Inspection of Emergency Management at the

Idaho National Laboratory

August 2007

Office of Health, Safety and Security

Office of Emergency Management Oversight
Office of Independent Oversight
Office of Health, Safety and Security
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Table of Contents

Abbreviations Used in This Report

AMWTP	Advanced Mixed Waste Treatment Project
BBWI	Bechtel BWXT Idaho, LLC
BEA	Battelle Energy Alliance, LLC
CFA	Central Facilities Area
CWI	CH2M-WG Idaho, LLC
DOE	U.S. Department of Energy
EAL	Emergency Action Level
EAM	Emergency Action Manager
ECC	Emergency Control Center
ED	Emergency Director
EM	Office of Environmental Management
EMPA	Emergency Management Program Administrator
EOC	Emergency Operations Center
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
ERAP	Emergency Readiness Assurance Plan
ERO	Emergency Response Organization
FY	Fiscal Year
ICARE	Issue Communication and Resolution Environment
ID	Idaho Operations Office
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
JIC	Joint Information Center
LSPT	Limited Scope Performance Test
MDO	Management Duty Officer
MFC	Materials and Fuels Complex
NaK	Sodium-Potassium
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NE	Office of Nuclear Energy
NRP	National Response Plan
OST	Office of Secure Transportation
PID	Public Information Director
WCC	Warning Communications Center

OVERSIGHT

1.0 Introduction

The U.S. Department of Energy (DOE) Office of Independent Oversight, within the Office of Health, Safety and Security (HSS), inspected the emergency management program at DOE's Idaho Operations Office (ID) and the Idaho National Laboratory (INL) during June and July 2007. HSS reports directly to the Secretary of Energy. The emergency management inspection was performed by Independent Oversight's Office of Emergency Management Oversight (HS-63). This volume discusses the results of the review of the ID and INL emergency management programs. Concurrently, the HSS Office of Environment, Safety and Health Evaluations (HS-64) inspected the INL environment, safety, and health program; the results of the HS-64 inspection are discussed in separate volumes.

Within DOE, the Office of Nuclear Energy (NE) has line management responsibility for INL. NE provides programmatic direction and funding for advanced civilian nuclear technology research and development, facility infrastructure activities, and emergency management program implementation at INL. In addition, the DOE Headquarters Office of Environmental Management (EM) is responsible for managing a variety of radioactive and hazardous wastes and materials that originate from INL missions and from other DOE facilities. At the site level, line management responsibility for INL operations and emergency management falls under the ID Manager.

Under contract to ID, INL is managed and operated by Battelle Energy Alliance, LLC (BEA), which began to operate INL on February 1, 2005. EM facilities at the INL site include the Idaho Cleanup Project managed by CH2M-WG Idaho, LLC (CWI), and the Advanced Mixed Waste Treatment Project managed by Bechtel BWXT Idaho, LLC (BBWI). The INL Emergency Services Division, within the Facilities and Site Services Directorate, is the BEA organization tasked with implementing the site's emergency response program. BEA provides the emergency management program for CWI and provides limited support to BBWI.

INL's mission is to operate a multi-program national research and development laboratory, with particular emphasis on nuclear technology, energy science and technology, and national and homeland security. To support these activities, INL contractors operate numerous laboratories, reactors, test facilities, waste storage facilities, and support facilities. In addition to the research and development mission, EM's mission is to complete environmental cleanup project activities stemming from the site's Cold War legacy. The EM program focuses on treating, storing and disposing of a variety of waste streams; cleaning up the environment; removing or deactivating unneeded facilities; and planning to remove DOE's inventory of spent nuclear fuel and high-level waste from the INL site.

INL activities involve various potential hazards that need to be effectively controlled. These hazards include exposure to external radiation, radiological contamination, nuclear criticality, and hazardous chemicals. Significant quantities of fissile and radioactive materials and hazardous chemicals are present in various forms at INL.

This evaluation included an examination of selected elements of the emergency management program at INL, including those that were determined to need improvement during the Independent Oversight inspections of September 2003 at the Idaho National Engineering and Environmental Laboratory and November 2004 at Argonne National Laboratory-West. Selected elements included reviews of hazards survey and assessment documents, emergency plans, and associated sitewide and facility-specific implementing procedures; emergency preparedness training, drills, and exercises; and emergency public information (EPI). To evaluate emergency response performance, the inspection team conducted limited-scope performance tests (LSPTs) with a sample of the site's key emergency response decision-makers to determine their ability to employ the available procedures, data sets, equipment, and skills when responding to postulated emergency conditions. Finally, the

team evaluated line management's ability to implement readiness assurance activities.

In evaluating emergency management programs, Independent Oversight has placed increasing emphasis on DOE line management oversight in ensuring effective emergency management programs, and on the role of DOE organizations in providing direction to contractors and conducting line management oversight of contractors' activities. In reviewing DOE line management oversight at INL, Independent Oversight concentrated on ID's effectiveness in managing the various contractors, including such management functions as setting expectations, providing implementation guidance, monitoring and assessing contractor performance, and monitoring and evaluating self-assessments.

Section 2 of this report provides an overall discussion of the results of the ID and INL emergency management program elements that were evaluated. Section 3 provides Independent Oversight's conclusions regarding the overall effectiveness of ID and INL 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 composition. Appendix B summarizes 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

BEA, as the lead contractor, has established a capable emergency response organization (ERO) to implement the INL emergency management program. Positive attributes of the program are discussed below.

- **Key emergency response decision-makers at affected facilities and at the emergency operations center (EOC) performed effectively during LSPTs.** Operational emergencies were promptly recognized, the EOC and facility emergency control centers were effectively activated, and offsite notifications were timely and accurate. Initial news releases were timely and updated frequently. Emergency Directors and Emergency Action Managers correctly used the emergency action levels (EALs) to categorize and classify the events and formulate protective actions. For the most part, Emergency Action Managers notified all affected site workers of initial take-cover protective actions and, in all cases, provided adequate instructions for safe relocation and implemented personnel accountability measures. Hazardous materials were identified and characterized to facilitate consequence assessments at the EOC. Facility monitoring teams were deployed to validate the adequacy of implemented protective actions. Overall, response activities were well coordinated and comprehensive.

- **With few exceptions, the INL EPI plan and supporting checklists effectively document, and personnel implement, the processes that provide site workers, news media, and the public with accurate, candid, and timely information.** The public education program is extensive and is appropriately tailored to INL, where the general population is a considerable distance away from the site. The EPI plan documents most elements required by DOE Order 151.1C, such as pre-approved templates for news releases, rumor control, employee communications, and provisions for a Joint Information Center (JIC). The EPI cadre is adequately trained, using an appropriate mix of training methods and topics. EPI cadre members within the EOC develop news releases and coordinate distribution through the JIC. The JIC process is well conceived and has clearly defined roles and responsibilities; although the JIC's space and equipment are limited.

- **The INL training, drill, and exercise programs develop and maintain emergency response capabilities to ensure that personnel are prepared to respond to emergencies.** The INL emergency management plan establishes detailed requirements that provide an appropriate structure for the site's training, drill, and exercise program. The systematically-designed ERO training program addresses the position requirements based on a high-level task analysis of the ERO functions. Training uses an appropriate mix of classroom instruction and drill participation, and is supported by a strong administrative system and computer database for monitoring initial and continuing training status. The number and variety of drills support the training program and provide adequate opportunity for each ERO member to participate. Site exercises are varied and comprehensive and involve many of the hazardous material facilities at the site, although some of those facilities have not conducted an annual evaluated drill or exercise as required.

2.2 Program Weaknesses and Items Requiring Attention

Although some improvements were noted since the 2003 and 2004 Independent Oversight inspections and the emergency management program exhibits several positive attributes, important weaknesses exist in the processes used to ensure that emergency planning hazards

assessments (EPHAs) accurately analyze the hazardous materials within facilities. Specific weaknesses are discussed below.

- **EPHAs have not been revised to address changes in facility operations and hazardous material inventories.** BEA and CWI have not established hazardous material inventory change processes to ensure that emergency management personnel are notified prior to significant changes in hazardous material inventories or operations involving hazardous materials. For example, although 19 facilities at the Idaho Nuclear Technology and Engineering Center (INTEC) have been demolished, or decommissioned and decontaminated, the hazards survey and EPHA do not reflect these facility changes; as a result, numerous EALs are obsolete. More significantly, EPHA analyses and EALs have not been developed for the remote handled transuranic waste present in the New Waste Calcining Facility. Also, EPHAs have not been updated for some facilities, even when significant changes were identified as part of an annual review. Routine EPHA revisions have been deferred for some facilities pending the implementation of DOE Order 151.1C, which requires a change in hazardous material screening methodologies and a corresponding revision of the EPHAs. The last of these EPHA revisions is to be completed in December 2009. As a result, some response planning tools, necessary to effectively respond to an emergency, do not accurately address current facility operations and hazardous material inventories.

- **BEA and ID feedback and improvement systems are not sufficiently implemented to ensure that programmatic weaknesses are effectively corrected.** BEA has established processes and mechanisms to ensure timely and effective implementation of corrective actions for findings from assessments, drills, and exercises; however, many potential issues noted in assessment reports are not properly entered into the system for screening and follow-up. Although ID has established roles and responsibilities for line management oversight of the emergency management program, some are not fully or effectively implemented. Most significantly, as noted above, ID has not ensured that hazards surveys and EPHAs are updated as required. ID has conducted a limited number of oversight assessments, but the issues from those assessments have not always been assigned for correction. No assessments conducted by ID have included BBWI program emergency management program elements. Additionally, contractors' corrective actions and ID's effectiveness reviews to address weaknesses in hazards surveys and EPHA identified during past Independent Oversight inspections were not fully effective.

- **Some INL implementing procedures lack specificity on how to implement required actions.** Although specified in facility emergency plans, there are no emergency procedures for the shutdown of building heating, ventilation, and air conditioning systems at the Central Facilities Area and INTEC to increase the effectiveness of shelter-in-place protective actions. Additionally, procedures do not adequately address incident command when the security shift captain is the INL incident commander, or the transfer of on-scene incident command.

3.0 Conclusions

The 2003 and 2004 Independent Oversight inspections of emergency management at INL found that many elements of the emergency management program were effectively implemented, but noted weaknesses in hazards surveys and EPHAs that did not appropriately review and analyze all hazardous materials. Additionally, ID had effectively defined but not fully implemented oversight responsibilities. This 2007 inspection found that most elements of the INL emergency management program remain effective. However, some corrective actions have not fully addressed the identified weaknesses, most significantly those that affect the hazards surveys and EPHAs.

The performance of the ERO is a notable strength. During LSPTs, all elements of the ERO were promptly activated, and effective command and control was established. Response activities were well coordinated and, with few exceptions, resulted in accurate categorization and classification, appropriate protective actions, timely notifications to workers and offsite agencies, and prompt and accurate news releases that were updated as new information was learned. Additionally, consequence assessment and field monitoring were employed to validate the adequacy of protective actions. This strong performance affirms the positive attributes in other elements of the emergency management program. In the area of plans and procedures, INL has established emergency plans, implementing procedures, and checklists that clearly define roles and responsibilities and concepts of emergency operations. In addition, the ERO training program is systematically designed, and most position-specific requirements are based on task analyses. The training program is supported by an adequate number and variety of drills, providing opportunities for ERO members to practice in their emergency response positions. The INL annual exercises have involved many hazardous material facilities and are designed to demonstrate an appropriate set of emergency response functions. Finally, the EPI program is, for the most part, well conceived and documented in the EPI plan and supporting checklists.

Additional positive attributes were noted, including generally well written hazards surveys and EPHAs, and improvements in contractor self-assessments and DOE line management oversight. ID oversight has improved since the 2003 Independent Oversight inspection, and now provides formal, routine feedback to the site contractors through biweekly meetings; reviews and approves emergency plans, emergency planning zones, EPHAs, and exercise packages; and recently conducted an assessment of the INL emergency management program.

Nevertheless, some program weaknesses were noted. Emergency management personnel are not notified of all significant changes in hazardous material inventories and facility operations. In some cases, hazards surveys and EPHAs have not been revised even when emergency management personnel were aware of the changes. BEA has approved guides for developing and maintaining hazards surveys and EPHAs in accordance with DOE Order 151.1C; however, the EPHA revisions using the new guide will not be complete until December 2009, and some updates in accordance with DOE Order 151.1B have been deferred. Consequently, some response tools, such as EALs and predetermined protective actions, no longer accurately address facility hazardous materials and do not provide effective tools for responders.

Additionally, some ID oversight responsibilities are not fully or effectively implemented, such as ensuring that hazards surveys and EPHAs are updated as required, ensuring annual performance of an evaluated drill or exercise at each hazardous material facility, establishing a DOE Order 151.1C implementation schedule for BBWI, and performing self-assessments of the ID emergency response function. Although formal assessment programs have been established, weaknesses in both the ID and BEA assessment and issues management programs have resulted in some corrective actions that did not adequately address identified weaknesses. Finally, some response procedures lack detail on how to accomplish specified actions, such as shelter-in-place and some aspects of incident command.

Overall, INL has an effective response organization. However, line management attention is warranted to ensure that emergency management personnel are notified of all significant changes to hazardous material inventories and that the EPHAs (and their output products) are revised accordingly, to provide an accurate technical basis for protective action decisions.

4.0 Ratings

This inspection focused on a detailed assessment of seven key emergency management programmatic elements, including the performance of selected emergency response decision-makers and support functions. The individual element ratings reflect the status of each INL emergency management program element at the time of the inspection. The rating assigned below to the readiness assurance category is specific to the 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 EPHAs ..... SIGNIFICANT WEAKNESS
Program Plans and Procedures ..... EFFECTIVE PERFORMANCE

Emergency Preparedness

Training, Drill, and Exercise Program ..... EFFECTIVE PERFORMANCE
Emergency Public Information ..... EFFECTIVE PERFORMANCE

Emergency Response

INL Emergency Response ..... EFFECTIVE PERFORMANCE

Readiness Assurance

DOE Line Program Management ..... NEEDS IMPROVEMENT
INL Feedback and Improvement ..... NEEDS IMPROVEMENT

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APPENDIX A
SUPPLEMENTAL INFORMATION

A.1 Dates of Review

Scoping Visit	March 13 – 14, 2007
Planning Visit	May 22 – 24, 2007
Onsite Inspection Visit	June 4 – 14, 2007
Report Validation and Closeout	July 10 – 12, 2007

A.2 Team Composition

A.2.1. Management

Glenn S. Podonsky, Chief, Office of Health, Safety and Security
Michael A. Kilpatrick, Deputy Chief for Operations, Office of Health, Safety and Security
Bradley A. Peterson, Director, Office of Independent Oversight
Steven C. Simonson, Director, Office of Emergency Management Oversight
Thomas R. Staker, Director, Office of Environment, Safety and Health Evaluations (Team Leader)

A.2.2 Quality Review Board

Michael A. Kilpatrick	Bradley A. Peterson	Steven C. Simonson	Thomas R. Staker
Dean C. Hickman	William T. Sanders	Robert M. Nelson	

A.2.3 Review Team

Jeffrey Robertson (Topic Leader)

John Bolling	JR Dillenback	Deborah Johnson	Teresa Lachman
David Odland	Brian Robinson	Thomas Rogers	

A.2.4 Administrative Support

Lee Roginski

A.3 Ratings Definitions

Independent Oversight uses a three-tier rating system that is intended to provide line management with a tool for determining where resources might be applied toward improving the site's emergency management program. This, and the fact that these reviews use a sampling technique to evaluate program elements, is the primary reasons why the Office of Emergency Management Oversight assigns ratings to the supporting elements of a facility's emergency management program rather than providing an overall rating. The ratings are not intended to provide a relative ranking of programs at different sites because of the many differences in missions, hazards, and facility life cycles. The rating system helps to communicate performance information quickly and simply. Changes in rating colors from previous reviews can be used to recognize relative improvements or to identify deteriorating performance. The three ratings and the associated management responses are:

- **Effective Performance (Green):** An emergency management element being evaluated would normally be rated "Effective Performance" if the emergency management function is effectively implemented. An element would also normally be rated as "Effective Performance" if, for any applicable standards that are not met, other compensatory factors exist that provide equivalent protection to workers and the public, or the impact is minimal and would not significantly degrade the site's response to an emergency. There may be specific issues or deficiencies that require attention and resolution.

- **Needs Improvement (Yellow):** An emergency management element being evaluated would normally be rated "Needs Improvement" if one or more applicable standards are not met, the variances are only partially compensated for by other measures, and the resulting deficiencies in the emergency management function degrade the ability of the emergency responders to protect site workers and the public. Line managers would be expected to substantially increase their attention on the identified areas of weakness. This rating is anticipatory and provides an opportunity for line management to correct and improve performance before it results in a meaningful degradation in the ability of emergency responders to protect site workers and the public.

- **Significant Weakness (Red):** An emergency management element being evaluated would normally be rated "Significant Weakness" if one or more applicable standards are not met, there are no compensating factors, and the resulting deficiencies in the emergency management function seriously degrade the ability of the emergency responders to protect site workers and the public. Line managers would be expected to apply immediate attention, focus, and resources to the deficient program areas, and in most cases, compensatory measures would be appropriate.

APPENDIX B
SITE-SPECIFIC FINDINGS

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

FINDING STATEMENTS	REFER TO PAGES:
1. The BEA and CWI processes for maintaining EPHAs do not ensure that the EPHAs appropriately reflect the impact of potential hazardous material releases on site workers and the public, as required by the INL emergency plan and DOE Order 151.1B, *Comprehensive Emergency Management System*.	14
2. BEA has not ensured that hazardous materials are appropriately evaluated in the EPHAs, as required by the INL emergency plan and DOE Order 151.1B.	15
3. Procedures have not been established for implementing the protective actions of shelter-in-place and take-cover, as required by DOE Order 151.1C, *Comprehensive Emergency Management System.*	17
4. ID has not required and INL has not conducted annual, evaluated drills or exercises at each of its hazardous material facilities, as required by DOE Order 151.1C.	22
5. ID has not fully implemented all elements of the cognizant field element responsibilities for INL (such as ensuring that hazards surveys and EPHAs are updated and providing effective oversight of BBWI), as required by the ID Emergency Management Program Manual and DOE Order 151.1C.	32
6. ID has not ensured that corrective actions were effective in resolving identified weaknesses and preventing recurrence of the same or similar weaknesses, as required by DOE Order 151.1C, and DOE Order 414.1C, *Quality Assurance*.	33
7. BEA has not ensured that issues were properly identified and tracked, and that corrective actions were effective in resolving the identified weaknesses and preventing recurrence of the same or similar weaknesses, as required by DOE Order 151.1C and DOE Order 414.1C.	34

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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 assure an effective emergency response. Key elements of emergency planning include developing hazards surveys and emergency planning hazards assessments (EPHAs) to identify and assess the impact of site- and facility-specific hazards and threats. Based upon the results of these assessments, U.S. Department of Energy (DOE) sites and facilities must establish an emergency management program that is commensurate with the identified hazards. The emergency 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, irrespective 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.

This evaluation included a review of the Idaho National Laboratory (INL) hazards surveys and EPHAs and their treatment of hazards associated with several INL facilities. Also reviewed were sitewide and facility-specific emergency plans and associated implementing procedures.

C.2 Status and Results

C.2.1 Hazards Survey and Hazards Assessment

The September 2003 and November 2004 Independent Oversight inspections determined that the INL hazards surveys and EPHAs were generally comprehensive. However, the screening process and results were not documented, and the screening process had not been fully implemented. In addition, INL had not implemented an adequate set of mechanisms to maintain the EPHAs with respect to significant changes in facility operations or quantities of hazardous materials. This 2007 inspection found that INL has resolved some of the issues identified in the 2003 and 2004 inspections; however, significant concerns exist regarding implementation of a hazardous material inventory control process and required revisions to the EPHAs.

Battelle Energy Alliance, LLC (BEA) has established hazards surveys and EPHAs that generally meet Departmental expectations regarding methodology and level of detail. To address implementation of DOE Order 151.1C, BEA has developed comprehensive guides for preparing hazards surveys and EPHAs that incorporate the provisions of the order. The guides provide site-specific references that reflect the DOE *Emergency Management Guide*, provide good bases for preparing the hazards surveys and EPHAs, ensure standardized format and content for the development of the documents, and ensure development of technically based site emergency planning zones and facility-specific emergency action levels (EALs). The revisions of all hazards surveys and EPHAs are scheduled to be complete in December 2009.

In response to the 2003 and 2004 Independent Oversight inspections, the Reactor Technology Complex and Materials and Fuels Complex (MFC) hazards surveys were revised. They now contain most of the required elements, including whether or not a quantitative EPHA is required, and generic emergency conditions, such as structural fire and natural phenomenon. Although the hazards surveys do not include a description of the screening criteria, as required, the screening criterion is documented in the EPHAs.

The EPHAs have also been revised and contain descriptions of emergency events and conditions, such as accidental releases, natural phenomena, external releases, and malevolent acts, for identified INL facilities containing hazardous materials and for nearby offsite activities. The EPHAs incorporate a combination of chemical screening criteria from DOE Orders 151.1B and 151.1C. Threshold and reportable quantity values specified by Order 151.1B are used as screening criteria, as well as National Fire Protection Association chemical screening criteria set

forth in DOE Order 151.1C. Although this approach differs from DOE guidance, no chemicals were found to be inappropriately screened out. The EPHAs also contain descriptive EAL statements that provide the quantitative relationships between postulated emergency events and their consequences, as well as the event descriptions and indications of barrier challenge and failure. EALs have been developed for analyzed events, although (as described later in this section) in some instances the pre-determined protective actions are not commensurate with the hazards in some facilities and in some cases, the EALs are obsolete.

With some exceptions (notably MFC), the revisions of EPHAs resulted in technically adequate documentation and analyses. However, several process weaknesses have allowed some of them to become outdated. INL has not established a hazardous material inventory control process that is linked to the analysis contained in the EPHAs. To be effective, a hazardous material inventory control process must be based on a thorough identification of hazardous materials at the facility and an accurate and timely process for tracking changes in operations at each facility. The process must also allow sufficient time for emergency management personnel to revise the EPHA and modify plans and procedures as necessary before significant changes occur. BEA's inventory mechanisms ensure that facility limits for hazardous materials are not exceeded; however, the EPHAs were developed using current quantities of hazardous material inventories in the facility or maximum historical quantities. In addition, hazardous material inventory control procedures do not require notification of emergency management personnel prior to inventory changes. Emergency management personnel must search the chemical management system for changes in quantities of chemicals rather than receiving an automated alert message, and emergency management personnel are only notified of facility changes that result in an unreviewed safety question determination and not engineering design files used for establishing new material-at-risk values. As a result of these weaknesses, hazardous material inventory changes, as well as changes to facility operations, have occurred without prior notification of emergency management personnel, and consequently, EPHA and procedure reviews and revisions were not done.

The absence of a process to ensure that EPHAs are reviewed and revised (as necessary) to analyze significant changes in facility operations and hazardous material inventories was previously identified during the 2003 and 2004 Independent Oversight inspections. BEA and CH2M-WG Idaho, LLC (CWI) also self-identified the need to establish a process to manage changes to the hazardous material inventory, and this issue was entered into the INL corrective action system by CWI with a completion date of December 2007. CWI identified this weakness when they realized that an engineering design file had been revised in July 2006 that could cause a disparity between the Radioactive Waste Management Complex safety analysis report and EPHA. To address this issue, CWI has begun development of a hazardous material inventory control and notification process. BEA is developing a tenant use agreement between operations and maintenance services and facility tenants to establish hazardous material limits and ensure notification of changes to hazardous material inventories and processes. However, neither BEA nor CWI has established an interim process, as a compensatory measure, for use in revising the EPHAs.

Finding #1: The BEA and CWI processes for maintaining EPHAs do not ensure that the EPHAs appropriately reflect the impact of potential hazardous material releases on site workers and the public, as required by the INL emergency plan and DOE Order 151.1B, *Comprehensive Emergency Management System*.

An additional weakness was noted in that EPHAs are not updated when changes are identified by the emergency management department. For example, remote handled transuranic waste was recently moved from the Radioactive Waste Management Complex to the New Waste Calcining Facility at the Idaho Nuclear Technology and Engineering Center (INTEC). Although emergency management personnel were notified of this change, it was not properly analyzed in the facility's EPHA. Additionally, numerous INTEC facilities have been demolished, or decommissioned and decontaminated, without these changes being addressed in routine hazards survey and EPHA updates. Consequently, emergency responders do not have all tools and information needed to respond effectively to an emergency event involving the release of hazardous materials.

The emergency management department has ensured that the EPHAs are peer reviewed annually, as required by DOE Order 151.1B, and that the reviews are documented by a letter to file. The INL emergency plan requires the EPHAs be revised as soon as possible when an increase in hazardous material inventory necessitates additional EALs; however, some needed

EPHA revisions, identified by peer review, have not occurred. For example, the annual review letters indicated that:

- Reconciliation of the EPHA for INTEC was needed because a new engineering design file indicated that transuranic waste inventories could be about ten times more than those assumed in the EPHA.

- The MFC EPHA required revision to address the inclusion of two EALs and the reevaluation of a quantity of non-radiological hazardous material in building MFC-703.

- The Test Area North EPHA is no longer needed because no significant hazards remain at the facility.

Consequently, EALs have not been developed for the increased hazards identified for some of the INL facilities; furthermore, due to the reductions of hazards at INTEC, numerous EALs are obsolete. Therefore, provisions have not been established for categorizing and classifying events or for providing appropriate pre-determined protective actions for all plausible operational emergencies. In addition, revisions to some EPHAs have been deferred pending the implementation of DOE Order 151.1C. The BEA implementation plan for DOE Order 151.1C has a due date of December 2009 for the revision of all EPHAs to the new order requirements.

Technical discrepancies in the MFC EPHA were also found. The consequence analyses for 1,000 lbs of sodium-potassium (NaK) residing in buildings MFC-703 and MFC-793E were performed using a bounding case of 4,800 lbs of sodium (not NaK). The use of 4,800 lbs of sodium as the bounding case results in conservative protective action distances for these facilities but does not represent an accurate source term, developed and analyzed for the material-at-risk. DOE Order 151.1C (and its predecessor) requires that the results of the EPHA analyses be used to establish an appropriate foundation for the emergency management program and be commensurate with the hazards at the facility. Furthermore, buildings MFC-766 and MFC-767 were excluded from screening and analysis in the EPHA even though the MFC hazards survey required their further assessment because of the presence of sodium. The EPHA indicates that these facilities were enveloped by the very conservative sodium evaluation performed for building MFC-703; however, facility and process descriptions and facility-specific EALs have not been developed for use in the event of a sodium fire from buildings MFC-766 and -767.

Finding #2: BEA has not ensured that hazardous materials are appropriately evaluated in the EPHAs, as required by the INL emergency plan and DOE Order 151.1B.

Finally, the hazards survey and EPHA for the Advanced Mixed Waste Treatment Project (AMWTP), operated by Bechtel BWXT Idaho, LLC (BBWI), have not been submitted to ID for review and approval. BBWI has developed a draft hazards survey/EPHA document that is still undergoing an internal review. Because it was a draft, this document was not made available for Independent Oversight review. While awaiting BBWI, and later ID, approval of these documents, BBWI has put in place EALs that are based on the AMWTP documented safety analysis.

To summarize, the INL EPHAs generally meet DOE's expectations regarding methodology and level of detail. INL has developed guides for preparing hazards surveys and EPHAs to help ensure that the documents are consistent with the DOE *Emergency Management Guide* and establish an appropriate foundation for the INL emergency management program. However, currently INL has not implemented effective processes for maintaining the EPHAs up to date with facility hazards by implementing a rigorous process by which personnel responsible for EPHA maintenance receive notification prior to changes in facility operations and hazardous material inventories. Also, some EPHAs have not been updated even when significant changes were identified as part of an annual review because routine EPHA revisions have been deferred pending the implementation of DOE Order 151.1C. The impact of these significant, longstanding EPHA maintenance weaknesses, combined with discrepancies and exclusions in the MFC EPHA that detract from the accuracy and completeness of the analyzed scenarios, is that emergency responders may not possess all of the required response planning tools necessary to effectively respond to an emergency event involving the release of hazardous materials.

C.2.2 Program Plans and Procedures

During the September 2003 inspection, the Independent Oversight team found that the DOE Idaho Operations Office (ID) emergency management manual and the INL emergency plan established an appropriate framework for a comprehensive

emergency management program and was supported by well integrated response procedures and checklists. This 2007 inspection found that INL has up-to-date emergency management planning documents, specifically the INL emergency plan and facility-specific addenda, emergency plan implementing procedures, and mutual assistance agreements. However, some procedures lack specificity on how to implement required actions, and some documents contain conflicting terminology.

The laboratory requirements document for the emergency management system defines responsibilities and requirements for establishing the INL emergency management system used by BEA and CWI. Requirements are derived from DOE Order 151.1C, *Comprehensive Emergency Management System,* and other Federal regulations and apply to BEA- and CWI-operated INL facilities (except for the two Nuclear Regulatory Commission-licensed independent spent fuel storage installations). The laboratory requirements document defines how INL will implement the order requirements and establishes the basis for the INL emergency plan.

While voluminous and sometimes duplicative, the INL emergency plan adequately describes the site's overall concept of emergency operations and is approved by ID. The INL emergency plan currently meets the requirements of DOE Order 151.1B and is scheduled to be revised to contain all DOE Order 151.1C requirements prescribed in the laboratory requirements document by September 30, 2007. BEA and CWI facility-specific emergency plan addenda, along with the AMWTP emergency plan, augment the INL emergency plan; define the authority and responsibilities of facility emergency response personnel; describe interfaces with emergency response organizations (EROs); adequately identify emergency response facilities and functional relationships; and outline processes used to assess consequences and develop protective actions. To further define and plan for an integrated emergency response, memoranda of agreement and memoranda of understanding are maintained as authorized by ID, with the exception of the *Memorandum of Agreement between the Naval Reactors Facility and the Department of Energy Fire Department Idaho National Engineering and Environmental Laboratory*.

The ID *Emergency Management Program Manual* identifies the general concept of operations for the Federal component of the emergency management program; establishes federal emergency response staff responsibilities and functions; and provides emergency response requirements specific to the ID staff. ID approval of the INL emergency plan and addenda are in accordance with the ID Manager's delegation of authority to the ID Emergency Management Program Administrator, with the exception of the AMWTP emergency plan that was approved by the Idaho Cleanup Project Deputy Manager after an appropriate review by ID. Although the emergency management program manual addresses most Federal emergency management responsibilities, some required Federal planning, as stated in DOE Order 151.1C, has not been performed. Specifically, ID has not pre-designated employees as the On-Scene Coordinator in accordance with the National Contingency Plan; Senior Federal Official for when DOE is the Coordinating Agency under the Nuclear/Radiological Incident Annex of the National Response Plan; or Senior Energy Official to coordinate Departmental activities under appropriate Federal plans.

Emergency plan implementing procedures have been developed for all INL facilities. These procedures are consistent with the operational concepts described in the INL emergency plan and respective facility-specific addenda. Procedures and checklists provide further detailed guidance to personnel at command centers, such as Emergency Coordinators, Emergency Action Managers, and the facility support staff, to formulate protective actions, make required emergency notifications, determine event categorizing and classification, and implement or communicate information. BEA also maintains procedures for the activation and operation of the emergency operations center, emergency control centers, and joint information center. Procedures clearly define roles and responsibilities, qualification requirements, and response expectations for each of the ERO cadre positions. Response procedures are supported by detailed, position-specific checklists for most cadre positions that contain required actions in a succinct and easy to use manner.

As in the command centers, supporting organizations, such as the INL Fire Department, Security, and Warning and Communications Center, have developed procedures that provide guidance to implement their response functions. These organization-specific procedures are generally well integrated with the overall site response. Although Warning and Communications Center procedures and checklists clearly define the process for implementing offsite notifications, the notification form itself does not require all information expected by DOE Headquarters for information about damage and casualties,

notifications made, and the level of media interest at the scene of the emergency or at the facility/site.

The emergency plan and addenda are effectively controlled and kept current. All changes are handled in accordance with the document action request process, unreviewed safety question process, and the Resource Conservation and Recovery Act configuration control permit procedure. However, the ID *Emergency Management Program Manual* and the INL emergency plan are not fully integrated in that the emergency plan does not reference the ID manual or fully incorporate the roles, responsibilities, and authorities of the ID emergency organization with the contractor ERO.

Although the emergency plan and implementing procedures establish an appropriate structure for a comprehensive emergency management program, several procedural weaknesses were noted. For example, roles and responsibilities of the incident commander are established in the emergency plan, but some response procedures lack specificity on how to implement incident command at the event scene/incident. The INL on-scene unified command system is generally described in sitewide procedure, *On-Scene/Unified Command on the INL,* and further defined for the Fire Department in the *Fire Department Incident Command System* procedure, a subordinate document. However, a similar Protective Force procedure does not adequately define incident command when the Security Shift Captain is the INL incident commander. Consequently, transfer of on-scene incident command between Security and the Fire Department is not adequately defined in any procedure. Lastly, the incident command system structure and terminology used in the INL emergency plan is not consistently stated in all emergency response procedures.

Problems noted during the 2004 Independent Oversight inspection pertaining to the effectiveness of personnel sheltering processes have persisted. For example:

- There are no established roles and responsibilities at site buildings to ensure that doors and windows are closed and ventilation systems shut down during shelter-in-place protective actions, although these actions are required by the emergency plan, emergency procedures, and prepared facility protective action announcements for take cover.

- Some buildings cannot be secured by occupants; most buildings have no procedural guidance on the shutdown of heating, ventilation, and air conditioning systems during shelter-in-place; and shutdown relies on the skill of the craft to implement.

- No list of buildings where shutdown of ventilation systems is not feasible has been provided to protective action decision-makers.

- The site has not included the practice of "security take cover" in the emergency plan, although this protective action is required by facility-level operating instructions.

Finding #3: Procedures have not been established for implementing the protective actions of shelter-in-place and take-cover, as required by DOE Order 151.1C, *Comprehensive Emergency Management System.*

Although BEA and CWI have prepared an integrated emergency plan and response procedures, the following observations indicate that additional planning is needed to address response actions specific to the joint operating environment among the site, Office of Secure Transportation (OST), and other agencies:

- Protocols for responding to emergencies at the INL site that originate with or affect OST shipments have not been developed with sufficient detail, in accordance with April 2005 guidance from the National Nuclear Security Administration Associate Administrator for Emergency Operations (NA-40) to ensure effective coordination between the Convoy Commander In-Charge and INL emergency responders.

- Planning has not been accomplished to address Naval Reactors Facility events that could result in the need for INL employees to implement protective actions.

- Some emergency management documents contain conflicting terminology. For example, the term "command post" is used to describe both the location of the facility shift supervisor/emergency control center and the location of the on-scene incident commander. The title of Emergency Coordinator and Emergency Action Manager identify key emergency decision-makers at INL facilities, but there are no identifiable differences in their responsibilities or authorities. On-scene commander and incident commander are used differently and interchangeably.

To summarize, collectively the INL emergency plan and the ID emergency management manual establish an appropriate structure for a comprehensive emergency management program. Generally, plans and procedures for emergency management clearly and consistently define roles and responsibilities for program administration and site-wide response actions. Emergency plan implementing procedures and checklists have been developed for most emergency facilities and ERO functions that are integrated with the overall site response. However, emergency response procedures lack specificity on how to implement shelter-in-place and take cover actions, and some elements of incident command. Except for these few exceptions, INL emergency plans and implementing procedures adequately establish the basis and requirements for the emergency management program.

C.3 Ratings

A rating of SIGNIFICANT WEAKNESS is assigned to the area of hazards survey and hazards assessments.

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

C.4 Opportunities for Improvement

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

Idaho Operations Office

Hazards Surveys and EPHAs

- Consider implementing a mechanism for reviewing the EPHA and emergency planning zone that ensures the timely involvement of the appropriate ID disciplines (e.g., safety analysis experts and Facility Representatives).

Program Plans and Procedures

- To establish emergency response planning for events under provisions of the *National Response Plan* (NRP) and the *National Oil and Hazardous Substances Pollution Contingency Plan* (NCP), consider the following actions:
  - Pre-designate a DOE employee as the On-Scene Coordinator when DOE is the lead agency for Federal responses under the NCP.
  - Pre-designate a DOE employee as the Senior Federal Official when DOE is the Coordinating Agency under the *Nuclear/Radiological Incident Annex* of the NRP.
  - Pre-designate a DOE employee as the Senior Energy Official to coordinate Departmental activities under appropriate Federal plans.
  - Provide appropriate procedures, checklists, and training for designated On-Scene Coordinators, Senior Federal Officials, and Senior Energy Officials.
- Consider whether specific arrangements with the Naval Reactors Facility, documented in a memorandum of understanding, are needed for joint response to events.

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Hazards Surveys and EPHAs

- Enhance the development of the hazards surveys and EPHAs. Specific actions to consider include:
  - Reference the hazardous material database inventories used in the hazards survey documentation.
  - Document all hazardous materials undergoing the screening process in the hazards surveys or the EPHAs.
  - Include administrative limits on hazardous material inventories in tenant use agreements to ensure that bounding inventories analyzed in the hazards assessment are not exceeded.

- In coordination with ID, develop a protocol for reviewing the hazards surveys and EPHAs to ensure that facility managers and the appropriate technical disciplines, such as safety and security analysis experts, support the review.

- Establish notification mechanisms in the chemical tracking database system to ensure that EPHA developers are notified when chemicals are ordered in quantities that exceed specified thresholds.

- Consider implementing a mechanism that ensures timely revisions of the hazards surveys and EPHAs when the need for revision has been identified.

- Ensure accuracy of the consequence assessments for NaK (composed of 78% potassium and 22% sodium) in the MFC EPHA by analyzing potassium, not sodium.

Program Plans and Procedures

- Strengthen the procedure use and revision process to facilitate response in accordance with program expectations and to enhance the performance of ERO responders. Specific actions to consider include:

  - Ensure that document revisions adequately consider potential changes to other related plans, procedures, and checklists.

  - When a change affects more than one document, issue revisions concurrently to prevent conflicting information and requirements.

  - Ensure that procedures contain sufficient detail to enable users to consistently reach the desired results. Consider requiring individuals with responsibility for procedure implementation to conduct procedure verification (for accuracy) and validation (for usability).

- When establishing procedures for shelter-in-place and take-cover protective actions, consider the following:

  - Establish a "shelter-in-place" protective action procedure that seals enclosures, to protect personnel from an airborne hazardous materials release.

  - Establish a "take cover" protective action procedure that shields personnel from flying projectiles and debris by directing personnel to strong interior rooms or below-grade areas of a building.

  - Provide clear roles and responsibilities in procedures for closing doors and windows and shutting down ventilation systems when implementing shelter-in-place protective actions.

  - Provide building-specific procedural guidance for shutting down ventilation systems.

  - Identify buildings that are suitable for effective shelter-in-place and take-cover protective actions, as well as those that are not suitable.

- Plan for events occurring at the Naval Reactors Facility that could affect INL. Specific actions to consider include:

  - Establish estimates of the effects on the INL for bounding Naval Reactors Facility hazardous material events and determine appropriate protective actions for INL employees. Determine whether specific arrangements are needed for a joint response to Naval Reactors Facility events impacting the INL.

- Plan for events occurring at INL that originate with or affect OST shipments. Specific actions should consider coordination, communication, and integration of the applicable aspects of emergency planning, preparedness, and readiness into a workable process to establish effective control for an event scene at INL.

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 a specific facility or the site as a whole. 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. An effective emergency public information (EPI) program provides the public, media, and U.S. Department of Energy (DOE) employees with accurate and timely information during an emergency event. In part, effectiveness is based on having in place a long-term, documented program to educate the public and the media about actions that may be required during an emergency response.

The Office of Independent Oversight team evaluated the training, drill, and exercise program used to support the Idaho National Laboratory (INL) ERO at the site and facility levels. As part of the programmatic review of the training, drill, and exercise elements, the Independent Oversight 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. The team also evaluated EPI plans and applicable processes for an emergency at INL.

D.2 Status and Results

D.2.1 Training, Drill, and Exercise Program

The previous Independent Oversight inspection found that the training and drill program at INL was well structured and successfully implemented to prepare ERO members to perform their emergency functions. It found further that the exercise program was effectively implemented in accordance with a comprehensive exercise program plan. This inspection found that the training program continues to provide ERO members with the fundamental training necessary for their positions, and the drill program provides adequate opportunities to achieve and maintain their ability to respond in an emergency. The exercise program also continues to be well designed and executed, and it contributes to the improvement of the site's emergency management program. However, annual evaluated drills or exercises have not been performed as required for all the site's hazardous material facilities.

Training

The INL emergency plan institutes a sound framework for the ERO training program. The training section of the plan establishes an appropriate set of roles and responsibilities for administration of site ERO training, governs all site contractor organizations, and sets detailed program requirements. The plan addresses the training requirements for most ERO positions and is based on an analysis of ERO functions. It also specifies requirements for continuing training through annual requalification and drill participation. The plan requires participation in a drill or exercise before an individual is initially assigned to the ERO roster; although it does not require that ERO members' proficiency in their position tasks be evaluated prior to the assignment.

In accordance with the training plan, emergency management personnel have implemented an effective process to ensure that most ERO personnel receive initial and requalification training and participate in training drills or exercises in order to be on the ERO roster. The ERO training program was systematically designed and developed, and it is delivered and evaluated in accordance with corporate procedures. The training addresses the established ERO position requirements, based on a high-level task analysis of the ERO functions and the positions that implement those functions. Recently, the task analysis of the

ERO functions has been revised and updated, and the training curriculum is being re-evaluated based on the results. Training is accomplished through an appropriate mix of classroom instruction and drill participation. Classroom lesson plans are well organized and focused on learning objectives, and training is scheduled at a frequency that adequately supports ERO personnel qualification. Training program implementation is supported by a strong administrative system and computer database that are used to monitor completion of initial and continuing training and control assignment to the ERO duty roster. In addition, ongoing training is augmented by an assigned reading program that is well-managed by emergency management department personnel, and supported by an excellent software tool.

Although the training program is effective in preparing the ERO to respond to an emergency, some minor weaknesses in the training program were noted. For example, two ERO positions, the on-scene commander and medical support director, are not included in the training analysis and the ERO training program (although they are effectively trained in their departmental technical areas). Further, the task analysis considers only high-level functions, and does not consider whether sub-tasks are necessary to accomplish the task. For example, the ERO event master task list includes "implement initial protective actions" as a protective action task, but does not address the underlying tasks, such as shelter-in-place.

Drills and Exercises

The INL emergency plan establishes detailed requirements in the drill and exercise section that provide a sound structure for the site's drill and exercise program. The plan establishes roles and responsibilities for implementation of the program and governs all site organizations. For example, the section addresses the scheduling of drills to support training and proficiency, and the performance and evaluation of exercises to support periodic assessment of all aspects of the site emergency management program. It also specifies the process for development and approval of drill and exercise scenarios, sets the format for the packages and reports, and addresses conduct and follow-up for the drills and exercises. Additionally, it includes provisions for the evaluation of both drills and exercises, requires the use of objectives and evaluation criteria for exercises, and provides that corrective actions be addressed either through the corporate or departmental corrective action processes. However, the emergency plan defines the entire INL site as a single facility, for the purposes of annual evaluated exercises, and does not address the annual facility-level evaluation and critique of emergency response capability required by DOE Order 151.1C and its predecessors.

INL effectively implements the drill program established by the emergency plan, although some weaknesses were noted. The overall site drill program is administered by the drill and exercise coordinator, who is supported by emergency management facility planners at each of the facilities. A number of drills are scheduled and performed each year at each of the facilities and emergency response locations, such as the emergency operations center (EOC), emergency control centers, and the warning communications center. The number of drills provides adequate opportunity for each of the ERO members to maintain proficiency and qualification through participation in at least one drill per year. Drills are provided for a variety of events (for example, radiological and chemical releases) at each of the facilities, and they include a mix of facility and support organizations to adequately support training in command, communication, and integration between and among the various ERO locations. Additionally, the required annual building evacuation drills have been conducted. Although past drill reports did not formally address identified problems and associated corrective actions, an expanded drill reporting format was adopted recently to include these items and facilitate program improvements based on drill results. Finally, with the exception of a fiscal year 2005 drill at Idaho Nuclear Technology and Engineering Center (INTEC), annual criticality drills have been performed as operations drills at all INL facilities with criticality alarms systems, although criticality drills at the Reactor Technology Complex, Materials and Fuels Complex, and INTEC often do not involve the ERO.

The site's exercise program is comprehensive and varied, and it involves many of the hazardous material facilities at the site, although some hazardous material facilities have not conducted an evaluated drill or exercise on an annual basis. Exercises are designed to demonstrate an appropriate set of emergency response functions over a five-year period and are spread over most of the site's facilities. Exercise packages for the past three years demonstrate that the exercises were well designed to evaluate integrated ERO response to a range of major hazardous material facilities, hazards, and events. A sitewide exercise for response to an earthquake as the initiating event was notable in its scope and breadth. Additionally, exercises have involved important onsite and offsite players, such

as occupational medicine, public information (one exercise included a mock press conference), local hospitals, and personnel from state agencies. With some minor exceptions, the exercise objectives, along with the underlying criteria and detailed points of review, provide adequate guidance for the evaluators. Further, exercises have been supported by an adequate number of independent, trained evaluators, and exercise reports indicate that evaluations have been appropriately self-critical, resulting in the identification of a number of needed improvements. Nevertheless, because of a Battelle Energy Alliance, LLC (BEA) interpretation of the order requirement, which was approved by the Idaho Operations office (ID), evaluated drills or exercises have not been scheduled or conducted to evaluate ERO performance at each hazardous material facility on an annual basis.

Finding #4: ID has not required and INL has not conducted annual, evaluated drills or exercises at each of its hazardous material facilities, as required by DOE Order 151.1C.

To summarize, the INL Emergency management plan establishes the basis for a sound program of training, drills, and exercises. Emergency Management Department personnel have implemented training and drill programs that effectively provide for the qualification and continuing training of ERO personnel and for the integration of the various response locations into the overall ERO. The INL has also implemented a well-structured exercise program that addresses a variety of plausible emergency scenarios, appropriately involves a number of internal and external organizations, and demonstrates a critical approach to exercise evaluation. INL has not conducted annual evaluated drills or exercises at each hazardous material facility; however, the site's annual exercises have been well executed and critically evaluated, and numerous training drills at the facilities have adequately prepared the ERO members to respond to an emergency.

D.2.2 Emergency Public Information

The 2003 and 2004 Independent Oversight inspections did not evaluate EPI within the INL emergency management program. During this 2007 inspection, Independent Oversight evaluated EPI program plans, implementing procedures, and supporting programs and found that with few exceptions the EPI program is well conceived and implemented and has a vigorous public education program. However, some areas for improvement were noted regarding planning documents, implementing checklists, and formality of EPI cadre training.

The public education program is extensive and includes several methods for interface and communication with offsite officials. Due to the remote location of the site and the low density of population within a 30-mile radius of site, INL does not need to distribute basic public educational materials to the public as other DOE sites typically do. Rather, BEA provides emergency management education and a speaker's bureau for schools and interested groups; frequently participates in offsite emergency management meetings with state, local, and tribal organizations; and provides significant support for local and state emergency management drills and Homeland Security exercises. Additionally, the INL web site is available to the public and includes outreach information about the INL site. It is noteworthy that during an incident, EPI immediately posts emergency news releases on the web site in an effort to keep the public up to date on emergency conditions and protective actions. However, the authority and capability to post these news releases on the web rests solely with one individual.

With few exceptions, the INL EPI plan and supporting checklists adequately document the processes and mechanisms to guide EPI personnel in providing accurate, candid, and timely information to site workers, news media, and the public. However, some areas for improvement were noted. The EPI plan, based on DOE Order 151.1A, *Comprehensive Emergency Management*, and the *DOE Emergency Management Guide,* already documents most elements now required by DOE Order 151.1C, such as pre-approved templates for news releases, rumor control, employee communications, and provisions for a joint information center (JIC.) It emphasizes the need for timely news releases by stipulating that the initial news release occur within one hour after the JIC is declared operational. While this policy differs from DOE guidance and expectations (that the initial release of information be issued as soon as possible, but generally no later than one hour after the event occurs), during the limited-scope performance tests the public information officers appropriately emphasized the importance of issuing timely news releases. Most importantly, however, during an actual INL operational emergency occurring during the time of this inspection, the initial and ensuing news releases were accurate, candid, and timely.

While the program is essentially effective, some site emergency planning documents contain inconsistent or conflicting information or lack sufficient detail. For example, various sections of the emergency

plan contain conflicting requirements regarding the news release approval process, and checklists do not thoroughly address the rumor control process and the use of news release templates. Additionally, the ID *Emergency Management Program Manual* states that the public information duty officer in the EOC provides direction and oversight to the INL public information office and is responsible for providing the initial ID approval for news releases. The public information duty officer is also assigned responsibility to act as the spokesperson at the JIC, which is located in a separate building from the EOC. Thus, when the public information duty officer is serving as JIC spokesperson, there is no ID public information representative in the EOC to provide direction and oversight to the INL public information office.

Fundamentally, the JIC process is well conceived, and the EPI plan and supporting checklists clearly define the roles and responsibilities for JIC staff and reflect the coordination of information among the EOC, the JIC, and offsite officials. However, process improvements reflected in updated checklists for each member of the EPI cadre have not been incorporated in the EPI plan, and no checklist assigns responsibilities for accommodation and interaction with the media located in the JIC. Also, the EPI plan does not address the DOE Order 151.1C requirement that the JIC be established, directed, and coordinated by ID or their designee. Moreover, as identified in the ID assessment of the BEA emergency management program, the space allocated for the JIC is inadequate to accommodate all current JIC activities, such as media and public inquiry teams, media monitoring for misinformation, and security of EPI equipment and supplies. In the event of an incident resulting in significant media attention, expanded EPI teams will be necessary to respond to media and public inquiries, further exacerbating the space limitations.

Finally, most of the EPI cadre has received adequate training through an appropriate mix of training topics and settings that includes frequent drill participation for all cadre members. The EPI cadre consists of three groups of personnel: contractor public affairs officer positions in the EOC, ID public information duty officer in the EOC, and the JIC cadre. Each group is subject to separate training program standards. The contractor public affairs officer position requirements are well defined in the training section of the emergency management plan, which establishes appropriate qualification and re-qualification requirements that include participation in a drill. The training provided for these EOC positions is administered through lesson plans, and training completion is tracked using the INL Training Records and Information Network, which tracks qualifications and is linked to duty roster assignment. Appropriate training requirements for the JIC cadre are documented in the EPI plan; however, that plan does not include public affairs positions in the EOC. For the ID public information duty officer positions, there is reliance on periodic participation in a drill or exercise, but no program documents establish training requirements and no mechanisms exist for administering training.

To summarize, the EPI program is well conceived and implemented and has a vigorous public education program. With few exceptions, the INL EPI plan and supporting checklists adequately document the processes and mechanisms to guide EPI personnel in providing accurate, candid, and timely information to site workers, news media, and the public. They also reflect nearly all of the EPI requirements and guidance from DOE Order 151.C. However, some supporting EPI checklists are missing or lack sufficient detail, and EPI planning documents and checklists do not fully detail the rumor control process. Further, even though the JIC process is well conceived and documented, the JIC lacks sufficient equipment and space. Additionally, there is no governing document that describes the overall EPI training program. However, these weaknesses do not substantially impact the overall effectiveness of the EPI program, as demonstrated during the limited-scope performance tests.

D.3 Ratings

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

A rating of EFFECTIVE PERFORMANCE is assigned to the area of emergency public information.

D.4 Opportunities for Improvement

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

Idaho Operations Office

Emergency Public Information

- To strengthen and clarify JIC operations, consider the following:
  - Determine whether the ID public information duty officer should also serve as the JIC spokesperson. Confirm that a knowledgeable person will be available to serve in both the EOC to direct and oversee the EPI process and in the JIC to serve as the DOE spokesperson and primary DOE representative.
  - Identify the ID representative, or designee, responsible for the establishment, direction, and coordination of all JIC operations.
  - Revise and update the EPI plan and checklists, as well as the ID Emergency Management Program Manual, to reflect JIC assignments.
- To strengthen and clarify the ID public information duty officer training program, determine the necessary training requirements and incorporate them into the written EPI program.

Battelle Energy Alliance, LLC

Training Drills and Exercises

- Consider enhancing the ERO training and qualification program by establishing a process for determining an individual's readiness for placement on the ERO roster, including:
  - A requirement that ERO responders demonstrate proficiency through evaluated participation in a drill or exercise before being added to the ERO roster.
  - A description of the types of proficiency demonstrations that can be used to satisfy this requirement.
- Consider expanding the ERO training and qualification program by including all ERO positions (for example, the on-scene commanders and medical support directors) in the analysis, design, and delivery of training that is specific to the site's emergency response organization and procedures.
- Consider enhancing the ongoing ERO task analysis by including subtasks for the tasks that are currently in the ERO event master task list. For example, consider critical tasks that have a number of important subtasks or require coordination among several individuals; such as:
  - The subtasks necessary to implement shelter or evacuation.
  - The positions and subtasks necessary to approve and then distribute potassium iodide.
- Further strengthen the drill and exercise program. Specific actions to consider include:
  - Reconcile the emergency response program requirements in the criticality safety program (PRD-112) with those in the applicable American National Standards Institute/ American Nuclear Society standard.
  - Confirm that annual criticality exercises and evacuation drills are conducted at all facilities where they are required.
  - Verify that annual criticality evacuation drills utilize the criticality evacuation paths where they differ from the evacuation paths for fires and other emergency evacuations.
  - Utilize more of the operational criticality drills as opportunities to train and drill the ERO.

Emergency Public Information

- To enhance the process for the timeliness and approval of news releases and related documents developed during an incident for release to the public, consider the following actions:
  - Reinforce in the EPI plan and appropriate checklists the goal to develop the initial news release within one hour of event classification.

- Incorporate the use of pre-approved news release templates into the information specialist checklist.

- Review the current news release approval process and make all appropriate documents consistent.

- Train and authorize additional personnel to post emergency news releases on the web during operational emergencies.

- Clarify the process for rumor control by considering the following actions:

  - Add further detail in the EPI plan and implementing checklists to describe fully the roles and responsibilities of all individual responsible for identifying or resolving rumors and misinformation. Specifically include responsibilities and methods for identifying and resolving rumors and misinformation among and between the public information director in the EOC, the JIC Manager, JIC media monitoring team, and the media and public inquiry teams. Include the use of the appropriate transmission form to communicate between these positions and interactions with any other positions necessary to identify or resolve misinformation in a timely manner.

  - Revise and update the INL emergency plan to include policies, roles, and responsibilities contained in the latest EPI plan revision.

- Strengthen the JIC process to ensure that adequate equipment and space are available for the JIC cadre during all levels of JIC activation. Specific actions to consider include:

  - Review JIC roles and consider adding a role for a news manager who is able to interact with and accommodate the media at the JIC when the JIC Manager and assistant public information director are involved in other activities.

  - Analyze a realistic response for inquiry telephone teams during a significant media event that necessitates an expanded telephone team. Identify and equip the JIC cadre with the necessary telephones, headphones, maps, facility fact sheets, and media kits.

  - Analyze space requirements for all levels of JIC activation and identify an easily available location with secure space to house equipment.

  - Revise the applicable implementing procedures and/or checklists to reflect changes made to the actions taken above.

- To enhance the overall performance of the EPI function, consider formalizing the EPI training program by developing a detailed training manual that incorporates all EPI positions. Specific actions to consider include:

  - Validate the informal training program for JIC positions, revise it as necessary, and include it as part of an official training document that is controlled and undergoes periodic review to keep it current and relevant.

  - Develop or assign the ID public information duty officer to an appropriate training curriculum.

  - Develop an independent EPI training plan that addresses the entire EPI cadre (EOC, JIC, and ID) and describes programmatic goals and objectives, training analysis and design, itemized training activities, and qualification and re-qualification training requirements, including drill participation.

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 formulating protective actions, categorizing and classifying the emergency, 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.

The information provided in this section is based on observations of four limited-scope performance tests (LSPTs) conducted by the Office of Independent Oversight at Idaho National Laboratory (INL). The LSPTs were based on two scenarios; both scenarios were administered on two different days. All four LSPTs involved the response of the emergency operations center (EOC), the warning communications center (WCC), the emergency control center (ECC) at the affected facility and the Central Facilities Area (CFA), and the on-scene command. Additionally, an actual operational emergency occurred at INL during the inspection period, providing an opportunity to validate some observations from the LSPTs. To avoid inadvertently interfering or influencing responders, response activities for the actual event were periodically monitored on the WebEOC at the alternate EOC, located in the Willow Creek Building and away from responders.

The emergency response organizations (EROs) responded to two LSPT scenarios, one affecting the Idaho Nuclear Technology and Engineering Center (INTEC) and the other affecting the Materials and Fuels Complex (MFC). The INTEC scenario was a response to a tornado that was complicated by a resultant injured person and a nitric acid tank leak. The MFC scenario was a fire at a radiological facility, with a forklift operator who responded to the fire alarm dropping and breaching a box of radiological material, resulting in a potential release to the outside environment. The LSPT scenarios, which were developed by INL trusted agents in conjunction with Independent Oversight, were presented to the participants by several trusted agents acting as controllers to ensure scenario validity and delivery of accurate event cues. Some trusted agents also played the roles of several unmanned positions to simulate responses by site personnel.

E.2 Status and Results

At INL, the initial emergency response for the scenarios used for the LSPTs is led by the Emergency Action Manager (EAM) at the affected facility in coordination with the arriving on-scene commander from the INL Fire Department. The facility EAM initiates telephone calls to the WCC for offsite notifications and activation of the facility ECCs, and for providing protective actions for designated facility workers. In addition, a faxed copy of an approved notification form is sent by the EAM to the WCC. The WCC, a continuously manned communications center, notifies offsite authorities, the EOC ERO, and all needed EROs at site facilities (typically arriving at an ECC). The need to activate EROs outside the affected facility is a decision for the Emergency Director (ED) and the Emergency Management Duty Officer. The CFA ERO provides logistical support to the affected facility ECC, such as providing buses to enable an evacuation, and assumes the site role in leading a response to an emergency and the protection of people who are outside a facility but within the INL site boundary. The offsite EOC, located in Idaho Falls, is staffed with a command center team lead by the ED, a planning team that performs the consequence assessment function, and a Public Information Director (PID) who develops news releases. The WCC is located within the same building as the EOC.

E.2.1 Emergency Response Activation and Command and Control

During the LSPTs, INL demonstrated an effective ERO capability for initial and ongoing response to operational emergencies. EAMs provided notifications to the WCC and activated their facility EROs. The WCC made notifications to the EDs and Emergency Management Duty Officers and provided the EOC, Fire Department, and all other facility EAM notifications.

All EOC and ECC activation notifications were effective; staffing the EOC and ECCs was accomplished in a timely manner by individuals assigned on the duty roster.

EAMs and EDs at the responding venues demonstrated strong command and control by providing directions to the emergency response members and by making appropriate use of their expertise. The EOC and the ECC control structures are organized consistently with the standard incident command system structure. EROs in the EOC and ECCs performed their assigned functions as stipulated by procedures and formally transferred their common functions of categorization, classification, and protective actions from EAMs to EDs as mutually agreed upon. Likewise, formality was demonstrated in establishing the operational status of command centers via voice announcements and logs that were based on prescribed minimum staffing requirements. Furthermore, ERO members used their position-specific checklists without difficulty to guide themselves in performing their ERO function. The Fire Department provided the on-scene commander, supported by security personnel, to conduct such activities as excluding site workers from the event scene, fire fighting, and rescue operations for these non-security LSPT scenarios.

E.2.2 Emergency Event Classification

EAMs and EDs promptly and consistently recognized, categorized, and classified operational emergencies using emergency action levels (EALs). Where similar EALs exist, these decision-makers frequently attempted to obtain additional information from on-scene personnel to make use of available indicators for selecting the applicable EAL. This process resulted in consistent categorization and classification decisions at the ECCs and EOC during the LSPTs and between the two days the LSPTs were performed. These decisions agreed with the expected categorizations and classifications designed into the scenarios.

E.2.3 Protective Actions

Protective actions were nearly always promptly implemented to provide the most effective protection for site personnel, reassessed throughout the scenarios, and modified as conditions changed. During both INTEC scenarios, the EAMs directed site workers to take cover immediately due to the severe weather conditions as stipulated by the EAL in use. Likewise, the EAMs directed site workers within the exclusion area around the nitric acid tank to relocate upon discovery of the nitric acid leak. Personnel accountability leaders (an ECC cadre position) implemented most of these orders by providing direction to area wardens who are located in the buildings. Other personnel relocations were sometimes implemented by security escorts dispatched to affected buildings. When relocations and evacuations became necessary, EAMs selected safe assembly points that were based on the existing weather conditions and pre-determined distances, prescribed in EALs, using maps and scaled map overlays to identify safe/unsafe areas. Furthermore, on-scene commanders monitored weather conditions and, during one LSPT, had to relocate the on-scene command post because of a wind shift. Similar actions were taken at MFC where the EAL for a fire in a radiological facility was initially used to determine protective actions, which included a standard building evacuation for a fire alarm and later, an EAL for a radiological material spill was used to determine protective actions upon discovery of a radiological release. In this case, on-scene command posts were relocated to a safe distance, and planning for safe building evacuations was initiated. Furthermore, EAMs and on-scene commanders consistently demonstrated concern for potentially injured people and directed that personnel accountability be performed during all LSPTs. However, some site workers were not effectively protected during the INTEC LSPTs for a sighted tornado. During these scenarios, the EAMs did not initially direct personnel to take cover in sturdy buildings, allowing some to shelter in trailer-type structures. Later, after the tornado had passed, EAMs realized that the response procedure stipulated the use of sturdy buildings, and then directed personnel relocation.

E.2.4 Notifications and Communications

In most cases, the EROs made prompt, accurate initial emergency notifications to offsite authorities, site workers, and emergency response personnel during the LSPTs. Facility EAMs or the EOC provided event information using notification forms to the WCC for execution of offsite notifications. The WCC performed a quality review check of the notification forms and simulated the distribution of notification forms to offsite authorities via a broadcast fax, with follow-up telephone calls to receiving authorities. As stated previously, initial event notifications from the site facilities were effective in alerting personnel at the affected facility and for activating the site and offsite

command centers. During LSPTs, all notifications were completed in a timely manner except for some worker notifications under the jurisdiction of the INTEC EAM. During the INTEC LSPTs, the EAMs, who are also responsible for notifying Test Area North, Power Burst Facility, and the INL Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility, did not notify these facilities in time to place workers there under take-cover protective actions for the tornado. After the tornado had passed, EAMs realized that these notifications should have been made.

In nearly all cases, the INL ERO provided continuous, effective, and accurate communications among responders, and communications were reliably maintained throughout the postulated emergencies. EDs and EAMs provided frequent and informative briefings to their ERO members, giving up-to-date information on the status of event conditions and the site's response. Affected facility EAMs and CFA EAMs effectively coordinated readying buses and staging areas to enable safe evacuation. To promote consistency in information distributed among themselves, EROs, EDs, and EAMs made use of conference calls; WebEOC was used at all command centers to display important information regarding significant event conditions and tasks assigned to ERO members; and notification forms were widely distributed. However, ERO members at the EOC and ECCs did not always make full use of available information systems to communicate information, such as WebEOC and event classification status boards, in that they either did not always update these systems or did not read them. In some cases, this resulted in confusion within the ECC cadre on the status of facility protective action responsibility, and some cadre members remained unaware of event classification changes.

During the LSPTs, the PIDs, located in the EOC, gave the Joint Information Center accurate, candid, and timely information for distribution to the news media and the public. The PIDs demonstrated quick development of an initial news release using an approved, pre-scripted template. The PIDs then had subsequent new releases developed that provided more event details as they became known. To enable timely and accurate news releases, the PIDs had frequent interactions with EOC personnel to ensure that up-to-date information was included before submitting the drafts to EOC personnel for approval. These actions were performed using the guidance contained in a checklist. The contents of news releases were generally informative but sometimes did not contain significant items, such as the operational status of the Joint Information Center, protective actions implemented, the status of the release, and the involvement of an injured person.

E.2.5 Consequence Assessment

On-scene commanders, security patrols, ECC teams, and the EOC planning teams performed and/or contributed in the effort to make initial and ongoing consequence assessments for use in validating the adequacy of protective actions. For the tornado LSPTs, security and/or fire patrols were deployed to determine the extent of facility damage. During all LSPTs, the arriving on-scene commanders consistently inquired about building hazards and made use of pre-fire plans and the Emergency Response Guidebook, as applicable. Once the hazardous material involved in the events was identified, EAMs used the EALs for determining the timely initial assessment and implemented the associated protective actions. Then, with one exception where actions were delayed, EAMs also took prompt actions to identify material at risk and determine the involved quantities. As this information became available, ERO personnel at the ECCs completed consequence assessment data forms and faxed them to the EOC to enable consequence assessment there based on the actual quantities involved in the releases. In all cases and at all venues, ERO personnel monitored weather conditions to ensure the safety of personnel and for use in dispersion modeling programs. Additionally, EAMs at affected facilities dispatched facility monitoring teams to provide detection capability for an empirical assessment of release consequences.

Meanwhile, as information became available, EOC planning teams developed dispersion plume plots using a variety of dispersion modeling programs, real weather conditions, and the material at risk information provided by facility personnel. The resultant consequence predictions were adequate and appropriately used to confirm the adequacy of protective actions. However, some enhancements could be made to promote consistency in performing consequence assessments among the consequence assessment teams and to eliminate unnecessary delays in obtaining the consequence assessment results. Inconsistencies existed because consequence assessment teams chose to use different dispersion modeling programs and did not consistently use information contained in the emergency planning hazards assessments, such as leak

path factor, damage ratio, respirable fractions, and, for the nitric acid leak, the containment pan dimensions for puddle size. Additionally, one team did not understand the significance of the molar concentration of nitric acid reported by facility personnel. Unnecessary delays were caused in the EOC planning room because members were sometimes inattentive during briefings, and in one case, a consequence assessment form, provided to enable a refined analysis, was left on the fax machine for approximately 20 minutes. Overall, these weaknesses were mitigated by the conservatism designed into the initial protective actions linked to the EALs.

To summarize, INL demonstrated effective responses to plausible event scenarios during LSPTs. Facility personnel recognized operational emergencies and activated their ERO promptly. Likewise, through effective notification mechanisms, supporting EROs at other facilities and the EOC in Idaho Falls were quickly staffed. Notification mechanisms were also effective in providing timely and accurate notifications to offsite authorities and to the public through media channels. Event classifications were consistently accurate, and associated protective actions were usually effective. Command leaders at all responding venues demonstrated appropriate concern for identifying hazards and the safety of site workers and responders. Furthermore, EOC and facility EROs adequately demonstrated their capability to validate the appropriateness of protective actions through dispersion modeling predictions and through planned deployments of facility monitoring teams equipped with detection instruments. However, some weaknesses were observed in the timeliness in sheltering some site workers into sturdy buildings at a nearby affected facility for a tornado, and in the availability of refined consequence assessment analysis. Respectively, these weaknesses were either partially mitigated by actions to ensure some level of protection to workers inside structures or fully mitigated by conservative protective actions prescribed by EALs.

E.3 Rating

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

E.4 Opportunities for Improvement

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

Battelle Energy Alliance, LLC and CH2M-WG Idaho, LLC

- To strengthen the use of available information systems, consider emphasizing the use of WebEOC and event status boards during drills and exercises.

- Strengthen the response to natural phenomena events by considering the following:

  – Incorporate the details contained in the severe weather procedure used at INTEC into the INL emergency plan implementing procedure for natural phenomena events.

  – During drills and exercises, emphasize timely sheltering in sturdy buildings for tornado conditions and the protective action responsibilities of the INTEC EAM for Test Area North, the INL Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility, and the Power Burst Facility.

- To enhance the consequence assessment output products and the timeliness of their availability, consider the following:

  – Provide a conversion calculator for molarity to percent solution determinations, and train and drill consequence assessment personnel on its use.

  – During exercises and drills, emphasize the use of information contained in the emergency planning hazards assessment for use in calculating event consequences.

– Establish, through procedures, the preferred hierarchy of predictive dispersion models to use for chemical and radiological releases.

APPENDIX F
READINESS ASSURANCE

F.1 Introduction

Emergency management program administration includes elements of readiness assurance as well as performance of some planning and response functions. Readiness assurance activities ensure that emergency management program plans, procedures, and resources of the Idaho Operations Office (ID) and Idaho National Laboratory (INL) will facilitate an effective response to an emergency at the site. 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 the Office of Nuclear Energy (NE) line organizations in monitoring program effectiveness; implementing self-assessment programs; and ensuring that timely corrective actions for identified weaknesses are identified, implemented, and appropriately closed. NE field elements also have direct responsibility for performing some emergency response activities, including oversight of the site's emergency response and activities related to the release of emergency public information to site workers and the public.

This U.S. Department of Energy (DOE) Office of Independent Oversight inspection examined the processes by which ID provides guidance and direction to and maintains operational awareness of the INL emergency management program. The inspection also included a review of ID emergency management program assessment processes. Additionally, the inspection included reviews of the INL emergency management self-assessment and issues management processes and the status of actions taken to address findings identified in the previous Independent Oversight inspections.

F.2 Status and Results

F.2.1 DOE Line Program Management

The September 2003 Independent Oversight inspection determined that ID had clearly defined roles, responsibilities, and authorities for their emergency response functions and for oversight of the contractor emergency management program. However, key oversight activities were not occurring, and ID faced significant challenges in implementing an effective line management oversight program. This 2007 inspection found that while ID retains the clearly defined roles and responsibilities for their emergency response functions and for oversight of the contractor emergency management program, ID still faces challenges in implementing an effective line management oversight program.

ID has established appropriate roles and responsibilities for oversight of the emergency management program and has dedicated resources for fulfilling these roles and responsibilities. A comprehensive set of process descriptions, office procedures, and work instructions governs the conduct of operational awareness of the emergency management program. The ID Emergency Management and Surveys Team is led by an emergency management program administrator (EMPA) with two support personnel focused on emergency management and additional matrix support available from ID as needed. Late in calendar year 2006, ID appointed a new EMPA who is actively engaged in ID's emergency management oversight responsibilities. ID provides formal, routine feedback to the site contractors on the emergency management program through biweekly meetings involving discussions of program issues and concerns. In addition, the EMPA provides updates on the status of the emergency management program to ID senior management through biweekly staff meetings. Further, ID reviews and approves contractor emergency plans, emergency planning zones, emergency planning hazards assessments (EPHAs), and annual site exercise packages. Most notably, ID recently conducted an assessment, with assistance from NE and the National Nuclear Security Administration Office of Emergency Management and Policy, of all program elements of the Battelle Energy Alliance, LLC (BEA) emergency management program.

Training and qualification requirements are in place for ID emergency management personnel and emergency response organization (ERO) members. The two emergency management support staff members have completed the DOE Headquarters technical qualification program for emergency management, although the EMPA has not yet started the qualification program. ID developed the *ID*

Emergency Management Program Manual, which addresses training and qualification requirements for ID personnel assigned to positions in the emergency operations center. The manual sets appropriate initial and continuing training requirements for the management duty officers (MDOs), implemented through a qualification card and qualification standard managed by the EMPA. The qualification card includes knowledge factors, training courses, required reading and practical factors, and establishes a comprehensive set of qualification requirements. The qualification standard describes the qualification process and contains detailed guidance for completing the topics on the card. Initial qualification, drill attendance, and requalification training are scheduled and effectively tracked. Although the overall qualification process for the MDOs is relatively thorough, the process allows for the approval and placement of the MDO on the duty roster without first participating in a drill or exercise or completing many of the items on the qualification card. As a result, the qualification process does not ensure that MDOs are proficient in their assigned tasks before assignment to the ERO roster.

Although ID has defined the roles and responsibilities for the emergency management program, ID has not fully or effectively implemented some of these roles and responsibilities. For example, the emergency readiness assurance plans (ERAPs) prepared by ID do not cover all facilities at the INL, and several pieces of required information, such as goals, status of hazards surveys and EPHAs, and results of assessments, are omitted. In addition, the fiscal year (FY) 2006 ERAP submission to DOE Headquarters did not include the INL implementation plan for compliance with DOE Order 151.1C as required. Further, ID approved an interpretation of the annual facility exercise requirement in DOE Order 151.1C that effectively grants an exemption to the requirement, although only DOE Headquarters may grant exemptions. The EMPA recently finalized an FY 2007 emergency management assessment plan that includes assessments of the BEA and ID emergency management programs; however, the plan does not include Bechtel BWXT Idaho, LLC (BBWI). Lastly, ID has not established a date or required BBWI to develop an implementation plan for achieving compliance with DOE Order 151.1C, despite the order having been in the BBWI contract for over nine months.

ID has established an overall assessment and issues management program; however, ID conducted only a few assessments of the emergency management program. ID manuals and procedures establish the processes for assessment and issues management activities and are discussed in further detail in the feedback and improvement section (section 4.4) of the Independent Oversight Inspection of Environment, Safety, and Health Programs at the Idaho National Laboratory Materials and Fuels Complex. In addition, an assessment plan was developed for FY 2005 and included a schedule of eight assessments of the contractor and ID emergency management programs. However, only two of the contractor assessments were completed, and no assessments were conducted in FY 2006. Further, one of the FY 2005 assessment reports contains a finding regarding the Materials and Fuels Complex hazards survey screening methodology and criteria, but the assessment report was not sent to the contractor for corrective actions and ID took no further actions. More recently, ID completed an assessment of the BEA emergency management program, which included a thorough technical review of the Materials and Fuels Complex hazards survey and EPHA along with a cursory review of the Radioactive Waste Management Complex EPHA. The specific criteria used to assess most of the other program elements were not provided, and in some cases, the specific documents reviewed were not listed. The basis for asserting the adequacy of the program elements evaluated, in most cases, could not be determined from post-assessment records. Further, the numerous non-compliances and areas for improvement that were identified for the hazards survey and EPHAs were not identified as findings in the assessment report. Consequently, the value of the assessment was diminished by the lack of a thorough review of some program elements and lack of specificity in the findings.

Finding #5: ID has not fully implemented all elements of the cognizant field element responsibilities for INL (such as ensuring that hazards surveys and EPHAs are updated and providing effective oversight of BBWI), as required by the ID Emergency Management Program Manual and DOE Order 151.1C, *Comprehensive Emergency Management System*.

Corrective actions for three of the four Federal findings and eight of the ten contractor findings from the 2003 and 2004 Independent Oversight inspections were effective; however, the corrective actions taken for the remaining three findings were not effective in preventing recurrence. The corrective actions from both Independent Oversight inspections were tracked and closed in the DOE Headquarters Corrective Action Tracking System and effectiveness reviews were conducted by ID once all corrective actions

were completed. The 2004 Independent Oversight inspection report contained a finding that the Argonne National Laboratory – West emergency management program had not been assessed at least once every three years, nor had self-assessments of the Federal emergency management program been conducted annually as required. As previously mentioned, an FY 2005 assessment plan was prepared by ID, but only two of the contractor assessments and none of the ID self-assessments were conducted. The effectiveness review conducted by ID did not determine whether the assessment plan had been fully implemented. In addition, two of the contractor findings from the previous Independent Oversight inspection reports were also not effectively resolved, as noted in Section C.2.1 of this report. The effectiveness reviews conducted by ID for these two findings did not include any field verification to ensure that all hazardous materials had been identified and assessed for potential impact. Consequently, the effectiveness reviews conducted by ID were not successful in determining whether corrective actions were effective in resolving all of the findings and preventing recurrence.

Finding #6: ID has not ensured that corrective actions were effective in resolving identified weaknesses and preventing recurrence of the same or similar weaknesses, as required by DOE Order 151.1C and DOE Order 414.1C, *Quality Assurance*.

To summarize, ID has a comprehensive set of documents that delineate the roles and responsibilities for oversight and assessments of the emergency management program along with the resources needed to implement the documents. The newly appointed EMPA is actively engaged in implementing ID's emergency management oversight responsibilities, including conducting a recent assessment of BEA. In addition, the two emergency management support staff members have completed the technical qualification program for emergency management. The training and qualification process for ID ERO members, while thorough, does not include a proficiency evaluation for MDOs before they are placed on the ERO roster. Further, several ID roles and responsibilities for the emergency management program have not been fully or effectively implemented, including preparation and submission of ERAPs, submission of exemptions to DOE Headquarters for approval, and oversight of the BBWI contract. In addition, few contractor assessments and no self-assessments have been conducted, although an assessment was recently completed of the BEA emergency management program. However, ID did not conduct a rigorous review of all of the emergency management program elements, and the findings did not include all identified issues. Furthermore, effectiveness reviews conducted by ID were not successful in identifying cases where corrective actions were not effective and had not prevented some issues from recurring.

F.2.2 INL Feedback and Improvement

The September 2003 Independent Oversight inspection determined that the contractor assessment process was effective in identifying weaknesses and improvement items and that corrective actions were being assigned, tracked, and completed. However, the processes used to track and close corrective actions were not always as rigorous as required by site procedures. This 2007 inspection found that while the contractor assessment process continues to be effective in identifying weaknesses and improvement items, issues still exist with the processes used for managing corrective actions.

BEA has established an organization-wide assessment program that includes CH2M – WG Idaho, LLC (CWI) activities as part of the emergency management services that BEA provides for CWI. Several recently conducted assessments exhibit an improving trend in the rigor of documentation provided in the assessment reports. BEA has corporate procedures that specify how assessments are to be conducted and includes requirements to prepare an annual assessment schedule, use specific assessment criteria, and locate objective evidence of performance. BEA has been performing assessments of all emergency program elements annually, but has recently adopted a different assessment strategy after consulting with the National Nuclear Security Administration Office of Emergency Management and Policy. For FY 2007 and future years, BEA plans to conduct a programmatic review of five program elements each year, with all 15 program elements reviewed over the course of three years. The Office of Emergency Management and Policy has indicated to Independent Oversight that this approach will not meet the requirements of DOE Order 151.1C and that a formal exemption request would be required to deviate from the specific order requirement.

BEA has also been using evaluation criteria in the draft DOE Guide 151.1-1 Volume VI, *Emergency Management Evaluations*, for their assessments, but appropriately changed to the emergency management accreditation program criteria in the draft DOE Guide 151.1-XY, *Emergency Management Accreditation Program*. Assessment reports are prepared to document each assessment; however, several assessment reports did not provide sufficient information to demonstrate that a rigorous assessment had been conducted. Recent assessment reports contain detailed documentation regarding the evaluation criteria and rationale for determining whether criteria were met and also better identified issues.

BEA has also established comprehensive processes and mechanisms to ensure timely and effective implementation of corrective actions for findings from assessments, drills, and exercises. A definition for issues that must be entered into the Issue Communication and Resolution Environment (ICARE) is provided in a BEA procedure, along with guidance that is to be applied conservatively when determining whether an issue should be entered into ICARE. The BEA procedure also states that all potential issues identified during an assessment are to be entered into ICARE for pre-screening. However, many potential issues identified in emergency management assessment reports have not been entered into ICARE. For example, an FY 2005 Reactor Technology Complex assessment identified two potential issues regarding an outdated radiological monitoring procedure and an incorrectly determined emergency planning zone; however, neither potential issue was entered into ICARE for pre-screening. In another case, 42 potential issues were noted in an FY 2006 INL emergency management base plan assessment, including several inadequacies related to hazards surveys, but none were entered into ICARE for pre-screening. Additionally, an FY 2006 Test Area North assessment identified a potential issue involving the inability to use new self-contained breathing apparatus. This potential issue was not entered into ICARE for pre-screening, and no further action was taken to ensure that the appropriate group within BEA was assigned to follow up on the issue. As a result, potential issues identified during assessments are not consistently pre-screened and subjected to the appropriate level of management visibility afforded by ICARE.

Corrective actions for most contractor findings from the 2003 and 2004 Independent Oversight inspections were effective; however, corrective actions taken for two findings were not effective in resolving the underlying causes. The 2003 and 2004 Independent Oversight inspection reports contained similar findings that the contractor had not ensured that all hazardous materials were identified and assessed for potential impacts. As noted in Section C.2.1 of this report, corrective actions taken by BEA regarding these two findings have not been effective. Several of the corrective actions involved training that was only provided to current personnel and would not be given to new personnel. In another case, a procedure was revised to include facility walkdowns to verify hazardous materials, but the frequency of the facility walkdowns was not specified. Consequently, the corrective actions were not effective in fixing the root causes and did not prevent the findings from recurring.

Finding #7: BEA has not ensured that issues were properly identified and tracked, and that corrective actions were effective in resolving the identified weaknesses and preventing recurrence of the same or similar weaknesses, as required by DOE Order 151.1C and DOE Order 414.1C.

In addition to assessments, the evaluation of responses to actual events also provides valuable feedback and improvement opportunities. Two operational emergencies (not requiring further classification) occurred at INL in the past two years. The first involved a fire in a granular activated carbon unit, and the second was a propane tank leak. An investigation report was prepared for the fire and contained a short section on the emergency response that identified five issues. Only an occurrence report was prepared for the propane tank leak, and that report did not address response activities. In neither case was a critique documented as required by the INL emergency plan, nor was a final report prepared and submitted to the Office of Emergency Operations on the emergency response, as required by DOE Order 151.1C (and its predecessor). As a result, the feedback and improvement opportunities from these two events were not shared with the rest of the INL ERO and DOE community.

To summarize, BEA has processes in place for assessments and issues management that apply across the company. Emergency management assessment plans are developed, and assessments are conducted using established criteria. Assessment reports are prepared, and although several reports provided few details regarding the conduct and results of the assessment, several recent assessments reports

exhibit an improving trend by providing a more thorough description of the assessment. The procedure governing the use of ICARE provides comprehensive requirements regarding the entry of potential issues, pre-screening to determine the issues that will remain in ICARE, prioritization of issues, and the development and closure of corrective actions. Corrective actions taken in response to the previous Independent Oversight inspections have generally been effective. However, many potential issues identified during emergency management assessments were not entered into ICARE as required for pre-screening to ensure that corrective actions were taken and increase the visibility of issues to BEA management. In addition, the corrective actions for two of the findings from the previous Independent Oversight inspections regarding identification of all hazardous materials and assessment for potential impacts were not effective. The corrective actions either were single actions that did not apply to future personnel or did not specify how often actions needed to be repeated. Finally, BEA did not capture or share the feedback and improvement opportunities gained during two operational emergencies that occurred at INL.

F.3 Ratings

A rating of NEEDS IMPROVEMENT is assigned to the area of DOE line program management.

A rating of NEEDS IMPROVEMENT is assigned to the area of INL feedback and improvement.

F.4 Opportunities for Improvement

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

Idaho Operations Office

- Consider expanding the scope of the ID procedure for review and approval of INL contractor documents to include emergency plans, hazards surveys, EPHAs, emergency planning zones, ERAPs, exercise packages, exercise evaluation reports, and final emergency reports.

- To promote comprehensive reviews and timely approvals of emergency management documents, consider developing an ID work instruction that contains the following information:

  – The technical disciplines (e.g., safety analysis experts and Facility Representatives) required within ID for the review of each emergency management document type.

  – An overall timeline and due dates for all reviews.

  – A mechanism that confirms DOE Headquarters' receipt of the approved documents.

- Strengthen the understanding of emergency management principles by having the EMPA complete the emergency management qualification standard in the DOE technical qualification program and enhance the process for qualifying MDOs by including a demonstration of proficiency before assignment to the ERO roster.

- To improve the usefulness of the ID ERAP, consider including all organizations at INL in the ID ERAP and the following additional information:

  – Status of all hazards surveys and EPHAs.

  – Exercises completed during the past fiscal year and exercise schedules for the next two fiscal years.

  – Assessments (contractor self-assessments, ID contractor assessments, and ID self-assessments) completed during the past fiscal year and assessment schedules for next two fiscal years.

  – Results of assessments (contractor self-assessment, ID contractor assessments, and ID self-assessments) completed during the past fiscal year.

  – Comparison of actual achievements from the past fiscal year to the goals, milestones, and objectives listed in the previous ERAP.

- Consider maintaining closure evidence files to document the basis for corrective action closure.

Idaho Operations Office and Battelle Energy Alliance, LLC

- When requesting order interpretations, consider obtaining formal concurrence from the Office of Emergency Management and Policy or their determination that an exemption request is required.

- Enhance the process for conducting emergency management assessments by providing additional guidance and/or training in the application of inspection criteria, the standards of acceptable performance, and the expected level of detail to be provided in assessment reports.

- Consider strengthening the self-assessment program through the development of a resource-loaded assessment plan. Specific attributes to consider in development and use of the plan include:

  – Balance the assessments of documents with assessments of field implementation.

  – Identify the resources needed to complete the assessment plan, and for activities that require outside expertise, identify how that expertise will be obtained.

  – Review the training and experience of personnel conducting assessments to ensure that they have the appropriate background to enable them to identify the expected standards of performance in the areas being evaluated.

  – Provide additional guidance and/or training to personnel conducting assessments for discerning an issue from an observation.

  – Include the updated assessment plan in the ERAP.

Battelle Energy Alliance, LLC

- To further enhance corrective action processes, consider implementing the following specific actions:

  – Include the issue disposition and corrective action tracking numbers in assessment reports.

  – Ensure that corrective actions involving training are incorporated into initial and continuing training materials, as necessary.

  – Emphasize the timely completion of corrective actions.

  – Ensure that corrective actions incorporate activities for validating effectiveness.

  – When validation activities identify continuing weaknesses, review the need to either re-open the issue or open a new issue.

- To strengthen feedback and improvement opportunities within the INL ERO and DOE community, conduct a critique at each emergency response venue after operational emergencies and prepare a final emergency report that includes actions taken at each emergency response venue, lessons learned, and issues identified for corrective action.

- Include all emergency management program elements in the annual self-assessments, or consider requesting a formal exemption from the Office of Emergency Management and Policy.