Volume II

Inspection of
Emergency
Management
at the

Waste Isolation Pilot Plant

August 2002

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

INDEPENDENT OVERSIGHT INSPECTION OF EMERGENCY MANAGEMENT AT THE WASTE ISOLATION PILOT PLANT

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Acronyms

AL	Albuquerque Operations Office
CBFO	Carlsbad Field Office
CMRO	Central Monitoring Room Operator
CMT	Crisis Management Team
DOE	U.S. Department of Energy
EAL	Emergency Action Level
EM	Office of Environmental Management
EM-5	Office of Safety, Health and Security
EOC	Emergency Operations Center
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
EPIP	Emergency Plan Implementing Procedure
ERO	Emergency Response Organization
FSM	Facility Shift Manager
FLIRT	First Line Incident Response Team
FY	Fiscal Year
HEPA	High Efficiency Particulate Air
JIC	Joint Information Center
OA	Office of Independent Oversight and Performance Assurance
RCRA	Resource Conservation and Recovery Act
SO-40	Office of Emergency Operations
TRU	Transuranic
TRUPACT-II	Transuranic Packaging Transporter Model II
WIPP	Waste Isolation Pilot Plant
WTS	Westinghouse TRU Solutions, LLC

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INDEPENDENT OVERSIGHT INSPECTION OF EMERGENCY MANAGEMENT AT THE WASTE ISOLATION PILOT PLANT

VOLUME II

1.0 INTRODUCTION

The Secretary of Energy's Office of Independent Oversight and Performance Assurance (OA) conducted an inspection of environment, safety, and health and emergency management programs at the U.S. Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) in July and August 2002. The inspection was performed as a joint effort by the OA Office of Environment, Safety and Health Evaluations and the Office of Emergency Management Oversight. This volume discusses the results of the review of the WIPP emergency management program. The results of the review of the WIPP environment, safety, and health (ES&H) programs are discussed in Volume I of this report, and the combined results are discussed in a summary report.

The Office of Environmental Management (EM) is the lead program secretarial office for WIPP. As such, it has overall Headquarters responsibility for programmatic direction, funding of activities, and emergency management at the site, and is responsible for providing overall program guidance and direction to the Carlsbad Field Office (CBFO). At the Headquarters level, the WIPP Office (EM-23) provides program implementation support to EM. Through a formal memorandum of understanding, CBFO receives technical and administrative support in the emergency management area from DOE's Albuquerque Operations Office (AL).

CBFO manages DOE's National Transuranic (TRU) Waste Program Office and the WIPP site. CBFO coordinates the TRU program at waste-generating sites and national laboratories, which includes managing the system for collecting, characterizing, and transporting transuranic (radioactive elements having a greater atomic number than uranium) waste. Within CBFO, the Office of Safety and Operations provides direction regarding the site emergency management program. WIPP is managed and operated by Westinghouse TRU Solutions, LLC (WTS), under contract to DOE.

The mission of the WIPP site is to provide permanent, underground disposal of TRU and TRU-mixed wastes (wastes that also have hazardous chemical constituents). TRU waste consists of clothing, tools, and debris left from the research and production of nuclear weapons. TRU waste is contaminated with small amounts of plutonium and other TRU radioactive elements. Over the next 35 years, WIPP is expected to receive approximately 175,000 cubic meters of TRU waste from various DOE sites. Since WIPP began operations in March 1999, it has received approximately 1,000 shipments (each shipment carries up to 42 55-gallon drum-equivalents). WIPP is now operating at the target goal of approximately 25 shipments per week, with plans for as many as 40 shipments per week by next year.

The WIPP site is located in southeastern New Mexico, approximately 30 miles southeast of Carlsbad, New Mexico, within a remote 16-square-mile tract. The area has a very low population density. Approximately 16 permanent residents live within a 10-mile radius of the site, with the nearest residents about 3.5 miles from the center of the site. WIPP project facilities include excavated rooms 2,150 feet underground in an ancient, stable salt formation, as well as various surface structures designed for transporter unloading and drum transfer to the underground rooms. Eventually, approximately 850,000 55-gallon drum-equivalents of TRU waste will be contained within the underground structure. WIPP

activities, which include transport container unloading, drum movement, and facility maintenance, involve various potential hazards that need to be effectively controlled including exposure to external radiation, radiological contamination, and various physical hazards associated with mining activities and facility operations (e.g., subsurface hazards, toxic gases, confined space, machine operations, high-voltage electrical equipment, pressurized systems, and noise).

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

In addition to the OA review of CBFO's emergency management oversight and operational awareness activities, this portion of the inspection evaluated progress since the May 2000 OA emergency management program review on upgrading the site emergency management program, which is managed and administered by the WTS Radiation Safety and Emergency Management department. The inspection team also conducted tabletop performance tests with a sample of the site's key decision-makers to evaluate their ability to employ available tools and skills when responding to postulated emergency conditions.

The results of this review indicate that, overall, CBFO and WTS have effectively addressed nearly all of the weaknesses identified during the May 2000 OA emergency management review. Furthermore, as a consequence of that effort, CBFO and WTS have implemented a hazardous material emergency management program that, with few exceptions, meets Departmental expectations for providing a system that protects responders, site workers, and the public in the event of an emergency at WIPP. However, the OA team identified several programmatic and implementation concerns, including initial response procedures that do not adequately define all of the necessary time-critical actions, inconsistent rigor of procedure usage by initial decision-makers, and inadequate training program definition for certain key initial responders. CBFO and WTS line management attention is necessary to refine program implementation and ensure that the level of emergency preparedness is maintained as the pace of waste receipt and storage activities increases.

Section 2 of this volume provides an overall discussion of the results of the review of the WIPP emergency management program, including positive aspects, findings, and other items requiring management attention. Section 3 provides OA's conclusions regarding the overall effectiveness of CBFO and WTS 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 identifies the findings that require corrective action and follow-up. Appendices C- F detail the results of the reviews of individual emergency management program elements.

2.0 RESULTS

2.1 Positive Program Attributes

Over the past two years, CBFO and WTS have committed considerable effort and resources to addressing the findings and weaknesses identified during the May 2000 OA emergency management program review. As an outgrowth of this effort, CBFO and WTS recognized the need to transform the emergency management program from a base program to a hazardous materials program, and this transformation is nearly complete. Positive attributes of the WIPP emergency management program include:

With very few exceptions, CBFO and WTS have satisfactorily addressed the findings and weaknesses identified during the May 2000 OA emergency management program review. CBFO and WTS developed and implemented numerous corrective actions to address the five findings and various other weaknesses, nearly all of which have been satisfactorily addressed. For example, inappropriate emergency planning hazards assessment (EPHA) material-at-risk assumptions were corrected, and administrative limits were imposed on waste drum curie content to ensure the validity of the EPHA results; improvements were made in the rigor of processes used to track emergency responder qualification status; the transportation-related emergency public information program and the associated roles and responsibilities were formally established; WTS is documenting drills and exercises and tracking findings and improvement items on an ongoing basis; and CBFO (together with EM's Office of Safety, Health and Security—EM-5) is now maintaining an appropriate level of programmatic awareness and providing effective guidance. Success can be attributed, in part, to the assignment of two additional full-time emergency management staff since the May 2000 emergency management review.

The EPHA serves as an effective foundation for the emergency management program, and WTS has successfully implemented the major elements of an operational emergency hazardous material program. WTS has adopted larger, bounding material-at-risk assumptions as a basis for EPHA release calculations, in combination with an existing broad spectrum of potential emergency events, to produce an EPHA that establishes a firm technical basis for the WIPP emergency management program. The Office of Emergency Operations (SO-40) and EM-5 were instrumental in supporting this effort. In addition, in recognition that the EPHA results indicated a potential for offsite consequences, the site undertook and has essentially completed the challenging task of transforming the previous base program, as defined in DOE Order 151.1A, *Comprehensive Emergency Management System,* into a hazardous materials emergency management program. This effort included establishing an emergency planning zone, developing an entirely new set of response procedures to address required classification and protective-action decision-making activities, and training emergency response personnel in their usage.

Drills and exercises are being effectively used to provide responder practice, validate the condition of the various emergency response elements, and promote further improvement. WIPP uses a variety of drill and exercise activities to provide emergency responders the opportunity to practice their response roles and responsibilities. The drills and exercises are thoroughly evaluated and documented, and the annual site exercise is used in conjunction with CBFO and AL appraisal activities to assess the condition of various programmatic elements. Corrective actions are developed from weaknesses and observations that are identified during drills and exercises and are tracked using the site's commitment tracking system; subsequent drill and exercise activities are used to verify the effectiveness of the corrective actions.

2.2 Program Weaknesses and Items Requiring Attention

A few weaknesses identified during the May 2000 OA emergency management program review have not been effectively addressed, particularly in the areas of event notification and crisis management team (CMT) training. Concerns in the response proficiency of the facility shift managers (FSMs), primarily in the area of protective-action decision-making for site workers, were noted as well. These concerns were due to a combination of weaknesses in the content of emergency plan implementing procedures and in the inconsistent rigor of procedure usage. Specific notable weaknesses include:

The processes and tools for formulating protective actions and then communicating all important information to offsite agencies do not ensure that these critical tasks are completed accurately and in a timely manner, and weaknesses in procedure usage adversely affected FSM performance. The procedure guidance that is provided for FSMs to formulate protective actions is not sufficiently specific to ensure that the type and extent of protective actions chosen are appropriate for the conditions at hand. In addition, the notification process is hampered by communication tools and implementing procedures that do not facilitate the efficient development and communication of messages that are complete and accurate, include all required recipients, and are timely, particularly after normal working hours. This weakness was also identified during the May 2000 OA emergency management program review. The current notification process has the potential for distracting responders from performing their primary responsibilities of mitigating the emergency and protecting site workers and the public. These procedure deficiencies, along with several instances of poor procedure usage, were primary contributors to weaknesses observed during tabletop performance tests conducted by OA during this inspection that resulted in significant delays in directing protective actions for site workers.

The WTS training program does not provide the structure and content necessary to ensure that FSMs and new CMT members are sufficiently prepared for their roles in an onsite emergency. The training and qualification process for FSMs does not include initial classroom training in topics unique to the WIPP emergency plan, such as emergency action level usage or protective-action formulation. The process also does not include any requirements for FSM participation in annual retraining or drills and exercises. In addition, although FSMs have been participating in drills and exercises, these activities to date have not addressed extended FSM emergency management decision-making without emergency operations center support being readily available, which would occur after normal working hours or on weekends. Such weaknesses may have contributed to FSM performance difficulties during the tabletop performance tests. Some aspects of the CMT training and qualification program have been strengthened since the May 2000 review, in part due to the transition to a hazardous material program. However, the CMT initial emergency management training module does not contain any examples of practical usage of position-specific procedures or tools, such as emergency action levels (for categorizing/classifying events), and new CMT members are not required to pass a performance-based test prior to be being assigned to the emergency response roster. The latter concern was a weakness specifically identified during the May 2000 OA review.

3.0 CONCLUSIONS

CBFO and WTS have made notable progress in addressing the findings and weaknesses identified during the May 2000 OA emergency management program review. All of the findings, with one exception, have been satisfactorily addressed and closed, and nearly all of the weaknesses have been appropriately addressed. As a result, most aspects of the WIPP emergency management program have been strengthened. Most significant is the incorporation of larger, technically defensible material-at-risk quantities into the EPHA, whose output consequently determined that a potential exists for offsite consequences following certain low-probability, high-consequence events. As a result, WTS implemented a hazardous materials emergency management program, whereas based on previous analysis, the site was required to have only a base program. Several aspects of this resource-intensive transition are noteworthy, including WTS's commitment to adequately staff the effort and the relatively short time span required for program development and implementation. In addition, training, drill, and exercise activities were expanded to retrain emergency responders on the fundamentals of the more complex emergency management system; validate the new program processes and tools; and provide emergency responders the practice opportunities necessary to become proficient. CBFO has been actively involved in the program transition effort and has teamed with AL, EM-5, and SO-40 to provide effective guidance and line management oversight.

The transition to the hazardous materials emergency management program is essentially complete, although additional effort is needed in several of the program elements, particularly in the area of processes and procedures for conducting event notifications and formulating protective actions for site workers. The process for conducting notifications is cumbersome, which not only inhibits timely completion of notifications but also distracts operators from other critical response duties, as demonstrated during tabletop performance tests conducted by OA during this inspection. In addition, the current set of emergency plan implementing procedures does not contain the necessary level of specificity to permit FSMs to consistently formulate appropriate protective actions, particularly for site workers. FSM performance during tabletop performance tests was also adversely impacted by several instances in which existing procedures were either not used or improperly used, which directly contributed to excessive delays in communicating protective actions to site workers.

Other weaknesses were noted as well, a few of which were also identified during the May 2000 OA emergency management review. For example, the FSM and CMT training programs do not ensure that responders are fully prepared for their emergency response duties. Furthermore, as would be expected of a new hazardous materials emergency management program, implementing plans and procedures contain numerous relatively minor organizational and content weaknesses, such as inconsistencies and areas requiring further definition. These will need to be addressed to ensure that all program elements are appropriately integrated and all response roles and responsibilities are clearly understood.

CBFO and WTS efforts to implement a hazardous materials emergency management program at WIPP have been generally successful. However, as demonstrated by the tabletop performance tests conducted as part of this inspection, the program needs further refinement. Continued line management attention is necessary to ensure that implementation of all the program elements is completed, particularly in the areas of emergency response procedure content and usage. In addition, looking forward, it is essential that CBFO and WTS line management carefully consider how to accommodate substantial increases in waste receipt and storage activities while maintaining an adequate level of emergency preparedness.

4.0 RATINGS

This inspection focused on a detailed assessment of eight key emergency management programmatic elements, divided into four major element categories. No overall program rating has been assigned. The individual element ratings reflect the status of the respective WIPP emergency management program elements at the time of the inspection. The rating assigned below to the contractor assessments and issues management element is specific to those assessment and corrective action mechanisms applied to the emergency management area.

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

Emergency Planning

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

Emergency Preparedness

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

Emergency Response

WTS Emergency Response Decision-Making..... NEEDS IMPROVEMENT
CBFO Emergency Response ..... EFFECTIVE PERFORMANCE

Readiness Assurance

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

APPENDIX A

Supplemental Information

A.1 Dates of Review

Scoping Visit	May 29-30, 2002
Onsite Inspection Visit	July 29-August 8, 2002
Report Validation and Closeout	August 20-22, 2002

A.2 Review Team Composition

A.2.1 Management

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

A.2.2 Quality Review Board

Michael A. Kilpatrick
Charles B. Lewis
Patricia Worthington
Dean C. Hickman
Robert M. Nelson

A.2.3 Review Team

Kathy McCarty, Deputy Director, Office of Emergency Management Oversight (Team Leader)

Steven Simonson (Topic Lead)
Jeff Robertson
David Schultz

A.2.4 Administrative Support

Sandra Pate

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APPENDIX B

Site-Specific Findings

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

FINDING STATEMENTS	REFER TO PAGES:
1. Waste Isolation Pilot Plant (WIPP) emergency plans, implementing procedures, and supporting notification systems do not ensure that the appropriate protective actions and other required event information are communicated in a timely and accurate manner to site workers and offsite jurisdictions, as required by DOE Order 151.1A, *Comprehensive Emergency Management System.*	16
2. During tabletop performance tests, WIPP facility shift managers did not consistently demonstrate effective and timely use of available resources, plans, and procedures to protect emergency responders and site workers from unacceptable consequences in the event of a hazardous material release, as required by DOE Order 151.1A.	27

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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 a hazards survey and emergency planning hazards assessment (EPHA) to identify and assess the impact of site and facility-specific hazards and threats and to establish an emergency planning zone. 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 hazards identified. 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, regardless of its magnitude.

This evaluation reviewed corrective actions developed and implemented in response to hazards survey, EPHA, and emergency planning zone weaknesses identified during the May 2000 Office of Independent Oversight and Performance Assurance (OA) emergency management program review at the Waste Isolation Pilot Plant (WIPP). Also reviewed were current versions of the WIPP site hazards survey, EPHA documents, the WIPP Resource Conservation and Recovery Act (RCRA) contingency plan, WIPP emergency plan, and associated implementing procedures, with a focus on the guidance provided to initial decision-makers in the areas of event classification, protective action guidance, and consequence assessment.

C.2 STATUS AND RESULTS

C.2.1 Hazards Survey and Hazards Assessment

The May 2000 OA emergency management program review determined that the hazards survey and the EPHA did not possess several critical attributes required by applicable requirements and guidance. The hazards survey did not identify all of the generic emergency events that could affect the site or the impact those events could have. The EPHA did not form an adequate basis for the WIPP emergency management program because of inappropriate hazardous material-at-risk assumptions and other errors in consequence assessment methodology. These deficiencies, together with other misinterpretations of requirements in DOE Order 151.1A, *Comprehensive Emergency Management System*, impacted other elements of the emergency management program, resulting in fundamental programmatic deficiencies, such as the lack of emergency classification thresholds and pre-determined protective actions for site workers and the public. Corrective actions have effectively addressed the hazards survey and EPHA deficiencies.

The WIPP hazards survey has been reviewed and approved by the Carlsbad Field Office (CBFO) and serves as an effective emergency planning document. It includes useful summaries of facilities and their functions, together with generic emergency events that may affect the facilities and the site. The utility of the hazards survey is enhanced by including tabular listings of hazardous materials in site facilities and systems, and the impact these materials may have on the health and safety of site workers and the public.

Overall, the hazards survey summarizes the emergency planning requirements that apply to the potential hazards, and the document appropriately defines the need for a quantitative hazards assessment.

The WIPP EPHA provides a thorough, quantitative analysis of potential airborne hazardous material releases resulting from events involving transuranic (TRU) waste, and with few exceptions, provides a suitable basis for determining the necessary emergency response plans and procedures, resources, and extent of the emergency planning zone for the site's hazardous materials emergency management program. The EPHA, last updated in January 2002, provides an accurate description of facility operations and processes and includes the demographic features of the site's location for defining the potential consequences of events affecting the facility and its surroundings. The EPHA also includes, without regard to probability of occurrence, an appropriately broad spectrum of emergency events that could affect the WIPP site, such as an aircraft crash into the waste handling building. Onsite transportation activities did not require assessment because of two factors: 1) the integrity of the Transuranic Packaging Transporter Model II (TRUPACT-II) containers, and 2) administrative procedures that prevent movement of hazardous waste that exceeds 50 percent of threshold planning quantities for the material. The EPHA assesses offsite events, such as a natural gas leak that could affect the site, and appropriately concludes that, while these offsite events will not lead to the release of hazardous materials from the site, they may require protective actions for site personnel. Other EPHA strengths include the consideration of potential chemical releases, conservative meteorological assumptions, the identification of critical receptor distances (other than the facility boundary) to determine emergency classifications, and an appropriate emergency planning zone radius.

The most significant change in the EPHA methodology from the May 2000 OA review involves the assumptions regarding the amount of hazardous material potentially available for release, or the material-at-risk. Because of concerns that actual material-at-risk quantities could exceed the values assumed in the EPHA, Westinghouse TRU Solutions, LLC (WTS) imposed an administrative limit (128 plutonium equivalent curies per seven pack of 55 gallon, contact-handled drums) on TRU waste in May 2000. Notably, this administrative limit has been incorporated into the safety analysis report and other controlling documents. As a result, the EPHA provides a conservative set of release calculations for the full spectrum of emergency events, including low-probability, high-consequence events, and therefore establishes a firm technical basis for the WIPP emergency management program. In addition, WTS has implemented mechanisms beyond the annual review cycle to ensure that the EPHA is effectively maintained. Plant process change orders, work orders involving hazardous materials, and purchase orders that change the hazardous chemical inventory are reviewed in advance for potential impact on EPHA analyses and predicted event consequences. This provides an opportunity to update the EPHA calculations prior to significant changes.

The OA team noted a few EPHA weaknesses. The first weakness involves the emergency action levels (EALs) and predetermined protective actions, which are derived from scenario barrier analysis and consequence assessment results. Although event consequences were calculated at the critical receptor distances of 30 meters, 100 meters, and the site boundary, the EPHA does not include a definition for the facility boundary that is appropriate for the WIPP site layout. At most sites, DOE guidance is used to establish facility boundaries at some point between 100 and 200 meters from the source of the postulated hazardous material release. At WIPP, the two potential facility release points, which are the main mine exhaust and the waste handling building exhaust, are considered as one release point even though they are separated by approximately 300 meters. Consequently, event-specific protective actions based on two separate release points have not been specifically identified for alert-level emergencies. The benefit of separately defining the release points is that more effective protective actions specific to such factors as the nature of the event, wind direction, and building integrity (i.e., for shelter-in-place) can be predetermined and implemented by the initial decision-maker.

The second weakness is that the EPHA refers to numerous facility detectors, such as continuous air monitors and high efficiency particulate air (HEPA) ventilation differential pressure flow indicators, which are potentially available to provide warning and recognition of emergency conditions to emergency responders. However, these detectors have not been assessed for usability as EAL thresholds upon which to base emergency declarations. Rather, only event-based indications such as fire, combined with the affected material-at-risk quantity, are used as EALs. The identification of potential symptomatic indicators would facilitate more timely and accurate EAL implementation.

Finally, the EPHA does not include an adequate technical justification for a few important analytical assumptions. Most notable is the assumption that of all the containers currently being used, the standard 55-gallon waste drums generate the most severe consequences from the postulated events because they are the most vulnerable to potential damage mechanisms. The OA team questioned this assumption because other waste containers, such as pipe overpacks, can be loaded to a much higher material-at-risk quantity, and the EPHA lacked any supporting technical basis regarding container integrity studies. The site subsequently referenced testing and analysis results from a published study of other waste configurations that validated the EPHA assumptions regarding the strengths of various waste containers. However, inclusion of essential technical bases within the EPHA facilitates both internal and external reviews so that EPHA maintenance activities can be more effectively performed.

In conclusion, WTS has significantly improved the thoroughness of the hazards survey and EPHA documents since the May 2000 OA review. These documents are generally consistent with DOE expectations and they provide a sound technical basis upon which to structure the balance of the WIPP emergency management program. Facilities and the associated hazards have been effectively characterized, material-at-risk quantities have been correctly quantified, and the spectrum of potential accidents and the consequences of potential releases have been appropriately analyzed. The OA team noted a few EPHA weaknesses: indicators potentially available for symptom-based EAL thresholds have not been explicitly considered in the EPHA; the facility boundary definition, which is used to develop emergency response tools, is not optimal for the actual WIPP layout; and there were several instances where documentation of assumptions within the EPHA was incomplete. However, these weaknesses do not significantly detract from the overall effectiveness of this element.

C.2.2 Program Plans and Procedures

The May 2000 OA review determined that the WIPP emergency management program plan contained the essential elements of a comprehensive emergency management program and that a series of procedures had been developed to implement the plan. However, the WIPP emergency plan had not been formally approved by DOE, and response procedures and other job aids lacked the specificity and usability necessary to effectively support timely initial decision-making by key emergency responders for the full spectrum of potential emergency events. Since that review, the site has implemented a hazardous materials emergency management program, which required developing a new set of emergency response procedures. However, the new procedure set uses a notification process that is similar to that evaluated previously by OA and that contains essentially the same key weaknesses that formed the basis for the notification element of the associated finding.

The WIPP emergency management program has been developed and implemented in accordance with the RCRA contingency plan, the WIPP emergency management program plan (hereafter referred to as the WIPP emergency plan), and the WIPP emergency plan implementing procedures (EPIPs). The RCRA contingency plan, which fulfills requirements of the New Mexico Administrative Code and applicable Federal law, defines certain key emergency responder responsibilities, including those of the emergency coordinator, and directs response activities intended to minimize hazards to human health and the environment. The WIPP emergency plan describes the site's overall concept of emergency operations

and supporting emergency management system elements, and is based on programmatic requirements established by the EPHA. As a result of changes in EPHA methodology, WIPP was required to transition from a base program to a hazardous materials emergency management program. Consequently, the WIPP emergency management program has become significantly more complex over the past 18 months. Nonetheless, the WIPP emergency plan contains the required elements, and the content is in most cases consistent with DOE expectations and guidance. Importantly, roles and responsibilities are well defined for most members of the emergency response organization, except as noted below.

The OA team noted several weaknesses in the WIPP emergency plan and RCRA contingency plan and their relationship with the EPIPs. Most significant of these are inconsistencies among various WIPP emergency plan sections and EPIPs regarding critical responsibilities of the facility shift manager (FSM), acting as the RCRA emergency coordinator, for categorizing and/or classifying events, formulating and implementing protective actions, and initiating notifications. For example, the emergency response organization section of the WIPP emergency plan states that the crisis manager "assists the FSM in ensuring that necessary emergency actions take place," and "The FSM is the individual in charge of directing activities at the WIPP site during emergency situations, including responsibilities as the … Emergency Coordinator." These statements contradict a statement in the categorization and classification section of the emergency plan that indicates that initial event categorization and classification is assigned to either the FSM or the emergency operations center (EOC) crisis manager.

The WIPP emergency plan also contains several discussions of key response elements that do not provide adequate detail for understanding how these functions are expected to be performed. The critical tasks of protective action formulation, event categorization and classification, and notification are poorly defined and therefore limit the usability of the emergency plan as an emergency response planning document. In addition, the plan weaknesses in these areas are consistent with weaknesses observed during tabletop performance tests conducted by OA; these plan weaknesses can be attributed in large part to corresponding weaknesses in EPIPs. Specific emergency plan concerns include:

- The emergency plan does not discuss the process or considerations for formulating and implementing protective actions, such as whether to shelter-in-place or evacuate, or how long shelter-in-place would be effective for various facilities on site.

- The emergency plan does not establish communication mechanisms or describe the overall process for performing all of the required initial notifications in a timely manner.

- The use of the property protection area to help define the alert and site area emergency classes is potentially misleading and could produce classifications inconsistent with Departmental expectations. For example, the emergency plan states that if the protective action guide is exceeded beyond 30 meters from the release point, but within the property protection area ("nominally 100 meters"), then an Alert should be declared. However, because of its irregular shape, a portion of the WIPP property protection area reaches as far as 380 meters east of the waste handling building release point (although still within the "site boundary"), and another portion reaches to within approximately 30 meters of the western side of the "site boundary," a point that is itself just over 350 meters to the west of the waste handling building release point. This defeats the purpose of a classification system intended to differentiate between events that have local effects and those events affecting the site population.

- The emergency plan does not include all of the criteria for declaring operational emergencies (not requiring classification) and does not provide an approach or any criteria for declaring non-emergency, significant events.

WIPP emergency operating procedures and management control procedures (collectively referred to in this report as EPIPs) provide detailed instructions for particular accident responses, such as a hazardous material spill and release or underground fire. If event conditions require, the user is directed by procedure to implement the RCRA contingency plan and other EPIPs that initiate activities, such as categorization and classification, EOC activation, and consequence assessment dose projection. The EPIP that addresses categorization and classification also directs such responses as implementing protective actions and performing notifications. Checklists appropriate for accomplishing actions required by an EPIP include procedural text that has been summarized in usable, one- or two-page activity sheets. The emergency response procedures are generally adequate for well-trained users to implement during normal working hours, when additional support staff are readily available. However, the OA team noted numerous organizational and content weaknesses that imposed an unnecessary burden on users during time-urgent emergency responses when only a minimal staff is available. The most significant of these are:

- The categorization and classification procedure directs the user to implement the required predetermined protective actions, but the procedure provides no mechanism or guidance to determine, based on the specific event, whether evacuation or shelter-in-place is more appropriate. The procedure also does not define the size of the affected area in which protective actions should be implemented.

- The categorization and classification procedure directs the user to perform individual notifications to a long list of offsite jurisdictions, but it does not provide a message format or list that identifies all of the required information to be communicated. Initial decision-makers must refer to the RCRA contingency plan or the EOC activation procedure to determine which information elements to transmit. However, the message format included in the EOC activation procedure, which was intended to capture all of the information requirements from the RCRA contingency plan, is not referenced in the categorization and classification procedure, has not been agreed to by offsite jurisdictions, and does not include the status of protective actions (if any), which is an essential element.

Furthermore, response personnel have not been provided with a mechanism, such as a group facsimile or ring-down telephone, to accomplish the notification task in a timely manner. These weaknesses in the notification process were previously identified in a finding from the May 2000 OA emergency management review.

The OA team also noted content weaknesses and inaccuracies in the EAL tables that hamper timely and accurate classification decision-making. Specifically:

- Many indicators used in the EALs are not objective and unambiguous. For example, “Loss of HEPA Filtration” and “Loss of Waste Handling Building Differential Pressures” are not quantified or further defined.

- The response actions in EAL tables do not include the emergency coordinator’s task of ensuring that accountability has been performed and determining the necessary actions if accountability problems are reported.

- Response steps within EPIPs have not been appropriately prioritized. For example, the categorization/classification decision-maker is directed to review operational emergency (not requiring classification) thresholds, and if the event exceeds the stated severity, to then review the

EALs for classifiable emergencies. Time-urgent response dictates a review of the more severe EALs first.

Finding #1: Waste Isolation Pilot Plant (WIPP) emergency plans, implementing procedures, and supporting notification systems do not ensure that the appropriate protective actions and other required event information are communicated in a timely and accurate manner to site workers and offsite jurisdictions, as required by DOE Order 151.1A, *Comprehensive Emergency Management System*.

Several other less significant weaknesses were noted as well. These include:

- The RCRA contingency plan requires that the emergency coordinator confer with DOE before notifying local authorities, which is inconsistent with DOE expectations.

- EPIPs do not consistently address all RCRA contingency plan notification thresholds, such as "the incident requires evacuation of a limited area for life safety."

- The occurrence reporting procedure requires the crisis manager to classify operational emergencies, and directs the facility manager to make notifications as soon as possible, but no later than two hours after upgrading to an emergency. As previously noted, only the emergency coordinator classifies emergencies and initiates notifications, and the referenced time limit is incorrect.

To summarize, WTS has established emergency plans and implementing procedures that generally describe the concept of emergency operations and address most response functions for well-trained and experienced decision-makers. However, the emergency plan and its associated implementing procedures do not ensure that event-specific protective actions are accurately formulated and implemented in a timely manner. Furthermore, the plan and procedures do not establish mechanisms or provide a process that ensures that notifications to offsite jurisdictions will be completed accurately and in a timely manner. These plan and procedural weaknesses contributed to several performance weaknesses identified during the tabletop performance tests conducted by OA that involved the FSMs, as discussed in Appendix E.

C.3 CONCLUSIONS

The hazards survey and EPHA provide a firm technical foundation for the WIPP emergency management program. Further enhancements to the facility boundary definition, documentation of assumptions, and incorporation of indicators for symptom-based EALs, where possible, will result in a document that is strong in every respect and which can be easily modified to address future activities. Emergency management plans and procedures generally fulfill DOE order requirements and Departmental expectations. However, significant improvements to the EPIPs and mechanisms for formulating protective actions and conducting notifications are needed to ensure that the initial decision-makers are provided with the tools necessary to effectively perform these critical tasks.

C.4 RATING

A rating of EFFECTIVE PERFORMANCE is assigned to the area of hazards survey and EPHA documents.

A rating of NEEDS IMPROVEMENT is assigned to the area of program plans and procedures.

C.5 OPPORTUNITIES FOR IMPROVEMENT

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

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- Revise the EPHA to strengthen the technical basis for EPIPs:
  - Summarize the technical basis for assumptions concerning the relative vulnerabilities of various waste containers and their associated material-at-risk quantities.
  - Evaluate the feasibility of using plant indicators for detecting symptoms of barrier failure and consider their use within EALs as symptomatic indicators of accident conditions. Document the results of the evaluation in the EPHA.
  - Re-define the WIPP "facility boundary" consistent with DOE guidance. Consider using the terms "facility boundary" and "site boundary" in plans, procedures, and other documents to ensure that a language common to the DOE complex is utilized in emergency notifications and communications.
  - Consider incorporating moderate malevolent acts into the spectrum of EPHA accident scenarios to provide a greater range of possible response actions.
  - Enhance the portrayal of EPHA results by revising the table of radiological data to clearly define the relationship between predicted consequences and the applicable protective action criteria.
- Consider installing additional, real-time instrumentation systems at critical hazardous material release points to provide symptomatic indicators of emergency events.
- Consider implementing the guidance provided by the National Response Team on integrated contingency planning, also known as the "One-Plan," to avoid inconsistencies among the RCRA contingency plan, the WIPP emergency plan, and EPIPs.
- Revise the WIPP emergency plan and EPIPs to ensure that emergency responders are provided with comprehensive and clear direction for fulfilling their assigned roles and responsibilities:
  - Consider using DOE Guide 151.1-1, Volume V- 2, *Standard Format and Content for Emergency Plans*, as a template for information to be included in the site emergency plan.
  - Consider enhancing EPIPs by including realignments of ventilation systems for situations where engineered safety features have failed or to otherwise limit the transport of hazardous materials.
  - Perform a crosswalk of all emergency management documents to ensure clear and consistent statements of roles and responsibilities.
  - Ensure that emergency plans and EPIPs include all applicable DOE thresholds for declaring operational emergencies and that definitions of emergency classes and protective action criteria are correctly stated and applied throughout.

- Ensure that EAL implementation thresholds are objective, unambiguous, and clearly identify the threshold indicator or observed event that is expected to be used.

- Validate, through performance testing, the EPIPs to ensure that they can be performed as written to efficiently accomplish the desired actions in a high-stress, time-urgent environment.

- Consider installing communications equipment, such as group facsimile or semi-automated telephonic capabilities, to ensure that required notifications can be effectively performed in a timely manner, with minimum intervention by the FSM or central monitoring room operator.

APPENDIX D

Emergency Preparedness

D.1 INTRODUCTION

A coordinated program of training, drills, and exercises is necessary to ensure that emergency response personnel and organizations can effectively respond to emergencies impacting the site or facilities. For a training program to be effective, it must include initial training that will develop individual and team skills and periodic training to keep the emergency response organization (ERO) proficient while keeping pace with changes to plans, procedures, and facility equipment. To be effective improvement tools, exercises should be used to validate all elements of an emergency management program over a multiyear period using realistic, simulated emergency events and conditions, as well as provide 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, this is based on having in place a long-term program to educate the public and the media about actions that may be required during an emergency response.

The Office of Independent Oversight and Performance Assurance (OA) inspection team reviewed corrective actions developed and implemented in response to training, drill, and exercise weaknesses and EPI weaknesses identified during the May 2000 OA emergency management program review at the Waste Isolation Pilot Plant (WIPP). As part of corrective action follow-up, the OA team evaluated procedures that support these elements and reviewed training and proficiency records for key site emergency responders.

D.2 STATUS AND RESULTS

D.2.1 Training, Drill, and Exercise Program

The May 2000 OA emergency management program review determined that the WIPP onsite emergency management training, drill, and exercise program incorporated most of the necessary program elements (i.e., classroom training, on-the-job training, drill, and exercise programs). However, the program lacked a challenging performance-based qualification program for the crisis manager and crisis management team (CMT) members; the first line initial response team (FLIRT) could not perform its mission because of a lack of qualified personnel; and program effectiveness was being limited because drill and exercise reports were not being completed in a timely manner. This OA inspection determined that corrective actions associated with this finding, which specifically addressed weaknesses in the training and qualification program that permitted the qualification status of emergency response personnel to lapse, have been effective. However, corrective actions were not entirely effective in addressing one important weakness, as discussed below.

Westinghouse TRU Solutions, LLC (WTS) has implemented several improvements in the training, drill, and exercise program since the May 2000 OA emergency management review. These improvements have effectively addressed nearly all of the weaknesses identified during the review. For example, WTS implemented a requirement that all CMT members participate annually in a drill or exercise, and the fiscal year (FY) 2001 annual retraining course for CMT members includes topics appropriate to the transition to a hazardous materials emergency management program, such as a detailed discussion of the content and usage of emergency action levels (EALs). In addition, WTS is using the training and qualification database in a more effective manner; a sample of training records checked by the OA

inspection team indicated that emergency response team and FLIRT responders are currently qualified, as are CMT members. Drill and exercise activities are now being thoroughly documented, and with few exceptions, the site is effectively using drills and exercises to identify needed corrective actions and programmatic improvements. In part, these improvements can be attributed to the assignment of two additional full-time emergency management staff since the May 2000 OA review.

One weakness identified during the May 2000 OA review was that the training, drill, and exercise program lacked a challenging performance-based qualification program for crisis management team members, including the crisis manager. This weakness remains because the WTS training program still does not provide the learning and evaluation activities necessary to prepare new CMT members for assignment to the emergency operations center (EOC) roster. For example, the CMT (self-study) training module is purely "programmatic" in nature; it does not contain any examples of practical usage of position-specific procedures or tools, such as EALS (for categorization/classification) or position checklists. In addition, CMT members are not required to complete any performance-based evaluations as part of their initial qualification program. At present there is only an informal expectation that new CMT members will observe a drill or exercise prior to being placed on the EOC roster.

The OA inspection team noted other training and exercise program weaknesses as well. The training and qualification program for facility shift managers (FSMs) does not include any requirements for annual retraining or periodic proficiency maintenance activities in emergency management decision-making. In addition, FSM initial classroom training does not include topics unique to the WIPP emergency plan, such as EAL usage or protective-action decision making. These are notable given the scope of FSM responsibilities during an emergency. Furthermore, the emphasis to date in drills and exercises has been the performance of the FSMs acting in concert with the EOC staff. FSMs have not been challenged to fulfill their emergency response roles and responsibilities acting for the first 30-45 minutes as the sole initial decision-maker, as would occur during weekends and off-shift hours. The program also does not include any formal provisions for re-qualifying a CMT member who has not filled the position for an extended period of time. As a result, a previously qualified CMT member who has not filled a position on the EOC roster for the past two years was recently added to the EOC roster without undergoing any type of retraining. This is inappropriate given the significant changes in the emergency management program over the past two years. In this particular case, however, the impact is substantially mitigated by his assigned position (i.e., operations representative), which does not involve categorization, classification, or protective action decision-making responsibilities.

Finally, the OA inspection team noted several aspects of the exercise program that may be limiting its effectiveness as a continuous improvement activity. The first is that the WTS drill and exercise program implementing procedure, which provides instructions for developing, conducting, and evaluating drills and exercises, does not define either the grading categories or the overall rating (i.e., satisfactory or unsatisfactory), and does not specify what actions are required for an "unsatisfactory" overall evaluation. In addition, the procedure does not specify which records need to be retained, although a contents sheet is placed in each exercise package and marked with the package contents. WTS has recognized various weaknesses in the content of this procedure and inconsistencies between it and current drill and exercise practices, and is working on a major revision.

The second area that is potentially limiting the effectiveness of the exercise program is the sequencing of the exercises that lead up to the annual site exercise. While these activities provide valuable practice and experience for emergency responders, the spacing of these activities over the past two years has been too short to allow weaknesses identified in the practice exercises to be satisfactorily addressed prior to the annual site exercise. This prevents the emergency management staff from effectively using the annual exercise as a tool to validate the effectiveness of corrective actions.

The third potentially limiting item is that the sheer volume of evaluation criteria (nearly 1,000 individual items supporting 28 major objectives) used to evaluate ERO performance during the FY 2002 annual exercise makes the exercise evaluation process unnecessarily cumbersome. In part, the large number of criteria is due to items that are predominantly or completely programmatic in nature, such as ensuring that the EALs contain the necessary elements. The effort required by exercise evaluators and emergency management staff to assemble, disseminate, collect, and evaluate the criteria may be adversely affecting the efficiency and accuracy of the exercise planning, conduct, and evaluation process, as illustrated by a missed opportunity to address weaknesses in the notification forms and processes that were identified by an evaluator during the FY 2002 annual exercise.

In conclusion, WTS has implemented corrective actions in the training, drill, and exercise program that satisfactorily address most of the weaknesses identified during the May 2000 OA review. The resulting improvements provide increased assurance that CMT members maintain an acceptable level of proficiency, as was demonstrated during tabletop performance tests conducted by OA, and have strengthened the utility of the drill and exercise program in identifying areas needing further attention. However, the training, drill, and exercise program does not ensure that new FSMs or CMT members are adequately prepared to fulfill their emergency response duties, and does not require either annual refresher training or periodic participation in drills or exercises by FSMs. These weaknesses are substantially mitigated by the experience level of currently assigned FSMs and CMT members. In addition, as currently implemented, the effectiveness of the exercise program is potentially being impacted by weaknesses in the drill and exercise implementing procedure; the sequencing of drills and exercises in advance of the annual site exercise; the exercise evaluation process; and the absence to date of any significant drill or exercise activities that focus on FSM performance during times when EOC support is not available. On balance, however, these weaknesses do not significantly degrade the program's effectiveness.

D.2.2 Emergency Public Information

The May 2000 OA emergency management program review determined that WIPP had implemented an effective EPI strategy for responding to a transportation event, but that the strategy was not formally captured in a plan or procedure to ensure that the Carlsbad Field Office (CBFO) would be able to provide accurate and timely information in support of state and local government to protect public health and safety. Additionally, the scope of the onsite EPI program was adequately described in a newly revised joint information center (JIC) operations program plan, but procedures for accomplishing several key activities, such as approving press releases, were not sufficiently defined to ensure that accurate information would be developed, approved, and released to the public and media in a timely manner. Furthermore, expectations and processes for conducting and documenting training for EPI personnel were not adequately defined. This OA inspection has determined that corrective actions that specifically addressed documentation and definition weaknesses in the transportation EPI program have been effective. However, corrective actions were not entirely effective in addressing two other previously identified weaknesses, as discussed below.

Since the May 2000 OA review, WTS has implemented a series of corrective actions intended to improve the definition of the onsite and offsite EPI program. The WIPP JIC operations program plan now describes the EPI approach for transportation events, and delineates the associated roles and responsibilities. The WIPP JIC operations procedure is both detailed and comprehensive, and addresses both onsite and offsite (i.e., transportation) activities. The procedure includes flowcharts that illustrate the associated press release development, review, and approval processes, and the JIC position checklists contained in the JIC operations procedure provide the implementing mechanisms for responding to emergency events. In the public/media education and outreach area, the WTS public affairs office has implemented several effective methods for rapidly disseminating press releases and related information to

site workers, the media, and other parties, including a Web-to-fax capability that allows a press release to be automatically converted to a fax and transmitted to pre-determined groups of recipients. WTS maintains an up-to-date Web site to provide site information in support of public education activities. The JIC fact sheet, which is available online and is distributed during outreach events, effectively communicates the purpose of the JIC and provides site contact numbers for use by both the media and the public.

Two weaknesses identified during the May 2000 OA review have not been completely addressed. The first weakness is that, although improved, the roles and responsibilities for approving press releases are not consistently and clearly defined in all of the EPI-related plans and procedures. For example, although the WIPP emergency plan clearly states that both the crisis manager and DOE management representative (in the EOC) approve the technical content of press releases, this expectation is not reflected in the JIC operations plan, the JIC operations procedure, or the position checklists for the crisis manager and the DOE management representative. In addition, the press release approval flowcharts in the JIC operations procedure do not clearly indicate the nature of the roles of the crisis manager and DOE management representative in the approval process.

Furthermore, an apparently contradictory note in the position checklist for the DOE spokesperson states that this individual has "overriding authority to grant final approval of all information released." There is no other mention of this authority in either the JIC operations plan, JIC operations procedure, or the emergency plan. Discussions with the CBFO and WTS public affairs managers indicate that the intent of this note is to facilitate timely issuance of press release updates when the EOC does not yet have complete information available. However, the two crisis managers and the primary DOE management representative do not share a common understanding of this expectation and the conditions under which this authority might be used. A well-understood process for approving press releases that is consistently and clearly defined in all applicable response plans and procedures is critical for ensuring that press releases are both accurate and timely.

The second weakness not completely addressed is in the area of JIC responder proficiency. The JIC operations plan now includes a description of JIC training requirements, including a requirement for both initial training and annual retraining in JIC operations, and there is a public affairs management expectation that JIC staff will participate in drills and exercises when they are available. However, there is no formal requirement for maintaining proficiency through annual drill and exercise participation, which is inconsistent with DOE expectations. In addition, drill/exercise sign-on sheets are not being consistently submitted to staff in the technical training department in a form considered acceptable for entry into the training database; hence, drill and exercise participation is not being accurately tracked.

To summarize, WTS has implemented corrective actions that effectively address all but two of the weaknesses identified during the May 2000 OA review. The transportation EPI program has been included in the JIC operations plan and accompanying procedure, and the EPI-related roles and responsibilities for responding to transportation events have been adequately defined. In addition, the JIC plan and procedure include more clearly defined processes for key JIC activities, and WTS has implemented improvements in the methods used to rapidly communicate information to site workers, the media, and other stakeholders. Additional effort is needed in providing consistently and distinctly defined responsibilities for approving press releases and ensuring annual participation in drills and exercises for JIC staff members.

D.3 CONCLUSIONS

The WIPP training, drill, and exercise program provides adequate structure and content to establish and maintain an effective ERO and to validate the response elements of the emergency management program.

Current CMT members are knowledgeable in their assigned areas, and the few remaining weaknesses in the training and qualification process apply almost exclusively to new additions to the EOC roster. However, the program does not adequately prepare new FSMs for their emergency response duties and does not place any formal requirements on qualified FSMs for maintaining their proficiency. In addition, drills and exercises have been focused solely on FSM response during normal working hours when the EOC staff is available to support initial decision-making. Looking ahead, FSMs need to be provided with the necessary training and practice opportunities to permit them to effectively function without EOC support during the initial stages of events that could occur after normal working hours. The EPI program adequately ensures that the media and the public will be provided with accurate, meaningful, and approved information in a timely manner following an emergency event at WIPP. However, additional effort is needed to clearly define EPI roles and responsibilities for approving press releases.

D.4 RATING

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

A rating of EFFECTIVE PERFORMANCE is assigned to the area of EPI.

D.5 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 DOE and contractor line management and prioritized and modified as appropriate, in accordance with site-specific programmatic emergency management objectives.

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- Strengthen the exercise program by enhancing the objective development and validation processes.
  - As a long-term project, consider developing a set of exercise objectives tailored to the needs of the WIPP site and establishing a library of objectives that can be used for future exercise planning. As part of this effort, segregate programmatic objectives from response objectives and evaluate programmatic objectives separately during other assessment activities.
  - Incorporate exercise-finding definitions and their applicable evaluation and disposition requirements into the drill and exercise program implementing procedure.
- Strengthen the value of exercises in validating the effectiveness of corrective actions by ensuring that sufficient time is allotted between exercises so that corrective actions can be effectively identified, implemented, and evaluated for effectiveness.
- Consider conducting a crosswalk of all emergency management and public affairs plans and procedures to ensure consistent definition of roles and responsibilities related to EPI.
- Enhance the JIC program plan by including clear expectations for periodic drill and exercise participation by JIC staff.

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APPENDIX E

Emergency Response

E.1 INTRODUCTION

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

The majority of the information provided in this section is the result of tabletop performance tests that were conducted by the Office of Independent Oversight and Performance Assurance (OA) with three crews, each consisting of a facility shift manager (FSM) and a central monitoring room operator (CMRO). Two scenarios were presented to each crew: an emergency in the waste handling building with a subsequent loss of site power, and an underground emergency with subsequent equipment failure resulting in an unmitigated release to the environs. Each scenario was assumed to occur after normal working hours when emergency operations center (EOC) staff and joint information center support were not immediately available. The scenarios, which were derived from the emergency planning hazards assessment and further developed by OA in conjunction with a Westinghouse TRU Solutions, LLC (WTS) trusted agent, were presented to these individuals by the trusted agent to ensure scenario validity, to deliver accurate event cues, and to provide access to information from other responders with whom the crew would normally interact. In addition, one performance test was conducted for the EOC consequence assessment team, and performance-based interviews were conducted with two EOC crisis managers and two Carlsbad Field Office (CBFO) Facility Representatives.

E.2 STATUS AND RESULTS

E.2.1 WTS Emergency Response Decision-Making

In the event of an emergency, initial direction and control of the Waste Isolation Pilot Plant (WIPP) emergency response organization is provided by the FSM with support from the CMRO. The CMRO maintains a full-time presence in the central monitoring room and, in the event of an emergency, recalls the FSM, who may not be immediately present. As the designated initial decision-maker, the FSM is responsible for event assessment, mitigation, and activation of additional resources; protective action decision-making; emergency categorization and classification; and notifications. After activation of the EOC, the FSM remains in control of the response as the Resource Conservation and Recovery Act (RCRA) emergency coordinator, and is assisted by the crisis manager and crisis management team (CMT) personnel located in the EOC.

Facility Shift Managers

The May 2000 OA emergency management program review determined that FSMs understood their roles and responsibilities and demonstrated generally effective command and control skills, but had some difficulty completing key, time-sensitive initial actions, such as accident assessment, formulation of protective actions for site workers following a hazardous materials release, and accident notifications. In

many cases, observed response weaknesses could be attributed to a variety of weaknesses in the guidance provided to initial decision-makers by the emergency plan and its implementing procedures. As discussed in detail in Appendix C, the OA team determined that a similar situation existed during this evaluation. Additionally, the OA team identified several instances during the tabletop tests where usage of emergency plan implementing procedures (EPIPs) by the FSMs degraded to the point where important response actions, particularly protective action formulation, were missed or excessively delayed.

The FSM/CMRO crews demonstrated effective performance in several important areas. Most notable were in the areas of accurate and timely initial event categorization and classification; timely initiation of event notifications to site personnel and offsite jurisdictions; prompt evacuation of affected personnel from the event scene; and segregation of potentially contaminated personnel. Of particular note was the teamwork displayed between the FSM and CMRO in accomplishing the necessary response activities. For example:

- All CMROs promptly recognized the postulated events as emergencies, implemented initial response actions from memory (including FSM recall), and referenced applicable procedures to implement subsequent actions.

- All CMROs contributed valuable assistance to the FSMs in tracking event status and the completion status of required FSM response actions, with one of the CMROs demonstrating disciplined use of all of the applicable procedures.

In addition, based on plant knowledge, one of the FSMs demonstrated the ability to effectively implement an action that is not specifically addressed by the EPIPs to aid his response efforts. This individual secured underground exhaust fans after an underground fire was reported. This prompt mitigative action prevented radioactive material that had been postulated to be released underground from being transported to the surface if the ventilation system failed to shift to a filtered exhaust path, which effectively precluded consequences to site workers above ground during the scenario.

Some other FSM/CMRO response areas were characterized by generally good performance. For example, of the three FSMs evaluated:

- Two FSMs demonstrated generally effective command and control in such areas as activating additional response resources and directing the CMRO to monitor plant status.

- Two FSMs demonstrated good recognition of degrading plant conditions that required an upgrade in classification from an Alert to a Site Area Emergency.

- One FSM effectively employed checklists to guide his initial response actions and to keep track of completed activities. Another FSM used the checklists to initiate response, although he didn't keep track of completed actions.

The OA team also noted several other areas that were characterized by poor performance or incomplete understanding of emergency management concepts. For example:

- One FSM did not utilize the overall response checklist included in the categorization/classification procedure, which, as discussed in more detail below, adversely affected the formulation of protective actions. In addition, this FSM personally performed a complicated electrical distribution manipulation without employing procedures or job aids, and performed a portion of the laborious notification task. As a result, the FSM lost situational awareness of the emergency, and many other critical response actions were not initiated, such as activation of additional response resources.

- One FSM was not able to correlate degraded plant conditions with the required upgrade in classification from an Alert to a Site Area Emergency because he was unable to interpret the scientific notation on the shipment summary report to determine the material-at-risk upon which emergency classification is based.

- The FSMs provided little or no guidance to the CMROs regarding what information to transmit to offsite jurisdictions. Consequently, such critical information as assistance needed, protective actions implemented, and in at least one case, the event classification, were omitted.

- Two crews did not notify the U. S. Department of Energy (DOE) Facility Representative of the event, as required by the categorization and classification procedure.

Most importantly, FSM performance in the area of protective action formulation and implementation does not provide assurance that emergency responders and site workers will be adequately protected in the event of a release of hazardous material. Beyond the weaknesses in procedure content discussed in Appendix C, the FSM/CMRO crews determined and implemented protective actions with varying degrees of effectiveness for affected personnel, primarily as a result of weaknesses in procedure usage. While one FSM activated the fire brigade promptly in response to an underground fire and communicated wind direction to the fire brigade leader to permit safe approach to the fire scene, another FSM did not activate the fire brigade until 16 minutes after report of the fire, provided no cautionary instructions about responding, and did not order Security to block plant access as directed by procedure. Other examples of inconsistent decision-making in the area of protective actions include the following:

- For the three underground events, two FSMs did not use the existing procedures and emergency action levels to quickly identify and communicate protective actions. One of these FSMs did not evacuate or shelter co-located workers above ground for 15 minutes, and the second FSM required 23 minutes to implement protective actions. These times are excessive, particularly because the transport time for hazardous materials is approximately five to seven minutes from underground.

- For the three above-ground events affecting the waste handling building, while one FSM (assisted by the CMRO) employed an effective combination of evacuation and shelter-in-place actions for the entire affected quadrant of the plant, another FSM issued no protective actions outside the waste handling building until contamination was found in the downwind sector. The remaining FSM assumed that the only personnel on site were in the guard and security building, and ordered only that building to shelter-in-place; additional personnel could have been in other facilities in the downwind sector and should have been evacuated or sheltered per procedure.

Finding #2: During tabletop performance tests, WIPP facility shift managers did not consistently demonstrate effective and timely use of available resources, plans, and procedures to protect emergency responders and site workers from unacceptable consequences in the event of a hazardous material release, as required by DOE Order 151.1A.

Crisis Managers

Performance-based interviews were conducted with two of the three designated crisis managers. These interviews included a demonstration of their response to a simulated emergency event underground and other situations where decision-making would be tested in a real event. Crisis managers demonstrated good command and control, decision-making capability, and procedure and checklist use. They also demonstrated good management-level knowledge of the concepts related to timely, conservative decision-

making, even for situations where precise event information was not available. The crisis managers demonstrated good technical knowledge of categorization and classification thresholds and associated protective actions by promptly detecting postulated, non-conservative initial decisions. For the situation posed, the crisis managers effectively solicited input from their staff, and made recommendations to the emergency coordinator to upgrade the classification and implement additional protective actions.

Consequence Assessment Team

A tabletop performance test was conducted with the EOC consequence assessment team to determine whether they could perform a timely initial assessment, conduct ongoing assessment, and incorporate field data into the site dispersion model to refine the accuracy of initial assessments. The team was presented a scenario involving a fire in the waste handling building that included a potential radiological release and a subsequent degradation of plant conditions requiring a classification upgrade.

The consequence assessment team immediately confirmed the adequacy of initial decision-making and performed initial calculations to determine bounding consequences in case the initial assessment information was incorrect. The consequence assessment team leader is also the primary safety representative on the CMT; this individual ensured that protective actions for scene workers and responders were implemented consistent with initial response requirements. As additional event information became available, the team continuously updated and refined its assessments, and made appropriate recommendations to EOC management. After receiving field measurement data, the team accurately incorporated the data into previous determinations, and refined its output products accordingly.

The only concern noted by the OA team in this area is that the consequence assessment procedure addresses radiological consequences exclusively, which may prevent the consequence assessment team from adequately considering hazardous chemical consequences. For the scenario presented to the consequence assessment team, the radiological consequences from the transuranic (TRU) mixed waste were bounding. However, under certain circumstances (e.g., mixed waste fire with high efficiency particulate air filtration), the chemical constituents of the waste may have the higher potential consequences. Ensuring that the consequence assessment process addresses both radiological and chemical releases will ensure that adequate protective measures can be determined and implemented under any circumstance.

In conclusion, FSM/CMRO crews demonstrated generally effective performance in most of the major response elements. A few areas were strong, particularly initial categorization and classification and teamwork between the FSMs and CMROs, and FSMs performed well in those scenarios where they employed discipline in using all available procedures and checklists. In addition, crisis managers demonstrated their ability to effectively lead the EOC staff in providing useful and meaningful support to the FSM once the EOC is activated. Furthermore, consequence assessment tools readily support the evaluation of radiological events, and the team members effectively demonstrated their ability to implement the consequence assessment function. The FSM/CMRO crews had difficulty with certain tasks, notably consistent communication of required event information and timely completion of the required initial notifications, but as previously discussed, these weaknesses were due primarily to weaknesses in the quality and usability of the associated EPIPs. However, to varying degrees, all three FSMs experienced difficulty in the critical area of formulating and implementing appropriate protective actions for responders and site workers in a timely manner. This can be attributed in large part to weaknesses on the part of the FSMs in effectively using the procedures and implementing tools that address protective actions. Also contributing to this weakness is that the training, drill, and exercise program has focused to date on the FSM and CMT working collaboratively, and little, if any, emphasis has been placed on extended operation of the FSM/CMRO team as a self-contained initial response unit. The FSM performance weaknesses are partially compensated by the strong support available to them

from EOC staff and by the fact that currently, waste receipt and storage activities occur primarily during normal working hours when the EOC can be promptly activated. Nonetheless, FSMs are appropriately assigned sole responsibility for issuing protective actions irrespective of the time of day or level of site staffing, and they must be able to reliably execute this key activity.

E.2.2 CBFO Emergency Response

Upon EOC activation, the DOE Facility Representative serves as the DOE management representative. The Facility Representative's authority to serve in this position is delineated in the CBFO functions and responsibilities document and the Facility Representative Program Plan. Responsibilities for this position include maintaining awareness and oversight coverage of emergency events, emergency management activities, and mitigative/recovery actions. Additional duties include notifications to CBFO management and the Mine Safety and Health Administration, and approval of the technical content of press releases. Effective performance in this role requires the individual to be able to adequately assess the event, be knowledgeable of the protective action processes and procedures, and have an understanding of the notification requirements.

Interviews and tabletop performance tests were conducted with the designated primary DOE management representative and the first alternate for this position. The scenario was one that was used for the FSM/CMRO tabletop performance tests, and the FSM and CMRO responses during these tests were provided to the DOE management representatives to evaluate their ability to oversee contractor response actions. The results indicate that both individuals interviewed:

- Understood their roles and responsibilities as the CBFO management representative in the EOC
- Possessed an excellent knowledge of facilities, systems, and operations
- Demonstrated an understanding of priorities during the postulated scenario
- Performed required notifications and event assessment
- Evaluated the adequacy of simulated FSM/CMRO protective actions.

One weakness identified by the OA team, which was previously noted as an improvement item in a June 2001 exercise evaluation conducted by EM's Office of Safety, Health and Security, was that the Facility Representatives are not required to receive emergency response training. On his own initiative, the Facility Representative, who serves as the primary DOE management representative, has taken initial and annual refresher CMT training. He also participates in the annual emergency exercises. However, the two alternates listed on the EOC callout list for the DOE management representative position have not received CMT training and the training records indicate that neither alternate has participated in a drill or exercise that required EOC activation. Because of their extensive site-specific experience and knowledge, training deficiencies did not result in performance problems for the Facility Representatives during tabletop tests. However an annual requirement for refresher training and participation in drills and exercises would help maintain awareness of procedure and process changes and also aid in qualifying individuals who are assigned to this EOC position in the future. In response to this OA concern, CBFO initiated a revision to the Facility Representative Program Plan that adequately addresses both initial qualification and annual retraining issues.

Overall, the CBFO Facility Representatives demonstrated that they clearly understand their emergency response role and have the knowledge and skills necessary to evaluate the adequacy of the contractor's response to operational emergencies. However, training requirements that include annual participation in a drill or exercise have not been established for the DOE management representative position.

E.3 CONCLUSIONS

FSM/CMRO crews demonstrated generally effective performance in most of the major response elements, but all three FSMs experienced difficulty in formulating and implementing appropriate protective actions. The most significant FSM performance weaknesses could have been mostly avoided by a disciplined use of all available procedures and checklists. Crisis managers and the consequence assessment team demonstrated their ability to provide useful and meaningful support to the FSM after the EOC is activated. In addition, the CBFO management representatives in the EOC demonstrated that they clearly understood their response role and possessed the plant technical knowledge to determine the adequacy of the contractor's response.

E.4 RATING

A rating of NEEDS IMPROVEMENT is assigned to the area of WTS emergency response decision-making.

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

E.5 OPPORTUNITIES FOR IMPROVEMENT

This Independent Oversight review 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 DOE and contractor line management and prioritized and modified as appropriate, in accordance with site-specific programmatic emergency management objectives.

Carlsbad Field Office

- Strengthen CBFO training and response expectations to better support CBFO emergency response.
  - Approve and issue the revision to the Facility Representative Program Plan that identifies initial and refresher training requirements for the DOE management representative position.
  - Consider incorporating roles and responsibilities for emergency response by the DOE management representative into the DOE management representative response checklist.
  - Consider revising the DOE management representative checklist to adopt the same format as other EOC position checklists, to include additional detail, as necessary, and make it a controlled document.
  - Consider formalizing the content of the Facility Representative emergency response notebook.

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- Reinforce expectations for use of EPIPs during site events.
  - Consider conducting a detailed causal analysis of FSM/CMRO performance weaknesses to identify barriers to effective performance. Share lessons learned with all FSM/CMRO crews and CMT members.
  - Assign an evaluator to specifically assess procedure usage by the FSM/CMRO crew during sitewide drills and exercises.

- Strengthen the training provided for FSMs by conducting limited-scope, timed drills and evaluated activities that focus on performing the critical, time-urgent responsibilities without the assistance of other support resources, such as the EOC staff.

- Consider providing real-time dispersion analysis capability for TRU waste chemical constituents to enhance consequence assessment capabilities in the EOC.

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APPENDIX F

Readiness Assurance

F.1 INTRODUCTION

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

This inspection examined the processes by which the Carlsbad Field Office (CBFO), the Albuquerque Operations Office (AL), and the DOE Headquarters Office of Environmental Management (EM) provide guidance and direction to and maintain operational awareness of the Waste Isolation Pilot Plant (WIPP) emergency management program. The inspection also included a review of Westinghouse TRU Solutions, LLC (WTS) emergency management self-assessments and reviewed the status of actions taken to address program weaknesses previously identified during the May 2000 program review conducted by the Office of Independent Oversight and Performance Assurance (OA), as well as weaknesses identified by AL and EM.

F.2 STATUS AND RESULTS

F.2.1 DOE Assessments and Performance Monitoring

The May 2000 OA emergency management program review determined that the Carlsbad Area Office (now CBFO) was engaged in providing line management oversight of the WIPP emergency management program, although the structuring of the Carlsbad Area Office assessments and the level of programmatic awareness were not sufficient to prevent key weaknesses that existed in several areas. Corrective actions have been effective and the process by which CBFO verified the closure of findings from the May 2000 OA emergency management program review was rigorous. During that process, CBFO also identified additional actions necessary to more fully address the weaknesses. It should be noted that the corrective actions were applicable to the base emergency management program in existence at the time of the May 2000 OA review. Since then, a hazardous materials emergency management program has been implemented, which required new, more complex response processes and procedures and a necessarily higher level of knowledge and skill in their use.

Through their line management oversight activities, CBFO—with support from EM's Office of Safety, Health and Security (EM-5) and AL—has maintained an overall awareness of the emergency management program status, identified areas for improvement, and provided effective direction to WTS. In addition to routine meetings and communications with the WTS emergency management program manager, CBFO performance monitoring activities include reviewing and approving program documents, assessing program elements, and evaluating performance during annual exercises. The CBFO emergency

management program manager reviews and approves the WIPP emergency plan and the emergency readiness assurance plan prior to issuance, and an evaluation of these documents was included in CBFO annual assessments. Additionally, CBFO reviewed the draft exercise scenario for the fiscal year (FY) 2002 annual emergency management sitewide exercise, and provided comments to WTS that resulted in a more challenging test of onsite and offsite response capabilities.

For the past two years, assessments of the emergency management program have included an evaluation of program elements as well as an evaluation of the annual exercise. AL's responsibilities for supporting CBFO exercise evaluations are formally documented in a memorandum of agreement. For a May 2002 assessment, AL provided an experienced team of six evaluators to assist CBFO. The input provided by AL indicates that a thorough review was performed; however, a report has not been issued by CBFO. EM-5 conducted an emergency management program and exercise evaluation in June 2001. This assessment identified weaknesses and improvement items and also provided well-reasoned corrective action recommendations that resulted in some significant program improvements.

In addition to annual assessments, CBFO commissioned an assessment of wildland fire hazards at WIPP as well as a lessons-learned study following the September 11, 2001, terrorist attacks in the United States. In November, 2000, CBFO requested the Bureau of Land Management to evaluate the wildland fire hazards at WIPP. This action was completed prior to the Secretary's memorandum directing all DOE sites to evaluate and document wildland fire hazards. The September 11 lessons-learned study included information about the WIPP responses and captured observations from Federal staff, emergency management personnel, and security managers. The resulting report provides specific recommendations for improving onsite and offsite coordination and communications, and also for improving the defensive posture of the site. Both of these reports were formally transmitted to WTS for action.

To implement these oversight activities, CBFO relies on the experience and knowledge of the emergency management program manager to ensure that emergency management requirements applicable to the field office are met. Although the requirements and expectations for oversight activities are not clearly documented, CBFO oversight of the WIPP emergency management program is effective. Additionally, the WTS document control system is used to ensure that CBFO reviews and approves important program documents, such as the emergency plan and emergency planning hazards assessment, prior to issuance. However, clearly-documented requirements and expectations for CBFO performance monitoring would help ensure that future performance is not adversely affected if personnel turnovers or position changes occur.

Overall, CBFO performance monitoring of the WIPP emergency management program is effectively implemented through program assessments, exercise evaluations, document reviews, and routine communications. The feedback provided to WTS from these activities has resulted in significant program enhancements and improved emergency response capabilities. Additionally, CBFO has been proactive in identifying and addressing lessons learned that have applicability to the emergency management area. Notwithstanding the above, the requirements and expectations for CBFO oversight activities are not clearly documented and, hence, the program is dependent on corporate knowledge to maintain its effectiveness.

F.2.2 Contractor Assessments and Issues Management

OA's May 2000 emergency management program review determined that the site contractor had implemented many effective feedback and continuous improvement mechanisms for the site's emergency management program, and that additional enhancements to the programs were ongoing. The contractor self-assessments provided meaningful feedback, but the process used to manage corrective actions was

not well defined, and many corrective actions were not identified, tracked, and implemented in a timely manner. Corrective actions have been effective in addressing the identified weaknesses.

As stated in the previous sections of this report, WTS has implemented significant improvements in all of the emergency management program elements that were evaluated by OA. Weaknesses identified in this report are attributed primarily to the complexities of implementing a new hazardous materials emergency management program. With the one exception (the prompt initial notification element of the finding related to plans and procedures), WTS has adequately addressed the OA findings from the May 2000 emergency management program review at WIPP. For the most part, other weaknesses identified in the May 2000 OA report have also been addressed. Additionally, WTS is effectively addressing issues identified by assessments, drills, exercises, and occurrence reports. In the past two years, the WTS Quality Assurance Department has conducted four assessments that included various elements of the emergency management program. These are in addition to the training, drill, and exercise evaluations conducted by the WTS emergency management team. Requirements for issues management and corrective action tracking have been incorporated in plans and procedures specific to the activity, such as occurrence reporting and training, and issues are tracked in the WIPP commitment tracking system. With few exceptions, observations and findings are clearly documented and tracked to completion. In addition, WTS has effectively addressed issues identified by organizations external to WIPP, such as the assessment of wildland fire hazards.

DOE expectations for performing an annual assessment of the emergency management program encompassing all aspects of emergency management have been incorporated into the WIPP emergency plan. However, all emergency management program elements have not been evaluated on an annual basis. The FY 2002 emergency management assessment, conducted to meet the annual requirement, was limited in scope and did not encompass all aspects of the program. The assessment focused on a follow-up of previously identified deficiencies and evaluated newly added program elements resulting from transition to the hazardous materials emergency management program. However, the assessment report included only a brief, high-level summary of the assessment results and did not include a discussion of specific strengths, weaknesses, or areas for improvement. The weaknesses with and causes for the limited assessment were self-identified by WTS and discussions between the Quality Assurance Department and the emergency management program manager on the best approach for future assessments were ongoing at the time of this OA review. To ensure that future annual assessments of the emergency management program provide a more comprehensive review, WTS initiated a corrective action request. The corrective action request process is a formal mechanism that will ensure that the issue is assigned and evaluated, corrective actions are identified and tracked, and effective implementation is verified by the Quality Assurance Department.

Overall, the WIPP emergency response capabilities have significantly improved since the May 2000 OA review of the emergency management program. WTS has effectively identified and addressed additional weaknesses through an ongoing program of drills, exercises, and programmatic assessments. WTS has also incorporated requirements for corrective action tracking in the applicable procedures, and issues are being effectively tracked. In addition WTS has evaluated recommendations and implemented programmatic improvements using feedback from assessments conducted by CBFO and EM-5. Although the FY 2002 WTS emergency management assessment did not include an evaluation of all program elements, prompt corrective actions were initiated to ensure that subsequent annual assessments will be comprehensive.

F.3 CONCLUSIONS

In conclusion, although the CBFO process and expectations for operational awareness of the program are not well documented, CBFO performance monitoring of the WIPP emergency management program is

proactive, and CBFO provides an effective overall awareness of the emergency management program status, identifies areas for improvement, and provides direction to WTS. Additionally, WTS assessments and management of both internally and externally identified issues have significantly improved the WIPP emergency management program.

F.4 RATING

A rating of EFFECTIVE PERFORMANCE is assigned to the area of DOE assessments and performance monitoring.

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

F.5 OPPORTUNITIES FOR IMPROVEMENT

This Independent Oversight review 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 DOE and contractor line management and prioritized and modified as appropriate, in accordance with site-specific programmatic emergency management objectives.

Carlsbad Field Office

- Develop a structured program that formally defines the requirements and expectations for CBFO oversight of the WIPP emergency management program.

  - Clearly convey management's expectations for such activities as thresholds and methods for documentation of observations, corrective action follow-up, and contractor response.

  - Establish a list of training, skills, and experience necessary for a new individual assigned responsibility for CBFO oversight of the WIPP emergency management program to ensure that the individual is appropriately qualified.

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- Consider using the evaluation criteria contained in draft Volume VI of the DOE Guide 151.1A, *Emergency Management Evaluations*, to develop evaluation checklists and conduct annual emergency management assessments.

- Include positive as well as negative results in emergency management assessment reports for all elements evaluated to provide more thorough documentation of assessment scope and to facilitate recognizing and evaluating performance trends.

- Consider segmenting the conduct of annual assessments and distributing the assessment activities over the year to facilitate a more detailed look at certain elements, where appropriate, and to help ease cyclic workloads for emergency management staff and other assessment personnel.