EVALUATION OF VIOLATIONS AFTER TVA RESPONSE

On November 6, 2020, the U.S. Nuclear Regulatory Commission (NRC) issued a Notice of Violation and Proposed Imposition of Civil Penalty (Notice) to Tennessee Valley Authority's (TVA) Watts Bar Nuclear Plant, Unit 1 (WBN-1). The Notice contained five violations (Violations A – E). This enclosure addresses TVA's response to the December 7, 2020, Notice and the NRC's disposition of all five violations.

I. Restatement of Violation A:

Title 10 of 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 0035, 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 3.3.3 "Conservative Decision Making," Subpart A, states, in part, "Stop when unsure and proceed in a deliberate and controlled manner."
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> Section 3.3.3 "Conservative Decision Making," Subpart E, states, in part, "When the control room team is faced with an emerging issue: . . .1. Do not allow production and cost to override safety. . . 3. question verify and validate available information. . . 5. 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, during a startup of Watts Bar Nuclear Plant (WBN) Unit 1, when faced with an emerging issue, Main Control Room (MCR) operators 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 to proceed, and the Shift Manager decided to proceed and directed 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, with input from the OCC, 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.

Summary of Licensee's Response to Violation A:

TVA denied Violation A on the basis that the provisions in TVA Procedure NPG-OPDP-1, Section 3.3.3, regarding conservative decision making are not enforceable requirements, but rather reflect provisions in the Commission's Final Safety Culture Policy Statement (76 Federal Register 34773 (June 14, 2011)). TVA asserted that the provisions allegedly violated in NPG-OPDP-1 are safety culture traits not enforceable by the NRC. TVA's response provided substantial background and related information, including reference to information presented at a closed Pre-Decisional Enforcement Conference held on July 22-24, 2020.

NRC Evaluation of Licensee's Response:

As discussed in the November 6, 2020, cover letter, Violation A was originally characterized as a Severity Level (SL) III violation and was not assessed a civil penalty. After considering TVA's response, the NRC disagrees with TVA's contention that TVA Procedure NPG-OPDP-1, "Conduct of Operations," Section 3.3.3, "Conservative Decision Making," is not an enforceable requirement.

TVA Procedure NPG-OPDP-1, "Conduct of Operations," covers activities affecting quality, and thus falls within the requirements of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Procedural steps and sections delineated within this procedure "shall be accomplished in accordance with these instructions, procedures, or drawings," as required by 10 CFR Part 50, Appendix B, Criterion V. Accordingly, the specific requirements of Section 3.3.3 regarding conservative decision making are legally binding requirements.

NRC Conclusion:

The NRC concludes that Violation A occurred as stated in the November 6, 2020, Notice and is appropriately characterized as an SL III violation. Additionally, consistent with the NRC 's original conclusions, as stated in Enclosure 2 to the Notice, because Violation A is not willful, and because credit is warranted for the civil penalty assessment factor of Corrective Action, a civil penalty is not being assessed for Violation A.

II. Restatement of Violation B:

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.

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 [Procedure] NPG-SPP-01.2, Administration of Site Technical Procedures."

TVA Procedure NPG-SPP-01.2.1, "Interim Administration of Site Technical Programs and Procedures for Watts Bar 1 and 2", Rev. 0002, Section 3.2.5B, 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 WBN Unit 1 MCR (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.

Summary of Licensee's Reply to Violation B:

TVA agreed that Violation B occurred as stated in the Notice but denied that this violation involved willfulness[1] on the part of TVA staff. TVA reiterated its arguments and conclusion that the Shift Manager mistakenly believed that his actions were compliant with existing procedures.

TVA contended that due to the lack of willfulness, the severity level of this violation should be reduced. Additionally, TVA requested an adjustment or withdrawal of the civil penalty based on the lack of willfulness and resulting lesser severity level of this violation, the low safety significance of the underlying violation, and credit for Corrective Action taken to address the procedural violation.

NRC Evaluation of Licensee's Response:

As discussed in the November 6, 2020, cover letter, Violations B and C were originally grouped together as an SL III Problem and assessed a civil penalty of $300,000. To enhance clarity and understanding of the NRC's safety significance evaluation and civil penalty assessment process, the NRC has decided to reevaluate and document Violations B and C separately.

The NRC's original evaluation of this violation concluded that the WBN-1 MCR operators engaged in deliberate misconduct by not following procedure 1-SOI-74.01, "Residual Heat Removal System," when they re-established RHR letdown without first starting the RHR pump.

The NRC carefully reviewed TVA's written response dated December 7, 2020, and finds that Violation B occurred as stated. However, the NRC has concluded, after considering TVA's written response in light of all the evidence, that there is not sufficient evidence to support the original conclusion that the operators engaged in deliberate misconduct. Therefore, absent willfulness, the significance of Violation B is assessed in accordance with the Reactor Oversight Process (ROP). In accordance with the ROP, Violation B is

[1] The term "willfulness" (or "willful") encompasses both careless disregard and deliberate misconduct. TVA's response of December 7, 2020, highlighted a difference between the apparent violations issued in March 2020, which identified deliberate misconduct associated with Violations B, C and E, and the November 6, 2020, Notice, which characterized Violations B, C, and E as "willful." Under the NRC Enforcement Policy, willfulness (whether the result of careless disregard or deliberate misconduct) is a factor in assessing the significance (severity level) of a violation and in determining whether to impose a civil penalty. In this case, as indicated in the apparent violations issued in March 2020, the NRC's original basis for concluding that Violations B, C, and E were willful was deliberate misconduct by individual employees of TVA.

characterized as having very low safety significance (Green). Additionally, the NRC concludes that Violation B is appropriately characterized as a non-cited violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. In accordance with the Enforcement Policy, Green findings and associated violations are not assessed a civil penalty.

NRC Conclusion:

The NRC concludes that Violation B occurred as stated in the November 6, 2020, Notice but that it did not involve willfulness. In accordance with the ROP, Violation B will be dispositioned as a NCV and is therefore not cited in the Revised Notice of Violation (Enclosure 1).

III. Restatement of Violation C:

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.

TVA Procedure NPG-OPDP-1, "Conduct of Operations," Revision 0035, Section 3.6, "Log Keeping," Paragraph 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." Paragraph B states, "All members of the shift shall ensure entries are made for their respective areas of responsibility." Paragraph C states that "[l]og entries document all major equipment manipulations and plant configuration changes" and that logs "should provide enough detail that events can be reconstructed at a later date." Paragraph 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 WBN Unit 1 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 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 20 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 any log entries to document the loss of control of pressurizer level or the actions taken to regain control. As a result, the logs failed to provide enough detail for the NRC or the licensee to reconstruct the events later. Shift management also did not review the logs to ensure that the logs were accurate and appropriate.

Summary of Licensee's Reply to Violation C:

TVA agreed that Violation C occurred as stated in the Notice but denied the willful aspects on the part of TVA staff. Based on this, TVA requested reconsideration of the severity level and requested credit for Corrective Action for the underlying procedural issues. TVA also requested an adjustment or withdrawal of the civil penalty for Violation C.

NRC Evaluation of Licensee's Response:

As discussed in the November 6, 2020, cover letter, Violations B and C were grouped together as an SL III Problem and assessed a civil penalty of $300,000. The November 6, 2020, cover letter also stated that due to the particular circumstances of Violation C (i.e., the unavailability of the Unit Supervisor, which precluded TVA from assessing his actions), the willful aspects of Violation C would not be considered in the civil penalty assessment. To enhance clarity and understanding of the NRC's safety significance evaluation and civil penalty assessment process, the NRC has decided to reevaluate and document Violations B and C separately.

The NRC carefully reviewed TVA's December 7, 2020, written response and finds that Violation C occurred as stated. However, the NRC now concludes, after considering TVA's written response in light of all the evidence, that there is not sufficient evidence to support the original conclusion that the Unit Supervisor's actions were willful. Specifically, the NRC has concluded that any willful aspects of the Unit Supervisor's actions cannot be determined with sufficient certainty due to the particular circumstances in this case (i.e., the Unit Supervisor's unavailability). In addition, because the NRC's assessment of the significance of this violation and the civil penalty assessment did not and does not consider willfulness, the issue of willfulness is effectively moot.

The NRC concludes that Violation C is still appropriately characterized at an SL III based on the significant impact that the incomplete and inaccurate logs had on the NRC's ability to conduct a timely and thorough review of the November 11, 2015, pressurizer water level event.

For purposes of the civil penalty assessment, consistent with the conclusions documented in the NRC's enforcement action dated November 6, 2020, credit is warranted for the civil penalty assessment factor of Corrective Action, and thus a civil penalty is not assessed for Violation C.

NRC Conclusion:

The NRC concludes that Violation C occurred as stated in the November 6, 2020, Notice but the violation did not involve willfulness. In accordance with the NRC Enforcement Policy, Violation C is appropriately characterized as an SL III violation. Because Corrective Action credit is warranted, a civil penalty is not assessed for Violation C.

IV. Restatement of Violation D:

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 TVA WBN 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. One of the employees interviewed that day, the WBN Unit 1 Shift Manager who was on duty on November 11, 2015, provided incomplete and inaccurate information to OI.

During his OI interview, 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. The Shift Manager also stated that there was no significant pushback from the MCR operators and represented that the decision to continue with the startup was not influenced by anyone outside the MCR.

The information provided by the Shift Manager during his OI interview was not complete and accurate. 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 made statements indicating that he had no idea if excess letdown would work and suspected it would not. He also admitted knowing that the MCR operators did not want to move forward with the startup, which is consistent with statements made by other MCR operators in NRC and non-NRC interviews indicating that they expressed concerns to the Shift Manager that excess letdown would not work and it was not a good idea to proceed.

This information was material to the NRC because it concerned the loss of control of the pressurizer level during startup of the reactor on November 11, 2015, an event that the NRC was actively inspecting at the time.

Summary of Licensee's Reply to Violation D:

TVA did not contest Violation D, the severity level, or the willful aspects, and TVA did not request mitigation or withdrawal of the civil penalty associated with Violation D.

NRC Evaluation of Licensee's Response:

As discussed in the November 6, 2020, cover letter, Violation D was characterized as an SL II violation and assessed a civil penalty of $303,471. Because TVA did not contest the violation or the proposed civil penalty, no additional evaluation of TVA's reply to Violation D is warranted.

NRC Conclusion:

The NRC concludes that Violation D occurred as stated in the November 6, 2020, Notice and is appropriately characterized as an SL II violation. Credit was not warranted for the civil penalty assessment factors of Identification or Corrective Actions, resulting in a civil penalty of two times the base, or $480,000. However, the civil penalty for Violation D was

capped at the statutory maximum of $303,471 for a single day violation. Therefore, a civil penalty of $303,471 is being assessed for Violation D.

V. Restatement of Violation E:

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.

TVA Procedure NPG-SPP-01.2.1, "Interim Administration of Site Technical Programs and Procedures for Watts Bar 1 and 2", Rev. 0002, establishes the minimum requirements for preparation, revision, review, approval, cancellation, and administrative hold of site and common technical procedures. Section 3.2.16, "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-01.2.1 when revising General Operating Instruction 1-GO-1, "Unit Startup from Cold Shutdown to Hot Standby." Specifically, during a WBN Unit 1 startup from Cold Shutdown to Hot Standby, the Manager of Nuclear Plant Shift Operations initiated a change to 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-01.2.1. The Manager of Nuclear Plant Shift Operations directed a procedure writer to make this change, then acted as Independent Qualified Reviewer (IQR) and final approver of the procedure change. 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 and draw a bubble in the pressurizer without having to wait for the RCS temperature to be between 135 and 160°F.

Summary of Licensee's Reply to Violation E:

TVA agreed that Violation E occurred as stated in the Notice but denied that the violation was due to willfulness on the part of TVA staff. In particular, TVA reiterated the statement of the individual directly involved in the procedural change, in which he stated firmly that he acted with the belief that he was complying with TVA procedures.

TVA contended that due to the lack of willfulness, the severity level of this violation should be reduced. Additionally, TVA requested an adjustment or withdrawal of the civil penalty based on a lack of willfulness and resulting lesser severity level of this violation, the safety significance of the underlying violation, and credit for Corrective Action taken to address the procedural violation.

NRC Evaluation of Licensee's Response:

As discussed in the November 6, 2020, cover letter, Violation E was originally characterized as an SL III violation and assessed a civil penalty of $300,000. The NRC's original evaluation of this violation concluded that the Manager of Nuclear Plant Shift Operations

engaged in deliberate misconduct by directing a procedure writer to make this change and then acting as IQR and final approver of the procedure change.

The NRC carefully reviewed TVA's December 7, 2020, written response and finds that Violation E occurred as stated. However, the NRC has now concluded, after considering TVA's written response in light of all the evidence, that there is not sufficient evidence to support the original conclusion that the Manager of Nuclear Plant Shift Operations engaged in deliberate misconduct. Therefore, absent willfulness, the significance of Violation E is assessed in accordance with the ROP. In accordance with the ROP, the significance of Violation E is characterized as having very low safety significance (Green). Additionally, Violation E is appropriately characterized as an NCV consistent with Section 2.3.2 of the Enforcement Policy. In accordance with the Enforcement Policy, Green findings and associated violations are not assessed a civil penalty.

NRC Conclusion:

The NRC concludes that Violation E occurred as stated in the November 6, 2020, Notice. In accordance with the ROP, Violation E will be dispositioned as a NCV and is therefore not cited in the Revised Notice of Violation (Enclosure 1).