UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

December 5, 2001

Carolina Power and Light Company
ATTN: Mr. J. S. Keenan
Vice President
Brunswick Steam Electric Plant
P. O. Box 10429
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INSPECTION REPORT 50-325/01-07, 50-324/01-07

Dear Mr. Keenan:

On October 19, 2001, the NRC completed a biennial safety system design and performance capability inspection at your Brunswick Steam Electric Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on October 19, 2001, with Mr. C. Gannon, Plant General Manager, and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The team reviewed selected procedures and records, observed activities, and interviewed personnel.

No findings of significance were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Document system (ADAMS). ADAMS is accessible from the NRC web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Mark S. Lesser, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos. 50-325, 50-324
License Nos. DPR-71, DPR-62

Enclosure: See page 2

Enclosure: NRC Inspection Report

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-325, 50-324
License No:	DPR-71, DPR-62
Report No:	50-325,324/01-07
Licensee:	Carolina Power & Light (CP&L)
Facility:	Brunswick Steam Electric Plant, Units 1 & 2
Location:	8470 River Road SE Southport, NC 28461
Dates:	October 1 - 5, 2001 (Week 1) October 15 - 19, 2001 (Week 2)
Inspectors:	J. Blake, Senior Project Manager (Team Leader) N. Merriweather, Senior Reactor Inspector R. Schin, Senior Reactor Inspector P. VanDoorn, Senior Reactor Inspector R. Maxey, Reactor Inspector M. Maymi, Reactor Inspector
Approved:	Mark Lesser, Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000325,324-01-07, on 10/1-19/01, Carolina Power and Light Company, Brunswick, Units 1 and 2, safety system design.

This safety system design and performance capability inspection was conducted by a team of region-based inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://nrr10.nrc.gov/NRR/OVERSIGHT/index.html.

No findings of significance were identified.

REPORT DETAILS

1. REACTOR SAFETY
CORNERSTONES: Initiating Events and Mitigating Systems

1R21 Safety System Design and Performance Capability (71111.21)

Introduction

Through review of the Brunswick Nuclear Plant Probabilistic Safety Assessment the team selected a population of components and operator actions that could initiate a Loss of Offsite Power (LOOP) with a Station Blackout (SBO) or mitigate the consequences.

.1 System Needs

a. Inspection Scope

Energy Source - Station Batteries

The team reviewed design basis documentation, calculations, and surveillance tests to verify that for the first hour of an SBO event, the coping loads could be adequately supplied by the 125/250 volt direct current (Vdc) batteries. The team reviewed analyses to verify that the batteries conformed with IEEE 485-1983, “Recommended Practice for Sizing Large Lead Storage Batteries for Generating Stations and Substations.” The team also reviewed design basis documentation and calculations to verify that, under minimum voltage conditions, the 125/250 Vdc batteries provided adequate voltage for safety-related equipment to perform their design functions. The ampacity of existing cables connecting the 125/250 Vdc batteries to essential switchboards, motor control centers, and distribution panels were reviewed for adequacy.

Controls - Vital Alternating Current

The team reviewed electrical drawings depicting the design of the degraded and loss of voltage relay logic protecting the balance of plant (BOP) and Emergency 4160 volt alternating current (Vac) switchgear buses to verify that, upon sensing a valid degraded or loss of voltage condition on the buses, the emergency diesel generators (EDG) would start and restore power to the boards and blackout loads would automatically sequence onto the boards. The objective of the above review was to verify that the EDG control logic was capable of performing the design functions during a LOOP event consistent with the licensing and design basis for the plant.

Emergency Diesel Generators

The team reviewed design basis documentation, calculations, and surveillance tests to verify that during an SBO event, the EDG possessed adequate capability to supply loads for the non-blacked out unit and SBO coping loads for the blacked out unit. The team reviewed analyses to verify the EDG system conformed with the alternate

alternating current (Aac) criteria as defined in NUMARC 87-00, “Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors,” and NRC Regulatory Guide 1.155, “Station Blackout.”

EDG Support System Power Supplies

The team reviewed design basis documentation associated with sizing of electrical circuit breakers for the EDG ventilation supply fan motors, EDG fuel oil transfer pump motors, and 125/250 Vdc battery chargers to verify that the breakers were adequately sized for the associated loads.

EDG Fuel Oil

The team reviewed design documentation, technical specifications, drawings, calculations, vendor manuals, test documentation, program and operating procedures, and installed equipment to verify that the sizing of storage tanks and the design of the fuel oil transfer pumps were adequate to provide the fuel requirements to operate the EDG for the period of time assumed in accident analyses. This included calculations that determined the EDG fuel consumption rate and calculations that determined the fuel oil volume required for seven days of operation. Additionally, the team reviewed test data sheets and the station acceptance criteria for fuel oil quality to verify these were consistent with the EDG vendor recommendations and applicable industry standards.

EDG Starting Air

The team reviewed design documentation, drawings, engineering service requests, surveillance procedures and deficiency reports to verify that the air start system capabilities were consistent with design base assumptions. This included test documentation to verify inclusion of air-start system check valves in the licensee’s periodic testing of check valves.

EDG Internal Lubrication and Cooling System

The team reviewed design documentation, drawings, maintenance work documentation, deficiency reports, and equipment specifications to verify that the internal cooling systems for the engine cooling and lubricating oil were adequate to maintain EDG operation within vendor specifications. This included jacket water system corrective maintenance documentation, and lube oil chemistry testing and station acceptance criteria documentation to verify these were consistent with the EDG vendor recommendations and applicable industry standards.

EDG Service Water Supply

The team reviewed the design and capability of the Service Water system to provide the required cooling flow for the EDG. The review included calculations, drawings, test data, and heat exchanger performance information.

Control Room Habitability

The team reviewed the relevant sections of Technical Specifications (TS), Technical Requirements Manual (TRM), Updated Final Safety Evaluation Report (UFSAR), design basis documents (DBD), drawings, emergency operating procedures (EOP), abnormal procedures (AOP), calculations and analyses, and self assessments to verify that during a station blackout or a loss of offsite power coincident with a design basis accident, the control room was designed to remain habitable; i.e., potential radiation doses received by operators would remain within regulatory limits. The team conducted a walkdown inspection of the control room area, control room emergency ventilation system, and standby gas treatment system to verify that the equipment relied upon to initiate control room emergency ventilation air flow through the charcoal filters, and to stop unfiltered air flow through the control room habitability boundaries, were installed as described in the system descriptions and habitability analyses. The walkdown included ventilation ducts, fans, filters, power supplies, control circuits, and habitability boundaries.

Control Building, Reactor Building, and Emergency Diesel Generator Heating, Ventilation, and Air Conditioning (HVAC)

The team reviewed the relevant sections of TS, TRM, UFSAR, DBDs, drawings, EOPs, AOPs, calculations and analyses, and self assessments and also walked down the control building, reactor building, and emergency diesel generator rooms' HVAC systems. The review was to verify that, during a station blackout or a loss of offsite power, the equipment relied on for safe shutdown of the reactor would be adequately ventilated and cooled as assumed in the system descriptions and analyses. The team also reviewed the effects of potential increased control room temperature during a station blackout on the accuracy of instruments used by operators to perform their EOPs and AOPs, to verify that reactor safety would not be adversely affected.

Operator Actions

The team reviewed pertinent operating instructions for the loss of offsite power (LOOP) and station blackout (SBO) events to verify that the instructions specified appropriate operator actions and that those actions could be performed in a timely manner commensurate with the significance of the action. The team reviewed the licensee's "Job Performance Measures" for selected key operator actions and observed field simulations of these actions. These actions included refill of the Condensate Storage Tank utilizing the Diesel Driven Fire Pump (DDFP), cross-tying 4160V buses, and cross-tying 480V buses. The team also reviewed supporting engineering documentation for these actions.

b. Findings

No findings of significance were identified.

.2 System Conditions and Capability

a. Inspection Scope

Field Observations - Installed Configuration

The team performed a field review of accessible equipment related to the EDG and support systems to assess material condition, identify degraded equipment and verify installed configuration was consistent with design drawings and calculation design inputs.

The field walkdowns of structures and equipment included the EDG building, the Condensate Storage Tanks (CSTs), HVAC components, the Diesel Driven Fire Pump (DDFP), emergency switchgear, station batteries, and 480V Motor Control Centers (MCCs). The team also conducted walkdown inspections of EDG building features credited for flood protection to confirm these had been maintained in working order.

The team conducted a walkdown inspection of the safety-related emergency 4160 and 480 Vac electrical distribution system, 230 KV Switchyard (including the start-up and unit auxiliary transformers), and the 125/250 Vdc systems. This review was performed to assess material condition, assess lightning protection and grounding, identify degraded equipment, and verify the installed configuration was consistent with design drawings and calculation design inputs.

The inspectors reviewed design basis documentation to verify that steady-state AC voltages on the safety related buses during minimum allowed switchyard voltage conditions and maximum expected bus loading (i.e., loss of coolant accident loading) were adequate. The inspectors also reviewed grid dispatcher operating procedures and grid stability studies to verify that controls were in place for maintaining adequate grid system voltages to support Brunswick Units 1 and 2 under various, expected, seasonal grid loading conditions and contingencies.

The inspectors reviewed the protection and coordination study for safety-related 4160 Vac switchgear breakers, 480 Vac Load Center breakers, and 480 Vac MCC breakers to verify that breakers provided adequate circuit protection and coordination.

The team reviewed plant modifications completed on SBO related equipment to verify that the equipment or systems were not degraded as a result of the modifications.

Testing

The team reviewed the “as-found” and “as-left” calibration records for the protective relays associated with the 4160 Vac Balance of plant (BOP) and Emergency Buses, the Units 1 and 2 unit and startup auxiliary transformers, and the EDG to verify that the settings had been consistent with setpoint calculations and relay setting sheets. The review included the degraded-voltage and under-voltage relays on both emergency and BOP buses.

The team reviewed the latest two, completed calibrations of instruments for the 4160 Vac Bus E1; the 4160 Vac BOP Buses 1C, 1D, 2C, and 2D; and EDG No.1. This review was to determine if instruments had been drifting outside the allowable response band between calibrations, and to assess whether identified test deficiencies, or out of tolerance conditions, had been properly evaluated.

The team also reviewed functional test records demonstrating that the automatic switching capability of the BOP power supplies from the Unit Auxiliary Transformer to the Startup Auxiliary Transformer had been satisfactorily tested on both units in accordance with the requirements of TS Surveillance Requirement 3.8.1.8.A.

The team reviewed capacity tests for the EDG and 125/250 Vdc batteries A-1, A-2, B-1, and B-2 to verify that the EDG and batteries were adequate to supply the required emergency loads for the design duty cycle. The tests were reviewed for conformance with parameters specified in design documents and the Technical Specifications.

The team reviewed completed surveillance and periodic test procedures, Action Requests (AR) and Condition Reports (CR), Work Requests / Job Orders (WR/JO), and self assessments to verify that control room habitability had been adequately maintained and tested. The team also reviewed the licensee's efforts toward satisfying a commitment to the NRC, to continue improving the air tightness of the control room habitability envelope in an attempt to establish the ability to attain a one-eighth inch water gauge pressure in the control room.

The team reviewed maintenance history and performance information for the DDFP, which is credited for refill of the CSTs, to confirm pump reliability and availability for credited actions in the AOP.

b. Findings

No findings of significance were identified.

.3 Selected Components

a. Inspection Scope

The team reviewed maintenance and testing documentation to assess the licensee's actions to verify and maintain the safety function, reliability, and availability of selected components. The team reviewed 5 years or more of preventive maintenance records on the EDG output breakers and the 4160 Vac Emergency Bus incoming supply and tie breakers in order to verify that appropriate preventive maintenance had been performed and that recurring equipment problems had been identified. The team also reviewed plant work orders describing corrective maintenance activities to assess the safety function, reliability, and availability of unit auxiliary and station auxiliary transformers.

The team reviewed deficiency reports, maintenance and testing documentation and evaluations to assess the licensee's actions to verify and maintain the safety function, reliability and availability of selected components for the EDG. The selected components included the diesels engines, fuel oil storage tanks, fuel oil transfer pump level switches, jacket water and lube oil system thermostatic control valves, air start system intercoolers, filters, and boundary check valves and HVAC components such as dampers, fans and valves. The inspectors also selected two fuel oil transfer pump motor breakers and one supply fan motor breaker to examine records of preventive and corrective maintenance performed over the past five years.

The team reviewed design changes of equipment accomplished through the licensee's design change process, and component level design changes accomplished via the procurement process, to verify that system and equipment function had been appropriately evaluated and maintained.

Operating Experience

The team reviewed the licensee's evaluation for INPO SOER 98-21, "Circuit Breaker Reliability," and SOER 99-1, "Loss of Grid." The review was performed to verify that the issue or issues had been properly assessed for impact on the plant and that, if applicable, appropriate corrective actions had been taken or planned to resolve the items.

The team reviewed EDG and supporting systems' related operating experience evaluations to verify applicability and implementation of appropriate corrective actions in equipment and system design.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed self-assessments relative to the reliability of LOOP/SBO equipment to determine if any adverse trends existed or if any equipment issues were unidentified. The review included switchyard and transformer yard equipment reliability, plant transmission equipment reliability, and EDG reliability assessments, as well as assessment of engineering products. The team also reviewed the corrective action program items that had been initiated by the licensee resulting from self-assessment findings.

The team reviewed problem investigation reports and respective corrective actions related to the EDG and its support systems to assess the adequacy of corrective actions and trending for the identified problems.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Management Meeting

The lead inspector presented the inspection results to Mr. C. Gannon, and other members of the licensee's staff at an exit meeting on October 19, 2001. The licensee acknowledged the findings presented. Proprietary information was reviewed during the inspection, but is not included in the inspection report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. DiCello, Manager, Regulatory Affairs
W. Dorman, Manager, Nuclear Assessment
C. Gannon, Plant General Manager
E. O'Neil, Manager Site Support Services
S. Tabor, Project Analyst, Regulatory Affairs
K. Ward, Superintendent, Mechanical Engineering, BESS

Other licensee employees contacted included engineers, operations personnel, and administrative personnel.

NRC
B. Bonser, Branch Chief, DRP
E. Brown, Resident Inspector
T. Easlick, Senior Resident Inspector
G. Guthrie, Resident Inspector

ITEMS OPENED, CLOSED, OR DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Procedures

0AOP-36.2, Station Blackout, Rev. 21
0AOP-39.0, Loss of DC Power, Rev. 13
0E&RC-1010, Fuel Oil Sampling, Rev. 20
0E&RC-1020, API Gravity, Rev. 5
0E&RC-1138, Determination of Kinematic Viscosity, Rev. 2
0E&RC-1141, Water and Sediment in Fuel Oil, Rev.5
0E&RC-1142, Particulate Contamination in Fuel Oil, Rev. 2
0CM-ENG 538, Power Pill Replacement in Robertshaw Temperature Regulator, Model No. 1-1284 Series, 4 Inch & 5 Inch Valves, Rev. 4
0PT-12.4A, No. 1 Diesel Generator Fuel Oil Test, Rev. 11
0PT-12.4B, No. 2 Diesel Generator Fuel Oil Test, Rev. 11
0PT-12.4C, No. 3 Diesel Generator Fuel Oil Test, Rev. 11
0PT-12.4D, No. 4 Diesel Generator Fuel Oil Test, Rev. 11
0OP-39, Diesel Generator Operating Procedure, Rev. 88
SPP-IPB–1, Main Generator Inspections, Cleaning And Meggering, Main Transformer, And Isophase Bus, Rev. 9
DTRM TP-12, 7/02/01, Operating 230 Kv Lines that Affect Brunswick Generation, Rev. 7
DTRM-GP-17, 5/14/01, Voltage Schedules for Generating Plants, Rev. 10
DTRM GP-24, 7/19/99, Brunswick Plant Voltage Support and Coordination, Rev. 11
1MST-XFR41R, Automatic Switching From UAT To SAT Functional Test, Rev. 0
2MST-XFR41R, Automatic Switching From UAT To SAT Functional Test, Rev. 1
0PM-BKR001, ITE 4 KV Breaker and Compartment Checkout, Rev. 25
0PM-BKR002A, PM For ITE K-Line Circuit Breakers, Rev. 27
0AOP-36.1, Loss of any 4160V Buses of 480V E-Buses, Rev. 17 and 20, and change packages for Rev. 15 through 19
0AOP-36.2, Station Blackout, Rev. 21 and change packages for Rev. 12 through 20
0EOP-01-LEP-01, Alternate Coolant Injection, Rev. 18
0OI-03.6, Radwaste Operator Daily Surveillance Report, Rev. 17
0OP-37, Control Building Ventilation System Operating Procedure, Rev. 42
0PIC-PT003, Calibration of Rosemont Model 1153 Pressure Transmitter, Rev. 19
0PIC-U1001, Calibration of International Instruments Models 1151 and 1251 Indicator, Rev. 26
0PM-Fan502, Joy Manufacturing Company Series 800, 1000, and 2000 Axivane Adjustable Fans, Rev. 3
0PT-21.1, Control Building Emergency Filter System Test, Rev. 20
0PT-23.1.1, Control Room Emergency Ventilation System Smoke Protection Functional Test, Rev. 1
0PT-23.1.3, Control Room Emergency Ventilation System Monthly Operability Test, Rev. 6
0PT-34.2.2.1, Fire Door, ASSD Access/Egress Door, Severe Weather Door Inspections, Rev. 24
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 28
0PT-46.5, Control Room Air Conditioning Performance Test, Rev. 2
1EOP-01-LPC, Level/Power Control, Rev. 5
1EOP-01-RSP, Reactor Scram Procedure, Rev. 6
1EOP-01-RVCP, Reactor Vessel Control Procedure, Rev. 4

1OP-10, Standby Gas Treatment System Operating Procedure, Rev. 43

Calculations

BNP-E-6.062, Unit 1 125/250 Vdc System Voltage Drop Calculation, Rev. 2
BNP-E-6.074, Unit 1 125.250 Vdc Battery Load Study, Rev. 1K
BNP-E-6.097, Unit 1 125/250 Vdc Power Cable Ampacity
BNP-E-7.010, Emergency Diesel Generator Static and Dynamic Load Study, Rev. 1
M-90-0017, Emergency Diesel Generators #1 and #4 Fuel Oil Consumption Rate
M-91-0001, Emergency Diesel Generators #2 and #3 Fuel Oil Consumption Rate
OFO-0014, Diesel Generator Fuel Oil 4-Day Tank Volume Calculation, Rev. 0
M-89-0009, Diesel Generator Fuel Oil 4-Day Tank Volume Calculation, Rev. 1
M-90-0009, Calculation of the Diesel Generator Saddle Tanks Volumes, Rev. 0
M-90-0010, Saddle Tank Overflow Piping Capacity, Rev. 0
M-90-0008, Calculation of the 7-Day Tank Volume, Rev. 0
CALC MISC-00001, FECP1289 Flow From F.O. ST. to 4-DAY Tank, Rev. 0
0FOD-0001, Seismic Qualification of Diesel Generator F.O. Transfer Pump Discharge Relief Valves 2-FOD-RV-1A, 1B, 2A, 2B, 3A, 3B, 4A, and 4B, Rev. 0
BNP-E-7.002, Attachment K, Degraded Grid Voltage Relays, Rev. 2
BNP-E-8.010, Attachments D, E, J, K, CC, DD, JJ, and KK , AC Coordination Study for 4160 V Buses E1, E2, E3 & E4 and 480 V Bus E5, E6, E7& E8, Rev. 1
8S42-M-01, SBO Coping Study: Condensate Inventory for Decay Heat Removal, Rev. 4
8S42-M-03, Station Blackout - Loss of HVAC, Rev. 1
8S42-M-08, Station Blackout - Control Room Loss of HVAC, Rev. 2
8S42-M-09, Minimum Water Inventory in the Condensate Storage Tank, Rev. 1
8S42-P-101, Station Blackout Coping Analysis Report, Rev. 6
CED-M-01, Main Steam Line Break Analysis - Control Room Dose Analysis to Support Power Uprate, Rev. 6
M-89-0008, Heat Balance on DG # 2 Jacket Water. Service Water Heat Exchanger, Rev. 0
0NSW-0001, Position of Diesel Generator Jacket Water Coolers Service Water Outlet Valves, Rev. 3
2SW-0101, SW Hydraulic Performance, Rev. 0
NEDC-32466P-A, DRF B21-00565 Class 3, Power Uprate Safety Analysis for Brunswick Steam Electric Plant Units 1 and 2, dated February 1997
OVA-0072, Evaluation of the Failure Modes and Effects Analysis on the Control Building Emergency Ventilation for Brunswick Nuclear Projects Units 1 and 2, dated April 8, 1994
PID-04220A-05, Loss of HVAC and Equipment Operability During a Station Blackout, Rev. 0
PID-04220A-02, Containment Temperature Response to Station Blackout, Rev. 3
RSC 99-21, Brunswick Nuclear Plant Probabilistic Safety Assessment - Heating, Ventilating, and Air Conditioning System Notebook, Rev. 1
EER 94-0199, Operability Evaluation of the Effects of Throttling the SW Discharge Valves on the DG Jacket Water Coolers & Evaluation of 2PT-24.6.4 Results for SW System, Rev. 1
EAI 94-0199-1 through 4, Minimum Valve Position for DG SW Outlet Isolation Valves, Rev. 0

Drawings

D-02523, Reactor Building Piping Diagram High Pressure Coolant Injection System Unit 2 Sheet 1, Rev. 51
D-02523, Reactor Building Piping Diagram High Pressure Coolant Injection System Unit 2 Sheet 2, Rev. 42
D-02529, Reactor Building Rector Core Isolation Cooling System Piping Diagram Sheet 1, Rev. 51
D-02529, Reactor Building Rector Core Isolation Cooling System Piping Diagram Sheet 2, Rev. 35
F-03006, Unit 1 Single Line Diagram 125/250 Vdc System Distribution Switchboards 1A and 1B, Rev. 37
F-03006, Unit 2 Single Line Diagram 125/250 Vdc System Distribution Switchboard 2A and 2B, Rev. 37
F-03026, Unit 2 Emergency Key One Line Diagram 4160V, 480V, 120/208V, 120/240V AC and 24/48V, 125/250V DC
F-03142, 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Interconnection Wiring Diagram, Rev. 18
LL-09112, 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Breaker Control Wiring Diagram Sheet 12, Rev. 7
LL-09112, 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Breaker Control Wiring Diagram Sheet 12A, Rev. 8
LL-09112- 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Breaker Control Wiring Diagram Sheet 12B, Rev. 0
LL-09112, 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Breaker Control Wiring Diagram Sheet 13, Rev. 2
LL-09112, 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Breaker Control Wiring Diagram Sheet 13A, Rev. 7
LL-09112, 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Breaker Control Wiring Diagram Sheet 13B, Rev. 5
LL-09112, 4160 Volt Switchgear E2, Compartment AG7, Emergency Diesel Generator No. 2 Breaker Cable Diagram Sheet 14, Rev. 7
LL-229, Fuel Oil Storage Tank Drawing, Rev. 2
LL-2230, Diesel Fuel Oil Storage Tank, Rev. 1
0-FP-20203, Unit 1 & 2 General Plan Diesel Fuel Diesel Fuel Oil Storage Tank, Sheet 1, Rev. C
D-2265-66, Starting Air for Diesel Generators Piping Diagram, Sheets 1A/B, 2A/B, Rev. 16, 18, 15
D-2267, DG Air Intake Exhaust and Cranckase Vacuum System, Sheets 1, 2, Rev. 10, 9
D-2268-69, Fuel Oil to Diesel Generators Piping Diagram, Sheets 1A/B, 2A/B, Rev. 27
D-2270-71, Diesel Generator Lube Oil System, Sheets 1A/1B, 2A/B, Rev. 18
D-2272-73, Diesel Generator Jacket Water System, Sheets 1A/B, 2A/B, Rev. 13, 12
F-03043, Unit 1 & 2 Key One Line Diagram 230KV, 24KV & 4160 Volt Systems, Rev. 19
F-03044, Units 1 and 2 Key One Line Diagram 480 Volt System, Rev. 18
F-03057, Units 1 and 2 Auxiliary One Line Diagram 480 Volt System MCC DGA, DGB, DGC, & DGD, Rev. 37

F-03077, Sheet 1, Units 1 and 2 4160 Volt Switchgear “E1" Relaying & Metering Three Line Diagram, Rev. 13
F-03077, Sheet 2, Units 1 and 2 4160 Volt Switchgear “E1" Relaying & Metering Three Line Diagram, Rev. 22
F-09116, Sheet 1, DG-1/E1 Div I Engineered Safeguard System Logic Cabinet H58 Control Wiring Diagram, Rev. 24
F-30019, Unit 1 Three Line Diagram 4160 Volt System Relaying & Metering, Rev. 20
LL-09111, Sheet 8, 4160V SWGR “E1" Compartment “AE6" Incoming Line SWGR 1D Control Wiring, Rev. 6
LL-9111, Sheet 8B, 4160V SWGR “E1" Compt. AE6 Incoming Line - SWGR 1D Control Wiring Diagram, Rev. 1
0-FP-04321. Units 1 & 2, Johnson Service Company Emerg. Recirc Fans & Make-up Dampers, Control Wiring Diagram & P&ID, Rev. P
F-40073, Reactor Building Ventilation system Air Flow Diagram - Sheet 1, Unit 1, Rev. 8
F-40073, Reactor Building Ventilation system Air Flow Diagram - Sheet 2, Unit 1, Rev. 6
F-40073, Reactor Building Piping Diagram, Standby Gas Treatment, Unit 1, Sheet 3, Rev. 8
F-04080, Unit 1 & 2 Control Building Air Flow Diagram, Rev. 14
F-04082, Control Building - Units 1 & 2 Air Conditioning & Ventilation, Mech. Rm. El. 70'- 0" - Plan & Sections, Rev. 27
D-02274, Sheets 1 & 2, Piping Diagram Diesel Generator Service Water & Demineralized Water Systems Rev. 23

Condition Reports (CRs) and Action Requests (ARs)

AR 05813, DSA - DG3 Leaking Intercooler, 02/16/99
AR 07627, DSA Intercooler Failure, 09/01/99
AR 14883, MR Functional Failure on System 5112, 12/23/99
AR 23050, 2-DSA-RV-2 Failed PT-11.0, 08/25/00
AR 24523, Check Valve DSA-V58 Failed IST in the Closed Direction, 10/10/00
AR 44563, DG Starting Air Compressor Failures, 07/04/01
AR 25209, Rework on DG4 Starting Air Compressor Intercooler, 10/30/00
AR 25054, Repetitive Functional Failure on the DG4 Compressor 1 Intercooler, 10/22/00
AR 31701, DG #1 Starting Air Valves Position, 05/16/01
AR 22444, Unable to Obtain Isolation of EDG#1 SW System, 08/07/00
AR 25938, DG#1 Aux Lube Oil Pump Coupling Failure, 11/27/00
AR 31224, Inconsistent/Inadequate Calibration Data, 07/30/01
AR 07226, Failed Jacket Water TCV 9901865, 07/27/99
AR 07709, Work Around #313, 09/13/99
AR 16198, Unstable DG1 Nitrite Levels, 02/02/00
AR 28252, Demin Water Inleakage into DG1 Water Jacket, 02/08/01
AR 09107, Fuel Oil Truck Flashpoint Result, 11/08/99
AR 15879, 1A Fuel Oil Transfer Pump High Vibration, 01/24/00
AR 17603, Halon Ingestion into Operating Diesel Generators, 03/13/00
AR 05516, EDG #3 Aux Jacket Water Pump, 01/16/99
AR 05663, DG#1 INOP, 01/30/99
AR 05814, EDG Valve Seat Insert Defects, 02/17/99

AR 06172, Component Out of Position, 03/27/99
AR 06737, DG#2 INOP, 05/24/99
AR 06872, SBO Calculation Deficiency, 06/10/99
AR 06883, DG Fail to Start, 06/09/99
AR 06907 Incorrect Q List Part, 06/10/99
AR 07031, DG3 Jacket Water Leak, 06/29/99
AR 07256, DG#3 Temperature Control, 07/26/99
AR 09034, Obsolete EGA Controller for Diesel Generator, 11/04/99
AR 10091, DG1 DSA Compressor 2 Relief Valve Failure, 12/14/99
AR 14706, DG-4 Attachment 3 Data not Obtained, 12/20/99
AR 20680, #2 DG Inoperability due to Failure to Raise Load Above 1500, 06/18/00
AR 22183, DG#4 Metallic Tapping Noise, 07/30/00
AR 22401, EDG#1 Jacket Water Heater Circ Pump, 08/05/00
AR 23344, DG#1 Cylinder #7 Low Temperature, 09/04/00
AR 23866, EDG Self Assessment 99-12 Weakness 1, 09/21/00
AR 23868, EDG Self Assessment Weakness 3, 09/21/00
AR 24748, DG#3 Fuel Oil Leak Causing DG Unavailability, 10/17/00
AR 31678, DG4 Cracked Aux Lube Oil Pump Casing, 05/15/01
AR 45180, DG2 Failure to Load in Manual Mode, 07/18/01
AR 20676, Oil DG#2 Cylinder 1R, 06/18/00
AR 25968, DG#4 Air Compressor #1 Pipe Failure, 11/28/00
AR 17292, DG#2 Tripped During System Operation, 03/04/00
AR 23867, EDG Self Assessment 99-12 Weakness 2, 09/21/00
AR 22073, Missed Diesel Generator Inoperability, 07/26/00
AR 23869, EDG Self Assessment Weakness 4, 09/21/00
AR 23871, EDG Self Assessment Item for Management Consideration 3, 09/21/00
AR 23874, EDG Self Assessment Item0000 for Management Consideration 6, 09/21/00
AR 23876, EDG Self Assessment Item for Management Consideration 8, 09/21/00
AR 23878, EDG Self Assessment Item for Management Consideration 10, 09/21/00
AR 45161, DG2 Jacket Water Leaks, 07/18/01
AR 00006097, A-B Timing Relay Vdc Rating 9900737, 3/24/99
AR 00005008, CBEAF Boundary Neg. Press., dated October 26, 1995
AR 00005174, Drywell Fan Motor Failures, dated May 29, 1998
AR 00005659, Control Room Breach, dated January 28, 1999
AR 00005984, Control Room Envelope Definition, dated March 9, 1999
AR 00006012, PT-46.4, CREV Inoperability, dated March 13, 1999
AR 00006086, Flow Testing Discrepancies, dated March 22, 1999
AR 00006717, The 2-VA-2E-SF-CB Failed to Start, dated May 17, 1999
AR 00007033, HVAC System Trending, dated June 28, 1999
AR 00007303, Hi Chlorine Isolation - CB, dated July 31, 1999
AR 00008965, OE Item 9752, Thirty-eight Smoke Detectors Wired Incorrectly, dated November 2, 1999
AR 00017718, Chlorine Detector Operability During Iodine Release, dated March 16, 2000
AR 00017912, 1C BFIV Air Leak, dated March 23, 2000
AR 00020398, CB HVAC Isolation due to Residual Chloride, dated June 9, 2000

AR 00022317, Reactor Building HVAC Exceeds Maintenance Rule Criteria, dated August 2, 2000
AR 00019917, Failure of Diesel Driven Fire Pump to Start
CR 97-01026, 2-VA-2D-CU-CB Timer Failure, dated March 6, 1997
CR 96-02876, DG3 Backdraft Damper did not Open, dated September 23, 1996

ARs and Work Orders Written During This Inspection

AR 00-049557, EDG Field Flash Voltage Adequacy
AR 00-049636, Open Items in Calculation BNP-E-6.097
AR 00-049898, Open Items in Calculations BNP-E-6.032, 6.075, 6.087, and 6.095
AR 00-049165, Incorrect Tag Numbers Docunted in Diesel MST Procedure, 10/04/01
AR 00-050029, Revise Calculation BNP-E-8.010 For Reactor Recirculation Pump MG Set Feeds
AR 00-032155, Review/Revise Calc 8S42-P-101; existing AR revised during inspection to include nine additional corrections to calculation

Engineering Service Requests (ESRs)

ESR 01-00221, Analysis of 125 Vdc Batteries with Single Cell Unavailable
ESR 00-00332, Replacement Chiller for Unit 2 Reactor Building Sample Station, Rev. 3
ESR 00-00474, Diesel Generator Operability Determination with Core Spray Pump at Full Rated Horse Power, Rev. 0
98-00126, Diesel Generator Starting Air System Filter Replacement, Rev. 0
95-01733-005, ITS and 24 Month Cycle Engineering Evaluations, Rev. 0
ESR 01-00173, Allen-Bradley Type 700-RTC Timing Relay Voltage Rating, Rev. 0

Nuclear Station Modifications

ESR 98-00497, Replace EDG Relays with AB Solid State Relays, Rev. 7
ESR 99-00072, Control Room Improvements, Rev. 0
ESR 99-00449, 480 Vac Distribution System, Rev. 0
ESR 99-00216, 125 Vdc Batteries And Battery Distribution System, Rev. 0

Completed Surveillance Procedures, Preventive Maintenance (PM), and Test Records

0PT-12.2D, No. 4 Diesel Generator Monthly Load Test, Rev. 73
OPM-LTM001, Unit Auxiliary Transformer External Inspection, Rev. 0
0MST-DG 501R3, Emergency Diesel Generators 72 Month Inspection, Rev. 11, completed 07/00, 08/00
0MST-DG500R, Emergency Diesel Generators 24 Month Inspection, Rev. 17, completed 06/01, 08/01
0PIC-LS008, Calibration of Magnetrol Model T21 Level Switch, Rev. 3, 5, completed 01/16/96, 06/10/96, 07/24/96, 08/13/96, 01/26/99, 06/08/99, 08/16/99, 11/17/99
0AI-125, System Cleanliness/Foreign Material Inclusion, Rev. 4, 10,11, completed 08/13/96, 11/30/98, 01/26/99, 08/16/99, 11/15/99, 08/09/00

1MST-DG21R, DG-1 Trip Bypass Logic Test, Rev. 12, completed 08/13/96
1MST-DG22R, DG-2 Trip Bypass Logic Test, Rev. 9, completed 07/24/96
2MST-DG21R, DG-3 Trip Bypass Logic Test, Rev. 12, completed 01/16/96
2MST-DG22R, DG-4 Trip Bypass Logic Test, Rev. 11, completed 06/10/96
0PLP-21, Independent Verification, Rev.10, completed 07/12/99
0CM-ENG526, Diesel Engine Fuel Injectors, Rev.8, completed 09/06/00
0PIC-PS001, Calibration of Allen Bradley Model 836 Pressure Switch, Rev. 9, 10, completed 07/13/99, 06/07/00
0PIC-PI001, Calibration of Pressure Gages, Rev. 19, completed 07/13/99
0SPP-ANN001A, DG-1 Annunciator Verification and Instrument Calibration, Rev. 4, completed 07/13/99
0SPP-ANN004A, DG-4 Annunciator Verification and Instrument Calibration, Rev. 9, completed 08/05/99, 10/25/99
WR/JO ARYU 001, 1MST-XFR41R, Automatic Switching From UAT To SAT, Completed 11/5/99
WO 00046287-01, Perform 2MST-XFR41R Every 24 Months, Automatic Switching From UAT To SAT, Completed 2/27/01
WR/JO ARYV 001, 2MST-XFR41R, Automatic Switching From UAT To SAT, Completed 3/29/99
WR/JO AGKN002, Calibration of Relay 1-1C-AC5-27/59U, Completed 3/2/99
WR/JO AGKM001, Calibration of Relay 1-1C-AC7-27/59S, Completed 4/26/96
WR/JO AGKM002, Calibration of Relay 1-1C-AC7-27/59S, Completed 3/2/99
WR/JO AEJX001, Calibration of Relay 1-1C-AC6-27, Completed 3/5/97
WR/JO AEJX002, Calibration of Relay 1-1C-AC6-27, Completed 4/4/00
WR/JO AGKR 001, Calibration of Relay 1-1D-AD5-27/59S, Completed 4/23/97
ASSSWR/JO AGKR 002, Calibration of Relay 1-1D-AD5-27/59S, Completed 12/14/99
WR/JO AEJY001, Calibration of Relay 1-1D-AD6-27, Completed 3/26/97
WR/JO AEJY002, Calibration of Relay 1-1D-AD6-27, Completed 4/26/00
WR/JO AGKQ001, Calibration of Relay 1-1D-AD7-27/59U, Completed 5/22/97
WR/JO AGKQ002, Calibration of Relay 1-1D-AD7-27/59U, Completed 12/14/99
WR/JO AEVW001, Calibration of Relay 2-2C-AC4-27/59U, Completed 1/21/98
WR/JO 45953-01, Calibration of Relay 2-2C-AC4-27/59U, Completed 2/27/01
WR/JO AEUZ001, Calibration of Relay 2-2C-AC6-27/59S, Completed 1/28/98
WR/JO 45952-01, Calibration of Relay 2-2C-AC6-27/59S, Completed 2/8/01
WR/JO AEUY001, Calibration of Relay 2-2C-AC5-27, Completed 4/18/97
WR/JO AEUY002, Calibration of Relay 2-2C-AC5-27, Completed 7/14/00
WR/JO AEVV002, Calibration of Relay 2-2D-AD6-27/59U, Completed 8/6/98
WR/JO AEVJ001, Calibration of Relay 2-2D-AD4-27/59S, Completed 7/14/95
WR/JO AEVJ002, Calibration of Relay 2-2D-AD4-27/59S, Completed 7/8/98
WR/JO AEVL001, Calibration of Relay 2-2D-AD5-27, Completed 4/4/97
WO 11413201, Calibration of Relay 202D-AD5-27, Completed 10/15/01
WR/JO AEMS 002, Calibration of Relays 1-E1-AE9-87DP-A, B, C, Completed 2/24/97
WR/JO AEMS 003, Calibration of Relays 1-E1-AE9-87DP-A, B, C, Completed 4/18/00
WR/JO AELE 002, Calibration of Relay 1-E1-AE8-32D, Completed 6/14/99
WR/JO AELC 002, Calibration of Relay 1-E1-AE8-40, Completed 4/20/98
WR/JO AEIU 001, Calibration of Relay 1-E1-AE8-64D, Completed 8/12/96

WR/JO AEIU 002, Calibration of Relay 1-E1-AE8-64D, Completed 12/28/99
WR/JO AGJX 001, Calibration of Relays 1-E1-AE8-51V-A, B, C, Completed 3/26/97
WR/JO AGJX 002, Calibration of Relays 1-E1-AE8-51V-A, B, C, Completed 8/6/00
WR/JO AIKX 001, Calibration of Relay 1-E1-AE9-81D, Completed 12/12/96
WR/JO AIKX 002, Calibration of Relay 1-E1-AE9-81D, Completed 8/8/00
WR/JO AEIW 001, Calibration of Relay 1-E1-AE9-59D, Completed 11/2/96
WR/JO AEIW 002, Calibration of Relay 1-E1-AE9-59D, Completed 8/6/00
WR/JO 47717-01, Calibration of Relay 1-E1-AE7-27/59E, Completed 1/22/01
WR/JO 122899-01, Calibration of Relay 1-E1-AE7-27/59E, Completed 5/14/01
WR/JO AGLE002, Calibration of Relay 1-E1-AE7-27HS, Completed 4/20/98
WR/JO 46249-01, Calibration of Relay 1-E1-AE7-27HS, Completed 5/14/01
WR/JO 46363-01, Calibration of Relay 1-E1-AE7-27/DVA, B, C, Completed 7/30/01
WR/JO AGLZ003, Calibration of Relay 1-E1-AE7-27/DVA, B, C, Completed 7/30/99
WR/JO AELJ002, Calibration of Relay 1-E1-AF9-50/51A,B,C, Completed 1/30/97
WR/JO 4576901, Calibration of Relay 1-E1-AF9-50/51A,B,C, Completed 8/8/01
WR/JO AEJC003, Calibration of Relay 2-E4-AK1-51V-A,B,C, Completed 8/3/00
WR/JO AEJD002, Calibration of Relay 2-E4-AK1-64D, Completed 9/10/99
WR/JO AEJA002, Calibration of Relay 2-E4-AK1-40, Completed 6/7/00
WR/JO AEJF002, Calibration of Relay 2-E4-AK2-87DP-A,B,C, Completed 8/28/00
WR/JO AILA003, Calibration of Relay 2-E4-AK2-81D, Completed 6/8/00
WR/JO 0004594701, Calibration of Relay 2-E4-AK2-59D, Completed 6/4/01
WR/JO 0004592601, Calibration of Relay 2-E4-AK0-27HS, Completed 7/30/01
WR/JO 0004779401, Calibration of Relay 2-E4-AK0-27/59E, Completed 7/30/01
WR/JO 0004636301, Calibration of Relays 2-E4-AK0-27/DV-A,B,C; 1-E1-AE7-27/DV-A,B,C; 1-E2-AG5-27/DV-A,B,C; and 2-E3-AI3-27/DV-A,B,C, completed 7/31/01
WR/JO 0004592101, Calibration of Relay 2-E4-AK1-32D, Completed 7/31/01
WR/JO AEMT001, Calibration of Relays 1-E2-AG7-87DP-A,B,C, Completed 2/13/99
WR/JO AELF002, Calibration of Relay 1-E2-AG6-32D, Completed 7/28/99
WR/JO AEMR002, Calibration of Relays 1-E2-AG6-51V-A,B,C, Completed 3/15/99
WR/JO AEIU002, Calibration of Relay 1-E2-AG6-64D, Completed 12/15/99
WR/JO AEIX001, Calibration of Relay 1-E2-AG7-59D, Completed 2/3/98
WR/JO AIKY001, Calibration of Relay 1-E2-AG7-81D, Completed 8/23/99
WR/JO 0004624801, Calibration of Relay 1-E2-AG5-27HS, Completed 7/16/01
WR/JO 00047771801, Calibration of Relay 1-E2-AG5-27/59E, Completed 7/16/01
WR/JO 0004586001, Calibration of Relay 1-E2-AG6-40, Completed 5/21/01
WR/JO AEGZ004, Calibration of Relay 2-E3-AI4-51V-A,B,C, Completed 4/13/00
WR/JO AEGX001, Calibration of Relay 2-E3-AI4-40, Completed 9/3/97
WR/JO AEHA002, Calibration of Relay 2-E3-AI4-64D, Completed 6/30/99
WR/JO AEHC002, Calibration of Relays 2-E3-AI5-87DP-A,B,C, Completed 11/16/99
WR/JO AIK2002, Calibration of Relay 2-E3-AI5-81D, Completed 8/23/00
WR/JO 0004594601, Calibration of Relay 2-E3-AI5-59D, Completed 8/20/01
WR/JO 0004592501, Calibration of Relay 2-E3-AI3-27HS, Completed 8/20/01
WR/JO 0004779301, Calibration of Relay 2-E3-AI3-27/59E, Completed 12/14/00
WR/JO 0004592201, Calibration of Relay 2-E3-AI4-32D, Completed 5/29/01
WR/JO AAJV001, PM Breaker 2-2CA-C05-52, Completed 2/26/99
WR/JO ALHI001, PM Breaker 2-2CA-C21-52, Completed 7/28/99

WR/JO ADBS001, PM Breaker 1-E5-AU5-52, Completed 10/23/96
WR/JO AAK0001, PM Breaker 2-2CB-C56-52, Completed 9/4/98
WR/JO ALHV001, PM Breaker 2-2CB-C43-52, Completed 6/24/99
WR/JO 94GGM001, PM EDG Breaker 2-E4-AK2-52, Completed 5/5/94
WR/JO ABTZ001, PM EDG Breaker 2-E4-AK2-52, Completed 6/12/97
WR/JO 0004569001, PM EDG Breaker 2-E4-AK2-52, Completed 6/4/01
WR/JO 91GHQ361, PM EDG Breaker 2-E3-AI5-52, Completed 10/3/91
WR/JO ABVK001, PM EDG Breaker 2-E3-AI5-52, Completed 7/30/97
WR/JO 0004568101, PM EDG Breaker 2-E3-AI5-52, Completed 8/20/01
WR/JO 93KFF461, PM EDG Breaker 1-E2-AG7-52, Completed 2/10/93
WR/JO 90KFF461, PM EDG Breaker 1-E2-AG7-52, Completed 12/15/90
WR/JO ADNH001, PM EDG Breaker 1-E2-AG7-52, Completed 1/8/96
WR/JO ADNH002, PM EDG Breaker 1-E2-AG7-52, Completed 7/24/00
WR/JO 00AEPP1, Replace Trip Coil on Breaker 1-E2-AG7-52, Completed 7/18/00
WR/JO 0004571301, PM EDG Breaker 1-E1-AE9-52, Completed 5/14/01
WR/JO ADMN001, PM EDG Breaker 1-E1-AE9-52, Completed 12/2/96
WR/JO ADMM01, PM Breaker 1-E1-AE6-52, Completed 11/2/96
WR/JO 95KEP131, PM Breaker 1-E1-AE6-52, Completed 1/26/94
WR/JO ADNE001, PM Breaker 1-E1-AG0-52, Completed 1/16/98
WR/JO 93KFC491, PM Breaker 1-E1-AG0-52, Completed 5/25/94
WR/JO 90KFC491, PM Breaker 1-E1-AG0-52, Completed 3/13/91
WR/JO ADNF001, PM Breaker 1-E1-AG1-52, Completed 3/25/97
WR/JO 93KFD481, PM Breaker 1-E1-AG1-52, Completed 12/3/93
WR/JO 90KFD481, PM Breaker 1-E1-AG1-52, Completed 3/20/91
WR/JO ADNG001, PM Breaker 1-E2-AG4-52, Completed 5/19/98
WR/JO 96KFF521, PM Breaker 1-E2-AG4-52, Completed 2/10/93
WR/JO 93KFF531, PM Breaker 1-E2-AG4-52, Completed 5/13/92
WR/JO ADNP001, PM on Breaker 1-E2-AH8-52, Completed 1/14/98
WR/JO 94KFQ041, PM on Breaker 1-E2-AH8-52, Completed 6/3/94
WR/JO 91KFQ051, PM on Breaker 1-E2-AH8-52, Completed 3/19/91
WR/JO ADNQ001, PM on Breaker 1-E2-AH9-52, Completed 6/16/97
WR/JO 94KFR041, PM on Breaker 1-E2-AH9-52, Completed 6/4/94
WR/JO 03FA4001, PM on Breaker 1-E2-AF9-52, Completed 6/4/94
WR/JO 91KFR051, PM on Breaker 1-E2-AH9-52, Completed 3/12/91
WR/JO ABVL001, PM on Breaker 2-E3-AI2-52, Completed 10/9/97
WR/JO ABVL002, PM on Breaker 2-E3-AI2-52, Completed 5/15/99
WR/JO 91HAI051, PM on Breaker 2-E3-AJ5-52, Completed 3/8/91
WR/JO ACBS001, PM on Breaker 2-E3-AJ5-52, Completed 5/7/97
WR/JO 91HAH181, PM on Breaker 2-E3-AJ6-52, Completed 1/23/92
WR/JO ACBR001, PM on Breaker 2-E3-AJ6-52, Completed 5/8/97
WR/JO ABTY001, PM on Breaker 2-E4-AJ9-52, Completed 10/11/97
WR/JO ABUE002, PM on Breaker 2-E4-AL4-52, Completed 11/30/94
WR/JO ABUE003, PM on Breaker 2-E4-AL4-52, Completed 7/6/98
WR/JO 93GGT221, PM on Breaker 2-E4-AL5-52, Completed 10/22/93
WR/JO ABUF002, PM on Breaker 2-E4-AL5-52, Completed 11/30/94
WR/JO ABUF003, PM on Breaker 2-E4-AL5-52, Completed 7/6/98

WR/JO ALED 001, COMPLETED 6/15/98, PM MCC COMPARTMENT 2-DGA-DR4 AND BREAKER 2-DGA-DR4-52
WR/JO ABDW 001, COMPLETED 9/5/00, PM MCC COMPARTMENT 2-DGA-DR7 AND BREAKER 2-DGA-DR7-52
WR/JO ALEE 001, COMPLETED 1/26/99, PM MCC COMPARTMENT 2-DGA-D37 AND BREAKER 2-DGA-D37-52
0PT-15.4, Secondary Containment Integrity, Rev. 20, completed on March 22, 2001
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 25, partially completed on March 12, 1999
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 25, partially completed on March 13, 1999
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 26, partially completed on April 9, 1999
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 26, completed on July 20, 1999
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 27, partially completed on January 25, 2001
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 28, partially completed on June 13, 2001
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 28, partially completed on July 12, 2001
0PT-46.4, Control Building HVAC Auto Initiation, Rev. 28, partially completed on August 9, 2001
0PT-34.5.5.0, Engine and Electric Driven Fire Pump Functional Test, Completed April 9, 2001
0PT-34.5.5.0, Engine and Electric Driven Fire Pump Functional Test, Completed October 11, 1999
AOP-36.2-92-1, SBO Crosstie of E-Buses Drill, Completed October 13, 1992
1PT-24.6.4, Service Water System Hydraulic Performance, Completed May 16, 1998
2PT-24.6.4, Service Water System Hydraulic Performance, Completed May 8, 1999

Completed Work Requests (WR/JO) and Work Orders (WO)

WO 22832, Unit 1 Unit Auxiliary Transformer External Inspection
WO 22841, Unit 1 Station Auxiliary Transformer External Inspection
WO 22833, Unit 2 Unit Auxiliary Transformer External Inspection
WO 145308, Unit 2 Station Auxiliary Transformer External Inspection
WR/JO ASWB / ASWC 001, Preventive Maintenance of Jacket Water TCV 2155/2129, completed 07/20/00, 08/10/00
WR/JO 93STL 001, Preventive Maintenance of Jacket Water TCV 2183, completed 08/30/99
WR/JO 93STN 001, Preventive Maintenance of Jacket Water TCV 2210, completed 02/21/95
WR/JO ASWE / ASWD 001, Preventive Maintenance of Lube Oil TCV 2054/1463, completed 07/20/00, 08/10/00
WR/JO 91-AKRM1 / 94-AGKU1, Corrective Maintenance on Diesel Lube Oil Valve TCV 2047/2100, completed 10/14/91, 11/29/94
WR/JO ADXU 004 / AGQN 001, 24/72 Month Maintenance Surveillance Test on #1 Diesel, completed 08/10/00
WR/JO ADXV 005, 24 Month Maintenance Surveillance Test on #2 Diesel, completed 07/19/00
WO 46360-01, 24 Month Maintenance Surveillance Test on #3 Diesel, completed 07/23/01

WO 46359-01, 24 Month Maintenance Surveillance Test on #4 Diesel, completed 05/08/01
WO 48007-01, Internal Valve Inspection on 2-DSA-V88, V100, V106, completed 07/25/01
WO 48006-01, Internal Valve Inspection on 2-DSA-V118, V130, V136, completed 05/15/01
WR/JO AORA 002 / 003, Calibration of DG1 Fuel Oil Day Tank Level Switches, completed 08/13/96, 01/27/99
WR/JO ALVF 002, DG1 Trip Bypass Logic Test, completed 08/13/96
WR/JO AOQZ 001 / 002, Calibration of DG2 Fuel Oil Day Tank Level Switches, completed 07/24/96, 08/17/99
WR/JO AMAI 003 / 005, Calibration of DG3 Fuel Oil Day Tank Level Switches, completed 01/16/96, 11/17/99
WR/JO AFQE 003 / 004, Calibration of DG4 Fuel Oil Day Tank Level Switches, completed 06/10/96, 06/08/99
WR/JO ALXD 002, DG2 Trip Bypass Logic Test, completed 07/24/96
WR/JO AMXH 001, DG3 Trip Bypass Logic Test, completed 01/16/96
WR/JO AMXI 001, DG4 Trip Bypass Logic Test, completed 06/10/96
WR/JO 99-AECT1 / 99-AECU1 / 99-AECW1 / 99-AECX1, Inspection and Cleaning of DG1/2/3/4 Circuit Breaker Control Switch, completed 07/12/99, 08/02/99, 11/14/99, 06/05/00
WR/JO 98-AFAM1, Remove and Clean Thermocouples 7 and 15 on DG1, completed 11/30/98
WR/JO 99-AEYG1, Replace DG 1 Starting Air Compressor Pressure Switch, completed 07/13/99
WR/JO 00-AFKW1, Remove DG1 No. 7 Fuel Injector and Replace it with New/Rebuilt Injector From Stores, completed 09/06/00
WR/JO 00-ADSJ1, Calibrate DG4 Starting Air Compressor Pressure Switch, completed 06/07/00
WR/JO 99-AFDH1 / 99-AFDH2 / 99-AFEP1, Calibration Check on DG4 Pressure Switches, completed 08/05/99, 10/25/99
WR/JO 99-AEPR1, Tighten Bolts on the Jacket Water Header for DG3, completed 06/28/99
WR/JO 99-ABKA1, Replace Gaskets on DG1 Jacket Water Head Pipes, completed 07/12/99
WR/JO 99-ADJU1, Tighten DG3 Jacket Water Leaking Dresser Coupling, completed 07/25/99
WR/JO 99-ACXT1, Replace DG2 Leaking Dresser Couplings, completed 08/16/99
WR/JO 99-ACXU1, Replace DG2 Flange Gaskets, completed 08/16/99
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LIST OF ABBREVIATIONS USED

Aac	Alternate alternating current
AOP	Abnormal operating procedures
API	American Petroleum Institute
AR	Action requests
BOP	Balance of plant
CR	Condition reports
CST	Condensate Storage Tanks
DBD	Design basis documents
DDFP	Diesel driven fire pump
EOP	Emergency operating procedures
HVAC	Heating, ventilation, and air conditioning
IEEE	Institute of Electrical and Electronic Engineers
INPO	Institute of Nuclear Power Operations
LOOP	Loss of offsite power
MCCs	Motor control centers
NRC	Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council (now NEI)
SBO	Station blackout
SOER	Significant operating experience report
TRM	Technical requirements manual
TS	Technical specifications
UFSAR	Updated Final Safety Evaluation Report
Vac	Volts alternating current
Vdc	Volts direct current
WO	Work Order
WR/JO	Work Requests / Job Orders