuss them with you.

Sincerely,

A. Bill Beach, Director
Division of Reactor Projects

Enclosure:
Meeting Summary w/attachments

cc w/enclosure:
LeBoeuf, Lamb, Leiby & MacRae
ATTN: Harry H. Voigt, Esq.
1875 Connecticut Avenue, NW
Washington, D.C. 20009-5728



IE45
1/1

Washington County Board
of Supervisors
ATTN: Jack Jensen, Chairman
Blair, Nebraska 68008

Combustion Engineering, Inc.
ATTN: Charles B. Brinkman, Manager
Washington Nuclear Operations
12300 Twinbrook Parkway, Suite 330
Rockville, Maryland 20852

Nebraska Department of Health
ATTN: Harold Borchert, Director
Division of Radiological Health
301 Centennial Mall, South
P.O. Box 95007
Lincoln, Nebraska 68509-5007

Fort Calhoun Station
ATTN: T. L. Patterson, Manager
P.O. Box 399
Fort Calhoun, Nebraska 68023

bcc to DMB (IE45)

bcc distrib. by RIV:

| | |
|---|---|
| R. D. Martin | Resident Inspector |
| DRSS-FIPS | Section Chief (DRP/C) |
| MIS System | RIV File |
| DRP | RSTS Operator |
| Project Engineer (DRP/C) | Lisa Shea, RM/ALF, MS: MNBB 4503 |
| DRS | Chief, Technical Support Section |

Senior Resident Inspector - Cooper
Senior Resident Inspector - River Bend

| | | | | |
|---|---|---|---|---|
| RIV:C:DRP/C | D:DRP | | | |
| PHHarrell:df | ABBeach | | | |
| 6/5/92 | 6/5/92 | | | |

bcc to DMB (IE45)

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| Senior Resident Inspector - Cooper | |
| Senior Resident Inspector - River Bend | |

| | | | | |
|---|---|---|---|---|
| RIV:C:DRP/C | D:DRP | | | |
| PHHarrell:df | ABBeach | | | |
| 6/5/92 | 6/5/92 | | | |

# MEETING SUMMARY

Licensee: Omaha Public Power District

Facility: Fort Calhoun Station

License No.: DPR-40

Docket No.: 50-285

Subject: Meeting to Discuss Lessons Learned From the Previous Refueling Outage and Results of the Licensee's Self-Aassessment Evaluation of Performance

On June 3, 1992, representatives of Omaha Public Power District met with NRC personnel at the corporate office to discuss the lessons learned during the recent refueling outage and the results of the licensee's self-assessment evaluation of performance. The attendance list and licensee presentation are attached to this summary. The meeting was open to the public.

Attachments:
1. Attendance List
2. Licensee Presentation

ATTACHMENT 1

# ATTENDANCE LIST

Attendance at the OPPD/NRC management meeting on June 3, 1992, at the licensee's corporate offices.

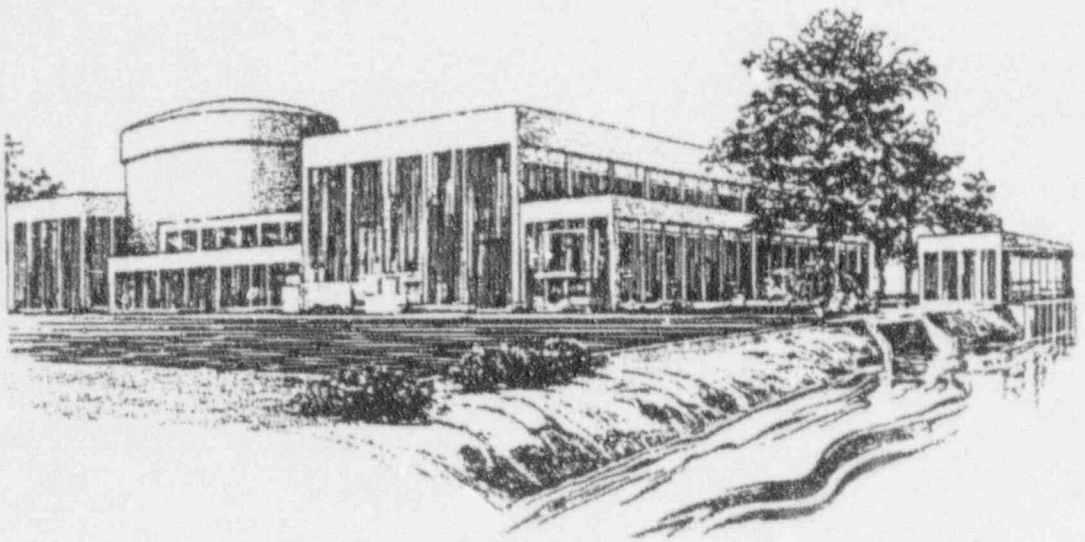
OPPD

W. Jones, Senior Vice President
S. Gambhir, Division Manager, Production Engineering
W. Gates, Division Manager, Nuclear Operations
R. Clemens, Supervisor, Outage Projects
J. Chase, Assistant Plant Manager
J. Tills, Assistant Plant Manager
R. Andrews, Division Manager, Nuclear Services
R. Short, Manager, Nuclear Licensing and Industry Affairs

NRC

J. Montgomery, Deputy Regional Administrator
M. Virgilio, Assistant Director, Project Directorate IV and V, Office of Nuclear Reactor Regulation (NRR)
S. Collins, Director, Division of Reactor Safety
T. Gwynn, Deputy Director, Division of Reactor Projects (DRP)
P. Harrell, Chief, Project Section C, DRP
R. Baer, Radiation Specialist, Division of Radiation Safety and Safeguards
R. Mullikin, Senior Resident Inspector, Fort Calhoun Station
S. Bloom, Acting Project Manager, Fort Calhoun Station, NRR
S. Peterson, Acting Technical Assistant to the Assistant Director, NRR

ATTACHMENT 2



# OMAHA PUBLIC POWER DISTRICT

# OPPD/NRC MANAGEMENT MEETING

# JUNE 3, 1992

# AGENDA FOR OPPD/NRC MANAGEMENT MEETING
# ENERGY PLAZA ATRIUM - June 3, 1992

| | |
|---|---|
| Opening Remarks | W. C. Jones |
| 1992 Outage Highlights | |
| ▪ Engineering | S. K. Gambhir |
| ▪ Operations | W. G. Gates |
| 1992 Outage Lessons Learned | |
| ▪ Schedule | R. P. Clemens |
| ▪ Outage Management | J. W. Chase |
| ▪ Shutdown Risk/Safety | J. W. Tills |
| 1993 Outage Plans | W. G. Gates |
| Safety Assessment Review | R. L. Andrews |
| Concluding Remarks | W. C. Jones |

# 1992 OUTAGE HIGHLIGHTS - ENGINEERING

- Major Projects (See Attachment E-1)
- Modifications (See Attachment E-2)
- Other Significant Engineering Issues

# REACTOR VESSEL - INSERVICE INSPECTION

SCOPE:

- UT 100% of accessible Reactor Vessel shell welds
- UT 4 cold leg and 2 hot leg Reactor Vessel nozzles
- UT accessible portion of one Reactor Vessel Lower Head circumferential weld and one Lower Head meridional weld
- VT 100% of Reactor Vessel Interior

FINDINGS:

- 20 Recordable Indications
  - 12 small laminar indications
  - 7 near surface spot indications or transducer liftoff
  - 1 near surface base material flaw near the lower head dollar weld (size .06" x .34")
- All indications Code acceptable without further analysis

# STEAM GENERATOR INSPECTION

SCOPE:

- Steam Generator Eddy Current Testing
  - Bobbin Coil Inspection
  - Motorized Rotating Pancake Coil (MRPC) Inspection
- Steam Generator Sludge Lancing
- Steam Generator Inspection

FINDINGS:

- No tubes required plugging
- No significant dent growth
- No indication of circumferential cracking at expansion transition region
- Total sludge removed (294 pounds) was 40% less than the 1990 RFO
- Results of Secondary Visual Inspection were good
- UT of feedwater distribution system found no significant erosion/corrosion damage

# THERMAL SHIELD INSPECTION

SCOPE:

- Overall inspection of Core Support Barrel and Thermal Shield
- Visual Inspection of the Thermal Shield support lugs and positioning pins
- Preload test, evaluation and repairs to Thermal Shield

FINDINGS:

- No visible deficiencies were indicated in any of the 8 support lugs or 24 positioning pins
- Repair plan determined that 7 lower and 4 upper positioning pins would be tightened
- All 11 pins were tightened to prescribed preload values and mechanical locking collars were installed
- Total exposure for the job was 33.46 Man-Rem

# MODIFICATIONS

SCOPE:

- 35 Modifications completed (including 3 emergent)
  - 56,139 Manhours of work

ACCOMPLISHMENTS:

- 6 SAOs closed by modification
- 8 modifications implemented to address aging issues
- 11 modifications implemented to achieve operational enhancements
- 16 modifications to meet regulatory commitments
- 3 significant NCR repair design changes

# OTHER SIGNIFICANT ENGINEERING ISSUES

- Teamwork/Communication
- Temporary Modification Reductions
- Ongoing Engineering Support
- Extreme Low Leakage Fuel Management

# 1992 OUTAGE HIGHLIGHTS - OPERATIONS

- Conservative Outage Management
- Pre-Outage Operator/Craft Training Paid Dividends
- Use of Training Department Personnel to Support Plant Departments
- Good Inter-Departmental Cooperation
- Excellent Industrial Safety Record
- Good Plant Equipment Condition was Verified
- 7 SAOs Closed
- Improvement Items
  - Shutdown Cooling Event
  - Foreign Material Exclusion
  - Contaminations
  - Schedule Detail

# 1992 OUTAGE HIGHLIGHTS - SUMMARY

- Continued Emphasis on Safety
  - Nuclear Safety
  - Radiological Safety
  - Industrial Safety
- Duration: 92 days (86 days planned)
  - Shortest Outage Since 1978
  - Within 10% of Schedule
- Tasks Completed
  - 35 Modifications (3 Emergent)
  - 24 Major Projects
  - 2,017 MWOs
    - 1,186 Originally Scheduled (999 Completed)
    - 1,018 Emergent Completed
  - 2,769 PMOs
- Cost - $ 26 million

# 1992 OUTAGE LESSONS LEARNED

# 1992 REFUELING OUTAGE LESSONS LEARNED

Scheduling:

Pre-Planning:

- Scope Control
- Early System Engineering/Maintenance/Operations "Buy-In"
- Level of Detail
  - System Windows
  - Modifications
  - MWOs and PMOs
  - I&C Calibration Procedures
- Timeliness of Schedule Issuance
- CHAMPS/Project 2 Interface
- Resource Estimates
- Preventative Maintenance Program

# 1992 REFUELING OUTAGE
# LESSONS LEARNED

Scheduling:

Execution:

- Coordination of Tag-Out Boundaries
- Use of "Project Managers" for Major Events and Work Activities
- Enhanced Training Regarding Schedule Use/Updating
- Scheduling of Surveillance and Post-Maintenance Tests
- Control of "Emergent Work"
- Progress Reporting
- Schedule Revisions/Updates Review and Accountability
- Progress Tracking and Performance Indicators

# OUTAGE MANAGEMENT

Positive Attributes:

- Outage Management Team
- Outage Control Center
  - Focal Point
  - Schedule Adherence
  - Emergent Work Control
- Outage Handbook

# OUTAGE MANAGEMENT

Positive Attributes (cont):

- Tag-Out Preparation
  - Location
  - Staffing

# OUTAGE MANAGEMENT

Positive Attributes (cont):

- Plant Awareness
  - Pre-Shift Meetings
  - Shift Status Meetings and Reports
  - Status Boards
  - Nuclear Notes
  - Football

# OUTAGE MANAGEMENT

Improvement Items.

- Improve Schedule
  - Cross Discipline Review
  - Identification of On-Line Activities
  - Standing Order M-104 Requirements
    - Issued 9/91
    - Establish Outage Pre-Planning Milestones

# OUTAGE MANAGEMENT

Improvement Items (cont):

- Coordination of Major Events and Work Activities
  - Drain Down Work Items
  - Electrical Bus Work
  - Fuel UT and Reconstitution

# OUTAGE MANAGEMENT

Improvement Items (cont):

- Reduction of Outage Work Scope
  - PMO
  - On-Line Work
  - Surveillance Test Coordination

# SHUTDOWN RISK/SAFETY

Nuclear Policy 2.03 - "Safety During Shutdown"

- Minimize Vulnerability
  - Minimize Time at Mid-Loop
  - Maximize Power Supply Availability
  - Ensure Availability of DHR Capability
- Maintain Integrity of Fission Product Barriers
- Careful Adherence to Fuel Handling Procedures

# SHUTDOWN RISK/SAFETY

Keys to Safe/Successful Outage

- Development and Revision of Schedule
  - Nuclear Policy 2.03 Philosophy Inclusion
  - Exceeds Technical Specification Requirements
  - Utilize Extensive Operational Experience
  - NSRG and Operations Schedule Reviews

- Implementation of Management Controls
  - Outage Responsibility Charter
  - NSRG Safety Review of Schedule Changes
  - Switchyard Activities Charter
  - Standing Orders to Control Non-Routine Activities
  - Training of Operations and Maintenance Personnel

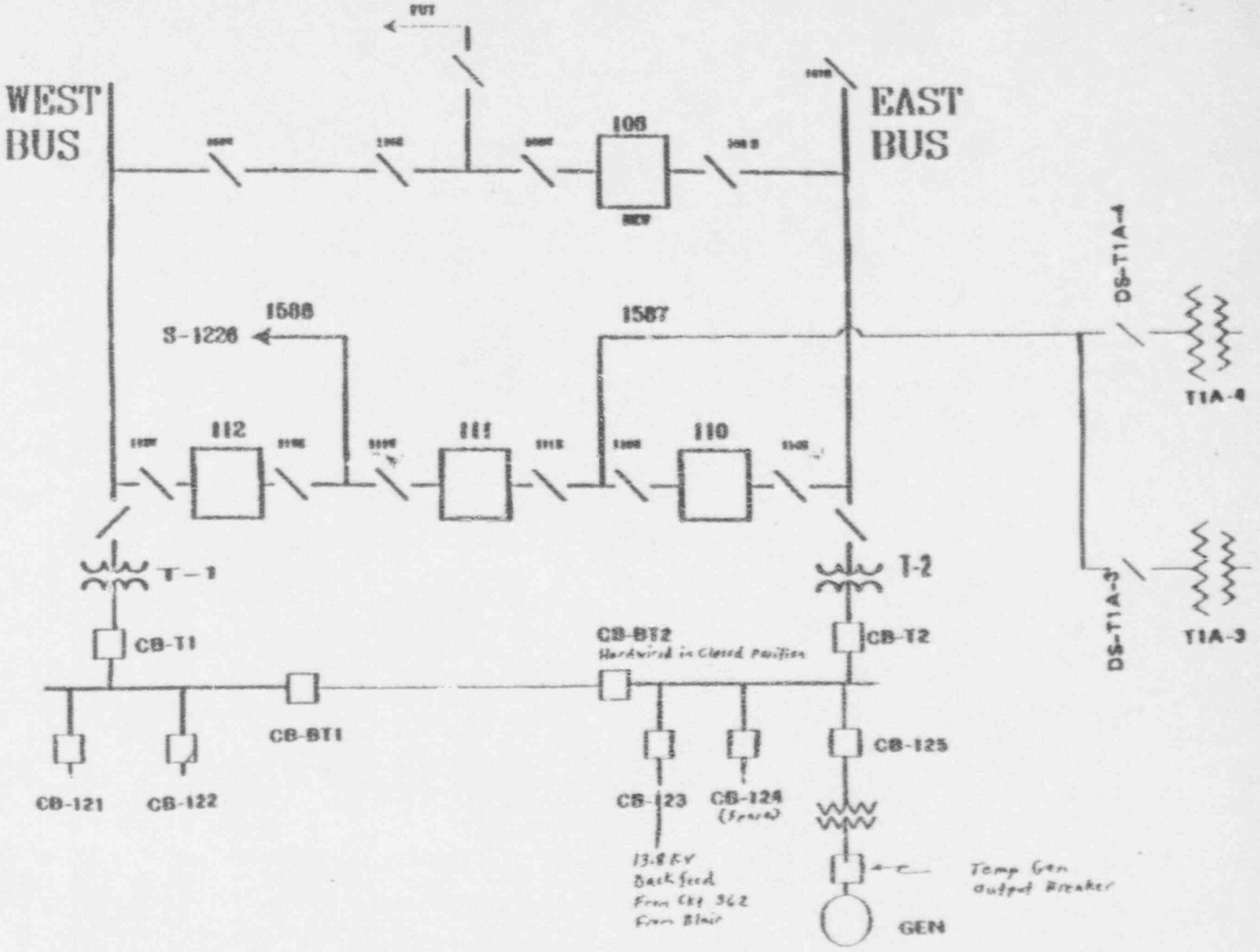
# SHUTDOWN RISK/SAFETY

Outage Strengths

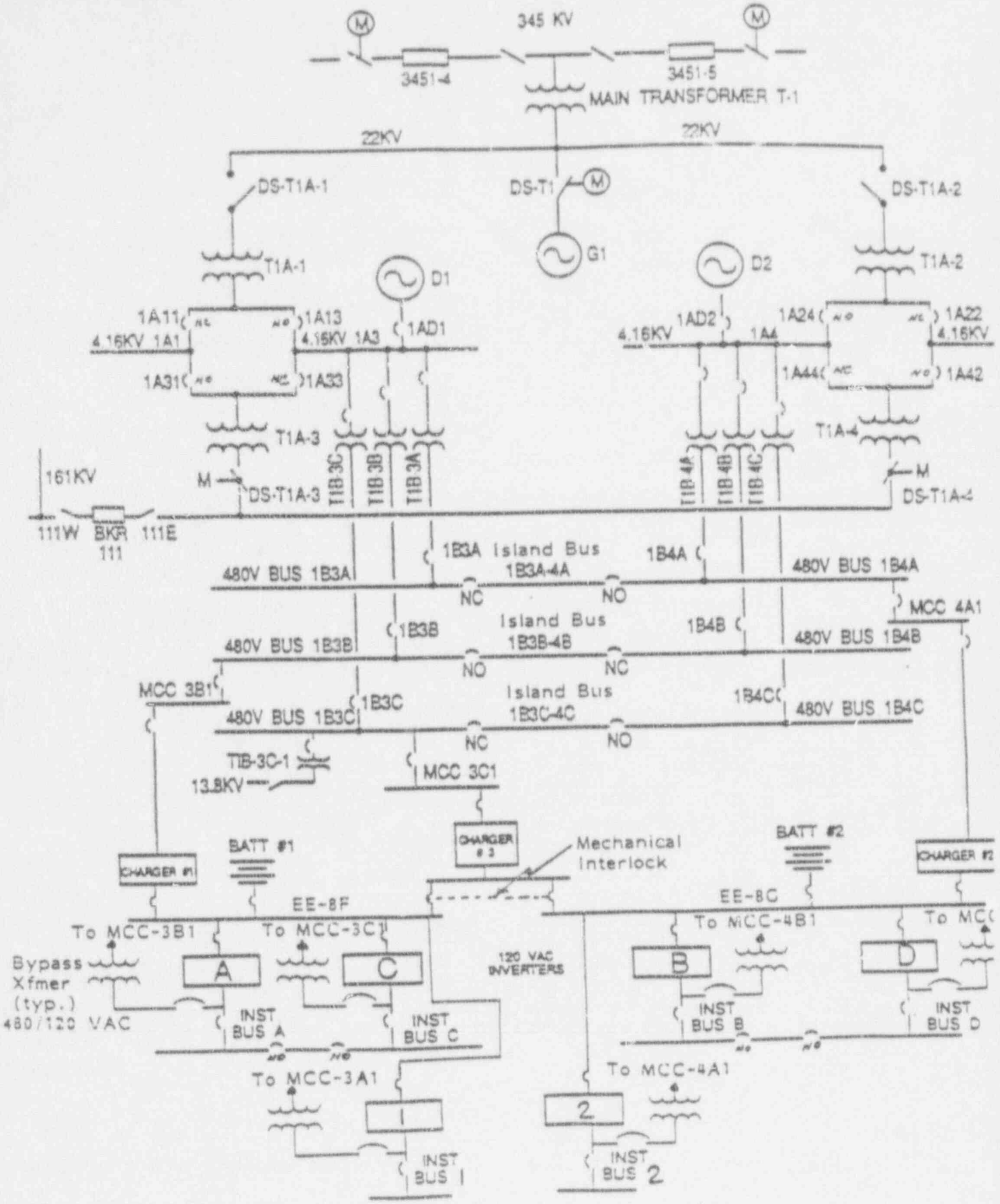
- Conservative Decision Making
  - Installation of Temporary Third Diesel Generator
  - Mid-Loop Operations
  - Fuel UT and Reconstitution
  - RCP Cover Gasket Replacement
- Strong Planning with Attention to Shutdown Safety
  - RW Outage/CCW Hydro
  - ESF Testing
  - Flashlight Cap Retrieval

Improvement Items

- 480V Bus Loss/Termination of SDC
- Switchyard Traffic Control


WEST BUS
EAST BUS
108
1588
S-1226
1587
112
111
110
DS-T1A-1
T1A-1
DS-T1A-3
T1A-3
T-1
T-2
CB-T1
CB-BT2
Hardwired in Closed Position
CB-T2
CB-BT1
CB-121
CB-122
CB-123
CB-124
CB-125
13.8 KV
Back feed
From CKT 362
From Blair
Temp Gen
output Breaker
GEN

# FORT CALHOUN STATION ELECTRICAL DISTRIBUTION SYSTEM



# SHUTDOWN RISK/SAFETY

Nuclear Policy 2.03 - "Safety During Shutdown"

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  - Ensure Availability of DHR Capability
- Maintain Integrity of Fission Product Barriers
- Careful Adherence to Fuel Handling Procedures

# 1993 OUTAGE PLANS

- Planned for 56 Days (Including ILRT)
  - 9/18/93 through 11/13/93
- Fully Implement NUMARC 91-06 Recommendations
  - Closely Monitor Industry Activities on Shutdown Safety
- Build on 1992 Outage Successes
  - Outage Control Center
  - Operator Shutdown Risk/Craft Training
  - Temporary 3rd Diesel Generator (if necessary)
- Incorporate 1992 Outage Lessons Learned
  - SDC Event
- Improve Planning/Scheduling Techniques

  Formation of Outage Action Teams
- Goal is to Reduce Outage Duration and Further Improve Shutdown Safety

# SAFETY ASSESSMENT REVIEW

# OVERVIEW

Evaluation Process

- Assessment Team
- Documents Reviewed
- Evaluation conducted May 11-12, 1992

Areas Reviewed

- Safety of Operations
- Support for Operations
- Plant Services
- Oversight and Verification

Category Ratings

- Areas of Continued Good Performance
- Areas of Improved Performance
- Areas Warranting Additional Effort

Recommendations

# SAFETY OF OPERATIONS

Areas Evaluated

- Safety Philosophy
- Operator Performance
- Operating/Emergency Procedures
- Performance Indicators

# SAFETY OF OPERATIONS

Areas of Continued Good Performance

- Conservative Management Approach to Safe Operations
- Plant Operational and Operator Performance
- Conservative Operability Decisions/Reporting
- Housekeeping/Plant Appearance
- Coordination Between Operations and Support Groups
- Effective Surveillance Test Program Implementation

# SAFETY OF OPERATIONS

Areas of Improved Performance

- Proactive Management Involvement in Daily Plant Activities
- Safe/Efficient Refueling Outage Accomplished
- Increased Number of Licensed Operators
- Enhanced Diesel Generator Reliability
- Management Tours

# SAFETY OF OPERATIONS

Areas Warranting Additional Effort

- Questioning Attitude/Attention to Detail

Conclusion

Safe plant operations along with good operational performance and operator response to plant events were especially noteworthy in this area. The importance of a questioning attitude and attention to detail needs increased emphasis.

# SUPPORT FOR OPERATIONS

Areas Evaluated

- Maintenance
- Radiation Protection
- Chemistry
- Engineering
- Emergency Planning
- Outage Management

# SUPPORT FOR OPERATIONS

Areas of Continued Good Performance

- Effective Outage Management
- Highly Effective Maintenance Program
- Strong Engineering Support
- Management Support for Radiation Protection
- Support Group Coordination
- Effective ISI/IST Programs
- Design Basis Reconstitution Program

# SUPPORT FOR OPERATIONS

Areas of Improved Performance

- Shutdown Risk Management Philosophy
- Management Support for Emergency Preparedness Program
- Commercial Grade Dedication Program
- Use of NPRDS for Maintenance Trending

# SUPPORT FOR OPERATIONS

Areas Warranting Additional Effort

- Questioning Attitude/Attention to Detail
- Management Oversight of Certain Engineering Issues
- Radiation Protection Performance Indicator Goals
- Material Condition of Water Plant

Conclusion

Performance in this area was led by improvements noted in Maintenance, Outage Management and Emergency Planning. Radiation protection practices and management of certain engineering issues were identified as improvement areas.

# PLANT SERVICES

Areas Reviewed

- Security
- Training
- Licensing
- Fire Protection
- Industrial Safety

# PLANT SERVICES

Areas of Continued Good Performance

- 100% Pass Rate on NRC Licensed Operator Exams
- Fitness for Duty Program
- Security Department Performance
- Fire Barrier Upgrade Program
- Training Support

# PLANT SERVICES

Areas of Improved Performance

- Industrial Safety During Outage
- Maintenance of Security Equipment
- Emergency Preparedness Training
- Reduction in NRC Violations

# PLANT SERVICES

Areas Warranting Additional Effort

- None

Conclusion

Security, Training and Industrial Safety Program performance were especially noteworthy.

# OVERSIGHT AND VERIFICATION

Areas Reviewed

- Quality Verification Groups
- Safety Committees
- Corrective Action Program
- Operating Experience Utilization
- Performance Monitoring/Trending

# OVERSIGHT AND VERIFICATION

Areas of Continued Good Performance

- Strong Management Oversight of Plant Safety
- Critical Self-Assessment Activities
- Root Cause Analysis Program
- Annual Safety System Functional Inspections
- Operating Experience Program
- Proactive Communication with the NRC

# OVERSIGHT AND VERIFICATION

Areas of Improved Performance

- NSRG Safety Review of Outage Schedule
- Use of Outside Technical Experts for QA Audits

# OVERSIGHT AND VERIFICATION

Areas Warranting Additional Effort

- Control of Commitments

Conclusion

Area was characterized by strong management oversight for safety and noteworthy critical self assessments. Improvements in the control of commitments and management oversight of programs is necessary.

# RECOMMENDATIONS

1. Emphasize improved radiological monitoring and work practices.

2. Resolve problems with PASS and ERF Computer.

3. Ensure critical programs are well maintained to achieve management expectations. Management oversight is periodically needed to ensure important program milestones are met.

ATTACHMENT E-1

FORT CALHOUN STATION
1992 REFUELING/MAINTENANCE OUTAGE
SPECIAL SERVICES ENGINEERING DEPARTMENT PROJECTS LIST

ISI EXAMINATIONS

ASME Section IX examination of the Class 1, 2 and 3 components and supports.

STEAM GENERATOR SERVICES

Installation of the Steam Generator nozzle dams, performance of the Eddy Current Testing, tube plugging, Steam Generator nozzle dams removal, performance of the Secondary Visual Inspections, and performance of sludge lancing.

THERMAL SHIELD INSPECTION A D REPAIR

Inspection of the Fort Calhoun Station Reactor Vessel Thermal Shield and tighting of its positioning pins to the prescribed preload value during the 1992 Refueling Outage.

CHECK VALVE INSPECTIONS

Performance of the scheduled Preventive Maintenance Inspections and Surveillance Tests utilizing visual inspection of the Fort Calhoun Station check valves and to detect and repair degraded check valves, and to ensure continued operability.

RELIEF VALVE TESTING

Coordination of the setpoint testing of approximately 20 ASME Section IX Code Class 1, 2 and 3 safety relief valves to comply with the ISI Program Plan requirements for Relief Valve testing.

PRESSURIZER SLUDGE INSPECTION

Determination of the composition and severity of sludge deposits in the pressurizer in order to prepare for efficient removal.

ATTACHMENT E-1

FORT CALHOUN STATION
1992 REFUELING/MAINTENANCE OUTAGE
SPECIAL SERVICES ENGINEERING DEPARTMENT PROJECTS LIST

EROSION/CORROSION

Detection and monitoring of areas of Fort Calhoun Station piping susceptible to erosion/corrosion and determination of the replacement intervals in piping in order to assure continued safe operation of Plant systems.

BALANCE OF PLANT ECT

Performance of the eddy current testing of the plant heat exchangers.

MOTOR OPERATED VALVES (MOV) TESTING

Overhaul, repair, diagnostic testing (MOVATS) and testing for Generic Letter 89-10 Project.

SYSTEM PRESSURE TEST (TEN YEAR HYDROS)

Performance of the Component Cooling Water System Class 3 Ten-Year Hydrostatic Test per SS-ST-CW-3001.

SNUBBER MAINTENANCE AND TESTING

Testing in accordance with the Fort Calhoun Station Technical Specifications to assure operability of all snubbers and maintenance of operability by a timely replacement of the snubber seals.

ATTACHMENT E-2

FORT CALHOUN STATION
1992 REFUELING/MAINTENANCE OUTAGE
MODIFICATIONS LIST

MR-FC-90-005
DG Instrumentation Upgrade

MR-FC-90-023
161KV System Modifications

MR-FC-90-024
LPSI Pump Low Voltage Trip Interlock

MR-FC-90-026
Raw Water Discharge Valve Replacement

MR-FC-90-038
Main Steam and Main Feedwater Support in Room 81

MR-FC-90-047
Pipe Restraints RCH-32 and RCH-33

MR-FC-90-060
SI Relief Valve, Flanged Connections

MR-FC-90-061
On-Line CECOR

MR-FC-90-062
Thermal Shield Locking Collar Replacement

MR-FC-90-063
Diesel Generator Room HVAC Control

MR-FC-90-067
FW-8C Loadshed Following OPLS

MR-FC-91-008
Undervoltage Protection for 480V Safety Related Motors

MR-FC-91-013
RPS Delta-T Power Fluctuations

MR-FC-91-015
Pressurizer Flange Leak

ATTACHMENT E-2

FORT CALHOUN STATION
1992 REFUELING/MAINTENANCE OUTAGE
MODIFICATIONS LIST

29. MR-FC-91-025
Replacement of LCV-383-1 and LCV-383-2

30. MR-FC-91-026
Station Battery Replacement

31. MR-FC-91-028
Steam Generator Insulation Support Ring

32. MR-FC-92-002
PAL Equalizing Valve Isolation

33. MR-FC-92-009
SI RV's Setpoint Change

34. MR-FC-92-012
Seismic Mounting DC Bus Breakers

35. MR-FC-92-018
RM-060 Isolation Valve Replacement