



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 9, 2020

EA-19-092

Mr. Jim Barstow  
Vice President Nuclear Regulatory Affairs  
& Support Services  
Tennessee Valley Authority  
1101 Market Street, LP 4A-C  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT – OFFICE OF INVESTIGATIONS REPORT  
NO. 2-2016-042 AND APPARENT VIOLATIONS

Dear Mr. Barstow:

This letter refers to the investigation completed on May 17, 2019, by the Nuclear Regulatory Commission's (NRC) Office of Investigations (OI) at Tennessee Valley Authority's (TVA) Watts Bar Nuclear (WBN) Plant. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

The NRC's review began in late November of 2015, when the NRC became aware of a November 11, 2015, Unit 1 pressurizer water level excursion event occurring during a plant startup. The NRC immediately began an inspection, which expanded to include significant focused inspection effort, assistance from the NRC's OI, interviews of numerous TVA staff, NRC allegation program and enforcement program coordination, and engagement with TVA's Inspector General and other government entities. A formal NRC OI investigation was initiated in August 2016 and completed on May 17, 2019. At the request of the Director, Office of Enforcement, the NRC convened a multi-office team to review the enforcement aspects of the OI investigation report.

Based on the results of the investigation, 12 apparent violations (AVs) were identified and are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. A summary of the NRC's review is discussed in Enclosure 1. The AVs and Factual Summaries of the OI Investigation are provided in Enclosures 2 and 3, respectively.

The NRC OI investigation was initiated to review the circumstances of a Unit 1 reactor startup on November 11, 2015, after a maintenance outage. During the startup, the Main Control Room (MCR) operators, in consultation with TVA's Outage Control Center staff and others, proceeded with a portion of the startup by removing Residual Heat Removal (RHR) letdown from service and using only excess letdown to control pressurizer water level. Once the plant was aligned to use only excess letdown, the pressurizer water level quickly began to rise uncontrollably over the next hour and twenty minutes. Prior to exceeding the pressurizer high level alarm,

MCR operators restored RHR letdown to regain the ability to control pressurizer water level. Pressurizer water level was promptly restored to normal level, and Unit 1 resumed normal power ascension later that day without further incident.

The NRC OI investigation also reviewed the details of multiple communications and meetings between the NRC and TVA staff, and related documentation, all associated with the NRC's follow-up inspection of the November 11, 2015, event. This included but was not limited to documentation provided to the NRC or maintained by TVA; onsite meetings between the NRC and TVA as well as interviews of TVA staff; a January 6, 2016, non-public meeting between TVA WBN senior managers at the WBN facility; a February 2, 2016, non-public "drop-in" meeting with NRC management in the NRC's Region II office; two telephone calls between the TVA Chief Nuclear Officer (CNO) and NRC senior managers on March 13 and 15, 2016; and the submittal of a report to the NRC on March 24, 2016.

The NRC's preliminary review identified AVs in three areas: (i) TVA's apparent failure to implement TVA procedure WBN OPDP-1, "Conduct of Operations"; (ii) apparent procedural non-compliances associated with the pressurizer water level event of November 11, 2015; and (iii) multiple examples in which TVA apparently maintained and/or submitted to the NRC incomplete and/or inaccurate information from December 2015 to March 2016.

NRC Inspection Report 05000390,391/2016001, issued on April 7, 2016, identified two non-cited violations (NCV) related to the Unit 1 startup of November 11, 2015: NCV 05000390/2016001-07, Failure to Maintain Operating Logs, and NCV 05000390/2016001-05, Failure to Use Approved Procedures to Place RHR Letdown in Service. These two NCVs were documented in the previous inspection report based on the staff's understanding of the safety and regulatory significance at that time. However, as a result of NRC staff review of OI investigation 2-2016-042 and in accordance with section 2.3.8 of the NRC Enforcement Policy, and with the specific approval of the Deputy Executive Director for Materials, Waste, Research, State, Tribal, Compliance, Administration and Human Capital Programs, the NRC is reopening these NCVs due to the potential that the circumstances may warrant a change in the severity of the sanction and to correct the record. Accordingly, these previously issued NCVs are referenced in this letter as AV5 (Failure to Maintain Operating Logs) and AV6 (Failure to Use Approved Procedures to Place RHR Letdown in Service).

Before the NRC makes its enforcement decision, we are providing you an opportunity to (1) respond to the apparent violations addressed in this letter within 30 days of the date of this letter, or (2) request a Pre-decisional Enforcement Conference (PEC). If a PEC is held, the NRC may issue a press release to announce the time and date of the conference; however, the PEC will be closed to public observation since it is related to an Office of Investigations report that has not been made public. Additionally, a PEC will be transcribed. If you decide to participate in a PEC, please contact Nick Hilton at 301.287.9526 within 10 days of the date of this letter. A PEC should be held within 30 days of the date of this letter.

If you choose to provide a written response, it should be clearly marked as a "Response to Apparent Violations, EA-19-092" and should include for each apparent violation: (1) the reason for the apparent violations or, if contested, the basis for disputing the apparent violations; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the apparent violations. Additionally, your response should be sent to the NRC's Document Control Center, with a copy mailed to Kenneth G. O'Brien, Director, Division of Reactor Safety,

U. S. Nuclear Regulatory Commission, Region III, 2443 Warrenville Road, Suite 210, Lisle, Illinois 60532-4352, to George Wilson, Director, Office of Enforcement, MS O14A50, U.S. Nuclear Regulatory Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and the NRC senior resident inspector at Watts Bar Nuclear Plant, within 30 days of the date of this letter. If a response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a PEC.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on these matters and any other information that you believe the NRC should take into consideration before making an enforcement decision. The decision to hold a PEC does not mean that the NRC has determined that a violation has occurred or that enforcement action will be taken. This conference would be conducted to obtain information to assist the NRC in making an enforcement decision. The topics discussed during the conference may include information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned.

In addition, please be advised that the number and characterization of apparent violations described in the enclosure may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter and enclosures will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

If you have any questions concerning this matter, please feel free to contact me at 630-829-9700.

Sincerely,

*/RA/*

Kenneth G. O'Brien, Director  
Special Project Team  
Office of Enforcement

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

Enclosures:

1. Summary of NRC Review
2. Apparent Violations
3. Factual Summaries of the OI Investigation

cc w/ encls: Distribution via ListServ

SUBJECT: WATTS BAR NUCLEAR PLANT – OFFICE OF INVESTIGATIONS REPORT  
 NO. 2-2016-042 AND APPARENT VIOLATIONS  
 DATED: 3/9/2020

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## Summary of NRC Review

On May 17, 2019, the U.S. Nuclear Regulatory Commission's (NRC) Office of Investigations (OI), Region II, completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN) Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether Tennessee Valley Authority (TVA) employees deliberately violated plant procedures and deliberately submitted to the NRC or maintained incomplete and inaccurate information related to the November 2015 startup in subsequent meetings with, telephone calls with, or written submittals to the NRC during the December 2015 to March 2016 timeframe.

In late November 2015, the NRC initially became aware of possible procedural violations and a pressurizer water level excursion during the startup of WBN Unit 1 on November 11, 2015. In December 2015, the NRC began an initial review consisting of inspections and interviews of TVA employees involved in the November 11 event. The review later expanded to include interactions with TVA's Office of Inspector General and other entities. A formal NRC OI investigation was initiated in August 2016 and completed on May 17, 2019.

Based on NRC staff review, 12 Apparent Violations (AVs) were identified and are being considered for escalated enforcement in accordance with the NRC Enforcement Policy (Enclosure 2). Eleven of the twelve AVs involve potential deliberate misconduct on the part of TVA employees and are summarized in Factual Summaries (Enclosure 3). Willfulness does not appear to be associated with AV1, therefore, there is no associated factual summary.

Based upon the NRC inspection and investigation results, it appears that TVA WBN senior management created and perpetuated an environment that promoted non-conservative decision making and placed production over safety, contrary to the TVA's Conduct of Operations procedure. This began in September 2015, during preparations for an October 2015 refueling outage, and continued through an unscheduled maintenance outage in November 2015, culminating in events that occurred during plant startup on November 11, 2015.

On the night shift of November 10-11, 2015, WBN Unit 1 was in the process of starting up after a maintenance outage. In order to support valve repair work, the Main Control Room (MCR) operators removed the Chemical and Volume Control System (CVCS) normal letdown path from service. As a result, pressurizer water level control was provided by the excess letdown and residual heat removal (RHR) letdown paths.

On November 11, 2015, WBN Unit 1 was in Mode 5 and the MCR operators were conducting start-up activities in accordance with TVA General Operating Instruction (GOI) 1-GO-1, "Unit Startup from Cold Shutdown [Mode 5] to Hot Standby [Mode 3]." The CVCS normal letdown path remained out of service due to delays with the scheduled valve repair work. Rather than waiting for the CVCS system valve repair work to be completed and normal letdown to be restored, the Outage Control Center (OCC) staff urged the MCR to execute the schedule, which included heating up to Mode 4 and continuing toward Mode 3 operation. To continue the heat-up after entering Mode 4, the GOI required the MCR operators to place the RHR system in "ECCS Standby" mode, removing the RHR letdown path from service.

Before placing the RHR system in "ECCS Standby" Mode and continuing with the Mode 4 heat-up, the MCR operators expressed concerns with proceeding with the startup using only excess

letdown to control pressurizer water level. These concerns were also discussed with the OCC. Ultimately, the MCR Shift Manager instructed the crew to place the RHR system in "ECCS Standby" Mode and continue with the heat-up. After the MCR operators placed the RHR system in "ECCS Standby Mode," and with only excess letdown available, the pressurizer water level began to rise uncontrollably. Prior to the pressurizer water level reaching alarm levels, the MCR operators took non-proceduralized actions to place RHR letdown back in service and to regain pressurizer level control. After completion of the CVCS valve repair work later that day, the MCR operators restored normal letdown to service and continued with the startup without further incident.

The MCR operators did not document in the plant logs their heatup of the plant with normal letdown out of service, the uncontrolled rise in pressurizer water level, or the non-proceduralized method used to regain control of pressurizer water level on November 11, 2015. WBN staff also did not enter the event into the corrective action program until after the NRC began its inspection of the event in mid-December 2015.

Apparent Violations 1 through 6 involve the licensee's apparent violations of TVA-NPG-OPDP-1, "Conduct of Operations," associated with the creation and perpetuation of a non-conservative decision-making environment, and other apparent procedural violations, that occurred on and prior to November 11, 2015.

Based upon the NRC inspection and investigation, it also appears that TVA and WBN management subsequently provided incomplete and/or inaccurate information about the events of that day. This included information in documents TVA was required to maintain, information in written documents provided to the NRC, and information provided to the NRC in meetings and telephone calls during the period December 2015 through March 2016. Apparent Violations 7-12 reflect these instances in which incomplete and/or inaccurate information was maintained by TVA or provided to the NRC.

Apparent Violation No. 1:

Watts Bar Nuclear (WBN) Plant Unit 1 Technical Specification (TS), Section 5.7.1, "Procedures," requires, in part, that written procedures shall be established, implemented, and maintained covering the following activities: "a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2."

Nuclear Regulatory Commission (NRC) Regulatory Guide 1.33, Revision 2, "Quality Assurance Program Requirements," requires in Appendix A, 2., "General Plant Operating Procedures," a written procedure for plant operations for "Hot Standby to Minimum Load (nuclear startup)."

WBN General Operating Instruction (GOI) 1-GO-2, "Reactor Startup," Revision 6, Section 4, "Prerequisites" [8], states, "MAINTAIN SG [Steam Generator] levels on program with AFW [Auxiliary Feedwater] pumps."

Contrary to the above, on October 21, 2015, the licensee failed to follow GOI 1-GO-2, while conducting a start-up of Unit 1. Specifically, the Main Control Room (MCR) operators maintained the SG levels on program using the Standby Main Feedwater Pump, to facilitate performance testing and inspection of feedwater valves, instead of using the AFW pumps.

Apparent Violation No. 2:

Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, 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.

Tennessee Valley Authority (TVA) Procedure NPG-SPP-01.2, "Administration of Site Technical Procedures," Revision 12, establishes the minimum requirements for preparation, revision, review, approval, cancellation, and administrative hold of site and common technical procedures. Section 3.2.11, "Minor/Editorial Changes," Subsection A, states, "Minor changes do not require an AOR [Authorizing Organization Review], 10 CFR 50.59 review, 10 CFR 72.48 review, or PORC [Plant Operations Review Committee] review. Minor changes shall not change the intent of the procedure or alter the technical content or sequence of procedural steps."

Contrary to the above, on November 9, 2015, the licensee failed to follow TVA Procedure NPG-SPP-01.2 when revising General Operating Instruction 1-GO-1, "Unit Startup from Cold Shutdown to Hot Standby." Specifically, during a Unit 1 startup from Cold Shutdown to Hot Standby, the Operations Procedure Supervisor and Engineer/Procedure Writer changed GOI 1-GO-1, Step 5.2.1.[8] from "**THEN RAISE** RCS to between 135 and 160F ..." to "**THEN INITIATE** RCS heat-up to between 135 and 160F ..." using the minor/editorial change process described in TVA Procedure NPG-SPP-01.2. However, the change to the GOI was not minor/editorial, in that it altered the technical intent of the GOI and changed the sequence of GOI steps by allowing the MCR operators to continue with the GOI without having to wait for the RCS temperature to be between 135 and 160°F.



Apparent Violation No. 3:

Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, 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.

Watts Bar Nuclear (WBN) Plant, Unit 1 General Operating Instructions (GOI) 1-GO-1, "Unit Startup from Cold Shutdown to Hot Standby," Revision 4, provides instructions to perform a unit startup from Cold Shutdown Mode 5 (less than or equal to 200°F) to Hot Standby Mode 3 normal operating temperature and pressure.

GOI 1-GO-1, Section 5.3, Step [17.1] states, in part, "**PRIOR** to RCS heat-up above 200°F, **PERFORM** the following: **ENSURE**...any other clearance that would prohibit entry into Mode 4 has been restored as required."

GOI 1-GO-1, Section 5.3, Step [22], states, "**COMPLETE** APPENDIX B, Mode 5-To-4 Review and Approval, to ensure all restraints to Mode 4 entry are resolved, and approvals for Mode change granted." The Shift Manager (SM) must initial that this step has been completed as a prerequisite for the Main Control Room (MCR) operators to continue with the startup procedure.

GOI 1-GO-1, Step [3] of APPENDIX B, "Mode 5-To-4 Review and Approval," requires the MCR operators to, "ENSURE Checklist 1 COMPLETE for entry into Mode 4." Checklist 1, "System Alignment Verifications," refers to, among others, the Chemical and Volume Control System (CVCS) Charging and Letdown Valve Checklist (1-62.01-1V). Checklist 1-62.01-1V indicates that Valve 1-FCV-62-70 is normally in the "OPERABLE" position.

Contrary to the above, on November 11, 2015, the licensee failed to follow GOI 1-GO-1, during a reactor startup by not ensuring Steps 5.3[17] and 5.3[22] were properly completed prior to entering Mode 4. Specifically, Step 5.3[17] was marked as "N/A" without explanation or independent verification when, in fact, Clearance 1-62-0584-FO, which contained a Mode 5/6 restriction, was still in effect. Additionally, the SM initialed Section 5.3, Step [22], indicating that all restraints to Mode 4 entry had been resolved, when in fact all such restraints had not been resolved. In this case, Valve 1-FCV-62-70 was under repair and not in the "OPERABLE" position. As a result, the CVCS was in an abnormal line-up controlled by Clearance 1-62-0584-FO. The clearance contained a Mode 5/6 restriction, which was a safety precaution that was necessary for the valve repair work.

#### Apparent Violation No. 4:

Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, 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.

Tennessee Valley Authority (TVA) Procedure NPG-OPDP-1, "Conduct of Operations," Revision 0029, Section 1.0, "Purpose", states that a purpose of this procedure is to, "provide guidelines and instructions to ensure shift operations are conducted in a safe and conservative manner."

Section 3.3 "Conservative Decision Making," Subpart A, states, "Stop when unsure and proceed in a deliberate and controlled manner."

Section 3.3 "Conservative Decision Making," Subpart E, states, in part, "when the control room team is faced with an emerging issue: ...do not allow production and cost to override safety; question verify and validate available information; and do not proceed in the face of uncertainty."

Contrary to the above, on November 11, 2015, the licensee failed to accomplish activities affecting quality in accordance with TVA Procedure NPG-OPDP-1. Specifically, when faced with an emerging issue, the licensee did not ensure that shift operations were conducted in a safe and conservative manner; did not stop when unsure and proceed in a deliberate and controlled manner; did not validate available information; allowed production to override safety; and proceeded in the face of uncertainty. In order to stay on schedule, Outage Control Center (OCC) personnel urged the Shift Manager, and the Shift Manager directed Main Control Room (MCR) operators, to continue with startup activities, including conducting a reactor heat-up and a surveillance test of the residual heat removal (RHR) system with normal letdown out of service. The Shift Manager directed the MCR operators to proceed without validating the capability of excess letdown to control pressurizer water level and without having or using approved or modified written procedures for responding to off-normal events during the evolution (uncontrolled pressurizer water level increase). As a direct result, an uncontrolled increase in the pressurizer water level occurred and the MCR operators did not follow approved procedures to arrest the uncontrolled pressurizer water level increase. Neither the OCC personnel nor the MCR operators had the knowledge, training, or procedural guidance to be certain that the directed reactor operations could be conducted successfully given the current reactor Mode and the equipment configuration at the time.

#### Apparent Violation No. 5:

Title 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," states, in part, that, "Sufficient records shall be maintained to furnish evidence of activities affecting quality," and that these records "shall include" operating logs.

Tennessee Valley Authority (TVA) Procedure NPG-OPDP-1, "Conduct of Operations," Revision 0029, Section 4.6, "Log Keeping," Bullet A, states, "operations department logs, established for key shift positions, contain a narrative of the plant's status and of all events and record the data necessary to maintain an accurate history of plant operation." Bullet B states, "that all members of the shift shall ensure entries are made for their respective areas of responsibility." Bullet C states, "log entries document all major equipment manipulations and plant configuration changes, and logs should provide enough detail that events can be reconstructed at a later date." Bullet I states, "Shift management reviews the logs to ensure that the logs are accurate and appropriate."

Contrary to the above, on November 11, 2015, the licensee failed to maintain operations department logs that contained a narrative of all events necessary to maintain an accurate history of plant operation and failed to ensure that the logs were accurate and appropriate. On November 11, 2015, the Watts Bar Nuclear (WBN) Plant Unit 1 Main Control Room (MCR) operators were conducting a plant startup after a maintenance outage in accordance with General Operating Instruction (GOI) 1-GO-1, "Unit Startup from Cold Shutdown to Hot Standby." During the startup, the MCR removed residual heat removal (RHR) letdown from service, leaving excess letdown in service to control pressurizer water level while continuing with the startup. After the MCR operators removed RHR from service, the pressurizer water level rose uncontrollably from approximately 45 percent to 79 percent over the next hour and twenty minutes. Prior to exceeding the pressurizer high level alarm, the MCR operators opened RHR loop suction valves (Valves 1-FCV-74-1 and 1-FCV-74-2) and placed RHR letdown back in service to regain pressurizer water level control. The MCR operators conducted the above major equipment manipulations and plant configuration changes and did not make log entries to provide enough detail to reconstruct the events later. Shift management also did not review the logs to ensure that the logs were accurate and appropriate.

Apparent Violation No. 6:

Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, 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.

Tennessee Valley Authority (TVA) Procedure NPG-OPDP-1, "Conduct of Operations," Revision 0029, Section 5.1.D, "Procedural Adherence," states, "Plant equipment shall be operated in accordance with written approved procedures as discussed in NPG-SPP-01.2, Administration of Site Technical Procedures."

TVA Procedure NPG-SPP-01.2, "Administration of Site Technical Procedures," Section 3.2.2B, states. "Each step [of a continuous use procedure] shall be performed exactly as written and in the exact sequence specified unless the procedure allows working steps out of sequence."

WBN Procedure 1-SOI-74.01, Residual Heat Removal (RHR) System, Revision 0002, a continuous use procedure, Section 5.8.2, Steps [11], [18], and [21], state that the required sequence of plant operations is to open valves 1-FCV-74-1 and 1-FCV-74-2 (Step 11) and start the RHR pump (Step 18) before establishing RHR letdown (Step 21).

Contrary to the above, on November 11, 2015, the licensee failed to accomplish an activity affecting quality, operating the RHR system, in accordance with written approved procedures. Specifically, the Main Control Room operators did not follow Procedure 1-SOI-74.01, "Residual Heat Removal System," when they re-established RHR letdown without first starting the RHR pump.

### Apparent Violation No.7:

Title 10 CFR 50.9(a) requires that information provided to the Commission by a licensee or information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the licensee shall be complete and accurate in all material respects.

Contrary to the above, on December 14, 2015, the licensee provided information to the Commission that was not complete and accurate in all material respects. Specifically, on December 14, 2015, two Tennessee Valley Authority (TVA) employees met with the NRC Senior Resident Inspector (SRI) in the NRC Resident Inspector Office at the Watts Bar Nuclear Plant (WBN). At the meeting, the TVA employees gave the SRI a document containing written responses to questions that the SRI had previously posed regarding events that occurred on November 11, 2015, during a Unit 1 startup. In response to the SRI's question as to why the Residual Heat Removal (RHR) inlet valves were cycled on November 11, 2015, the TVA written response stated that one reason the RHR inlet valves were cycled was to place RHR letdown in service "to allow the repair of a valve inside containment on the normal letdown line (Valve 1-FCV-62-70)."

The written response provided by the TVA employees to the SRI was not accurate because it stated that the RHR inlet valves (Valves 1-FCV-74-1 and 1-FCV-74-2) were opened "to allow the repair of a valve inside containment on the normal letdown line (Valve 1-FCV-62-70)," when in fact the repair was initiated hours before the valves were opened. The written response was also not complete because it omitted the actual reason why the RHR inlet valves were cycled, which was to arrest the increase in pressurizer water level resulting from the inability of excess letdown to control pressurizer water level during the heat-up.

Additionally, TVA WBN maintained information that was not complete and accurate in all material respects in Condition Report (CR) 1114975, which was written on December 15, 2015, to address the SRI's concerns about the November 2015 startup. The CR was not complete and accurate because it did not document or address the actual reason for cycling Valves 1-FCV-74-1 and 1-FCV-74-2 (i.e., to restore RHR letdown to arrest the increase in pressurizer water level). The CR is a document that TVA is required to maintain pursuant to 10 CFR Part 50, Appendix B, Criterion XVII.

This information in both the written response and the CR was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

Apparent Violation No. 8:

Title 10 CFR 50.9(a) requires that information provided to the Commission by a licensee or information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the licensee shall be complete and accurate in all material respects.

Contrary to the above, on January 6, 2016, the licensee provided information to the Commission that was not complete and accurate in all material respects. On January 6, 2016, the NRC staff conducted a meeting with Tennessee Valley Authority (TVA) Watts Bar Nuclear (WBN) Plant senior managers at the WBN facility. During the meeting, TVA discussed the circumstances of the November 11, 2015, pressurizer water level control event. As part of that discussion, TVA presented a slide that contained the following text (bullet points):

- Operator fundamentals – Conservative decision making
- Procedures
  - Did not follow our rules
  - Procedures were not in hand
  - Deviate from procedures without proper authorizations

The slide also identified actions that had been taken by management, including performing observations in the Main Control Room (MCR) and implementing a Shift Order. The TVA staff stated at the meeting that this slide reflected the cause of the events on November 11, 2015.

The TVA senior managers did not inform the NRC, at the January 6, 2016, meeting or subsequently, of their awareness that on November 11, 2015, the MCR operators raised concerns to the Outage Control Center (OCC) managers as to their ability to control pressurizer water level during heat-up with normal letdown out of service. Additionally, these TVA managers did not inform the NRC, at the January 6, 2016, meeting or subsequently, that they were aware that the OCC was involved in the decision to move forward with the November 11, 2015, plant heat-up.

This information was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

### Apparent Violation No. 9:

Title 10 CFR 50.9(a) requires that information provided to the Commission by a licensee or information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the licensee shall be complete and accurate in all material respects.

Contrary to the above, on December 18, 2015, the licensee provided information to the Commission that was not complete and accurate in all material respects. Specifically, the NRC's Office of Investigations (OI) interviewed several Tennessee Valley Authority (TVA) Watts Bar Nuclear (WBN) Plant employees regarding a Unit 1 startup on November 11, 2015, and a decision to continue with the startup while controlling pressurizer water level using only excess letdown. Two of the employees interviewed that day, the WBN Unit 1 Operations Superintendent and the Shift Manager who was on duty on November 11, 2015, provided incomplete and inaccurate information to OI.

During the OI interviews, both the Operations Superintendent and the Shift Manager stated that no one had brought forth concerns regarding the Unit 1 startup before, during, or after the November 11, 2015, event. Additionally, the Shift Manager made several affirmative statements to OI indicating his belief that using only excess letdown would be successful in controlling pressurizer water level. Both the Operations Superintendent and the Shift Manager also stated that there was no significant pushback from the Main Control Room (MCR) operators and represented that the decision to continue with the heat-up was not influenced by anyone outside the MCR.

The information provided by these TVA employees during the OI interviews was not complete and accurate. Prior to the OI interviews, the Operations Superintendent had received emails from individuals knowledgeable of the November 11, 2015, event that acknowledged concerns about removing the Residual Heat Removal (RHR) system from service without normal letdown in service and the influence individuals outside the MCR had in the decision to proceed with the Unit 1 startup while using only excess letdown. The Operations Superintendent had also attended an internal interview of the MCR Unit Supervisor who was on duty during the dayshift on November 11, in which the Unit Supervisor indicated that using only excess letdown to control pressurizer water level during the heat-up caused the MCR operators to be uneasy. The Shift Manager made contradictory statements in emails sent before and after his NRC OI interview and during subsequent non-NRC interviews, indicating that he had been talked into moving forward with the startup, that moving forward was really a senior management decision, and that he had not told this to the NRC. In subsequent non-NRC interviews, he also admitted that the MCR operators did not want to move forward with the startup.

This information was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

### Apparent Violation No. 10:

Title 10 CFR 50.9(a) requires that information provided to the Commission by a licensee or information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the licensee shall be complete and accurate in all material respects.

Contrary to the above, on January 21, 2016, information required by the Commission's regulations to be maintained by the licensee was not complete and accurate in all material respects. Specifically, on or about January 21, 2016, the Tennessee Valley Authority (TVA) Watts Bar Nuclear (WBN) Plant staff completed a Level 2 Corrective Action Program (CAP) evaluation, as part of Condition Report (CR) 1121520. The Level 2 CAP evaluation was conducted, in part, to review the Main Control Room (MCR) staff's procedural use and adherence associated with the November 11, 2015, Unit 1 heat-up and pressurizer water level rise. The team that conducted this review prepared a draft report that assigned responsibility to both the MCR and the Outage Control Center (OCC) for using incorrect assumptions and information and for displaying a lack of conservative decision making and risk review in the decision to proceed with the plant heat-up using only excess letdown. However, in the final version of the report, the findings and language that assigned responsibility to the OCC were removed.

The Level 2 CAP evaluation report documented the following apparent and contributing causes for the November 11, 2015, pressurizer water level rise event:

- "Apparent Cause (AC-1): The Main Control Room (MCR) displayed a lack of conservative decision making and risk review prior to securing Residual Heat Removal (RHR) and continuing plant heat up on excess letdown during the performance of 1-SI-0-905 (Primary Pressure Boundary Isolation Valve Leak Test Residual Heat Removal Return Valves), which was precipitated by lack of adequate coordination of the work to repair 1-FCV-62-0070-A (CVCS Letdown Isolation) and not recognized or challenged by the Outage Control Center (OCC) staff."
- "Contributing Cause (CC-2): The MCR did not fully understand the expected plant response with securing RHR while on excess letdown and marginal secondary cooling capability during plant heat up in Mode 4 and proceeded in the face of uncertainty."

The Level 2 CAP evaluation report also included the following statements concerning the November 11, 2015, event:

- "... the MCR used incorrect assumptions and information when making the decision to proceed with the performance of 1-SI-0-905 while on excess letdown."
- "During the discussions related to plant heat up with the concurrent removal of the residual heat removal flow path in support of performing 1-SI-0-905, the MCR made an erroneous assumption related to the capacity of the excess letdown system to maintain pressurizer level."
- "the capability of the excess letdown system was assumed based on training experience with the system operating and normal operating temperatures and pressures versus actual operating experience at shutdown condition."

This information was not complete and accurate in all material respects, in that the Level 2 CAP evaluation report did not state that the MCR operators raised concerns with the OCC staff regarding removing RHR from service and continuing the Unit 1 heat-up using only excess



letdown and questioned the capability of excess letdown to maintain pressurizer water level. Additionally, the Level 2 CAP evaluation report did not state that the OCC was involved in the discussions and decision making on November 11 and influenced the MCR staff to proceed with removal of the RHR system from service for testing with the normal letdown system out of service in order to stay on schedule. The Level 2 CAP evaluation report is a document that TVA is required to maintain pursuant to 10 CFR Part 50, Appendix B, Criterion XVII.

This information was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

### Apparent Violation No. 11:

Title 10 CFR 50.9(a) requires that information provided to the Commission by a licensee or information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the licensee shall be complete and accurate in all material respects.

Contrary to the above, on February 2, 2016, the licensee provided information to the Commission that was not complete and accurate in all material respects. Specifically, on February 2, 2016, during a non-public "drop-in" meeting with NRC management in the NRC's Region II office, Tennessee Valley Authority (TVA) management provided incomplete and inaccurate information regarding a November 11, 2015, event at the Watts Bar Nuclear (WBN) Plant. During the meeting, a TVA employee presented a slide addressing the apparent cause analysis for the November 11 event. The slide stated that "[t]he Main Control Room (MCR) crew displayed a lack of conservative decision making and risk review," and that this decision "was not recognized or challenged by the OCC [Outage Control Center]." The slide also identified, as a contributing cause, that "[t]he MCR crew did not fully understand the expected plant response and proceeded in the face of uncertainty."

None of the TVA attendees informed the NRC, at the February 2, 2016, meeting or subsequently, that the apparent cause analysis team originally concluded that both the MCR and the OCC were responsible for the non-conservative decision-making regarding the November 11, 2015, event. Additionally, none of the TVA attendees informed the NRC, at the February 2, 2016 meeting or subsequently, that the MCR operators had, in fact, expressed concerns to the OCC about the decision to proceed with the plant heat-up using only excess letdown. This information was also not conveyed in the TVA's slides during the drop-in meeting.

This information was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

Apparent Violation No. 12:

10 CFR 50.9 (a), "Completeness and Accuracy of Information," states, in part, information provided to the Commission by a licensee shall be complete and accurate in all material respects.

Contrary to the above, on several occasions in March 2016 the licensee provided information to the Commission that was not complete and accurate in all material respects. These included: (a) two telephone calls between the Tennessee Valley Authority (TVA) Chief of Nuclear Operations (CNO) and Nuclear Regulatory Commission (NRC) senior managers on March 13 and 15, 2016, and (b) a TVA Special Review Team (SRT) Report submitted to the NRC on March 24, 2016.

- (a) On March 11, 2016, an NRC Region II senior manager informed the TVA CNO of the NRC's intent to issue a Chilling Effect Letter (CEL) to TVA the following week. During the call, the NRC senior manager conveyed several concerns including the NRC's determination that there was sufficient evidence to support the existence of a significantly degraded Safety Conscious Work Environment (SCWE) in the Watts Bar Nuclear (WBN) Plant Operations Department.

On March 13, 2016, in a telephone call with the NRC Executive Director of Operations (EDO), the TVA CNO stated, among other things, that the NRC's conclusion about a degraded work environment was "not surprising because two independent TVA internal reports had been completed last week which reached the same conclusions as the NRC review" and that both TVA reports reached a conclusion regarding a "chilled environment in operations." The CNO was referring to a report prepared by TVA's Employee Concerns Program (ECP) and the SRT Report, which was prepared by a team led by the TVA Vice President (VP) of Nuclear Licensing. The CNO read these statements to the EDO "as written" from a set of written talking points provided to the CNO by the VP of Nuclear Licensing on March 12, 2016. In a subsequent telephone call with an NRC Region II senior manager on March 15, 2016, the TVA CNO communicated a similar message.

The information the CNO conveyed to the NRC, based on the VP of Nuclear Licensing's talking points, was incomplete and inaccurate in several respects:

1. The CNO stated that the two reports "had been completed" the week prior to the phone call of March 13, 2016, when, in fact, the SRT Report continued to be revised after the phone call and was not completed until March 23, 2016, and the ECP Report was completed on March 20, 2016.
2. The CNO indicated that the two reports had reached the same conclusions as those of the NRC when, in fact, as of March 12, 2016, there were significant differences between the conclusions in the SRT Report and the ECP Report, and between the SRT Report and the NRC conclusions that had been conveyed to TVA on March 11, 2016.
3. The CNO stated that the two reports were independent when, in fact, the two investigations were not independent. The ECP Report was an input into the SRT Report, and the VP of Nuclear Licensing, who led the SRT effort, was included on distribution of information pertaining to the ECP investigation from the outset, including its planning, approach, and findings as the investigation was performed. There were

discussions and exchange of documents, including preliminary conclusions and draft reports, between the VP of Nuclear Licensing and the Senior Manager of the Nuclear Employee Concerns Program (the ECP Manager), who led the ECP investigation. Further, after March 12, 2016, the VP of Nuclear Licensing and others revised the SRT Report to minimize differences between the ECP and SRT Reports and between the SRT Report and the NRC conclusions.

- (b) On March 24, 2016, TVA submitted the ECP report and the SRT report to the NRC. The SRT report stated that the SRT was formed “[i]n response to a series of issues at [WBN] over the fall of 2015 through February 2016,” and that the SRT’s purpose was to address whether WBN employees were reluctant to raise nuclear safety issues and, if so, the extent of that condition. The SRT Report was incomplete and inaccurate, however, in that it failed to acknowledge that the team was formed to influence the NRC not to take additional regulatory action after TVA management learned, in late February 2016, that the NRC had been briefed about the conclusions of a TVA Office of the Inspector General (OIG) investigation into a chilled work environment at WBN and had entered the concerns identified by the TVA OIG into the NRC Allegations Program.

The information provided by TVA in the telephone calls and in the SRT was material to the NRC because this information was provided to the NRC in conjunction with the NRC’s issuance of a Chilling Effects Letter (CEL) to TVA (on March 23, 2016) and gave impressions about TVA’s understanding of and response to concerns about the work environment at WBN. As such, the NRC was likely to consider the information in deciding on future actions related to the CEL and the work environment at WBN.

FACTUAL SUMMARY 2 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations completed an investigation into the circumstances of a Watts Bar Nuclear (WBN) Plant, Unit 1 reactor startup occurring on November 9, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

On November 9, 2015, the WBN Unit 1 Main Control Room (MCR) operators were conducting a plant startup after a maintenance outage, using TVA General Operating Instruction (GOI) 1-GO-1, "Unit Startup from Cold Shutdown to Hot Standby," Revision 3. The reactor coolant system (RCS) temperature was being held at approximately 111 degrees Fahrenheit (°F) because of ongoing work on the reactor vessel head. The Outage Control Center (OCC) schedule listed "drawing a bubble" in the pressurizer as a critical path activity for the day.

Early that afternoon, the Manager of Nuclear Plant Shift Operations and the Engineer / Procedure Writer initiated and processed a revision to 1-GO-1 to change the wording of Step 5.2.1[8], the first part of the procedure for "drawing a bubble." As originally written, this step read, "**IF** RCS is less than 135°F, **THEN RAISE** RCS to between 135 and 160°F. . . ." The revised language read, "**IF** RCS is less than 135°F, **THEN INITIATE** RCS heatup to between 135 and 160°F." This change in wording from "**RAISE** RCS" to "**INITIATE** RCS heatup" permitted the MCR operators to "draw a bubble" with the RCS temperature less than 135°F.

TVA Procedure NPG-SPP-01.2, "Administration of Site Technical Procedures," Revision 12, establishes the minimum requirements for preparation, revision, review, approval, cancellation, and administrative hold of site and common technical procedures. Section 3.2.11, "Minor/Editorial Changes," Subsection A, states that "Minor changes do not require an AOR [Affected Organization Review], 10 CFR 50.59 review, 10 CFR 72.48 review, or PORC [Plant Operations Review Committee] review. Minor changes shall not change the intent of the procedure or alter the technical content or sequence of procedural steps." Section 3.2.11, Subsection A, also states that minor/editorial changes require an Independent Quality Reviewer (IQR) review.

This revision was processed as a "minor/editorial change" as defined in section 3.2.11 of TVA Procedure NPG-SPP-01.2, "Administration of Site Technical Procedures." The Manager of Nuclear Plant Shift Operations decided the revision was needed to stay on schedule, sponsored it, and directed the Engineer/Procedure Writer to process it. The Manager of Nuclear Plant Shift Operations then conducted the required Independent Quality Review (IQR) of the procedure revision.

The change to Procedure 1-GO-1 altered the technical intent of the procedure and changed the sequence of procedural steps by allowing the MCR operators to continue with the procedure to draw a bubble without having to wait for the RCS temperature to be between 135 and 160°F.

The Manager of Nuclear Plant Shift Operations held a Senior Reactor Operator (SRO) license and had served as an SRO and shift manager at WBN. In addition to that experience, he had IQR training, which specifically addressed minor/editorial changes, as well as the requirements for independence of an IQR reviewer. The Manager of Nuclear Plant Shift Operations admitted that the purpose of the procedure change was to stay on schedule.

The Engineer/Procedure Writer stated that he had been involved in “thousands” of procedure changes and that he used NPG-SPP-1.2 and the TVA writer’s guide during his reviews. In addition, he also had IQR training, as well as training on 1-GO-1 that he received as part of operator training. When initially asked about the change to Step 5.2.1[8] in an interview, the Engineer/Procedure Writer’s stated that it “probably did not” meet the definition of a minor/editorial change.

FACTUAL SUMMARIES 3, 5, AND 6 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN) Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

At the beginning of the dayshift (06:00) on November 11, 2015, WBN Unit 1 was in Mode 5 and in the process of a start-up in accordance with TVA General Operating Instruction (GOI) 1-GO-1 "Unit Startup from Cold Shutdown to Hot Standby." During the night shift on November 10-11, 2015, the WBN Unit 1 Main Control Room (MCR) operators had taken normal letdown out of service to allow repair of Valve 1-FCV-62-70. The Chemical and Volume Control System (CVCS) was in an abnormal line-up due to a clearance (1-62-0584-FO) governing this repair being issued and hung on the valve at 00:09 on November 11. The clearance contained a Mode 5/6 restriction, which was a safety precaution that was necessary for the valve repair work.

Per GOI 1-GO-1, "Unit Startup from Cold Shutdown to Hot Standby," the Shift Manager (SM) authorizes the change from Mode 5 to Mode 4. GOI 1-GO-1, Section 5.3, Step [22], states, "**COMPLETE** APPENDIX B, Mode 5-To-4 Review and Approval, to ensure all restraints to Mode 4 entry are resolved, and approvals for Mode change granted." The SM must initial that this step has been completed as a prerequisite for the MCR staff to continue with the startup procedure.

Step [3] of APPENDIX B, "Mode 5-To-4 Review and Approval," requires the operators to "ENSURE Checklist 1 COMPLETE for entry into Mode 4." Checklist 1, "System Alignment Verifications," refers to, among others, the CVCS Charging and Letdown Valve Checklist (1-62.01-1V). Checklist 1-62.01-1V indicates that Valve 1-FCV-62-70 is normally in the "OPERABLE" position. While that valve was under repair, it was not "OPERABLE," and Clearance 1-62-0584-FO was in effect for status control during that time. As stated above, that clearance contained a Mode 5/6 restriction that prohibited entry into Mode 4.

On November 11, the SM initialed GOI 1-GO-1, Section 5.3, Step [22], indicating that all restraints to Mode 4 were resolved. At 09:30 the SM made the following entry in the Main Control Room (MCR) logs:

Completed a walkdown of the Main Control Room Control Boards IAW [in accordance with] OPDP-1 and Standing Order 15 8. All alarms are understood for current plant conditions. There are no issues identified from the board walkdown that precludes entry into M[ode] 4.

At 09:38, the SM made another log entry stating, "All requirements have been met for entry into M4. Permission granted to proceed from M5 to M4." Less than a minute later, the MCR operators entered GOI 1-GO-1, Section 5.4 and began to raise reactor coolant temperature to 205-210°F. At 09:54, the reactor reached Mode 4 (200°F) operation. At the time, the CVCS was not in the alignment prescribed in Checklist 1-62.01-1V and was not under the control of an approved alternate method of system status control valid for operation in Mode 4.

The SM had worked at WBN since 2000, had been licensed as a Senior Reactor Operator (SRO) at WBN since 2003, and had been a qualified shift manager since 2008. He had received training on TVA procedure NPG-OPDP-1, "Conduct of Operations," and TVA's clearance procedures numerous times, and described himself as a "subject matter expert on operations." When he came on duty on the morning of November 11, he received a shift turnover briefing from the outgoing SM, who told the incoming SM that the night shift crew did not move from Mode 5 to Mode 4 because normal letdown was out of service due to the valve repair. The incoming SM did a walkdown of the MCR boards with the outgoing SM, who was aware of the mode limitation that had been added to the clearance. After the walkdown, the incoming SM made a log entry indicating that he understood all plant conditions.

When Unit 1 entered Mode 4 on November 11, Residual Heat Removal (RHR) train B was in operation. Therefore, with the normal letdown flow path unavailable due to the valve repair, pressurizer level control was initially provided by excess letdown and RHR letdown. A log entry at 10:08 indicated that the crew was preparing for performance of 1-SI-0-905, "RHR Return Valve Leak Testing," which was listed as a critical path evolution for that day. Prior to performing that test, Section 5.4 of GOI 1-GO-1, Step [8.3], required the crew to place the RHR system in Emergency Core Cooling System (ECCS) Standby mode. Given the plant configuration that day, this step would remove RHR letdown from service and leave only excess letdown for pressurizer level control.

Log entries indicate that the MCR crew placed RHR in ECCS-Standby mode, securing the RHR pump and RHR suction Valves 1-FCV-74-1 and 1-FCV-74-2. With only excess letdown in service, the pressurizer level began to rise uncontrollably. The MCR operators attempted to control pressurizer level using secondary steam from the steam generators and concurrently reducing seal water flow to the reactor coolant pumps but were unsuccessful in arresting the pressurizer level rise. When the level reached 79 percent, the MCR operators reopened the RHR suction valves and placed RHR letdown back in service, which allowed the crew to regain control of pressurizer level. When the crew took these steps, they did not restart the RHR pump.

The MCR logs for November 11, 2015, do not reflect the operators' loss of control of pressurizer level or the actions they took to abate the level rise. The SM was trained multiple times on NPG-OPDP-1, which contains procedural requirements for log-keeping. In his interview with NRC OI, he acknowledged that the SM is responsible for ensuring logs are accurate and appropriate, and that the logs from November 11 were "less than adequate" and "not up to standards."

TVA procedure 1-SOI-74.01 requires that the RHR pump be started before establishing RHR letdown. The SM knew that the procedure required starting the pump and said he could have started the pump if he wanted to, but he did not put the pump in service to avoid an inadvertent mode change back to Mode 5. The Unit Supervisor also stated that the motivation for not starting the pump was to avoid a cooldown and possible mode change. The SM acknowledged that such a mode change would have had no safety consequences.



FACTUAL SUMMARY 4 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations (OI) completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN), Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

At the beginning of the dayshift (06:00) on November 11, 2015, WBN Unit 1 was in Mode 5 and in the process of a startup in accordance with TVA General Operating Instruction (GOI) 1-GO-1 "Unit Startup from Cold Shutdown to Hot Standby." During the night shift on November 10-11, 2015, the WBN Unit 1 main control room (MCR) crew had taken normal letdown out of service to allow repair of valve 1-FCV-62-70. Residual Heat Removal (RHR) train B was in operation; therefore, with the normal letdown path unavailable, pressurizer level control was initially provided by excess letdown and RHR letdown.

The planned activities for the main control room (MCR) crew on November 11 included continuing the startup in accordance with Procedure 1-GO-1 by heating up to Mode 4 and continuing toward Mode 3 operation. Section 5.4 of 1-GO-1, Step [8.3] states, "Place RHR [Residual Heat Removal] system in ECCS [Emergency Core Cooling System]-Standby mode per 1-SOI-74.01." This step removed RHR letdown from service, which left only excess letdown for pressurizer level control given the plant configuration at the time.

The evidence indicates that the entire MCR crew had discussions with the Shift Manager (SM) about removing RHR from service and continuing the heat-up on excess letdown. None of the crew members thought it was a good idea to proceed without normal letdown in service. They did not feel heating up on excess letdown would work and questioned the ability to control pressurizer level using excess letdown. Statements from crew members and others in the MCR that day indicate that the SM also had concerns. None of the operators, including the SM, had any training on or experience with heating up on excess letdown, and they did not know how much flow they would get from excess letdown.

The WBN Operations Director, who was working in the Outage Control Center (OCC) on November 11, was involved in discussions that morning in the OCC about removing RHR and allowing the heat-up to continue using excess letdown. The Operations Director stated that "the whole OCC team was pushing to move forward" that day. He also stated that the Plant Manager (PM) and the Site Vice President (SVP) were aware of what was going on, were involved in the decision, and were in favor of removing RHR from service.

The Operations Director was also involved in discussions with the shift manager (SM) and crew in the MCR, and was aware that crew members, including the SM, had concerns about the effect on pressurizer level if they removed RHR and allowed the heat-up to begin. At one point, an employee witnessed the Operations Director telling the SM that he (the Operations Director) wanted RHR removed from service as soon as possible to move ahead with the schedule. After the SM responded that he did not want to remove RHR until normal letdown was restored, the Operations Director challenged the SM. The SM ultimately relented and instructed the crew to continue with the heat-up. After the operators removed RHR from service, the pressurizer level began to rise uncontrollably. The operators attempted to control pressurizer level using steam from the steam generators while concurrently reducing seal water flow to the reactor coolant pumps but were unsuccessful in arresting the pressurizer level rise. When the level reached

79 percent, the operators opened RHR loop suction valves (Valves 1-FCV-74-1 and 1-FCV-74-2) and placed RHR letdown back in service to regain level control.

Later that afternoon, the SM sent an email to other TVA SROs and the Operations Superintendent warning, "Never let anyone talk you into removing RHR from service without normal letdown in service. Does not work out so hot. Had to apply some prudent operator actions to keep from an all-expense paid trip to Atlanta."

TVA WBN Unit 1 Procedure OPDP-1, "Conduct of Operations," Revision 0029, provides guidelines and instructions to ensure shift operations are conducted in a safe and conservative manner. Section 3.3.E of OPDP-1 directs operators to "stop when unsure" and "not proceed in the face of uncertainty." The Operations Director later admitted that heating up on excess letdown was "not the safest path" and that he had never seen it done in his experience, which included 15 outages. He also acknowledged that the plant would have lost no more than 6 hours on the critical path schedule if they had waited for normal letdown to be restored before proceeding with the heatup.

FACTUAL SUMMARY 7 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN), Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC and whether TVA employees deliberately violated plant procedures.

During the day shift on November 11, 2015, the WBN Unit 1 Main Control Room (MCR) operators were conducting a plant startup after a maintenance outage. Normal letdown was out of service at the time for repair of Valve 1-FCV-62-70. Startup was initiated with only excess letdown in service. During the startup, when the pressurizer level began to rise uncontrollably, the MCR operators opened Residual Heat Removal (RHR) inlet Valves 1-FCV-74-1 and 1-FCV-74-2 to control pressurizer level.

The Operations Superintendent worked the night shift on November 10, 2015, when normal letdown was taken out of service in anticipation of the valve repair, and discussions were held about starting up on excess letdown. He was at the plant until approximately 10 a.m. on November 11, and was in the control room when the valve repair work was started at approximately 8:45 a.m. When he returned to duty for the night shift on November 11, 2015, the MCR operators told him that, during the Unit 1 startup that day, the pressurizer level had risen to 80 percent and the MCR operators had to open RHR letdown inlet valves to reduce the pressurizer level. The Operations Superintendent was therefore aware on November 11, 2015, that the valve repair had preceded the opening of the RHR inlet valves, and that the RHR inlet valves were opened to place RHR letdown in service for purposes of controlling the pressurizer level.

On December 11, 2015, the NRC's Senior Resident Inspector (SRI) at WBN Unit 1 provided a list of questions regarding the Unit 1 plant startup of November 11, 2015, to a TVA Senior Reactor Operator (SRO), and verbally to the Plant Manager. The Plant Manager then conveyed the SRI's questions to other TVA managers, including the WBN Site Vice President, the Operations Director, and the Operations Superintendent/Senior License Holder. One of the questions on the list was, "Why were the RHR inlet valves cycled?"

The TVA SRO researched the SRI's questions by consulting the Unit 1 logs and Dataware plots from November 11, 2015. On December 12, 2015, the TVA SRO sent an email to the Operations Superintendent describing the circumstances of the November 11, 2015, startup. This email contained the following statement:

The plant was in the process of heating up, however normal letdown was not available. We were attempting to heat up on excess letdown, however due to low RCS pressure, excess letdown was not able to keep up with the increase in pressurizer level due to the heat up. Pressurizer level increased to approximately 80 %. The crew opened [Valves]1-FCV-74-1 and 1-FCV-74-2 to place RHR letdown back in service at 1419.

This email was also forwarded to the TVA WBN Site Licensing Manager on December 12, 2015, with a request for the Site Licensing Manager to review it and discuss with the Operations Superintendent. The Site Licensing Manager and Operations Superintendent discussed the situation between themselves that same day.

On December 13, 2015, the Operations Superintendent sent an email to himself with a draft written response to the SRI's questions. The draft written response stated three reasons for cycling the RHR valves: (1) the RHR inlet valves were closed to align RHR for Emergency Core Cooling System alignment; (2) the RHR inlet valves were opened to place RHR letdown in service; and (3) the RHR inlet valves were cycled to perform 1-SI-0-905, "Primary Pressure Boundary Isolation Valve Leak Test Residual Heat Removal Return Valves." Two hours later, the Operations Superintendent emailed an updated version of this draft to the WBN Site Vice President. In the updated version, the second reason was revised to state that the RHR inlet valves were opened to place RHR letdown in service "to allow the repair of a valve inside containment on the normal letdown line ([Valve] 1-FCV-62-70)."

On December 13, 2015, the TVA WBN Site Licensing Manager sent an email containing a discussion of the NRC SRI's questions to the TVA WBN Senior Vice President for Operations and Construction. The "Background" section of the email explained that on November 11, 2015, the plant was heating up without normal letdown available due to repairs, excess letdown could not keep up with the increase in pressurizer level due to the heat up; the pressurizer level reached approximately 80%, the crew reopened [Valves] 1-FCV-74-1 and 1-FCV-74-2 to place RHR letdown in service, and the pressurizer level stabilized. A separate section of the email listed the NRC's questions and provided responses. The response to the question about why the valves were cycled was identical to the response contained in the updated version that the Operations Superintendent had sent to the WBN Site Vice President. The second reason given was that the RHR inlet valves were opened to place RHR letdown in service "to allow the repair of a valve inside containment on the normal letdown line ([Valve] 1-FCV-62-70)."

On December 14, 2015, the Operations Superintendent and the TVA WBN Site Licensing Manager met with the SRI in the SRI's office and gave the SRI a document containing written responses to the NRC's questions. This document stated that the second reason the RHR inlet valves were opened was to place RHR letdown in service "to allow the repair of a valve inside containment on the normal letdown line ([Valve] 1-FCV-62-70)."

On the evening of December 14, 2015, the Operations Superintendent sent an email to TVA SROs explaining the events of November 11, 2015. This email stated that normal letdown had been removed to repair a valve, excess letdown was in service, pressurizer level continued to rise, and when it reached 80 percent the operators opened the RHR inlet valves and "effectively placed RHR letdown in service." This information was not included in the document given to the SRI.

On December 15, 2015, the Operations Superintendent wrote a Condition Report (CR) to address the SRI's concerns about November 11, 2015, startup. This CR (CR 1114975) was entered in the licensee's Corrective Action Program (CAP). The CR does not mention anything about the reason for cycling the valves (i.e., to restore RHR letdown to control pressurizer level). The CR is a document that TVA is required to maintain, pursuant to 10 CFR Part 50, Appendix B, Criterion XVII.

The Operations Superintendent had worked at TVA since 2008, held an active SRO license, and was the Senior License Holder at WBN Unit 1 at the time. The TVA WBN Site Licensing Manager had worked at TVA since 2007 and had previously held Reactor Operator and Senior Reactor Operator licenses. Both therefore had sufficient experience with and knowledge of plant operations to understand the information they were providing to the NRC.

The written response provided to the SRI was inaccurate because it stated that the RHR inlet valves (1-FCV-74-1 and 1-FCV-74-2) were opened “to allow the repair of a valve inside containment on the normal letdown line ([Valve] 1-FCV-62-70),” when in fact the repair was initiated hours before the valves were opened. The written response was also incomplete because it omitted the actual reason why the RHR inlet valves were cycled, which was to arrest the increase in pressurizer level resulting from the inability of excess letdown to control pressurizer level during the heat up. The information contained in CR 1114975 was incomplete for the same reason.

This information was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

FACTUAL SUMMARY 8 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations completed an investigation into the circumstances of a Watts Bar Nuclear (WBN) Plant, Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

During the day shift on November 11, 2015, the WBN Unit 1 Main Control Room (MCR) operators were conducting a plant startup after a maintenance outage. Normal letdown was out of service at the time for repair of Valve 1-FCV-62-70. Startup was initiated with only excess letdown in service. During the startup, when the pressurizer level began to rise uncontrollably, the MCR operators opened Residual Heat Removal (RHR) inlet Valves 1-FCV-74-1 and 1-FCV-74-2 to control pressurizer level.

On January 6, 2016, the NRC conducted a meeting with TVA WBN senior managers at the WBN facility, to discuss the circumstances of November 11, 2015, plant startup. TVA attendees at the meeting included the Site Vice President (SVP), the Plant Manager, the Operations Director, and the Operations Superintendent. During the meeting, TVA discussed the circumstances of the pressurizer level control issue on November 11. As part of that discussion, TVA presented a slide that contained the following text (bullet points):

- Operator fundamentals – Conservative decision making
- Procedures
  - Did not follow our rules
  - Procedures were not in hand
  - Deviate from procedures without proper authorizations

The slide also identified actions that had been taken by management, including performing observations in the MCR and implementing a Shift Order. The Plant Manager stated at the meeting that this slide reflected the cause of the events on November 11.

None of the TVA managers identified above informed the NRC, at the January 6, 2016, meeting or subsequently, of their awareness that the operators in the MCR on November 11, 2015, raised concerns to managers in the Outage Control Center (OCC) about the ability to control the pressurizer level if they continued to heat up without normal letdown in service. The above-listed TVA managers also did not inform the NRC, on January 6 or subsequently, that they were aware the OCC (including some of these managers) was involved in the decision to move forward with the heat up on November 11. This information was material to the NRC because it was related to an event that the NRC was actively inquiring about at the time.

Prior to January 6, 2016, the Operations Superintendent learned through emails or in-person discussions with operators and others who were in the MCR on November 11, 2015, that the decision to move forward came from the OCC and that the operators had expressed concerns about continuing with the heat up on excess letdown.

On November 11, the Operations Director was involved in discussions in the OCC in which the OCC concluded that the heat up should proceed. Also, the Operations Director was directly involved in a discussion with the Shift Manager (SM) on November 11 in which the Operation

Director wanted the SM to increase the heat up rate, but the SM expressed concerns and indicated he did not want to proceed.

The Plant Manager, who had previously served as Operations Director at WBN and had a Senior Reactor Operator (SRO) certification, was aware of the plant status on November 11 and was in the OCC for discussions that day. He was involved in discussions about the plan to move forward on excess letdown and was involved in the decision to remove RHR from service. He was monitoring the plant status through outage updates. There is also evidence that the SVP and Plant Manager were involved in pushing operators to act non-conservatively.

The SVP, who had previously worked as a licensed Senior Reactor Operator (SRO), Operations Manager, and Plant Manager at another nuclear facility, was involved in OCC discussions on November 11 about removing RHR letdown and continuing to heat up on excess letdown. He was aware of plant conditions that day, including the repairs to the normal letdown valve and the plan to heat up on excess letdown. Evidence indicates that the SVP had been pushing to get out of the November 2015 outage. Finally, there is evidence that the SVP became aware in mid-December 2015 of the operators' discomfort about moving forward with the heat up on November 11.

This information was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

FACTUAL SUMMARY 9 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations (OI) completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN), Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

During the day shift on November 11, 2015, the WBN Unit 1 Main Control Room (MCR) operators were conducting a plant startup after a maintenance outage. Normal letdown was out of service at the time for repair of Valve 1-FCV-62-70. Startup was initiated with only excess letdown in service. During the startup, when the pressurizer level began to rise uncontrollably, the MCR operators opened Residual Heat Removal (RHR) inlet Valves 1-FCV-74-1 and 1-FCV-74-2 to control pressurizer level.

On December 18, 2015, OI interviewed several TVA employees, including the Operations Superintendent and the Shift Manager (SM) who were on duty that day, regarding the events of November 11, 2015.

During his NRC OI interview, the Operations Superintendent stated that no one had brought concerns to him before, during or after the November 11, 2015, event. When asked by NRC OI if he had anything to add, expand on or clarify, he reiterated: "Nobody brought up anything of I feel uncomfortable at any time, including the discussions of will excess letdown work the way it's supposed to work. Nobody brought up anything that I was forced, coerced or pushed into any kind of corner whatsoever or attempted to hide anything at all." The Operations Superintendent also stated that the operators simply got to an operating place they didn't expect, and they acted to stabilize the plant.

The evidence indicates that, prior to the meeting with NRC OI on December 18, 2015, the Operations Superintendent received several indications of operator concerns and pushing by management. The Operations Superintendent received emails from individuals knowledgeable of the November 11, 2015, event that acknowledged concerns about removing RHR from service without normal letdown in service and the influence of individuals outside the MCR in the decision to proceed with the Unit 1 startup while using only excess letdown. Also, on December 16, 2015, the Operations Superintendent attended an internal interview of the Unit Supervisor who was on duty during the dayshift on November 11. In that interview, the Unit Supervisor indicated that using excess letdown to control pressurizer level during the heat-up caused the MCR crew to be uneasy.

During his NRC OI interview, the SM discussed the decision to move forward with the heat-up on November 11 with only excess letdown. He made several affirmative statements to OI indicating that he believed excess letdown would work, and he stated that there was no significant pushback from the crew. He also represented that the decision to continue with the heat-up was his call as SM and he was not unduly influenced by anyone else. However, the SM made contradictory statements in emails sent before and after his NRC interview, and during subsequent non-NRC interviews as part of a TVA internal review of the event and a TVA OIG investigation. In an email sent on November 11, the SM said he had been talked into moving forward that day. In another email sent after his interview on December 18, the SM said moving forward was really a senior management decision and admitted he had not told this to the NRC. In the subsequent non-NRC interviews, he admitted that the crew did not want to move forward,



a statement that is consistent with statements made by other crew members in NRC and non-NRC interviews. And although the SM suggested in his December 18 email that he was afraid of retaliation, he spoke openly about that fear and management involvement on November 11 when interviewed a few weeks later as part of TVA's internal review. The SM had training on the NRC's employee protection rule and was aware he had the option to go to the NRC with concerns, but he did not do so.

Based on the evidence, it appears that the Operations Superintendent and the SM provided incomplete and inaccurate information to the NRC during their December 18, 2015 interviews. This information was material to the NRC because it concerned the startup of the reactor and was related to an event that the NRC was actively inspecting at the time.

FACTUAL SUMMARY 10 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN), Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

During the day shift on November 11, 2015, the WBN Unit 1 Main Control Room (MCR) operators were conducting a plant startup after a maintenance outage. Normal letdown was out of service at the time for repair of Valve 1-FCV-62-70. Startup was initiated with only excess letdown in service. During the startup, when the pressurizer level began to rise uncontrollably, the MCR operators opened Residual Heat Removal (RHR) inlet Valves 1-FCV-74-1 and 1-FCV-74-2 to control pressurizer level.

On or about January 12, 2016, the licensee initiated a Level 2 corrective action program evaluation to review certain aspects of the November 11, 2015, Unit 1 plant startup, as part of condition report (CR) 1121520. A team led by the WBN Director of Site Support conducted this review and prepared a draft report that assigned responsibility to both the MCR and the Outage Control Center (OCC) for using incorrect assumptions and information and for displaying a lack of conservative decision making and risk review in the decision to proceed with the plant heat-up on excess letdown. The Director of Site Support sent this draft to the WBN Site Vice President (SVP) and the WBN Plant Manager, neither of whom were members of the review team, asking if the team was "roughly right" or "off track." These three individuals subsequently discussed the report in a teleconference, after which changes were made to the report to remove language assigning responsibility to the OCC. The SVP and Director of Site Support directed at least one of these changes.

The final Level 2 evaluation report, issued on approximately January 21, 2016, attributed the cause of the November 11, 2015, evolution solely to the actions and decisions of the MCR operators:

- "... the MCR used incorrect assumptions and information when making the decision to proceed with the performance of 1-SI-0-905 while on excess letdown. . . ."

"During the discussions related to plant heat up with the concurrent removal of the residual heat removal flow path in support of performing 1-SI-0-905, the MCR made an erroneous assumption related to the capacity of the excess letdown system to maintain pressurizer level."

The final Level 2 evaluation report also stated that the apparent cause of the November 11 event was that "[t]he Main Control Room (MCR) displayed a lack of conservative decision making and risk review prior to securing Residual Heat Removal (RHR) and continuing plant heat up on excess letdown. . . which was . . . not recognized or challenged by the [OCC] staff."

Based on the evidence, it appears that the WBN Director of Site Support and SVP were aware of changes made to the final Level 2 evaluation report that made the report inaccurate. This information was material to the NRC because it was related to the NRC's ongoing inspection efforts at WBN in 2015-2016, and NRC awareness of OCC involvement could have influenced NRC decisions.

FACTUAL SUMMARY 11 (LICENSEE)  
OFFICE OF INVESTIGATIONS REPORT NO. 2-2016-042

On May 17, 2019, the NRC's Office of Investigations completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN), Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether TVA employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

During the day shift on November 11, 2015, the WBN Unit 1 Main Control Room (MCR) operators were conducting a plant startup after a maintenance outage. Normal letdown was out of service at the time for repair of Valve 1-FCV-62-70. Startup was initiated with only excess letdown in service. During the startup, when the pressurizer level began to rise uncontrollably, the MCR operators opened Residual Heat Removal (RHR) inlet Valves 1-FCV-74-1 and 1-FCV-74-2 to control pressurizer level.

On or about January 12, 2016, the licensee initiated a Level 2 corrective action program evaluation (apparent cause analysis) to review certain aspects of the November 11, 2015, Unit 1 plant startup, as part of condition report (CR) 1121520. A team led by the WBN Director of Site Support conducted this review and prepared a draft report that assigned responsibility to both the MCR and the Outage Control Center (OCC) for using incorrect assumptions and information and for displaying a lack of conservative decision making and risk review in the decision to proceed with the plant heat-up on excess letdown. The Director of Site Support sent this draft to the WBN Site Vice President (SVP) and the WBN Plant Manager, neither of whom were members of the review team, asking if the team was "roughly right" or "off track." These three individuals subsequently discussed the report in a teleconference, after which changes were made to the report to remove language assigning responsibility to the OCC.

The final Level 2 evaluation report, issued on approximately January 21, 2016, attributed the cause of the November 11, 2015, evolution solely to the actions and decisions of the MCR operators.

On February 2, 2016, during a non-public 'drop-in' meeting with NRC management in the NRC's Region II office, TVA provided information regarding the event of November 11, 2015. TVA attendees included the SVP, the WBN Plant Manager, and the WBN Director of Site Support. During the meeting, the WBN Director of Site Support presented a slide addressing the apparent cause analysis for the November 11 event. The slide stated that "[t]he Main Control Room (MCR) crew displayed a lack conservative decision making and risk review," and that this decision "was not recognized or challenged by the OCC." The slide also identified, as a contributing cause, that "[t]he MCR crew did not fully understand the expected plant response and proceeded in the face of uncertainty." These statements are consistent with statements in the final Level 2 evaluation report.

None of the TVA managers identified above informed the NRC, at the February 2, 2016, meeting or subsequently, that the apparent cause analysis team originally concluded that both the MCR and the OCC were responsible for the non-conservative decision-making on November 11, 2015. This information was material to the NRC because it was related to the NRC's ongoing inspection efforts at WBN in 2015-2016, and NRC awareness of OCC involvement could have influenced NRC decisions.

The Director of Site Support, as the team leader for the analysis, was aware that the team initially concluded that both the MCR and OCC shared responsibility for the non-conservative decisions on November 11. He and the SVP were involved in making changes to the draft report to remove references to the OCC's responsibility. The SVP and Plant Manager were aware of the team's conclusions, having reviewed the draft report. In addition, the SVP and Plant Manager were directly involved in the OCC's activities on November 11 and were aware that the OCC was involved in the decision to move forward with the heat up that day.

FACTUAL SUMMARY 12 (LICENSEE)  
OFFICE OF INVESTIGATION REPORT 2-2016-042

On May 17, 2019, the U.S. Nuclear Regulatory Commission's (NRC) Office of Investigations, Region II, completed an investigation into the circumstances of a Watts Bar Nuclear Plant (WBN), Unit 1 reactor startup occurring on November 11, 2015. The purpose of the investigation was to determine whether Tennessee Valley Authority (TVA) employees deliberately submitted incomplete and inaccurate information to the NRC, and whether TVA employees deliberately violated plant procedures.

On January 12, 2016, TVA's Employee Concerns Program (ECP) received a concern alleging a chilled work environment. In response, TVA hired two outside consultants to investigate this concern. On February 1, 2016, the Senior Manager, Nuclear Employee Concerns (ECP Manager) sent an email containing the investigative plan to TVA management, including Vice President (VP) of Nuclear Licensing. The plan stated that the ECP manager would provide a daily briefing to the VP of Nuclear Oversight and the VP of Nuclear Licensing. On February 5, 2016, the ECP manager briefed the VP of Nuclear Licensing and other senior TVA managers on the results of the first phase of the ECP investigation.

In January 2016, the TVA Office of the Inspector General (OIG) began a separate investigation of concerns it received from WBN licensed operators about schedule pressure and non-conservative decision making. The TVA OIG conducted briefings with TVA senior management, including the Chief Nuclear Officer (CNO), in late January and again on February 9-10, 2016. According to the TVA OIG, TVA's response to these briefings suggested an effort to minimize the issue.

On February 24, 2016, the TVA OIG briefed the NRC on its investigation and its conclusion of a widespread chilled work environment at WBN. The NRC informed TVA senior executives about this briefing later that day and processed the concern in accordance with the NRC's Allegations Program. The next day, TVA management decided to create a Special Review Team (SRT). The VP of Nuclear Licensing was asked to lead the SRT.

On February 26, 2016, the VP of Nuclear Licensing sent an email to senior TVA managers outlining the problem statement and objective of the SRT, the approach and key activities, and the recommended SRT team members. The email also described the SRT problem statement as being derived from inferences from conversations with key NRC staff and executives. The objective was to "Develop strategy that (1) continues to address TVA identified challenges at WBN, (2) anticipates and reasonably addresses concerns NRC is perceiving from NRC conversations with OIG and (3) prepares to communicate these actions to NRC in a manner that convinces NRC that no further regulatory action is needed above normal." One of the planned key activities was to "prepare for engagement with NRC to head off NRC escalated response." The VP of Nuclear Licensing indicated that the purpose of the SRT was not to reinvestigate, but to perform a review based on inputs that included the ECP investigation.

In early March, the VP of Nuclear Licensing emailed preliminary conclusions of the SRT to the WBN Senior Site VP. On March 9, 2016, the WBN Senior Site VP emailed an SRT team member, stating "I have read the ECP report. I have read the [VP of Nuclear Licensing] conclusions. They are miles apart. A logical person will have trouble getting to our proposed end."

On March 11, 2016, NRC Region II senior management held a phone call with the TVA Chief of Nuclear Operations (CNO), to discuss the NRC's concerns and intentions, and specifically the NRC's intent to issue a Chilling Effect Letter (CEL) to TVA the following week. The NRC conveyed several concerns, including the NRC's determination that there was sufficient evidence to support the existence of a significantly degraded Safety Conscious Work Environment (SCWE) in the Operations Department at WBN, and that the overall culture had degraded to a point where operators were so fearful of retaliation that normal processes for identifying issues and effecting changes were impacted or negatively affected. The NRC also concluded that influence and direction of licensed operators from outside of the control room directly contributed to the operational challenges and events that occurred on November 11, 2015.

Later that day, the TVA VP, Nuclear Licensing emailed Revision 21 of the SRT to senior TVA executives, and noted that, "In light of today's information from Region II regarding issuance of a Chilling Effects letter next week, the report will need to be revised to reflect emphasis on some of the problem areas."

As of March 11, the draft SRT Report (Revision 21), stated, "Overall at Watts Bar, employees are not reluctant to raise safety concerns for fear of retaliation" and "Operations Department personnel have stated they will bring their concerns forward to management." (Section 1.0, Summary). This draft also concluded that, "Operations Department employees remain willing to raise safety concerns" and "employees site-wide . . . have been and remain willing to raise safety concerns." (Section 4.3 Key Safety Conscious Work Environment Aspects Evaluation Results). With regard to the events of November 11, 2015, Revision 21 of the SRT report did not identify pressure and direction from outside the control room as a contributing factor, simply noting "...that certain operations personnel felt push-back from the Outage Control Center regarding decisions made by the operators" and identifying as an insight that "the OCC was challenging the operators as to why a request could not be perform instead of accepting the operators decision." And finally, Revision 21 of the SRT acknowledged that the SRT Report and the ECP Report had not reached the same conclusions regarding a hostile work environment. Subsequent versions of the SRT Report, including the final version submitted to the NRC, were significantly revised to align the report more closely with the ECP Report and the NRC's conclusions.

On March 12, 2016, in preparation for a planned phone call between the TVA CNO and the NRC Executive Director for Operations (EDO), the VP of Nuclear Licensing sent an email to the TVA CNO which contained talking points for the discussion (with the NRC EDO). According to the VP of Nuclear licensing, these notes outlined "a set of moves that could catch [the EDO's] attention enough to cause him to pause." Among other things, the talking points stated, "two independent TVA internal reports had been completed last week which reached the same conclusions as the NRC review" and "TVA reports both reach conclusion regarding . . . chilled environment in operations," (referring to the ECP and SRT Reports).

In a March 13, 2016, phone call with the NRC EDO to discuss the scheduled issuance of the CEL, the TVA CNO communicated these talking points as written to the NRC EDO. Information contained in these talking points was also communicated by the TVA CNO to NRC Region II Senior Management during a separate phone call held on March 15, 2016. The NRC issued the CEL to TVA on March 23, 2016.

TVA completed the ECP Report on March 20, 2016, and completed the SRT Report on March 23, 2016. On March 24, 2016, TVA submitted both reports to the NRC.

The SRT report states that the team was formed in response to events at WBN from the fall of 2015 to February 2016 to address whether WBN employees were reluctant to raise nuclear concerns and, if so, the extent of that condition. The report also states that after “[i]ndications of an unhealthy SCWE and degraded work environment . . . initially surfaced in November 2015,” the issue became clearer to TVA senior management after an ECP concern was filed in January 2016, and the SRT was established to provide “additional background and contextual analysis” because TVA management recognized “the serious implications if such a concern were to be substantiated.”

Evidence indicates that the VP of Nuclear Licensing was heavily involved in both the ECP and SRT efforts. He served as team leader and primary author and editor of the SRT Report, and according to SRT members, he had a significant impact on the wording of the report. Evidence also indicates that the VP of Nuclear Licensing kept informed of the status, findings and conclusions of the ECP investigation through discussions with the Senior Manager for Nuclear Employee Concerns, and that he kept other TVA staff and TVA senior management abreast of the status and conclusions of both the SRT and ECP investigations. As of March 11, the VP of Nuclear Licensing had the latest versions of the ECP and SRT Reports, and on March 12, he provided talking points to the CNO that he knew would be presented to the NRC in an attempt to delay issuance of the CEL or otherwise influence an NRC regulatory decision.

Based on the above evidence, it appears that the VP of Nuclear Licensing provided incomplete and inaccurate information to the NRC in the SRT Report, because the report fails to acknowledge that the team was formed to influence the NRC not to take additional regulatory action after TVA management learned that the NRC had been briefed about the conclusions of the TVA OIG investigation at WBN and had entered the concerns raised into the NRC Allegations Program. Further, it appears that the VP of Nuclear Licensing also provided incomplete and inaccurate information to TVA in talking points that were provided to the TVA CNO and communicated as written to the NRC EDO and NRC Region II Administrator in telephone calls. In both cases, this information was material to the NRC because it was provided to the NRC in conjunction with the NRC’s issuance of a CEL to TVA and gave impressions about TVA’s understanding of and response to concerns about the work environment at WBN. As such, the NRC was likely to consider the information in deciding on future actions related to the CEL and the work environment at WBN.