



Department of Energy
National Nuclear Security Administration
Sandia Field Office
P.O. Box 5400
Albuquerque, NM 87185
AUG 18 2016



CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Michelle Hunter
Ground Water Quality Bureau Chief
New Mexico Environment Department
P. O. Box 26110
Santa Fe, New Mexico 87502

Subject: Sandia National Laboratories Building 827, Fifteen Day Spill Report

Dear Ms. Hunter:

Enclosed is a copy of the Release/Discharge Notification for a discharge at the National Nuclear Security Administration (NNSA), Sandia National Laboratories/New Mexico (SNL/NM) located at Kirtland Air Force Base, Bernalillo County, New Mexico. The release was discovered on Tuesday, August 2, 2016, at approximately 10:08 a.m. The release was reported to David Rast of the NNSA, Sandia Field Office at approximately 11:30 a.m. August 3, 2016. Information was provided by SNL/NM staff, and after further investigation, Mr. Rast called the New Mexico Environment Department (NMED) non-emergency hotline number and reported the release to the NMED on August 3, 2016, at approximately 1:25 p.m.

The enclosed notification satisfies the fifteen day written notification requirement specified in 20 NMAC 6.2, *Ground and Surface Water Protection*, Section 1203.A.3.

If you have questions, please contact David Rast of our staff at (505) 845-5349.

Sincerely,

James W. Todd
Assistant Manager for Engineering

Enclosure
cc: See Page 2

cc w/enclosure:

Stephen Connolly, NMED/HWB

Susan Lucas Kamat, NMED/OB

John Kieling, NMED/HWB

Janine Kraemer, NMED/HWB

Greg Huey, NMED/GWQB

Shelly Lemon, NMED/SWQB

John Pike, 377 MSG/CEAN/KAFB

Helen Nguyen, USEPA

Amy Blumberg, SNL/NM

Stephanie Salinas, SNL/NM

Darrell Fong, SNL/NM

Andrew Gough, SNL/NM

David Darling, SNL/NM

Cindy Wimberly, SFO/LEGAL

James Todd, SFO/ENG

Susan Lacy, SFO/ENG

Karen Agogino, SFO/ENG

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**RELEASE/DISCHARGE NOTIFICATION
Fifteen-Day Report
U. S. Department of Energy
National Nuclear Security Administration
Sandia Field Office
Sandia National Laboratories**

Facility Owner:

U. S. Department of Energy
National Nuclear Security Administration
Sandia Field Office
Jeffrey P. Harrell, Manager
P.O. Box 5400 MS 0184
Albuquerque, New Mexico 87185

Facility Operator:

Sandia Corporation
Michael W. Hazen, Vice President, Infrastructure Operations
Chief Security Officer
P.O. Box 5800 MS 0143
Albuquerque, New Mexico 87185

Contact Person:

David Rast, Environmental Engineer
U. S. Department of Energy
National Nuclear Security Administration
Sandia Field Office
P.O. Box 5400 MS 0184
Albuquerque, New Mexico 87185
(505) 845-5349

Location, Date, Time, and Duration of Discharge:

At approximately 10:08 am on August 2, 2016 a "water on floor" alarm was detected at Building 827 Primary Stands laboratory on the property of the U.S. Department of Energy, Sandia National Laboratories located in Technical Area I on Kirtland Air Force Base, Bernalillo County, New Mexico, by the Facilities Maintenance and Operations Center (FMOC) Facilities Control System (FCS). Facilities Mechanical Maintenance responded to the alarm and shut down the cooling tower system at 10:20 am. The duration of the discharge from the building is estimated to have lasted approximately 8 to 12 minutes. A second and subsequent incident during cleanup operations of the cooling tower water occurred around 2:29 pm and lasted for approximately five minutes.

Source and Cause of the Discharge:

The cause of the cooling tower water overflow was due to an electro pneumatic relay failure that occurred during the exchange of water between two cooling towers located on the mezzanine within Building 827. The second release of cooling tower water was due to a miscommunication between Emergency

Operations Center (EOC) and Custodial Services during cleanup efforts that resulted in the pumping of residual water from within the building into the storm drain system.

Description and Volume of Discharge:

It is estimated that approximately 300 gallons of cooling tower water overflowed into Building 827. Of that cooling water, it was estimated that less than 10 gallons flowed out of the bay doors and into the storm drain system (Photo 1). The second and subsequent discharge of cooling tower water to the storm drain was due to a miscommunication by the EOC directing Custodial Services to pump water to the storm drain. Custodial Services personnel collected, logged, and pumped approximately 60 gallons of cooling tower water to the storm drain before stopping the pumping and cleanup operations. Remaining volume of water was directed to the sanitary sewer system, an authorized discharge with the Albuquerque Bernalillo County Water Utility Authority. The cooling water contained a scale inhibitor, at a concentration of approximately 114 ppb and bromine (used to control algae growth) at a concentration of 1.15 ppm with a pH of 7 (as tested on site by the EOC at the time of the event).

A grab sample was obtained downstream from the discharge location (see Photo 2 for approximate location) and was sent to the laboratory for analysis. In addition to the sample, a handheld pH meter was used providing a reading of 9.2. It is also noteworthy that earlier that day Sandia performed fire protection maintenance and testing throughout the site, and in the morning was also discharging water from the Hazardous Waste Handling Unit retention pond. These authorized discharges resulted in significant flow to the storm channel observed in Photo 2.

Corrective Action:

The mechanical system that contains the return valve is actively monitored by the FMOC automated electronic FCS. The FCS is programmed to signal system problems and in this case, the FCS detected an abnormal condition and initiated a "water on floor" alarm. The EOC received a communication from the FCS alarm system and when this alarm communication was received the EOC communicated by radio to the mechanical maintenance swing shift team that a "water on floor" alarm at Building 827 had been received. The mechanical maintenance team responded immediately to assess the situation and perform urgent maintenance. A replacement part has been ordered and the backup system will be used until the new part is installed and fully functional. The FMOC's mechanical system engineering team is evaluating the cause of the failed relay valve to incorporate any opportunities for improvement.

The "water on floor" alarm within the FCS is accompanied by an engineered control that causes the FCS to automatically shut down towers, chillers, and all pumps at the mechanical system location to prevent any additional water from entering the system. A causal analysis in October 2015, analyzed the causes of a previous overflowing mechanical system due to a different type of mechanical equipment failure and identified several corrective actions. One of the corrective actions that was implemented was adding more sensitivity to the FCS which included the "water on floor" alarm with the automatic shutdown. This improvement to the FCS is a success as it prevented additional water from being added to the system after the relay valve broke and signaled the need for mechanical maintenance to immediately assess the situation. The implementation of these alarms has significantly decreased the volume of cooling tower water discharges to the environment.

In addition to the FCS improvements, Sandia National Laboratories Environmental Compliance and Monitoring Program (ECMP) personnel are working with the EOC to provide environmental awareness for first responders. The ECMP is providing guidance on environmental releases, Subject Matter Experts for spill guidance are available around the clock, as well as an initiative to support the EOC Response Team by donating spill containment drain covers to protect accidental discharges to the storm drain

system. The ECMP and EOC are collaborating to ensure the appropriate actions are taken in the event of future releases. Also, awareness was raised to the Custodial Services Department during the daily morning stretch and flex meetings on the appropriate handling of the water collected by their vacuums to prevent discharges to the environment from reoccurring.

Lastly, a grab sample was obtained during the event and sent to the laboratory for analysis. The sample was run for Metals Analysis (EPA 200.2) and Oil and Grease (EPA1664A/1664B). Results came back well below the regulatory requirements set forth in Sandia National Laboratories' Multi-Sector General Permit with the exception of Magnesium (0.848 mg/L), which is consistent with natural background levels.



Photo 1 – Initial discharge to storm drain



Photo 2 – Concrete line storm channel with water