



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

January 31, 2012

Mr. Joseph W. Shea
Manager, Corp. Nuclear Licensing Programs
Tennessee Valley Authority
1101 Market Street, LP 4B-C
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000390/2011005

Dear Mr. Shea:

On December 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Watts Bar Nuclear Plant, Unit 1. The enclosed integrated inspection report documents the inspection results which were discussed on January 4, 2012, with Mr. D. Grissette and other members of the Watts Bar staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Three NRC-identified findings of very low safety significance (Green) were identified during this inspection.

All of these findings were determined to involve violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Watts Bar Nuclear Plant.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II; and the NRC Resident Inspector at the Watts Bar facility.

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Scott M. Shaeffer, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos.: 50-390
License No.: NPF-90

Enclosure: NRC Inspection Report 05000390/2011005
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

Enclosure

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Letter to Joseph Shea from Scott Shaeffer dated January 31, 2012

SUBJECT: WATTS BAR NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000390/2011005

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-390

License No.: NPF-90

Report No.: 05000390/2011005

Licensee: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Unit 1

Location: Spring City, TN 37381

Dates: October 1 through December 31, 2011

Inspectors: R. Monk, Senior Resident Inspector
K. Miller, Resident Inspector
R. Baldwin, Senior Operations Engineer (1R11.2)
P. Higgins, Senior Reactor Inspector (4OA5)
W. Deschaine, Resident Inspector (4OA5)
N. Childs, Resident Inspector (4OA5)

Approved by: Scott M. Shaeffer, Chief
Reactor Projects Branch 6
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000390/2011-005; 10/01/2011 – 12/31/2011; Watts Bar, Units 1 & 2; Fire Protection, Flood Protection Measures, Identification and Resolution of Problems.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional inspectors. Three Green findings were identified, each of which involved non-cited violations (NCVs) of NRC requirements. The significance of most findings is identified by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP); the cross-cutting aspect was determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified an NCV of 10 *Code of Federal Regulations* (CFR) 50 Appendix B, Criterion XVI, Corrective Action, for the licensee's failure to develop and implement corrective actions to address the unauthorized placement of temporary structures supporting Unit 2 construction in the probable maximum precipitation (PMP) drainage path. Problem Evaluation Report (PER) 206105, initiated by the licensee on October 28, 2009, identified that Unit 2 temporary structures had been placed inside the plant protected area surrounding Unit 1 and 2 without verifying impacts to the PMP critical flood elevation of 729 feet. The PER required a corrective action plan (CAP) due date of February 14, 2010. The condition as it then existed was bounded by a functional evaluation which expired February 28, 2010. The inspectors determined that the corrective actions had not been implemented and that the original adverse condition had worsened due to the addition of other temporary structures. Based on this observation, the licensee re-entered the issue into the corrective action program as PER 413818 and also initiated PER 417148 to address the continuing plant impact from the addition of more temporary structures.

The licensee's failure to develop and implement corrective actions to preclude the unauthorized placement of temporary structures in the PMP drainage path was a performance deficiency. The inspectors reviewed Inspection Manual Chapter (IMC) 0612 and determined that the finding was more than minor because if left uncorrected, would have the potential to lead to even more temporary structures being added to the PMP drainage path thus exceeding the critical flood level of 729 feet, at which point safety-related structures, systems, and components would be adversely impacted. Additionally, the finding was associated with the protection against external factors attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the frequency of those events that

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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, at the point the licensee gained control of adding temporary structures, the modeled PMP basin water level was two tenths of a foot below the elevation leading to flooding of safety-related structures, systems, and components. The cause of the finding had a cross-cutting aspect in the area of problem identification and resolution associated with the CAP component because the licensee failed to develop and implement corrective actions to address the unauthorized placement of temporary structures supporting Unit 2 construction in the PMP drainage path. (P.1(d)) (Section 1R01)

Cornerstone: Mitigating Systems

- Green. An NCV of the Unit 1 Operating License Condition 2.F was identified for the licensee's failure to store transient combustible materials in a safety-related/critical area of the auxiliary building in accordance with the approved Fire Protection Plan (FPP). Specifically, an excessive amount of combustible trash and laundry was stored on the auxiliary building refueling floor. The stored combustible material was approximately two and a half times the allowable limit, and the amount in excess of that limit was stored without an approved transient combustible evaluation, as required by the FPP. As a result, this was an unapproved increase in fire loading due to an increase in the volume of the combustible material in the area. The licensee took immediate corrective action to issue a transient combustible evaluation and then remove the excess combustibles from the area. The licensee entered this issue into the CAP as PER 432883 and PER 455545.

The finding was determined to be more than minor because it affected the protection against external events attribute of the Mitigating Systems cornerstone, in that, it affected the objective of ensuring reliability and capability of systems that respond to initiating events. This finding was evaluated using IMC 0609, Appendix F, Attachment 1, and was determined to be of very low safety significance because it represented a low degradation of fire prevention and administrative controls. The cause of the finding was directly related to the cross-cutting aspect of proper work planning in the work control component of the area of Human Performance, in that, the licensee failed to appropriately plan work activities to minimize the risk associated with an excessive amount of combustible trash and laundry in a safety-related fire zone without compensatory measures. (H.3 (a)) (Section 1R05)

- Green. The inspectors identified a Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to establish adequate procedures to identify accumulated gas in emergency core cooling systems (ECCS). Specifically, the operations surveillance test procedures, 1-SI-63-10.1-A, "ECCS Discharge Pipes Venting – Train A Inside Containment," Rev 1 and 1-SI-63-10.2-A, "ECCS Discharge Pipes Venting – Train A Outside Containment," Rev 1, could allow accumulated gases inside ECCS to be vented without being quantified and evaluated for potential adverse impacts on

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system operability. The licensee entered this in their corrective action program as PER 478095.

The inspectors determined that the licensee's failure to establish adequate procedures to identify accumulated gas in ECCS was a performance deficiency (PD). The PD was more than minor because if left uncorrected, the PD had the potential to lead to a more significant safety concern. Specifically, if left uncorrected the potential existed for an unacceptable void that could affect ECCS operability to remain undetected. The inspectors screened this finding in accordance with Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) since it did not represent the loss of any system safety function and it did not screen as potentially risk significant due to seismic, flooding or severe weather.

The inspectors determined that the finding has a cross-cutting aspect in the area of human performance, because the licensee did not have accurate procedures to measure gas vented from ECCS systems in order to determine if gas voids existed which could impact ECCS system operability (H.2(c)). (Section 4OA5)

B. Licensee-Identified Violations

None.

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REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near 100 percent rated thermal power (RTP) from the beginning of the reporting period, October 1, 2011, until October 7, 2011, when the unit was removed from service due to an increased vibration level on the number 11 turbine bearing. The unit was brought back to 100 percent on October 17, 2011, following repairs on number 11 turbine bearing. During power ascent, the condenser vacuum pumps seal leakage allowed a build-up of ammonia fumes, prompting the licensee to classify the event as a Notification of Unusual Event (NOUE) due to the temporary inaccessibility of that portion of the turbine building. No safety related equipment nor access to it was affected. Operation continued at approximately 100 percent until December 16, 2011, when the licensee discovered deteriorated cooling air baffling in the 1B condensate booster pump and reduced load to approximately 95 percent. On December 22, 2011, the unit was returned to 100 percent RTP and operated at or near that power through the end of the reporting period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

Readiness for Seasonal Extreme Weather Readiness

a. Inspection Scope

The inspectors reviewed licensee actions taken in preparation for low temperature weather conditions to limit the risk of freeze-related initiating events and to adequately protect mitigating systems from its effects. The inspectors reviewed licensee procedure 1-PI-OPS-1-FP, Freeze Protection, and walked down selected components associated with the five areas listed below to evaluate implementation of plant freeze protection, including the material condition of insulation, heat trace elements, and temporary heated enclosures. Corrective actions for items identified in relevant problem evaluation reports (PERs) and work orders (WOs) were assessed for effectiveness and timeliness. This inspection satisfied one inspection sample for extreme weather readiness. Documents reviewed are listed in the attachment to this report. The associated finding closes out unresolved item (URI) 050000390/2011004-01, Failure to Develop and Implement Corrective Actions for PMP Drainage Path Impact on Unit 1.

- Performed walkdowns for extreme weather preparations at the intake pumping station, the refueling water storage tank, feedwater flow transmitters, and diesel building

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b. Findings

Introduction: A Green, NRC-identified non-cited violation (NCV) of 10 *Code of Federal Regulations* (CFR) 50 Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to develop and implement corrective actions to address the unauthorized placement of temporary structures supporting Unit 2 construction in the probable maximum precipitation (PMP) drainage path

Description: The inspectors identified an NCV of 10 *Code of Federal Regulations* (CFR) 50 Appendix B, Criterion XVI, Corrective Action, for the licensee's failure to develop and implement corrective actions to address the unauthorized placement of temporary structures supporting Unit 2 construction in the probable maximum precipitation (PMP) drainage path. Problem Evaluation Report (PER) 206105, initiated by the licensee on October 28, 2009, identified that Unit 2 temporary structures had been placed inside the plant protected area surrounding Unit 1 and 2 without verifying impacts to the critical flood elevation of 729 feet. The PER required a corrective action plan (CAP) due date of February 14, 2010. The condition as it then existed was bounded by a functional evaluation which expired February 28, 2010. However, a CAP was never developed and additional temporary structures continued to be added to the PMP drainage path. The inspectors determined that the corrective actions had not been implemented and that the original adverse condition had worsened. Based on this observation, the licensee re-entered the issue into the corrective action program as PER 413818 and also initiated PER 417148 to address the continuing plant impact from the addition of more temporary structures since the initial problem was identified in 2009. At the time of re-discovery, the elevation associated with the PMP event had reached 728.8 feet.

Analysis: The licensee's failure to develop and implement corrective actions to preclude the unauthorized placement of temporary structures to facilitate Unit 2 construction in the PMP drainage path was a performance deficiency. The inspectors reviewed Inspection Manual Chapter (IMC) 0612 and determined that the finding was more than minor because if left uncorrected, would have the potential to lead to even more temporary structures being added to the PMP drainage path thus exceeding the critical flood level of 729 feet, at which point safety-related structures, systems, and components would be adversely impacted. Additionally, the finding was associated with the protection against external factors attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the frequency of those events that upset plant stability and challenge critical safety functions, during shutdown as well as power operations.

Using the Phase I screening worksheet of IMC 0609, the inspectors determined that the finding was of very low safety significance (Green) because, at the point the licensee gained control of adding temporary structures, the modeled PMP basin water level was two tenths of a foot below the elevation leading to flooding of safety related structures, systems, and components. The cause of the finding had a cross-cutting aspect in the area of problem identification and resolution associated with the CAP component. It was directly related to the licensee failing to take appropriate corrective actions to address a safety issue in a timely manner, commensurate with its safety significance and complexity. Specifically, the licensee failed to develop and implement corrective actions

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to address the unauthorized placement of temporary structures supporting Unit 2 construction in the PMP drainage path. (P.1(d))

Enforcement: 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, states, in part, that measures shall be established to assure that conditions adverse to quality such as non-conformances are promptly identified and corrected. Contrary to the above, the licensee failed to develop and implement corrective actions to address the unauthorized placement of temporary structures supporting Unit 2 construction in the PMP drainage path. Because this violation was of very low safety significance and was entered into the licensee's CAP as PERs 413818 and 417148, this violation is being treated as an NCV consistent with the NRC Enforcement Policy and is identified as NCV 05000390/2011005-01, Failure to Develop and Implement Corrective Actions for PMP Drainage Path Impact on Unit 1. This NCV closes URI 05000390/2011004-01, Failure to Develop and Implement Corrective Actions for PMP Drainage Path Impact on Unit 1.

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors conducted three equipment alignment partial walkdowns, listed below, to evaluate the operability of selected redundant trains or backup systems with the other train or system inoperable or out of service (OOS). The inspectors reviewed the functional system descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and technical specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system.

- Partial walkdown of component cooling system pump C-S aligned to B-train (SOI-70.01, Section 8.4, Return pump C-S from supply header 1A to supply header 1B)
- Partial walkdown of A-train emergency gas treatment system following OOS for maintenance
- Partial walkdown of Channel III DC board power alignment while on spare battery V

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

The inspectors conducted one detailed walkdown/review of the alignment and condition of the containment spray system to verify proper equipment alignment and to identify any discrepancies that could impact the function of the system and increase risk. The

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inspectors utilized licensee procedures, as well as licensing and design documents, when verifying that the system alignment was correct. During the walkdown, the inspectors also verified, as appropriate, that: (1) valves were correctly positioned and did not exhibit leakage that would impact the function(s) of any valve; (2) electrical power was available as required; (3) major portions of the system and components were correctly labeled, cooled, ventilated, etc.; (4) hangers and supports were correctly installed and functional; (5) essential support systems were operational; (6) ancillary equipment or debris did not interfere with system performance; (7) tagging clearances were appropriate; and (8) valves were locked as required by the licensee's locked valve program. Pending design and equipment issues were reviewed to determine if the identified deficiencies significantly impacted the system's functions. Items included in this review were the operator workaround list, the temporary modification list, system health reports, and outstanding maintenance work requests/(WOs). In addition, the inspectors reviewed the licensee's corrective action program (CAP) to ensure that the licensee was identifying equipment alignment problems and to ensure they were properly addressed for resolution.

b. Findings

No findings were identified.

1R05 Fire Protection

Fire Protection Tours

a. Inspection Scope

The inspectors conducted tours of the 10 areas important to reactor safety, listed below, to verify the licensee's implementation of fire protection requirements as described in the Fire Protection Program, Nuclear Power Group Standard Programs and Processes (NPG-SPP)-18.4.6, Control of Fire Protection Impairments, NPG-SPP-18.4.7, Control of Transient Combustibles, NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work). The inspectors evaluated, as appropriate, conditions related to: (1) licensee control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment, and features; and (3) the fire barriers used to prevent fire damage or fire propagation. This activity constituted ten inspection samples.

- Cable Spreading Room
- 480 V reactor (RX) motor-operated valve (MOV) Board Room 1A
- 480 V RX MOV Board Room 1B
- 480 V RX MOV Board Room 2A
- 480 V RX MOV Board Room 2B
- Vital battery Room I, II, III, IV, V

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b. Findings

Introduction: The inspectors identified a Green NCV of the Unit 1 Operating License Condition 2.F for the licensee's failure to store transient combustible materials in a safety-related/critical area of the auxiliary building in accordance with the approved FPP. Specifically, an excessive amount of combustible trash and laundry was stored on the auxiliary building refueling floor. The stored combustible material was more than double the allowable limit and the amount in excess of that limit was stored without an approved transient combustible evaluation, as required by the FPP.

Description: On September 8, 2011, with the plant in Mode 1 power operation, the inspectors noted that an excessive amount of combustible trash and laundry was stored on the auxiliary building refueling floor. This quantity was estimated by the licensee to be approximately 825 cubic feet. Watts Bar Engineering Calculation, EPM-DOM-012990, Combustible Loading Data (CLD), currently permits approximately 336 cubic feet of combustible trash in this location. The stored combustible material was more than double the allowable limit and the amount in excess of that limit was stored without an approved transient combustible evaluation, as required by the FPP. As a result, this was an unapproved increase in fire loading due to an increase in the volume of the predominant combustible material in the area. Per Part II of the Fire Protection Report (FPR), the FPP, Section 10.0, Control of Combustibles, the use and handling of combustible materials such as paper and plastic are controlled in safety-related areas. Implementing Procedure NPG-SPP-18.4.7, Control of Transient Combustibles, Section 3.2.2.D., specifies that combustible radwaste materials and other trash which has been collected for removal shall not be left to accumulate. These materials shall be removed to the designated waste processing/packaging area(s). The inspectors notified the licensee's TVA radiation protection personnel of the observation and verified that no approved transient combustible evaluation was performed for the storage of an excessive amount of combustible trash and laundry. The licensee took immediate corrective action to issue a transient combustible evaluation and then remove the excess combustibles from the area.

Analysis: The inspectors determined that the licensee's failure to store transient combustible materials in a safety-related/critical area of the auxiliary building in accordance with the approved FPP, Section 10.0, Control of Combustibles, was a performance deficiency. The performance deficiency was determined to be more than minor because it affected the protection against external events attribute (i.e., fire) of the Mitigating Systems cornerstone, in that, it affected the objective of ensuring availability, reliability, and capability of systems that respond to initiating events. Because the finding increased the fire loading due to an increase in the volume of the predominant combustible material in the area by approximately two and a half times the allowable limit; the inspectors completed a SDP Phase 1 analysis that indicated the finding was not a major degradation of fire prevention and administrative controls. The cause of the finding was directly related to the cross-cutting aspect of proper work planning in the work control component of the area of Human Performance, in that the licensee failed to appropriately plan work activities to minimize the risk associated with an excessive

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amount of combustible trash and laundry in a safety-related fire zone without compensatory measures. (H.3(a)).

Enforcement: Watts Bar Unit 1 Operating License Condition 2.F requires that the licensee implement and maintain in effect all provisions of the approved fire protection program as described in the FPP for the facility, as approved in Supplements 18 and 19 of the safety evaluation report (NUREG-0847). Per the FPP, Section 10.0, Control of Combustibles, the use and handling of combustible materials such as paper and plastic are controlled in safety-related areas. Implementing Procedure NPG-SPP-18.4.7, Control of Transient Combustibles, Section 3.2.2.D., specifies that combustible radwaste materials and other trash which has been collected for removal shall not be left to accumulate. These materials shall be removed to the designated waste processing/packaging area(s).

Contrary to the above, the licensee failed to implement and maintain in effect all provisions of the approved FPP as described in the FPP for the facility, as approved in Supplements 18 and 19 of the safety evaluation report (NUREG-0847). Specifically, the licensee failed to implement the requirements of the FPP, Section 10.0, Control of Combustibles, by failing to store transient combustible materials in a safety-related/critical area of the auxiliary building in accordance with the approved FPP, on September 8, 2011. On September 13, 2011, the licensee took immediate action to issue a transient combustible evaluation and then remove the excess combustibles from the area. Because this finding was of low safety significance (Green) and was entered into the licensee's corrective action program as PER 432883 and PER 455545, this violation is being treated as an NCV consistent with the NRC Enforcement Policy and is identified as NCV 05000390/2011005-02, Failure to Store Transient Combustible Materials in a Safety-Related/Critical Area of the Auxiliary Building in Accordance With the Approved Fire Protection Plan.

1R11 Licensed Operator Requalification

.1 Quarterly Licensed Operator Requalification Inspection

a. Inspection Scope

On October 25, 2011, the inspectors observed the simulator evaluations for Operations Crew 5 per 3-OT-SRT-SR-S1-6, Small RCS Leak, ATWS and Large Break LOCA, Revision 0. The plant conditions led to a Site Area level classification. Performance Indicator (PI) credit was taken.

The inspectors specifically evaluated the following attributes related to the operating crews' performance:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms

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- Correct use and implementation of abnormal operating instructions and emergency operating instructions
- Timely and appropriate Emergency Action Level declarations per Emergency Plan Implementing Procedures (EPIP)
- Control board operation and manipulation, including high-risk operator actions
- Command and control provided by the unit supervisor and shift manager

The inspectors also attended the critique to assess the effectiveness of the licensee evaluators, and to verify that licensee-identified issues were comparable to issues identified by the inspector.

b. Findings

No findings were identified.

.2 Annual Licensed Operator Requalification Inspection

a. Inspection Scope

Annual Review of Licensee Requalification Examination Results On December 30, 2011 2011, the licensee completed the annual requalification operating test required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of individual operating tests and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, "Operator Requalification Human Performance Significance Determination Process."

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two performance-based problems listed below. A review was performed to assess the effectiveness of maintenance efforts that apply to scoped SSCs and to verify that the licensee was following the requirements of TI-119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting .65, and NPG-SPP-03.4, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting .65. Reviews focused, as appropriate, on: (1) appropriate work practices; (2) identification and resolution of common cause failures; (3) scoping in accordance with .65; (4) characterization of reliability issues; (5) charging unavailability time; (6) trending key parameters; (7) .65 (a)(1) or (a)(2) classification and reclassification; and (8) the appropriateness of performance criteria for SSCs classified as (a)(2) or goals and corrective actions for SSCs classified as (a)(1).

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- Review of a(1) corrective action plan for the main steam safety valves
- Review of a(1) corrective action plan for the electro-hydraulic control (EHC) system

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, for the three work activities listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors verified that the licensee was complying with the requirements of .65 (a)(4); SPP-7.0, Work Control and Outage Management; NPG-SPP-07.1, One Line Work Management; and TI-124, Equipment to Plant Risk Matrix. This inspection satisfied three inspection samples for Maintenance Risk Assessment and Emergent Work Control.

- Risk assessment for work week 203 w/1B aux air compressor, ERCW pump, 1B EDG, 1B MDAFW pump, and 1B CCP OOS for planned maintenance
- Risk assessment for emergent issues on B-train level control valve 1-3-148 while B-train EGTS, 1A CCS/AFW space cooler, and D service air compressor OOS
- Risk assessment for work week 209 with 1A EDG, 1A AFW, A train EGTS, and A Train main control room chiller OOS for planned maintenance

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed four operability evaluations affecting risk-significant mitigating systems, listed below, to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether the compensatory measures, if involved, were in place, would work as intended, and were appropriately controlled; (4) where continued operability was considered unjustified, the impact on TS Limiting Conditions for Operation (LCOs) and the risk significance in accordance with the significant determination process (SDP). The inspectors verified that the operability evaluations were performed in accordance with NPG-SPP-03.1, Corrective Action Program.

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- Functional Evaluation (FE) for PER 417148, Revision 1, Site drainage blockage for probable maximum precipitation (PMP)
- FE for PER 401706, Upper ice plenum door seal pressure below minimum required pressure
- FE for PER 465229, Lack of load capacity margin on vital battery IV
- FE for PER 449860, ERCW pinhole leak near valve 1-FCV-067-146A

b. Findings

Introduction: During review of 0-SI-236-54, 125 VDC Vital Battery IV 60 month Performance Test and 125 VDC Vital Battery Charger IV Test, performed in February of 2011, as part of the Watts Bar 2 EDSFI in November 2011, the inspectors noted that the battery capacity had significantly degraded unexpectedly. Further investigation by the resident inspectors identified an unresolved item (URI) related to additional testing performed on Vital Battery IV per 0-SI-236-44, 125 VDC Vital Battery IV 18 month Service Test and Vital Battery Charger IV Test in June of 2011.

Description: On February 13, 2011, Vital Battery IV was tested per 0-SI-236-54, 125 VDC Vital Battery IV 60 month Performance Test and 125 VDC Vital Battery Charger IV Test, as required by Technical Specification 3.8.4, surveillance requirement 3.8.4.14 which requires, in part, that the battery capacity be $\geq 80\%$ of the manufacturer's rating. The battery tested at 82.5% capacity, down from 108.75% at its last test performance. No additional actions were taken at that time.

In June 2011, the licensee noted that cell # 51, was at 2.12 vdc which was out of the Category A and B limits of the associated surveillance requirement. Following cell replacement, on June 27, 0-SI-236-44, 125 VDC Vital Battery IV 18 month Service Test and Vital Battery Charger IV Test was attempted and aborted due to multiple cell voltages dropping below procedural limits. The licensee decided to replace 8 cells and re-perform the test. The test passed with no margin to support a two unit load profile requirement which was the test acceptance criteria. The licensee ordered new battery cells for both Vital Batteries IV and III. The two unit load profile had been in use on previous tests.

In that Vital Battery III was the same age as Vital Battery IV, in November 2011, the inspectors inquired as to the reason for postponing the Vital Battery III performance test which had been due since November of 2010. The licensee responded that they had ordered new cells for the battery and that the cells would be replaced prior to the end of the surveillance grace period, which would end in February of 2012 and that they had confidence in Vital Battery III due to the performance of 0-SI-236-43, 125 VDC Vital Battery III 18 month Service Test and Vital Battery Charger III, in February of 2011, which showed no degradation at that time. At that point, the inspectors questioned the operability of Vital Battery III. Based on test history and battery age, batteries I, II, and V were not considered at risk for current operability.

To address the current operability questions, the licensee decided to perform 0-SI-236-53, 125 VDC Vital Battery III 60 month Performance Test and 125 VDC Vital Battery

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Charger III Test. Inspectors observed this test on November 21, 2011, which failed to achieve the required 80% capacity. This battery was subsequently left out of service until new cells arrived and replaced the old cells.

The licensee modified the service test load profile for each battery to include only Unit 1 loads and Unit 2 loads that were connected during this period in question. This modified test was successfully performed on Vital Battery III and Vital Battery IV with the 8 new cells replaced in June. Current plans are to re-install the original 8 cells in Vital Battery IV and perform the modified service test to prove its past capability of meeting established design base loads for the time frame between February and June of 2011. The licensee plans to perform this test in January 2012. Until then, spare Vital Battery V will remain in service carrying Vital Battery IV loads. Pending this additional testing, this item is identified as URI 050000390/2011005-03, Operability concerns for Vital Batteries III and IV.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed four post-maintenance test procedures and/or test activities, (listed below) as appropriate, for selected risk-significant mitigating systems to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. The inspectors verified that these activities were performed in accordance with NPG-SPP-06.9, Testing Programs; NPG-SPP-06.3, Pre-/Post-Maintenance Testing; and NPG-SPP-07.1, On Line Work Management.

- WO 112797628, Replace relay 27S22B for 6.9 kV SD BD 2B-B breaker 1826 and WO 112797633, Calibration per 2-SI-211-7-B
- WO 112940966, O-SI-236-43, 125 VDC Vital Battery III 18 month service test and 125 VDC Vital Battery Charger III test
- WO 110902702, Inspection and upper motor bearing oil sample per PM M3305V on ERCW pump motor D-A
- WO 112974541, Erratic position indication for control rod M-8, 1-MON-085-5000/A, CERPI monitor A

b. Findings

No findings were identified

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1R22 Surveillance Testinga. Inspection Scope

The inspectors witnessed six surveillance tests and/or reviewed test data of selected risk-significant SSCs, listed below, to assess, as appropriate, whether the SSCs met the requirements of the TS; the UFSAR; SPP-8.0, Testing Programs; NPG-SPP-06.9.2, Surveillance Test Program; and SPP-9.1, ASME Section XI. The inspectors also determined whether the testing effectively demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions.

In-Service Test:

- WO 112016853, 1-SI-62-901-B, Centrifugal charging pump 1B-B quarterly performance test

RCS Leak Detection

- WO 111992844, 1-SI-90-13, 92 Day Channel Operational Test of the Containment Building Lower Compartment Particulate Radiation Monitor loop 1-LPR-90-106A

Other Surveillances

- WO 10-810665, 0-SI-236-53, 125 VDC Vital Battery III 60 month Performance Test and 125 VDC Vital Battery Charger III Test
- WO 112972320, 0-SI-236-44, 125 VDC Vital Battery IV 18 month Service Test and Vital Battery Charger IV Test
- WO 112972297, 0-SI-236-53, 125 VDC Vital Battery III 18 month Service Test and 125 VDC Vital Battery Charger III Test
- WO 112461953, 0-SI-31-6-B, Control Room Emergency Ventilation System, Monthly Operability Test – Train B

b. Findings

No findings were identified

4. OTHER ACTIVITIES

4OA1 Identification & Resolution of Problems.1 Review of Items Entered into the Corrective Action Program (CAP)

As required by Inspection Procedure (IP) 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items

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entered into the licensee's CAP. This review was accomplished by reviewing daily PER summary reports and periodically attending daily PER review meetings.

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope

As required by IP 71152, Identification and Resolution of Problems, the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on human performance trends, licensee trending efforts, and repetitive equipment and corrective maintenance issues. The inspectors also considered the results of the daily inspector CAP item screening discussed in Section 4OA2.1. The inspectors' review nominally considered the six-month period of July 2011 through December 2011, although some examples expanded beyond those dates when the scope of the trend warranted.

b. Observations

No findings were identified. However, the inspectors identified that the overall CAP appeared about to be overwhelmed by the volume of entries. The inspectors noted that, in the preceding quarter, 4348 service requests (SRs) were entered into the program. Of these, 1208 were WOs and 3140 were PERs (corrective action documents). Of the number of PERs, about 20 percent were related to the work control process. These work control process PERs included all departments involved. The number of work control process PERs has been fairly constant over the past four years, indicating that the CAP is not effective at resolving these problems.

In recent months, the volume has continued to rise as many items that are included might normally be thought of as 'suggestion box' items and departmental ticklers to accomplish some task within the department. CAP metrics dip into and out of the RED band periodically and spend longer periods of time in the YELLOW band. Inspectors have noted recently that the plant staff is beginning to recognize this growing problem and have developed some workarounds for the short term (e.g., pre-screening). Longer term solutions like raising the threshold for SR initiation will be more difficult as it can easily become too high.

.3 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors reviewed the operator workaround program to verify that workarounds were identified at an appropriate threshold, were entered into the CAP, and that corrective actions were proposed or implemented. Specifically, the inspectors reviewed the licensee's workaround list and repair schedules, conducted tours, and interviewed operators about required compensatory actions. Additionally, the inspectors looked for undocumented workarounds, reviewed appropriate system health documents, and

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reviewed PERs related to items on the workaround list. Documents reviewed are listed in the attachment.

b. Findings and Observations

No findings were identified.

4OA2 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 (Closed) NRC Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter (GL) 2008-01)"

a. Inspection Scope

The inspectors reviewed the implementation of the licensee's actions in response to GL 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems. The subject systems included the emergency core cooling system (ECCS), decay heat removal system (DHR), and containment spray system (CSS).

The inspectors reviewed the licensing basis of the facility to verify that actions to address gas accumulation were consistent with the operability requirements of the subject systems.

The inspectors reviewed the design of the subject systems to verify that actions taken to address gas accumulation were appropriate given the specifics of the functions, configurations, and capabilities of these systems. The inspectors reviewed the design and operation of the DHR system to determine if flashing in DHR suction lines would challenge system operability. The inspectors reviewed selected analyses performed by

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the licensee to verify that methodologies for predicting gas void accumulation, movement, and impact were appropriate. The inspectors performed walkdowns of selected subject systems to verify that the reviews and design verifications conducted by the licensee had drawn appropriate conclusions with respect to piping configurations and pipe slope which could result in gas accumulation susceptibility.

The inspectors reviewed testing implemented by the licensee to address gas accumulation in subject systems. A selection of test procedures and completed test results were reviewed to verify that test procedures were appropriate to detect gas accumulations that could challenge subject systems. The inspectors reviewed the specified testing frequencies to verify that the testing intervals had appropriately taken historical gas accumulation events as well as susceptibility to gas accumulation into account. The inspectors also reviewed the test programs and processes to verify that they were sensitive to pre-cursors to gas accumulation.

The inspectors reviewed corrective actions associated with gas accumulation in subject systems to verify that identified issues were being appropriately identified and corrected. The inspectors reviewed the locations of selected vent valve installations to verify that the locations selected were appropriate based on piping configuration and pipe slopes.

b. Findings

Introduction: The inspectors identified a Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to establish adequate procedures to identify accumulated gas in the ECCS. Specifically, the operations surveillance test procedures, 1-SI-63-10.1-A, "ECCS Discharge Pipes Venting – Train A Inside Containment," Rev 1 and 1-SI-63-10.2-A, "ECCS Discharge Pipes Venting – Train A Outside Containment," Rev 1, could allow accumulated gases inside ECCS piping to be vented without being quantified and evaluated for potential adverse impacts on system operability.

Description: The GL 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" states, in part, that the surveillance requirement should reasonably ensure that gas has not affected operability and will not likely accumulate in sufficient quantity to jeopardize operability before the next surveillance. The licensee performs procedures, 1-SI-63-10.1-A, "ECCS Discharge Pipes Venting – Train A Inside Containment," Rev 1 and 1-SI-63-10.2-A, "ECCS Discharge Pipes Venting – Train A Outside Containment," Rev 1, to meet Technical Specifications (TS) Surveillance Requirement (SR) 3.5.2.3 which verifies that ECCS piping is full of water by venting system piping high points. The procedural steps require that the vent valve be opened and gas and liquid be allowed to vent for 30 seconds or one minute (depending on the vent point) before timing of the gas release is started. If, after those time limits, no gas release continues, it is concluded that all gas previously vented came from the vent line and no gas existed in the ECCS piping which could cause operability impacts on the ECCS system. No analysis was provided by the licensee to support the process that only after those time limits would gas in the ECCS piping be vented. Absent such an analysis, gas in the ECCS piping could be

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inadvertently vented without measurement and operability impacts associated with such gas could go undetected. Interviews with operations personnel who conduct these Surveillance Instructions (SI) and observation of the venting by an inspector coupled with review of the SI venting data, which shows that no valid gas release has been recorded in at least the past six years, was performed. Since no analysis was available to support the licensee's process of measuring ECCS piping gas release only after the 30 second or one minute of venting, the inspectors concluded that the procedure was not adequate to determine if gas existed in the ECCS system piping and to allow evaluation of that gas volume for operability impacts on the systems. The licensee entered the issue into their corrective action program as PER 478095.

Analysis: The inspectors determined that licensee's failure to establish adequate procedures to identify accumulated gas in the ECCS was a performance deficiency (PD). The PD was more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, if left uncorrected the potential existed for an unacceptable void that could affect ECCS operability to remain undetected. The inspectors screened this finding in accordance with Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) since it did not represent the loss of any system safety function and it did not screen as potentially risk significant due to seismic, flooding, or severe weather.

The inspectors determined that the finding had a cross-cutting aspect of complete and accurate procedures in the resources component in the area of human performance because the licensee did not have accurate procedures to measure gas vented from ECCS systems (H.2(c))

Enforcement: Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances." Contrary to the above, the licensee failed to establish adequate procedures to identify accumulated gas in the ECCS. Specifically, procedures 1-SI-63-10.1-A and 1-SI-63-10.2-A were not adequate to detect amounts of gas that could reasonably challenge the operability of the ECCS. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as PER 478095, this violation is being treated as an NCV, consistent with the Enforcement Policy and is identified as NCV 05000390/2011005-04, Inadequate Procedures for Identifying Accumulated Gas in ECCS systems.

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4OA6 Meetings, including Exit

Exit Meeting Summary

An exit meeting with Mr. Dave Gronek and other members of the licensee's management and staff was conducted on December 16, 2011, to discuss the results of the TI 2515/177 inspection. Proprietary information reviewed by the team as part of routine inspection activities was returned to the licensee in accordance with prescribed controls.

On January 4, 2012, the resident inspectors presented the quarterly inspection results to Mr. Don Grissette, Site Vice President, and other members of the licensee staff. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

4OA7 Licensee Identified Violations

None.

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

D. Gronek, Plant Manager
J. Bushnell, Licensing Engineer
T. Detchemende, Emergency Preparedness Manager
K. Dutton, Engineering Director
D. Grissette, Site Vice President
D. Guinn, Licensing Manager
E. Higgins, Mechanical/Civil Design Manager
W. Hooks, Radiation Protection Manager
D. Hughes, Training Supervisor
B. Hunt, Operations Superintendent
A. Jenkins, Chemistry Manager
R. Kirkpatrick, Design Engineering Manager
D. Murphy, Maintenance Manager
A. Phillips, Operations Support
W. Prevatt, Operations Manager
C. Riedl, Licensing
A. Scales, Work Control Manager
S. Sweet, Licensing Engineer
J. Wilcox, Security Manager

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000390/2011005-03	URI	Failure to Comply with Technical Specification Requirement 3.8.4.14 for Vital Batteries III and IV (Section 1R15)
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Opened and Closed

05000390/2011005-01	NCV	Failure to Develop and Implement Corrective Actions for PMP Drainage Path Impact on Unit 1 (Section 1R01)
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05000390/2011005-02	NCV	Failure to Store Transient Combustible Materials in a Safety-Related/Critical Area of the Auxiliary Building in Accordance With the Approved Fire Protection Plan (Section 1R05)
05000390/2011005-04	NCV	Inadequate Procedures for Identifying Accumulated Gas in ECCS Systems (Section 4OA5)
<u>Closed</u>		
05000390/2011004-01	URI	Failure to Develop and Implement Corrective Actions for PMP Drainage Path Impact on Unit 1 (Section 1R01)
05000390/2515/177	TI	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter (GL) 2008-01 (Section 4OA5)

Discussed

None.

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

1-PI-OPS-1-FP, Freeze Protection

Section 1R04: Equipment Alignment

System Operating Instruction (SOI)-72.01, Containment Spray System, Revision 0033
SOI-72.01 ATT 1P, Containment Spray System Power Checklist 72.01-1P, Revision 0032
SOI-72.01 ATT 1V, Containment Spray System Valve Checklist 72.01-1V, Revision 0032
Drawing 1-47W812-1, Flow Diagram, Containment Spray System
WO 09-819944-000
WO 110926036
WO 110991766
WO 111232581
WO 111232640
WO 112107188
WO 112214354
SOI 65.02, EGTS System, Checklist 1 and 2
and Drawing 1-47W866-1
SOI 237.03, 125V DC Vital Battery Board III
SOI 236.05, 125V DC Vital Battery Board V

Section 4OA2: Problem Identification and Resolution

OPDP-1, Conduct of Operations
ODM-15.1, Operator Workarounds, Burdens, Challenges, Control Room Deficiencies, and AUO Rounds
Work Orders; 04-815132-000, 08-819757-000, 10-810903-000, 111252468, 111322557, 111944228, 112055920, 112511134, 112533909, 112869443

Section 4OA5: Other Activities

Licensing Bases Documents

ML0813601011, Tennessee Valley Authority
Browns Ferry Nuclear Plant, Units 1, 2 & 3 Docket Nos. 50-259, 50-260, 50-296
Sequoyah Nuclear Plant, Units 1 & 2, Docket Nos. 50-327, 50-328
Watts Bar Nuclear Plant, Units 1, Docket Nos. 50-390
Generic Letter 2008-01, Initial Response, May 5, 2008
ML0819700840, Tennessee Valley Authority
Browns Ferry Nuclear Plant, Units 1, 2 & 3 Docket Nos. 50-259, 50-260, 50-296
Sequoyah Nuclear Plant, Units 1 & 2, Docket Nos. 50-327, 50-328
Watts Bar Nuclear Plant, Units 1, Docket Nos. 50-390
Generic Letter 2008-01, Revised Initial Response, June 6, 2008

ML0828905400, Tennessee Valley Authority
 Browns Ferry Nuclear Plant, Units 1, 2 & 3, Docket Nos. 50-259, 50-260, 50-296
 Sequoyah Nuclear Plant, Units 1 & 2, Docket Nos. 50-327, 50-328
 Watts Bar Nuclear Plant, Units 1, Docket Nos. 50-390
 Generic Letter 2008-01, 9-Month Response, October 11, 2008
 ML1102101100, Tennessee Valley Authority
 Watts Bar Nuclear Plant, Units 1
 Docket Nos. 50-390
 Response to Request for Additional Information Related to Generic Letter (GL)
 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat
 Removal, and Containment Spray Systems", January 14, 2011
 ML1115202330, Watts bar Nuclear Plant, Unit 1- Closeout of Generic Letter 2008-01,
 "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and
 Containment Spray Systems", May 24, 2011

Procedure

- Surveillance Instruction 1-SI-63-10.1-A, "ECCS Discharge Pipes Venting – Train A Inside Containment," Rev 1
- 1-SI-63-10.2-A, ECCS Pumps and Discharge Pipes Venting - Train A Outside Containment, Rev 2
- 1-SI-63-10-B, ECCS Pumps Venting - Train B, Rev 19
- 1-SI-72-901-A, Containment Spray Pump 1A-A Quarterly Performance Test, Rev 23
- 1-SI-72-901-B, Containment Spray Pump 1B-B Quarterly Performance Test, Rev 24
- 1-SI-72-904-A, Check Valve Testing during Operations – Containment Spray (Train A), Rev 16
- 1-SI-72-904-B, Check Valve Testing during Operations – Containment Spray (Train B), Rev 15
- System Operating Instruction SOI-72.01, Containment Spray System, Rev 33
- SOI-63.01, Safety Injection System, Rev 47
- Standard Programs and Processes Procedure NPG-SPP-09.3, Plant Modifications and Engineering Change Control – Appendix C, Rev 4
- Standard Department Procedure NEDP-22, Operability Determinations and Functional Evaluations, Rev 11

Miscellaneous

- WBN-ENG-08-018, Procedures Review for Generic Letter 2008-04, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems, Date of Assessment: 8/22/2008-8/29/2008
- WBN-ENG-F-10-006, Readiness for NRC inspection of WBN response to Generic Letter 2008-04, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal (or Residual Heat Removal), and Containment Spray Systems, Date of Assessment: 8/9/2010-9/7/2010
- Generic Letter 2008-01 Drawing Review (Auxiliary Building), dated 8/25/2008
- Generic Letter 2008-01 Drawing Review (Reactor Building), dated 11/7/2011
- Generic Letter 2008-01 Gas Accumulation in ECCS Piping - WBN Auxiliary Building Walkdown Evaluation, approved 8/24/11
- GL 2008-01 WBN U1 RFO9 ECCS Walkdown Evaluation , approved 10/14/2009

Attachment

Drawings

- Flow Diagram 1-47W811-1, Safety Injection System, Rev 55
- Flow Diagram 1-47W812-1, Containment Spray System, Rev 27
- Flow Diagram 1-47W809-1, Chemical And Volume Control System, Rev 56
- Mechanical Drawing 47W435-1, Safety Injection System Piping, Rev 23
- Mechanical Drawing 47W435-3, Safety Injection System Piping, Rev 6
- Mechanical Drawing, 47W437-1, Containment Spray System Piping, Rev 26

Calculations

- Westinghouse Calculation CN-SEE-IV-09-22, Evaluation of Suction Side Gas Voids Volumes for Watts Bar Unit 1 to Address GL-2008-01, Rev 0
- Calculation MDQ00106320110182, Calculation of Effects of Gas Accumulation in ECCS Piping, Rev 0
- Calculation MDQ00106320030081, Evaluation of High Point Vents in the Emergency Core Cooling System, Rev 3

Modifications

- Engineering Design Change EDC-54658-A, Rev A
- DCN-51526, Installation of Two High Point Vents in the Residual Heat Removal System, Rev A
- DCN-51818, Provide Isolation Valves in the Safety Injection System Accumulator Test Header, Rev B
- DCN-52257, Install High Point Vents, Rev B
- DCN-51525, Reroute of Four Safety Injection High Point Vent Lines, Rev A
- DCN-51522, Add New High Point Vents to the CVCS, SI, and RHR System, Rev A
- DCN-51486, Install Four New High Point Vents in the ECCS System at Valves 1-FCV-063-08 and -11, Rev A
- DCN-51482, Remove Tee Connection Downstream of ECCS Vent Valves, Rev A

PERs Reviewed During Inspection

- 241525 - During performance of 1-SI-72-904-A, a 0.2 psi drop in pressure occurred
- 295133 - Self Assessment WBN-ENG-F-10-006 Learning Opportunity 3
- 294533 - Self Assessment WBN-ENG-F-10-006 Deficiency 2
- 295118 - Self Assessment WBN-ENG-F-10-006 Area for Improvement 1
- 294551 - Self Assessment WBN-ENG-F-10-006 Learning Opportunity 2

- 245024 - CSS Pump Suction Piping not inspected for voids
- 142887 - Generic Letter 2008-01
- 153169 - NRC GL 2008-01 Action
- 166844 - GL 2008-01 Implementation Issues
- 153180 - NRC GL 2008-01 Action
- 153179 - NRC GL 2008-01 Action
- 153177 - NRC GL 2008-01 Action
- 153171 - NRC GL 2008-01 Action
- 153174 - NRC GL 2008-01 Action

Completed Procedures

1-SI-63-10.2-A, "ECCS Discharge Pipes Venting – Train A Outside Containment," Rev 1
1-SI-63-10.1-A, "ECCS Discharge Pipes Venting – Train A Inside Containment," Rev 1
1-SI-72-904-A, Check Valve Testing During Operations-Containment Spray (Train A)

PERs Generated As a Result of Inspection

475728 - Procedure 1-SI-72-904-A Not Followed
478095 - NRC Identified – Inspection (GL) 2008-01 Procedure Revision

LIST OF ACRONYMS

ANS	Alert and Notification System Testing
ARERR	Annual Radiological Effluent Release Report
CAP	Corrective Action Program
CERPI	Computer Enhanced Rod Position Indication
CFR	Code of Federal Regulations
CY	calendar year
DEP	Emergency Response Organization Drill/Exercise Performance
EAL	Emergency Action Level
ED	electronic dosimeter
ERO	Emergency Response Organization
HPT	Health Physics Technician
HRA	high radiation area
IP	Inspection Procedure
LHRA	locked high radiation area
LSC	liquid scintillation counter
NEI	Nuclear Energy Institute
No.	Number
NSTS	National Source Tracking System
ODCM	Offsite Dose Calculation Manual
PCM	personnel contamination monitor
PERs	Problem Evaluation Report
PI	Performance Indicator
PM	portal monitor
PS	Planning Standard
QA	Quality Assurance
RCA	radiologically controlled area
RG	Regulatory Guide
REMP	Radiological Environmental Monitoring Program
Rev.	Revision
RS	Radiation Safety
RWP	radiation work permit
SAM	small article monitor
TBSS	Turbine Building System Sump
TI	Temporary Instruction
TLDs	thermoluminescent dosimeters
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
U1	Unit 1
U2	Unit 2
VHRA	very high radiation area
WBC	whole body count