March 15, 2002

Mr. Charles H. Cruse
Vice President - Nuclear Energy
Constellation Nuclear
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT - NRC INSPECTION REPORT 50-317/01-015, 50-318/01-015

Dear Mr. Cruse:

On January 31, 2002, the NRC completed a team inspection at the Calvert Cliffs Nuclear Power Plant, Units 1 and 2. The enclosed report documents the results of that inspection which were discussed with Messrs T. Pritchett and W. Holston, and other members of your staff on January 31, 2002.

The inspection examined 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. Within these areas, the inspection consisted of a selected examination of procedures and records, observation of activities, and interviews with personnel.

No findings of significance were identified.

In accordance with 10CFR2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's Agency Wide Document and Access Management 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/

Lawrence T. Doerflein, Chief
Systems Branch
Division of Reactor Safety

Docket No. 50-317, 50-318

License No. DPR-53, DPR-69

Enclosures: NRC Inspection Report 50-317/01-015, 50-318/01-015
cc w/encl:

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DATE	02/15/02		02/19/02		03/15/02					

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-317 50-318
License No.:	DPR-53 DPR-69
Report No.:	50-317/01-015, 50-318/01-015
Licensee:	Calvert Cliffs Nuclear Power Plant, Inc.
Facility:	Calvert Cliffs Nuclear Power Plant, Unit 1 and Unit 2
Dates:	January 14-18 and 28-31, 2002
Inspectors:	M. Modes, Team Leader P. Kaufman, Sr. Reactor Inspector T. Burns, Reactor Inspector G. Cranston, Reactor Inspector G. Morris, Reactor Inspector S. Kennedy, Trainee
Approved By:	Lawrence T. Doerflein, Chief Systems Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000317/01-015, 05000318/01-015; on 1/14-18 and 1/28-31/2002; Calvert Cliffs Nuclear Power Plant, Inc.; Calvert Cliffs Nuclear Power Plant, Units 1 & 2. Engineering Team Inspection Report.

The inspection was conducted by five region-based inspectors. No findings of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 “Significance Determination Process” (SDP). Findings for which the SDP does not apply are indicated by “No Color” or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/reactors/operating/oversight.html.

a. Inspector Identified Findings

None

b. Licensee Identified Findings

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R02 Evaluations of Changes, Tests, or Experiments (IP71111.02)

a. Inspection Scope

The team reviewed a sample of safety evaluations (SEs) required by 10 CFR 50.59 for changes to facility systems, structures, and components or procedures as described in the Calvert Cliffs Nuclear Power Plant Updated Final Safety Analysis Report (USFAR). The SEs were selected from a list of changes implemented during the last two years. The review was conducted to verify that changes to the facility or procedures as described in the UFSAR, and test and experiments not described in the UFSAR, were reviewed and documented by the licensee in accordance with 10 CFR 50.59. The team also verified that the changes, tests, and experiments did not require prior NRC approval or a license amendment.

The team also reviewed a sample of changes and tests for which the licensee determined that a safety evaluation was not required. This review was performed to verify that the licensee's threshold for performing safety evaluations was consistent with the requirements of 10 CFR 50.59.

b. Findings

No findings of significance were identified.

1R21 Safety System Design and Performance Capability (IP 71111.21)

a. Inspection Scope

The team reviewed the design and performance capability of the auxiliary feedwater (AFW) system. The AFW system is used to mitigate an accident by supplying water to the steam generators in the event of a loss of main feedwater and during some accident and transient conditions. Inspection criteria were based on the system performance requirements derived from the Calvert Cliffs Nuclear Power Plant UFSAR, Technical Specifications, probabilistic risk assessment, and the NRC's SDP. To determine the system performance mitigation requirements, the team selected and reviewed accident and transient analyses assumptions for sequences associated with AFW system components.

The team verified that: (1) the system design bases were in accordance with the licensing commitments and regulatory requirements; and (2) the design documents, such as drawings and design calculations, were correct. The documents reviewed included engineering analyses, calculations, piping and instrumentation drawings (PI&D), electrical schematics, and instrument setpoint documentation. The mechanical design review focused on the capability of the AFW system to supply adequate water to

the steam generators under design and transient conditions. Emphasis was placed on the AFW steam driven and motor driven pumps and operator actions to align the back-up steam driven pump in case of pump failure. Selected system alignments were reviewed to ensure they could support design and risk significant functions. Specifically, the system alignment for suppling alternate feedwater during a fire was reviewed to ensure the AFW system was capable of supplying sufficient flow rates for the safe shutdown function.

Additionally, the current performance and test acceptance criteria for the AFW was reviewed to ensure consistency between allowable component performance and minimum allowable capabilities assumed in the accident analyses and associated design basis calculations. This was compared against a license amendment request taking into account steam generator sludge volume. The team reviewed a sample of permanent modifications, repairs and replacements to the system to verify the original design function was being maintained. Preventive maintenance activities were reviewed to verify that maintenance was performed as scheduled using controlled procedures and the system met its design basis function during the maintenance evolution. The team evaluated a sample of surveillance and post maintenance test results to verify system capability. Inservice inspection test results from the last refuel outage were evaluated for conformance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI. The team reviewed a sample of system instrument calibration and test results to confirm system control features were validated.

The team reviewed the AFW electrical single line diagrams, loop and logic diagrams, and elementary, schematic and wiring diagrams to confirm the redundancy of the power supplies for the AFW pumps, valves, instrumentation and control equipment interfacing with the auxiliary feedwater actuation system and to confirm the independence and redundancy required by IEEE 279, “Criteria for Protection Systems for Nuclear Power Generating Stations.” The team reviewed calculations, outline and nameplate information, vendor technical manuals and other manufacturer’s information to determine the requirements of the AFW system electrical, instrument and control components and to confirm the capabilities for the electrical distribution system to supply adequate power to the AFW system components. The team reviewed selected abnormal and emergency operating procedures to confirm the capacity and capability of the electrical systems to support plant transients consistent with 10 CFR 50, Appendix A, Design Requirements, Criterion 17, Power Systems. The team reviewed selected incident reports, work orders, and maintenance and calibration procedures to confirm the status of the components supporting the AFW system.

The team walked-down system components and supporting systems including service water, ventilation, and condensate storage to verify associated functions such as the adequacy of ventilation flow under accident conditions and the amount of condensate reserve being maintained. The team verified that normal, abnormal, and emergency operating procedures were consistent with system design bases, risk analysis, and SDP operating assumptions. As part of this review, the team reviewed system interfaces (instrumentation, controls, and alarms) available to operators to support operator decision making. The team also reviewed the ability of procedures in place to respond

to anomalous conditions and complete activities outside the design basis, but risk significant, such as the ability to recover alternate feedwater in the event of a fire.

A sample of Issue Reports (IR) initiated on the AFW system were reviewed to verify the licensee was identifying design issues at an appropriate threshold and entering them in the corrective action program. A selected sample of IRs were also reviewed to verify that corrective actions were being taken.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

.1 Management Meeting

The team presented the inspection results to Messrs. T. Pritchett and W. Holston, and other members of the licensee's staff at an exit meeting on January 31, 2002. The team verified that the inspection report does not contain proprietary information.

Attachment

KEY POINTS OF CONTACT

Calvert Cliffs

M. Cox	Principal Engineer, Secondary Systems Engineering Unit
M. Gahan	Supervisor, Issues Assessment
M. Geckle	Director, Nuclear Regulatory Matters
W. Holston	General Supervisor, Design Engineering
S. Mead	Operations Supervisor
B. Mrowca	Principal Engineer, Reliability Engineering
G. Pavis	General Supervisor, Technical Services Engineering
M. Polak	General Supervisor, Maintenance Support
T. Pritchett	Manager, Nuclear Engineering Department
A. Simpson	Nuclear Regulatory Matters
J. Spina	Superintendent, Nuclear Maintenance
H. Valenta	Engineering Assessment Unit Supervisor

LIST OF ACRONYMS

ADAMS	Agency-wide Document Access Management System
AFW	Auxiliary Feedwater
ES	Engineering Service Package
IR	Issue Report
NRC	Nuclear Regulatory Commission
PI&D	Piping and Instrumentation Drawings
SDP	Significance Determination Process
SE	Safety Evaluation
STP	Surveillance Test Procedure
UFSAR	Updated Final Safety Analysis Report

DOCUMENTS REVIEWED

Auxiliary Building Ventilation System Description No. 032
Auxiliary Feedwater System Description No. 36 A/B
Quarterly Surveillance Test for August 9, 2001 and November 9, 2001
License Amendment Request: Reanalysis of the Loss of Feedwater Event
Operability Determination 01-016, Auxiliary Feedwater System
Lesson Plan POC-36-1-00, Auxiliary Feedwater
Memorandum “Diesel Fire Pump Performance Assessment for “Fill and Chill” Line-up
Issue Report Risk Matrix for IR3-041-487, AIT #IR20000123
Setpoints File System 036 Unit 1
Setpoints File System 019 Unit 1
Procedure Unit 1 OI-32A, Auxiliary Feedwater System
Procedure Unit 2 OI-32A, Auxiliary Feedwater System
Procedure Unit 1 OI-32B-1, AFAS System Operation Auxiliary Feedwater System
Procedure Unit 2 OI-32B-2, AFAS System Operation Auxiliary Feedwater System
Procedure Unit 2, STP-O-9-1, AFAS Logic Test
Procedure Unit 1, STP-O-9A-1, AFAS Equipment Response Time Test
Calvert Cliffs, Units 1 & 2, Technical Specifications, Section 3.7.3. Auxiliary Feedwater System
Calvert Cliffs, Units 1 & 2, Technical Specifications Bases, Section B3.7.3. Auxiliary Feedwater System
Calvert Cliffs, UFSAR, Section 10.3, Auxiliary Feedwater System

Attachment (cont.)

Functional Evaluation 01-016, Impact on AFW system operability due to issues associated with the Loss of Feedwater analysis documented in UFSAR Chapter 14
Procedure EN-4-104, Surveillance Testing
Auxiliary Building Ventilation System Description, No. 032
Auxiliary Feedwater System Description, No. 36A/B
Auxiliary Feedwater System Quarterly Surveillance Test, Surveillance Test Procedure
Calvert Cliffs License Amendment Request: Reanalysis of the Loss of Feedwater Event letter Mr. C. Cruse to NRC, November 19, 2001.
Memo CMU-90-450, AFW Pump Room Temperatures
Calc M94-157, Aux. Bldg Ventilation Heatload to Cold Shutdown in Appendix R Fire
Calc M95-0130, Insulation Removal in Aux. Bldg with HELB.
Calc CA04467, AFW Pump Room Transient Temperature Analyses Using GOTHIC code
Calvert Cliffs Casual Analysis Handbook, Revision 0
CCNPP Unit 1, Computer Point Displays
CCNPP Station PI Notebook Computer Display Screens
Conduct of Maintenance and Reliability Improvement Project Plan, Rev. 1, dated October 24, 2001
RPA-2001-1568, Request for Procedure Activity to TURB-01, dated October 22, 2001
Vendor Technical Manual 12083-010, Steam Generator, Auxiliary Feed Pump, Rev. 45
Reptask 10362000 and 10362035, printed December 11, 2001
Letter responding to NOV Calvert Cliffs to NRC dated October 18, 2001
Fastener-01 Torquing and Fastener Applications, Revision 1
Lube-02 General Lubrication Procedure, Revision 4
MN-1-102 Preventive Maintenance Program, Revision 8
MN-1-100 Conduct of Maintenance, Revision 20
CH-1-100 Controlled Materials Management, Revision 7
QL-2-100 Issue Reporting and Assessment, Revision 15
QL-2-101 Casual Analysis, Revision 4
Turb-01 Auxiliary Feedwater Pump Turbine Overhaul, Revision 7

SURVEILLANCES

STP O-73H-2, AFW Pump Large Flow Test, performed on August 13, 2001
STP O-5A-2, Auxiliary Feedwater System Quarterly Surveillance Test performed on November 16, 2001
STP O-5A-1, Auxiliary Feedwater System performed on November 7, 2001
STP 0-5A-2, Auxiliary Feedwater System performed on August 30, 2001
STP 0-5A-1, Auxiliary Feedwater System Quarterly Surveillance Test, performed on August 9 and November 9, 2001
STP 0-5A-2, Auxiliary Feedwater System Quarterly Surveillance Test, performed on August 13 & 30, 2001
STP 0-73H-1, Auxiliary Feedwater Pump Large Flow Test, performed on April 4, 1998
STP 0-73H-1, Auxiliary Feedwater Pump Large Flow Test, performed on March 3, 2000
STP 0-73H-2, Auxiliary Feedwater Pump Large Flow Test, performed on March 13, 1999
STP 0-73H-2, Auxiliary Feedwater Pump Large Flow Test, performed on March 18, 2001

CORRECTIVE ACTIONS

IR3-052-198, SG Sludge not accounted for in calculations of SG inventory
IR3-075-582, SG reanalysis for Appendix R

Attachment (cont.)

IR3-076-958, AOP-9N change to implement fire hose hook-up
IR3-000-616, AFW flow measurement uncertainties
IR3-034-319, Margin on the AFW air accumulators
IR3-041-465, Operability of risk significant AOVs
IR3-041-487, Tech Spec basis for LCO 3.7.3 Aux feedwater deficiency
IR3-075-581, Errors in loss of feedwater analysis
IR3-075-582, Accounting for SG blowdown in Appendix R analysis
IR3-075-583, SG dryout analysis for Appendix R
IR3-082-409, SRW pump room temperature could exceed 130°F
IR3-083-193, AFW 23 discharge to fire protection fitting
IR3-084-178, Woodward governor 10 CFR Part 21 on model 2301A aging capacitors
IR3-014-692, Misalignment of hanger support 4EBB13-2002-S-3
IR3-047-102, General trend on process improvement
IR3-042-723, Slow stroke time on Unit 1 AFW control valve 1-CV-4512
IR3-017-471, Unit 1 thrust bearing preload on AFW motor driven pump

OPERATING PROCEDURES

EOP-3, Loss of all Feedwater
AOP-36, Malfunction of Main Feedwater System
AOP-71, Loss of 4KV, 480 Volt or 208/120 Volt Instrument Bus Power
EOP-8, Functional Recovery Procedure
AOP-9A, Control Room Evacuation and Safe Shutdown Due to Severe Control Room Fire

MODIFICATIONS

ES200100666-000, Vendor Drawings 15000-009 and 15000-0012 for the 13 and 23 AFW
ES200100767-000, Change Setpoints of AFW air accumulator pressure switches
ES200100566-000, Change AFW turbine bearing oil
200100767-000, Rev. 0, Change setpoints on pressure switches for AFW valve air accumulators
ES200100666-000, Alternate AFW alignment dowel pins
Calculation Units 1 and 2 AFW Pumps – NPSH and maximum allowable flows for combinations of AFW pumps

50.59 SCREENING EVALUATIONS

IR3-041-487, The tech spec basis for LCO does not sufficiently describe the testing configurations
IR3-000-616, Flow measurement uncertainties are not being appropriately factored into acceptance criteria
IR3-075-581, Methodology errors discovered during loss of Feedwater analysis
IR3-075-583, The time to S/G Dryout during and Appendix R event
IR3-052-198, SG Sludge has not been accounted for in previous calculations at the start of the Appendix R and Chapter 14 , Loss of Feedwater scenarios
IR3-075-582, During the NRC review of Appendix R issues the question was raised as to how Steam Generator blowdown is accounted for
IR3-034-319, Capture Question of Margin on the AFW air accumulators
Temporary Procedure Change to AFW Large Flow Test PR-1-101

Attachment (cont.)

MD 2200102355, Allow PMT of 23 AFW PP
ES 200100767-000, AFW pressure switch setpoint changes
ES 200100390-000, Evaluation of use of RTV sealant of No. 22 AFW pump
ES 199501141-017, Modification of instrument air tubing and supports in AFW
EN-1-102 Unit 2, Change to Procedure STP O-73H-2
ES 2001100739-000, AFW pump bearing oil change
ES 200100566-000, Change AFW turbine bearing oil from mineral to synthetic, October 24, 2001
ES 200100767-000, Change setpoints on pressure switches for AFW valve air accumulators, September 10, 2001
ES 200100666-000, Approve alternate AFW motor alignment dowel pins, August 9,2001
Revision to surveillance testing administrative controls in procedure EN-4-104

50.59 SAFETY EVALUATIONS

93-B-036-188-R00. Change AOP-9 Procedure
SE00428, Allow the use of the 13 and 23 Auxiliary Feedwater Pumps below Mode 3 for the purpose of feeding the Steam Generators
SE00430, Addition of several hand valves to isolate branch headers off the main plant air header
SE00428, Allow use of #13 or #2 AFW pumps below Mode 3 for the purpose of feeding the steam generators
SE00464, ESFAS panel door interlock circuit, disable and abandon in place
SE00460, Thimble support Plate installed 1.05" higher than per design
SE00446, Delete requirement from FSAR to report fire protection feature non-compliances
SE00444, Remove 1A and 0C EDG low lube oil sump level trip
SE00438, Modify minimum load requirements for 1A EDG
SE00436, Modify Incore Instrument flanges
SE00435, Revise Chemistry Procedure
SE00422, Temporary alteration to gag relief valve
SE00414, Main Safety Valve testing in Mode 1

DRAWINGS

64312, Simplified System Drawing Unit 1 Aux Feedwater SL-800
60583, Auxiliary Feedwater System
60722SH003, Auxiliary Building Ventilation System
60722SH002, Auxiliary Building Ventilation System
84312, Simplified System Drawing Unit 2 Aux Feedwater SL-801
61403SH0006, Accident Flowsheet Event 06 Loss of Feedwater Flow
62583, Auxiliary Feedwater
60722SH1, Auxiliary Building Ventilation System
60722SH2, Auxiliary Building Ventilation System
60722SH3, Auxiliary Building Ventilation System

ONE LINE DRAWINGS

Attachment (cont.)

15735-0005, Dual Battery Chargers
61001SH0001, Electrical Main Single Line Diagram FSAR Fig. No. 8-1, Rev. 39
61001SH0002, Diesel Generator Project Electrical Main Single Line Diagram, Rev. 5
61005, Meter and Relay Diagram 4KV System Unit Buses 11 & 14 FSAR Fig. No. 8-4, Rev. 34
61006, Meter & Relay Diagram 4KV System Unit Buses 12, 13, 15, 16, Rev. 18
61009, Single Line Meter & Relay Diagram 480V Unit Buses 11A, 11B, 14A & 14B FSAR Fig. No. 8-3, Rev. 35
61010SH0001, Single Line Meter & Relay Diagram 480V Unit Buses 12A, 12B, 13A & 13B, 15, Rev. 35
61017SH0001, Single Line Diagram Reactor 480V MCC 104R, Rev. 27
61022SH0001, Single Line Diagram 120V AC Vital System, Rev. 46
61024, Single Line Diagram 125V DC Vital System Bus 11, Rev. 48
61025, Single Line Diagram 125V DC Vital System Buses 12 and 22, Rev. 30
61033, Single Line Diagram 125V DC Vital System Bus 01 Reserve Battery System, Rev. 13
61091SH0001, Schematic Diagram, Motor Driven Fire Pump 11, Rev. 16
63005SH0001, Meter And Relay Diagram 4KV System Unit Buses 21 And 24 FSAR Fig. No. 8-10, Rev. 32
63006, Meter & Relay Diagram 4KV System Unit Buses 22, 23, 25, 26, Rev. 10
63009, Single Line Meter & Relay Diagram 480V Unit Buses 21A, 21B, 24A & 24B FSAR Fig. No. 8-11, Rev. 32
63010, Single Line Meter & Relay Diagram 480V Unit Buses 22A, 22B, 23A, 23B & 25 FSAR, Rev. 37
63022, Single Line Diagram, 120V AC Vital System, Rev. 36
63024, Single Line Diagram, 125 V DC Vital System, Bus 21, Rev. 36

LOOP DIAGRAMS

60910, Loop Diagram, Alternate Shutdown Related Circuits Unit No.1 AFWS Throttle and Misc. Control Vales, Rev. 6
62631SH0001, Loop Diagram 21 S/G AFW Flow Turb. Driven Feed Pumps 2FT4509A, Rev. 8
62631SH0002, Loop Diagram 21 S/G AFW Flow-AFAS Turb. Driven Feed Pumps 2FT4509B, Rev. 6
62631SH0003, Loop Diagram 22 S/G AFW Flow Turb. Driven Feed Pumps 2FT4510A, Rev. 9
62631SH0004, Loop Diagram 22 S/G AFW Flow-AFAS Turb. Driven Feed Pumps 2FT4510B, Rev. 5
62631SH0005, Loop Diagram 21 S/G AFW Flow-AFAS Motor Driven Feed Pump 2FT4524A, Rev. 6
62631SH0006, Loop Diagram 21 S/G AFW Flow Motor Driven Feed Pumps 2FT4524B, Rev. 7
62631SH0007, Loop Diagram 22 S/G AFW Flow-AFAS Motor Driven Feed Pump 2FT4534A, Rev. 5
62631SH0008, Loop Diagram 22 S/G AFW Flow Motor Driven Feed Pumps 2FT4534A, Rev. 7

62632SH0001, Loop Diagram Alternate Shut-Down Related Circuits Unit No.2 AFWS Throttle And Miscellaneous Control Valves, Rev. 4
62-632-C, Sh.2, Loop Diagram Alternate Shut-Down Related Circuits Unit No. 2 AFWS Throttle And Miscellaneous Control Valves, Rev. 0

LOGIC DIAGRAMS

Attachment (cont.)

60619B SH 42, Rev. 5, Steam Generator Aux. Feedwater Pump Turbine - Trip Control
60619B SH 43, Rev. 3, Steam Generator Aux. Feedwater Pump Motor Driven
60903SH0007, Logic Diagram No. 12 Steam Generator Pressure Alternate Shutdown 1PT1023C, Rev. 5
60-920-B SH.1D, 11 Steam Generator Pressure AFAS Pipe Rupture Logic 201-36-IPT4521A, Rev. 3
60-920-B SH.1E, 11 Steam Generator Pressure AFAS Pipe Rupture Logic 201-36-IPT4521B, Rev. 4
60-920-B SH.1F, Loop Diagram 12 Steam Generator Pressure AFAS Pipe Rupture Logic 1PT4531A, Rev. 4
60-920-B SH.1G, 12 Steam Generator Pressure AFAS Pipe Rupture Logic 1PT4531B, Rev. 5
62-622-B SH.1D, 21 Steam Generator Pressure AFAS Pipe Rupture Logic 202-36-IPT4521A, Rev. 3
62-622-B SH.1E, 21 Steam Generator Pressure AFAS Pipe Rupture Logic IPT4521B, Rev. 3
62-622-B SH.1F, 22 Steam Generator Pressure AFAS Pipe Rupture Logic 2PT4531A, Rev. 3
62-622-B SH.1G, 22 Steam Generator Pressure AFAS Pipe Rupture Logic 202-36-IPT4531B, Rev. 2

SCHEMATIC DIAGRAMS

61063, Schematic Diagram Auxiliary Feedwater Actuation System, Rev. 4
61079SH0026, Schematic Diagram Condensate & Feedwater Aux. Feed Pump Turb. Trip 1SV3988, Rev. 19
61079SH0026A, Schematic Diagram Condensate & Feedwater Aux. Feed Pump Turb. Trip 1SV3986, Rev. 8
61-079-B, Schematic Diagram Condensate And Feedwater Feedwater Valves Indication, Rev. 1
61079SH0029B, Schematic Diagram Stm. Gen. A.F.W. Flow Cont. Vlvs. 1CV4525 & 1CV4535 Position Indication, Rev. 4
61079SH0054A, Schematic Diagram Aux. Feedwater Motor Driven Pp #13 Motor Space Heater,
Rev. 2
61079SH0054B, Schematic Diagram Aux. Feedwater Motor Driven Pump #13, Rev. 8
61079SH0054C, Schematic Diagram Aux. Feedwater Motor Driven Pump #13, Rev. 7
61079SH0055A, Schematic Diagram Aux. Feedwater Pumps #11&12 Isol. Valves 1CV4070 & 4070A, Rev. 2
61079SH0055B, Schematic Diagram Aux. Feedwater Pumps #11&12 Isol. Valves 1CV4071 & 1CV4071A, Rev. 1
61-079-B, SH 56, Schematic Diagram Unit No. 1 Cross Connect Valve 1CV4550, Rev. 2
61-079-B, SH 57, Schematic Diagram Steam Gen. 11 & 12 Aux. Feedwater Sys. Isol. Vlvs. 1CV4520,21 & 1CV4530, 31, Rev. 4
61079SH0057C, Schematic Diagram Steam Gen. 11 Aux. Feedwater Motor Sys. Isol. Vlv. 1CV4522, Rev. 0

61079SH0057D, Schematic Diagram Steam Gen. 12 Aux. Feedwater Motor Sys. Isol. Vlv. 1CV4532, Rev. 0
61079SH0057E, Schematic Diagram Steam Gen. 11 Aux. Feedwater Motor Sys. Isol. Vlv. 1CV4523, Rev. 0
61079SH0057F, Schematic Diagram Steam Gen. 12 Aux. Feedwater Motor Sys. Isol. Vlv. 1CV4533, Rev. 0

Attachment (cont.)

61-079-B SH.59, Schematic Diagram AFW System No Flow Alarms, Rev. 3
61-079-B SH.64, Schematic Diagram AFAS Block Actuation, Rev. 2
63063, Schematic Diagram Auxiliary Feedwater Actuation System, Rev. 4
63-079-D SH.26, Schematic Diagram Condensate & Feedwater Aux. Feed Pump Turbine Trip 2CV3986 & 3988, Rev. 14
63-079-B SH.29B, Schematic Diagram Stm. Gen. A.F.W. Flow Cont. Vlvs. 2CV4525 & 2CV4535 Position Indication, Rev. 2
63079SH0054B, Schematic Diagram Aux. Feedwater Motor Driven Pump 23, Rev. 8
63-079-D SH.54C, Schematic Diagram Aux. Feedwater Motor Driven Pump #23, Rev. 3
63079SH0055A, Schematic Diagram Auxiliary Feedwater Pumps 21 & 22 Isol. Valves 2CV4070 & 2CV4070A, Rev. 1
63079SH0055B, Schematic Diagram Auxiliary Feedwater Pumps 21 & 22 Isol. Valves 2CV4071 & 2CV4071A, Rev. 1
63-079-B, SH 56, Schematic Diagram Unit No. 2 Cross Connect Valve 2CV4550, Rev. 2
63-079-B, SH 57, Schematic Diagram Steam Gen. 21 & 22 Aux. Feedwater Sys. Isol. Vlvs. 2CV4520,1,2,3 & 2CV4530, 1,2,3, Rev. 3
63-079-B SH.59, Schematic Diagram AFW System No Flow Alarms, Rev. 3
63-079-B SH.64, Schematic Diagram AFAS Block Actuation, Rev. 3
63063, Schematic Diagram Auxiliary Feedwater Actuation System, Rev. 4

ELEMENTARY DIAGRAMS

82654SH0001, AFW Pump, Control BKR 1116, Rev.13

WIRING DIAGRAMS
15735-0005, Battery Charger Outline
15735-0005, Battery Charger Alarm/Metering, Rev. 0
63101SH0043A, Connection Diagram, Isolation Panel 2C43A, Rev. 4
63101SH0043B, Connection Diagram, Isolation Panel 2C43B, Rev. 7
63101SH0043C, Wiring Diagram, Isolation Panel 2C43, Rev. 3
63101SH0043D, Wiring & Connection Diagram, Aux. Shutdown Panel 2C43, Rev. 5
87304SH0001, Panel 2C04, Computer Section, Rev. 18
87304SH0002, Panel 2C04, Computer Section, Rev. 13
87304SH0003, Panel 2C04, Computer Section, Rev. 15
87304SH0004, Panel 2C04, Computer Section, Rev.14
87304SH0004A, Panel 2C04, Computer Section, Rev. 7

Attachment (cont.)

MAINTENANCE ORDERS

2199904175, Unit 2 AFW annual maintenance of SG water level recorder
1200003531, Unit 1 AFW, investigate slow stroke time of 1CV4512, 8-10-00
1200003577, Unit 1 flush contaminated oil from outboard bearing housing 13 AFW
2200102677, Unit 2 investigate AFW flow control panel light failure
2199904175, Unit 2 annual maintenance on 2LR1114D, 21 SG water level recorder
1200004539, Unit 1 calibration check of turbine flow to 12 SG control valve signal converters
1200002895, Unit 1 motor driven AFW pump alignment check, bearing temperature check and secure bearing lube oil sample
1199904048, Unit 1 replace the outboard thrust bearing on 13 AFW pump

NDT INSPECTION TEST REPORTS

2000BV017, Exam of AFW component support H-4, R-4
2001BV012, Exam of integrally welded attachment 4EBB13-2002-S-2 to AFW piping
2001BV027, Exam of integrally welded attachment 6EBB5-2002-H8, R10, R11 to AFW piping
2001BV028, Exam of AFW component support 6EB5-2002-H8, R10 and R11
2001BV066, Exam of AFW component support 6EB-8-2001-R13, R14
2001BV065, Exam of AFW component support 6EB-8-2001-A-13-1
2001BV032, Exam of AFW component support 4EBB13-2002-S-2
2001BV015, Exam of AFW component support 4EBB13-2004-S-3