

# Ginna

## 2Q/2010 Plant Inspection Findings

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### Initiating Events

**Significance:**  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Correctly Implement Chemical and Volume Control System Water Transfer Procedure**

The inspectors identified a self-revealing NCV of Technical Specification (TS) 5.4.1.a, "Procedures," when an auxiliary operator did not correctly implement procedure S-7M, "Transferring Refueling Water Storage Tank to Any Chemical and Volume Control System Holdup Tank (HUT)," Revision 000, and close valve V-8661, "Spent Fuel Pool (SFP) Recirculation Pump 'B' Discharge Isolation Valve," as specified by step 5.1.21. As a result, an estimated 3,000 gallons of water was inadvertently transferred from the SFP to the 'B' and 'C' HUTs which caused the 'B' SFP pump to automatically trip, and the SFP level to decrease an estimated 5 inches. Ginna implemented several corrective actions including a requirement for operators to conduct a pre-job brief before transferring water with marked-up system prints showing the intended flow path and water transfers are to be observed by a senior reactor operator or a shift technical advisor. Ginna entered this issue into their corrective action program for resolution.

This finding is more than minor because it is associated with the Initiating Events Cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined that the finding was of very low safety significance (Green), because the finding did not increase the likelihood of a loss of reactor coolant system (RCS) inventory, degrade the ability of Ginna to terminate a leak path or add RCS inventory when needed, nor degrade the ability to recover residual heat removal. This finding has a cross-cutting aspect in the area of human performance because operators did not adhere to the procedural requirements outlined in S-7M and close valve V-8661 prior to initiating the water transfer (H.4.b per IMC 0305).

Inspection Report# : [2009004](#) (pdf)

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### Mitigating Systems

**Significance:**  Jun 11, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Take Adequate Corrective Actions for Elevated Chlorides in the 'A' EDG Jacket Water Heat Exchanger**

The team identified an NRC-identified finding of very low safety significance associated with a non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," in that measures were not established to assure that a condition adverse to quality was promptly identified and corrected. Specifically, after Ginna identified that monthly samples of the emergency diesel generator (EDG) jacket water system were not being taken and analyzed for chlorides and fluorides, a sample was not taken and analyzed for approximately 5 months. Additionally, after the analysis indicated that the chlorides were over twice the procedural limit, Ginna did not increase the chloride sampling frequency, did not take action to return the chlorides to within specifications, and did not complete an analysis for long term effects on the EDG as required by chemistry procedure CH-138, "Closed Cooling Water Systems Chemistry Optimization Plan," Revision 1. Ginna's corrective actions included evaluating the degradation of the 'A' EDG jacket water due to the elevated chloride level in the 'A' EDG jacket water heat exchanger exceeding 90 days and developing a plan to reduce the chloride level to within specification.

This finding is more than minor because if left uncorrected, elevated chloride levels in the 'A' EDG jacket water system could lead to a more significant safety concern. Specifically, elevated chlorides in the 'A' EDG jacket water heat exchanger could lead to degradation of the jacket water heat exchanger through stress corrosion cracking and impact the reliability of the 'A' EDG. This finding is associated with the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The team determined that the finding was of very low safety significance (Green), because it was not a design or qualification deficiency confirmed not to result in loss of operability; did not result in a loss of safety function; and did not screen as potentially risk significant due to a seismic, flooding, or a severe weather initiating event. This finding has a cross-cutting aspect in the area of problem identification and resolution because Ginna did not take appropriate actions to address the elevated chloride level in the 'A' EDG jacket water system.

Inspection Report# : [2010006](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Demonstrate the Performance of the Diesel Air Compressor was Being Effectively Controlled Through Preventive Maintenance**

The inspectors identified an NCV of 10 CFR 50.65, "Maintenance Rule (MR)," paragraph (a)(2), when Ginna did not demonstrate that the performance of the diesel-driven service air compressor was being effectively controlled through preventive maintenance. Specifically, Ginna did not fully evaluate whether failures of the diesel-driven air compressor that occurred in October 2006 justified monitoring under paragraph (a)(1) of the MR. Ginna reassessed the October events and determined that both events were functional failures and one event was a maintenance preventable functional failure. Ginna subsequently determined that the air compressor should have been placed in category (a)(1) of the MR as specified by 10 CFR 50.65. Ginna's corrective actions included modifying procedures to identify the operations department as the responsible department for maintaining fuel level in the compressor, establishing a monitoring frequency for fuel level, and providing direction for refueling the compressor. Additional corrective actions included documenting and monitoring the compressor run times to ensure the fuel filter replacement frequency of 250 hours is not exceeded.

This finding is more than minor because it is associated with the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined the finding was of very low safety significance (Green) using Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." Specifically, the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. Since this performance deficiency occurred in 2006 and does not reflect current performance, no cross-cutting aspect was assigned.

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Correctly Implement Containment Closeout Procedure**

The inspectors identified an NCV of Technical Specification 5.4.1.a, "Procedures," when Ginna personnel did not correctly implement procedure A-3.1, "Containment Storage and Closeout Inspection," Revision 04200, and restrain or remove loose debris from containment prior to entering Mode 4, and verify that process instrumentation tubing, sample tubing, and their supports were properly clamped and were not leaking or bent. On September 30, 2009, during a walkdown of containment with the plant in Mode 3, the inspectors identified a large amount of loose debris that had not been removed prior to entering Mode 4. In addition, the inspectors identified several examples where process instrumentation tubing was not properly supported. Ginna implemented several corrective actions including removing the debris and either repairing the instrument tubing that was degraded or performing an engineering analysis of the degraded condition and determining it did not require repair prior to plant startup. A subsequent Ginna engineering analysis determined that the debris left in containment and the missing tubing supports did not adversely

impact operability of the safety-related systems or components in containment. These issues were entered into Ginna's corrective action program for resolution.

This finding is more than minor because it is associated with the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined that the finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent a loss of system safety function or train, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. This finding has a cross-cutting aspect in the area of human performance because Ginna did not adhere to the procedural requirements specified in A-3.1 (H.4.b per IMC 0305).

Inspection Report# : [2009005](#) (pdf)

**Significance:** **W** Oct 07, 2009

Identified By: Self-Revealing

Item Type: VIO Violation

**Failure to Preclude Recurrence of a Significant Condition Adverse to Quality Associated with the Turbine-Driven Auxiliary Feedwater Pump Governor Control Valve**

A self-revealing apparent violation (AV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for the failure to preclude recurrence of a significant condition adverse to quality (SCAQ) associated with the turbine-driven auxiliary feedwater (TDAFW) pump governor control valve. Specifically, after identifying corrosion of the governor control valve stem in April 2005, Ginna did not take adequate corrective actions to preclude the recurrence of corrosion which led to the binding of the governor control valve and failure of the TDAFW pump on July 2, 2009. In addition, the inspectors concluded that governor control valve stem binding was the likely cause of the failure of the TDAFW pump on May 26, 2009. The overspeed trip of the TDAFW pump on May 26, 2009, was originally determined by Ginna to be failure of the governor control system relay valve. Governor control valve stem corrosion is a SCAQ because corrosion of the stem can lead to governor control valve stem binding and failure of the TDAFW pump as discussed in NRC Information Notice 94-66: "Overspeed of Turbine-Driven Pumps Caused by Governor Valve Stem Binding" and other related industry operating experience documents. Immediate corrective actions included entering this condition in the corrective action program (CAP), conducting a root cause analysis (RCA), replacing the governor control valve stem, and conducting weekly monitoring of the governor control valve during surveillance testing to identify any potential for stem binding. In addition, corrective actions included a follow-up inspection of the governor control valve during the fall 2009 refueling outage. Ginna will continue to monitor the governor control valve under an enhanced TDAFW surveillance program to ensure TDAFW pump operability.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, stem corrosion caused binding of the governor control valve and led to the failure of the TDAFW pump. This finding was assessed using IMC 0609 and preliminarily determined to be White (low to moderate safety significance) based on a Phase 3 analysis with a total (internal and external contributions) calculated conditional core damage frequency (CCDF) of 8.6E-6. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Ginna did not implement a CAP with a low threshold for identifying issues completely, accurately, and in a timely manner commensurate with their safety significance [P.1(a) per IMC 0305]. Specifically, Ginna did not identify issues associated with corrosion of the governor control valve within the CAP.

Inspection Report# : [2009008](#) (pdf)

**Significance:** **G** Oct 07, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Corrective Actions Associated with Steam Admission Valve Leakage**

A self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for the failure to establish adequate measures to correct a longstanding issue associated with steam admission valves leakage. As a result, the leakage most likely contributed to the build-up of corrosion on the TDAFW

pump governor control valve stem and contributed to the failure of the TDAFW pump on May 26, 2009, and on July 2, 2009. The steam admission valves had been leaking since at least 2005. However, Ginna did not take adequate measures to correct the leakage or minimize the impact of the leakage on governor control valve performance. Immediate corrective actions included entering this condition in the corrective action program, conducting a root cause analysis, replacing the governor control valve stem, and conducting weekly monitoring of the governor control valve during surveillance testing to identify any potential for stem binding. Additionally, the steam admission valves were inspected and re-worked and the governor control valve was inspected during the fall 2009 outage. Ginna will continue to monitor the governor control valve under an enhanced TDAFW surveillance program to ensure TDAFW pump operability. Planned corrective actions include replacing the steam admission valves in May 2011.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, leakage through the steam admission valves can result in continuous wetting of the governor control valve stem and lead to or accelerate corrosion of the governor control valve. This could result in a stem binding of the governor control valve and failure of the TDAFW pump. The inspectors evaluated the significance of this finding using IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The finding is of very low safety significance because it is not a design or qualification deficiency, did not represent a loss of a safety function of a system or a single train greater than its technical specification (TS) allowed outage time, and did not screen as potentially risk significant due to external events. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Ginna did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary, in a timely manner, commensurate with their significance [P.1(c) per IMC 0305]. Specifically, Ginna did not thoroughly evaluate the potential effect of the steam admission valve leakage on the governor control valve performance.  
Inspection Report# : [2009008](#) (pdf)

**Significance:**  Oct 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Establish Design Control Measures Associated with the Turbine-Driven Auxiliary Feedwater Pump Governor Control Valve**

The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the failure to establish measures to ensure that a modification performed on the governor control valve bushing was a suitable application of materials for the TDAFW pump. During a review of the RCA associated with the TDAFW pump failures, the inspectors noted that Ginna did not consider the potential impact of removing some of the hardened layer of the bushing on the corrosion rate of the governor control valve. Following concerns raised by the inspectors, Ginna inspected the governor control valve bushing during the fall 2009 refueling outage and observed corrosion of the bushings. Ginna noted that the corrosion of the bushings appeared to have been caused by the lapping of the bushing to achieve the increased clearance between the stem and the bushings. Immediate corrective actions following the inspection of the governor control valve during the fall 2009 refueling outage included entering this condition in the CAP and refurbishing the governor control valve with a new stem and bushing.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, lapping of the valve bushing resulted in an unanticipated corrosion mechanism of the governor control valve that impacted the reliability of the TDAFW pump. The inspectors evaluated the significance of this finding using IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The finding is of very low safety significance because it is a design or qualification deficiency confirmed not to result in the loss of operability or functionality. The inspectors determined that this finding has a cross-cutting aspect in the area of Human Performance, Decision Making, because Ginna did not make a safety-significant or risk-significant decision using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety was maintained [H.1(a) per IMC 0305]. Specifically, Ginna did not use a systematic process such as an engineering evaluation to properly evaluate the potential impact of removing some of the hardened layer of the bushing. [H.1(a) per IMC 0305]

Inspection Report# : [2009008](#) (pdf)

**Significance:** G Sep 30, 2009

Identified By: NRC

Item Type: FIN Finding

**Did Not Provide Adequate Compensatory Guidance to Verify Condensate Storage Tank Operability**

The inspectors identified a Green finding of very low safety significance when Ginna failed to ensure adequate procedures were developed to support implementation of compensatory measures for a degraded condition associated with the condensate storage tanks (CSTs). The CSTs at Ginna have flexible bladders installed on top of each tank to minimize air infiltration. On March 7, 2007, Ginna discovered that the bladders had degraded which allowed water to accumulate on top of the bladder surface. Ginna performed an operability determination (OD) that limited the amount of water that was allowed to accumulate on the bladder surface because it could bias the CST level indication system. The inspectors determined that Ginna did not provide operators with adequate procedures, equipment, and training to verify the OD leakage limits were met as specified by CNG-OP-1.01-1002, "Conduct of Operability Determination/Functionality Assessments," Revision 0000. Ginna's corrective actions included increasing the pump down frequency on the CST and verifying the leakage was within the limits specified in the OD. Ginna entered this issue into their CAP for resolution.

This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent core damage. The inspectors determined that the finding was of very low safety significance (Green) because it did not result in a loss of safety function and did not screen as potentially risk significant due to a seismic, flooding, or a severe weather-initiating event. This finding has a cross-cutting aspect in the area of human performance because Ginna did not ensure that complete, accurate, and up-to-date design documentation and procedures were available (H.2.c per IMC 0305).

Inspection Report# : [2009004](#) (*pdf*)

**Significance:** G Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Meet Technical Specifications for Inservice Testing Requirements**

An NRC-identified NCV of TS 5.5.7, "Inservice Testing (IST) Program," was identified when Ginna failed to implement the IST program in accordance with relief request GR-2. Relief request GR-2 states that if any limiting value is exceeded, the valve is immediately declared inoperable and the appropriate technical specification (TS) action statement is entered, if applicable. However, because only the high limiting value for stroke time was contained in the surveillance procedure, plant personnel did not identify that a valve did not meet the low IST limiting value for stroke time. As a result, Ginna did not declare turbine-driven auxiliary feedwater (TDAFW) recirculation valve, air-operated valve (AOV) 4291, inoperable until 9 days after it exceeded the IST low limiting value. Ginna's corrective actions included issuing an operations night order which provided instructions that after valve stroke timing was complete, the shift technical advisor or control room supervisor shall compare the stroke times to the action limit low and high values in Ginna's IST summary document prior to exiting the TS limiting condition for operation. Ginna entered this issue into their corrective action program (CAP) for resolution.

This finding was more than minor because additional unavailability of the auxiliary feedwater (AFW) system was accrued due to retesting AOV-4291 and Ginna's failure to include action limits and low limiting values for valve stroke timing in surveillance procedures is programmatic in nature and is not isolated to STP-O-16Q-T, "AFW Turbine Pump – Quarterly," Revision 00200, or TDAFW recirculation valve, AOV-4291. Therefore, if left uncorrected, this finding could become a more significant safety concern due to the potential not to detect valve degradation which could impact valve operability. This finding also affected the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. This finding has a very low safety significance because the conditions did not result in an actual failure of the TDAFW recirculation valve or a loss of safety function, and it did not screen as potentially risk significant due to a seismic, flooding, or a severe weather-initiating event. The inspectors determined the finding had a cross-cutting aspect related to appropriate corrective actions in the CAP component of the problem identification and resolution area because Ginna did not take appropriate action to address this issue when it was identified on June 19, 2009, and documented in CR 2009-4248 (P.1.d. per IMC 0305).

**Significance:** **W** Mar 31, 2009

Identified By: Self-Revealing

Item Type: VIO Violation

### **Failure to Properly Lubricate Governor Linkage**

The inspectors identified an violation of Technical Specification 5.4.1.a, “Procedures,” for the failure of the licensee to implement an effective preventive maintenance (PM) program for the turbine-driven auxiliary feedwater (TDAFW) pump governor linkage. Specifically, procedure M-11.5C, “AFW Pump Minor Mechanical Inspection and Maintenance,” Revision 29, which includes steps for cleaning and lubricating the TDAFW pump governor linkages, was not properly implemented. The cleaning and lubrication steps were inappropriately deleted during the work planning process for the PM scheduled on the TDAFW system. As a result, the governor linkages were not lubricated during the March 2008 maintenance period, which directly contributed to the failure of the TDAFW pump as demonstrated by testing performed on December 2, 2008. Ginna’s planned corrective actions include increased frequency of testing to validate the identified root cause and appropriate resolution, upgrades to the maintenance procedure for disassembly and lubrication of bearing wear surfaces and linkages, and guidance on the type of lubricant to use. In addition, corrective actions include enhancements to the scope of minor maintenance requirements on the TDAFW pump to ensure that the linkage cleaning and lubrication is not missed, and establishing a 9-year periodicity to rebuild the governor and associated linkages.

The inspectors determined that this finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to perform adequate maintenance resulted in the inoperability of the TDAFW pump. This finding was assessed using IMC 0609 and preliminarily determined to be White based on a Phase 3 analysis with a total (internal and external contributions) calculated conditional core damage frequency (CCDF) of 8.8E-6. This finding has a cross-cutting aspect in the area of human performance because Ginna did not establish appropriate controls to assess how changes to the TDAFW PM program would impact operation of the TDAFW system (H.3.b per IMC 0305).

Inspection Report# : [2009002](#) (pdf)

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## **Barrier Integrity**

**Significance:** **G** Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Inadequate Selection of Alternating Current-Powered Relays in Control Room Emergency Air Treatment System Fan Control Logic**

A self-revealing NCV of 10 CFR 50, Appendix B, Criterion III, “Design Control,” was identified for Ginna’s failure to select a suitable relay in the design of control room emergency air treatment system (CREATS) actuation and sequencing logic which led to the inoperability of both trains of CREATS fans. On September 16, 2009, while operating in Mode 5, Ginna completed emergency diesel generator (EDG) load and safeguard sequence testing. This testing included placing the CREATS in service followed by initiation of a simulated safety injection (SI) signal concurrent with a loss of offsite power (LOOP) condition. Both trains of CREATS fan breakers tripped and did not sequence on as required. The CREATS fan breakers tripped on over-current due to a design deficiency that incorrectly utilized both alternating current (AC)-powered relays and direct current (DC)-powered relays in the CREATS SI and LOOP actuation logic circuitry. Ginna’s corrective actions included changing the AC-powered relays to DC-powered

relays to eliminate the design deficiency.

This finding is more than minor because it affected the design control attribute of the Barrier Integrity Cornerstone objective of maintaining radiological barrier functionality in the control room. The inspectors determined that the finding was of very low safety significance (Green) using IMC 0609, Appendix A, “Determining the Significance of Reactor Inspection Findings for At-Power Situations.” Specifically, the finding only represented a degradation of the radiological barrier function provided for the control room. Since the CREATS was designed and implemented in 2004, this finding does not reflect current licensee performance and there is no cross-cutting aspect.

Inspection Report# : [2009005](#) (*pdf*)

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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## **Public Radiation Safety**

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## **Physical Protection**

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## **Miscellaneous**

Last modified : September 02, 2010