July 20, 2001

Dr. Robert C. Mecredy
Vice President, Nuclear Operations
Rochester Gas and Electric Corporation
89 East Avenue
Rochester, NY 14649

SUBJECT: R. E. GINNA NUCLEAR POWER PLANT - NRC INSPECTION REPORT 05000244/2001-005

Dear Dr. Mecredy:

On June 8, 2001, the NRC completed a Safety System Design inspection of your R. E. Ginna facility. The enclosed report documents the inspection findings which were discussed on June 8, 2001, with you, Mr. J. Widay, and other members of your staff, and on July 18, 2001, with Mr. G. Wrobel.

This 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green) which involved inadequate procedures and a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this non-cited violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Ginna facility.

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 Publically Available Records (PARS) component of the NRC's document management system (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Wayne D. Lanning, Director
Division of Reactor Safety

Docket No. 05000244
License No. DPR-18

Enclosure: Inspection Report 05000244/2001-005

cc w/encl:
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DATE	07/23/01		07/17/01		07/18/01		07/17/01		07/20/01	

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	05000244
License No:	DPR-18
Report No:	05000244/2001-005
Licensee:	Rochester Gas and Electric Corporation (RG&E)
Facility:	R. E. Ginna Nuclear Power Plant
Location:	1503 Lake Road Ontario, New York 14519
Dates:	May 21, 2001 through June 8, 2001
Inspectors:	W. Schmidt, Senior Reactor Inspector, Team Leader F. Arner, Reactor Inspector, Assistant Team Leader P. Kaufman, Senior Reactor Inspector M. Modes, Senior Reactor Inspector (second week) G. Morris, Reactor Inspector S. Pindale, Reactor Inspector (first week) A. Lohmeier, Reactor Inspector (50.59 - first week)
Approved by:	Lawrence T. Doerflein, Chief Systems Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000244-01-005, on 5/21 thru 6/8/2001; Rochester Gas & Electric (RG&E); R. E. Ginna Nuclear Power Plant, Safety System Design and Performance Capability.

The inspection was conducted by region-based inspectors. The inspection identified one Green finding which was a non-cited violation. 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/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

Green. The team determined there was no procedure to address a loss of service water (LOSW) event with offsite power available. The finding related to two LOSW transient scenarios concerning the turbine driven auxiliary feedwater (TDAFW) pump and the standby auxiliary feedwater (SAFW) pumps and the need to maintain the secondary heat removal function and prevent core damage. Neither the control room annunciator response procedures nor applicable emergency operating procedures, contained entry or transition criteria to direct the operators, following a LOSW transient, to conduct existing procedures to align temporary fire water cooling to the TDAFW pump or to align the alternate city water suction supply to the SAFW pumps.

This issue was of more than minor concern because the Ginna Phase 2 SDP worksheet assumed that following a LOSW transient the failure of operators to take the appropriate actions for TDAFW and SAFW pumps would lead to core damage. A subsequent Phase 3 SDP analysis showed that the lack of specific entry or transition criteria in procedures were of very low safety significance (Green); because operators could reasonably have been expected to maintain the secondary heat removal function. Specifically, in the sequence which required the alignment of temporary cooling water to the TDAFW pump, the pump could reasonably be expected to operate, without cooling water, for longer than the licensing basis of two hours and longer than the approximately 3.5 hours required for the condensate storage tank to reach a water level of five feet, allowing a proceduralized transfer to the SAFW pumps with the alternate city water supply. In the sequence that included the failure of the TDAFW pump to start or to run; given the frequence of the pump failure and allowing for recovery actions to restore the service water system, the operators trained in the alignment of the SAFW pumps to city water would reasonably have been effective. (Section 1R21.b, Loss of Service Water)

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 the Rochester Gas and Electric (RG&E) Nuclear Operations Group Interface Procedures that describe the process for conducting and documenting safety evaluations (SEs) for changes to facility systems, structures, and components or procedures as described in the Ginna Updated Final Safety Analysis Report (UFSAR), as required by 10 CFR 50.59.

The team reviewed selected SEs performed by RG&E. The SEs were selected from a list of changes implemented during the last year. The review was conducted to verify that the changes to the facility or procedures as described in the Updated Final Safety Analysis Report (USFAR), and test and experiments not described in the UFSAR, were reviewed and documented by the licensee in accordance with 10 CFR50.59. 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 plant change records, temporary modifications and technical evaluations for which RG&E determined that a safety evaluation was not required. This review was performed to verify that RG&E's threshold for performing safety evaluations was consistent with the requirements of 10 CFR50.59. Lastly, the team verified that the problems identified with the implementation of the safety evaluation program were entered into the corrective action program.

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 secondary heat sink systems needed to remove decay heat from the reactor coolant system (RCS) and successfully mitigate selected transients and accident scenarios. This inspection focused mainly on the auxiliary feedwater (AFW) and standby auxiliary feedwater (SAFW) systems, the atmospheric relief valves (ARVs) and main steam safety valves (MSSVs), and associated support systems, based on system performance requirements derived from the Ginna UFSAR, TS, and probabilistic risk assessment (PRA), and the NRC's Significance Determination Process (SDP), Ginna Phase 2 Worksheets. Other risk significant systems, components and operator actions needed to mitigate the selected scenarios were reviewed, encompassing: essential and station blackout (SBO) alternating current (AC) power systems; emergency and technical support center (TSC)

diesel generators and supporting systems; station and TSC direct current (DC) battery power systems; service, fire, and city water; and instrument air and nitrogen backup systems.

To determine the system performance mitigation requirements the team selected and reviewed the core-damage accident and transient analyses assumptions for sequences associated with the loss of feedwater (LOFW) transient and steam generator tube rupture (SGTR) events and transient initiators including: loss of offsite power (LOOP) and SBO, loss of service water (LOSW), and loss of instrument air (LOIA).

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, plant modifications, piping and instrumentation drawings (P&IDs), electrical schematics, instrumentation and control drawings, logic diagrams, and instrument setpoint documentation.

The mechanical design review focused on the capability of the AFW and SAFW pumps, piping, and valves to supply adequate water to the steam generators (SGs) under the design basis and transient conditions. Emphasis was placed on the turbine driven auxiliary feedpump (TDAFW) due to its risk significance in mitigating the SBO and the LOSW initiators. Selected valves with active safety functions were reviewed to ensure they could support their design function. Additionally, the current performance and test criteria for the TDAFW, motor driven AFW (MDAFW), and SAFW pumps were reviewed to ensure consistency between allowable component performance and minimum allowable capabilities assumed in the accident analyses and associated design basis calculations.

The team used the UFSAR, TS, P&IDs, and isometric drawings as references to verify the physical installation was consistent with design bases assumptions for major components, including piping, piping supports, pumps, turbine, and valves in accessible portions of the AFW, SAFW, ARV, and MSSV systems. The team also walked down supporting systems including service water, emergency diesel generators, instrument air, and nitrogen systems.

The electrical design review focused on the capability of the normal and emergency electrical power sources to supply the AFW and SAFW components and necessary supporting systems with power and the ability of associated actuation, control, and instrumentation systems to support the design basis and PRA assumptions. The team reviewed one-line diagrams, elementary diagrams, control schematics, calculations of equipment loading, load flow diagrams, and protective device setpoints. This included a review of related operating instructions, and surveillance and test procedures.

The team assessed the reliability and unavailability performance of AFW and SAFW by reviewing selected corrective and preventive maintenance work orders (WOs) over the past two years. The team also used the RG&E Maintenance Rule Program Quarterly Executive Summary Reports and Periodic Assessment and discussed system reliability and availability with the maintenance rule engineer. The team reviewed post-

maintenance testing results for various WOs to verify the demonstrated capability of the components to perform their intended safety function.

The team reviewed TS required performance data acquired during surveillance testing activities to verify that the results demonstrated the system's functional capability and met the acceptance criteria. Selected component performance data was reviewed to verify that test results reflected design conditions. The team witnessed the performance of PT-16Q-T, Auxiliary Feedwater Turbine Pump - Quarterly from the control room and field and assessed test data to verify the functional capability and operational readiness of the system.

A sample of action reports (ARs) was reviewed to verify that deficiencies associated with normal operations, and testing and maintenance activities were being properly identified and resolved in RG&E's corrective action program. This sample included two ARs which detailed problems that occurred during the inspection with the TDAFW pump flow control valves, including mis-wiring of one valve control unit during maintenance and subsequent discovery that these valves would fail as-is vice open following a LOIA.

The team reviewed operator actions assumed following the identification of transient and accident initiation conditions and the operating, monitoring, and controlling of the AFW and SAFW systems during the selected sequences to ensure effective mitigation. A review of suction sources included the condensate storage tank (CST) and the adequacy of the emergency operating procedure (EOP) setpoint utilized for swapping to alternate supplies. The team verified that normal, abnormal, and EOPs were consistent with systems design bases and PRA/SDP operating assumptions. As part of this review, the team reviewed the system interfaces (instrumentation, controls, and alarms) available to operators to support operator decision making. The team also reviewed the ability to respond to anomalous conditions and complete recovery activities including RCS feed and bleed and depressurization.

b. Findings

Loss of Service Water Transient

The team determined that the licensee did not have a LOSW procedure to respond to an intake structure or other common mode failure of the service water pumps. This finding was considered to be of very low safety significance (Green) and a non-cited violation (NCV) of TS 5.4.1 which required, as specified in Regulatory Guide 1.33, that significant events such as a LOSW will be covered by written procedures. Specifically, inadequate direction existed for the operators to ensure that the secondary heat sink would be maintained to remove decay heat from the RCS. Neither control room annunciator response procedures nor applicable EOPs, contained entry or transition criteria that directed the operators to conduct existing procedures to align temporary fire water cooling to the TDAFW pump or to align the alternate city water suction supply to the SAFW pumps.

The team determined that the lack of adequate procedural transition criteria could adversely affect the operator failure probability in completing the actions required for both the TDAFW and SAFW systems in mitigating a LOSW transient. The NRC Ginna

Phase 2 SDP worksheets for the non-SBO LOSW event contains two sequences, both of which involve the TDAFW pump or the SAFW pumps supplying water to the SG for the secondary heat sink function. [1] The sequences, following the LOSW, included:

- Operator actions for restoring temporary fire water lube oil cooling to the TDAFW system within two hours to prevent pump failure and as a backup to this, operator action to lineup to the alternate city water suction source and to start the SAFW system. The two-hour licensing basis came from the NRC's approval of a TMI Action Plan Item II.E.1.1 test, conducted in April 1981, demonstrating the ability of the TDAFW pump to operate without AC power for that period of time. [2]

- TDAFW pump failure to start or run, with the subsequent operator action to lineup the alternate city water suction source and to start the SAFW system.

Regarding the TDAFW pump, the team identified inadequate entry and transition criteria existed for aligning the temporary cooling water from the fire water header in the intermediate building following a non-SBO LOSW, which could result in a loss of the pump due to overheating. The team did not identify any annunciator response procedures or EOPs directing the operators, following a LOSW, to use EOP attachment 5.2, "Attachment Fire Water Cooling to TDAFW Pump" which directed the actual hookup of a hose between the fire header in the intermediate building and the cooling water supply. The team also found that if a common SW pump suction problem occurred, it would also affect the electric and diesel driven fire pumps located in the same structure as the SW pumps. However, the team did identify a procedure to align city water to the fire header following annunciation of a low level in the fire pump suction bays.

Regarding the SAFW system, the team found that inadequate entry and transition criteria existed for aligning the alternate city water suction to the SAFW pumps, following a LOSW, which could result in loss of the pumps due to damage from running with no suction supply. During this event, if all other sources of normal and AFW were lost, procedure FR-H.1, "Response to Loss of Secondary Heat Sink," would be utilized to restore heat removal capability. The team found that this procedure allowed only the normal valve alignment for the SAFW system utilizing the normal service water suction source. The operator performing this task would have to recognize that this normal alignment would no longer be appropriate as service water would be unavailable. The only procedural directed transition to the alternate city water supply for the SAFW pumps, per ER-AFW.1, "Alternate Water Supply to The AFW Pumps," was contained in other EOPs such as E-0, "Reactor Trip Or Safety Injection," but only after CST level reached the normal AFW pump supply switchover criterion of less than 5 feet of water. However, in the LOSW scenario, the team estimated that the CST could provide

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[1] The loss of service water resulting from an SBO was included in the NRC Ginna Phase 2 SDP- SBO sequence.

[2] NRC Letter, dated June 16, 1982, Subject: Auxiliary Feedwater System Evaluation, NUREG-0737 Item II.E.1.1 - Ginna and RG&E Letter, dated June 8, 1981, Subject: NRC Requirements for Auxiliary Feedwater Systems - Ginna

adequate suction sources for at least four hours until this criterion would be met. If the TDAFW pump failed to start or failed to run prior to this level being achieved, then the operators would not be directed to ER-AFW.1 to allow use of SAFW pumps with the alternate city water supply. If the 5-foot CST level criterion were met before TDAFW failure, the operators would be directed to ER-AFW.1 and have the choice of refilling the CSTs and continue using the TDAFW system or utilize the alternate city water to supply the SAFW system.

The team verified that the operators had received training and conducted job performance measures on the connection of the TDAFW pump temporary cooling water per the EOP attachment and on the temporary city water suction supply to the SAFW pumps per ER-AFW.1.

The NRC Ginna Phase 2 SDP worksheets stated, in part, that procedures must exist with training conducted under conditions similar to the scenario assumed, in order to credit placing the mitigating equipment in service. In this case, the team determined that procedural direction was not adequate and that mitigation of the sequences would be dependent on operator knowledge-based training. The team considered the issue to be more than minor because the LOSW transient frequency was 1.82E-4 per reactor year (Ginna IPE) and therefore considered credible. A Phase 3 SDP was initiated to determine the risk significance of this issue.

The Phase 3 SDP considered the two LOSW sequences:

- The first was the sequence that required operators to align temporary cooling water to the TDAFW pump within two hours. In evaluating this sequence, the TDAFW pump was credited with operating without cooling water past the two hours, based on additional information provided by the licensee which indicated that the TDAFW pump could reasonably be expected to operate, without cooling water, for greater than the approximately 3.5 hours required to reach 5 feet in the CST. This would allow the proceduralized transfer of the secondary heat removal function to the SAFW pump with an appropriate city water supply. Considering the initiating event frequency, the operation of TDAFW pump until the CST reached the level of 5 feet of water, and allowing for recovery actions to restore SW system, the Phase 3 SDP considered this issue to be of very low safety significance (Green).

- The second sequence was where the TDAFW pump could fail to start or fail prior to the CST 5-foot of water level, with the SAFW pumps subsequently called upon. Considering the initiating event frequency, the frequency of TDAFW pump failure to start or fail while operating prior to 3.5 hours, and the unclear procedure transfer, giving credit for the operators being trained in the alignment of the SAFW pumps to city water, and allowing for recovery actions to restore SW system, the Phase 3 SDP considered this issue to be of very low safety significance (Green).

TS 5.4.1 required establishing procedures as recommended in Regulatory Guide 1.33, which included addressing a LOSW event. Contrary to this, the team determined that there was inadequate procedural direction for a LOSW event. This is a non-cited

violation consistent with Section VI.A.1 of the NRC Enforcement Policy issued May 1, 2000 (65FR25368). **(NCV 05000244/2001-05-01)** The LOSW was considered a credible event due to its estimated frequency found within the licensee's PRA and thus the lack of adequate procedural guidance was determined to have a credible impact on safety. The licensee entered this deficiency into their corrective action program as Action Report No. 2001-0905.

4OA6 Meetings, Including Exit

.1 Management Meeting

On June 8, 2001, the team presented the preliminary inspection results to Messrs. R. Mecredy, T. Marlow, J. Widay, and other members of licensee management. On July 18, 2001, Mr. G. Wrobel was informed of the inspection results following the additional review of the LOSW procedure issue. The e-mails from the NRC to RGE requesting information, and the RGE responses, to resolve the LOSW procedure issue, have been placed in the Public Document Room (ADAMS Accession No. ML012000255). The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

Key Points of Contact

A. Butcavage	System Engineer
B. Everett	Operations Supervisor
M. Flaherty	Manger, Configurations Support
T. Harding	Licensing Engineer
G. Hermes	Manager, Reliability
G. Joss	IST Engineer
T. Miller	System Engineer
J. Pacher	Electrical/I&C System Lead
R. Ploof	Manager, Balance of Plant Systems Engineering
B. Rapin	System Engineer
P. Sidelinger	EOP Coordinator
L. Sucheski	System Engineer
P. Swidt	System Engineer
G. Wrobel,	Manager, Licensing
J. Zapetis	Maintenance Rule Engineer

List of Items Opened, Closed and Discussed

Opened/Closed

05000244/2001-05-01	NCV	Lack of Procedural Guidance for a loss of service water

List of Acronyms

AC	Alternating Current
AFW	Auxiliary Feedwater
ARV	Atomospheric Relief Valve
CST	Condensate Storage Tank
DC	Direct Current
EDG	Emergency Diesel Generator
EOP	Emergency Operation Procedures
LOFW	Loss of Main Feedwater
LOIA	Loss of Instrument Air
LOOP	Loss of Offsite Power
LOSW	Loss of Service Water
MDAFW	Motor Driven Auxiliary Feedwater
MSSV	Main Steam Safety Valve
NCV	Non-cited Violation
P&ID	Piping and Instrumentation Drawing
PRA	Probabilistic Risk Assessment
RCS	Reactor Coolant System
RG&E	Rochester Gas and Electric
SAFW	Standby Auxiliary Feedwater
SBO	Station Blackout
SDP	Significance Determination Process
SE	Safety Evaluation
SG	Steam Generator
SGTR	Steam Generator Tube Rupture
SW	Service Water
TDAFW	Turbine Driven Auxiliary Feedwater
TS	Technical Specification
TSC	Technical Support Center
UFSAR	Updated Final Safety Evaluation Report
WO	Work Order

Documentation Reviewed

50.59 Inspection:

Nuclear Operations Group Interface Procedures

IP-DES-2 - Revision 13	Plant Change Process
IP-DES-3 - Revision 7	Temporary Modifications
IP-SEV-1 - Revision 5	Preparation, Review and Approval of Safety Evaluations
IP-SEV-2 - Revision 7	Preparation, Review and Approval of Safety Evaluations
IP-CON-4- Revision 1	Probabilistic Safety Assessment (PSA) Evaluation Request

Plant Change Requests

1998-0001	Check Valves 753A/B Test Connections (Systems 02,09)
1998-0103	Pressurizer Heater Repair/Reconfiguration (Systems 02,22)
1999-0043	CCW Heat Exchanger SW Gauge Installation (Systems 08,09)
1999-0055	Level Indicator for RWST (System 05)
1999-0065	V-9519E Leak-off Line Installation (System 81)
1999-0069	Tank Level Control Valve Seal Drain Valve Replacement (System 84)
1999-0071	Main Condenser Inlet Water Box Drain Valves (Systems 88,84)
1999-0072	EDG Lube Oil Jacket Water Heat Exchanger Flush Connections (Systems 65,08)
1999-0086	CVCS Demineralizer DP Indicators' Installation (System 07)
1999-0089	MS Non-Return Check Valve Upgrade (System 81)
2000-0012	Reconnect Outlet Drain Piping to Valve 281B (System 07)
2000-0021	Sleeve Addition to Cooling Piping on TSC Diesel (System 62)
2001-0014	Spacer Addition for Valve 1127 Replacement (System 07)

Temporary Modifications

1999-0020	Temporary Leak Repair for MSIV 3517 (System 81)
1999-0025	Zebra Mussel Sample Station
1999-0034	MFW Bypass Regulation Installation (System 84B)
2000-0001	Leak Repair of Valve 3334B 2B MSR Drain level Control System (System 86)
2000-0007	SG "A" Blowdown Corrosion Sampler
2000-0008	Leak Repair Clamp on Inlet Side of V-3972
2000-0009	Temporary Instrumentation Air Supply to Containment for 2000 Outage
2000-0010	Containment Tendon Grease Filling Piping Leak Repair in 1B Basement
2000-0023	Leak Repair of AOV 3333A (System 86)
2001-0003	Condensate System Corrosion Product Samplers
2001-0005	Heater Drain Pump Seal Water Injection Monitoring and Flow Control System

Technical Evaluations

2000-0036	Evaluation of Additions to PACO2A/B CVCW Pump Bearing Covers (System 09)
2000-0041	WGHS DB Breaker Seismic Upgraded Inertia Latch (System 62)
2000-0044	Evaluation of Condition Found in Containment Exterior Concrete (System 21)

2000-0056 304 Stainless Equivalency Evaluation to 303 SS (System 21)
2000-0057 Material Change on Lower Housing of Regulating Valves EIN 5979 (System 65)
2000-0060 Evaluation of Dow Corning Silicone Sealants (System 21)

Safety Evaluations

1149 Rev 2 Containment Tendon Grease Filler Pipe Leak Repair
1156 Rev 0 Temporary Cooling Water to Various Service Water Loads
1162 Rev 0 Pressurizer Heater Inspection and Repair ((PCR 98-103)
1166 Rev 0 Material Change for Service Water Pump Impellers and Wear Rings
1167 Rev 0 Modification to Reduce Potential for Pressure Locking of RHR Valves
1179 Rev 0 Control Rod Drive Cabinet Temporary Air Conditioning Unit

Containment Tendon Surveillance Program

Procedure No. PT-27.2 Rev 21 Containment Tendon Surveillance Program

SSDI Inspection:

Work Orders

19902143 Auxiliary Feedwater Pump A - Inspect/Repair
19902378 Position Indication for Both Check Valves 3504B & 3505B
20002565 Erratic Valve Operation Noted During PT-2.6.6
20003033 AOV-4310 is leaking a small amount of water when closed
20003267 Packing Leakage on TDAFW Discharge Valve
20003321 FI-2022B Spiked to -25 GPM When “A” MDAFW Pump was Secured
20101299 Controller Potentiometer for AOV 4297 Operates Roughly

Action Reports

1998-0189 Failure of Relief Valve RV-4657
1998-0334 Activation of Pressurizer PORV-430
1998-0742 RV-4770A Failed the As Found Pop Test
1998-1629 Start of “B” EDG due to Loss of Circuit 751
1999-0794 Premature Opening of V-3505 During MOVATS of MOV-3505A
1999-0794 Inadvertent start of TDAFW pump
1999-1157 Noticeable Steam/Water Hammer on TDAFW Pump Start
1999-1802 AOV-4310 did not open within the required band
1999-2145 AOV-4304 is opening at too high a flowrate per surveillance procedure
1999-2812 SW flow to TDAFW pump thrust bearing has significantly decreased
2000-0105 AOV-4310 did not respond correctly during surveillance
2000-0201 Valve 9704B Re-pack Unsuccessful
2000-0789 Operator assumed actions times are not consistent with EOP procedure priority
2000-0970 Stroke Time Limits on IST Summary Inconsistent
2000-1484 FI-4084B reading flow with pump secured
2000-1505 AFW flow indicator 2021A indicating high
2000-1576 ‘A’ AFW flow indicators reading greater than zero with pump secured

2000-1731 FI-2030 'B' AFW flow transmitter failed to return to zero flow following test
2001-0638 Lube Oil Sample Analysis Evaluating for Proper Attributes
2001-0873 AOV-4297 Controller Works Backwards
2001-0890 AOV-4297 and 4298 Fail As Is Vice Open As Shown on P&ID
2001-0947 MDAFW Pump Acceptance Criteria May Not Be Conservative
2001-0948 TDAFW Pump Acceptance Criteria May Not Be Conservative
2001-0949 SAFW Pump Acceptance Criteria May Not Be Conservative
2001-0957 UFSAR and MOV Testing may not be consistent

Self-Assessment Reports

Quarterly Executive Summary Reports for the Auxiliary Feedwater system - 3rd and 4th quarter 2000 and 1st quarter 2001.

Periodic Assessment of the R. E. Ginna Maintenance Rule Program for the period April 22, 1999 through October 19, 2000, dated July 30, 1999.

Periodic Assessment of the R. E. Ginna Maintenance Rule (MR) Program for the period November 1997 through April, 1999, dated March 1, 2001.

Industry Operating Experience

INPO Significant Event Report, SER 2-01, March 13, 2001, Emergency Diesel Generator Failure Resulting from Inadequate Performance Monitoring and Inadequate Response to Symptoms of Impending Failure

Design Drawings
33013-1231 rev. 29 Main Steam
33013-1237, rev. 41 Auxiliary Feedwater
33013-1238, rev. 19 Standby Auxiliary Feedwater
33013-1893, rev. 14 Instrument Air, Intermediate Building
33013-2285, rev. 11 Motor Driven and Turbine Driven AFW Pumps Lube Oil Skid
10904, (multiple sheets) - Motor Control Center Schedules
10905, (multiple sheets) - Elementary Wiring Diagrams for AFW and SAFW
21946, (multiple sheets) - Control Schematics for the EDG

Isometric:
C-381-352, AFW Piping in the Intermediate Building

Engineering Calculations and Design Changes

0499-M-02	Hydraulic Model Of AFW System, Rev.3
Calc 128	Ginna CST Switchover Level
DA-EE-95-0108-06	MOV-3996 TDAFW Discharge Valve Modification, Rev. 0
DA-EE-92-111-01	DG A Dynamic Loading Analysis, Rev 1
DA-EE-92-112-01	DG B Dynamic Loading Analysis, Rev 1
DA-EE-92-120-01	DG B Steady State Loading Analysis, Rev 3
DA-EE-93-006-08	480 V Undervoltage Relay Sellings and Test Acceptance Criteria, Rev 1
DA-EE-93-104-07	480 V Coordination and Circuit Protection Study, Rev 2

DA-EE-96-005-07	MCC Coordination Analysis, Rev 9
DA-EE-96-068-03	Offsite Power Load Flow Study, Rev 1
DA-EE-97-069	Sizing of Vital Batteries A and B, Rev 2
DA-EE-99-047	125 VDC System Loads and Voltages, Rev 1
DA-ME-89-0002	Inservice Testing Check Valve Full Flow Rates, Rev. 2
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