

HSS Independent Activity Report - Rev. 0**Report Number:** HIAR-WTP-2014-01-27**Site:** Hanford Site**Subject:** Office of Enforcement and Oversight's Office of Safety and Emergency Management Evaluations Activity Report for Observation of the Waste Treatment and Immobilization Plant Low Activity Waste Facility Heating, Ventilation, and Air Conditioning Systems Hazards Analysis Activities**Dates of Activity :** 01/27/14 - 02/07/14**Report Preparer:**

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Activity Description/Purpose:

The Office of Health, Safety and Security (HSS), Office of Safety and Emergency Management Evaluations (Independent Oversight) reviewed a set of Insight software hazard evaluation (HE) tables for hazard analyses (HAs) developed for the low activity waste facility (LA3W) heating, ventilation, and air conditioning (HVAC) systems and met with responsible Bechtel National, Incorporated (BNI) personnel to discuss comments. This Independent Oversight observation is part of a planned multi-phase review (Ref. 1) focusing on the technical adequacy of BNI-issued LAW HA Reports (HARs) and subsequent submittal of the Waste Treatment and Immobilization Plant (WTP) LAW Facility documented safety analysis and technical safety requirements for the U.S. Department of Energy (DOE) Office of River Protection's review and approval.

Result:

The HA process being executed by each HA Team (also referred to as the Safety Design Integration Team, or SDIT) identifies potential events (i.e., process event upset conditions that lead to adverse consequences to facility workers, collocated workers, or the public) for analysis. Because of the low complexity of the LAW HVAC systems, the SDIT used the What-If methodology in developing the Insight HE tables for the HVAC systems. The HE sessions for the HVAC system were completed on January 23, 2014, before the start of Independent Oversight's onsite review.

Independent Oversight reviewed the completed (draft) Insight HE tables developed for the HVAC systems as well as system descriptions, drawings, calculation sheets, and other design documentation. After meeting with the SDIT lead to discuss Independent Oversight questions resulting from the review, Independent Oversight developed and documented comments in a comment sheet, which they provided to BNI for written response. BNI's responses (Ref. 2 and Ref. 3) clarified the SDIT's reasoning behind their methodology and conclusions or acknowledged actions that will be taken as the HVAC HAR volume is developed.

Independent Oversight notes that all events covered in the HE tables, including both radiological and chemical releases, have low consequences (Risk Rank III) to the public and collocated workers. BNI judged that some events have high consequence (Risk Rank I) to facility workers; however, these judgments conservatively estimate that all the high efficiency particulate air (HEPA) filters in zone C5 are fully loaded with material-at-risk (MAR) and would simultaneously release their contents in a fire. These results are expected since MAR inventories in the HVAC systems are limited to the amounts that accumulate (primarily in HEPA filters) over time; those amounts are substantially reduced with routine changeouts of the HEPA filters. Process upsets in systems upstream of the HVAC systems will increase the amount of MAR in the HVAC systems, but these events are being addressed in the HAs for those upstream systems. The HVAC systems are candidate controls for other systems experiencing upset conditions, and Independent Oversight will evaluate the HVAC systems as part of the oversight activities for control selection and for the development of Chapters 3, 4, and 5 of the documented safety analysis. What-If methodology was used appropriately for the HVAC systems.

As a result of the review of the Insight HE tables and other documentation associated with the LAW HVAC systems, Independent Oversight did not identify new potential concerns, examples supporting existing potential concerns, or events that were not covered by the analyzed events.

HSS Participants	References
1. James O. Low (lead)	1. DOE/HQ HS-45, <i>Plan for the Independent Oversight Review of the Hanford Site Waste Treatment Plant Low Activity Waste Facility Documented Safety Analysis Development</i> , April 22, 2013.
2. David Odland	2. E-mail, Paul Patterson (BNI) to James Low, subject: HS-45 Ventilation HA Comments 1-30 – LBL Team Response, February 4, 2014.
3. Mary Miller	3. E-mail, Patterson (BNI) to James Low, subject: RE: HS-45 Ventilation HA Comments 1-30 – LBL Team Response, February 11, 2014.
4. Daniel Schwendenman	
Were there any items for HSS follow up? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
HSS Follow Up Items	
<ul style="list-style-type: none"> Evaluate the treatment of HVAC systems in the selection of controls and the development of Chapters 3, 4, and 5 of the LAW documented safety analysis. 	