



BWX Technologies, Inc.

February 26, 2016  
16-014

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Reference: (1) License SNM-42, Docket 70-27  
(2) Letter dated January 28, 2016, Eric C. Michel (NRC) to B.J. Burch (BWXT NOG-L), NRC Inspection Report No. 07000027/2015005 and Notice of Violation.  
(3) Letter dated May 4, 2007, L.R. Morrell (BWXT) to Document Control Desk (NRC), Additional Information to Support Container Storage Facility Amendment Request (TAC L31972).  
(4) Letter dated July 31, 2007, L.R. Morrell (BWXT) to Director, Office of Nuclear Material Safety and Safeguards (NRC), Response to Request for Additional Information Concerning Fire Protection for the New Container Storage Facility License Amendment Request for Container Storage Facility (TAC L31972).

Subject: Reply to a Notice of Violation in Inspection Report No. 07000027/2015005

Dear Sir or Madam:

Pursuant to the provisions of 10 CFR 2.201, BWXT Nuclear Operations Group, Inc.- Lynchburg, Va. (BWXT NOG-L), is providing a written response to the Notice of Violation (NOV) that was transmitted by the NRC letter dated January 28, 2016 (Reference 2). BWXT NOG-L denies that a Severity Level IV violation occurred in this incident and asks that the NRC reconsider the NOV.

If you have questions or require additional information, please contact Chris Terry, Manager of Licensing and Safety Analysis, at [cterry@bwxt.com](mailto:cterry@bwxt.com) or 434-522-5202.

Sincerely,

B. Joel Burch  
Vice President and General Manager  
BWXT Nuclear Operations Group, Inc. – Lynchburg

Enclosures

IED7  
NMSS



cc: NRC, Resident Inspector  
NRC, Merritt N. Baker, Senior Project Manager  
Virginia Dept. of Health, Steve Harrison, Director

**ENCLOSURE**

**REPLY TO NOTICE OF VIOLATION****Violation 70-27/2015-005-01**

10 CFR 70.62 (d) requires, in part, "The management measures shall ensure that engineered and administrative controls and control system that are identified as items relied on for safety pursuant to § 70.61(e) of this subpart are designed, implemented, and maintained, as necessary, to ensure they are available and reliable to perform their function when needed, to comply with the performance requirements of 10 CFR 70.61 of this subpart."

Contrary to the above, on September 3, 2015, the licensee failed to implement adequate management measures to ensure that the Container Storage Facility (CSF) wet-pipe sprinkler system, identified as an IROFS, was maintained to ensure the system was available and reliable to perform its function when needed, to comply with the performance requirements of 10 CFR 70.61. Specifically the CSF sprinkler system was in a degraded state for approximately 30 minutes due to the concurrent testing of the fire pumps and an existing system impairment that had already isolated part of the fire/service water loop from its water source.

**The Reason for Denial of the Violation**

BWXT NOG-L denies the violation occurred as stated. NOG-L Management contends that the management measures in place to ensure the Container Storage Facility wet-pipe sprinkler system was available and reliable were adequate to meet 10 CFR 70.62(d).

The Container Storage Facility wet-pipe sprinkler system is identified in the ISA as one of several IROFS implemented to prevent a criticality accident due to the collapse of the storage facility racks thus compromising the spacing between the fuel components. Other IROFS preventing such an occurrence include:

- Operator action to control ignition sources
- Operator action to extinguish a fire with portable fire extinguishers

In addition to the IROFS other fire protection features, including control of combustibles through quarterly inspections, access control to the building, and an area wide smoke detection system which provides early warning of a fire, were available at the time of the event.

The management measures supporting the Container Storage Facility wet-pipe sprinkler system as documented in the ISA are the monthly inspection of the sprinkler system and a quarterly flow test of the water supplying the sprinkler system. Management Measures are not required to ensure the IROFS is available at all times or that the IROFS will not fail or become degraded. NUREG 1520 Chapter 11 permits licensees to use a graded approach to the application of Management Measures to provide "reasonable assurance" of compliance with the performance requirements of 70.61. Reasonable assurance is established by considering factors such as necessary maintenance,

operating limits, common-cause failures, and likelihood and consequences of failure or degradation of IROFS and the management measures. As stated above, NOG-L implemented a monthly inspection and quarterly flow test to ensure the system is available and reliable. These management measures come directly from NFPA 13, Standard for the Installation of Sprinkler Systems, and NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, the nationally recognized standards for the maintenance of fire protection sprinklers. As permitted by NUREG 1520, these management measures were deemed to be adequate to ensure the availability and reliability of the Container Storage Building wet-pipe sprinkler system when considering the overall risk of a fire and the availability of other IROFS which maintain the risk of criticality to an acceptable level. On the day of the event there was no fire in the facility. This fact could be viewed as fortuitous and that under differing circumstances, an actual fire, and the sprinkler system would not have been available. However, even in this situation the other IROFS documented in the ISA provided adequate protection to ensure that a nuclear criticality accident was highly unlikely. The overall risk of a criticality could only be degraded from highly unlikely through the failure of multiple independent IROFS and fire protection features. In the case of a fire, this would include: a transient combustible accumulation in a quantity and location to support a fire of sufficient intensity and duration to fail the metal racks, a failure of the ignition source control program such that an ignition source was available to ignite the combustibles, and a failure of the ignition source fire watch to extinguish the fire in its incipient stage. However, on September 3, 2015, none of these additional failures existed.

On May 2, 2007, while the Container Storage Facility was being constructed, NOG-L submitted fire modeling calculations (Reference 3) to the NRC that demonstrated a fire in the building could not fail the fuel storage racks. Unfortunately, the schedule for completion of the building did not permit further discussions with the NRC on this subject and NOG-L conservatively agreed to make the sprinkler system an IROFS (Reference 4). These fire modeling calculations remain valid documentation that a fire in the container storage facility with no mitigation is highly unlikely to fail the fuel racks. This fact supports NOG-L's position that the graded management measures in place (monthly inspection and quarterly test) were adequate.

Furthermore, NOG-L Management was always in compliance with the overall intent of 10 CFR 70.62(d) which states in part that, "Each applicant or licensee shall establish management measures to ensure compliance with the performance requirements of § 70.61." This opening sentence establishes that management measures are required to ensure the availability and reliability of IROFS only to the extent necessary to comply with 70.61.

Immediately following the event, a Nuclear Criticality Safety Concern Analysis (NCSCA) was prepared that demonstrated that all performance requirements were satisfied during the event. This NCSCA was reviewed by your inspectors during the inspection and they concurred that the performance requirements were maintained as stated in NRC Inspection Report No. 07000027/2015005.

The loss of water to the Container Storage Facility wet-pipe sprinkler system and the fire/service water as a whole was an anticipated event planned for under the site emergency plan and implementing procedures. These procedures provide defense in-depth that ensures a loss of water to the facility is quickly addressed through the assignment of fire watches and that the loss of water is mitigated by the running of large diameter hose to resupply the systems, and the summoning of offsite fire water pumping assistance from local fire departments. On the day of the incident, as soon as the loss of water to the facility was identified, the Emergency Operations Center was activated and actions were taken to compensate for the loss of water. Concurrently, actions were initiated to mitigate the consequences of the loss of water to the Container Storage Facility wet-pipe sprinkler system and the service/fire water system as a whole. The existence of these emergency procedures further supports NOG-L's position that the graded management measures existing at the time of the event which complied with National Fire Protection Association codes were adequate.

Should the NRC disagree with NOG-L's assessment that a violation did not occur, then NOG-L Management asks the NRC to reconsider the classification of the event as a Severity Level IV violation in accordance with Inspection Manual Chapter 0616. NOG-L Management believes the violation should have been assessed as a minor violation as discussed in the following paragraph.

In screening the event under Inspection Manual Chapter 0616, it does not appear the NRC considered the overall increase in risk presented by the event. The IROFS that remained available and the actions taken by the Emergency Management Organization to immediately address the situation should have resulted in the conclusion that there was no significant increase in risk and that therefore the violation was minor. IM 0616 Appendix B Screening Process states (emphasis added) that "In general, if the answer to all of the applicable screening questions is yes, the noncompliance is minor. Conversely, if the answer to any one question is yes, the noncompliance is generally more-than-minor; **however, before the final conclusion is reached, the inspector should also consider the overall increase in risk that may have resulted from the noncompliance. For example, in cases where the licensee credits a large number of controls for safety, a degraded or failed control (result of a noncompliance) may only slightly impact the risk of an accident.**" NOG-L management believes this screening consideration applies to the cited violation since numerous safety controls (IROFS and fire protection features) existed and were available and reliable to ensure a fire of significant magnitude to cause a nuclear criticality remained highly unlikely.