



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

May 3, 2016

Mr. Joseph W. Shea  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
1101 Market Street, LP 3R-C  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 – U.S. NUCLEAR REGULATORY COMMISSION EVALUATION OF CHANGES, TESTS, AND EXPERIMENTS AND PERMANENT PLANT MODIFICATIONS INSPECTION REPORT  
05000390/2016008 AND 05000391/2016008

Dear Mr. Shea:

On March 25, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Watts Bar Nuclear Plant, Units 1 and 2, and discussed the results of this inspection with Mr. Simmons and other members of your staff. Additional inspection results were discussed with Mr. Proffitt on April 14, 2016. Inspectors documented the results of this inspection in the enclosed inspection report (IR).

NRC inspectors documented two findings of very low safety significance (Green) and two Severity Level IV findings in this report. The findings involved a violation of NRC requirements. The NRC is treating these violations as non-cited violations (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, U.S. 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 or a finding not associated with a regulatory requirement 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 Nuclear Plant.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public inspections, exemptions, requests for withholding" of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, and its Enclosure, will be available electronically for public inspection in the NRC Public Document Room, or from the Publicly Available Records (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS);

accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Jonathan H. Bartley, Chief  
Engineering Branch 1  
Division of Reactor Safety

Docket Nos. 50-390 and 50-391  
License Nos. NPF-90 and NPF-96

Enclosure:  
NRC IR 05000390 and 391/2016008  
w/Attachment: Supplementary Information

cc: Distribution via Listserv

accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Jonathan H. Bartley, Chief  
Engineering Branch 1  
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ADAMS: ☒ Yes      ACCESSION NUMBER: \_\_\_\_\_      ☒ SUNSI REVIEW COMPLETE      ☐ FORM 665 ATTACHED

OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRP	RII:DRP	RII:DRS
SIGNATURE	<b>JAE1</b>	<b>TNF1</b>	<b>SXL5</b>	<b>JHB1</b>	<b>JBB5</b>	<b>AJB3</b>	<b>JHB1</b>
NAME	JEARGLE	TFANELLI	SHERRICK	JBARTLEY	JBAPTIST	ABLAMEY	JBARTLEY
DATE	4/25/2016	4/20/2016	4/21/2016	4/28/2016	4/25/2016	5/2/2016	5/3/2016
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	

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INSPECTION RPT (2016008).DOCX

**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos: 50-390 and 50-391

License Nos: NPF-90 and NPF-96

Report Nos: 05000390/2016008 and 05000391/2016008

Licensee: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Units 1 and 2

Location: Spring City, TN 37381

Dates: March 7, 2016, through March 25, 2016

Inspectors: Jason Eargle, Senior Reactor Inspector (Team Leader)  
Theodore Fanelli, Senior Reactor Inspector  
Sandra Herrick, Reactor Inspector

Approved by: Jonathan H. Bartley, Chief  
Engineering Branch 1  
Division of Reactor Safety

Enclosure

## SUMMARY

Inspection Report (IR) 05000390/2016008 and 05000391/2016008; 3/7/2016 – 3/25/2016; Watts Bar Nuclear Plant, Units 1 and 2; Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications

This report covers a 2-week onsite inspection by two senior reactor inspectors and one reactor inspector. Two Green non-cited violations (NCV) for Unit 1 and two SL IV NCVs for Unit 2 were identified. The significance of the Unit 1 inspection findings is indicated by their color (Green, White, Yellow, Red) using the NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. The Unit 2 Mitigating Systems cornerstone has not yet transitioned to the Reactor Oversight Process, so the significance of the Unit 2 inspection findings is indicated by their severity level (IV, III, II, I) using traditional enforcement in accordance with IMC 2517 "Watts Bar Unit 2 Construction Inspection Program," dated June 6, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

### Unit 1

Cornerstone: Mitigating Systems

- Green: The NRC identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," at Watts Bar Unit 1 for the licensee's failure to perform 10 CFR 50.59 screening reviews for new technical procedures and changes to technical procedures, as directed by procedure NPG-SPP-01.2.1, "Interim Administration of Site Technical Programs and Procedures for Watts Bar 1 and 2," Rev. 2. The licensee entered this issue into their corrective action program as condition report 1145320 and performed the procedurally directed screening reviews which determined that no 50.59 Evaluations were required.

The licensee's failure to perform 10 CFR 50.59 screening reviews for new technical procedures and changes to technical procedures as directed by procedure NPG-SPP-01.2.1 was determined to be a performance deficiency. The performance deficiency was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. The finding was determined 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 was assigned a cross-cutting aspect of Change Management in the Human Performance area because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3]. (Section 1R17.b.1)

Green: The NRC identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," at Watts Bar Unit 1 for the licensee's failure to perform verification and validation for abnormal operating instructions as directed by technical instruction 0-TI-12.11, "Emergency Operating Instruction (EOI)." The licensee entered this issue into their corrective action program as condition reports 1151954 and 1153507, and performed the procedurally directed verifications and validations which determined that all of the abnormal operating instructions in question were adequate.

The licensee's failure to perform verification and validation for abnormal operating instructions as directed by technical instruction 0-TI-12.11 was determined to be a performance deficiency. The performance deficiency was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. The finding was determined 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 was assigned a cross-cutting aspect of Change Management in the Human Performance area because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3]. (Section 1R17.b.2)

## **Unit 2**

- SL IV: The NRC identified a SL IV non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," at Watts Bar Unit 2 for the licensee's failure to perform 10 CFR 50.59 screening reviews for new technical procedures and changes to technical procedures, as directed by procedure NPG-SPP-01.2.1, "Interim Administration of Site Technical Programs and Procedures for Watts Bar 1 and 2," Rev. 2. The licensee entered this issue into their corrective action program as condition report 1145320 and performed the procedurally directed screening reviews which determined that no 50.59 Evaluations were required.

The licensee's failure to perform 10 CFR 50.59 screening reviews for new technical procedures and changes to technical procedures as directed by procedure NPG-SPP-01.2.1 was determined to be a performance deficiency. The performance deficiency was more than minor because it represented an improper or uncontrolled work practice that could impact quality or safety, involving safety-related SSCs. The inspectors determined this finding to be of very low safety significance (SL IV) in accordance with Section 6.5 of the Enforcement Policy. The finding has a cross-cutting aspect of Change Management in the Human Performance area because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3]. (Section 1R17.b.3)

- SL IV: The NRC identified a SL IV non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," at Watts Bar Unit 1 for the licensee's failure to perform verification and validation for abnormal operating instructions as directed by technical instruction 0-TI-12.11, "Emergency Operating Instruction (EOI)." The licensee entered this issue into their corrective action program as condition reports 1151954 and 1153507, and performed the procedurally directed verification and validations which determined that all of the abnormal operating instructions in question were adequate.

The licensee's failure to perform verification and validation for abnormal operating instructions as directed by technical instruction 0-TI-12.11 was determined to be a performance deficiency. The performance deficiency was more than minor because it represented an improper or uncontrolled work practice that could impact quality or safety, involving safety-related SSCs. The inspectors determined this finding to be of very low safety significance (SL IV) in accordance with Section 6.5 of the Enforcement Policy. The finding was assigned a cross-cutting aspect of Change Management in the Human Performance area because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3]. (Section 1R17.b.4)

## REPORT DETAILS

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R17 Evaluations of Changes, Tests, Experiments and Permanent Plant Modifications (71111.17T)

##### a. Inspection Scope

Evaluations of Changes, Tests, and Experiments: The team reviewed eight safety evaluations performed pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, "Changes, tests, and experiments," to determine if the evaluations were adequate, and that prior NRC approval was obtained as appropriate. The team also reviewed twenty-one screenings where licensee personnel had determined that a 10 CFR 50.59 evaluation was not necessary. The team reviewed these documents to determine if:

- the changes, tests, or experiments performed were evaluated in accordance with 10 CFR 50.59, and that sufficient documentation existed to confirm that a license amendment was not required
- the safety issues requiring the changes, tests, or experiments were resolved
- the licensee conclusions for evaluations of changes, tests, or experiments were correct and consistent with 10 CFR 50.59
- the design and licensing basis documentation used to support the change was updated to reflect the change

The team used, in part, Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Implementation," Rev. 1, to determine acceptability of the completed evaluations and screenings. The NEI document was endorsed by the NRC in Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," dated November 2000.

Permanent Plant Modifications: The team reviewed nine permanent plant modifications that had been installed in the plant during the last three years. The modifications reviewed are listed below:

- DCN 53413, Stage 13: Make 2-FCV-70-153 an Active Valve For Unit 1, Rev. A
- DCN 57975, AFW Operating Response Time, Rev. B
- DCN 58444, Replace Any Emergency Diesel Generator (EDG) 6.9KV Power Cables that Do Not Pass the Required Very Low Frequency (VLF) Insulation Testing, Rev. 1
- DCN 58778, Incorporate Changes to Correct Eagle 21 Narrow Range RTD Error per Westinghouse FCN-WATM-10845, Rev. 1
- DCN 59675, Stage 11 - Install Two 225 KVA Air Cooled Diesel Generators On The Aux Bldg Roof To Mitigate Loss Of All AC Beyond-Design-Basis-Event, Rev. A
- DCN 60438, Provide Flood Protection Barrier Around SDBR And MCR CW CIR. Pumps, Rev. A

- DCN 62864, Corrects the Existing Unit 1 System 62 Condition in Which a Fire Could Cause Spurious Closure of a System 62 VCT Valve and At The Same Time Prevent the Required Same Train System 62 RWST Valve From Opening. Rev. 0
- DCN 64013, Increase the Flow Limitation Of The CCS Pumps 1A-A, 1B-B, C-S, And 2B-B, Rev. A
- DCN 64501- Replace Centrifugal Charging Pump Room Cooler Coil With ASME Section III Coil, Rev. A

The modifications were selected based upon risk significance, safety significance, and complexity. The team reviewed the modifications selected to determine if:

- the supporting design and licensing basis documentation was updated
- the changes were in accordance with the specified design requirements
- the procedures and training plans affected by the modification had been adequately updated
- the test documentation, as required by the applicable test programs, had been updated
- post-modification testing adequately verified system operability and/or functionality

The team also used applicable industry standards to evaluate acceptability of the modifications and performed walkdowns of accessible portions of the modifications. Documents reviewed are listed in the Attachment.

b. Findings

b.1 Failure to Perform 50.59 Screenings For Procedures For Unit 1

Introduction: The NRC identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," at Watts Bar Unit 1 for the licensee's failure to perform 10 CFR 50.59 screening reviews for new technical procedures and changes to technical procedures, as directed by procedure NPG-SPP-01.2.1, "Interim Administration of Site Technical Programs and Procedures for Watts Bar 1 and 2," Rev. 2

Description: Watts Bar's program for implementing 10 CFR 50.59 "Changes, Tests, and Experiments" is based on NEI 96-07 "Guidelines for 10 CFR 50.59 Implementation", Rev. 1. This consists of three main parts; Applicability Determinations, Screening Reviews, and 50.59 Evaluations. The screening review is performed to determine if a technical specification change is required or if a 50.59 Evaluation is required.

Procedure NPG-SPP-01.2.1, section 3.2.14, I., required, in part, that "New technical procedures and changes to technical procedures shall be reviewed to determine if the procedure is within the scope of 10 CFR 50.59," and that, "If it is determined that 10 CFR 50.59 is applicable to the procedure or the change being made, then a 50.59 screening review shall be performed in accordance with NPG-SPP-09.4."

Responding to the inspectors request related to procedure changes, the licensee informed the inspectors that approximately twenty Unit 0 new or changed technical procedures were found to be within the scope of 10 CFR 50.59 without having a screening performed. The licensee entered this issue into their corrective action



program (CAP) as condition report (CR) 1145320 and performed the procedurally directed screening reviews which determined that no 50.59 Evaluations were required. The inspectors concluded that there was a programmatic aspect to this issue, due to it not being an isolated instance.

Analysis: The licensee's failure to perform 10 CFR 50.59 screening reviews for new technical procedures and changes to technical procedures as directed by procedure NPG-SPP-01.2.1 was determined to be a performance deficiency. 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 50.59 screenings for procedures are programmatically not performed, the new and revised procedures could be inappropriately implemented without proper 50.59 evaluation.

The inspectors used IMC 0609, Att. 4, "Initial Characterization of Findings," issued June 19, 2012, for Mitigating Systems, and IMC 0609, App. A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012, and 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 was assigned a cross-cutting aspect of Change Management in the Human Performance area as defined in NRC IMC 0310, because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, And Drawings," required, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to the above, since October 22, 2015, the licensee failed to accomplish activities affecting quality in accordance with procedures, by failing to perform 50.59 screening reviews for new technical procedures and changes to technical procedures in accordance with procedure NPG-SPP-01.2.1. This violation is being treated as an NCV consistent with section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's CAP as CR 1145320 and the licensee performed 50.59 screenings of all of the procedures in question. (NCV 05000390/2016008-01, "Failure to Perform 50.59 Screenings For Procedures For Unit 1.")

b.2 Failure to Perform Verification and Validation For Abnormal Operating Instructions For Unit 1

Introduction: The NRC identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," at Watts Bar Unit 1 for the licensee's failure to perform verification and validation (V&V) for abnormal operating instructions (AOIs) as directed by technical instruction 0-TI-12.11, "Emergency Operating Instruction (EOI)."

Description: Technical instruction 0-TI-12.11 establishes administrative controls and provides requirements for revision, maintenance, verification, validation, and approval of EOIs and supporting program manuals. This technical instruction is applicable for revisions of EOI program manuals, EOIs, and AOIs, and uses the term "EOI" to refer to all of these types of documents.

Section 3.3.1 of technical instruction 0-TI-12.11, stated, in part, that “Verification of EOLs is the process of independently checking that instructions are technically correct, that any deviations from the corresponding ERG/ARG guidance are justified, that the instructions are compatible with plant hardware, and that the instructions adhere to the guidance in the Writer’s Guide” and that “The verification requirement of this section are applicable to all revisions to EOLs.” In this context, ERG is the Westinghouse Owners Group Emergency Response Guideline document, and that ARG is Westinghouse Owners Group Abnormal Response Guideline document. Additionally, section 3.6.1 of TI 0-TI-12.11, stated, in part, that “Validation of EOLs is the process of exercising instructions to ensure that they are usable, that the language and level of information is appropriate, and that the instructions will function as intended” and that “The validations requirements of this section are applicable for all revisions to EOLs and AOs, except for correction of typographical errors.”

Through interviews, questions, and procedure reviews, the inspectors determined that some abnormal operating procedures did not receive a V&V. The licensee entered this issue into their CAP as CRs 1151954 and 1153507, and determined through an extent of condition review that approximately twenty-three Unit 0 and twenty-three Unit 1 new or revised AOs did not have V&V performed. Additionally, the licensee performed the procedurally directed V&Vs which determined that all of the AOs in question were adequate. The inspectors concluded that there was a programmatic aspect to this issue, due to it not being an isolated instance.

Analysis: The licensee’s failure to perform V&V for AOs as directed by technical instruction 0-TI-12.11 was determined to be a performance deficiency. 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 V&Vs for AOs are programmatically not performed, the new and revised AOs could be inadequate to be relied upon for situations such as time critical operator actions.

The inspectors used IMC 0609, Att. 4, “Initial Characterization of Findings,” issued June 19, 2012, for Mitigating Systems, and IMC 0609, App. A, “The Significance Determination Process (SDP) for Findings At-Power,” issued June 19, 2012, and 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 was assigned a cross-cutting aspect of Change Management in the Human Performance area as defined in NRC IMC 0310, because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, And Drawings,” required, in part, that “activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.” Contrary to the above, from January 11, 2007, to March 7, 2016, the licensee failed to accomplish activities affecting quality in accordance with instructions, by failing to perform V&V for AOs as directed by technical instruction 0-TI-12.11. This violation is being treated as an NCV consistent with section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee’s CAP as CRs 1151954 and 1153507 and the licensee performed V&Vs for all of the AOs in question. (NCV

05000390/2016008-02, "Failure to Perform Verification and Validation For Abnormal Operating Instructions For Unit 1.")

b.3 Failure to Perform 50.59 Screenings For Procedures For Unit 2

Introduction: The NRC identified a SL IV NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," at Watts Bar Unit 2 for the licensee's failure to perform 10 CFR 50.59 screening reviews for new technical procedures and changes to technical procedures, as directed by procedure NPG-SPP-01.2.1, "Interim Administration of Site Technical Programs and Procedures for Watts Bar 1 and 2," Rev. 2.

Description: Watts Bar's program for implementing 10 CFR 50.59 "Changes, Tests, and Experiments" is based on NEI 96-07 "Guidelines for 10 CFR 50.59 Implementation", Rev. 1. This consists of three main parts; Applicability Determinations, Screening Reviews, and 50.59 Evaluations. The screening review is performed to determine if a technical specification change is required or if a 50.59 Evaluation is required.

Procedure NPG-SPP-01.2.1, section 3.2.14, I., required, in part, that "New technical procedures and changes to technical procedures shall be reviewed to determine if the procedure is within the scope of 10 CFR 50.59," and that, "If it is determined that 10 CFR 50.59 is applicable to the procedure or the change being made, then a 50.59 screening review shall be performed in accordance with NPG-SPP-09.4."

Responding to the inspectors request related to procedure changes, the licensee informed the inspectors that approximately twenty Unit 0 and thirty-four Unit 2 new or changed technical procedures were found to be within the scope of 10 CFR 50.59 without having a screening performed. The licensee entered this issue into their CAP as CR 1145320 and performed the procedurally directed screening reviews which determined that no 50.59 Evaluations were required. The inspectors concluded that there was a programmatic aspect to this issue, due to it not being an isolated instance.

The licensee's failure to perform 50.59 screening reviews for new technical procedures and changes to technical procedures as directed by procedure NPG-SPP-01.2.1 was determined to be a performance deficiency. The performance deficiency was more than minor, because it represented an improper or uncontrolled work practice that could impact quality or safety, involving safety-related SSCs. Specifically, if 50.59 screening reviews for procedures are programmatically not performed, the new and revised procedures could be inappropriately implemented without proper 50.59 evaluation. The inspectors determined this finding to be of very low safety significance, SL IV, in accordance with Section 6.5 of the Enforcement Policy. Specifically, the finding was a SL IV violation because it represented a failure to meet a regulatory requirement, including one or more QA criteria that had more than minor safety significance. The finding was assigned a cross-cutting aspect of Change Management in the Human Performance area as defined in NRC IMC 0310, because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, And Drawings," required, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions,

procedures, or drawings.” Contrary to the above, since October 22, 2015, the licensee failed to accomplish activities affecting quality in accordance with procedures, by failing to perform 50.59 screening reviews for new technical procedures and changes to technical procedures in accordance with procedure NPG-SPP-01.2.1. This finding was determined to be a SL IV violation using Section 6.5 of the NRC Enforcement Policy. This violation is being treated as an NCV consistent with section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee’s CAP as CR 1145320 and the licensee performed 50.59 screenings of all of the procedures in question. (NCV 05000391/2016008-01, “Failure to Perform 50.59 Screenings For Procedures For Unit 2.”)

b.4 Failure to Perform Verification and Validation For Abnormal Operating Instructions For Unit 2

Introduction: The NRC identified a SL IV NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” at Watts Bar Unit 2 for the licensee’s failure to perform V&V for AOs as directed by technical instruction 0-TI-12.11, “Emergency Operating Instruction (EOI).”

Description: Technical instruction 0-TI-12.11 establishes administrative controls and provides requirements for revision, maintenance, verification, validation, and approval of EOIs and supporting program manuals. This technical instruction is applicable for revisions of EOI program manuals, EOIs, and AOs, and uses the term “EOI” to refer to all of these types of documents.

Section 3.3.1 of TI 0-TI-12.11, stated, in part, that “Verification of EOIs is the process of independently checking that instructions are technically correct, that any deviations from the corresponding ERG/ARG guidance are justified, that the instructions are compatible with plant hardware, and that the instructions adhere to the guidance in the Writer’s Guide” and that “The verification requirement of this section are applicable to all revisions to EOIs.” In this context, ERG is the Westinghouse Owners Group Emergency Response Guideline document, and that ARG is Westinghouse Owners Group Abnormal Response Guideline document. Additionally, section 3.6.1 of technical instruction 0-TI-12.11, stated, in part, that “Validation of EOIs is the process of exercising instructions to ensure that they are usable, that the language and level of information is appropriate, and that the instructions will function as intended” and that “The validations requirements of this section are applicable for all revisions to EOIs and AOs, except for correction of typographical errors.”

Through interviews, questions, and procedure reviews, the inspectors determined that some abnormal operating procedures did not receive a V&V. The licensee entered this issue into their CAP as CRs 1151954 and 1153507, and determined through an extent of condition review that approximately twenty-three Unit 0 new or revised AOs did not have V&V performed. Additionally, the licensee performed the procedurally directed V&Vs which determined that all of the AOs in question were adequate. The inspectors concluded that there was a programmatic aspect to this issue, due to it not being an isolated instance.

The licensee’s failure to perform V&V for AOs as directed by TI 0-TI-12.11 was determined to be a performance deficiency. The performance deficiency was more than minor, because it represented an improper or uncontrolled work practice that could impact quality or safety, involving safety-related SSCs. Specifically, if V&Vs for AOs are

programmatically not performed, the new and revised AOs could be inadequate to be relied upon for situations such as time critical operator actions. The inspectors determined this finding to be of very low safety significance, SL IV, in accordance with Section 6.5 of the Enforcement Policy. Specifically, the finding was a SL IV violation because it represented a failure to meet a regulatory requirement, including one or more QA criteria that had more than minor safety significance. The finding was assigned a cross-cutting aspect of Change Management in the Human Performance area as defined in NRC IMC 0310, because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remained the overriding priority [H.3].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, And Drawings," required, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to the above, from October 22, 2015, to March 7, 2016, the licensee failed to accomplish activities affecting quality in accordance with instructions, by failing to perform V&V for AOs as directed by TI 0-TI-12.11. This finding was determined to be a SL IV violation using Section 6.5 of the NRC Enforcement Policy. This violation is being treated as an NCV consistent with section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's CAP as CRs 1151954 and 1153507 and the licensee performed V&Vs for all of the AOs in question. (NCV 05000391/2016008-02, "Failure to Perform Verification and Validation For Abnormal Operating Instructions For Unit 2.")

#### 4OA6 Meetings, Including Exit

On March 25, 2016, the team presented the inspection results to Mr. Simmons and other members of the licensee's staff. Additional inspection results were discussed with Mr. Proffitt on April 14, 2016. The team verified that no proprietary information was retained by the inspectors, or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

## **SUPPLEMENTARY INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel:**

P. Simmons, TVA – Site Vice President  
G. Arent, TVA – Licensing Manager  
J. O'Dell, TVA - Regulatory Compliance  
R. Proffitt, TVA – Licensing  
Bryce Cusick, TVA – Civil Engineering Manager

#### **NRC personnel:**

A. Blamey, Chief, Division of Reactor Projects  
J. Baptist, Chief, Division of Reactor Projects  
J. Nadel, Unit 1 Senior Resident Inspector, Division of Reactor Projects  
E. Patterson, Unit 2 Senior Resident Inspector, Division of Reactor Projects

### **LIST OF REPORT ITEMS**

#### **Opened and Closed**

05000390/2016008-01	NCV	Failure to Perform 50.59 Screenings For Procedures For Unit 1 (Section 1R17.b.1)
05000390/2016008-02,	NCV	Failure to Perform Verification and Validation For Abnormal Operating Instructions For Unit 1 (Section 1R17.b.2)
05000391/2016008-01	NCV	Failure to Perform 50.59 Screenings For Procedures For Unit 2 (Section 1R17.b.3)
05000391/2016008-02	NCV	Failure to Perform Verification and Validation For Abnormal Operating Instructions For Unit 2 (Section 1R17.b.4)

## **LIST OF DOCUMENTS REVIEWED**

### **Licensing Documents**

TS, Current  
TRM, Current  
UFSAR, Current  
SER and Supplements

### **10 CFR 50.59 Evaluations**

DCN 52837, Provide Required Documentation And PR's To Eliminate Pressure Locking And To Regear Valves 1-FCV-63-025 & -026 To Meet JOG-MOV Program Requirements, Rev. B  
DCN 52857, Installation Of Foxboro Control System And Eagle 21, Rev. 1  
DCN 56414 Refuel Logic Dual Unit Operation, Rev. 0  
DCN 59008, Provide A Tie-In To The Existing Aux Control System To Allow Installation Of A 3rd Compressor, Rev. A  
DCN 61077, Revise SDD, FSAR, Design Criteria, Etc. To Support Testing The Unit 2 ERCW System, Rev. A  
DCN 62151, Modify Unit 1 ERCW Valve Positions In Preparation For Dual Unit ERCW Flow Balance, Rev. A  
DCN 62860, Modify The Control Circuits To Only Run The Dryers When The Associated Compressor Is Operating, Rev. 0  
DCN 65097, Install New Backdraft Dampers For Smoke Mitigation Between The 6.9Kv B-Train Shutdown Board Room And The 480VAC Shutdown Board Room, Rev. A

### **10 CFR 50.59 Screenings**

DCN 51679, Increase Range On Several CCS Flow Loops To Correct Off-scale Indications, Rev. 1  
DCN 52641, Installs/Modifies Two Unit 2 System 65 EGTS Loops 2-LPP-65-80 And 2-LPP-65-82, Rev. 4  
DCN 53669, Modify Unit 1 And Unit 2 Interface, Rev. A  
DCN 53743, Install Boric Acid Batching Tank Conveyor, Rev. A  
DCN 54004, Repair And Replace Various Components That Serve EGTS, Rev. 3  
DCN 54208, Move EDG SSPS Cables To TB603 To Match Unit 1, Rev. 3  
DCN 54410, Perform All Necessary Work To Remove WBN Unit 2 Main and Aux Feedwater System Interface Points With Unit 1, Rev. A  
DCN 54497, Parallel Signal To Unit 2 CISP, Rev. 0  
DCN 54912, Replaces/Reroutes Cables Required For Unit 1 Operation Due to Cable Breakages Identified From The Appendix R CAP, Rev. 7  
DCN 55477, Replace Valve Actuators For GL 89-10, Rev. A  
DCN 56903, Install New DCS Cabinets To Support Unit 1 Upgrade, Rev. 1  
DCN 57326, Replace Station Air Compressors & Associated Equipment, Rev. A  
DCN 57707, Revises The Design Requirements For The Lower Compartment Vent Cooler (LCVC) Cooling Coils, The Control Rod Drive Mechanism (CROM) Cooling Coils, The Reactor Coolant Pump Motor Air Coolers (RCP MACs), The Upper Compartment Vent Cooler (UCVC) Cooling Coils And The In-Core Instrument Room Chillers To Support GDC 5, Rev. 0  
DCN 58263, Replace RHR Sump Strainer Plenum Coverplate With Coverplate Using Larger Orifices, Rev. A  
DCN 58517, Eliminate The Unit 1 Hydrogen Recombiner System (System 83), Rev. A  
DCN 58901, Connect The N2 Backup Systems For The U1 & U2 AFW Systems To The Yard Nitrogen Supply Header, Rev. A

DCN 60532, Facilitate Flood Mode Preparations For ERCW / CCS Spool Pieces, Rev. A  
 DCN 60539, Remove Discharge Check Valve Internals On SDBR, MCR, And EBR Chilled Water Circulating Pumps, Rev. A  
 DCN 63514, Removes The Coil Clearing Relay Contact For The Reset Coils On The EGTS Suction Dampers, LR10 For 1-FCV-65-10-A And LR30 For 1-FCV-65-30-B, Rev. 0  
 Scaffold Request 15-3292-2, Unit 2 Aux Building Scaffold, Rev. 0  
 Scaffold Request 16-0510-2, Unit 0 Control Building Scaffold, Rev. 0

#### Calculations

EPMFM120187, Auxiliary Control Air Operating Modes, Rev. 4  
 EPM-GDU-041593, Brake Horsepower Analysis For Safety Related Components, Rev. 033  
 EPM-JN-071789, Component Cooling System Available Pump NPSH, Rev. 007  
 EPM-MZ062592, FMEA for Reactor Building Purge Exhaust System, Rev. 7  
 EPM-SME-040790, Component Cooling System Load List, Rev. 024  
 MDQ00003020010067, Minimum ESF Cooler ERCW Flow Rates Versus Entering ERCW Temperatures During LOCA Conditions, Rev. 4  
 MDQ00006720080341, Essential Raw Cooling Water (ERCW) System Pressure Drop Calculation, Rev. 24  
 MDQ00299920110380, Evaluation of the Impact of Diesel Generator (DG) Frequency and Voltage Limits, Rev. 008  
 TI627, FMEA Auxiliary Building, Rev. 37  
 TI630, FMEA Auxiliary Building Gas Treatment System, Rev. 16  
 WB-DC-40-36, The Classification Of Piping, Pumps, Valves, and Vessels, Rev. 0  
 WB-DC-40-36.1 The Classification Of Heating, Ventilating, And Air Conditioning Systems, Rev. 11  
 WBNEM73, Essentially Mild, Rev. 9  
 WBPEVAR8909010, Cable Ampacity in Class 1E Cable Raceways, Rev. 96  
 WBPEVAR9004001, Appendix R Cables Required For Safe Shutdown Following Fire, Rev. 52  
 WCGACQ0496, Seismic Qualification Of System 030 Equipment, Rev. 7

#### Procedures

MMTP-102, Erection Of Scaffolds/Temporary Work Platforms And Ladders, Rev. 11  
 MMTP-104, Guidelines And Methodology For Assembling And Tensioning Threaded Connections, Rev. 7  
 NC-PP-32, Watts Bar Nuclear Plant Unit 2 Development And Issue Of Operating And Technical Instructions, Rev. 6  
 NPG-SPP-01.2, Administration Of Site Technical Procedures, Rev. 12  
 NPG-SPP-01.2.1, Interim Administration Of Site Technical Programs And Procedures For Watts Bar 1 and 2, Rev. 2  
 NPG-SPP-09.3, Plant Modifications And Engineering Change Control, Rev. 21  
 NPG-SPP-09.3.1, Guidelines For Preparation Of Design Inputs And Change Impact Screen, Rev. 6  
 NPG-SPP-09.4, 10 CFR 50.59 Evaluations Of Changes, Tests, And Experiments, Rev. 9  
 NPG-SPP-22.300, Corrective Action Program, Rev. 5  
 NPG-SPP-22.302, Corrective Action Program screening, Rev. 8  
 OPDP-8, Operability Determination Process And Limiting Conditions For Operation Tracking, Rev. 21  
 TI-67.002, Component Flow Blockage Testing – Essential Raw Cooling Water (Train B), Rev. 180-AOI-43.01, Loss Of Unit 1 Train A Shutdown Boards, Rev.4  
 0-AOI-43.02, Loss Of Unit 1 Train B Shutdown Boards, Rev. 6  
 0-AOI-43.03, Loss Of Unit 2 Train A Shutdown Boards, Rev. 5



0-AOI-43.04, Loss Of Unit 2 Train B Shutdown Boards, Rev. 5  
 0-AOI-35, Loss Of Offsite Power, Rev. 0  
 0-ARI-241-253, CCS, Rev. 2  
 0-SOI-70.01, Component Cooling Water (CCS) System, Rev. 20  
 0-TI-12.11, Emergency Operating Instruction (EOI) Control, Rev. 1  
 0-TI-441, Operational Readiness Process For Unit 2 Systems, Rev. 6  
 1-AOI-15, Loss of Component Cooling Water (CCS), Rev. 7  
 1-AOI-21.01, Loss Of 125V DC Vital Battery Board I, Rev. 0  
 1-AOI-21.02, Loss Of 125V DC Vital BATTERY Board II, Rev. 1  
 1-AOI-25.01, Loss Of 120V AC Vital Instrument Power Boards 1-I Or 2-I, Rev. 4  
 1-AOI-25.02, Loss Of 120V AC Vital Instrument Power Boards 1-II Or 2-II, Rev. 4  
 1-AOI-25.03, Loss Of 120V AC Vital Instrument Power Boards 1 - III Or 2 – III, Rev. 3  
 1-AOI-25.04, Loss Of 120V AC Vital Instrument Power Boards 1-IV And 2-IV, Rev. 3  
 1-AOI-21.01, Loss Of 125V Dc Vital Battery Board I, Rev. 0  
 1-AOI-21.02, Loss Of 125V DC Vital Battery Board II, Rev. 0  
 1-AOI-25.01, Loss Of 120V AC Vital Instrument Power Boards 1-I Or 2-I, Rev. 0  
 1-AOI-25.02, Loss Of 120V AC Vital Instrument Power Boards 1-II Or 2-II, Rev. 0  
 1-AOI-25.03, Loss Of 120V AC Vital Instrument Power Boards 1 - III OR 2 – III, Rev. 0  
 1-AOI-25.04, Loss Of 120V AC VITAL INSTRUMENT POWER BOARDS 1-IV And 2-IV, Rev. 0  
 1-AOI-40, Station Blackout, Rev. 5  
 1-AOI-44, EAGLE21 Malfunctions, Rev. 0  
 1-SI-68-301, Cross Calibration Of RCS Temperature Sensors Using RTDXCAL-DAQ, Rev. 7  
 2-AOI-44, EAGLE21 Malfunctions, Rev. 0

#### Completed Procedures:

1-SI-3-901-B, Motor Driven Auxiliary Feedwater Pump 1B-B Quarterly Performance Test,  
 Performed 02/01/2016

#### Drawings

N2014-24x48-WBD-2-SUB, TVA Watts Bar Wing Blade Damper Submittal Drawing, Rev. 3  
 N2014-WBD-0590-0593-SUB, TVA Watts Bar Wing Blade Damper General Arrangement /  
 Installation Submittal Drawing, Rev. 0  
 0-47W611-70-1, Electrical Logic Diagram Component Cooling System, R1  
 0-47W611-82-1, Logic Diagram Diesel Generator System DG 1A-A, Rev. 0  
 0-47W840-4, Flow Diagram Fuel Oil 225KVA Diesel, Rev. 2  
 0-47W845-1, Mechanical Flow Diagram-Essential Raw Cooling Water System, Rev. 0  
 0-47W845-2, Mechanical Flow Diagram – Essential Raw Cooling Water Rev. 2  
 0-47W845-1, Mechanical Flow Diagram – Essential Raw Cooling Water Rev. 0  
 0-47W848-1, Mechanical Flow Diagram Control Air, R0  
 0-47W859-1, Mechanical Flow Diagram Component Cooling System, R5  
 0-47W859-4, Mechanical Flow Diagram Component Cooling System, R1  
 1-45W600-70, Wiring Diagrams Component Cooling System Schematic Diagrams, R18  
 1-45W600-65-1, Wiring Diagrams Emergency Gas Treatment System, Rev. 15  
 1-47W803-2, Flow Diagram Auxiliary Feedwater, R70  
 1-47W803-2, Flow Diagram Auxiliary Feedwater, R87  
 1-47W804-1, Flow Diagram Condensate, R70  
 1-47W845-4, Mechanical Flow Diagram – Essential Raw Cooling Water Rev. 37  
 1-47W859-2, Mechanical Flow Diagram Component Cooling System, R41  
 2-45W600-70, Wiring Diagrams Component Cooling System Schematic Diagrams, R11  
 2-47W803-2, Flow Diagram Auxiliary Feedwater, R38  
 2-47W859-3, Mechanical Flow Diagram Component Cooling System, R34

45N1693-1, Wiring Diagrams Separation Aux Relay PNL 1-R-78 Connection Diagrams, Rev. 19  
 46W401-7, Reactor & Control Building, Architectural Plan EI 755.0 & 757.0, R12  
 47W845-1, Flow Diagram Essential Raw Cooling Water, Rev. 29  
 47W310-1, Mechanical Tanks, R4  
 47N2677-1, Solid State Protection System Train B Connection Diagram, Rev.  
 47A373-12, Mechanical, Heating, Ventilating, & Air Conditioning Air Cooling Units, Rev. 3  
 47W310-3, Mechanical Tanks, R0  
 47W450-35, Mechanical Essential Raw Cooling Water, Rev. 2  
 47W611-82-3, Electrical Logic Diagram Diesel Generator, Rev. 8

#### Miscellaneous Documents

Approval And Specific Case Engineering Evaluation Of Fiberglass Extension Ladder  
 Letter WAT-D-11925, Tennessee Valley Authority Watts Bar Nuclear Plant Unit 1, Eagle-21  
 Rack 2 Narrow Range RTD Remediation, dated September 28, 2011  
 PS 4.M.4.4, ASME Section III And Non-ASME Section III Bolting Material, Rev. 5  
 SDD-N3-30AB-4001, Auxiliary Building Heating, Ventilation, Air Conditioning System (30, 31,  
 44) Unit 1 / Unit 2, Rev. 39  
 SDD-N3-30RB-4002, Reactor Building Ventilation System Unit 1 / Unit 2, Rev. 27  
 SDD-N3-32-4002, Compressed Air System, Rev. 12  
 SDD-N3-3B-4002, Auxiliary Feedwater System Unit 1 / Unit 2, Rev. 22  
 SDD-N3-70-4002, Component Cooling System, Rev. 17  
 Setpoint and Scaling Document, 1-PD-3-122A, Rev. 1  
 Setpoint and Scaling Document, 1-PD-3-122C, Rev. 1  
 Test Summary Report for 2-PTI-070-03, Component Cooling System (CCS) Dual Unit  
 Shutdown Flow Test, Rev. 0  
 Test Summary Report for 2-PTI-070-2A, Component Cooling System (CCS) Unit 2 Train A Flow  
 Balance, Rev. 1  
 Watts Bar Nuclear Plant Fire Protection Report, Rev. 51  
 WBN-DCD-40-29, Flood Protection Provisions, Rev. 14  
 WBN-DCD-WB-DC-40-34, Containment Isolation System, Rev. 12  
 WBN-ENG-F-13-003, WBN Design Change Notices From 1996 To 2004  
 WBN-SDD-N3-32-4002, Compressed Air System, Rev. 9  
 WBN-VTD-E322-0430, Ellis & Watts Installation, Operation, And Maintenance Manual For  
 ASME B&PV Section III Cooling Coils, Rev. 0  
 WBN-VTD-PR24-0110, PMT Nuclear Operating & Maintenance Manual Low Leakage Wing  
 Blade Check Dampers, Rev. 0  
 WBN-WB-DC-40-37, Heat Rejection System, Rev. 16

#### Corrective Action Documents

CR 237411	CR 820441	CR 840320	CR 1066869
CR 320202	CR 824803	CR 842123	CR 1068286
CR 382870	CR 826877	CR 868139	CR 1069649
CR 384466	CR 830946	CR 920178	CR 2242046
CR 773461	CR 834028	CR 1023935	
CR 809167	CR 837179	CR 1025550	

#### Work Orders

04-823935-000	04-820592-000	111506518	114934739
04-823912-000	110799435	111934773	115432946
04-820592-015	111068428	112857630	115432948
04-820592-008	111506378	114756104	115448292

115589547	115742751	116154283	116956010
115674620	115886614	116154285	117104692
115742750	116077181	116154298	117600532

Corrective Action Program Documents generated as a result of the inspection

CR 1145320, 10CFR50.59 Not Address For Unit 2 And Unit 0 Procedures  
 CR 1151924, Untagged And Unrestrained Temporary Ladders On Auxiliary Building El. 737  
 CR 1151954, No EOI Validations Performed For AOI-21.0X Revisions  
 CR 1152030, NRC Identified: Scaffold In Place For Greater Than 90 Days Without an 50.59 Performed  
 CR 1152278, Error In NPG-SPP-01.2.1  
 CR 1152586, Scaffold In Place Greater Than 90 Days Without An 50.59 Performed  
 CR 1152844, General Housekeeping Issues In Communications Room (CB 692)  
 CR 1153507, AOI Revisions Not Appropriately Validated  
 CR 1153508, Potential Procedure Enhancement To AOI-25 Series  
 CR 1153509, Procedure Enhancement ECA-0.1