



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

November 6, 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: TENNESSEE VALLEY AUTHORITY - NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY – \$903,471; NRC OFFICE OF INVESTIGATIONS REPORT NUMBER 2-2016-042, NRC INSPECTION REPORT NO. 050000390/2020013, AND WITHDRAWAL OF PREVIOUSLY DOCUMENTED NON-CITED 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 Plant Unit 1 (WBN-1). The purpose of the investigation was to determine whether 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 November 2015 to March 2016 timeframe.

In late November 2015, the NRC became aware of possible procedural violations and a pressurizer water level excursion during the startup of WBN-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 11th event. The review later expanded to include interactions with the 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.

The NRC's letter of March 9, 2020 (Agencywide Documents Access and Management System (ADAMS), Accession No.: ML20065M374), documented 12 Apparent Violations (AVs) that were being considered for escalated enforcement in accordance with the NRC Enforcement Policy. Eleven of the 12 AVs were associated with potential deliberate misconduct on the part of TVA staff.

On July 22-24, 2020, a pre-decisional enforcement conference (PEC) was conducted with you and members of your staff to discuss the apparent violations, their significance, their root causes, and your corrective actions.<sup>1</sup> The conference was closed to public observation because the findings were related to an OI report that has not been publicly disclosed.

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<sup>1</sup> Due to the ongoing COVID-19 pandemic, the PEC was held remotely via videoconference.

Based on the information developed during the investigation, the information that you provided during and after the conference, and information provided by TVA staff during individual PECs or in written responses, the NRC has determined that a substantial safety culture issue existed at the WBN-1 site during the late fall of 2015 to early 2016, and that five violations occurred warranting escalated enforcement action. These violations are cited in the Notice of Violation and Proposed Imposition of Civil Penalty (Notice) (Enclosure 1). Enclosure 2 to this letter discusses the NRC's final disposition of each of the AVs documented in our letter to you dated March 9, 2020 (including our ultimate determinations on whether a violation occurred, its significance, and whether it was willful), along with a summary of TVA's perspective on each of the AVs and TVA's corrective actions.

Two of the five violations (i.e., the failure to maintain operations department logs of the November 11, 2015 event, and the deliberate failure by a Main Control Room Shift Manager to provide accurate details of the event to NRC investigators), significantly impeded the NRC's review and understanding of the November 11, 2015 event. TVA senior management and staff failed to communicate with candor, clarity, and integrity during several interactions with the NRC during the course of the inspection and investigation. These failures substantially complicated the Agency's review of the event and resulted in unnecessary delays in our ability to understand and assess your corrective actions. Given the Commission's particular emphasis and concern regarding willful violations and the need for candor and clarity in communications with licensees, TVA's actions caused significant concerns within the Agency.

Regarding the substantial safety culture issue, the investigation identified a pervasive weakness in the station's conduct of operations and conservative decision making during the fall of 2015 and early 2016 that was directly attributable to the site vice president and plant manager at the time. For example, numerous operators reported that, during this period, senior site management established an expectation that Main Control Room (MCR) staff had to demonstrate that a proposed plant operation was prohibited by plant procedures, or was unsafe, in order to stop or delay a scheduled operation. WBN-1 management's failure to ensure the primacy of safe operations led to several occasions during that period in which TVA staff failed to follow procedures, made inappropriate procedural changes, and operated the plant outside of established procedures.

On November 11, 2015, the Outage Control Center (OCC), with the awareness of site management, wanted the MCR to continue with WBN-1 heat-up without the normal letdown portion of the chemical and volume control system (CVCS) in operation, thus challenging pressurizer level control. Neither the OCC personnel nor the MCR operators had the knowledge, training, or procedural guidance to ensure that these reactor operations could be conducted successfully given the current reactor status and equipment configuration. 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 result, the MCR operators were required later to take actions to arrest the uncontrolled increase in the pressurizer water level. However, these actions were not taken in accordance with written procedures. At its PEC, TVA leadership acknowledged that "[WBN-1] employees engaged in nonconservative decision making at Watts Bar on November 11, 2015."

The substantial safety culture issue that existed at WBN-1 in 2015 and 2016 resulted in a negative impact to the site, including NRC-licensed reactor operators. NRC investigation and

inspections at that time identified concerns associated with the operators' unwillingness to raise issues and the resulting impact on plant operations. As a result, in March 2016 the NRC issued a letter (ML16083A479) to TVA (referenced as the Chilling Effect Letter, or CEL), identifying that a chilled work environment existed in the Operations Department because of a perception that operators were not free to raise safety concerns using all available avenues without a fear of retaliation. TVA initiated corrective actions which have been monitored and reviewed through several follow-up inspections from NRC Region II staff. In a recent NRC inspection report completed on December 23, 2019 (Inspection Report 05000390/2019012 and 05000391/2019012, ML19357A240), NRC Region II documented that "Watts Bar continued to make progress with improving their safety conscious work environment."

Based on the NRC's review of the WBN-1 reactor heat-up of November 11, 2015, the NRC concluded that TVA's actions during the startup on November 11, 2015, were in violation of 10 CFR Part 50, Appendix B, Criterion V, and TVA Procedure OPDP-1, "Conduct of Operations," Section 3.3.3. In particular, the NRC concluded that when faced with an emerging issue, 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. At the PEC, TVA asserted that this section of Procedure OPDP-1 is aspirational in nature and is not enforceable, based on prior Commission guidance and direction. The NRC carefully considered TVA's comments regarding the enforceability of this section of OPDP-1 and concluded that a violation can be cited and is warranted.

The violations cited in the Notice include:

- Violation A (AV 4 of the NRC's letter of March 9, 2020): On November 11, 2015, during the startup of WBN-1, TVA staff failed to follow TVA Procedure OPDP-1, "Conduct of Operations," Section 3.3.3 "Conservative Decision Making," Subparts A and E. When faced with an emerging issue, MCR staff 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. Because of the significant potential consequences and increased risk associated with plant operations in a non-conservative manner by licensed operators, with the knowledge of the OCC, this violation is characterized at Severity Level III in accordance with the NRC Enforcement Policy.
- Violation B (AV 6 of the NRC's letter of March 9, 2020): On November 11, 2015, TVA MCR operators at WBN-1 did not follow Procedure 1-SOI-74.01, "Residual Heat Removal System," when they re-established Residual Heat Removal (RHR) letdown without first starting the RHR pump. The NRC determined that the TVA Shift Manager's actions were willful. As discussed in the NRC Enforcement Policy, willful violations are a particular concern because the NRC's regulatory program is based on licensees and their contractors, employees, and agents acting with integrity and communicating with candor. This violation is characterized at Severity Level III, based on the underlying safety significance together with the willful aspects.
- Violation C (AV 5 of the NRC's letter of March 9, 2020): On November 11, 2015, TVA MCR operators at WBN-1 failed to maintain operations department logs, as required by plant procedure, to include 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. Based on the evidence, the NRC concluded that this violation was willful on the part of the Unit

Supervisor. Because this violation significantly impeded the NRC's review and understanding of the circumstances surrounding the November 11, 2015, event, it is being assessed and dispositioned in accordance with the NRC Enforcement Policy, with the underlying violation characterized as a Severity Level III violation. In addition, the willful aspects of this violation would normally result in the NRC enhancing the violation to Severity Level II. However, due to the particular circumstances of this case (i.e., the unavailability of the Unit Supervisor, which precluded TVA's ability to assess his actions) the NRC has decided to disposition this violation as Severity Level III, and not consider the willful aspects in the civil penalty assessment. During the PEC, TVA management highlighted that weaknesses in MCR logs had been previously identified, and in fact was a focus area of WBN-1 site management during this time frame. Given this focus, it is particularly troubling that multiple licensed operators, as well as TVA WBN-1 senior management (including the Operations Superintendent, the Operations Director, and the Plant Manager) failed to ensure that the significant operational event of November 11, 2015, was documented in the MCR logs.

- Violation D (AV 9 of the NRC's letter of March 9, 2020): On December 18, 2015, during an interview with the NRC, a TVA employee failed to provide complete and accurate information, as required by 10 CFR 50.9. In this case, the NRC's OI interviewed several TVA WBN-1 employees regarding the Unit 1 startup on November 11, 2015, and TVA's decision to continue with the startup while controlling pressurizer water level using only excess letdown. During an interview conducted on December 18, 2015, the WBN-1 Shift Manager who was on duty on November 11, 2015, provided incomplete and inaccurate information to OI regarding the decision to continue with the Unit 1 startup. 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. The NRC considers violations involving the submittal of incomplete and inaccurate information to the NRC that could impede or otherwise have an impact on the NRC's review of reactor operations to be a significant matter. As discussed in the NRC Enforcement Policy, willful violations are a particular concern to the Agency, as is the need for licensee staff to act with integrity and communicate with candor. The willful aspects of this violation, in this case by a licensed senior reactor operator, warrant escalation of this violation to Severity Level II, in accordance with the NRC Enforcement Policy.
- Violation E (AV 2 of the NRC's letter of March 9, 2020): On November 9, 2015, TVA staff failed to follow Procedure NPG-SPP-01.2.1, "Interim Administration of Site Technical Programs and Procedures for Watts Bar 1 and 2", Rev. 0002, when revising General Operating Instruction (GOI) 1-GO-1, "Unit Startup from Cold Shutdown to Hot Standby." During a Unit 1 startup from Cold Shutdown to Hot Standby, the Manager of Nuclear Plant Shift Operations identified the need for a procedural change, initiated and then approved the change to the procedure that was not minor/editorial, in that it altered the technical intent of GOI 1-GO-1. Procedural changes that are not minor/editorial require a higher level of review and approval to ensure plant safety. The NRC concluded that the actions of the Manager of Nuclear Plant Shift Operations were willful. As highlighted above, willful violations are a particular concern to the Agency. This violation is characterized at Severity Level III, based on the underlying safety significance together with the willful aspects.

The violations described above did not cause any actual consequences. However, the potential consequences associated with these violations could have been significant under different circumstances. The NRC expects licensees to operate with a safety culture that ensures

conservative decision making, demands rigorous procedural adherence, and prohibits plant operations in the face of uncertainty. The NRC considers procedural use and adherence to be a fundamental tenet of nuclear safety.

Violations B and C are both directly related to the November 11, 2015 pressurizer water level event. Additionally, the plant operations that were not recorded in the logs (Violation C) included many activities associated with Violation B. Therefore, the NRC has concluded that these two violations should be characterized together as a Severity Level III Problem in Enclosure 1 and for civil penalty assessment purposes.

In accordance with the NRC Enforcement Policy, a base civil penalty in the amount of \$150,000 is considered for a Severity Level III violation or problem, and a base civil penalty in the amount of \$240,000 is considered for a Severity Level II violation or problem.

Regarding Violations A and C, because WBN-1 has not been the subject of escalated enforcement actions within the last 2 years prior to the November 2015 event, the NRC considered whether credit was warranted for *Corrective Action* in accordance with the civil penalty assessment process in Section 2.3.4 of the Enforcement Policy. Corrective action credit is warranted for Violation A and C, based on TVA's corrective actions as summarized in Enclosure 2. The NRC notes, however, that Violations A and C were not identified by TVA, but rather were identified by the NRC during the investigation and inspection. TVA's inability to effectively monitor key safety culture attributes to preclude the poor safety conscious work environment that arose during 2015 was a significant TVA senior management failure. Additionally, as highlighted in the discussion of Violation C above, TVA management had highlighted weaknesses in MCR logs prior to the November 2015 event, yet several licensed reactor operators and senior managers failed to identify that the significant operational event of November 11, 2015, was not documented in the MCR logs.

Because Violations B, D, and E were willful, the NRC considered whether credit was warranted for *Identification* and *Corrective Action* in accordance with the civil penalty assessment process in Section 2.3.4 of the NRC Enforcement Policy. These violations were not identified by TVA, but rather were brought to the attention of TVA via NRC investigation and inspection. As such, credit is not warranted for the factor of *Identification* for Violations B, D, and E.

As summarized in Enclosure 2, TVA has taken discrete corrective actions to address many of the root and contributing causes that gave rise to the underlying violations. However, TVA did not articulate or document broad, comprehensive and substantive corrective actions to address the willful aspects of any of the violations. As highlighted in the NRC Enforcement Policy Section 2.2.1.d,

Willful violations are of particular concern because the NRC's regulatory program is based on licensees and their contractors, employees, and agents acting with integrity and communicating with candor. The Commission cannot tolerate willful violations. Therefore, a violation may be considered more significant than the underlying noncompliance if it includes indications of willfulness.

In assessing the factor of Corrective Action, the NRC considers the timeliness and adequacy of the licensee's root cause analysis for the violations and, given the significance and complexity of the issue, the comprehensiveness of the corrective action (i.e., whether the action is focused narrowly on the specific violation or broadly on the general area of concern). Licensees are expected to take significant remedial action in responding to willful violations commensurate

with the circumstances, such that the action reflects the seriousness of the violation, thereby creating a deterrent effect within the licensee's organization. In light of the Commission's particular emphasis and concern regarding willful violations and the need for candor in communications, and TVA's lack of broad, comprehensive corrective actions to address the Agency's concern with respect to willful violations, credit is not warranted for the factor of Corrective Action for Violations B, D, and E.

Therefore, to emphasize the importance of prompt identification of violations, the importance of procedural adherence and TVA's oversight of plant operations, the importance of complete and accurate information, and in recognition of the willful aspects, I have been authorized to issue the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice) in the following amounts:

- For Violation B and C (comprising a Severity Level III Problem) credit is not warranted for the factors of Identification or Corrective Actions, resulting in a civil penalty of two times the base, or \$300,000.
- For Violation D, a Severity Level II violation, credit is not warranted for the 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 is capped at the statutory maximum of \$303,471 for a single day violation.
- For Violation E, a Severity Level III violation, credit is not warranted for the factors of Identification or Corrective Actions, resulting in a civil penalty of two times the base, or \$300,000.
- Violation A is not assessed a civil penalty.

The total civil penalty amount for the above violations is \$903,471.

If you disagree with this enforcement sanction, you may deny the violations, as described in the Notice, or you may request alternative dispute resolution (ADR) with the NRC in an attempt to resolve this issue. ADR is a general term encompassing various techniques for resolving conflicts using a neutral third party. The technique that the NRC has decided to employ is mediation. Mediation is a voluntary, informal process in which a trained neutral party (the "mediator") works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of agreement, and reach a final resolution of the issues. Additional information concerning the NRC's ADR program can be found at <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>.

The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC's program as a neutral third party. If you are interested in pursuing this issue through the ADR program, please contact: (1) the ICR at 877-733-9415; and (2) Nick Hilton by email at [nick.hilton@nrc.gov](mailto:nick.hilton@nrc.gov), within 10 days of the date of this letter. If you decide to participate in ADR, your submitted signed agreement to mediate using the NRC ADR program will stay the 30-day time period for payment of the civil penalty until the ADR process is completed.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

For administrative tracking purposes, this letter and its enclosures are issued as NRC Inspection Report 50000390/2020013. Violations not determined to involve deliberate misconduct or escalated enforcement will be dispositioned in the normal resident quarterly inspection report. In addition, NRC Inspection Report 05000390,391/2016001, issued on April 7, 2016, identified two noncited 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 this investigation 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 reopened 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 now recharacterized as Violations A and B in Enclosure 1, and the previously documented NCVs are withdrawn.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC Public Document Room and from 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 or proprietary information so that it can be made available to the public without redaction. The NRC also includes significant enforcement actions on its Web site at <http://www.nrc.gov/reading-rm/doc-collections/enforcement/actions/>.

If you have any questions concerning this matter, please contact me at 630-829-9654.

Sincerely,

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

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

Enclosures:

1. Notice of Violation and Proposed Imposition of Civil Penalty
2. Summary of Apparent Violation Resolution
3. NUREG/BR-0254 Payment Methods
4. NUREG/BR-0317 Rev. 2, Enforcement Alternative Dispute Resolution Program

SUBJECT: TENNESSEE VALLEY AUTHORITY - NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY – \$903,471, NRC OFFICE OF INVESTIGATIONS REPORT NUMBER 2-2016-042, NRC INSPECTION REPORT NO. 50000390/2020013  
 DATED: 11/6/2020

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