Ginna
3Q/2010 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Sep 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Adequately Assess the Risk of Technical Support Center Inverter Maintenance
The inspectors identified a very low safety significance (Green) non-cited violation (NCV) of 10 CFR 50.65, "Maintenance Rule," paragraph (a)(4), when Ginna did not perform an accurate risk assessment prior to removing the technical support center (TSC) battery charger and fire system S01, suppression for the auxiliary building basement cable trays, from service, which resulted in an underestimation and lack of awareness of the risk during these maintenance activities. Ginna's corrective actions included immediately updating their risk model to reflect the actual plant configuration. When re-evaluated, the core damage frequency risk, during the maintenance, increased from low to medium.

The finding is more than minor because if the overall risk had been correctly assessed, it would have placed Ginna into a higher risk category. The finding is associated with the configuration control 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. The inspectors determined that the finding is of very low safety significance because the incremental core damage probability deficit was less than 1.0E-6. This finding has a cross-cutting aspect in the area of human performance, work control, in that Ginna operators were not fully apprised of the work status of the TSC inverter work and its operational impact (H.3.b per IMC 0310).

Inspection Report# : 2010004 *(pdf)*

Significance: G Sep 30, 2010
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Identify Five Pumps in the Inservice Testing Alert Range
A self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was determined based on Ginna's failure to identify that vibration data exceeded the inservice testing (IST) acceptance criteria for five pumps. On June 30, 2009, Ginna identified that the 'B' residual heat removal (RHR) pump vibration data had exceeded the required action range for IST criteria for the previous four surveillance tests due to vibration data being incorrectly measured and analyzed. Ginna's apparent cause evaluation documented that an extent of condition review was completed which identified all the additional components that were unknowingly in the IST alert or required action range from May 2008 to June 2009. On August 4, 2010, Ginna tested the 'A' motor-driven auxiliary feedwater pump and determined that it was in the alert range for inboard bearing vibration. During their analysis, Ginna discovered that during the last comprehensive test in October 2008, the same vibration point was in the IST alert range. This had not been identified during Ginna's previous extent of condition review. Subsequently, Ginna performed another extent of condition review and identified that four other components were outside the vibration acceptance criteria and in the alert range. Ginna's immediate corrective actions included entering this issue into their corrective action program (CAP) and verifying that all other IST pumps were within the IST acceptable range.

This finding is more than minor because it was repetitive and it affected a number of pumps. The finding is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. 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 safety function, 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 problem identification and resolution, CAP, in that Ginna did not thoroughly evaluate IST program vibration data during their extent of condition review conducted in 2009 as a result of the 'B' RHR pump exceeding the IST required action range (P.1.c per IMC 0310).
Inspection Report# : 2010004 *(pdf)*

Significance: G 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: G 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: G 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.

A supplemental inspection (95002) was completed on July 23, 2010 to assess Constellation’s evaluation associated with three turbine-driven auxiliary feedwater (TDAFW) pump failures which resulted in two White inspection findings, and a related White performance indicator (PI). No findings of significance were identified. The licensee’s primary equipment cause was inadequate governor control linkage maintenance and control valve binding caused by valve leakage and corrosion. The licensee identified organizational causes related to a lack of rigor and depth in preventive maintenance scoping, technical detail and procedural guidance for maintenance, vendor manual maintenance, and corrective action program implementation. The licensee also identified that critical decision-making team members and team leads did not challenge the use of inadequate investigative evidence and did not effectively review and challenge the failure-modes analyses. The licensee’s collective review identified additional causes related to station responses to emerging issues and their resolution.

Constellation has taken or planned appropriate actions to address the root and contributing causes. These actions include maintenance, material and equipment changes to the TDAFW pump control valve, linkage and steam admission valves, and process changes to critical PI&R programs. The inspectors determined that the licensee’s identified actions, including the scope and timing of remaining planned actions, are appropriate to address the identified causes. The inspectors determined overall that Constellation performed a comprehensive evaluation of the individual and collective causes of the three White issues. The NRC determined that no additional agency follow-up beyond the baseline inspection program is necessary.

Inspection Report# : 2009008 *(pdf)*
Inspection Report# : 2010007 *(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: G 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)*

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)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

Last modified : November 29, 2010