

<b>EA Operational Awareness Record</b>	<b>Report Number:</b> EA-ID-2015-10-22
<b>Site:</b> Idaho Site	<b>Subject:</b> Follow-Up Review of the Idaho Site Fire Protection Program as Implemented for the Irradiated Materials Characterization Laboratory and the Advanced Mixed Waste Treatment Project
<b>Dates of Activity:</b> 10/19/2015 – 10/22/2015	<b>Report Preparer:</b> Aleem E. Boatright
<p><b>Activity Description / Purpose:</b></p> <p>The Office of Environment, Safety and Health Assessments, within the Office of Enterprise Assessments (EA), performed a follow-up review to evaluate the completion of corrective actions taken to address the findings that EA identified during the previous reviews of the Idaho Site fire protection programs. This review evaluated the effectiveness of both the contractor and field office programs in managing the findings and subsequent corrective actions associated with fire protection at the subject facilities.</p> <p>Fire protection was identified as an independent oversight targeted review area for 2013 in an Office of Health, Safety and Security (predecessor to EA) memorandum from the Chief Health, Safety and Security Officer to DOE senior line management, dated November 6, 2012. At the Idaho Site, targeted fire protection reviews were completed at the Irradiated Materials Characterization Laboratory (IMCL) of the Materials and Fuels Complex (MFC) and the Advanced Mixed Waste Treatment Project (AMWTP) in May and July of 2014, respectively. The respective final reports for these targeted reviews were issued September and October of 2014. The findings that resulted from those reviews were the subject and focus of the follow-up review documented by this report.</p> <p>Currently, the Idaho Site comprises AMWTP, the Idaho Cleanup Project (ICP), and the Idaho National Laboratory (INL), which includes IMCL. The Idaho Operations Office (ID) provides direction and oversight for the design and operation of the Idaho Site nuclear facilities for the DOE Offices of Nuclear Energy (NE) and Environmental Management (EM). NE is responsible for INL facilities and general site operations, and EM is responsible for ICP and AMWTP facilities. Battelle Energy Alliance, LLC (BEA); CH2M-WG Idaho, LLC (CWI); and Idaho Treatment Group, LLC (ITG) are currently the primary contractors responsible for the management and operation of INL, ICP, and AMWTP facilities, respectively.</p>	
<p><b>Result:</b></p> <p>The Idaho Operations Office (ID) has adequately monitored and facilitated closure of the findings identified by EA for both the IMCL and AMWTP fire protection reviews. In addition, EA observed the following results during this follow-up review.</p> <p><b><u>Irradiated Materials Characterization Laboratory (IMCL)</u></b></p> <p><i>IMCL-F-01: The INL FPP [Fire Protection Program], as implemented at MFC in support of the operation of IMCL, does not comply with various DOE Order 420.1B requirements or the procedures established to implement these requirements. The INL FPP procedure, LRD-14401, does not describe key responsibilities for the implementation of the FPP; only active systems are being managed using the impairment procedure, LWP-14407; the non-compliant conditions described in the BNA [Baseline Needs Assessment] were not processed as equivalencies, and the established compensatory measures were not evaluated for effectiveness; and BNA conclusions, including non-compliances associated with response times and EMS capabilities, were not incorporated into the IMCL FHA [Fire Hazard Analysis].</i></p>	

This finding was appropriately communicated from ID to the responsible contractor, Battelle Energy Alliance, LLC (BEA), using the PEGASUS system (see PEGASUS Issue #: ISS-EM-1/8/2015-80065). EA verified that BEA took action to resolve the finding:

- Procedure PDD-14401, *INL Fire Protection Program*, was revised to include a new section titled *Implementation–Roles, Responsibilities, Accountabilities, and Authorities (R2A2s)*. The information in this section outlines specific responsibilities for key individuals supporting the FPP, such as the INL Fire Marshal, Facility Fire Protection Engineers (FPEs), Fire System Engineers, Fire Protection Design Engineers, Life Safety Systems Manager, and INL Fire Chief.
- Procedure LWP-14407, *Managing Fire Protection Impairments*, was revised and addresses the process for impairing passive fire systems. EA reviewed an example of a passive impairment (Ref. Fire System Impairment Tag ATR-2015-0372). The impairment was for a fire door that was required to be left open to support the installation of scaffolding. The fire door provided access to an area that was protected with an active Halon fire suppression system.
- The BNA was updated and issued.

***IMCL-F-02: The IMCL FHA does not classify the facility in accordance with NFPA [National Fire Protection Association]-45 or identify related requirements, including fire separation, limitations on flammable liquids, means of egress, and fire extinguishing systems.***

This finding was appropriately communicated from ID to the responsible contractor, BEA, using the PEGASUS system (see PEGASUS Issue #: ISS-EM-1/8/2015-67775). EA verified that BEA took action to resolve the finding:

- The IMCL FHA, HAD-465, Rev. 5, was revised to reflect the classification in accordance with NFPA-45; IMCL was classified as Class C. A table was added to the FHA to address compliance with the specific requirements (e.g., for life safety, sprinkler protection, limitations for flammable/combustible fuels).

#### **Advanced Mixed Waste Treatment Project (AMWTP)**

***AMWTP-F-01: The calculation that supported the approval of equivalency request DOE-ID-FPEQ-AMWTP-02-01 is not consistent with the current field performance conditions of the AMWTP TSA-RE [Transuranic Storage Area-Retrieval Enclosure] fire suppression systems. Inputs to the supporting calculation are now non-conservative, based on the most recent dry pipe valve testing, and therefore supporting documentation has not been kept current, as required by Title 10 CFR 830.***

This finding was appropriately communicated from ID to the responsible contractor, Idaho Treatment Group, LLC (ITG), using the PEGASUS system (see PEGASUS Issue #: ISS-OS-2/11/2015-65874). EA verified that ITG took action to resolve the finding:

- All eight fire suppression system dry pipe valve risers were replaced. EA reviewed test results confirming that each dry pipe system met the fire flow delivery time required by NFPA-25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*.
- ID and ITG followed up with an extent-of-condition review to address other existing equivalencies. As a result, several of the supporting equivalencies were determined to be no longer necessary and were cancelled.
- Overall, the process has been improved to ensure these documents are periodically reviewed and updated to reflect current facility conditions and operational needs.
- Since the 2014 review, increased attention has focused on equivalencies at AMWTP, which resulted in the installation of the eight new dry pipe system valves and improved the overall management of the equivalency process.

***AMWTP-F-02: Labeling and placards in accordance with NFPA-704, indicating the hazard rating of the stored material, have not been installed on the RCE [Retrieval Contamination Enclosure] Diesel Fuel Day Tank, as required by NFPA-30.***

This finding was appropriately communicated from ID to the responsible contractor, ITG, using the PEGASUS system (see PEGASUS Issue #: ISS-OS-2/11/2015-28271). EA verified that ITG took action to resolve the finding:

- EA conducted a facility walkdown confirmed that hazard rating placards were installed on the Diesel Fuel Day Tank.

***AMWTP-F-03: The annual fire pump test and the evaluation of the resulting data are not being performed to meet the requirements of NFPA-25. The fire pump annual test procedure has no acceptance criteria, does not prescribe the test and data evaluation methodology, and does not include pump field acceptance test curves. Additionally, there is no evidence that test data is reviewed by an FPE.***

This finding was appropriately communicated from ID to the responsible contractors, ITG and CH2M-WG Idaho, LLC (CWI), using the PEGASUS system (see PEGASUS Issues #: ISS-OS-2/11/2015-56294 and ISS-OS-2/11/2015-70090, respectively). EA verified that ITG and CWI took action to resolve the finding:

- Subsequent testing of the CWI fire pumps has been performed in accordance with NFPA-25 requirements, addressing EA concerns.
- Test data is corrected based on rated speed; test results are evaluated against certified vendor test curves and evaluated by an FPE.
- Discussions with the CWI FPE revealed that a Model Work Order (MWO) was revised to appropriately describe the testing methodology.
- RWMC-639, *Diesel & Electric Fire Pump Annual Inspection & Test PM* [Preventive Maintenance], incorporates the acceptance criteria and pump acceptance test curves using FRM-1720 (fire pump data spreadsheet). It further requires the data to be reviewed by an FPE. Procedure PRD-158, *Inspection, Testing and Maintenance of Fire Protection Systems and Equipment*, has also been revised and references this information.

***AMWTP-F-04: The Building WMF-636 FHA and DSA [Documented Safety Analysis] do not accurately reflect the facility's capability to contain contaminated firewater runoff from the HEPA filter deluge system. The FHA and DSA documentation also does not show agreement as to the worst-case firewater runoff scenario. The FHA and DSA are to be current, complete, and accurate, as required by Title 10 CFR 830.***

This finding was appropriately communicated from ID to the responsible contractor, ITG, using the PEGASUS system (see PEGASUS Issue #: ISS-OS-2/11/2015-72033). EA verified that ITG took action to resolve the finding:

- The DSA does not credit the HEPA filter deluge system in accident analyses and thus does not reference the capacity to contain the resulting contaminated fire water runoff or conflict with the FHA.
- The FHA was revised to include both the requirement for containing radiological runoff as a result of fire flow (sprinkler discharge and hose streams) and the design capacity.

In addition to following up on the reported findings, EA also examined the provided information on the status of the MFC infrastructure that supports IMCL – specifically, the fire water supply system. The EA fire protection assessment of IMCL noted performance issues associated with the primary fire water pump and also observed significant deterioration due to interior corrosion of the fire water storage tank (which was in the process of being addressed in 2014). Progress toward addressing these issues has been achieved through the ongoing installation of a new 400,000 gallon fire water storage tank and supporting diesel fire water pump system. These upgrades represent a significant effort toward ensuring a reliable and adequate water supply for MFC and surrounding nuclear facilities.

As discussed, all of the findings identified by EA were tracked by ID using the procedure that defines the responsibilities for documenting, categorizing, tracking, and closure of DOE-identified issues (03.WI.04.02, *Conduct of Oversight Activities*). In addition, facility management addressed many other EA observations and viewed them as key indicators for feedback and continuous improvement.

EA has confirmed that all of the findings for both IMCL and AMWTP have been satisfactorily closed.

**EA Participants**

1. Aleem E. Boatright (lead)
2. Jeffrey Robinson

**References (Key Documents, Interviews, and Observations)**

1. EA Independent Review Report, *Office of Enterprise Assessments Targeted Review of the Idaho National Laboratory Fire Protection Program as Implemented at the Irradiated Materials Characterization Laboratory at the Idaho Site*, September 2014
2. EA Independent Review Report, *Office of Enterprise Assessments Targeted Review of the Fire Protection Program at the Idaho Site Advanced Mixed Waste Treatment Project*, October 2014
3. ISS-EM-1/8/2015-67775, *IMCL Fire Hazards Analysis does not classify the facility in accordance with NFPA-45*
4. ISS-EM-1/8/2015-80065, *The INL Fire Protection Program does not comply with DOE O 420.1B requirements*
5. ISS-OS-2/11/2015-65874, *Equivalency Inconsistent With Current Performance Conditions of the TSA-RE Fire Suppression Systems*
6. ISS-OS-2/11/2015-28271, *Placards Not Installed on RCE Diesel Fuel Day Tank*
7. ISS-OS-2/11/2015-56294, *Fire Pump Test and Evaluation No Being Performed in Accordance with NFPA 25*
8. ISS-OS-2/11/2015-70090, *RWMC Fire Pump Test and Evaluation Not Being Performed in Accordance with NFPA 25*
9. ISS-OS-2/11/2015-72033, *WMF-636 FHA/DSA Do Not Reflect Capability to Contain Firewater Runoff*
10. ATR-2015-0372, *Fire System Impairment*
11. HAD-465, Revision 5, *Fire Hazards Analysis for the Irradiated Materials Characterization Laboratory (IMCL) at MFC*, 7/13/2015
12. PDD-14401, Revision 0, *INL Fire Protection Program*, 5/7/2015
13. MCP-598, Revision 33, *Corrective Action System*, 7/17/2013
14. PRD-158, Revision 10, *Inspection, Testing, and Maintenance of Fire Protection Systems and Equipment*, 3/23/2015
15. FRM-1710, Revision 00, *Fire Pump Test Evaluation*, 3/11/2015
16. 03.WI.04.02, Revision 15, *Conduct of Oversight Activities*, 8/20/2014

Were there any items for EA follow-up?     Yes     No

**EA Follow-up Items:**

None.