



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

May 10, 2016

EA-16-060

Mr. B. J. Burch  
Vice President and General Manager  
BWXT Nuclear Operations Group, Inc.  
P.O. Box 785  
Lynchburg, VA 24505-0785

**SUBJECT: RESPONSE TO DISPUTED NOTICE OF VIOLATION (EA-16-060)**

Dear Mr. Burch:

Thank you for your response, dated February 26, 2016, to the Notice of Violation (NOV) issued on January 28, 2016. The NOV was in regards to inspections conducted October 1 through December 31, 2015, at the BWXT Nuclear Operations Group (NOG), Inc., facility in Lynchburg, VA. On March 11, 2016, we acknowledged receipt of your reply to Nuclear Regulatory Commission (NRC) Inspection Report No. 70-27/2015-005 and informed you that your response was being evaluated.

In your response to the NOV, you disputed violation 70-27/2015-005-01 based on the following points: (1) management measures were established and applied to the Container Storage Facility wet-pipe sprinkler as required by 10 CFR 70.62(d) and (2) the performance requirements of 10 CFR 70.61 were met for the accident sequence in question, even during the 30 minutes that the sprinkler was unavailable. In consultation with the NRC's Offices of Enforcement and Nuclear Material Safety and Safeguards, we have evaluated your response and after consideration concluded that, for the reasons presented in the enclosed evaluation, the violation occurred as stated in the NOV that was issued on January 28, 2016. You are not required to respond to the NOV unless the description documented in inspection report 70-27/2015-005 does not accurately reflect your corrective actions. This violation will remain open until the NRC has verified implementation of your corrective actions during a subsequent inspection.

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

If you have any questions concerning this letter, please contact Mr. Eric Michel, Chief, Projects Branch 2, by telephone at 404-997-4555.

Sincerely,

**/RA/**

Mark S. Lesser, Director  
Division of Fuel Facility Inspection

Docket No. 70-27  
License No. SNM-42

Enclosure:  
Evaluation and Conclusion

cc:  
Chris T. Terry, Manager  
Licensing and Safety Analysis  
BWXT Nuclear Operations Group, Inc.  
P.O. Box 785  
Lynchburg, VA 24505-0785

Steve Harrison, Director  
Division of Radiological Health  
Department of Health  
109 Governor Street, Room 730  
Richmond, VA 23219

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## **EVALUATION AND CONCLUSION**

Violation (VIO) 70-27/2015-005-01 was identified during a routine Nuclear Regulatory Commission (NRC) inspection conducted between October 1 and December 31, 2015, at the BWXT fuel facility in Lynchburg, VA. The purpose of the inspection was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. The violation identified was a Severity Level IV violation for the failure to provide adequate management measures for the Container Storage Facility (CSF) sprinkler system item relied on for safety (IROFS). In their letter dated February 26, 2016, the licensee (BWXT) denied the violation. More specifically, the licensee stated that the management measures in place to ensure the availability and reliability of the IROFS [CSF wet-pipe sprinkler] were adequate to meet 10 CFR 70.62(d).

### **Specific Bases for Denying Violation 70-27/2015-005-01**

The licensee denied the violation on the basis of the following points:

1. Management measures were established and applied to the CSF wet-pipe sprinkler as required by 10 CFR 70.62(d), and
2. The performance requirements of 10 CFR 70.61 were met for the accident sequence in question, even during the 30 minutes that the sprinkler was unavailable.

Therefore, according to the licensee, the facility was never in violation of the requirements of 10 CFR 70.62(d).

The licensee also disputed the significance of the violation and stated that sufficient additional safety controls (IROFS and fire protection features) existed and were in place such that the failure of this particular IROFS had only a slight impact to the overall risk of an accident. Therefore, according to the licensee, the noncompliance was minor in severity based on Inspection Manual Chapter (IMC) 0616, Appendix B.

### **NRC Evaluation of the Licensee's Response**

The NRC staff has reviewed BWXT's response and concludes that VIO 70-27/2015-005-01 occurred as stated in our letter dated January 28, 2016, "BWXT NUCLEAR OPERATIONS GROUP – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 70-27/2015-005 AND NOTICE OF VIOLATION." The NRC's basis for this determination is that compliance with the performance requirements of 10 CFR 70.61 does not equate to compliance with 10 CFR 70.62(d). The requirements of 10 CFR 70.62(d) are separate from and in addition to the performance requirements of 10 CFR 70.61. 10 CFR 70.62(d) requires that licensees establish management measures to ensure the availability and reliability of IROFS commensurate with the reduction in risk credited for that IROFS. Without adequate management measures, the preventive/mitigative factors credited in the ISA (i.e. a probability of failure on demand of -2) to meet the performance requirements of 10 CFR 70.61 cannot be adequately supported. The management measures are required to ensure that IROFS are maintained to ensure availability and reliability to perform their function when needed. The fact that other controls were available to meet the performance requirements does not eliminate this requirement. The fact remained that the CSF sprinkler system (an IROFS) was not available to perform its function if called upon due to inadequate management measures.

Enclosure

The NRC acknowledges that all IROFS, no matter how robust, cannot be made perfect and have an associated failure rate. However, the preventive/mitigative factor provided by IROFS are, in part, a function of the management measures applied to ensure their availability and reliability. In this case, BWXT failed to properly implement a management measure for maintenance activities, specifically the configuration management program. Section 15.1 of the facility ISA states that the “configuration management program is a credited management measure that applies to all IROFS,” including the wet-pipe sprinkler. This management measure is critical to maintaining the availability and reliability of each individual IROFS and therefore essential to compliance with the requirements of 10 CFR 70.62(d). 10 CFR 70.72 states, in part, “The licensee shall establish a configuration management system to evaluate, implement, and track each change to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel.” 10 CFR 70.4 defines configuration management as a “management measure that provides oversight and control of design information, safety information, and records of modifications (both temporary and permanent) that might impact the ability of items relied on for safety to perform their functions when needed.”

The maintenance activity that resulted in the inadvertent disabling of the CSF wet-pipe sprinkler indicated to the NRC that a failure to implement a management measure (the configuration management program) had occurred. Specifically, the abnormal alignment of the fire water system due to an identified leak was not adequately evaluated for potential impact to additional plant systems and operating procedures in accordance with License Application section 11.1.3, Change Control, which requires evaluation of any change to a process or facility in such a way that it could impact the results of the ISA. The licensee failed to adequately evaluate the impact of the temporary fire water system lineup on plant operating procedures and subsequently performed a routine fire pump test that ultimately isolated the CSF sprinkler system and disabled the IROFS due to the isolated water supply. The condition was self-revealing based on plant personnel observations of water pressure loss in service and domestic water systems that are also supplied by the fire water system. The NRC considers the configuration management program an essential management measure in place for all IROFS, and its adequate implementation is critical to the continued safe operation of the facility. Therefore, the NRC views a failure of the configuration management program seriously, even though the likelihood of an inadvertent criticality remained highly unlikely.

Licensees are required to implement management measures adequately to ensure the reliability and availability of all identified IROFS so as to provide reasonable assurance that the risk limits of 10 CFR 70.61 are met at all times. The identification of additional IROFS beyond the minimum to meet the risk limits of 10 CFR 70.61 does not diminish or eliminate the need for adequate application of management measures to be applied to IROFS. However, it should be noted that because the likelihood of a high consequence event remained “highly unlikely” due to the additional IROFS identified in the ISA, the violation did not rise to the level of a Severity Level I, II, or III violation. Therefore, the violation was similar to example 6.2(d).1 of the Enforcement Policy, which is an example of the failure to meet the requirements of 10 CFR 70.61, where the failure does not result in a SL I, II, or III violation. Specifically, the NRC identified a violation in which an IROFS failed to be maintained pursuant to 10 CFR 70.62.

Regarding the significance of the violation, the NRC determined that the violation was more than minor based on screening criteria questions #7 and #9 of IMC 0616, Appendix B. The IMC asks, in part, “Does the noncompliance involve the failure of a management measure such that an IROFS would not be available or reliable to perform its intended safety function when needed as required by 10 CFR 70.61(e) and 10 CFR 70.62(d) and is it risk significant?” and “Does the noncompliance adversely affect the ability of an IROFS or safety related component to perform its intended safety function?” In this instance, the answer to these questions was yes.

Furthermore, examples 1b and 1d of IMC 0616 Appendix B articulate scenarios where failures to adequately maintain configuration management, implemented as management measures, resulted in the inability of IROFS to perform their safety function or adversely impacted an IROFS safety function. Based on the impact to the IROFS safety functions, these scenarios reflect a violation characterized as “more than minor” in nature. The NRC does not agree with BWXT’s assertion that the licensee credited a large number of controls for safety. Specifically, as documented in the ISA, the licensee credited the following IROFS: 1) operator action to control ignition sources, 2) operator action to extinguish a fire with portable fire extinguishers, and 3) CSF wet pipe sprinkler system. The failure of the CSF wet pipe sprinkler system eliminated one of those three controls, and therefore eliminated safety margin such that further degradation or failure of the other two IROFS would have resulted in a failure to meet the performance requirements of 10 CFR 70.61(b) for a high-consequence event. The NRC considers the loss of the CSF sprinkler system risk significant since no additional safety margin to meet the 10 CFR 70.61(b) performance requirements remained. Other non-credited controls such as un-reviewed fire modeling calculations, quarterly inspections for combustibles, access control to the building, and a wide area smoke detector; while beneficial to safety, have not been credited for protection in this circumstance.

#### NRC Conclusion

Based on the preceding evaluation, the NRC concludes that the violation (VIO 70-27/2015-005-01, “Inadequate Management Measures for Sprinkler System IROFS”) occurred as stated in inspection report 70-27/2015-005.