

# Watts Bar 1

## 1Q/2015 Plant Inspection Findings

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### Initiating Events

**Significance:** G Sep 30, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Perform an Adequate Post Maintenance Test Results in Draining of the Unit 1 RWST to a Level Below Technical Specification Limit (Section 1R19)**

A Green self-revealing finding was documented by the inspectors for the licensee's failure to adequately perform a post maintenance test for Design Change Notice (DCN) 60683, Stage 8, resulting in draining approximately 3300 gallons of radioactive contaminated water from the Unit 1 refueling water storage tank into the auxiliary building. The inspectors determined that the licensee's failure to implement an adequate post maintenance test for DCN 60683, install new connections for Fukushima modifications, as required by NPG-SPP-06.9.3, Revision 5, Plant Modification Testing, was a performance deficiency.

The performance deficiency was determined to be more than minor because it adversely affected the Design Control attribute of the Mitigating Systems cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to implement an adequate post maintenance test resulted in the inoperability of the Unit 1 RWST. Using the screening worksheet of IMC 0609, Appendix A, Exhibit 2 – Mitigating Systems Screening Questions, the inspectors determined that the finding was of very low safety significance (Green) because the resulting loss of Unit 1 RWST inventory was restored within the Technical Specification allowable time. The cause of the finding was directly related to the aspect of work management in the Human Performance cross-cutting area because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority. [H.5]

(Section R19)

Inspection Report# : [2014004](#) (*pdf*)

**Significance:** G Jun 30, 2014

Identified By: NRC

Item Type: FIN Finding

#### **Failure to comply with design drawing results in a reactor trip**

An NRC-identified finding was documented by the inspectors for the licensee's failure to comply with a design drawing during a modification resulting in a trip of Unit 1 reactor.

The inspectors determined that the licensee's failure to properly implement Design Change Notice (DCN) 52295, complete bus differential wiring for main bus 2, as required by NPG-SPP-09.3, Revision 17, Plant Modifications and Engineering Change Control, was a performance deficiency. The performance deficiency was determined to be more than minor because it adversely affected the objective of the Initiating Events cornerstone to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to correctly translate design drawings to implementing work order 08-816022-006 resulted in Unit 1 experiencing a 100% load rejection and reactor trip. Using the screening worksheet of IMC 0609, Appendix A, Exhibit 1 - Initiating Events Screening Questions, the inspectors determined that the finding was of very low safety significance (Green) because the resulting transient was within the design basis for Unit 1 and all plant systems functioned as required to place the unit in a stable, hot standby condition. The cause of the finding was directly related

to the aspect of work management in the Human Performance cross-cutting area because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority. [H.5] (Section 40A3)

Inspection Report# : [2014003](#) (*pdf*)

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## Mitigating Systems

**Significance:**  Mar 04, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure To Perform An Adequate Water Hammer Test**

The NRC identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to perform an adequate test to verify that anticipated water hammer forces would not exceed design limitations at high points in the essential raw cooling water piping associated with the upper containment coolers (UCC). This issue was entered into the licensee’s corrective action program as problem evaluation report 981278 and an operability determination was performed that provided reasonable assurance of operability while corrective actions are being evaluated.

The licensee’s failure to perform an adequate test to verify that anticipated water hammer forces would not exceed design limitations at high points in the essential raw cooling water piping associated with the UCCs was determined to be a performance deficiency. The team determined that the performance deficiency was more than minor because it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), and the SSC maintained its operability. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2015007](#) (*pdf*)

**Significance:**  Mar 04, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure To Identify A Condition Adverse To Quality For Negative Fouling Factors**

The NRC identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” for the licensee’s failure to promptly identify a condition adverse to quality. Specifically, following post cleaning tests of the A and C component cooling system (CCS) heat exchangers (HX), a negative fouling factor was recorded to meet the fouling factor acceptance criteria without being entered into the licensee’s CAP to determine if the data was credible and representative of the HX performance. The violation was entered into the licensee’s corrective action program as problem evaluation report 969404 and an operability determination was performed that provided reasonable assurance of operability while corrective actions are being evaluated.

The licensee’s failure to promptly identify the negative fouling factor as a condition adverse to quality was a performance deficiency. The team determined that the performance deficiency was more than minor, because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, if the licensee fails to evaluate abnormal fouling factor test results then the potential exists for parameter uncertainties to go undetected and potentially result in test results that are not representative of adequate HX performance. The team determined the

finding to be of very low safety significance (Green) because the finding was not a design deficiency, did not represent a loss of system and/or function, and did not represent the loss of any trains of Technical Specification or Non-Technical Specification equipment. The finding has a cross cutting aspect in the Conservative Bias component of the Human Performance area as defined in NRC IMC 0310, because the licensee failed to use decision-making practices that emphasize prudent choices over those that are simply allowable. Specifically, the licensee failed to recognize that a negative fouling factor while less than the test acceptance criteria, did not represent an expected test result [H.14].

Inspection Report# : [2015007](#) (pdf)

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Assure Qualification Testing Met Specified Requirements**

The inspectors identified a Green NCV of 10 CFR Part 50 Appendix B Criterion VII for the licensee's failure to assure that purchased chillers for the main control room (MCR) and shutdown board room (SDBR) conformed to the procurement documents. Specifically, the equipment qualification documentation provided for the MCR and SDBR chillers did not provide sufficient evidence to reasonably conclude the equipment would be able to perform its active safety function of heat control before, during, and after the analyzed safe shutdown earthquake.

The inspectors determined that the licensee's failure to meet procurement specification SL M-0024-0 for qualification of MCR and SDBR chillers was a performance deficiency. The cause was reasonably within the licensee's ability to foresee and correct and should have been prevented.

The performance deficiency was more than minor because, if left uncorrected, the condition had the potential to lead to a more significant safety concern. The main control room chillers were required to assure habitability was maintained for mitigation and control of analyzed accidents. Because no further equipment qualification activities were planned, the capability of the main control room and shutdown board room cooling equipment to withstand an analyzed earthquake would continue to be indeterminate after installation and placement into service. The NRC concluded that the finding was of very low safety significance (Green) because the chillers had not been installed. The inspectors determined that the finding was directly related to the cross-cutting aspect in the area of Problem Identification and Resolution because the licensee did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance (P.3).

Inspection Report# : [2014005](#) (pdf)

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to follow scaffold procedure impacts Appendix R operator manual actions (Section 1R05)**

The inspectors identified a Green non-cited violation (NCV) of 10 Code of Federal Regulations (CFR) 50, Appendix B, Criterion V, for the licensee's failure to follow procedure MMTP-108, Erection of Scaffolds/Temporary Work Platforms and Ladders, Revision 8. Specifically, on August 18, 2014, a scaffold was erected in the 1B-B charging pump room and Operations personnel failed to adequately evaluate the scaffold for plant equipment access impairments as required by the procedure. The inspectors determined that the licensee's failure to adequately evaluate the completed scaffold for plant equipment access/operability/impairments as required by MMTP-108, Erection of Scaffolds/Temporary Work Platforms and Ladders, Revision 8, was a performance deficiency.

The performance deficiency was determined to be more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding had the potential to affect the feasibility of performing operator manual actions (OMAs) required for fire safe shutdown in the event of a fire. The finding was evaluated using IMC

0609 Appendix F, Fire Protection Significance Determination Process, dated September 20, 2013, and was determined to require a detailed risk analysis because evaluation was beyond the scope of IMC 0609 Attachment 1, Fire Protection Significance Determination Process Worksheet, Phase 2 Quantitative Screening Approach. A bounding analysis was performed by a regional senior reactor analyst using the guidance of IMC 0609, Appendix F because the finding affected the ability to reach and maintain safe-shutdown conditions in case of fire. The analysis determined that the risk associated with the performance deficiency represented an increase in core damage frequency of less than  $1E-6$ /year, a finding of very low safety significance (Green). The cause of the finding was directly related to the aspect of Conservative Bias in the Human Performance cross-cutting area because the licensee failed to use decision making practices that emphasize prudent choices over those that are simply allowable when performing the scaffold evaluation. [H.14] (Section 1R05)  
Inspection Report# : [2014004](#) (*pdf*)

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to correct a condition adverse to quality**

An NRC-identified NCV of 10 Code of Federal Regulations (CFR) 50 Appendix B, Criterion XVI, Corrective Action, was documented for the licensee's failure to adequately identify a condition adverse to quality associated with the installation of 480 volt breaker 0-BKR-548-0021-S with non-conforming parts which was in service in safety-related 480 volt shutdown board 1B1.

The inspectors determined that the licensee's failure to adequately identify a condition adverse to quality associated with the installation of non-conforming parts as required by 10 CFR 50 Appendix B, Criterion XVI, was a performance deficiency. The performance deficiency was determined to be more than minor because it adversely affected the objective of the Mitigating Systems cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to identify the condition adverse to quality led to an additional six months that this non-conforming condition existed thus reducing the licensee's ability to ensure the reliability and capability of plant safety systems. Using the screening worksheet of IMC 0609, Appendix A, Exhibit 2 – Mitigating Systems Screening Questions, the inspectors determined that the finding was of very low safety significance (Green) because the deficiency only affected the qualification of the breaker. The cause of the finding was directly related to the aspect of identification in the Problem Identification and Resolution cross-cutting area because the licensee did not identify this issue completely, accurately, and in a timely manner in accordance with the program. [P.1] (Section 4OA2.3)

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to evaluate a condition adverse to quality**

A NRC-identified non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, was documented for the licensee's failure to adequately identify a condition adverse to quality associated with the installation of relief valve 1-RFV-67-1026D, Upper Containment Cooler 1D, an ASME Class III component.

The inspectors determined that the licensee's failure to adequately identify a condition adverse to quality associated with the non-conformance of relief valve 1-RFV-67-1026D, as required by 10 CFR 50 Appendix B, Criterion XVI, was a performance deficiency. The performance deficiency was determined to be more than minor because it adversely affected the objective of the Mitigating Systems cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to correct the condition adverse to quality in a timely manner led to an additional 4 years that this non-conforming

condition existed prior to evaluation thus reducing the licensee's ability to ensure the reliability and capability of plant safety systems. Using the screening worksheet of IMC 0609, Appendix A, Exhibit 2 – Mitigating Systems Screening Questions, the inspectors determined that the finding was of very low safety significance (Green) because there existed an additional relief valve in the IST program that could protect the piping and cooler from over pressurization with appropriate compensatory measures. The cause of the finding was directly related to the aspect of evaluation in the Problem Identification and Resolution cross-cutting area because the licensee did not adequately evaluate this issue to ensure that an adequate resolution addressed the condition commensurate with its safety significance. [P.2] (Section 40A2.4)

Inspection Report# : [2014003](#) (*pdf*)

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## Barrier Integrity

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### Emergency Preparedness

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Maintain Effectiveness of Emergency Plan**

A self-revealing non-cited violation (NCV) of 10 CFR 50.54(q)(2) was identified for the licensee's failure to maintain 1-RM-90-404 A/B radiation monitors as required by their Radiological Emergency Plan and NRC-approved Emergency Action Level scheme. The issue was placed in the licensee's corrective action program and the radiation monitors are being replaced under a design change on an expedited schedule.

The licensee's failure to identify the extended loss of the Unit 1 Watts Bar Nuclear Power Plant's 1-RM-90-404 A&B CVE Radiation Monitors was not compliant with their approved emergency plan and was a failure to comply with 10 CFR 50.54(q)(2), was more than minor because it was associated with the Facilities and Equipment attribute of the Reactor Safety – Emergency Preparedness Cornerstone and adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency in that equipment relied upon to prompt decision-makers to declare emergencies was not available. The finding was determined to have very low safety significance (Green) because alternative Emergency Action Levels within the radiological effluent initiating condition, facility design as documented in their Updated Final Safety Analysis Report, and the licensee's declaration processes, were such that an accurate and timely declaration would have been made. This finding had a cross-cutting aspect of Evaluation in the Problem Identification and Resolution component. The TVA failed to thoroughly evaluate the impact of the long term unavailability of the 1-RM-90-404A/B radiation monitors on the emergency plan. Specifically, since these radiation monitors are used to make site area and general emergency declarations, their continued long term unavailability presented a potentially safety significant concern. The licensee failed to identify this concern as an Emergency Preparedness issue and failed to take timely corrective actions to restore the failed radiation monitors (P.2). (Section 1EP5)

Inspection Report# : [2014501](#) (*pdf*)

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## Occupational Radiation Safety

## Public Radiation Safety

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### Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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### Miscellaneous

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