Volume II

Inspection of
Emergency
Management
of the

Idaho Operations Office
and
Idaho National Engineering and Environmental Laboratory

September 2003

Office of Independent Oversight and Performance Assurance
Office of the Secretary of Energy

INDEPENDENT OVERSIGHT INSPECTION OF EMERGENCY MANAGEMENT AT THE IDAHO OPERATIONS OFFICE AND IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

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Acronyms

ATR	Advanced Test Reactor
BBWI	Bechtel BWXT Idaho, LLC
CFA	Central Facilities Area
CFR	Code of Federal Regulations
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EAL	Emergency Action Level
EAM	Emergency Action Manager
EC	Emergency Coordinator
ECC	Emergency Control Center
EM	Office of Environmental Management
EOC	Emergency Operations Center
EPI	Emergency Plan Implementing (Procedure)
EPZ	Emergency Planning Zone
ERO	Emergency Response Organization
ES&H	Environment, Safety, and Health
FEB	Facility Evaluation Board
HA	Hazards Assessment
ICARE	BBWI issues communication and resolution environment
ICATS	ID Corrective Action Tracking System
ICS	Incident Command System
ICMS	Integrated Chemical Management System
ID	Idaho Operations Office
INEEL	Idaho National Engineering and Environmental Laboratory
MDO	ID Management Duty Officer
MOU	Memorandum of Understanding
NA-40	Headquarters Office of Emergency Operations, National Nuclear Security Administration
NE	Office of Nuclear Energy, Science and Technology
NOAA	National Oceanic and Atmospheric Administration
OA	Office of Independent Oversight and Performance Assurance
RCRA	Resource Conservation and Recovery Act
TEL	Threshold for Early Lethality
TRA	Test Reactor Area
TPQ	Threshold Planning Quantity
UFSAR	Updated Final Safety Analysis Report

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INDEPENDENT OVERSIGHT INSPECTION OF EMERGENCY MANAGEMENT AT THE IDAHO OPERATIONS OFFICE AND IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

Volume II

1.0 INTRODUCTION

The Secretary of Energy's Office of Independent Oversight and Performance Assurance (OA) conducted an inspection of environment, safety, and health (ES&H) and emergency management programs at the U.S. Department of Energy (DOE) Idaho National Engineering and Environmental Laboratory (INEEL) in August and September 2003. The inspection was performed as a joint effort by the OA Office of Environment, Safety and Health Evaluations and the Office of Emergency Management Oversight. This volume discusses the results of the review of the INEEL emergency management program. The results of the review of the INEEL ES&H programs are discussed in Volume I of this report, and the combined results are discussed in a summary report.

The DOE Office of Nuclear Energy, Science and Technology (NE) is the lead program secretarial office for INEEL. As such, it has overall Headquarters responsibility for programmatic direction, funding of activities, and emergency management at the site. The DOE Office of Environmental Management (EM) is responsible for certain decontamination and decommissioning (D&D) and environmental restoration projects at INEEL. At the site level, line management responsibility for INEEL operations and safety falls under the Manager of the Idaho Operations Office (ID). INEEL is managed and operated for DOE by Bechtel BWXT Idaho, LLC (BBWI), whose members include Bechtel National, Inc.; BWX Technologies Company; and a consortium of eight regional universities.

INEEL is a multi-purpose laboratory that performs work for NE, other DOE program offices, other Federal agencies, and work for others. INEEL activities include nuclear reactor technology research and development, waste management, D&D of facilities, environmental restoration, advanced energy production, defense-related support, technology transfer, and non-nuclear research and development projects. INEEL has experienced a significant increase in D&D and programmatic work in the past few years for a variety of reasons (e.g., D&D projects have been accelerated).

INEEL consists of eight primary facilities situated on nearly 900 square miles in a rural, sparsely populated sector of high-desert terrain in southeastern Idaho. Site buildings and structures are clustered within these facilities, which are typically several hundred acres in size and are usually separated from each other by large tracts of undeveloped land. In addition, DOE owns or leases laboratories and administrative offices in the city of Idaho Falls.

INEEL activities involve various potential hazards that need to be effectively controlled. These hazards include external radiation, radiological contamination, hazardous chemicals, and various physical hazards associated with facility operations (e.g., machine operations, high-voltage electrical equipment, pressurized systems, hoisting and rigging heavy loads, and noise). Significant quantities of radiological and chemical hazardous materials are present in various forms at INEEL.

INEEL organizations and programs are currently undergoing a significant transition. NE and EM are restructuring some aspects of their approach to line management of INEEL activities to provide for more clear lines of responsibility and direction. Correspondingly, ID will be reorganized to facilitate line management direction and oversight of the two major mission areas (i.e., environmental management and research/technical support). ID plans to issue separate contracts for these two mission areas when the current contract period ends. BBWI is also reorganizing into two distinct entities to align with the two mission areas.

Throughout the evaluation of emergency management programs, OA reviews the role of DOE organizations in providing direction to contractors and conducting line management oversight of contractor activities. OA is placing more emphasis on the review of contractor self-assessments and DOE line management oversight in ensuring effective emergency management programs. In reviewing DOE line management oversight, OA focused on the effectiveness of ID in managing the INEEL contractors, including such management functions as setting expectations, providing implementation guidance, allocating resources, monitoring and assessing contractor performance, and monitoring and evaluating contractor self-assessments. Similarly, OA focuses on the effectiveness of contractor self-assessment programs, which DOE expects to provide comprehensive reviews of performance in all aspects of emergency management.

In addition to the OA review of ID's emergency management oversight and operational awareness activities, the inspection team conducted tabletop performance tests with a sample of the site's key decision-makers to evaluate their ability to employ procedures, other tools, and training when responding to postulated emergency conditions.

Section 2 of this report provides an overall discussion of the results of the review of the INEEL emergency management program elements that were evaluated. Section 3 provides OA's conclusions regarding the overall effectiveness of ID and contractor management of the emergency management program. Section 4 presents the ratings assigned as a result of this review. Appendix A provides supplemental information, including team member composition. Appendix B identifies the findings that require corrective action and follow-up. Appendices C through F detail the results of the reviews of individual emergency management program elements.

2.0 RESULTS

2.1 Positive Program Attributes

BBWI has implemented a comprehensive emergency management program that provides confidence that the emergency response organization can mount an effective response to a wide range of initiating events. While weaknesses were noted within several of the programmatic areas, as discussed on the following page, they should be viewed in the context of a fundamentally strong program. Positive attributes of the emergency management program are discussed below.

With very few exceptions, BBWI has implemented a rigorous and well-structured framework for the INEEL emergency management program. BBWI has established an effective mechanism for developing and maintaining a consistent set of hazards surveys and hazards assessments (HAs) in the form of detailed procedures that include most of the elements required by a rigorous HA development process. Generally, the INEEL hazards surveys and HAs appropriately identify and characterize nearly all facility and site hazards, including transportation activities. BBWI institutional and facility-specific emergency planning and response documents, including plans, implementing procedures, and responder checklists, accurately describe all elements of the INEEL emergency preparedness program and establish a consistent set of expectations for emergency response.

The INEEL emergency management training, drill, and exercise program is comprehensive and well-defined, and it is used effectively to prepare emergency response organization (ERO) members for their emergency response duties, maintain proficiency, and identify areas for program improvements. BBWI has defined and effectively implemented a performance-based training and qualification program using a variety of instructional presentation and evaluation methods, including practical demonstrations of proficiency. The mature BBWI drill program is used to train new ERO members and help maintain ERO proficiency. INEEL exercises are appropriately structured, conducted, and documented to validate the elements of the emergency management program and identify needed improvements. ID has defined an appropriate training and qualification program for ID management duty officers (MDOs).

Key INEEL emergency responders demonstrated appropriate and conservative decision-making skills during tabletop performance tests, and the INEEL emergency response approach and level of preparedness have been validated during several recent events. Emergency operations center (EOC) teams (which included the ID MDO position), emergency control center (ECC) teams, and consequence assessment teams demonstrated a clear understanding of individual and team roles and responsibilities, worked effectively as teams, and were clearly sensitive to the concepts of conservative decision-making. With few exceptions, EOC and ECC teams identified appropriate protective actions and ensured that affected populations were notified in a timely manner. Furthermore, INEEL demonstrated conservative and timely response to two recent facility emergencies involving drums of contaminated material.

Many aspects of the INEEL emergency management program have been improved since the 1998 OA emergency management review, and BBWI and ID are continuing to implement programmatic improvements. Since 1998, BBWI has implemented improvements in the rigor and quality of HAs, transportation emergency planning, and the accuracy and usability of emergency response procedures. The BBWI integrated assessment program is being used effectively to identify areas for improvement, and identified issues are being effectively resolved. BBWI's wildland fire preparedness program includes a comprehensive annual preparation process to ensure readiness for the range-fire season. ID efforts have resulted in significantly improved communication and coordination with cognizant state and local agencies, and the recently-approved ID emergency management system manual clearly establishes emergency response and line management oversight roles and responsibilities for ID staff.

2.2 Program Weaknesses and Items Requiring Attention

Although the INEEL emergency management program is strong in many areas, weaknesses were noted in several HAs and the associated emergency action levels (EALs), which are used for event classification and protective action formulation. These weaknesses impact the rigor of the programmatic foundation and the accuracy and usability of some of the response tools employed by key ERO initial decision-makers. Concerns in the rigor of ID oversight were noted as well. Specific weaknesses are discussed below.

HA weaknesses collectively diminish the rigor of the foundation for the INEEL emergency management program. The process for developing hazards surveys and HAs does not address the evaluation of hazardous materials that do not have Code of Federal Regulations-published screening quantities. Thus, in several instances, hazardous materials stored in significant quantities, including explosives and sulfamic acid, were not evaluated for their potential toxicological impact on site workers and the public. Although the HAs have been significantly improved, they do not assess the full spectrum of events that could impact affected populations; analyze release barriers for available indications of barrier failure for use in EALs; or accurately determine the extent of emergency planning zones (EPZs). In addition, in several instances, HA event analyses were incorrectly carried forward to the associated EALs, resulting in classification levels and predetermined protective actions that are non-conservative.

Weaknesses in the specificity of many EAL thresholds and some of the associated predetermined protective actions limit EAL usefulness in a high-stress environment. Some EALs do not adequately support consistent, accurate, and timely event classification and identification of protective actions because few EALs include measurable entry thresholds, even for events postulated at the Advanced Test Reactor, which is highly instrumented. In addition, in several instances, the predetermined protective actions are inconsistent with the EAL technical basis analyzed in the associated HA. Also, predetermined protective actions do not always include both a downwind distance and breadth to clearly define the affected area in which the stated protective action is applicable. Consequently, EALs may challenge initial decision-makers, particularly if used early in an event when the full capabilities of the ERO are not yet available to provide technical support. Several instances of event misclassification during tabletop performance tests can be attributed in part to these weaknesses.

The ID program for conducting line management oversight of the INEEL emergency management program is immature, and significant challenges exist to successful implementation. ID has not fully implemented a program for conducting line management oversight of the INEEL emergency management program. Although the recently-approved ID emergency management system manual effectively captures an appropriate set of roles, responsibilities, and guidance for overseeing the BBWI emergency management program, ID has not yet developed the implementation mechanisms necessary to ensure that the required activities will be appropriately performed. In addition, deficiencies exist in both the implementation of the ID issues management program and the use of the corrective action tracking system for emergency management issues. Furthermore, ID has not effectively addressed the longstanding inconsistency between the BBWI emergency management program and DOE Order 151.1A requirements regarding events that should be categorized as Operational Emergencies (not requiring further classification). Consequently, if a classifiable emergency occurs at INEEL, DOE Headquarters emergency response personnel might not understand that the event does not necessarily involve the airborne release of hazardous materials.

3.0 CONCLUSIONS

As reported in the May 1998 review of emergency management programs across the DOE complex, the OA team found that a sound and effective emergency management program was in place at INEEL. The 1998 review also identified several weaknesses in response implementing mechanisms, proficiency and depth of knowledge of some ERO members, and EM and ID involvement in line management oversight of the INEEL emergency management program. This inspection found that BBWI has made a sustained effort to maintain the program strengths, address most identified weaknesses, and implement further improvements across many program elements. In addition, both EM and ID have been more engaged in overseeing the INEEL program.

The BBWI emergency management program is characterized by an appropriate framework in the form of institutional and facility-specific emergency plans, a well-integrated set of response implementing procedures and ERO checklists, and a defined emergency planning hazards identification and assessment process. HAs, with some notable exceptions, appropriately identify the hazardous materials that need to be evaluated, assess the consequences of postulated events, and provide information necessary to develop emergency response procedures. Other elements of the BBWI program contain strengths as well. The training, drill, and exercise program is well-structured and is being used effectively to prepare ERO members for their emergency response duties and identify areas for program improvements. During tabletop performance tests, BBWI emergency response personnel demonstrated appropriate and conservative decision-making skills, which is an area showing significant improvement from the 1998 OA review. BBWI is effectively using self-assessments to implement programmatic improvements, and ID has improved coordination with offsite response agencies. ID has also recently issued a manual to clearly define line management oversight and emergency response roles and responsibilities and ID ERO response functions.

Although the program is fundamentally strong, weaknesses were noted in several aspects of the HAs and EALs. A weakness in the hazards screening process resulted in some hazardous materials that are present in significant quantities at three INEEL facilities not being assessed for their potential impact on site workers and the public. HAs do not consider all of the event initiators necessary to adequately cover the range of potential accident scenarios, and the HAs do not accurately determine EPZs. Furthermore, the EALs, which are used for event classification, do not always contain the necessary specificity in terms of implementation thresholds and predetermined protective actions. The collective consequence of these weaknesses is that in some cases, initial decision-makers may not have all of the tools necessary to ensure timely and accurate event classification and protective action dissemination in a high-stress environment. Finally, significant challenges exist for ID in implementing the program for conducting line management oversight of the INEEL emergency management program, and ID has not ensured that the BBWI event categorization and classification process is consistent with DOE requirements or sought an exemption from the cognizant Headquarters authority. This inconsistency means that Headquarters emergency response personnel may not have a clear understanding of the true severity of an INEEL-classified event.

Overall, BBWI has implemented a well-structured emergency management program that provides a high degree of confidence that site workers and the public will be adequately protected if a significant event occurs. This confidence is based on programmatic attributes, ERO performance during tabletop tests, and validation of the INEEL emergency response approach and level of preparedness during several recent events. The identified weaknesses in HAs and EALs will require sustained attention and a carefully-considered approach to correction, but overall, the program is strong, and BBWI and ID are continuing to implement improvements.

4.0 RATINGS

This inspection focused on a detailed assessment of seven key emergency management programmatic elements, divided into four major element categories. No overall program rating has been assigned. The individual element ratings reflect the status of each INEEL emergency management program element at the time of the inspection. The ratings assigned below to the readiness assurance category are specific to those assessment, corrective action, and performance monitoring mechanisms applicable to the emergency management area.

The ratings for the individual program elements evaluated during this inspection are:

Emergency Planning

Hazards Surveys and Hazards Assessments.....NEEDS IMPROVEMENT
Program Plans and Procedures.....EFFECTIVE PERFORMANCE

Emergency Preparedness

Training and Drills .....EFFECTIVE PERFORMANCE
Emergency Response Exercises.....EFFECTIVE PERFORMANCE

Emergency Response

INEEL Emergency Response Decision-Making.....EFFECTIVE PERFORMANCE

Readiness Assurance

DOE Assessments and Performance Monitoring.....NEEDS IMPROVEMENT
Contractor Assessments and Issues Management .....EFFECTIVE PERFORMANCE

APPENDIX A

Supplemental Information

A.1 Dates of Review

Scoping Visit	June 3 - 5, 2003
Onsite Inspection Visit	August 11 - August 21, 2003
Report Validation and Closeout	September 2 - 4, 2003

A.2 Review Team Composition

A.2.1 Management

Glenn S. Podonsky, Director, Office of Independent Oversight and Performance Assurance
Michael A. Kilpatrick, Deputy Director, Office of Independent Oversight and Performance Assurance
Charles B. Lewis, Director, Office of Emergency Management Oversight

A.2.2 Quality Review Board

Michael A. Kilpatrick
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Robert M. Nelson
Douglas P. Trout

A.2.3 Review Team

Charles B. Lewis, Director, Office of Emergency Management Oversight (Team Leader)

Steven Simonson (Topic Lead)
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Jeff Robertson
Tom Rogers
David Schultz

A.2.4 Administrative Support

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APPENDIX B

Site-Specific Findings

Table B-1. Site-Specific Findings Requiring Corrective Action Plans

FINDING STATEMENTS	REFER TO PAGES:
1. BBWI has not ensured that all hazardous materials are identified and assessed for potential impact on site workers and the public, as required by DOE Order 151.1A, *Comprehensive Emergency Management System.*	13
2. BBWI has not fully analyzed an appropriate spectrum of emergency events and conditions; assessed available indicators of barrier failures for use in EALs; or appropriately determined the extent of emergency planning zones, as required by DOE Order 151.1A.	15
3. Many BBWI EALs do not contain an appropriate set of measurable implementation thresholds that ensure that event classifications are timely and accurate, as required by DOE Order 151.1A.	18
4. ID has not ensured that the BBWI event categorization and classification process is consistent with DOE Order 151.1A or sought an exemption in accordance with the process described in DOE Order 151.1A.	35

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APPENDIX C

Emergency Planning

C.1 INTRODUCTION

Emergency planning consists of identifying hazards, threats, and hazard mitigation mechanisms; developing and preparing emergency plans and procedures; and identifying personnel and resources needed to ensure an effective emergency response. Key elements of emergency planning include developing a hazards survey and emergency planning hazards assessment (HA) to identify and assess the impact of site- and facility-specific hazards and threats, and establishing an emergency planning zone (EPZ). Based upon HA results, U.S. Department of Energy (DOE) sites and facilities must establish an emergency management program that is commensurate with the identified hazards. The emergency management plan defines and conveys the management philosophy, organizational structure, administrative controls, decision-making authorities, and resources necessary to maintain the site's comprehensive emergency management program. Specific implementing procedures are then developed that conform to the plan and provide the necessary detail, including decision-making thresholds, for effectively executing the response to an emergency, regardless of its magnitude. These plans and procedures must be closely coordinated and integrated with offsite authorities that support the response effort and receive emergency response recommendations from the site.

This Office of Independent Oversight and Performance Assurance (OA) inspection included a review of Idaho National Engineering and Environmental Laboratory (INEEL) emergency preparedness hazards surveys and HAs, INEEL emergency plans, and the associated implementing procedures. Facilities and activities that were reviewed include the Central Facilities Area (CFA) and the Test Reactor Area (TRA), as well as onsite transportation activities. The focus of this review of emergency planning was the hazards survey and HA processes and the resultant tools provided to initial decision-makers for event classification, offsite notifications, and protective action formulation.

C.2 STATUS AND RESULTS

C.2.1 Hazards Surveys and Hazards Assessments

The May 1998 OA review determined that HAs generally formed a strong technical basis for the emergency management program at the Idaho Chemical Processing Plant (now the Idaho Nuclear Technology and Engineering Center) and CFA, but the site lacked a mechanism to ensure that changes in hazardous material inventories were routinely communicated to emergency planners, and improvements were needed in planning for transportation-related incidents. Since that evaluation, the site has implemented several program improvements in the emergency planning area to address the identified weaknesses.

Hazards surveys and HAs serve as the foundation of the emergency management program; consequently, their rigor and accuracy are key to developing effective emergency response procedures. The degree to which the HAs effectively serve this function depends primarily on the completeness of the institutional processes for developing hazards surveys and HAs; the effectiveness of the screening process by which hazardous materials are initially considered; and the rigor and accuracy of the analyses contained within the HA. At INEEL, each of these areas contains positive attributes. However, several shortcomings in each of the three areas collectively impact the adequacy and effectiveness of the hazards surveys and HAs as emergency planning tools.

Bechtel BWXT Idaho, LLC (BBWI) has established detailed procedures for developing and maintaining hazards surveys and HAs; this effort is one of the improvement items implemented since the 1998 OA review. These procedures address the major tasks involved in HA development, and with some notable exceptions, they provide appropriate guidance to emergency planners. In addition, BBWI is in the process of segregating the hazards survey information from the body of the existing HAs to produce a stand-alone survey document that qualitatively determines the required level of response planning for a facility/activity and serves as the basis for determining whether an HA is necessary. The CFA hazards surveys and HAs that were recently completed in accordance with the governing procedures represent a marked improvement in format, content, and usability. The CFA hazards survey includes most required elements and the generic emergency initiators, such as natural phenomena, that may affect the facilities, although a few appropriate elements, such as a summary of the planning and preparedness requirements applicable to the facility, are not documented. BBWI expects to complete all hazards survey documents in calendar year 2003 (with the exception of a transportation survey). Augmenting the procedures for performing HAs are other procedural requirements that the emergency services department be notified in advance of any changes to the safety basis documentation, as was done for the glovebox excavator at the Radioactive Waste Management Complex. However, some HA development elements are inaccurately described or missing from the hazards survey and HA development procedures. For example, methods for determining a definitive hazardous material source term – the "material at risk" – to use in assessment computations (i.e., current, average, or maximum permissible) are not addressed. Furthermore, as discussed in more detail later in this section, not considering hazardous materials that do not have Code of Federal Regulations (CFR)-published threshold quantities negatively impacts the hazards screening process and, hence, the rigor of the associated HA analyses.

An effective hazardous material screening process (which determines the need for a quantitative HA) is based on a thorough identification of hazardous materials in the facility, which, in turn, relies to a great extent on an accurate site inventory of hazardous materials. BBWI has implemented several inventory mechanisms for hazardous materials including, for example, the INEEL chemical management system (ICMS). The ICMS inventory is verified annually, updated at least every three weeks, and annotated with electronic identifiers for listed materials that are present in quantities in excess of regulatory thresholds. Although some errors in database inventory can occur due to usage, average and maximum quantities calculated by the system adequately support emergency planning and response activities. In addition to easy access to ICMS, emergency planners are notified of every chemical order, so upcoming ICMS inventory changes can be evaluated in advance for potential impacts on the HAs. Moreover, emergency planners conduct annual physical walkdowns of facilities to confirm inventories of hazardous materials and potential event initiators.

Screening processes as applied to transportation activities also have several strengths. The INEEL transportation department identifies and screens radiological nuclide quantities in accordance with site shipping procedures, and categorizes inventories to select the appropriate Department of Transportation (DOT)-approved, over-the-road shipping container. For materials moved onsite that are not in DOT-approved containers, a transportation plan is prepared and reviewed by a committee of cognizant site personnel, including the emergency management staff. If planned shipment inventories exceed screening thresholds, a case-basis HA is prepared. The three case-basis transportation HAs that were reviewed during this inspection include such necessary elements as potential emergency events and their consequences, recommended emergency action levels (EALs), protective actions, and a recommended EPZ. However, one transportation activity was not identified as a hazard requiring assessment: Office of Secure Transportation vehicles carrying hazardous materials that may seek safe haven at INEEL. The Office of Secure Transportation has developed HAs for these shipments, but these documents have not been formally transmitted to BBWI for incorporation into site documents to plan for events involving such shipments.

To evaluate the effectiveness of the hazards identification and screening process, physical inspections of approximately ten hazardous material locations in each of the CFA and TRA areas were performed, and a small portion of the ICMS inventory was reviewed. CFA and TRA facilities are generally clean and free of excessive combustible loading. Facility or building managers are knowledgeable of hazards in areas under their cognizance, and local inventory records are reflective of materials present. BBWI is proactively reducing site hazards, as indicated by their recent substitution of less-hazardous materials for chlorine in water treatment systems. The CFA hazards survey accurately reflects facility hazardous material inventories.

Facility walkdowns at TRA revealed two instances where hazardous materials were not properly identified and screened. In the first case, TRA transportation activities include periodic deliveries of large quantities of sulfuric acid; however, the amount identified for assessment was less than half of that typically being delivered. In the second case, one TRA 90-day temporary accumulation area was noted to have a 55-gallon drum of lead- and cadmium-contaminated paint chips (lead and cadmium have low threshold planning quantities – TPQs), but the material was not identified as requiring quantitative assessment.

Another significant concern is that the screening process does not address INEEL hazardous materials that do not have published TPQs, but that have potentially significant consequences if released. The BBWI procedures for developing hazards surveys and HAs dictate that if materials lack CFR-published planning quantities, the materials do not need to be quantitatively assessed. Because many potentially hazardous materials are not included on these lists, this practice is not consistent with DOE expectations that HAs be developed (as a basis for response procedures) for all materials that may pose a threat to affected populations. For example, although explosives are subject to an assessment of the blast hazard, the toxicological hazard was not evaluated, and therefore the consequences of non-detonation events involving these materials were not assessed. Preliminary calculations performed by BBWI emergency planners determined that toxicity protective action criteria for explosives at CFA could exceed blast protection criteria and would modestly expand the CFA EPZ. Additionally, several hazardous materials listed in ICMS and exhibiting significant toxicity were present in INEEL facilities or were associated with transportation activities in quantities that pose a potential threat to site workers. For example, a large quantity of sulfamic acid listed in ICMS as being stored at the Idaho Nuclear Technology and Engineering Center was not evaluated for potential release concerns.

Inappropriate screening of hazardous materials was also noted at TRA. A large inventory of sulfuric acid is present, but was screened from further assessment (in accordance with procedure) based solely on the material's low vapor pressure at normal temperatures. Relatively small temperature increases that may be produced during such accident sequences as an aircraft crash change the characteristics of the material into a significant hazard as a result of decomposition. This circumstance has not been considered, and the consequences of such an event are not assessed.

Finding #1: BBWI has not ensured that all hazardous materials are identified and assessed for potential impact on site workers and the public, as required by DOE Order 151.1A, *Comprehensive Emergency Management System*.

The hazards remaining after the screening process is complete are carried forward into the HAs to complete the assessment process so that event consequences on affected populations can be estimated and indications of barrier failures can be considered for use in developing EALs. The CFA HA effectively characterizes onsite hazardous materials (except for the toxicological properties of explosives) in that it describes the conditions of storage and use; includes most material properties needed to determine the

source terms; and generally documents the engineered and administrative controls that mitigate hazardous material releases. Several different credible events are assessed in the CFA HA, including facility and range fires, spills, and tank failures due to such events as a vehicle collision with the tank. Significant effort was expended in describing the selected events and consequences, and HA appendices appropriately document the analysis process. However, the CFA classification procedure contains an EAL dictating a Site Area Emergency for an aircraft crash into any building on the site, but the EAL's technical basis is not included in the HA. This EAL would result in declaring a Site Area Emergency for an event that does not involve hazardous materials. As discussed further in Section C.2.2, this is inconsistent with DOE expectations that classified emergencies be declared only for events requiring time-urgent response that involve the airborne release of hazardous materials.

The TRA HA includes some of the positive attributes seen in the CFA HA, but it has not yet been revised in accordance with the new format and is not as comprehensive as the CFA HA. For example, barriers to release are not effectively described to facilitate subsequent barrier failure analysis for EAL development. The TRA HA also exhibits weaknesses related to identifying the spectrum of analyzed events, estimating release consequences, formulating predetermined protective actions, and determining classification thresholds. For example:

- High-consequence, low-probability events, such as aircraft crashes and malevolent acts, are not assessed. Such events can be significant because the energy input to many event scenarios can increase consequences significantly.

- The event spectrum analyzed for the Advanced Test Reactor (ATR) includes only severe accidents (i.e., Site Area Emergency and General Emergency severity) that are contained in the updated final safety analysis report (UFSAR). Numerous higher-probability/lesser-consequence events are postulated by the UFSAR, but are not assessed in the HA.

- Release consequences are not calculated and included in the HA for all assessed events. Rather, the range of consequences determined in the UFSAR is equated to the event severity definitions for Site Area Emergency and General Emergency classifications. Because the HA does not include a determination of elapsed time from event initiation until each consequence threshold is exceeded at receptors of interest, one of the factors for determining the most appropriate protective actions is not available. Consequently, the predetermined protective actions identified in the EALs may not provide the greatest benefit.

- The TRA HA does not define the facility boundary for the potential release points within the TRA, and it does not correctly define an Alert as that area within which protective action criteria are exceeded beyond 30 meters, but not beyond the facility boundary. Furthermore, consequences are not calculated for all of the critical receptors of interest, such as 30 and 100 meters. As a result, the HA does not contain all of the information necessary to determine whether a lesser-severity event should be classified as an Alert.

- The HA does not include mechanisms to identify barrier failures leading to the release of hazardous materials; knowledge of such barriers and potential failures is fundamental to identifying instrument indicators that are symptomatic of the failure. These indicators (e.g., temperature, pressure, radiation levels) may be used as operator thresholds in EALs to facilitate early event identification and severity determination for purposes of accurate classification and protective action formulation. Consequently, event-specific EALs based on technically accurate analysis are not recommended in the HA and, in most cases, have not been developed for use in emergency response decision-making.

Finally, the HAs do not always appropriately determine the extent of EPZs. Each of the HAs includes considerations for constructing the EPZ based on consequences. The CFA EPZ is two kilometers (km), a value that implements applicable DOE guidance. However, the TRA and transportation EPZs are not consistent with DOE expectations. The TRA EPZ of 5 km is based only on the threshold for early lethality (TEL – 100 rem). The TEL for TRA accidents is not exceeded at distances greater than 5 km; therefore, 5 km represents the minimum size permissible. However, other applicable criteria have not been incorporated. Several ATR severe accidents (aside from events that may be excluded, such as beyond-design-basis natural phenomena) exhibit consequences that exceed protective action criteria well beyond 5 km, requiring consideration of an EPZ closer to the maximum size of 16 km. Additionally, the transportation HA incorrectly concludes that a transportation EPZ should be computed for each accident, rather than computing the planning EPZ based on event consequences and location of INEEL transportation arteries. Consequently, a composite EPZ has not been developed that accurately reflects areas within which emergency response planning activities should be completed.

Finding #2: BBWI has not fully analyzed an appropriate spectrum of emergency events and conditions; assessed available indicators of barrier failures for use in EALs; or appropriately determined the extent of emergency planning zones, as required by DOE Order 151.1A.

To summarize, BBWI has been proactive in developing a formal, comprehensive process to construct and maintain hazard surveys and assessments, and in developing institutional mechanisms to track and maintain hazardous material inventories and notify emergency planners of process changes. The site is actively reducing hazards by minimizing hazardous material inventories, minimizing event initiators in storage environments, and changing processes to use less hazardous materials. The site has initiated preparation of hazards surveys, and HAs are complete for all applicable facilities. However, some key elements needed to develop a technically sound basis for the emergency management program are inadequate. The process for screening hazardous materials for emergency management impact is incomplete, and therefore not all facility hazards have been considered. Not all emergency events have been identified and assessed, and assessment conclusions are not accurately formulated for use in other elements of the emergency management system. Collectively, these deficiencies negatively affect the adequacy of the event classification tools (i.e., EALs), associated predetermined protective actions, and EPZs. The utility of some EALs was particularly impacted by HA weaknesses, as discussed further in the next section and in Appendix E.

C.2.2 Program Plans and Procedures

The May 1998 OA review determined that some aspects of emergency planning at INEEL, such as the consequence assessment process and the classification of transportation events, were not adequately addressed in emergency plans and procedures. Since that evaluation, there have been significant improvements in the definitions of roles, responsibilities, and authorities for all emergencies. In addition, a transportation plan has been developed and incorporated into the INEEL emergency management program. BBWI also developed a wildland fire preparedness program to strengthen fire prevention activities and provide a comprehensive annual preparation process for range-fire operational readiness, emergency response, and post-recovery efforts. The consequence assessment procedure has also been significantly improved, although some roles and responsibilities are not fully documented.

Idaho Operations Office (ID) roles and responsibilities for emergency response, including those of the ID management duty officer (MDO) are clearly documented in a comprehensive ID emergency management manual, which was approved August 15, 2003. This manual establishes and formalizes the ID emergency management system and appropriately incorporates the requirements set forth in DOE Order 151.A and the accompanying guidance document (DOE Guide 151.1-1). In addition, ID is effectively maintaining

memoranda of understanding with Federal, state, and local emergency response organizations, and ID is currently negotiating an agreement with the Shoshone-Bannock Tribes delineating responsibilities and mechanisms for requesting assistance in connection with the transportation of DOE materials through tribal homelands. The manual, however, contains several inconsistencies with the INEEL Emergency Plan/RCRA [Resource Conservation and Recovery Act] Contingency Plan in such areas as roles and responsibilities for the maintenance of agreements with offsite authorities. Moreover, the roles and responsibilities for the MDO under the ID transportation emergency preparedness plan have not been integrated into the ID emergency management manual. For example, the manual does not establish MDO roles and responsibilities for categorizing offsite transportation events as Operational Emergencies (not requiring further classification) or for making the required 30-minute notifications, as required by DOE Order 151.1A.

The BBWI emergency management program is comprehensive and well-developed. The INEEL Emergency Plan/RCRA Contingency Plan (base plan) describes the BBWI integrated emergency management system and establishes the emergency management program requirements to ensure effective response to Operational Emergencies occurring on the INEEL site. With the exception of the INEEL categorization and classification process (as discussed later in this section), the base plan appropriately consolidates all Federal, state, and local emergency plan requirements, and it serves as the safety basis for Nuclear Regulatory Commission licensing. The base plan also is supported by addenda that identify facility-specific emergency response activities, as well as an addendum for transportation activities. The emergency plan implementing procedures (EPIs) and position-specific checklists, which are detailed procedures of actions to be taken during an emergency, implement the base plan and addenda. Although non-BBWI facilities – the Naval Reactors Facility, Argonne National Laboratory-West, and British Nuclear Fuels, Ltd. – have stand-alone emergency management plans, the ID emergency management coordinating committee coordinates and integrates their emergency management program activities with the INEEL program.

Collectively, the ID emergency management manual and the INEEL base plan establish an appropriate structure for a comprehensive emergency management program and address the essential elements of the emergency preparedness program. The base plan and facility addenda are well integrated, as are the associated EPIs and checklists, and the use of these concepts and protocols has been effectively demonstrated during two recent facility emergencies involving drums of contaminated material. Facility addenda are consistent in format and content, and they provide precise details as to emergency actions within the facility and for transportation incidents within the facility boundaries. EPIs and checklists comprehensively address emergency planning elements and contain detailed information required to implement the base plan, including clearly defined roles and responsibilities; detailed explanations of the notification processes; shelter and evacuation procedures; evacuation maps; and a thorough personnel accountability process. In addition, the existence of Incident Response Teams at high-hazard facilities enhances initial emergency-response capabilities by providing rapid, on-scene event assessment, initial containment actions (where appropriate), medical support, and a subsequent source of technical expertise for the incident commander. To further improve the program, BBWI has implemented a process to standardize systems and emergency management programs through chartered facility-level emergency preparedness implementation teams to execute emergency preparedness activities at a facility. These teams meet regularly to discuss improvements to emergency preparedness programs and to increase employee input to the process. Recommendations from these teams then go to the emergency services department for review and action.

While the INEEL plans and procedures are generally comprehensive and well-integrated, several instances were noted where plans and procedures do not contain adequate detail, or are inconsistent with DOE Order 151.1A requirements. For example:

- During off-hours, at facilities without continuous onsite coverage, the duty emergency action manager (EAM) or the emergency coordinator (EC) is charged with making or reviewing classifications and protective actions when not present in the emergency control center. However, the process by which this occurs; coordination issues that might arise; and expectations for materials and equipment to be carried by the EAM/EC when off site are not discussed in any plan or implementing procedure.

- The INEEL Operational Emergency classification protocols exclude the category of events that DOE Order 151.1A refers to as "Operational Emergencies that are not further classified" (i.e., events requiring external assistance that do not involve the airborne release of hazardous materials). As discussed in Appendix F, BBWI had previously received concurrence from ID for this practice. In addition, INEEL's written guidance for downgrading events is inconsistent with DOE Order 151.1A.

Numerous INEEL EALs have been developed for INEEL facilities and for many potential events. They are appropriately formatted, provide predetermined protective actions, and refer the user to other charts and tables as necessary. Although some EALs are complex, emergency responders demonstrated during tabletop performance tests that they are familiar with these tools and, in most cases, could identify the appropriate EAL. Furthermore, a few of the EALs that have been more recently developed or revised contain improved clarity in the implementation thresholds and improved specificity in the predetermined protective actions. However, some notable weaknesses in the consistency, technical content, and "usability" of these EALs were identified, which can (and which, in a few performance tests, did) impact the ability of initial decision-makers to rapidly disseminate appropriate protective actions to site workers and offsite agencies in a high-stress environment. For example:

- In many cases, specific EAL threshold indicators are not included, or do not provide objective, clear, and quantifiable evidence of event occurrence. For example, the ATR EAL for a high-pressure boiloff event (3.B.8) requires that a Site Area Emergency be declared if emergency response decision-makers observe "A radiological release resulting from a high-pressure boiloff event as indicated by: Direct observation of the event AND Multiple CAM and RAM alarms." "Direct observation of the event" is ambiguous and does not objectively convey the required plant status for this EAL to apply, particularly given the degree to which plant instrumentation is available at the ATR.

- Not all scenarios identified in the HA are developed into EALs at the appropriate classification level. Consequently, in some cases, the appropriate predetermined protective actions are either incomplete or missing. For example, the TRA HA indicates that the event consequences for a reactivity insertion event resulting in a radiological release are 10.6 rem thyroid at 16 km. However, the predetermined protective actions in the associated EAL (3.B.12) make no mention of protective actions for CFA or Naval Reactors Facility personnel. Similarly, the TRA HA reflects consequences of a General Emergency at the site boundary (6.9 rem thyroid at 14.6 km) for a high-pressure boiloff event resulting in a radiological release. The associated EAL (3.B.8) is listed as a Site Area Emergency and does not include any protective action recommendations for offsite authorities, as should be identified for an event having offsite consequences.

- Predetermined protective actions for some EALs do not include a specified breadth so that decision-makers can rapidly determine the area in which the stated protective action or protective action recommendation is applicable.

- Transportation EALs do not accurately and consistently define facility boundaries or use a term such as "activity boundary" (or "exclusion area") to establish the 100-meter demarcation line between Alert and Site Area Emergency declarations. For example, the transportation EAL for hazardous

materials not otherwise addressed in the EAL set (9.B.18) states that if the isolation distance is greater than 800 meters or extends beyond the facility boundary, the event is classified as a Site Area Emergency. However, a Site Area Emergency would be expected if the isolation distance extends beyond approximately 100 meters.

- As mentioned previously, many EALs identify classification levels for certain events that are inconsistent with the DOE Order 151.1A requirements that only events resulting in an airborne release of hazardous materials should be classified. For example, CFA EALs require declaration of a Site Area Emergency at INEEL for an aircraft crash into any building irrespective of its hazardous material content.

- With few exceptions, ATR emergency operating procedures are not integrated with EALs. Such integration would facilitate timely and accurate event identification.

- EALs are not always user friendly. For example, sections 7, 8, and 10 of the CFA EAL set contain several categories that are not applicable to the facility and that might therefore unnecessarily confuse a decision-maker in a time-urgent situation. Also, Table 17 of the protective actions applicable to a transportation accident involving sulfuric acid and the potential for fire (Transportation EAL 1.B.16) appears at the end of the section, rather than being co-located with the EAL for easy reference.

Finding #3: Many BBWI EALs do not contain an appropriate set of measurable implementation thresholds that ensure that event classifications are timely and accurate, as required by DOE Order 151.1A.

To summarize, ID has developed an emergency management manual that appropriately captures ID emergency response roles and responsibilities. BBWI has implemented an emergency plan that, with the exception of one specific inconsistency between the INEEL classification process and DOE Order 151.1A, addresses the required elements. The plan also establishes a rigorous framework that is implemented by procedures and response protocols to ensure effective response to Operational Emergencies. Corrective actions taken since the 1998 OA review have improved response actions through the transportation addendum and improved emergency response organization tools, such as consequence assessment procedures. However, a few implementing procedures lack the necessary detail to ensure consistent performance. Furthermore, although the EAL set as a whole contains several positive attributes (and is continuing to be improved), some EALs have notable weaknesses in their technical content and usability that limit their usefulness to initial emergency response decision-makers following a significant site event. Many of the weaknesses in the specificity of implementing thresholds can be attributed to weaknesses in the associated HAs, which are reflected in the rating for Section C.2.1.

C.3 CONCLUSIONS

BBWI has established a defined process for developing and maintaining hazards surveys and HAs, and with some exceptions, the HAs serve as an appropriate foundation for the INEEL emergency management program. The ID emergency management manual and the INEEL base emergency plan establish an appropriate framework for a comprehensive emergency management program and are supported by well-integrated response procedures and checklists. However, the rigor of the emergency planning basis for INEEL is diminished by weaknesses in the HA development process. HAs do not consistently identify all hazardous materials, appropriately analyze potential release scenarios, or assess barrier failure indicators. Consequently, in many cases EALs do not ensure timely and accurate event classification.

C.4 RATING

A rating of NEEDS IMPROVEMENT is assigned to the area of hazards surveys and hazards assessments.

A rating of EFFECTIVE PERFORMANCE is assigned to the area of program plans and procedures.

C.5 OPPORTUNITIES FOR IMPROVEMENT

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive or mandatory. Rather, they are intended to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific programmatic objectives and priorities.

Idaho Operations Office

- Together with BBWI, cross-walk the contents of the memorandum of understanding (MOU) with the National Oceanic and Atmospheric Administration (NOAA), and the accompanying Statement of Work, against consequence assessment procedures to ensure that required tasks and expectations are accurately captured in the consequence assessment procedures.

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- Improve the hazards survey/hazards assessment development and maintenance procedures by providing additional specificity to important process attributes. Specific actions to consider include:

  - Perform a detailed review of the HA-related sections of the DOE Emergency Management Guide to identify provisions that need to be incorporated into the hazards survey and HA development process (e.g., define and document site-specific assessment criteria such as "average" meteorology and "material at risk").

  - Document the radiological material identification and screening process employed at INEEL in the transportation hazards assessment. For materials not screened, fully characterize the hazards in case-basis hazard assessments to make the assessment a fully effective response tool.

- Enhance the quality of hazards surveys and HAs by including additional details and assumptions. Specific actions to consider include:

  - Accurately define emergency classes in HAs; compute consequences at the receptors of interest necessary to differentiate among event classes.

  - Improve HA quality by documenting consequence assessment assumptions used in event analysis in the HA (including applicable protective action criteria) and determining potential barrier failure indicators that should be considered for installation to improve early event detection and quantification.

  - Complete a transportation hazards survey in accordance with DOE Order 151.1A and INEEL procedures. Incorporate DOE Order 151.1A survey requirements into the hazards survey development and maintenance procedure and all surveys to improve the effectiveness of hazards surveys as a planning and response tool.

- Consider computing "surrogate" threshold planning quantities (i.e., determining the amount of hazardous material required to adversely impact worker/public health) for materials of concern that do not have published threshold quantities and listing them in ICMS.

- Enhance EALs and integrate them with procedures to make them a more effective emergency response tool. Specific actions to consider include:

  - Conduct performance testing to validate EALs. Ensure that EALs and corresponding protective action tables are used consistently and as written by trained personnel in a manner that will efficiently accomplish the desired actions in a high-stress, time-urgent environment.

  - Fully integrate EALs with emergency operating procedures to alert facility operations personnel to the existence of classifiable emergencies upon reaching certain plant conditions defined by emergency operating procedures.

- Cross-walk emergency management documents to ensure clear and consistent statements of roles and responsibilities. Specific actions to consider include:

  - Ensure that the ID emergency management manual is coordinated with the INEEL base emergency plan for all programmatic elements and with document PDD 1065 in the Administration Manual (16-C) to ensure consistency of responsibilities between ID and BBWI regarding the development and maintenance of Federal, state, and local MOU responsibilities.

  - Compare document PRD 155 in the Administration Manual (16-C) and the ID emergency management manual to ensure that the expectations for ID and BBWI document approvals are consistent.

  - Review the emergency operations center checklists for the public information director and the support director to ensure that the warning communications center is notified when the joint information center is operational and that the notification form is appropriately marked.

- Identify, within EPIs or response checklists, the methods to be used by EAMs, ECs, and emergency directors when reviewing or determining event categorization and classification while offsite.

- Revise consequence assessment procedures and checklists to further define roles and responsibilities and assist assessment specialists in ensuring appropriate data is obtained and exchanged between NOAA and BBWI. Specific actions to consider include:

  - Identify roles and responsibilities for hazardous chemical release consequence assessments.

  - Provide instruction regarding the use of assessment modeling programs (e.g., ALOHA, EPI Code, NARAC, Math Cad, and INEL VIZ), including proper application and limits in their usage.

  - Delineate the output data (e.g., wind speed and direction, humidity, inversions, stability, precipitation, temperature) derived from INEL VIZ to be used by BBWI assessment specialists in consequence assessment procedures.

APPENDIX D

Emergency Preparedness

D.1 INTRODUCTION

A coordinated program of training, drills, and exercises is necessary to ensure that emergency response personnel and organizations can effectively respond to emergencies impacting the site or facilities. This response includes the ability to make time-urgent decisions and take action to minimize the consequences of the emergency and to protect the health and safety of responders, workers, and the public. To be effective improvement tools, exercises should be used to validate all elements of an emergency management program over a multi-year period using realistic, simulated emergency events and conditions, and to provide emergency response organization (ERO) members an opportunity to practice their skills.

The Office of Independent Oversight and Performance Assurance (OA) team evaluated the training, drill, and exercise program used to support the EROs at the institutional and facility levels. As part of the programmatic review of the training, drill, and exercise elements, the OA team evaluated the plans and procedures that support these elements and reviewed training and proficiency records for key site emergency responders. Drill and exercise reports were also reviewed for indications that they are being used effectively to enhance responder proficiency and evaluate the level of the site's response preparedness.

D.2 STATUS AND RESULTS

D.2.1 Training and Drills

The Bechtel BWXT Idaho, LLC (BBWI) training and qualification program is rigorous, well-defined, and effectively structured to prepare ERO members for their emergency response duties. ERO members are required to satisfactorily complete classroom training and participate in a minimum of one evaluated drill for initial qualification. Annual requalification for each ERO member requires a combination of classroom training, required reading, and annual participation in a drill or exercise. ERO training and qualification requirements are identified in TRAIN, which is a sitewide automated database that tracks training completion and drill/exercise participation, and stores training records. Any ERO member who becomes overdue for required training is identified in TRAIN and removed from his/her emergency response position unless a written extension is granted from the BBWI Emergency Services Department manager or the Idaho Operations Office (ID). Requalification training is scheduled with adequate time to ensure that ERO members have the opportunity to meet requirements prior to the end of the calendar year.

ERO training is complemented at the Idaho National Engineering and Environmental Laboratory (INEEL) by a comprehensive, mature drill program that is used to train ERO members and help maintain proficiency. Drills are being appropriately used to periodically exercise key facility-specific ERO elements (e.g., the emergency control center) that, based on the frequency of site exercises, would otherwise have insufficient opportunities to maintain proficiency. A sitewide drill schedule is developed annually, and the BBWI drill and exercise coordinator reviews a status report monthly to track implementation. Drill packages are standardized and contain all appropriate information, including drill type, purpose, participating organizations, objectives, scenario description, sequence-of-events list, and cue cards. Emergency planners have been assigned to major facilities to assist in developing and conducting drills and to facilitate the balancing of drill schedules with operational priorities. Drills

conducted at the Advanced Test Reactor (ATR) often utilize the ATR simulator to provide realism for operators.

Although the program for BBWI emergency management training and drills has been appropriately and effectively established and implemented, several weaknesses were identified:

- BBWI security captains and special response team lieutenants have not all attended a certified course on the incident command system (ICS) or acted as incident commanders as a part of a unified ICS during drills, exercises, or actual events. The majority of security captains completed an ICS course in 1994; however, ICS training has not been offered since that time. Additionally, incident commander performance in drills and annual ICS training is not well documented. ICS training is important because the senior protective force officer fills the role of the incident commander for security-related events at INEEL, with the senior fire department officer providing support in a unified command structure.

- The participation of Central Facilities Area (CFA) medical staff in drills is limited, even for postulated mass-casualty and contaminated-injury events. On occasion, lack of prior coordination between medical and the Fire Department was cited as the reason why a nurse was unable to participate in a particular drill. However, a CFA nurse serves on the annual exercise scenario development committee, and medical staff participate in annual exercises.

- Drill critique/improvement items are not routinely captured or formally provided to training and scenario developers for follow-up. However, informal feedback from drills is being used to improve the program, and for emergency operations center (EOC) drills, written critique information is provided to BBWI training and drill/exercise coordinators.

- Many Emergency Services Department lesson plans contain out-of-date and/or inaccurate information, which had already been recognized by BBWI. The lesson plans, several of which have not been formally revised in over five years, include outdated references and numerous handwritten changes. In some instances, information on visual projection sheets is inconsistent with lecture material in the lesson plans, and lesson plans do not always reflect the status of physical, chemical, and/or radiological hazards at facilities. BBWI has developed a lesson plan revision/review schedule, but has not established firm completion milestones.

Emergency response training for ID staff is focused on the ID management duty officer (MDO), who is designated to represent the ID manager when an emergency is declared. ID has appropriately defined the training and qualification program for the MDO position in the ID emergency management manual (previously discussed in Appendix C), which includes detailed direction on ID emergency response and emergency management program administration. MDO candidates are required to complete the initial qualification program to be initially assigned to the position, and then participate in an annual requalification program to maintain that position. MDOs appointed prior to the manual implementation have been "grandfathered" based on their previous experience, and although they do not have to meet current training requirements for assignment to the duty roster, they are expected (but not required) to complete the initial training program within the next 18 months. The only identified training element weakness is that the MDO training program does not address MDO responsibilities under the transportation emergency preparedness program.

To summarize, the BBWI training and drill program is well structured and implemented to prepare ERO members to perform their emergency functions. The computer-based TRAIN system identifies training and drill requirements and tracks successful completion of those requirements, thereby helping to ensure that ERO members maintain their qualifications. Drills are of sufficient number and quality to maintain

facility and ERO emergency preparedness. Although this element is judged to be effective overall, some weaknesses were noted in ICS training for security decision-makers; drill play with the CFA Occupational Medicine facility and staff; capturing lessons learned from drills; and the quality of emergency management lesson plans. The ID training and qualification program for the MDO position is appropriately defined and, with the exception of training to address responsibilities following an offsite transportation event, adequately prepares MDOs for their emergency response duties.

D.2.2 Emergency Response Exercises

Requirements and guidance for implementing the BBWI exercise program are described in a drill/exercise program description contained within the base emergency plan (i.e., section 13), which, among other positive attributes, describes organizational roles and responsibilities for the development and conduct of exercises. This document also addresses in detail such key elements as exercise safety and confidentiality; development of objectives; scenario development; selection, duties, and preparation of controllers and evaluators; and structure and content of the exercise report. Also included is appropriate guidance on the use of free play and prompting during the actual conduct of the exercise and the handling of corrective and improvement items identified during exercises.

The provisions of the exercise program description are effectively implemented. Exercise planning efforts have resulted in challenging scenarios that are consistent with analyzed events and test the elements of the emergency management program. Exercise packages contain all appropriate information, including scenario implementing materials, control and evaluation documents, administration and logistics information, and prepared public information messages. The exercise program actively seeks participation with offsite fire, medical, law enforcement, and local and state government for each annual exercise. Offsite entities are invited to provide input into scenario development to test their respective emergency plans. Exercise objectives are clearly stated and include measurable criteria developed through a planning group that includes representation from all responding organizations. Comprehensive exercise training for controllers and evaluators is established and formally administered and documented.

A formal report is written for each exercise, and findings are identified and tracked. BBWI exercise reports are well written and informative, and they identify program strengths, weaknesses, and deficiencies. Weaknesses and deficiencies are correlated to exercise objectives, and corrective action recommendations are provided to facilitate development of corrective actions. Based on the detailed evidence closure files that BBWI maintains, the corrective action process has been effective in correcting identified problems. Furthermore, corrective actions for performance issues often include a drill component to validate finding closure.

Finally, the BBWI practice of rotating the annual exercise schedule between the nuclear operations and waste management organizations provides a tool for facility managers to meet exercise requirements while minimizing conflicts with operational priorities. However, Test Area North and the Radioactive Waste Management Complex have not hosted an annual exercise within the past several years and are not currently on the exercise schedule, although both facilities have hazardous material inventories and applicable emergency planning hazards assessments (HAs) that indicate the potential for classifiable emergencies. In addition, an onsite transportation exercise has not been conducted to evaluate the completeness of the recently-completed transportation HA and associated transportation event emergency response plans and procedures.

To summarize, the BBWI exercise program is effectively implemented in accordance with a comprehensive exercise program plan. The completeness of exercise packages; the extent of the exercise planning, conduct, and evaluation efforts; and the implementation of exercise corrective actions into the training and drill process significantly enhance the level of emergency preparedness at INEEL, as

demonstrated by effective ERO performance during tabletop performance tests and in response to actual site events.

D.3 CONCLUSIONS

ID and BBWI are effectively maintaining the preparedness of INEEL emergency responders through the training, drill, and exercise elements. The ID training, qualification, and drill requirements for the MDO position are well documented and, with one exception, comprehensive. BBWI's training and qualification program, combined with a mature drill program, effectively prepares ERO members for their emergency response duties and helps to maintain proficiency. Annual exercises are conducted that evaluate ERO performance, validate the elements of the emergency management program, and identify needed improvements.

D.4 RATING

A rating of EFFECTIVE PERFORMANCE is assigned to the area of INEEL training and drills.

A rating of EFFECTIVE PERFORMANCE is assigned to the area of emergency response exercises.

D.5 OPPORTUNITIES FOR IMPROVEMENT

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive or mandatory. Rather, they are intended to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific programmatic objectives and priorities.

Idaho Operations Office

- Consider requiring incumbent MDOs, whose qualifications are "grandfathered" under the newly-approved qualification program, to complete the same training prescribed for new candidates to ensure that complete and consistent training is provided to all MDOs. This can be achieved through annual refresher training or a separate training schedule.

- Ensure that MDOs are trained on their categorization and notification responsibilities for offsite transportation incidents where the Department of Energy is the shipper of record, and consider drilling MDOs in their responsibilities as the Regional Coordinating Office Director.

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- Strengthen the initial training and requalification programs. Specific actions to consider include:

  – Perform periodic reviews and updates of emergency management lesson plans. Consider assigning due dates to lesson plan reviews/revisions and tracking progress in existing computer databases, or establishing more specific expectations in the training program description (i.e., base emergency plan).

  – Provide a recognized ICS course to security captains, lieutenants, and other security decision-makers. Certified ICS courses are readily available from the BBWI Fire Department, CD ROM, self-paced online study via the Internet, or at the Federal Emergency Management Agency Emergency Management Institute and National Fire Academy.

- Enhance the effectiveness and efficiency of the drill program by expanding the scope of participating organizations and establishing additional formality in some elements. Specific actions to consider include:

  - Develop drill scenarios to ensure that consequence assessment teams are proficient in the application and use of all INEEL HA modeling programs and to ensure that emergency action managers, emergency directors, and EOC support directors are proficient in applying generic emergency action levels and the Emergency Response Guidebook.

  - Design drill scenarios that involve the CFA medical facility and staff in mass casualty and contaminated injury events. Coordinate planning, scheduling, and conduct of the drills to minimize potential impacts on the routine medical responsibilities of the facility.

  - Establish criteria for giving security personnel credit for ICS training when they respond to actual events.

  - Ensure that when security personnel participate in events and drills as incident commanders, their participation is properly documented.

  - Establish requirements for annual evaluated drills, including appropriate documentation in a drill report, for use in ensuring the proficiency of facility-specific ERO elements at facilities not involved in an annual exercise.

- Ensure that all elements of the emergency management program are evaluated over a multi-year period by increasing the scope of events evaluated by the exercise program. Specific actions to consider include:

  - Conducting an onsite transportation event exercise outside a facility boundary

  - Developing a documented approach for involving facilities with relatively low hazards in emergency management drills and exercises.

- Conduct evaluated tabletop performance tests that involve postulated event scenarios having progressive facility/event degradation to focus on sequential usage of emergency action levels. Consider incorporating tabletop performance tests into the BBWI drill program.

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APPENDIX E

Emergency Response

E.1 INTRODUCTION

The ultimate objective of emergency planning and preparedness is to prepare emergency responders so that they can apply their skills, procedures, and training to make appropriate decisions and to properly execute actions to protect emergency responders, workers, and the public. Critical elements of the initial response include categorizing and classifying the emergency, formulating protective actions, and notifying onsite personnel and offsite authorities. Concurrent response actions include reentry and rescue, provision of medical care, and ongoing assessment of event consequences using additional data and/or field monitoring results.

Most of the information provided in this section is based on observations from tabletop performance tests conducted by the Office of Independent Oversight and Performance Assurance (OA) with four Idaho National Engineering and Environmental Laboratory (INEEL) emergency control center (ECC) teams (two each from the Test Reactor Area and from the Central Facilities Area – CFA), two emergency operations center (EOC) teams, and two partial EOC consequence assessment teams, consisting of a planning support director and an assessment specialist. The ECC teams included the emergency action managers (EAMs), support manager, planning manager, operations manager, and security leader. The EOC teams included the emergency director, support director, security director, and the Idaho Operations Office (ID) management duty officer (MDO). Collectively, four operational emergency scenarios were presented to the participants: a traffic accident that ultimately produces a wildland fire affecting sensitive areas, a transportation event involving the spill of a hazardous chemical; a coincident fire and release of a hazardous chemical; and a malevolent act resulting in a release of radioactive materials. The scenarios, which were developed by OA in conjunction with several INEEL trusted agents, were presented to the participants by the Bechtel BWXT Idaho, LLC (BBWI) trusted agents, who also acted as the balance-of-plant personnel, to ensure scenario validity and delivery of accurate event cues. In addition, interviews and walkdowns were conducted with four individuals with on-scene incident command responsibility.

E.2 STATUS AND RESULTS

In the event of an emergency, INEEL activates the EOC, the public information center, the CFA ECC, and possibly one or more facility ECCs. The on-scene response is led by an incident commander from either the fire department or the security organization, depending on the type of emergency, who directs tactical operations and interfaces with the onsite ECC(s). Facilities activate their ECC if the emergency is within the defined boundaries of the facility or if other conditions warrant activation. Facility ECCs are led by an EAM whose responsibilities include initial notification, classification, and protective action decision-making. After the EOC (in Idaho Falls) is activated, the EOC emergency director may relieve the EAM of some duties, including notification, classification, and protective action responsibilities, and the emergency director assumes overall strategic response. The CFA ECC performs similar functions as a facility ECC when events occur on INEEL property that are outside a facility boundary, as well as providing logistical support when an event originates within a facility boundary. Consequence assessment personnel in the EOC support event response by identifying areas that could be affected by a hazardous material release and by providing associated recommendations to the EOC command staff. Initial plume modeling is performed by National Oceanic and Atmospheric Administration (NOAA) personnel (who were not included in the scope of the tabletop tests) using data provided by BBWI personnel, who also validate plume modeling.

During tabletop performance tests conducted as part of the May 1998 OA review, some key INEEL emergency management initial decision-makers did not demonstrate adequate proficiency in such areas as classifying events and formulating protective actions, and ID MDO functions were not clearly defined. In addition, the 1998 review also suggested adding preprogrammed data files to dispersion model programs, developing a simplified process for converting field monitoring data to dose assessments, and defining the technical data to be exchanged between NOAA and BBWI consequence assessment team members. This inspection determined that improvements have been implemented in all of these areas.

E.2.1 Incident Commanders

Fire department and security incident commanders are knowledgeable of their on-scene roles and responsibilities to protect personnel and responders in the immediate area and are able to use the communications systems and other tools available to implement a response to an INEEL emergency event. The incident commanders understand the INEEL unified command protocols (although the security incident commanders who were interviewed indicated that they had not practiced the concept in a drill or exercise), are aware of potential facility hazards, and are knowledgeable of the methods used to identify hazards and avoid personnel exposures. Fire department incident commanders are familiar with the principles and processes for identifying hazardous materials, establishing exclusion zones, performing accountability of response personnel, and selecting appropriate personnel protection equipment and extinguishing agents.

E.2.2 ECC Teams

The ECC teams worked effectively in responding to the postulated emergencies. With few exceptions, ECC personnel employed the available tools, such as position checklists, emergency action levels (EALs), communication systems, and maps, to implement an effective emergency response strategy. They also typically provided accurate and timely notifications to onsite and offsite authorities during the performance tests. ECC members demonstrated awareness of individual and team roles and responsibilities and those of other ECCs, the EOC, and the on-scene commander. Formality was evident in declaring the operational status of the ECC; making classifications; and transferring classification, notification, and protective action responsibilities from the ECC EAMs to the emergency director in the EOC.

Nonetheless, the ECC teams encountered some difficulties in using and applying EALs to determine classification and appropriate protective actions. As discussed in Appendix C of this report, most of the observed performance difficulties can be attributed to EALs that, in some cases, are ambiguous or poorly organized. Examples of ECC performance weaknesses or inconsistencies include the following.

- The ECC team members had, in some cases, significant differences of opinion regarding EAL interpretation and application and how to determine whether the EAL thresholds were met. Examples of confusion included: “confirmed release” vs. “expected release”; “no fire” vs. “potential fire”; and “experiment loop” vs. “fueled experiment loop.” Correct interpretation of some of these EALs significantly impacts the classification decision and protective action formulation.

- During the transportation event involving a sulfuric acid truck, two ECC teams incorrectly entered the EAL protective actions applicable to a fuel truck fire (which are significantly less restrictive than for a sulfuric acid truck fire). Both teams later realized their error and implemented the appropriate (i.e., expanded) sulfuric acid protective actions. This EAL requires personnel to use a series of protective action tables that follows the EAL section.

- When using the protective action table to formulate protective actions in response to the sulfuric acid truck event, one ECC team erred by not converting the amount of spilled acid from gallons (as reported) to pounds (as listed in the table).

- One EAM could not determine the isolation distance for sulfuric acid using the Emergency Response Guidebook distributed by the Department of Transportation. The applicable EAL requires this information to classify transportation accidents involving hazardous materials not already listed in prior EALs.

- One EAM declared a Site Area Emergency when only the Alert criteria were met because he anticipated upgrading to the Site Area Emergency level. Although the notification form indicated a Site Area Emergency, the emergency director and the ECC staff were told (during simulated briefings) that an Alert was the correct classification (and the ECC classification board reflected the Alert classification).

Although the ECC teams understood how to evacuate personnel safely, in two instances during the tabletop performance tests the evacuation was not effectively implemented. In the first case, the EAM did not evacuate operators known to be at the Advanced Test Reactor loop operating control station, and in the second, an ECC team did not consider safe evacuation routes until approximately ten minutes after the evacuation siren was sounded. However, these were isolated instances in an otherwise strong set of performances.

E.2.3 EOC Teams

The EOC teams also worked effectively in responding to the postulated emergencies; demonstrated appropriate concerns about protective measures for responders, site workers, and the public; and provided accurate and timely notifications to offsite authorities during postulated events. EOC personnel used the available procedures and response tools, such as position checklists, logs, EALs, consequence assessment data, and, to a limited extent, maps, to implement an effective emergency response strategy. Roles and responsibilities of EOC personnel were clearly demonstrated, and EOC team members effectively utilized support and information provided by ECCs and the on-scene commander. EOC support directors were particularly effective in assisting the emergency directors in making initial and subsequent classifications, notifications, protective actions, and protective action recommendations. As with ECC teams, a formal conduct-of-operations approach was used in declaring the operational status of the EOC; making classifications; transferring classification, notification, and protective action responsibilities; and communicating personnel accountability status. Emergency directors demonstrated awareness of the limits in their authority regarding the use of deadly force and the administration of potassium iodide as a protective action measure.

During the postulated events, the EOC teams appropriately integrated security concerns into the emergency response. Security response actions and the role of the security advisor in supporting the emergency director were appropriate, and security-related actions were addressed in a timely manner. The security representatives' use of checklists, activity logs, and response procedures was effective in supporting the overall emergency response. Internal security notifications and the flow of communications to senior management, first responders, and local law enforcement agencies were timely and accurate.

The role of the ID MDO was integral with that of the EOC teams, thus contributing to the effective teamwork observed. The MDOs provided adequate oversight of the BBWI emergency operations approach, performed appropriate ID notifications, coordinated with the affected ID facility duty officer, and ensured that required notifications and communications with such offsite agencies as Department of

Energy Headquarters were accomplished. In performing these functions, MDOs appropriately used an emergency response "kit" that contained items necessary to perform the MDO function. MDOs demonstrated the ability to independently reference and interpret EALs, were knowledgeable of the primary goal of protecting site workers and the public, and were clearly aware of the importance of timely notifications and communications.

As with the ECC teams, EOC performance was, in some cases, negatively impacted by difficulties in selecting the applicable EAL due to ambiguous wording in EAL thresholds or predetermined protective actions. Consequently, emergency directors did not always classify events accurately, as defined by the EAL set. Examples of EOC performance weaknesses or inconsistencies include:

- One support director could not locate the proper EAL for Site Area Emergency conditions after the emergency director rejected a General Emergency classification recommendation, and did not use a "generic" EAL as a classification substitute. As a result, dissemination of a complete set of protective actions for site workers was delayed by approximately 28 minutes.

- One emergency director was uncertain as to the appropriate method for confirming a radiological release to satisfy an EAL criterion. However, the other EOC team members appropriately provided suggestions.

- A Site Area Emergency was declared by one emergency director based on incorrect selection of the EAL for a reactor loop loss of coolant event when the scenario postulated a loss of coolant event in a fueled experiment loop. Contributing to this error is the inclusion of experiment loop EALs with the reactor loss of cooling EALs within the EAL set.

In nearly all of the instances of inaccurate classification, the emergency directors erred in the direction of over-classification (i.e., classifying at the next higher level), and in each case, a conservative set of protective actions was identified. However, over-classification may mislead responders and offsite authorities as to the severity of an event. More importantly, it does not necessarily provide "better" protective actions for affected populations because selection of an incorrect EAL can result in inappropriate protective actions, irrespective of the classification level.

E.2.4 Consequence Assessment Teams

The BBWI consequence assessment teams, which are normally complemented by NOAA personnel, adequately executed tasks that would support an emergency director. The teams validated pre-generated NOAA assessments (provided during the scenarios) using different program models and provided protective action recommendations to the emergency director. The consequence assessment teams demonstrated their ability to obtain hazardous material assessment data using the Radiological Safety Analysis Computer (RSAC) computer program and convert hazardous material source terms from gallons to pounds for use in EAL protective action tables.

However, the consequence assessment teams were inconsistent in their understanding and use of available models and their interpretations of EALs and EAL thresholds. One team was knowledgeable of the limitations of the Areal Locations Of Hazardous Atmospheres (ALOHA) modeling program for use in sulfuric acid modeling, and therefore used the Emergency Prediction Information (EPI) code. Another team indicated that they would manually load sulfuric acid data into ALOHA after obtaining needed data from an industrial hygienist. The latter team mistakenly considered EPI code to be unavailable. Other inconsistencies include:

- RSAC was used by only one team to validate source term information and plume model results and to make dose assessments. The other team used RSAC only to obtain initial worst case consequence dispersion data.

- One team used a computer program for estimating explosive blast consequences. The other team concluded that it was not applicable and would only detract from other duties.

- The interpretation of EALs resulted in different recommendations to the emergency director. One team did not recommend a General Emergency when all three EAL criteria were satisfied, whereas for the same scenario, the other team recommended a General Emergency when only one criterion was met, and then again when two criteria were met.

In some cases, informal and inconsistent use of applicable procedures contributed to delays in obtaining and verifying the results of the dispersion modeling. Such delays could be significant in a time-urgent, high-stress environment because the consequence assessment teams are expected to provide information and recommendations to the emergency director. However, the delays that OA observed during the tabletop performance tests in producing and evaluating plume plots would not have significantly impacted EOC decision-making processes.

E.3 CONCLUSIONS

INEEL and ID have improved their emergency response capability since the 1998 OA review by providing procedures that clearly define each member's roles and responsibilities, and that provide specific guidance in performing such key tasks as consequence assessment. Personnel participating as EOC, ECC, and consequence assessment team members, as well as incident commanders, demonstrated appropriate concern for and, with very few exceptions, were proficient in performing the most important task, which is the protection of site personnel and the public. Teamwork within and among the emergency response teams and a formal conduct-of-operations approach to emergency management were effectively demonstrated in event classification, notification, and formulation of protective actions. However, informal use of some procedures, particularly by one consequence assessment team, and differing interpretations of EALs led to performance inconsistencies between the two teams. Difficulties with EAL usage are primarily attributed to weaknesses in some EALs, as discussed in Appendix C. Although these challenges produced several classification errors, protective-action decisions were almost always appropriate. Consequently, the results of the tabletop performance tests provide reasonable assurance that site workers, response personnel, and the public will be protected in the event of an emergency at INEEL involving the release of hazardous material.

E.4 RATING

A rating of EFFECTIVE PERFORMANCE is assigned to the area of INEEL emergency response decision-making.

E.5 OPPORTUNITIES FOR IMPROVEMENT

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive or mandatory. Rather, they are intended to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific programmatic objectives and priorities.

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- Enhance emergency response by implementing a consistent use of maps and related tools at all venues. Specific actions to consider include:
  - Complete EOC maps by adding missing street names.
  - Orient the CFA ECC map so north is upward, consistent with other maps.
  - Establish expectations for identifying wind direction and the locations of emergency response assets (e.g., command posts, staging areas, and security positions) on maps with grease pencil.
  - Develop scaled map overlays to measure distances to receptors of interest.
- Improve the usability of EALs in a high-stress environment. Specific actions to consider include:
  - Eliminate conversions from gallons to pounds in protective action tables by adding a "gallons" column.
  - Move protective action tables so that they appear on the same page as the applicable EAL.
  - Reorganize EALs so that non-reactor coolant system EALs are not labeled as reactor coolant system EALs.
  - Simplify facility-specific EAL binders by removing unused EAL categories.
- Improve the thoroughness and timeliness of consequence assessment support by emphasizing management expectations for use of procedures and checklists.

APPENDIX F

Readiness Assurance

F.1 INTRODUCTION

The readiness assurance program provides the U.S. Department of Energy (DOE)-wide framework and multi-year planning mechanism for ensuring that program plans, procedures, and resources are adequate and sufficiently maintained to mount an effective response to an emergency. Readiness assurance activities include implementation of a coordinated schedule of program evaluations, appraisals, and assessments. Key elements of the readiness assurance program include the active involvement of DOE line organizations in monitoring program effectiveness, contractor self-assessment programs, and timely implementation of corrective actions for identified weaknesses. For exercise evaluations, readiness assurance includes assessment of the effectiveness of the exercise as a means of demonstrating and continuously improving a site's integrated response capability.

This inspection examined the processes by which the Idaho Operations Office (ID) provides guidance and direction to and maintains operational awareness of the Idaho National Engineering and Environmental Laboratory (INEEL) emergency management program. The inspection also included a review of INEEL contractor emergency management self-assessments and the issues management program used to ensure that actions are taken to address identified program weaknesses. Also reviewed was the status of actions taken to address program weaknesses previously identified during the May 1998 emergency management program review that was conducted by the Office of Independent Oversight and Performance Assurance (OA).

F.2 STATUS AND RESULTS

F.2.1 DOE Assessments and Performance Monitoring

As part of the 1998 emergency management program review, OA found that overall, there was an effective emergency management program in place at INEEL. However, ID needed to define the roles, responsibilities, and authorities for DOE personnel responding to emergencies and be more engaged in ensuring the effectiveness of the INEEL emergency management program. This inspection found that ID has implemented several program improvements to address the identified weaknesses.

In September 2002, the Office of Environmental Management (EM), with support from the National Nuclear Security Administration's Headquarters Office of Emergency Operations (NA-40), conducted a comprehensive assessment of the ID emergency management program. The purpose of the assessment was to determine the adequacy of the ID emergency management program and the effectiveness of ID oversight of the contractor emergency management programs at INEEL, which OA identified as a weakness during the 1998 review. The EM team concluded that serious weaknesses existed and that ID had not provided effective oversight of emergency management programs at INEEL. In response, ID formed an emergency management team consisting of two engineers and a new emergency management program administrator. The corrective action plan that was developed and submitted to EM was generally adequate to address the issues, although no expected completion dates were provided. Corrective actions were formally assigned and entered into the ID corrective action tracking system (ICATS).

ID management established several key priorities for the emergency management team. The first was to improve communications and coordination with Federal, state, and local agencies. This was

accomplished by establishing a working group and implementing a memorandum of understanding with the State of Idaho INEEL oversight organization. The second priority item was to clarify the roles and responsibilities of the ID management duty officers (MDOs) and improve their performance. New individuals were identified to help support this rotating assignment, and a training and qualification program was implemented. The third priority, which was intended to address several issues, was the development of the ID emergency management system manual. The manual, approved during this OA assessment, clearly establishes and formalizes the roles and responsibilities for ID emergency responders and also establishes the requirements for oversight of the contractor program, consistent with the provisions of DOE Order 151.1A. With the one exception related to MDO responsibilities for offsite transportation incidents, which is discussed in Appendix C, the ID manual is comprehensive and represents a significant effort on the part of ID.

Additionally, mechanisms are in place for ID to provide formal and informal feedback to Bechtel BWXT Idaho, LLC (BBWI). Two surveillances have been completed this year, one on the offsite notification form and the other on an emergency operations center drill. Both reports appropriately contain observations (no actions required) aimed at improving interfaces with offsite agencies and were provided to BBWI for information. ID emergency management staff and the BBWI emergency services department manager meet biweekly to discuss program issues. The ID security division manager and the BBWI security and emergency services manager usually attend these meetings as well. Additionally, informal communications via e-mail and telephone between the ID emergency management team leader and the BBWI emergency services department manager are frequent.

Nonetheless, implementation of the oversight program established by the ID emergency management manual will be challenging because some key elements of the program are not yet in place. ID does not currently perform a technically-oriented review of hazards assessments, implementing procedures, or emergency planning zone determinations, as required by the manual and DOE Order 151.1A. Likewise, programmatic assessments of the BBWI emergency management program have not been conducted. As a result, although the first step of defining an oversight program is complete, significant effort remains to develop the protocols and standards necessary to ensure consistent and appropriately-detailed line management oversight and then to conduct the oversight activities.

The ID issues management program includes many positive attributes, including an order and manual that define the process; an issues management board to evaluate the validity of issues; and verification and validation requirements for issue closure. ICATS includes adequate provisions for tracking issues and corrective actions to closure. However, deficiencies were found in both the implementation of the ID issues management program and the use of the corrective action tracking system for emergency management issues. These deficiencies included numerous data entry errors, actions closed without verification (as required by the ID issues management manual), actions closed without adequately addressing the issue, and action due dates that are not properly assigned.

These concerns with implementing an effective program to oversee the INEEL emergency management program and managing identified issues are not specific to the emergency management area. Rather, they are indicative of institutional-level problems in the ID program for conducting line management oversight, which is described in detail in the "Feedback and Continuous Improvement" section (Appendix D) of the environment, safety, and health volume (Volume I) of this report, and the related finding.

One longstanding issue identified by OA in 1998, and then again by the 2002 EM assessment, involves BBWI's use of an event categorization and classification process that classifies every emergency, irrespective of whether it involves the actual or potential release of hazardous materials. This deviation from the requirements of DOE Order 151.1A is incorrectly identified in the current emergency readiness

assurance plan as an exemption, but no such exemption request has ever been submitted to the DOE Deputy Secretary for approval. Although ID and BBWI have had numerous discussions, and correspondence with NA-40 (and predecessor organizations) on this issue dates back approximately five years, this policy issue has not been appropriately resolved. As a result, under the current practice, if a classifiable emergency occurs at INEEL that does not involve hazardous materials, DOE Headquarters emergency response personnel may not understand the actual severity of the event because of their association, under the DOE system, of classified emergencies with airborne releases of hazardous materials.

Finding #4: ID has not ensured that the BBWI event categorization and classification process is consistent with DOE Order 151.1A or sought an exemption in accordance with the process described in DOE Order 151.1A.

To summarize, EM, with support from NA-40, conducted a comprehensive assessment of the ID emergency management program. Since then, significant progress has been made in resolving some priority issues including improving offsite interfaces and the MDO program and issuing an ID emergency management manual that establishes the ID response functions and line management oversight program. However, the significant challenge of fully implementing the oversight program remains. Additionally, although ID has the mechanisms in place for effectively managing issues, implementation weaknesses diminish the effectiveness of this program.

F.2.2 Contractor Assessments and Issues Management

BBWI has implemented notable improvements in several areas since the 1998 OA review of emergency management. These improvements, as identified in previous sections of this report, include the hazards survey and emergency planning hazards assessment development and maintenance processes; hazards assessment rigor and quality; transportation emergency planning; consistency between the BBWI emergency plan and associated implementing procedures; and performance of emergency response personnel during tabletop evaluation sessions. Through the integrated assessment program, BBWI continues to identify and implement additional emergency management program enhancements.

Assessments

Comprehensive sitewide procedures cover all elements of the BBWI integrated assessment program, and evaluations of the INEEL emergency management program are included in various components of this program. Self-assessments are conducted by the security and emergency services organization. The facility evaluation board (FEB) performs periodic reviews of facility-level implementation of the emergency management program. The BBWI independent oversight organization conducts annual program reviews against the requirements of DOE Order 151.1A. These components of the integrated assessment program are being used effectively to continuously improve the emergency management program.

The emergency management self-assessment process is well planned and managed. A self-assessment coordinator within the security and emergency services organization performs the emergency management self-assessments, supported by the appropriate subject matter experts, and also communicates schedules and results, performs quality validation of assessment reports, and updates the integrated assessment database. The self-assessment program is designed to evaluate each facility over a five-year period against the criteria of Draft DOE Guide 151.1 Vol. VI, *Emergency Management Evaluations*. Implementation of the base emergency plan requirements is evaluated annually. The self-assessment procedure stresses the importance of performance observations, and a review of issues in self-

assessment reports confirms that performance is being observed. Additionally, self-assessment reports clearly and accurately summarize results and highlight issues and noteworthy practices.

The FEB conducts performance-based assessments of INEEL facilities. The FEB charter adequately defines the assessment process and includes provisions for reevaluating functional areas and/or facilities that are graded below average in performance. Emergency preparedness is a functional area within the FEB integrated safety management system module and contributes to the grade in that area. For emergency management, work observations include tabletop drills with emergency coordinators and emergency action managers, facility drill observations, and facility/equipment walkdowns. Standard performance objectives and criteria help to ensure consistency, although assessors have some flexibility and are not required to evaluate all criteria. BBWI and ID senior management are briefed on the results of each FEB evaluation. Consequently, the program provides meaningful feedback to managers at all levels and has enhanced the emergency management program.

In accordance with the INEEL emergency plan, the BBWI independent oversight organization conducted the annual assessment of the emergency management program in January 2003. The scope and results of the assessment are clearly documented. Deficiency and concern statements are evidence of the thoroughness of the assessment and knowledge of the assessors.

Outside of the formal assessment program, but as an indication of a commitment to continuous improvement, BBWI has taken steps to improve the coordination and response to terrorist attack. In the post-9/11 environment, BBWI has used a series of presentations and tabletop drills to ensure a common understanding among Federal, state, and local organizations of roles, responsibilities, and authorities in response to a terrorist attack. Additionally, BBWI has assembled several sets of reference documents to aid in evaluating and responding to terrorism and weapons of mass destruction. Sharing this information with a broader DOE audience, such as through the Emergency Management Issues Special Interest Group, would facilitate improved understanding of these important issues within the DOE complex.

Issues Management

The BBWI issues management and corrective action processes are defined by sitewide procedures. These procedures include adequate provisions for prioritizing (based on risk significance), determining causes, and correcting issues. Issue and corrective action tracking is supported by the issues communication and resolution environment (ICARE) system, into which all assessment items are required to be entered.

In general, emergency management issues identified by the various assessment activities are being effectively resolved. Based on a sample that included all issues for fiscal year 2003 emergency management self-assessments, as well as the most recent FEB and BBWI independent oversight reports, emergency management issues are being evaluated, and corrective actions are identified and assigned. However, in some instances, corrective action tracking is not in accordance with procedures. For example, not all assessment items are tracked as required by the sitewide corrective action tracking procedure. Even though the FEB charter allows for resolution of "concerns" (i.e., best management practices or improvement items) to be left to the discretion of the responsible manager, and emergency management self-assessments also identify concerns, this concept is not addressed in the applicable issues management procedure. Additionally, work group tasks (i.e., action items assigned and managed at the department level) are being used to track self-assessment items. Work group tasks are captured on a centralized database system, but are not controlled by procedure and therefore do not have the same rigorous process controls or management visibility of ICARE items. Nonetheless, as noted above, appropriate actions are being taken to resolve emergency management issues identified by assessments.

To summarize, the INEEL emergency management program has notably improved since the 1998 OA review. The comprehensive integrated assessment program provides for numerous opportunities to enhance the emergency management program on a continuing basis. Assessment processes are well defined, performance oriented, and clearly documented. The deficiencies and concerns that are identified and communicated represent valuable feedback for improving the emergency management program. The issues management and corrective action processes are also well defined by sitewide procedures and, for emergency management issues, are being adequately addressed. However, in some instances corrective action tracking is not in accordance with procedures, and as a result, some issues are not subject to the same rigorous process controls or management visibility.

F.3 CONCLUSIONS

ID has clearly defined roles, responsibilities, and authorities for their emergency response functions and for oversight of the BBWI emergency management program in a recently-approved ID emergency management manual. However, key oversight activities, such as technical reviews of INEEL emergency planning documents, are not occurring, and ID faces significant challenges in implementing an effective line management oversight program. The BBWI integrated assessment process is being used effectively to identify weaknesses and improvement items. Corrective actions that adequately address the weaknesses are being assigned, tracked, and completed. However, the processes used to track and close corrective actions are not always as rigorous as required by site procedures.

F.4 RATING

A rating of NEEDS IMPROVEMENT is assigned to the area of DOE assessments and performance monitoring.

A rating of EFFECTIVE PERFORMANCE is assigned to the area of contractor assessments and issues management.

F.5 OPPORTUNITIES FOR IMPROVEMENT

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive or mandatory. Rather, they are intended to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific programmatic objectives and priorities.

Idaho Operations Office

- Develop a detailed implementation plan or project management plan to aid in implementing the oversight program described in the ID emergency management manual. Specific actions to consider include:

  - Identify the tasks needed to implement individual requirements, such as developing assessment schedules, assessment plans, evaluation criteria, and reporting mechanisms.

  - Identify the resources needed to complete each action, and for activities that may require outside expertise, identify how that expertise will be obtained.

  - Coordinate with BBWI to establish a schedule and process for reviewing such program documents as emergency plans, implementing procedures, and hazards assessments.

- Sequence actions to ensure that an integrated approach is used. In addition to corrective actions, also include routine and annual activities that will require significant resources, such as the annual updates to the emergency readiness assurance plan.

- Ensure that the ICATS database is corrected to accurately reflect the status of emergency management corrective actions. Specific actions to consider include:

  - Document discussions or agreements that are to be used as the bases for closing corrective actions.

  - As part of the verification process for corrective action closure, review the weaknesses identified in the EM assessment report against completed actions to ensure that they are adequately addressed.

  - Identify due dates for corrective actions that are not yet complete.

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- Establish a minimum set of requirements for using work group tasks for tracking self-assessment items. The goal should be to provide a consistent approach, define expectations, and minimize the administrative burden for items that need to be tracked but do not meet the threshold of an ICARE "issue." Specific actions to consider include:

  - Identify thresholds that would require an item to be tracked.

  - Identify any required documentation that must be kept.

  - If different from ICARE, establish acceptable closure methods (e.g., use of document action requests vs. approved revisions, and lesson plans vs. completed training).

- Update the discussion of exemptions in the Emergency Readiness Assurance Plan to reflect only those issues that are actual deviations from DOE policy.