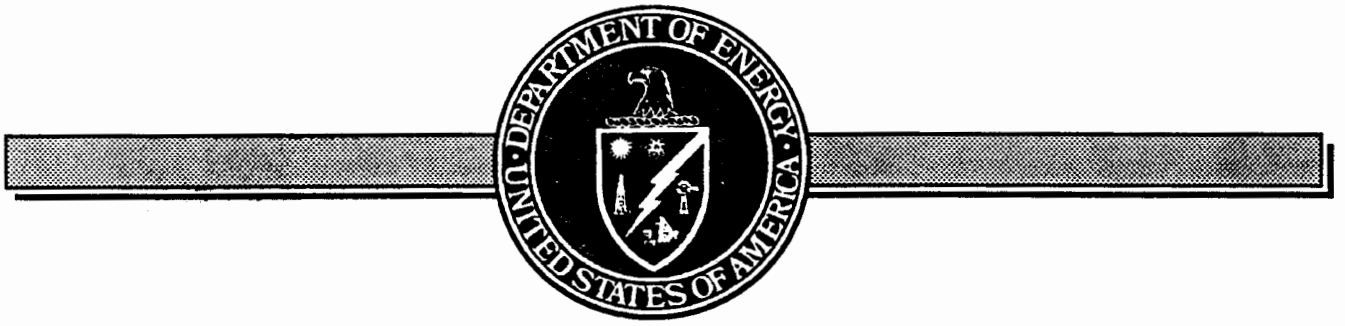
Environmental Restoration and Waste Management



Operational Readiness Review of the Waste Isolation Pilot Plant

ADDENDUM

Summer 1991

OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

ADDENDUM TO THE

OPERATIONAL READINESS REVIEW

of the

WASTE ISOLATION PILOT PLANT

Prepared by:

Thomas C. Elsasser, Team Leader

Owen O. Thompson, Deputy Team Leader

Approved by:

Edwin E. Kintner, Senior Advisor

Edward A. Mason, Senior Advisor

Thomas H. Pigford, Senior Advisor

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ACRONYM LIST

Acronym	Definition
AL	DOE Albuquerque Field Office
AL EM	AL Office of Energy & Special Projects (responsible for EM work)
ANL	Argonne National Laboratory
CFR	Code of Federal Regulations
CMR	Central Monitoring Room
CRA	Criteria and Review Approach
CVA	Compliance Visits of Assistance
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
ECO	Engineering Change Order
EEG	New Mexico Environmental Evaluation Group
EH	DOE Office of the Assistant Secretary for Environment, Safety and Health
EM	DOE Office of Environmental Restoration and Waste Management
EM ORR	Environmental Restoration and Waste Management Operational Readiness Review
EM WIPP	DOE EM Headquarters line organization responsible for WIPP
EPA	U.S. Environmental Protection Agency
ES&H	Environmental Safety & Health
FEIS	Final Environmental Impact Statement
FOSS	Facility Operations Shift Supervisor
FSAR	Final Safety Analysis Report
I&C	Instrumentation & Control

ACRONYM LIST

Acronym	Definition
INEL	Idaho National Engineering Laboratory
INPO	Institute of Nuclear Power Operations
ISC	Integrated Systems Checkout
LCO	Limiting Condition of Operation
MOU	Memorandum of Understanding
MSHA	U. S. Department of Labor, Mine Safety and Health Administration
NQA-1	ASME/ANS Quality Assurance Requirements for Nuclear Facilities
NRC	U.S Nuclear Regulatory Commission
NS	DOE Office of Nuclear Safety
ORR	Operational Readiness Review
OSHA	U.S. Department of Labor, Occupational Safety & Health Administration
OSR	Operational Safety Requirements
P&ID	Piping and Instrument Drawing
PMI	Preventive Maintenance Instructions
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act of 1980
Sandia	Sandia National Laboratories
TRU	Transuranic
UOR	Unusual Occurrence Report
Westinghouse	Westinghouse Waste Isolation Division
WIPP	Waste Isolation Pilot Plant
WPO	DOE WIPP Project Office

II. DISCUSSION

General

The process for resolution of a Finding was based on the following steps;

- Proposed actions to resolve the Finding were provided by the responsible WIPP organization to EM for review and approval.
- After approval by EM and implementation by the responsible organization, the resolution was transmitted to the EM ORR Team Leader or Deputy Team Leader for initial review.
- An EM ORR Technical Expert reviewed, and if appropriate, accepted the resolution.
- The EM ORR Technical Expert documented the basis for resolution of the Finding.
- The EM ORR Team Leader or Deputy Team Leader provided for physical verification of the resolution when document review alone was not sufficient to assure proper implementation of the resolution.

Appendix A-1 contains all Pre-Start Findings with their associated Basis as provided in the August 9 report. Also included is the Status which provides a discussion of the actions taken to close out the Pre-Start Finding. All Pre-Start Findings have been closed by the EM ORR Team. However for the following Pre-Start Findings a punch-list of specific actions must be completed and verified by the WIPP line management and EM (including the Oversight Organization, EM-20) prior to performing operations using TRU waste for the identified finding, as follows:

1. H.2-5 The project participants have proposed and the EM ORR Team has agreed that methods alternate to the existing method of bin leak testing, MILRT, are preferable for achieving safety and experimental goals which were proposed to be achieved by this leak testing. In order to implement these alternate methods a number of changes to QA Manuals, the FSAR Addendum, interface agreements with the waste generation sites, and operating procedures are required. These changes must all be in place, including associated configuration management and training, before bins containing TRU waste can be accepted at the WIPP site.

2. F.2-3 Observations and findings from audits and associate activities related to the end to end testing completed in response to this finding and from other preparatory work at INEL has identified a number of minor difficulties and interface problems with the packaging and shipping of the test bins. When taken in their entirety these difficulties and problems raise questions regarding the functioning of this multi-organizational program for routine packaging and shipping of TRU wastes. DOE HQ management should agree to organize a comprehensive management and program review of the WIPP related TRU waste packaging and shipping program, including loading, maintenance, emergency preparedness/response, verification, shipping, traffic management, and public affairs. This agreement should include an Action Plan identifying major organizations involved, key reviewers, and method of closeout (e.g., an ORR of the waste packaging and shipping program for routine operations). The Action Plan should address other waste generation sites which will be shipping TRU waste to the WIPP site as well as the audit findings addressed in EM ORR Team Finding F.2-1.

3. F.2-3 The end to end demonstration was terminated with proper receipt of the test bin in the WIPP Waste Handling Building and did not include emplacement, hookup, disassembly and retrieval of the bin. This portion of the demonstration should be completed prior to handling of a bin containing TRU waste. In view of possible activities to stabilize this room (see EM ORR Team Finding H.5-1) it should simulate as closely as possible the conditions in room 1, panel 1 anticipated during the receipt of the first bins containing TRU waste.

4. F.2-4 Provide documentation of the completion of the WPO audit of shipping at INEL and identification and course of resolution of the nine findings that could have a critical impact on waste shipping. These resolutions should be completed prior to shipment of TRU waste.

Appendix A-2 contains all Post-Start Findings with their associated Basis as provided in the August 9 report, including a new Post-Start Finding (F.1.1-12) that requires a comprehensive emergency preparedness exercise before the end of this calendar year. The Status provides additional explanation of the EM ORR Team's Post-Start determination, including any recent actions

toward resolution. Appendix A-2 should be used in conjunction with Appendix 5 of the August 9, 1991, report to obtain full details of the EM ORR Post-Start Findings.

The EM ORR Team Leader recommended that the Action Plan to address Post-Start Findings should be submitted within 90 days. The EM ORR Team believes this schedule is reasonable and will not place an excessive burden on the WIPP Program while maximum attention is needed on startup activities. The EM oversight organization (EM Office of QA/QC) is assigned responsibility for closing the remaining open Post-Start Findings. An approach similar to the closure process for the Pre-Start Findings will be used. It should be noted that the EM ORR Team expects that Post Start Findings will be resolved expeditiously. Actions completed to date provide evidence that the Team's expectations for "expeditious" resolution can be met.

Comments from the Defense Nuclear Facilities Safety Board

In Recommendation 91-2 dated April 26, 1991, the DNFSB recommended that the Department conduct a final, comprehensive readiness review of the WIPP Project. By letter dated June 5, 1991, the Department informed the DNFSB that a team was being assembled to conduct the EM ORR as recommended by the DNFSB. On May 29, 1991, the DNFSB provided comments on the EM ORR draft Implementation Plan; the comments were incorporated into the Implementation Plan used by the team and a revised Implementation Plan was sent to the DNFSB on August 2, 1991 and included as Appendix 1 to the EM ORR Report dated August 9, 1991. The DNFSB provided additional comments on the list of DOE Orders considered by the EM ORR Team and the Criteria and Review Approaches (CRAs) by letter dated June 28, 1991. These comments were incorporated into the CRAs used by the EM ORR Team, as discussed in the response to the DNFSB (Appendix A-3).

The EM ORR team leadership and EM management met with the DNFSB on August 20, 1991 to discuss the EM ORR Team results and report, including the basis for discriminating between Pre-Start Findings and Post-Start Findings. The Board suggested that, based on the information available to them, some of the Post-Start Findings appeared to meet the EM ORR Team criteria that would require resolution before start-up. Accordingly, additional clarifying information on the EM ORR Team's determination is provided in Appendix A-2.

The EM ORR Team staff and the DNFSB and their staff also discussed the possibility that the EM ORR Team findings, when considered in their entirety, could indicate systemic problems above those identified in specific findings. The EM ORR Team leadership and Senior Advisors made another assessment of the EM ORR report in that context and discussed potential systemic

problems. This group concluded that the primary overall systemic problem was identified by the team as well as the DOE oversight groups; namely the lack of clear DOE authority and responsibility for the WIPP Program. This problem was a root cause of a number of Findings (both Pre-Start and Post-Start Findings) and has received considerable attention by the EM ORR Team and up to the highest levels in DOE. Substantial WIPP management changes have been made and the EM ORR Team leadership is confident that a program has now been identified for effective DOE management of the WIPP Program. The expected result is that the subordinate programs such as Quality Assurance and WIPP waste transportation that have a systemic component will be brought into compliance with DOE requirements by the new organization during the course of resolving the specific EM ORR Post-Start Findings.

Independent Oversight Reviews by EH and NS

The Assistant Secretary for Environment, Safety and Health (EH) provided a report of EH oversight of the EM ORR in a memorandum dated August 21, 1991 (Appendix A-4). EH concluded that the EM ORR was adequate to assess the readiness of the facility for startup.

The Office of Nuclear Safety (NS) provided a startup assessment of the WIPP Dry Bin Scale Test Phase of operations by memorandum dated August 28, 1991 (Appendix A-5). NS identified findings and concerns in two general categories: (1) safety analysis and (2) operational readiness for startup. The NS report recognized that the EM ORR Team had identified the major concerns and was resolving them as part of the pre-start effort, but specifically identified 18 items that NS considered "pre-startup". Three of these NS "pre-startup" items were different, to some degree, from the EM ORR Pre-Start Findings. The EM Line organization developed an action plan response dated August 30, 1991, that included immediate compensatory action along with additional post-startup action for final resolution of the three NS "pre-startup" items that were not covered by the EM ORR Pre-Start findings. The EM ORR Team reviewed the NS report and the EM response and concluded that there are no additional deficiencies identified by NS that require action prior to the start of the Dry Bin Scale Test Phase of operations.

Evaluation of Approved Final Safety Analysis Report Addendum

At the time of the EM ORR, the Addendum to the Final Safety Analysis Report (FSAR) that addresses the Dry Bin Scale Test Program was in the final review phases. The EM ORR Team reviewed the approved FSAR Addendum and identified changes compared with the FSAR documentation available during the EM ORR. The changes primarily involved additional commitments in the FSAR Addendum

that would have to be included in procedures. The EM ORR Team was provided confirmation that the changes had been incorporated into facility operating procedures and accordingly confirmed that the EM ORR review effort, findings and conclusions are consistent with the approved FSAR Addendum.

III. CONCLUSIONS

The objective of the EM ORR was to verify DOE's safety, health and environmental compliance and management readiness to package, transport and receive at WIPP limited quantities of TRU waste for the Dry Bin Scale Test Phase of operation. The EM ORR Team concludes that this objective will have been met upon completion of the punch-list items identified in Section II of this Addendum.

APPENDIX A-1

PRE-START FINDINGS WITH STATUS

EM ORR REPORT ADDENDUM 1

PRE-START FINDING RESOLUTION

* **Finding H.1-1:** Inconsistencies exist within and among the programs established at the WIPP to identify and control the design and testing of Operational Safety Related equipment, i.e., equipment controlling a Limiting Condition for Operation (LCO). (Sub-Objective H.1.1)

Basis: The Configuration Management Plan (WP09-009) specifies that the official list of Operational Compliance Equipment (OCE) be maintained on drawing 412-X-001-W, OSR-Related Equipment. Discrepancies were as follows:

- Equipment associated with the Fire Suppression System are not included on drawing 412-X-001-W, even though it is specified in the FSAR as an LCO-related system.

- Equipment associated with the Test Bin Overpressurization Protective System and Test Bin Gas Monitoring System are not included on drawing 412-X-001-W even though they are specified in the FSAR Addendum as an LCO-related system.

Inconsistencies exist between equipment identified in procedure WP04-007, OSR Administrative Plan, and equipment listed on drawing 412-X-001-W, OSR-Related Equipment. These inconsistencies consist of different methods used to identify OSR-related equipment.

Status: CLOSED
Four Engineering procedures and the Engineering Procedures and Configuration Management Plan have been modified to require that design changes be verified against FSAR requirements. These modification were verified to be complete and to resolve this finding.

* **Finding H.1-3:** Procedures which define the design review and approval process do not consistently require that a review be conducted to verify that a new design or design modification affects compliance with FSAR requirements for design of the WIPP. (Sub-Objective H.1.4)

Basis: A review of the Westinghouse ORR results identified this finding as an open issue and required a revision to Procedure WP09-007, Engineering and Design Document Preparation. Procedure WP09-007 is one of a group of principal procedures used to control the design review and approval process. (These procedures are listed below.) The procedures require several levels of reviews and approvals against regulatory criteria.

- WP09-009, Configuration Management Plan
- WP09-018, Design Verification
- WP09-022, Design Classification
- WP09-024, Configuration Control Board

Status: CLOSED
Four Westinghouse Engineering Procedures and the Engineering Procedures and Configuration Management Plan have been modified to require design changes be verified against FSAR requirements. These modifications satisfy this finding.

* **Finding H.2-1:** Two LCOs (10.1.1 and 10.1.2) are not covered by approved surveillance procedures. These procedures are required to be in effect before Dry Bin Scale Testing can begin. (Sub-Objective H.2.6)

Basis: Procedures, surveillance requirements and calibrations for CAMs and ARMs are in place and are being performed as required in support of safe handling operations. The surveillance test program, including approval and scheduling aspects, was reviewed and, except where noted below, was considered adequate.

A review of LCOs and OSRs for Dry Bin Scale Test Phase instrumentation showed two areas where the FSAR requirements are not met. LCOs 10.1.1 and 10.1.2 specify requirements for Test Bin Overpressurization and Test Bin Gas Monitoring, respectively. Appropriate surveillance procedures are not included in the surveillance test program. Interviews with operations personnel indicated that these procedures are in draft.

Status: CLOSED
The LCO's have been rewritten to include these LCO's; appropriate surveillance procedures have been written, and the requirement for semi-annual relief value calibration added. These actions are adequate to close this finding.

* **Finding H.2-4:** There are no apparent controls exercised over the use and configuration of special test equipment used to monitor and condition the waste bin environment. (Sub-Objective H.2.5)

Basis: Some special test equipment necessary to perform evolutions on the bins was found to be incorrectly assembled, questionable as to leak tightness, and generally uncontrolled relative to its use during performance of ISC waste handling procedure steps. The special test equipment includes:

- WP05-WH1809, Bin Pressurization: Bin Pressurization Unit; Regulator Assembly
- WP05-WH1803, Argon Purge of Bin: Purge Exhaust Assembly with RAF Assemblies Containing RAFs; Rack Gas and Manifold Assembly
- WP05-WH1801, Oxygen Gettering of Bin: Oxygen Getter Cart with Associated Supply, Return, and Sensing Hoses and RAFs.
- WP05-WH1806, Bin Sampling: Gas Sample Manifold
- WP05-WH1910, Bin Equipment Connection for Emplacement: Primary and Secondary Instrumentation and Relief Manifolds; Rupture Disk and Mechanical Relief Assemblies.

Examples of inconsistencies noted during the ISC are as follows:

- Argon Purge Exhaust Assembly required reconfiguring prior to use during performance of the Argon Purge U/G. The reconfiguring was performed with verbal authorization from the WHS.
- The Rupture Disk and Mechanical Relief assemblies were incorrectly configured and were partially installed on the bin prior to recognizing that an incorrect configuration existed. The assemblies were corrected and the procedure allowed to proceed.
- Leak tightness of the Gas Sample Manifolds was identified as questionable.
- Procedures do not contain figures or sketches to assist or direct installation of sometimes complex test equipment assemblies, e.g., Argon Purge Exhaust Assembly which requires six (6) different connections.

Additional examples are provided in Sub-Objective H.2.5.

Status: CLOSED
A new procedure has been developed and implemented for control of

Sandia-supplied equipment and a number of changes have been made on the process for review of that equipment. Following a number of rewrites, ORR Team Expert review finds the procedure adequate to close this Finding.

* **Finding H.2-5:** Instrumentation and processes used in performing the Bin Leak Rate Test yielded unreliable and questionable results. Complete operator procedures for the leak test have not been developed. (Sub-Objective H.2.1)

Basis: The Bin Leak Rate Test (WP05-WH1807) was performed during the ISC. First, the test bin is pressurized and the temperatures of three sensors on the test bin and of a sensor on a separate leak-tight reference chamber are required to agree within 0.0001°F. No written procedure covers the temperature equalization. The operator then activates a computer system that measures the time-dependant pressure in the test bin relative to that in the reference chamber and that measures and averages the time-dependant temperatures from the four sensors. From these data a time-dependant volumetric leak rate is automatically computed and displayed. After data are recorded and displayed for one hour, the procedure requires the cognizant engineer to read the data and determine if the leak-rate criterion of 0.001 cm^3/sec is satisfied. However, the values displayed are the average cumulative leak rates, averaged from the beginning of the test, whereas the criterion applies to an instantaneous leak rate.

The data displayed during the ISC indicated a negative leak rate, of a magnitude about fourfold greater than the criterion. Assuming that the leak-rate results are meaningful, a negative leak rate indicates that air is leaking into the pressurized container. The record of acceptance tests of the leak rate system shows that similar negative values were measured in some of the tests, with no indication that negative values would render the test equipment unacceptable or would be questionable.

The Cognizant Engineer reviewed the ISC test data and stated that, based on his experience with the testing equipment, a negative leak rate indicates that the bin is leak tight and meets the criterion of 0.001 cm^3/sec. The basis for that conclusion has not been explained. No written basis was provided.

Westinghouse engineering staff later explained that for the leak-test apparatus to perform satisfactorily the temperature of gas within the test bin must be everywhere within 0.0001°F the temperature of the sensors. Westinghouse believes that the average temperature within the bin is within 0.0001°F the sensor temperatures during the one-hour leak test, but no tests or calculations have been made to show that the spatial variation of temperature within the bin is less than 0.0001°F. If the gas temperature is as uniform as believed, no physically reasonable explanation of the negative leak rates observed during the ISC and during the earlier acceptance tests have been offered by Westinghouse.

The logic of averaging the temperature measured from the sensor

on the reference chamber with the temperatures measured on the bin surface was not explained. It appears to be an incorrect way of correcting for temperature changes.

Status: CLOSED
The Project participants (Westinghouse, Sandia, and DOE) have made a review of the entire basis for leak rate testing, including both safety and experimental requirements. They have concluded that leak rate, per se, is not a criteria but, rather, is an indicator that criteria relating to bin contamination, in-leakage of oxygen, or loss of generated gases may be violated. Recognizing that the current leak rate testing, MILRT, is not reliable and can be misleading they have chosen to develop alternate, more direct, approaches to assuring compliance with these criteria. Necessary QA Manual, FSAR, interface agreements with waste generators, and operating procedure changes to accommodate these alternate approaches must be completed, and the requirement for these changes is identified as a punch list item in Section II of this Addendum.

* **Finding H.3-1:** Many procedures for systems important to safe waste handling are not yet developed or are currently being revised. (Sub-Objective H.3.1)

Basis: Prior to commencement of the ISC there were approximately 30 procedures which were new and were undergoing field verification. The majority of these procedures were observed during the ISC. Changes to these procedures as a result of conduct of the ISC must be verified prior to start of waste handling operations.

Status: CLOSED
Waste handling procedures supporting the ISC were reviewed and verified to be approved for use. The number of procedure change notices against procedures is indicative of an effective field verification and walkdown process. Additionally, during conduct of the ISC, approximately twenty normal and emergency operating procedures were field verified by the EM ORR Technical Expert as part of overseeing conduct of the ISC.

* **Finding H.3-4:** There is no written policy which permits deviation from written procedures during an emergency to protect personnel or equipment. (Sub-Objective H.3.2)

Basis: Conduct of Shift Operations Procedure, WP04-AD3002, and related procedures do not explicitly define the cited policy.

Status: CLOSED
Procedure WP 04-AD3002, Conduct of Shift Operations, has been modified to permit deviation from written procedures during an emergency. The FOSS and Operations Managers were interviewed by the EM ORR Technical Expert to confirm their understanding of the procedure modification.

* **Finding H.3-5:** Performance of the Flammable Gas Concentration High Drill (step 9.5.12 of WP05-WH1501) did not achieve drill goals and objectives and is evaluated as not being effective in demonstrating adequate operator and WIPP response to a Flammable Gas Concentration High Condition. (Sub-Objective H.3.4)

Basis: The drill was initially performed underground on Day 3 of the ISC. The drill (step 9.5.12 of WP05-WH5101) was inadequate based on the following deficiencies:

- Drill, as written, does not have as an objective verification that the CMR/FOSS is notified that an LCO has been entered and an action statement is invoked.

- Drill was improperly initiated, i.e., not in accordance with step 9.5.12(A). This was done to expedite the ISC; however, the action imposed too great an artificiality on the drill scenario.

- Problems encountered with acquiring the Argon purge rig distracted operators from the drill scenario.

- The following artificialities and minor difficulties with the drill scenario and the Argon purge procedure (WP05-WH1803), when evaluated as a whole, exercised a negative impact upon effectiveness of the drill scenario to demonstrate an adequate response to the High Flammable Gas Condition.

    - Lack of an operable Helium Leak Detector precluded taking a sample, which was one of the corrective actions developed between the PI and WHS

    - The Argon purge rate as specified in procedure WP05-WH1803 was too low by at least a factor of 10. (Current corrective action is to PCN procedure to increase Argon purge from an indicated 10 to an indicated 100.)

    - Configuration of Argon tanks and associated manifolds and indicators imposed difficulties on the operators to easily operate and view valves and pressure/flow indications.

Based upon the observations made during the performance of the drill, it is the recommendation of the EM ORR evaluator that the drill be conducted again.

Status: CLOSED
Westinghouse drills on August 1 and August 5, 1991, verified that shortcomings identified during ISC (step 9.5.12 of WP05-WH1501) have been adequately addressed.

* **Finding H.3-6:** Artificialities assumed as part of the ISC, associated with oxygen gettering, purging, and Miniature Integrated Leak Rate Test (MILRT) of the bins, impair demonstrating the adequacy of important, affected procedures, equipment and personnel. (Sub-Objective H.3.4)

Basis: The processes of oxygen gettering and bin purging were to be stopped once the processes were demonstrated to be achieved and operational. As a result, the ability to reduce oxygen concentration in the bins to the levels indicated below would not be demonstrated prior to actual waste bin arrival. The net effect is that the procedures, equipment and personnel actually installed at the WIPP would not be tested to demonstrate their ability to achieve the following bin oxygen concentrations.

- Nitrogen Purge of Bin (WP05-WH1804): Oxygen concentrations greater than 3.8%, but less than 4.0%
- Argon Purge of Bin (WP05-WH1803): Oxygen concentrations less than or equal to 500 ppm
- Oxygen Gettering of Bin (WP05-WH1801): Oxygen concentrations less than or equal to 10 ppm
- Bin Leak Rate Test (WP05-WH1807):Leak rate less than or equal to 1×10^{-3} (0.001) cc per second.

Status: CLOSED
A bin purging and gettering demonstration commenced on July 31, 1991 and completed August 6, 1991. Documentation of the demonstration has been reviewed by the EM ORR Technical Expert. Additional purging and gettering has continued beyond this demonstration. The bin leak rate demonstration portion of this Finding is addressed under Finding H.2-5. These actions are adequate to resolve this Finding.

* **Finding H.3-8:** There does not exist a WIPP procedure, similar to the ISC test procedure (WP05-WH5101), which controls and directs the performance of principal evolutions which must be performed upon receipt of a waste bin, through and including bin emplacement underground and its routine monitoring. (Sub-Objective H.3.1)

Basis: A procedure similar to WP05-WH5101 currently does not exist. Evolutions which must be performed on a bin, based upon the waste characterization and other experimental considerations, are identified to Westinghouse by Sandia through use of a Work Request. Sandia currently has a procedure under development (an "interactive procedure") which instructs Sandia personnel in the preparation of bin-related work requests.

The assignment of responsibilities, the sequence in which detailed activities are to be performed, and the control of very specific bin evolutions are currently defined in a portfolio of approximately 30 separate procedures. The manner and method of placing these separate procedures into an integrated bin handling process is currently not available.

Status: CLOSED
A procedure has been developed, which the EM ORR Team Expert finds adequate to satisfy this finding.

* **Finding H.4-2:** Assurance is not provided that procedures for facilities and systems for operational support services for the Dry Bin Scale Test Phase have been developed and implemented. (Sub-Objective H.4.5)

Basis: The Quality Assurance Manual, Rev. 13, has not been approved and the impact on the implementing procedures has not been assessed by the facility management. The existing Quality Assurance implementing procedures are somewhat suspect as to completeness/readiness. (See Sub-Objective F.1.6.) The baseline requirements for the Dry Bin Scale Test Phase appear to be under development. A planned effort is required to bring baseline documentation to an acceptable level.

Status: CLOSED
The internal WIPP ORR and additional Westinghouse efforts relating to RCRA and VOC have included audits and evaluations to assure that procedures for facilities and systems for operational support services are adequate. The ORR team made an on-site review of the closure process and the remaining outstanding items and found that this finding has been properly addressed.

* **Finding H.5-1:** The stability of the excavation in Room 1, Panel 1 can only be projected with a high degree of confidence for a period of seven years, i.e., two years beyond the start of the Dry Bin Scale Test Phase. (Sub-Objective H.5.3)

Basis: No formal plans have been prepared to enhance the roof support systems in Panel 1 and to assure that the Dry Bin Scale Test Program can be safely and successfully accomplished during the next five to nine years.

The history of room and pillar design criteria, the sequence and method of excavation, roof bolt patterns and specifications, geological structure and geotechnical monitoring data were examined and analyzed, and a visual examination of the excavations was made. The conclusions of this review concur with the findings of the Expert Geotechnical Panel on the Effective Life of Rooms in Panel 1.

Status: CLOSED
A design, procurement and installation program for enhancement of roof support systems has been initiated and is proceeding on an expedited schedule. The EM ORR Technical Expert participated in the design review effort and believes that the current actions will extend the period of room stability from a minimum of two years to a minimum period which will exceed the planned period of the Dry Scale Bin test program for those rooms.

* **Finding H.5-3:** No routine preventive maintenance examination has been made in the lined and unlined sections of the exhaust shaft since December 1990. The examination at that time was conducted with a remotely operated TV camera. Prior to December 1990, no preventive maintenance examination had been made since early 1988. This is not in accordance with DOE 4430.4A (Sections 3.2.1g and 3.2.2b). (Sub-Objective H.5.3)

Basis: This Finding is based upon examination of preventive maintenance records, conversations with Engineering Staff, and study of videotapes, from the December 1990 examination. Regular inspections, including one prior to the start of waste handling operations, should be conducted.

Status: CLOSED
The exhaust shaft was reexamined on 7/1/91 using a remote television camera, modified to provide enhanced visual resolution. Maintenance inspections are now scheduled quarterly. Methods of conducting detailed physical examinations, maintenance and repairs will be evaluated by 7/1/92. The ORR Team Expert believes these actions are adequate to resolve this finding.

* **Finding P.1-1:** Operations personnel have not been shown to be trained and qualified on all of the procedures that will be used for waste handling operations. (Sub-Objective P.1.2)

Basis: A review was conducted regarding the status of training on procedures for the Dry Bin Scale Test. While most Operations personnel have completed qualification and certification for their positions, they still must be trained on the procedures revised during the ISC.

Status: CLOSED
In preparation for ISC over 700 man hours of training were conducted and documented for new and revised procedures. Operator familiarity with the procedures was verified during the ISC. Training records were verified by the EM ORR Technical Expert.

* **Finding M.1-1:** A substantial amount of work in progress or backlog exists, including drawing revisions, procedure updates and modifications, and personnel training. This future work has been screened to determine individual work tasks required to be complete before start of operations. However, no overall review has been performed of the total work associated with post-startup time periods to determine if the magnitude of this work is greater than can realistically be accomplished under the increased demands of operations. (Sub-Objective M.1.1)

Basis: The following labor-intensive work efforts were noted by the EM ORR Team:

- Modifications in Progress - Sub-Objective M.1.2
- Drawing Revisions - Sub-Objective F.3.1
- Emergency Procedures - Sub-Objective F.1.1
- Environmental Procedures - Sub-Objective F.1.3
- Maintenance Procedure - Sub-Objective F.1.5
- Quality Assurance Procedures - Sub-Objective F.1.6
- Training For New Procedures - Sub-Objective F.1.9
- Worker Safety Procedures - Sub-Objective F.1.10
- TRANSCOM Procedures - Objective F.2
- Systematize Drawings and Procedures - Objective F.3

The magnitude of this work should be considered as part of preparations for operation. Industry practice and INPO guidelines on Organization and Administration, Conduct of Maintenance, and Conduct of Operations provide strong advice against allowing significant backlogs of work unless there is a realistic management plan to complete it in a reasonable time. No such planning has been performed for the WIPP Project, although Westinghouse is currently developing an integrated scheduling and budgeting system for WIPP. This effort or a similar effort should be expedited so that a comprehensive plan for managing the WIPP workload is available prior to conducting Dry Bin Scale Test Operations.

Status: CLOSED
As part of their normal budgeting process, Westinghouse develops a Work Plan, which identifies work to be performed in the subsequent fiscal year. The ORR Team has reviewed the 1992 Plan and confirmed that all important backlog items are included and can realistically be accomplished with existing resources. Based

on this review, the ORR Team is satisfied that this issue can be closed.

* **Finding M.5-1:** AL and EM WIPP expectations and directions to WPO are fragmented and sometimes burdensome. (Sub-Objective M.5.1)

Basis: This Finding is based upon interviews with mid-level managers of EM WIPP, AL and WPO. The predominant concern is in regard to decision-making authority and accountability for WIPP project decisions. Below the EM Director, the process for decision-making is not clear and often requires WPO to have excessive contact points and coordination.

WPO managers in Carlsbad are burdened by the expenditure of considerable time personally handling communications with four layers of management in EM as well as in AL.

Status: CLOSED
A change to the WIPP management structure has been implemented by EM in response to Findings M.5-1 and M.5-2. The new management structure, which includes a single chain of command and clearly identified responsibilities, will be in place prior to the scheduled start of waste handling operations. Agreements, plans and procedures necessary to fully document the operation of the new management structure will be completed within ninety days of the scheduled start of waste handling operations. Completion of these agreements, plans and procedures will be covered under Post-Start Findings M.4-2 and M.5-3. These actions are adequate to satisfy this finding for the start of operations.

* **Finding M.5-2:** Documented organizational commitments do not exist which organize the WIPP Program effectively and commensurate with its importance to DOE. (Sub-Objective M.5.1)

Basis: A complex project of this nature, with external local, state and Federal interfaces, public pressures and technical decisions requires full-time professional management with clear authority and responsibility delegated from the Director of EM to effectively manage the transition into the conduct of Dry Bin Scale Test Operations. Interviews with EM staff as well as WPO, AL, Westinghouse and Sandia personnel revealed that assignments and authorities of various members of the EM staff are not clear. It is clear that the Director, EM, is in charge of the Program. It is unclear as to the responsibility delegated to the WPO Project Manager. Field personnel, both DOE and contractor, had varying answers depending on their perception of the conflicting responsibilities. EM staff gave three distinctively different answers for the four people interviewed when asked about management of the WIPP Project.

Where the scope of the WIPP Project extends beyond Westinghouse authority, the accountability for performance is vague and characterized by relationships which are often less than supportive. Those interfaces which are of greatest concern involve the following functions: Quality Assurance, the characterization, packaging and transport of waste materials, and experiment design and operations.

DOE should perform a comprehensive organizational review of WPO, AL and Headquarters organizations and staff associated with the WIPP Program. The review should focus on developing and implementing an organization and staff fully capable of supporting the rigors of operating a nuclear facility, including clear and timely directions and integration of site WIPP contractors as well as off-site activities (ID and other shipping sites) and providing detailed and aggressive oversight of contractor activities. This review should consider consolidating responsibility and authority for the WIPP Program with strong and focused oversight by the EM line organization.

Status: CLOSED
The basis for closure of this Finding is the same as for closure of Finding M.5-1.

* **Finding F.1.1-1:** The WIPP Emergency Plan and supporting documents do not adequately address key emergency response functions and responsibilities to ensure that personnel carry out emergency duties and interfaces.

Basis: A number of key emergency functions and responsibilities have not been adequately defined and assumptions made in the Emergency Plan and supporting documents that emergency response personnel understand how business will be done in an emergency. Interviews and document reviews revealed that there is not a clear and consistent definition as follows:

- No procedure is in place for classification of WIPP emergencies; and, no procedure is in place for recovery/reentry planning, except in the event of a natural disaster.
- The DOE Facility Representative (emergency position) authorities and responsibilities for oversight of the emergency response and recovery are not clearly understood nor adequately defined.
- The Underground Facility Manager plays a significant role in response to an underground emergency; however, this emergency role is not documented.
- Provisions for communicating event information to the State of New Mexico (e.g., the Governor) are inadequate. Current procedures call for AL to handle this; however, the July 18, 1991 Emergency Exercise showed that information to the Governor should be provided in a more timely and direct manner, i.e., directly through the WIPP EOC.
- There are no provisions to notify the EEG organization of a WIPP site emergency.
- There are no special provisions for direction and control of public visitors/tour groups on site during an emergency. Such provisions should include informing the EOC of the presence and status of such groups so that possible public relations and legal liability considerations may be addressed by management.

Status: CLOSED
Several changes to emergency procedures have been made. These changes are adequate to satisfy this finding. The adequacy of the dose assessment function was evaluated as part of Finding F.1.1-10.

* **Finding F.1.1-2:** A training and qualification program is not in place to ensure that EOC, IC, and Radiological Assistance Team (RAT) personnel at WIPP and other DOE sites providing assistance for WIPP shipments, are prepared to carry out emergency duties and responsibilities.

Basis: There are no qualification criteria for emergency response positions in the EOC and the IC, and personnel in the EOC have not received formal training related to emergency responsibilities, functions, authorities and interfaces. During the June 18, 1991 observed exercise, management personnel in the EOC did not exhibit good understanding and performed weakly for important emergency response functions, including utilization of procedures/checklists, categorization and classification of events, and recovery planning.

There are no explicit qualification criteria for RAT personnel who respond to transportation emergencies involving WIPP shipments, and no training has been provided specific to their role and functions.

Status: CLOSED
A general program of emergency response for transportation shipments has been developed and implemented for EOC, Information center, and DOE RAT personal, including WIPP specifics, and a sufficient number of people have been trained. WIPP specific training is still required for AL, RF, and INEL personnel, and can be addressed as part of the closeout of Post-Start Findings F.2-7 and F.1.1-8.

* **Finding F.1.1-3:** Provisions are not complete to ensure that all emergency response equipment and facilities are maintained in a state of readiness.

Basis: There is no procedure for EOC surveillance, and records were not available to demonstrate that facility inventories and equipment checks are performed periodically.

Radiological Emergency Response Kits are not controlled (i.e., a seal device to deter tampering with kit contents); some equipment was observed to be incomplete and inoperable during the July 18, 1991 Emergency Exercise; and, surveillance records were not available in all cases.

Hazardous Material Emergency Response equipment is stored in an unsealed, uncontrolled storage trailer with other unrelated supplies. There is no inventory of materials kept at this location.

Additionally, note Finding F.1.10-3 related to the maintenance of respiratory protection equipment. DOE 5500.3A and NUREG-0654, FEMA Rep 1, cover these requirements as well as 29 CFR 1910.120.

Status: CLOSED
The WIPP Emergency Plan and Procedures and the WIPP Radiation Safety Manual have been modified to reflect the requirement for periodic inventory of emergency equipment. These procedures have been implemented and found to be adequate by the ORR Team.

* **Finding F.1.1-4:** The emergency public information organization, plan and implementing procedures are not complete to support communications with the public and news media in the event of a WIPP emergency.

Basis: DOE 5500.4 and 5500.3A require that WIPP have an emergency public information plan and personnel to staff emergency public information functions during event response. A WIPP emergency public information plan and implementing procedures were drafted to support the TRANSAX-90 exercise; however, these have remained in draft since November 1990, and have not been incorporated into the WIPP Emergency Plan. Additionally, adequate alternate staffing for emergency public information positions is not available. There is a commitment to select and train alternates by July 1, 1991; however, no progress to accomplish this could be demonstrated.

Status: CLOSED
An internal consistency review was performed for the Emergency Operations Information Center procedure. This resulted in changes to the procedures WP 15-8 and WP 15-801 which are adequate to close this finding.

* **Finding F.1.1-5:** News media in the vicinity of WIPP have not been effectively briefed about plans for public information activities during an emergency and provisions for WIPP emergency response.

Basis: DOE 5500.3A as well as NUREG-0654, FEMA Rep 1, require periodic (i.e., annual) dissemination of information to the news media on plans for public information activities during an emergency as well as information on facility hazards, protective measures and public points of contact. Personnel responsible for emergency public information were unfamiliar with this requirement and stated that the news media have not been provided with such information.

Status: CLOSED
An revised media information sheet has been prepared and distributed to media representatives in the vicinity of the WIPP site.

* **Finding F.1.1-7:** The WIPP site does not completely comply with 29 CFR 1910.120 requirements for training for Hazardous Material Emergency Response personnel.

Basis: Personnel on the Emergency Response Team (ERT) and the underground First Line Initial Response Team (FLIRT) are not fully trained to respond to hazardous material emergencies. An adequate training program, per 29 CFR 1910.120 requirements, to qualify WIPP ERT and FLIRT personnel to conduct hazardous material emergency response has not been developed and conducted.

Status: CLOSED
An adequate training program to meet the requirements of 29 CFR 1910.120 has been developed and a sufficient number of personnel are trained to respond.

* **Finding F.1.1-9:** AL Duty Officer procedures are not formalized and complete.

Basis: The AL Duty Officer Manual is not a controlled or approved procedure, but is the primary guidance for Duty Officer response to WIPP and other emergencies. Duty Officers are annually briefed on their responsibilities. Briefing materials used refer to a "Special Procedure for WIPP Emergencies in the Duty Officer's Manual." This procedure was not in the Manual and could not be located.

Status: CLOSED
The AL Duty Officer Manual has been revised and issued as a controlled document and a section specific to WIPP has been added. A requirement to periodically verify all telephone numbers should be added as part of the closeout of Post-Start Finding F.1.1-8.

* **Finding F.1.1-10:** WIPP was unable to demonstrate the ability to assess off-site radiological hazards accurately and safely.

Basis: During the July 18, 1991 emergency exercise demonstration, several actions were noted that resulted in a failure to provide assessment of offsite radiological hazards accurately and safely:

- Personnel responsible for dose assessment provided inaccurate wind direction data to the field monitoring team, and continued to do so even with repeated questioning from the field. As a result, dose assessment data as well as field monitoring data reported to the EOC was 180 degrees in the wrong direction.

- The radiological dose calculation did not account for a ground level, unmonitored release.

- Radiological field monitoring person did not carry dosimetry into the field and was not provided with a radiation meter to detect radiation from a possible release (per scenario).

- The field monitoring was conducted by a single individual, whereas a minimum of two persons should make up a monitor team to help ensure personnel safety, data gathering and transmittal.

- Communications between the EOC and the dose assessment function were poor, and this function appeared to be given fairly low priority and interest by EOC management.

Status: CLOSED
As the result of numerous changes to personnel, procedures, and calculational methods, an exercise on August 29, 1991, demonstrated that dose assessment capability is adequate, dose calculation methods are now acceptable and can calculate a ground release, and communications are adequate. A full scale exercise to assure that all recent training and skills are retained and improved is recommended within the next four months. (See new post-Start Finding F.1.1-12.)

* **Finding F.1.4-1:** Surveillance procedures for fire protection systems identified as OSRs in the FSAR do not assure an adequate water supply to the automatic sprinkler system.

Basis: FSAR Sections 10.3.5.1 and 10.3.5.2 require the Exhaust Filter Building (EFB) fire suppression system and the Waste Handling Building (WHB) fire suppression systems, respectively, to be operable. Procedures WP04-712 and WP04-713 provide for WHB and EFB sprinkler system testing. The water supply to each system is tested by opening the 2-inch drain and verifying that the pressure drop on the supply side of the alarm check valve is less than 25 psi. The pressure drop measurement does not assure the adequacy of the flow, pressure, and duration of the water supply.

Status: CLOSED
Procedure WP-117, Weekly Testing of Fire Pumps has been revised to properly accommodate this finding and assure an adequate water supply. This revision adequately addresses this finding.

* **Finding F.1.4-2:** Firefighting strategies (pre-fire plans) do not exist for the Waste Handling Building (WHB).

Basis: DOE 5480.7, Item 10.b(4), requires "Plans...adequate to permit controlling any credible fire emergency that may arise on the facility." The WHB is the focal point of waste receipt and transfer to the storage area.

Status: CLOSED
A pre-plan for fire fighting strategies has been prepared by Westinghouse and found to be adequate by the EM ORR Technical Expert.

* **Finding F.1.6-1:** The Westinghouse Quality Assurance (QA) Program is being revised but does not clearly identify the authorities and responsibilities of the QA Organization for line activities (e.g., design control, design verification, maintenance and calibration, transportation).

Basis: The QA Program as documented is implemented but is being revised. No schedule for reviewing and modifying the Program and the implementing procedures is established.

The Westinghouse Environment, Safety and Health (ES&H) Appraisal Program is not in compliance with DOE 5482.1B in that it is not documented and auditable, does not address all elements, and is frequently not multi-disciplinary. It is not overviewed by Westinghouse QA.

Individual corrective action systems exist (approximately nine); however, no individual or organization has the responsibility for total coordination and review of corrective actions.

Although procurement control within Westinghouse is effective (see Sub-Objective F.1.5), Westinghouse does not have objective evidence that all appropriate QA Program procurement requirements are passed down to their contractors and subcontractors.

Status: CLOSED
Revision 13 to the Westinghouse Quality Assurance Manual has been issued. This revision has been reviewed by the EM-ORR Technical Expert who, subject to minor comments separately transmitted to the responsible EM officials, found that it now adequately addresses this Finding.

* **Finding F.1.6-2:** DOE has not provided effective independent verification of WIPP Quality Assurance Programs. The overall Audit Program for WIPP activities is not sufficiently broad in scope to address all Project participants.

Basis: The Westinghouse ORR did not adequately address the Westinghouse QA Program; no DOE organization addressed the operational readiness of the Westinghouse, WPO or AL QA Programs. DOE has not reviewed off-site WIPP QA Programs.

Status: CLOSED
EM has developed a plan to implement an integrated QA program which will include independent audits and surveillance of the entire WIPP Program. This plan includes waste generation sites and the transportation program as well as the WIPP site and the various DOE offices. Assignment of a QA manager to the WIPP Program Director's office (see finding M.5-1) should assure an overview of implementation of this plan. These actions are adequate to close this finding.

* **Finding F.1.6-3:** The passdown and consolidation of all appropriate Quality Assurance Program requirements to all Program participants has not been accomplished by EM, AL, WPO, or Westinghouse.

Basis: The WPO QA Program does not specifically address: (1) who is responsible for specific oversight details for all Program participants; (2) DOE involvement in the Design Review/Configuration Control and procurement processes; and, (3) identification, review, and control of those significant conditions adverse to safety and quality.

QA authorities, responsibilities, and interfaces have not been established for WIPP Program participants.

The WPO QA Program documents are out-of-date, and are inconsistent with the requirements listed in Chapter 11 of the FSAR, WP02-9, Rev. 0. They are also not consistent with NQA-1, the required standard.

The WPO QA Program is not fully implemented and does not satisfy the requirements of DOE 5700.6B, Documented WPO QA Program Requirements, or the requirements of NQA-1.

The WPO QA Program, as documented in DOE/WPO 87-007, Quality Assurance Program for WIPP, depends on the details recorded in the Standard Operating Procedures (SOPs) for Program implementation. These SOPs have been canceled and replaced by a Management Directive System which does not provide the necessary authorities and responsibilities to implement the NQA-1 requirements.

Additional bases are provided in Finding F.1.6-1.

Status: CLOSED
EM has developed a plan to implement an integrated QA program which will assure proper passdowns and consolidation of the various organizational QA programs related to the WIPP Program. Both DOE-AL and WPO are improving their QA manuals to, among other things, assure that they are consistent with the EM integration plan. The latest scheduled completion date for these various efforts is 10-01-91, which is adequate to close this finding.

* **Finding F.1.6-6:** Corrective actions have not been accepted or verified for key audits by AL.

Basis: QA Audit 90-OQD-005 was conducted on July 31-August 3, 1990 of the Westinghouse As-Built Drawing System; this audit is 10 months old. A review of the Audit Report and status logs was conducted as well as personnel interviews. A Quality Assurance Audit OQD:91-09RC, TRUPACT-II Design, Manufacturing, and Management Audit on October 22, 1990 to January 12, 1991, was conducted by AL QA Operations Division. The audit findings have not been resolved, and, according to the AL Quality Audit Engineer, a design deficiency is unresolved concerning the prototype trailers, although modifications have been made.

Another issue involved the same Audit Report which identified manufacturing, procedural and data package errors which were initially listed as Attachments 1, 2 and 3 to the Audit Report. Attachment 1 identified over 100 discrepancies with traveler and data packages related to trailer manufacturing. Attachment 2 identified approximately 20 test report discrepancies. Attachment 3 identified approximately 30 other data package discrepancies. These attachments were removed from the Audit Report and were to be followed-up on a separate tracking system. The AL QA Audit Team does not know how Attachments 1, 2 and 3 were followed up or closed out by WPO.

Status: CLOSED
Corrective actions for the four key audits have been resolved by AL. These resolutions were reviewed by the EM ORR Team and found to be adequate to resolve this finding.

* **Finding F.1.6-7:** There is a lack of QA/QC effectiveness in the operational aspects of waste handling.

Basis: Observations made during the ISC revealed many important evolutions. Where there was no involvement by quality programs personnel (QA/QC). The involvement that QA did have in one observed procedure (WP05-WH1901) was ineffective since they failed to discover a loose ground strap connection. (See Sub-Objective H.4.1.)

Status: CLOSED
Westinghouse has made a review of all waste handling procedures for appropriate QA hold and witness points. They have modified these procedures as required, and are developing an overall Surveillance Plan for waste handling operations. This Plan will be critiqued and modified as necessary following the first waste handling operations. Confirmation of the adequacy of this Plan, following modification, should be verified by DOE QA audit.

* **Finding F.1.9-1:** The requirements for unescorted access on the WIPP site for Dry Bin Scale Testing are not resolved.

Basis: Section 2.18 of the Westinghouse Training Program Manual (WP14-001) indicates that satisfactory completion of General Employee Training (Course GET-101) is required for unescorted access on the WIPP site, and that individuals who have not completed GET-101 must be escorted. This requirement is not currently being enforced. Rather, all newly-hired permanent employees (Westinghouse, WPO and Sandia) and all subcontractors who will be on-site more than 30 consecutive days are required to attend GET-101. Westinghouse has expanded GET-101 to three days to include in this training the requirements of 29 CFR 1910.120 for a RCRA treatment, storage or disposal facility, which WIPP will be once the Dry Bin Scale Test Program begins. DOE 5480.20, which is not yet required to be implemented at WIPP, requires that GET be provided for personnel who will spend more than one to two weeks on-site.

Status: CLOSED
The WID General Manager has implemented a phased access control program which will be fully implemented by November 1, 1991. This approach is responsive to this finding and is consistent with normal EPA RCRA implementation schedules for hazardous waste handling findings.

* **Finding F.1.10-1:** Dry Bin Scale Test Phase employees who will conduct hazardous waste operations at a Treatment, Storage and Disposal (TSD) facility under RCRA have not been adequately trained.

Basis: Although these employees have received General Employee Training as well as some additional courses, the training conducted to date does not fully prepare workers to the level of competence necessary to perform hazardous waste duties as required by OSHA and specified at 29 CFR 1910.120(p). Aspects which are insufficiently addressed are site characterization, hazard assessment and monitoring, chemical incompatibility, contamination control, and simulation exercises.

Status: CLOSED
Westinghouse has developed a "Site Generated Hazardous Waste Worker Refresher Course" (REP-110). This course has been reviewed by the EM ORR Technical Expert and found to be adequate to resolve this Finding. Westinghouse has committed to train all affected employees by September 30, 1991.

* **Finding F.2-1:** There is no assurance that wastes already loaded and planned for shipment to WIPP will meet the final WIPP Quality Assurance Program Plan (QAPP) requirements which augment the Waste Acceptance Criteria (WAC). (Sub-Objective F.2.1)

Basis: Several important WIPP Program documents are still in the review and approval cycle, and susceptible to changes which could invalidate the basis upon which the first two bins were certified and loaded at INEL. The QAPP and the site-specific Quality Assurance Project Plans (QAPPs) have not been finalized. These plans include assumptions on using process knowledge-based approximations for waste characterization, RCRA Part B variance agreement, and variance agreement for the EPA "no migration determination." The review cycle for these plans includes EPA, EEG and the State of New Mexico as well as participating DOE and contractor groups.

Status: CLOSED
An audit by the Waste Acceptance Criteria Certification Committee (WACCC) using approved QAPPs to determine that INEL has a demonstrated process in place to generate the necessary data for the first loaded bin has been completed. Formal results of this audit have not yet been published, but the WACCC Chairman has certified that there were no critical (i.e. unacceptable) findings. Assurance of the proper resolution of those findings and observations which resulted from this audit should be included in the punch list item related to EM ORR Team Finding F.2-3.

* **Finding F.2-2:** No procedures or agreements are established for rejecting or holding wastes if the waste cannot be maintained within WAC. (Sub-Objective F.2.1)

Basis: Review of Program documentation and interviews with managers in Westinghouse, WPO, and INEL verified that current procedures or agreements would not accommodate changes after a shipment had commenced. There is no consensus concerning what interim or permanent actions should be taken or who owns the waste. An MOU is being developed and will be circulated to address this issue. The MOU is tentatively scheduled for implementation on June 30, 1991.

Status: CLOSED
Procedures and agreements between WIPP site and shippers (INEL) have been established to assure that WIPP rejected shipments will be sent back and accepted by the shipper.

Finding H.1-2: Minor errors were noted during the field verification of drawings. (Sub-Objective H.1.3)

Basis: Differences existed between the configuration of systems as documented on drawings and the actual, as-installed configuration. Flow elements on drawing 41-B-001-W were incorrectly located, and a flow indicator shown on drawing 45-S-012-W was not physically present. (Refer to Finding H.4-1.)

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.2-2: There are no governing procedures which provide guidance for troubleshooting activities.

Basis: Current troubleshooting practices rely on the judgement and experience of lead technicians, maintenance engineers or cognizant engineers and lack consistency. Although work observed was conducted with either specific work instructions or personal engineering guidance, these methods do not ensure that good troubleshooting practices are incorporated for each job. Lack of a documented procedure also precludes incorporating improvements and good practices. (Sub-Objective H.2.7)

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.2-3: Responsibilities are not assigned for conducting equipment failure root cause analysis and incorporating operating experience feedback into maintenance procedures, the Preventive Maintenance Program and maintenance training.

Basis: Although the Maintenance Performance Assessment Manual addresses these areas for review, no analyses have been conducted which implement the program. Interviews with maintenance managers and supervisors verified the current status. A root cause analysis procedure is being developed.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.3-2: During the walkdown of procedure WP04-006, Rev. 1, Waste Handling Building #411 Contact-Handled Waste Handling Area (Zone Z) HVAC Operation, it was noted that the procedure was difficult to follow and instructions were inconsistent with the current operating philosophy for the system. (Sub-Objective H.3.1)
Basis: The EM ORR Technical Experts were informed that the procedure was under revision into the "INPO Format". These draft revisions were reviewed and found to represent a significant improvement over the original procedure and addressed the shortcomings noted in the original procedure. Resolution of this procedural shortcoming has not been timely.

Status: Action to resolve this Finding has been completed by Westinghouse, subject to verification by EM. This Finding is an extension of Finding F.3-1, but is not a major deficiency that needs to be resolved before start of waste handling operation because the procedure was not unusable. In fact, the weakness identified in Finding H.3.2, had previously been discovered by Westinghouse, but the procedure revision was not final. The EM ORR Team determined that this action should be followed to completion.

Finding H.3-3: Writer's Guides for Operations and Maintenance Procedures do not direct writers to review and consider LCOs during the preparation of procedures. (Sub-Objective H.3.2)

Basis: WP15-007, Sections 2-2 of the Operations Procedures Writer's Guide does not specify a review of Chapter 10 of the FSAR and FSAR addenda. WP10-003 does not contain a section similar to Section 2.2 of the WP15-007 procedure.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding P.2-1: Operations support personnel have not been shown to be trained and qualified on all procedures that will be used for waste handling operations. There is a significant ongoing effort to develop and revise WIPP procedures. (Sub-Objective P.2.2)

Basis: While most operations support personnel have completed qualification and certification for their positions, procedures for Dry Bin Scale Testing and other operations activities are continuing to be developed and revised.

Finding M.1-2: Neither WPO nor Westinghouse is sufficiently self-critical nor accepting of external criticism to assure that there is a mechanism to elevate identified potential problems to appropriate management levels for resolution. (Sub-Objective M.1.1)

Basis: "Technical Humility", or the capability to accept the technical input of other experts without defensiveness is not strongly evident at WIPP. Attention to this issue is needed to comply with the guidance of SEN-20-90 and with the expectations of the EM Director for his staff to demonstrate "intellectual curiosity".

Indicators of past performance in several areas raise questions regarding the inquisitive attitude of employees and management at WIPP. Chief among these indicators are the shortcomings of the Quality Assurance Program, a lack of independence in the Westinghouse ORR, non-responsive behavior in regard to EEG inquiries, and a legalistic approach to certain inquiries during the EM ORR. (See Finding M.6-2.)

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding M.2-1: Stop Work authority is not consistently defined. (Sub-Objective M.2.1)

Basis: Stop Work authority is assigned in the FSAR to the WIPP Project Manager (WPO Manager). The Westinghouse Quality Assurance Plan and the Westinghouse/DOE contract are in conflict with this assignment of Stop Work authority. Personnel interviewed did not have a clear understanding of Stop Work authority.

Status: Action to resolve this Finding has been completed by WPO and Westinghouse; subject to verification by EM. In the view of the EM ORR Team, the stop work authority and responsibility at the working level for such functions as Quality Assurance, Radiological Protection, Industrial Hygiene and Worker Safety Is clearly understood. However, at higher levels in the WIPP chain-of-command, the term "stop work authority" is not clearly defined, although the EM ORR Team was confident that sufficient responsible people in the chain-of-command claimed that authority, and their authority would be respected even if not explicitly granted in written documents.

A draft Startup/Shutdown Procedure dated July 1991 has been prepared. The EM ORR Team considers that appropriate action for this Finding is for WIPP management to review and approve this document as part of the WIPP Action Plan for resolution of Post-Start Findings.

Finding **M.3-1:** WPO management has not taken an aggressive leadership role in discharging certain project responsibilities. (Sub-Objective M.3.1)

Basis: WPO has not been consistently effective in directing oversight of the two large WIPP contractor organizations. Examples are:

- The slow progress in implementing an effective Quality Assurance Program, in spite of FSAR commitments;
- Minimal direct WPO involvement and direction in resolution of high priority technical concerns;
- Lack of program guidance and direction to Westinghouse from WPO on implementation of DOE Orders;
- No WPO representative was present at the Westinghouse critique of the emergency preparedness drill conducted on July 18, 1991;
- Minimal direct observation of the ISC by WPO personnel;
- Absence of an obvious DOE focal point for day-to-day project management of WIPP site activities where on-site staff look for leadership and where the more important issues get attention; this is clearly not the primary role being taken by the WPO Project Manager in his daily duties, and is not emphasized in his job description. The weakness of WPO leadership was evident to the EM ORR Team in its day-to-day activities: the EM ORR Team often was directed to Westinghouse for discussions on technical issues and tentative findings; briefings to the EM ORR Team on specific technical items often had minimal support from WPO.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding M.4-1: WPO is not receiving support from AL in the Quality Assurance area necessary to establish an adequate Quality Assurance Program. (Sub-Objective M.4.1)

Basis: Despite the need for additional work in the Quality Assurance area (e.g., development and implementation of a WIPP Program Quality Assurance Plan), vacancies have existed within the AL Quality Assurance Organization for a long period.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991. The deficiencies in AL support for QA are tied to Post-Start Finding M.4-2 (definition of support expected from AL) and Pre-Start Findings M.5-1 and M.5-2 (definition of organizational responsibilities). In the view of the EM ORR Team, AL is providing critical support needed such as for audits of TRUPACT, but resources and priority for routine support need to be addressed. These issues are not critical for the start of operations, particularly in view of actions proposed in the resolution of Pre-Start Findings M.5-1 and M.5-2, but they should be addressed in the Action Plan for resolution of Post-Start Findings.

Finding **M.4-2**: There is not a clear definition of the support that the AL Office of Special Projects (AL EM) and other AL organizations are committed to provide to WIPP. (Sub-Objective M.4.2)

Basis: The Assistant Manager, AL EM, is responsible for EM activities, including WIPP, under the cognizance of AL. AL EM views one of its primary roles as managing WPO. AL EM management characterizes this relationship as WPO reporting administratively to AL EM, but receiving program and technical direction directly from EM in DOE Headquarters.

Accountability within AL is lacking. Interviews at AL led to the conclusion that there is confusion about the roles of individuals involved with the WIPP Program. Reporting relationships between EM and individuals at AL are not understood. The WPO Project Manager stated that he works for the AL EM Assistant Manager, who reports to the AL Manager, and the EM Director. The AL EM Assistant Manager stated that he reports to the Director of EM, but that change is recent and has not been fully implemented. The AL Manager stated that he reports to the EM Director (as well as DP) and provides direction to the AL EM organization.

Furthermore, the AL Assistant Manager for Environment, Safety and Health (AL EH) reports directly to the AL Manager. Their role with respect to WIPP is not clear, i.e., whether they perform a line oversight function reporting to the AL Manager or a support function reporting to the AL EM Manager.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

* **Finding F.1.6-3:** The passdown and consolidation of all appropriate Quality Assurance Program requirements to all Program participants has not been accomplished by EM, AL, WPO, or Westinghouse.

Basis: The WPO QA Program does not specifically address: (1) who is responsible for specific oversight details for all Program participants; (2) DOE involvement in the Design Review/Configuration Control and procurement processes; and, (3) identification, review, and control of those significant conditions adverse to safety and quality.

QA authorities, responsibilities, and interfaces have not been established for WIPP Program participants.

The WPO QA Program documents are out-of-date, and are inconsistent with the requirements listed in Chapter 11 of the FSAR, WP02-9, Rev. 0. They are also not consistent with NQA-1, the required standard.

The WPO QA Program is not fully implemented and does not satisfy the requirements of DOE 5700.6B, Documented WPO QA Program Requirements, or the requirements of NQA-1.

The WPO QA Program, as documented in DOE/WPO 87-007, Quality Assurance Program for WIPP, depends on the details recorded in the Standard Operating Procedures (SOPs) for Program implementation. These SOPs have been canceled and replaced by a Management Directive System which does not provide the necessary authorities and responsibilities to implement the NQA-1 requirements.

Additional bases are provided in Finding F.1.6-1.

Status: CLOSED
EM has developed a plan to implement an integrated QA program which will assure proper passdowns and consolidation of the various organizational QA programs related to the WIPP Program. Both DOE-AL and WPO are improving their QA manuals to, among other things, assure that they are consistent with the EM integration plan. The latest scheduled completion date for these various efforts is 10-01-91, which is adequate to close this finding.

* **Finding F.1.6-6:** Corrective actions have not been accepted or verified for key audits by AL.

Basis: QA Audit 90-OQD-005 was conducted on July 31-August 3, 1990 of the Westinghouse As-Built Drawing System; this audit is 10 months old. A review of the Audit Report and status logs was conducted as well as personnel interviews. A Quality Assurance Audit OQD:91-09RC, TRUPACT-II Design, Manufacturing, and Management Audit on October 22, 1990 to January 12, 1991, was conducted by AL QA Operations Division. The audit findings have not been resolved, and, according to the AL Quality Audit Engineer, a design deficiency is unresolved concerning the prototype trailers, although modifications have been made.

Another issue involved the same Audit Report which identified manufacturing, procedural and data package errors which were initially listed as Attachments 1, 2 and 3 to the Audit Report. Attachment 1 identified over 100 discrepancies with traveler and data packages related to trailer manufacturing. Attachment 2 identified approximately 20 test report discrepancies. Attachment 3 identified approximately 30 other data package discrepancies. These attachments were removed from the Audit Report and were to be followed-up on a separate tracking system. The AL QA Audit Team does not know how Attachments 1, 2 and 3 were followed up or closed out by WPO.

Status: CLOSED
Corrective actions for the four key audits have been resolved by AL. These resolutions were reviewed by the EM ORR Team and found to be adequate to resolve this finding.

* **Finding F.1.6-7:** There is a lack of QA/QC effectiveness in the operational aspects of waste handling.

Basis: Observations made during the ISC revealed many important evolutions. Where there was no involvement by quality programs personnel (QA/QC). The involvement that QA did have in one observed procedure (WP05-WH1901) was ineffective since they failed to discover a loose ground strap connection. (See Sub-Objective H.4.1.)

Status: CLOSED
Westinghouse has made a review of all waste handling procedures for appropriate QA hold and witness points. They have modified these procedures as required, and are developing an overall Surveillance Plan for waste handling operations. This Plan will be critiqued and modified as necessary following the first waste handling operations. Confirmation of the adequacy of this Plan, following modification, should be verified by DOE QA audit.

* **Finding F.1.9-1:** The requirements for unescorted access on the WIPP site for Dry Bin Scale Testing are not resolved.

Basis: Section 2.18 of the Westinghouse Training Program Manual (WP14-001) indicates that satisfactory completion of General Employee Training (Course GET-101) is required for unescorted access on the WIPP site, and that individuals who have not completed GET-101 must be escorted. This requirement is not currently being enforced. Rather, all newly-hired permanent employees (Westinghouse, WPO and Sandia) and all subcontractors who will be on-site more than 30 consecutive days are required to attend GET-101. Westinghouse has expanded GET-101 to three days to include in this training the requirements of 29 CFR 1910.120 for a RCRA treatment, storage or disposal facility, which WIPP will be once the Dry Bin Scale Test Program begins. DOE 5480.20, which is not yet required to be implemented at WIPP, requires that GET be provided for personnel who will spend more than one to two weeks on-site.

Status: CLOSED
The WID General Manager has implemented a phased access control program which will be fully implemented by November 1, 1991. This approach is responsive to this finding and is consistent with normal EPA RCRA implementation schedules for hazardous waste handling findings.

* **Finding F.1.10-1:** Dry Bin Scale Test Phase employees who will conduct hazardous waste operations at a Treatment, Storage and Disposal (TSD) facility under RCRA have not been adequately trained.

Basis: Although these employees have received General Employee Training as well as some additional courses, the training conducted to date does not fully prepare workers to the level of competence necessary to perform hazardous waste duties as required by OSHA and specified at 29 CFR 1910.120(p). Aspects which are insufficiently addressed are site characterization, hazard assessment and monitoring, chemical incompatibility, contamination control, and simulation exercises.

Status: CLOSED
Westinghouse has developed a "Site Generated Hazardous Waste Worker Refresher Course" (REP-110). This course has been reviewed by the EM ORR Technical Expert and found to be adequate to resolve this Finding. Westinghouse has committed to train all affected employees by September 30, 1991.

* **Finding F.2-1:** There is no assurance that wastes already loaded and planned for shipment to WIPP will meet the final WIPP Quality Assurance Program Plan (QAPP) requirements which augment the Waste Acceptance Criteria (WAC). (Sub-Objective F.2.1)

Basis: Several important WIPP Program documents are still in the review and approval cycle, and susceptible to changes which could invalidate the basis upon which the first two bins were certified and loaded at INEL. The QAPP and the site-specific Quality Assurance Project Plans (QAPPs) have not been finalized. These plans include assumptions on using process knowledge-based approximations for waste characterization, RCRA Part B variance agreement, and variance agreement for the EPA "no migration determination." The review cycle for these plans includes EPA, EEG and the State of New Mexico as well as participating DOE and contractor groups.

Status: CLOSED
An audit by the Waste Acceptance Criteria Certification Committee (WACCC) using approved QAPPs to determine that INEL has a demonstrated process in place to generate the necessary data for the first loaded bin has been completed. Formal results of this audit have not yet been published, but the WACCC Chairman has certified that there were no critical (i.e. unacceptable) findings. Assurance of the proper resolution of those findings and observations which resulted from this audit should be included in the punch list item related to EM ORR Team Finding F.2-3.

* **Finding F.2-2:** No procedures or agreements are established for rejecting or holding wastes if the waste cannot be maintained within WAC. (Sub-Objective F.2.1)

Basis: Review of Program documentation and interviews with managers in Westinghouse, WPO, and INEL verified that current procedures or agreements would not accommodate changes after a shipment had commenced. There is no consensus concerning what interim or permanent actions should be taken or who owns the waste. An MOU is being developed and will be circulated to address this issue. The MOU is tentatively scheduled for implementation on June 30, 1991.

Status: CLOSED
Procedures and agreements between WIPP site and shippers (INEL) have been established to assure that WIPP rejected shipments will be sent back and accepted by the shipper.

* **Finding F.2-3:** A coordinated demonstration of loading to final shipment at INEL has not been accomplished using a final set of approved procedures with trained participants. (Sub-Objective F.2.2)

Basis: While the waste characterization effort and drum unloading/test bin loading is proceeding satisfactorily, there are unanswered questions as to finalizing and approving plans and procedures, and some questions as to WIPP guidance/coordination regarding conduct of bin loading. The preparation of WIPP shipments has been demonstrated piece-meal. A number of concerns were identified during the TRUPACT loading demonstration.

Status: CLOSED
An end to end shipping demonstration of a single bin, loaded, shipped from INEL and received at the WIPP site, has been completed. Documentation and observer reports indicate that the demonstration was successful; however, a number of minor difficulties and interface problems were identified. None of these issues appeared sufficient to preclude safe shipment of a limited number of bins, but they should be resolved prior to assuming that packaging and shipment of TRU waste bins is a routine operation. A punch list item to address the issue of assuring that all outstanding difficulties, with emphasis on interface issues, is included in Section II of this Addendum. The remainder of the end to end test to include emplacement and retrieval of the shipped bin was not completed, since it had been included in the ISC. Although all of this demonstration was successfully completed as part of the ISC, the EM ORR Team still considers it prudent to complete this portion of the planned end to end test. This completion is included as a punch list item in Section II of this addendum.

* **Finding F.2-4:** The WIPP Waste Acceptance Criteria Coordinating Committee (WIPP/WAC-CC) has not audited the Transportation Packaging Program of INEL as required in the WAC and by DOE 5820.2A. (Sub-Objective F.2.2)

Basis: This audit is currently planned for July 1991. Audit procedures are being developed for WPO by a contractor and have not been completed, finalized or approved. Loading of TRUPAC by INEL cannot be accomplished until the WAC-CC audit is completed and all findings closed.

Status: CLOSED
The WIPP-WACCC has audited the loading of bins 1 and 2 to the new Waste Acceptance Criteria; however, only draft reports with a number of findings are available. Nine of these findings are identified as potentially "resulting in questionable waste shipments or possible violations to environment, safety or health." The EM ORR Team believes that these nine findings should be resolved as punch list items as discussed in Section II of this addendum.

APPENDIX A-2

POST-START FINDINGS WITH STATUS

Finding H.1-2: Minor errors were noted during the field verification of drawings. (Sub-Objective H.1.3)

Basis: Differences existed between the configuration of systems as documented on drawings and the actual, as-installed configuration. Flow elements on drawing 41-B-001-W were incorrectly located, and a flow indicator shown on drawing 45-S-012-W was not physically present. (Refer to Finding H.4-1.)

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.2-2: There are no governing procedures which provide guidance for troubleshooting activities.

Basis: Current troubleshooting practices rely on the judgement and experience of lead technicians, maintenance engineers or cognizant engineers and lack consistency. Although work observed was conducted with either specific work instructions or personal engineering guidance, these methods do not ensure that good troubleshooting practices are incorporated for each job. Lack of a documented procedure also precludes incorporating improvements and good practices. (Sub-Objective H.2.7)

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.2-3: Responsibilities are not assigned for conducting equipment failure root cause analysis and incorporating operating experience feedback into maintenance procedures, the Preventive Maintenance Program and maintenance training.

Basis: Although the Maintenance Performance Assessment Manual addresses these areas for review, no analyses have been conducted which implement the program. Interviews with maintenance managers and supervisors verified the current status. A root cause analysis procedure is being developed.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.3-2: During the walkdown of procedure WP04-006, Rev. 1, Waste Handling Building #411 Contact-Handled Waste Handling Area (Zone Z) HVAC Operation, it was noted that the procedure was difficult to follow and instructions were inconsistent with the current operating philosophy for the system. (Sub-Objective H.3.1)
Basis: The EM ORR Technical Experts were informed that the procedure was under revision into the "INPO Format". These draft revisions were reviewed and found to represent a significant improvement over the original procedure and addressed the shortcomings noted in the original procedure. Resolution of this procedural shortcoming has not been timely.

Status: Action to resolve this Finding has been completed by Westinghouse, subject to verification by EM. This Finding is an extension of Finding F.3-1, but is not a major deficiency that needs to be resolved before start of waste handling operation because the procedure was not unusable. In fact, the weakness identified in Finding H.3.2, had previously been discovered by Westinghouse, but the procedure revision was not final. The EM ORR Team determined that this action should be followed to completion.

Finding H.3-3: Writer's Guides for Operations and Maintenance Procedures do not direct writers to review and consider LCOs during the preparation of procedures. (Sub-Objective H.3.2)

Basis: WP15-007, Sections 2-2 of the Operations Procedures Writer's Guide does not specify a review of Chapter 10 of the FSAR and FSAR addenda. WP10-003 does not contain a section similar to Section 2.2 of the WP15-007 procedure.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.3-7: Waste handling procedures used during the conduct of the ISC were incomplete in providing instructions to operators performing the procedure steps. (Sub-Objective H.3.4)

Basis: The following items were evaluated as inadequate in the waste handling procedures. The items relate to incomplete or missing instructions which if incorporated, would serve to make the operators more effective in their performance of the evolutions being directed by the procedures.

- Limits should be provided. When a variable is to be monitored, measured, or controlled to an acceptable limit, the acceptable limit should be clearly identified in specific terms. As an example, radioactivity limits in procedure WP05-WH1803, Attachment 1, are stated as "RAF activity less than acceptable limit". The actual, required limits should be provided.

- Action Statements should be provided. If a limit is exceeded, explicit instructions should be provided which would direct the operator to recover, or imitate the activities necessary to recover, from having exceeded an acceptable limit identified in the procedure.

- Instructions for certain routine operations should be provided. If for any reason a procedure is interrupted and cannot be completed, instructions should be provided which would allow the operator to re-enter the procedure at some intermediate step rather than re-starting the procedure from the first, initial step.

- Instructions for certain routine operations should be provided. The following are specific examples of where routine evolutions were performed as part of a procedure even though the procedure did not have a step requiring the evolution to be performed.

  - Swipes and surveys by a Health Physics Technician (HPT) during the performance of WP05-WH1901, 1910, 1801, etc. (principally when removing tubing connections, caps, etc. on the bin)

  - "Ground" verification evolution as conducted by Experimental Operations personnel during performance of WP05-WH1910 (around step 7.15).

Status: Action to resolve this Finding has been completed by Westinghouse, and is subject to verification by EM. The improvements suggested in the BASIS for this Finding do not rise to the level of requirements. However, in the opinion of the EM ORR Team, incorporation of these items would improve the procedures. Because these changes are not mandatory, this finding was not considered to be a pre-start requirement.

Finding H.4-1: Minor errors were noted during the field verification of drawings. (Sub-Objective H.4.3)

Basis: A walkdown of the Waste Handling HVAC and Fire Water Piping systems revealed some deficiencies in the P&ID drawings used by the operators to operate the system. Inaccuracies included the mis-location of flow instrumentation on ventilation ducts, and a flow indicator which was not physically present.

While the drawing deficiencies found were not of a nature which would be expected to jeopardize safe operations, they should be corrected as part of an overall drawing update program. Important P&IDs which are used to operate the facility should receive priority.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding H.5-2: There is no evidence that an evaluation has been made on the long-term stability of the roof in other areas of the subsurface, particularly the 33'0" wide travelways and other experimental areas, and the method by which they will be maintained in a safe condition. (Sub-Objective H.5.3)

Basis: This finding is based upon inquiries and conversations with senior DOE and Westinghouse personnel. Based upon these inquires, it is understood that plans are being developed for evaluating this concern.

Status: Action to resolve this Finding has been completed by Westinghouse, and is being made available for verification by EM.

Finding H.5-4: No provisions are made to access the exhaust shaft in order to conduct routine physical inspections or to make repairs should this become necessary. (Sub-Objective H.5.3)

Basis: The 14'0" diameter exhaust shaft and the exhaust filter system at the top of the shaft are key structures and components in the safe operation of the underground facility. The exhaust shaft is the only means by which air can be vented to the atmosphere after waste handling operations begin. Furthermore, the exhaust shaft and exhaust filter system are a Radioactive Materials Area (RMA) because they could be contaminated after an underground radioactive material release. Temporary loss of the use of this shaft caused by deterioration of the shaft lining, collapse of a section of the walls in the unlined portion, water ingress, or any other reason would inevitably create a severe impact on the ability to sustain underground operations. The presumption that no condition could arise over the next five to nine years which affects the safety of the underground facility, and which would require maintenance and repairs, is not realistic.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991. The provisions for inspection of the exhaust shaft were divided into two findings: F.5-3 and F.5-4. The immediate need to conduct visual inspections has been accomplished by the measures discussed under Finding H.5-3. The longer term action to develop any necessary capability for physically inspecting and conducting maintenance on the shaft is to be developed within 90 days. Any need for a routine physical entry into the shaft is not anticipated for a number of years. Accordingly, resolution of this finding requires WIPP to develop the capability for entry in a diligent, orderly and economical manner. The final resolution of this Finding is required no later than June 1992 to comply with DOE 4330.4A.

Finding P.2-1: Operations support personnel have not been shown to be trained and qualified on all procedures that will be used for waste handling operations. There is a significant ongoing effort to develop and revise WIPP procedures. (Sub-Objective P.2.2)

Basis: While most operations support personnel have completed qualification and certification for their positions, procedures for Dry Bin Scale Testing and other operations activities are continuing to be developed and revised.

Status: Action to resolve this Finding has been completed by Westinghouse; subject to verification by EM. This finding is directed at staff support activities, not staff directly involved in waste handling operations. It is expected that waste handling procedures will continue to be revised and improved as part of the pilot operation of WIPP and the impact, if any, of such changes on the support personnel will be reflected in their procedures and training as a normal course of events. In the judgement of the EM ORR Team, the extent to which this Finding applies would not adversely affect safe waste handling operations and accordingly this Finding was not determined to be a pre-start item. However, the EM ORR Team expected that this Finding would be resolved expeditiously. In fact, the contractor did not separate "training" from the "procedure development" activity identified in Finding H.4-2 and the required training has been completed.

Finding P.2-2: With few exceptions, WIPP maintenance personnel qualification is not based on an analysis of specific tasks for systems important to safety. Maintenance personnel interviewed and observed were knowledgeable of their job requirements. (Sub-Objective P.2.3)

Basis: While qualification and certification cards have been established for WIPP maintenance personnel positions, these cards do not generally include sign-offs on specific tasks that these personnel perform. For example, the Instrumentation & Control (I&C) Technician Certification Card (I&C-01, Rev. 3) only addresses tasks related to the calibration laboratory; it does not include tasks in two other I&C Technician duty areas (radiation instruments, and instrument calibrations in the field). The Electrical Technician Certification Card (ELECT-01, Rev. 3) Department and equipment training focus on the equipment these technicians will use but not on the tasks they perform. The WIPP Technical Training and Maintenance organizations are aware of these limitations, and as part of their efforts to meet the requirements of DOE 5480.20 (Implementation Matrix due by November 1991) and DOE 5480.18 (which is not required for WIPP), job and task analyses are underway as the initial step in developing certification/qualification cards that are based on the tasks that maintenance personnel perform.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding P.3-1: The Westinghouse employee and personnel appraisal system leaves attention to health, safety, and protection of the environment as an option, rather than a requirement. This option has seldom been used in past appraisals. (Sub-Objective P.3.1)

Basis: Employee and management interviews, plus a review of the formal employee and management appraisal policies and three random employee appraisals, indicated the performance appraisal system was not being used to reinforce health, safety and environmental protection objectives.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding P.3-2: No random testing for drug use is required for personnel with unescorted access to the WIPP site. (Sub-Objective P.3.2)

Basis: This Finding is based upon review of the Employee Handbook and an interview of the manager responsible for the Fitness-For-Duty Program.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding P.3-3: Fitness-for-duty training has not been effective in maintaining personnel knowledge of the Program requirements. (Sub-Objective P.3.2)

Basis: This Finding is based upon interviews with first-line supervisors and mid-level managers in the Westinghouse organization. Personnel interviewed were not knowledgeable of the requirements of the Fitness-for-Duty Program nor employee assistance programs.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding P.3-4: Westinghouse fitness-for-duty requirements are not applied to subcontractor and Sandia personnel working on-site with unescorted access. (Sub-Objective P.3.2)

Basis: This finding is based upon an interview with the manager responsible for the Fitness-for-Duty Program.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding M.1-2: Neither WPO nor Westinghouse is sufficiently self-critical nor accepting of external criticism to assure that there is a mechanism to elevate identified potential problems to appropriate management levels for resolution. (Sub-Objective M.1.1)

Basis: "Technical Humility", or the capability to accept the technical input of other experts without defensiveness is not strongly evident at WIPP. Attention to this issue is needed to comply with the guidance of SEN-20-90 and with the expectations of the EM Director for his staff to demonstrate "intellectual curiosity".

Indicators of past performance in several areas raise questions regarding the inquisitive attitude of employees and management at WIPP. Chief among these indicators are the shortcomings of the Quality Assurance Program, a lack of independence in the Westinghouse ORR, non-responsive behavior in regard to EEG inquiries, and a legalistic approach to certain inquiries during the EM ORR. (See Finding M.6-2.)

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding M.2-1: Stop Work authority is not consistently defined. (Sub-Objective M.2.1)

Basis: Stop Work authority is assigned in the FSAR to the WIPP Project Manager (WPO Manager). The Westinghouse Quality Assurance Plan and the Westinghouse/DOE contract are in conflict with this assignment of Stop Work authority. Personnel interviewed did not have a clear understanding of Stop Work authority.

Status: Action to resolve this Finding has been completed by WPO and Westinghouse; subject to verification by EM. In the view of the EM ORR Team, the stop work authority and responsibility at the working level for such functions as Quality Assurance, Radiological Protection, Industrial Hygiene and Worker Safety Is clearly understood. However, at higher levels in the WIPP chain-of-command, the term "stop work authority" is not clearly defined, although the EM ORR Team was confident that sufficient responsible people in the chain-of-command claimed that authority, and their authority would be respected even if not explicitly granted in written documents.

A draft Startup/Shutdown Procedure dated July 1991 has been prepared. The EM ORR Team considers that appropriate action for this Finding is for WIPP management to review and approve this document as part of the WIPP Action Plan for resolution of Post-Start Findings.

Finding M.3-1: WPO management has not taken an aggressive leadership role in discharging certain project responsibilities. (Sub-Objective M.3.1)

Basis: WPO has not been consistently effective in directing oversight of the two large WIPP contractor organizations. Examples are:

- The slow progress in implementing an effective Quality Assurance Program, in spite of FSAR commitments;
- Minimal direct WPO involvement and direction in resolution of high priority technical concerns;
- Lack of program guidance and direction to Westinghouse from WPO on implementation of DOE Orders;
- No WPO representative was present at the Westinghouse critique of the emergency preparedness drill conducted on July 18, 1991;
- Minimal direct observation of the ISC by WPO personnel;
- Absence of an obvious DOE focal point for day-to-day project management of WIPP site activities where on-site staff look for leadership and where the more important issues get attention; this is clearly not the primary role being taken by the WPO Project Manager in his daily duties, and is not emphasized in his job description. The weakness of WPO leadership was evident to the EM ORR Team in its day-to-day activities: the EM ORR Team often was directed to Westinghouse for discussions on technical issues and tentative findings; briefings to the EM ORR Team on specific technical items often had minimal support from WPO.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

Finding M.4-1: WPO is not receiving support from AL in the Quality Assurance area necessary to establish an adequate Quality Assurance Program. (Sub-Objective M.4.1)

Basis: Despite the need for additional work in the Quality Assurance area (e.g., development and implementation of a WIPP Program Quality Assurance Plan), vacancies have existed within the AL Quality Assurance Organization for a long period.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991. The deficiencies in AL support for QA are tied to Post-Start Finding M.4-2 (definition of support expected from AL) and Pre-Start Findings M.5-1 and M.5-2 (definition of organizational responsibilities). In the view of the EM ORR Team, AL is providing critical support needed such as for audits of TRUPACT, but resources and priority for routine support need to be addressed. These issues are not critical for the start of operations, particularly in view of actions proposed in the resolution of Pre-Start Findings M.5-1 and M.5-2, but they should be addressed in the Action Plan for resolution of Post-Start Findings.

Finding M.4-2: There is not a clear definition of the support that the AL Office of Special Projects (AL EM) and other AL organizations are committed to provide to WIPP. (Sub-Objective M.4.2)

Basis: The Assistant Manager, AL EM, is responsible for EM activities, including WIPP, under the cognizance of AL. AL EM views one of its primary roles as managing WPO. AL EM management characterizes this relationship as WPO reporting administratively to AL EM, but receiving program and technical direction directly from EM in DOE Headquarters.

Accountability within AL is lacking. Interviews at AL led to the conclusion that there is confusion about the roles of individuals involved with the WIPP Program. Reporting relationships between EM and individuals at AL are not understood. The WPO Project Manager stated that he works for the AL EM Assistant Manager, who reports to the AL Manager, and the EM Director. The AL EM Assistant Manager stated that he reports to the Director of EM, but that change is recent and has not been fully implemented. The AL Manager stated that he reports to the EM Director (as well as DP) and provides direction to the AL EM organization.

Furthermore, the AL Assistant Manager for Environment, Safety and Health (AL EH) reports directly to the AL Manager. Their role with respect to WIPP is not clear, i.e., whether they perform a line oversight function reporting to the AL Manager or a support function reporting to the AL EM Manager.

Status: An Action Plan to complete this Finding is scheduled to be available by November 9, 1991.

APPENDIX A-3

RESPONSE TO DNFSB COMMENTS (6/28/91)

Department of Energy

Washington, DC 20585

AUG 3 0 1991

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
Suite 700
625 Indiana Avenue, N.W.
Washington, D.C. 20004

Dear Mr. Conway:

This responds to your June 28, 1991, letter in which the Defense Nuclear Facilities Safety Board (Board) provided comments on the Waste Isolation Pilot Plant (WIPP) Operational Readiness Review (ORR) Implementation Plan.

In general, we have adopted your comments. However, some DOE Orders that the Board suggested be included were not within the scope of the EM ORR. As discussed in the enclosure, those Orders do not directly impact the environment, safety, and health aspects of the WIPP project.

The selected Level 1 DOE Orders included in the EM ORR are those Orders that impact WIPP readiness for operation in the areas of the environment, safety, and health. Appropriate portions of the selected Orders were used as criteria for the review of EM ORR Objectives. Some additional Orders were used for review but were not included in the selected list if the Order was not substantively used. While the EM ORR was not a detailed compliance review of Level 1 DOE Orders, it did provide assurance that WIPP is in compliance with those portions of the Orders which significantly impact the environment, safety, and health, as discussed in the EM ORR Report (page III-9).

The EM ORR list of selected Orders was developed during the same time that the generic DOE list of Level 1 Orders was being prepared in response to the Board's Recommendation 90-2, Standards. The EM ORR Team checked its list against the generic DOE list that was available during the EM ORR to assure that all appropriate Level 1 Orders were considered. Accordingly, the EM ORR will be used, as appropriate, to support responses to Recommendation 90-2, as discussed in my letter to the Board on this subject dated August 16, 1991. EM will continue to work through the Department's 90-2 committee to provide a consolidated DOE response to the 90-2 recommendations.

The enclosure addresses each of the Board's comments and provides a reference to revisions made in the WIPP ORR Implementation Plan. The revised Implementation Plan was used for the EM ORR and is included in the EM ORR Report.

Please contact me or the EM ORR Team Leader, Mr. Thomas C. Elsasser, if you or your staff have any questions.

Sincerely,

Leo P. Duffy
Director
Office of Environmental Restoration
and Waste Management

Enclosure

cc w/enclosure:
D. Knuth, DP-2.2
R. Scott, EM-20
J. Lytle, EM-30

Enclosure

RESPONSE BY THE
OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
WIPP OPERATIONAL READINESS REVIEW (ORR) TEAM
TO THE COMMENTS PROVIDED BY THE
DEFENSE NUCLEAR FACILITIES SAFETY BOARD (DNFSB)
ON JUNE 28, 1991

Implementation Plan

1. DOE 5400.3 and DOE 5480.15 have been added to the list of Selected Level-1 DOE Orders Applicable to WIPP, Table 1 of the Implementation Plan. Other Orders included in the DNSFB list were not included for the reasons stated below. The list is intended to include only DOE Orders; other applicable references are included in the appropriate Criteria and Review Approach (CRA) references.

Comments on list of Level I Orders identified by the DNFSB for possible inclusion are as follows:

1300.2A Standards Program (draft 2/12/91)
This Order sets policy on DOE participation in voluntary standards bodies and is primarily focused on actions at DOE headquarters; this Order does not address primary safety issues applicable to start of WIPP operation, and for this reason was not explicitly included in the EM ORR list of DOE Orders.

1360.2A Unclassified Computer Security Program (5/20/88)
The purpose of the Order is to protect computer systems from abuse and misuse that could compromise information or cause unnecessary delays or costs. This Order was not explicitly included in the EM ORR list; the determination was made that operability of the computer systems as needed at the present time would be adequate for the start of WIPP operations. A specific start-up objective covering computer security was not considered necessary and the additional team review effort to cover this area could not be justified; this, however, is an appropriate topic for a future appraisal.

4700.1 Project Management System (3/6/87)
This Order sets forth the principles and requirements governing DOE outlay program acquisitions as set forth in the Program Management System (PMS). Many aspects of the PMS are covered by the CRAs of the EM ORR (e.g. responsibilities; safety and environmental requirements); however, so many of the program management aspects of the PMS are not directly applicable to safe start-up of WIPP, that DOE 4700.1 was not referenced so as to avoid an appearance of more coverage of this Order than was actually accomplished.

5400.3 Hazardous and Radioactive Mixed Waste Program (2/22/89)
This Order has been included in the EM ORR list.

5400.4 Comprehensive Environmental Response, Compensation, and Liability Act Requirements, (10/6/89)
Certain elements of this Order are included under Sub-Objective F.1.3 but this Order was not included as a primary environmental requirement affecting start of WIPP operations.

5440.1D National Environmental Policy Act Compliance Program (2/22/91)
Certain elements of this Order are included under Sub-Objective F.1.3 but this Order was not included as a primary environmental requirement affecting start of WIPP operations because the Environmental Impact Statement and subsequent supplements have been issued in accordance with NEPA requirements, and WIPP meets NEPA requirements and complies with DOE 5440.1D.

5480.18 Training Accreditation (11/2/89)
This Order lists facilities for which this Order is applicable; WIPP is not included in the list and therefore this Order is considered to not be applicable to WIPP. The review of Objective P.1, however, considers relevant portions of DOE 5480.18.

5600.1 Management of DOE Weapons Program and Weapon Complex (6/27/79)
This Order does not provide primary safety or environmental requirements applicable to start of WIPP operations.

6430.1A General Design Criteria (4/6/89)
The design bases and design criteria for WIPP are included in the Final Safety Analysis Report (FSAR) which has been reviewed and approved by DOE, and in the pending FSAR Addendum which is being reviewed by DOE Office of Safety Appraisals (EH-33). The EM ORR scope does not call for revisiting that effort. Accordingly, the EM ORR assumes that the design criteria are acceptable, per the approved SAR. Note that the FSAR does not require compliance with DOE 6430.1A for the as-built facility -- DOE 6430.1A was not in existence at the time WIPP was designed and built but is applicable to the testing program covered in the FSAR Addendum and future design changes. The EM ORR starts with the assumption that the facility design is acceptable and verifies that the facility "as-built" meets the requirements of the FSAR. Accordingly, DOE 6430.1A was not included in the EM ORR list of orders reviewed as part of the start-up readiness review.

Comments on the additional list of Level I DOE Orders (not safety related) identified by the DNFSB for possible inclusion are as follows:

1360.4A Scientific and Technical Computer Hardware (10/7/87)
This Order covers computer software developed or modified under DOE contract and provided for use by others. This Order is applicable to some of the work being done by the Scientific Advisor (Sandia) but does not affect, to any measurable extent, the readiness of WIPP to start operation and accordingly was not included in the EM ORR list.

1540.3 Base Technology for Radioactive Material Transportation Packaging Systems (2/29/88)
This Order has been included in the EM ORR list.

5400.2A Environmental Compliance Issue Coordination (1/31/89)
This Order is primarily a program reporting requirement and is not considered to address primary environmental compliance and was not included in the EM ORR list. However, it is implicitly covered under Sub-Objective F.1.3.

5480.15 DOE Laboratory Accreditation Program for Personnel Dosimetry (12/14/87)
This Order is referenced in DOE 5480.11; however it has been added to the list.

5480.17 Site Safety Representative (10/5/88)
This Order covers site representatives from the Assistant Secretary for Environment, Safety and Health (EH). No EH site representative is assigned to WIPP at this time or planned for the near future. Accordingly, this Order does not apply to WIPP at this time.

Objectives and Sub-Objectives

1. Section H.1: The emphasis of Objective H.1 is to ensure that systems identified in the FSAR as important to safe waste handling are afforded "special" consideration within WIPP programs for design, operation and maintenance or design configuration.

   Radiological Protection Review programs as implemented at the WIPP are addressed principally by Sub-Objective F.1.7.
   Additionally, Objective H.4 requires a review of radiological protection-related concerns as they relate to operational support services.

   The review as requested by the comment has been addressed as part of other objectives within this ORR and as such a sub-objective as part of H.1 would not be required.

2. Section F.1.7: The comment has been adopted and included in the CRAs, rev.1, page F-26.

Safety Objectives and Assignment Matrix

1. The comment has been adopted and included in Table 1 of the Implementation Plan.

Criteria and Review Approaches (General Comments):

1. The relevant required standards are referenced with each Objective and Sub-Objective; additional standards that were substantially used in the review are also included even if they are not a DOE requirement.

2. The number of samples listed in the CRAs as necessary to meet a Criterion were only a first estimate and were adjusted by the reviewers based on their observations and experience to meet actual conditions encountered. Substantative deviations from the CRAs are identified in the EM ORR report. In some cases, if a deficiency was identified after only a small sampling, and additional work would not have been productive, no more sampling was done. On the other hand, more sampling was employed in some cases to be sure that the initial deficiencies observed were not anomalies (e.g. with as-built drawing).

3. The comments on assessing the integrated results of training are covered in Sub-Objective P.1.6 (page P-9), P.2.4 (page P-16) and page F-34, rev. 1.

Criteria and Review Approaches (Specific Comments):

1. Section H.2.1 (Criteria): The comment has been adopted and included in the CRAs, rev.1, page H-11.

2. Section H.2.4 (Approach): The comment has been adopted and included in the CRAs, rev.1, page H-19.

3. Section H.2.7 (Approach): The purpose of this Sub-Objective was to assure that maintenance requirements and products are adequate. The review of ORs for maintenance practices, experiments and design modifications was covered under Sub-Objective F.1.5 and was accomplished during the EM ORR.

4. Section H.3.2 (General): Activities undertaken to address Sub-Objective F.1.1 address the review requested by the this comment. One of the activities, as defined by Approach #8 of Sub-Objective F.1.1, requires a review of the FSAR Accident Analysis Section and other hazard assessment documents for the WIPP program to ensure that comprehensive hazard assessment has been conducted and that the emergency plan is responsive to the full spectrum of accidents.

   As a point of clarification, abnormal operating procedures can apply to a very broad spectrum of operating conditions, none of which are emergency related. An example could be the local start of an Emergency

Diesel Generator, where the normal method of starting the diesel is automatic, or remote.

5. Section H.3.2 (General): The comment has been adopted and included in the CRAs, rev.1, page H-32; item #4 has been revised to require verification and evaluation of how personnel utilize procedures during emergency/event drills during the conduct of the ISC evaluations; item #5 has been revised to include interviews of all operational managers/supervisors authorized to make the decision to deviate from procedures during emergency situations.

6. Section H.3.4 (Approach): The comment has been adopted and included in the CRAs, rev.1, page H-36.

7. Section H.4.1 (Criteria): The comments of the first sentence are covered under Sub-Objective F.3.1, page F-53. The comments of the second sentence have been adopted and included in the CRAs, rev.1, page H-43.

8. Section H.4.2 (References): The comment has been adopted and included in the CRAs, rev.1, page H-46.

9. Section H.4.3 (Approach): The comment has been adopted and included in the CRAs, rev.1, page H-47.

10. Section H.5.1 (Basis): The comment has been adopted and included in the CRAs, rev.1, page H-55.

11. Section H.5.1 (References): The comment has been adopted and included in the CRAs, rev.1, page H-55.

12. Section P.1.1 (Criteria): The comment has been adopted and included in the CRAs, rev.1, page P-2 and P-3.

13. Section P.1.2 (Approach): The comment has been adopted and included in the CRAs, rev.1, page P-4.

14. Section P.2.1 (Approach): The comment has been adopted and included in the CRAs, rev.1, page P-11.

15. Section P.2.2 (Approach): The comment has been adopted and included in the CRAs, rev.1, page P-13.

16 Section M.1.1 (Approach): The comment has been adopted and included in the CRAs, rev.1, page M-2.

17 Section M.1.3 (References): The comment has been adopted and included in the CRAs, rev.1, page M-5.

18 Section M.1.3 (Approach): The comment has been adopted and included in the CRAs, rev.1, page M-8.

19. Section M.2.1 (Criteria): The comment has been adopted and included in the CRAs, rev.1, page M-13.

20. Section M.5.2 (General): The comment has been adopted and included in the CRAs, rev.1, page M-37.

21. Section M.6.1 (References): The comment has been adopted and included in the CRAs, rev.1, page M-42.

22. Section F.1.1 (Criteria): The comments have been adopted and included in the CRAs, rev.1, pages F-2, F-3 and F-4.

23. Section F.1.1 (Approach): The comment has been adopted and included in the CRAs, rev.1, page F-4.

24. Section F.1.2 (General): The comment has been covered under Sub-Objectives F.1.2 and F.1.7.

25. Section F.1.4 (General): The comment has been adopted and included in the CRAs, rev.1, pages F-15 to F-19.

26. Section F.1.4 (Criteria): The comment has been adopted and included in the CRAs, rev.1, page F-15.

26. Section F.1.6 (Criteria): The comments regarding Radiological Protection have been covered under Sub-Objectives F.1.7, Criterion #1 paragraphs 4, 6 and 7; the comments regarding quality assurance have been adopted and included in the CRAs, rev.1, page F-24 and F-25.

27. Section F.1.7 (Criteria): The comment has been covered under Section F.1.7, Approach #2, paragraph 1.

28 Section F.1.9 (Criteria): The comment has been adopted and included in the CRAs, rev.1, page F-34.

29. Section F.1.9 (Approach): The comment has been adopted and included in the CRAs, rev.1, page F-35.

APPENDIX A-4

REPORT ON EM ORR BY EH

-89)
FG (07-90)

United States Government **Department of Energy**

memorandum

DATE: August 21, 1991

REPLY TO ATTN OF: EH-331

SUBJECT: Summary of Office of Environment, Safety and Health (EH) Oversight Activities Related to the Office of Environmental Restoration and Waste Management (EM) Operational Readiness Review (ORR) of the Waste Isolation Pilot Plant (WIPP)

TO: Leo P. Duffy, Director
Office of Environmental Restoration
and Waste Management, EM-1

The Office of Safety and Quality Assurance (EH-30) has completed an oversight assessment of the ORR conducted by EM for the WIPP facility and WIPP Integrated Systems Checkout (ISC) during the period June 1991 through August 1991. The purpose of the EH oversight assessment was to verify and validate the processes and technical adequacy of the EM ORR for determining the readiness of the WIPP facility to operate. The EH review found that the measures taken by EM in their ORR to assess the readiness of the WIPP facility to operate, and the results of this review, were adequate and fulfill EM's line management safety review responsibilities. EH has no findings or concerns to report as a result of our review. The single EH recommendation is that EH be kept informed and involved from the onset of planning for future ORR's, so that EH involvement and both EH and EM resource needs can be better planned.

The EH review was conducted against the requirements contained in DOE Orders 5481.1B and 5480.5, draft EM objectives, criteria, and implementing procedures for conducting ORRs, including the EM ORR Activities Plan (June 1991), and the processes described in "Procedures for Conducting Technical Safety Appraisals" (DOE/EH-0129 Draft, February 1991). EH processes and evaluation criteria used for oversight of the EM ORR have been documented in a draft protocol, entitled "Protocol for Conducting Oversight Assessments of Operational Readiness Reviews for Startups and Restarts" (July 1991). This document has been provided to EM-20 for their information and future use. EH employed two Team Leaders from EH-33 and eight team members from Brookhaven National Laboratory (BNL), involving an extensive onsite presence, in conducting this assessment. Details of the assessments are documented in BNL to EH Trip Reports dated July 17, 1991, and August 1, 1991.

The EH conclusions are based on reviews of the EM ORR planning and team assembly processes, reviews of the EM processes and procedures documented for conducting the ORR, direct field observation of the EM ORR processes and personnel, interviews of EM ORR personnel, comparative sampling of selected technical issues, and assessment of the findings and conclusions documented by the EM ORR Team.

EH found the EM effort to be comprehensive and effective. The ORR Team Leaders, Senior Advisors, and Team Members were well-qualified, highly experienced, and technically competent. While many team personnel had previously had little direct experience with DOE organization and Orders, this was offset by their familiarity and experience with assessment processes, the

availability of detailed, formal assessment guidance, and Team Leader direction.

The EM ORR team was well-organized and well-directed. Team meetings and team interactions with WIPP personnel were observed to be structured and formal at all times. The use of Senior Advisors provided an independent high level assessment process within the ORR; however, their time demands on the Team Leaders during their onsite presence detracted from the availability of the Team Leaders for direct management and support of the team members, and impacted the Team Leader control and the team synthesis process during some of the team meetings.

Formal criteria and objectives were employed (Criteria and Review Approach - CRA) to effectively assess systems, management processes, and technical and functional issues at WIPP. Delay in formal approval of these criteria did not significantly impact the review effort since team members were able to use drafts effectively during the first week of the ORR. EH assessors (on a sampling basis) observed that all ORR team members used the appropriate CRA's and employed observations, walkdowns, interviews, and reviews of records, documents and procedures in conducting their assessments. EM ORR team findings were consistent with derived information and were technically adequate.

EH has reviewed the August 1991 draft of the EM ORR Report. The EM findings (38 prestart issues, 59 post-startup issues) are consistent with their assessments and with conditions observed by EH representatives, as well as with findings and technical issues previously identified by EH. EH has no additional findings to report.

The EH oversight assessment has determined that the EM ORR of the WIPP plant and equipment, personnel, management, and functional areas and programs met DOE requirements and was adequate to assess the readiness of the facility for startup. This assessment was conducted under the direction of Richard J. Serbu of EH-331. Should you have any questions or desire additional details, please contact Mr. Serbu at 3-2856.

Paul L. Ziemer

Paul L. Ziemer, Ph.D.
Assistant Secretary
Environment, Safety and Health

APPENDIX A-5

REPORT ON EM ORR BY NS

(8-89)
EFG (07-90)

United States Government **Department of Energy**

memorandum

DATE: August 28, 1991

REPLY TO ATTN OF: P.K. Niyogi, NS-20, (3-2421)

SUBJECT: Startup Assessment of the Waste Isolation Pilot Plant (WIPP) Dry Bin-Scale Test Phase by the Office of Nuclear Safety (NS)

TO: Leo Duffy, EM-1

Attached is the final report of the Office of Nuclear Safety's startup assessment of the Waste Isolation Pilot Plant (WIPP) at Carlsbad, New Mexico. This report has incorporated comments from your staff regarding factual accuracy.

We have organized our findings and concerns into two general categories: (1) safety documentation, and (2) operational readiness for startup. We recommend that the concerns listed below be categorized as "pre-startup" items, and these should be addressed immediately. Resolution of the remaining concerns should be undertaken after startup. This categorization is consistent with that of EM's ORR findings.

List of "Pre-startup" concerns:

Concern NS-91-01-06 (findings 1-4)
Concern NS-91-01-07 (findings 1, 3, 5)
Concern NS-91-01-08 (findings 1,2)
Concern NS-91-01-09 (findings 1-5)
Concern NS-91-01-10 (findings 1-3)
Concern NS-91-01-11

I would appreciate a written response within 60 days indicating what actions have been taken or are planned to resolve each of the concerns identified in the attached NS report.

Steven M. Blush
Director
Office of Nuclear Safety

Attachment: NS Assessment of Readiness for Startup for WIPP Dry Bin-Scale Test Phase

cc: E. Blackwood, NS-2
A. Marchese, NS-20
D. Stadler, NS-10
M. Frei, EM-34

OFFICE OF NUCLEAR SAFETY
ASSESSMENT OF READINESS FOR STARTUP FOR THE WASTE ISOLATION PILOT PLANT (WIPP) DRY BIN-SCALE TEST PHASE

Report No. WIPP-01-91-01

Responsible DOE Line Program: Office of Environmental Restoration and Waste Management

Assessment Dates: June 24-26 & July 17-18, 1991

Report Issue Date: August 28, 1991

Conducted by:

P. Niyogi
F. Anderson
E. Carnes
R. Davis
W. Gunther
J. Psaras
S. Reaven

Prepared by:

Steven M. Blush for P. K. Niyogi, Team Leader — 8-28-91 Date

Concurrence:

Steven M. Blush for Andrew R. Marchese, Director, Risk and Policy Analysis Division — 8-28-91 Date

Steven M. Blush for Dave Stadler, Director, Performance Assessment Division — 8-28-91 Date

Approved by:

Steven M. Blush
Steven M. Blush, Director
Office of Nuclear Safety

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WASTE ISOLATION PILOT PLANT (WIPP) ACRONYMS

ACNFS	Advisory Committee on Nuclear Facility Safety
AL	Albuquerque Operations Office
ALARA	As Low As Reasonably Achievable
ANS	American Nuclear Society
ANSI	American National Standards Institute
BNL	Brookhaven National Laboratory
CAM	Continuous Air Monitor
CMR	Central Monitoring Room
DAS	Data Acquisition System
DOE	Department of Energy
DOT	Department of Transportation
EEG	Environmental Evaluation Group
EH	Office of the Assistant Secretary for Environment, Safety and Health
EID	Environmental Improvement Division
EM	Office of Environmental Restoration and Waste Management
EPA	Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FSAR	Final Safety Analysis Report
FSEIS	Final Supplement Environmental Impact Statement
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilation, and Air Conditioning
I&C	Instrumentation and Control
IEEE	Institute of Electrical and Electronics Engineers
INPO	Institute of Nuclear Power Operations
ISA	Instrument Society of America
ISC	Integrated System Checkout
LCO	Limiting Condition of Operation
NAS	National Academy of Sciences
NRC	Nuclear Regulatory Commission
NS	Office of Nuclear Safety
OR	Occurrence Report
ORR	Operational Readiness Review
OSHA	Occupational Safety and Health Act
OSR	Operational Safety Requirement
PSO	Program Senior Official
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
SA	Scientific Advisor
SAR	Safety Analysis Report
SCBA	Self-Contained Breathing Apparatus
SNL	Sandia National Laboratories
SOP	Standard Operating Procedure
SOV	Solenoid Operated Valve
SR	Surveillance Requirement
TRU	Transuranic
USQ	Unreviewed Safety Question
WID	Westinghouse Waste Isolation Division
WIPP	Waste Isolation Pilot Plant
WPO	WIPP Project Office

I. EXECUTIVE SUMMARY

This report documents the results of an assessment of readiness for startup of the Waste Isolation Pilot Plant (WIPP) Bin-Scale Test Phase conducted by the Office of Nuclear Safety (NS). NS conducted its assessment at the site during the periods June 24-26, and July 17-18, 1991. The purpose of this assessment was to determine whether there is adequate assurance in operations regarding nuclear safety to enable NS to concur in startup and operation of the Bin-Scale Test Phase at WIPP.

WIPP was authorized by Public Law 96-164. Its mission is to provide "a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from the defense activities and programs of the United States." The facility is intended to be used to demonstrate receipt, handling, and permanent disposal of transuranic (TRU) waste. It is designed to be a facility in which studies and experiments can be conducted that will extend understanding of the behavior of radioactive waste in an underground salt formation.

The construction of the WIPP facility has been completed, and the safety and operational documentation prepared and reviewed. The facility is preparing to start the Bin-Scale Test program. This will constitute the first set of experiments at the facility in its 5-year Test Phase of operation. To demonstrate that the facility can be operated safely, the DOE Office of Environmental Restoration and Waste Management (EM) conducted a final Operational Readiness Review (ORR) for the Bin-Scale Test during June and July 1991.

The NS team identified several strengths associated with the facility, including the following:

- The openness and cooperation of the EM, DOE Albuquerque Operations Office (AL), WIPP Project Office (WPO), Westinghouse Waste Isolation Division (WID), and the Sandia National Laboratories (SNL) contributed greatly to the efficiency of the NS assessment and our understanding of substantive issues.

- The WID and SNL management and staff exhibited genuine dedication and concern for improvement of performance in their effort to resolve problems and deficiencies at the facility.

- The WID and SNL management have made significant progress recently in hiring quality management and staff, raising staff morale, and introducing a safety culture in all aspects of the facility.

The NS assessment also identified a number of concerns. These concerns are categorized in two general areas: those related to safety documentation for the facility, and those related to the operational readiness of the facility. Overall, there are three

principal concerns from the assessment as follows:

- The interface of responsibilities and accountabilities between the Sandia National Laboratories (SNL) and Westinghouse (WID) managers is unclear and, coupled with inadequate document control and lack of explicit procedures, can lead to problems.

- The emergency preparedness program has fundamental deficiencies, and is inconsistent with accepted standards necessary for establishing reasonable assurance that the public and personnel will be protected in the event of an emergency.

- In order to assure the Bin Scale Tests can be conducted successfully, it will be necessary to apply one or more room stabilization techniques.

The EM ORR team also found the above issues to be of concern and WIPP is in the process of resolving them as part of its pre-startup effort.

Other concerns which we wish to highlight are listed below:

- There are deficiencies in conduct of operations, management of the backlog of instrument calibration, and development, review and approval of procedures.

- The number of deficiencies observed during the Integrated System Checkout exercise was more than one would normally expect, indicating problems with operator training as well as inadequate procedures.

It should also be emphasized that whenever changes are made in the configuration of the underground rooms, including new excavations, the underground ventilation system has to be checked to assure proper flow balancing. This is not a matter of particular concern, but it is a matter of which the operating contractor must be constantly cognizant.

II. INTRODUCTION

The Waste Isolation Pilot Plant (WIPP) is authorized by Public Law 96-164. Its mission is to provide "a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from the defense activities and programs of the United States." To implement this mission, the Department of Energy (DOE) has designed WIPP as a full-scale facility to receive, handle and permanently dispose of transuranic (TRU) waste, in order to demonstrate the many technical and operational principles associated with permanent isolation of TRU waste in a geologic repository. The WIPP facility has been designed to accommodate studies and experiments to extend understanding of the behavior of radioactive waste in an underground salt formation.

The full storage capacity of WIPP (about 6.2 million cubic feet of contact-handled and 250,000 cubic feet of remote-handled TRU waste) will not be utilized until sufficient operating and scientific data have been accumulated to ensure that long-term disposal of radioactive waste in a salt formation is safe. Within the initial 5-Year demonstration period, referred to as the Test Phase, a decision will be reached either to dispose of TRU waste permanently at the WIPP facility or to retrieve the emplaced waste for an alternative mode of disposal. If it is decided that WIPP can be used for permanent disposal of waste, there will be a Disposal Phase of about 25 years for placing waste inside and then closing and sealing the facility. Subsequently, the predicted performance of the facility must meet specified Environmental Protection Agency (EPA) regulations for radioactive waste disposal (40 CFR 191). These regulations are intended to provide individual protection for a period of 1,000 years and containment of the waste for 10,000 years.

Organizationally, the Director of the Office of Environmental Restoration and Waste Management (EM) is the Program Senior Official (PSO) responsible for authorizing operation of WIPP. The DOE Albuquerque Operations Office (AL) and the WIPP Project Office (WPO) provide local inspection and oversight assuring continued compliance with regulations, DOE orders, contractual obligations, and EM requirements. Westinghouse Electric Corporation's Waste Isolation Division (WID) is the management and operating contractor, and is responsible for day-to-day operation of the plant. Sandia National Laboratories (SNL) serves as scientific advisor (SA) and is responsible for the design of experiments and performance assessment during the Test Phase.

To demonstrate that the facility can be operated safely at minimum risk, a safety analysis preparation and review process was established for WIPP. The Final Environmental Impact Statement (FEIS) was published in 1980, and a Final Supplement to the Environmental Impact Statement (FSEIS) was issued in January 1990. The Final Safety Analysis Report (FSAR), Revision 0, was prepared by Westinghouse for DOE and was published in June 1990. These documents

have been subjected to reviews by (1) DOE Advisory Committee on Nuclear Facility Safety (ACNFS), (2) State of New Mexico Environmental Improvement Division (EID), (3) Environmental Evaluation Group (EEG), (4) National Academy of Sciences (NAS) WIPP Panel, and (5) DOE AL, and (6) DOE Office of Assistant Secretary for Environment, Safety and Health (EH).

EM decided to start the Test Phase of WIPP with Dry Bin-Scale Tests. An addendum to the FSAR addressing issues related to the Dry Bin-Scale Tests was issued for review in draft form in mid-1990. The document was reviewed by WPO, AL, EM, EH and NS. This was followed by reviews by external organizations such as EEG and ACNFS. A final Addendum is scheduled to be issued before startup.

At the recommendation of the Defense Nuclear Facilities Safety Board (DNFSB), EM initiated a final Operational Readiness Review (ORR) of WIPP for the Bin Scale Test Phase of operation. The ORR started on May 29, 1991 and was completed in June. An Integrated System Checkout (ISC) was performed in July. A draft ORR report was issued by EM on July 31, 1991, and the final version was issued on August 19, 1991.

The Office of Nuclear Safety (NS) performed an independent assessment of the ORR, including an assessment of ISC activities. This assessment was part of its continuing oversight responsibility for the facility, and was conducted in accordance with the provisions of Secretary of Energy Notice (SEN) SEN-16A-90 and SEN-6C-91. The NS assessment focused on the ORR process and the ORR results. The NS team reviewed draft documents prepared by the ORR team during its review, and attended selected key activities as observers. In addition, the NS team interviewed plant operations staff and management at the site, performed independent review of selected areas of plant operation and procedures, and took part in the ISC exercises as observers. The NS team conducted its assessment using DOE Orders, commercial standards (e.g., ANSI, ANS), and knowledge of good commercial nuclear industry practices as the bases for evaluating nuclear safety.

III. SAFETY DOCUMENTATION

A. SAFETY ENVELOPE

1. Assessment Basis

DOE 5481.1B specifies basic requirements for safety analysis by DOE contractors and review by DOE line organizations. DOE 5480.5 specifies additional requirements for Safety Analysis Reports (based on NRC Regulatory Guides) and basic requirements for Operational Safety Requirements, and Unreviewed Safety Questions (USQ). DOE 5480.19 specifies requirements for operating procedures (Chapter XVI) to ensure that safe operation of the facility within its design bases and safety envelope are documented in the Safety Analysis Report (SAR). DOE 5000.3A contains requirements for occurrence reporting and processing of operational information. DOE 6430.1A contains general design criteria for DOE facilities.

2. Discussion

The safety envelope of a facility establishes the conditions within which the facility was designed and analyzed to be capable of being operated safely. The safety envelope for WIPP has been defined by the design basis as described in the SAR, and is reflected in the OSRs and standard operating procedures (SOPs). The safety envelope should be verified to be accurate through activities such as design verification and qualification testing. Functional testing of equipment and operability testing of systems should be used to ensure that operating characteristics of the facility are maintained within the safety envelope. The adequacy of the safety envelope should continue to be examined through the USQ process, occurrence reporting, performance indicators, and lessons learned from operations.

SARs are prepared by operating contractors and approved by DOE. The SAR includes analyses of potential accidents that could, for example, release radioactive material to the environment. It also documents operating limits of the facility which are determined by a comparison of potential accidents with the facility's design criteria. Any process or operation outside of these analyzed operating limits, which form the safety envelope for facility operation, involves a USQ, and requires additional DOE review and approval for facility operation.

The current FSAR for WIPP (WP 02-9, Rev. 0) was completed in May, 1990. The FSAR describes the WIPP facility, its

operation, and the experimental programs, site analysis, radiological impact of normal and abnormal operations, general design criteria, process descriptions, radiological protection, accident analysis, conduct of operations, OSRs, QA program, and decontamination and eventual decommissioning of the facility.

In late 1990, a draft Addendum to the FSAR was prepared to address the issues related to the Dry Bin Scale Test Phase of WIPP operation. The Addendum was reviewed internally and by external groups. Revision 0 of the draft addendum (WP 02-9) was issued in July 1991. The final version is scheduled to be issued in August 1991. The NS team's comments are based on a review of these documents.

3. Concerns and Findings

Concern WIPP-NS-91-01-01:
If the Exhaust Air Filtration Systems are considered safety-related (the SAR takes credit for mitigation of accidents AG-1 and AG-2), it should be the subject of Limiting Conditions for Operation. Currently, the facility Limiting Conditions for Operation (LCO) and Surveillance Requirements (SRs) do not address all of the systems that would be required to be operable to support this system.

Findings:

- The LCO for the Underground Exhaust Air Filtration System addresses only the operability of the mechanisms necessary to shift air flow through the system and the operability of the HEPA filter units, and not the complete system including the exhaust system.

- The LCO for the Waste Handling Building Exhaust Filtration Systems addresses only the operation of the exhaust trains. The action statement only addresses the operation of the subsystems, not the HEPA filter units.

- The LCO for the Backup Electrical System addresses the operability of the backup diesel generator and electrical distribution system, but does not address any of the essential support systems for the diesel generator such as startup batteries and the oil supply system. The system is said to be required only when personnel are underground, but the system may be needed to operate filtration and

ventilation systems for certain buildings above ground.

- The SRs for the above three safety-related systems address the specific subsystems and components stated in the LCO, but do not address support systems needed to ensure the systems are capable of functioning as required.

- The SRs do not specify all of the acceptance criteria that would need to be met during the tests to ensure operability of safety-related systems (for example, the startup batteries (and their chargers) for the diesel generator).

Concern WIPP-NS-91-01-02:

The Administrative Controls section of the OSR does not specify all of the information needed for administration of a safe operation.

Findings:

- The Administrative Controls section does not address requirements for the independent review and audit function provided by the safety review committees at WIPP.

- The Administrative Controls section does not delineate the WIPP Organization (including both Westinghouse and Sandia).

- The Administrative Controls section does not address the requirements for a Radiation Protection Program.

Concern WIPP-NS-91-01-03:

The LCOs, SRs, and other sections of the OSR document are not formatted and organized in a manner that promotes ease of use, audit, and understanding.

Findings:

- The LCOs and SRs provided for the WIPP Bin-Scale Test as an addendum to the OSR document are numbered as if the requirements were in the Introduction and Safety Limits sections of the document, respectively, rather than in the OSR sections for LCOs and SRs.

- The SRs are physically separated from the LCOs which hampers the one-for-one correlation necessary to ensure verification and implementation in the procedures.

- The Bases only apply to the LCOs. The Bases should also establish the appropriateness of the SRs.

- The LCOs and SRs provide requirements on systems that are not safety-related (such as radiation instrumentation, differential pressure systems, bin overpressure protection and monitoring system), and are likely to distract the user from requirements on systems that are important to safety.

IV. SYSTEMS AND CONFIGURATION CONTROL

A. ELECTRICAL POWER DISTRIBUTION AND I & C

1. Assessment Basis

DOE 5480.5 establishes that DOE nuclear facilities should be operated and maintained in accordance with generally accepted standards, guides, and codes which are consistent with those applied to comparable commercial licensed nuclear facilities. ANSI/IEEE Standard 141-1986, "IEEE Recommended Practice for Electric Power Distribution for Industrial Plants," ANSI/IEEE Standard 242-1986, "IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems," IEEE Standard 241-1983, "IEEE Recommended Practice for Electric Power Systems in Commercial Buildings," ISA Standard ISAOS67.04-1987, "Setpoints for Nuclear Safety-Related Instrumentation," and ISA Draft Standard RP67.04 - Part II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation," provide guidance and methodologies for the design of electrical distribution systems and calculation of instrument loop setpoints and accuracy determinations. These standards establish the design features, calculations, studies, analyses, and good engineering practices that need to be applied to ensure safe and reliable operation of electrical equipment at industrial facilities.

2. Discussion

Analyses, calculations and studies are typically performed as part of the design of industrial facility electrical distribution and instrumentation systems to ensure their safe and reliable operation. For example, studies and analyses are used to verify adequate continuous current ratings for electrical equipment, to determine thermal rating of cables, to verify adequate voltage levels for proper operation and protection of equipment during normal operation and transient conditions, to determine fuse and breaker ratings and establish protective relay settings, and to ensure proper coordination of protective devices. The NS team's assessment included a review of the design of the Data Acquisition System (DAS), the Central Monitoring Room (CMR), and the backup electrical system (diesel generators).

3. Concerns and Findings

Concern WIPP-NS-91-01-04:

There are deficiencies and inconsistencies in the procedures for operation of backup electrical systems at WIPP.

Findings:

- Procedure PM025039, Rev. 0, "Monthly Inspection and Maintenance of Batteries and Charger for Diesel Generators" has the following deficiencies: (1) To perform this procedure, one of the diesel generators must be taken out of service; the procedure should require the user to verify that the other diesel generator is available for service, if necessary; and (2) The acceptance criteria state that the specific gravity of all acid battery cells must be within 50 points of each other. This value exceeds IEEE requirements as identified in Standard 450-1987, which states that a difference in the specific gravity of more than 10 points is a cause for concern requiring the initiation of an equalizing charge. Also, the acceptance criteria do not specify a minimum allowable voltage. Other recommended techniques in the IEEE standard such as averaging the specific gravity readings are not incorporated in the procedure.

- Procedure WP04-701, Rev. 0, "1100-KW Diesel Generator Operational Checks" is intended to satisfy the surveillance test requirement of LCO 3.3, Backup Electrical Systems, by requiring operation of the diesel generator under load conditions for 2 hours. The procedure does not address the surveillance requirements for the electrical distribution system. To verify the operability of the electrical distribution system, one would expect a breaker lineup to be performed to assure that required equipment is available to support safe operation of the facility. The procedure does not accomplish this.

- Procedure WP04-ED1341, "Site Backup Power System" is intended for use in the event of a loss of offsite power. This important procedure has the following deficiencies: (1) It does not have any sign-offs; the complexity of this procedure warrants sign-offs for critical steps to better assure that these are correctly implemented, and

(2) The procedure is inconsistent with the procedure for operation of the underground ventilation system, WP04-VU1001. The latter provides for operation of the ventilation system in the filtration mode with the Station A radiation monitoring system out of service. However, steps 7.1.25, 7.3.21, 7.5.18, and 7.7.28 in procedure WP04-ED1341 explicitly state that Station A must be operated before the ventilation system is initiated in the filtration mode.

Concern WIPP-NS-91-01-05:

Acceptance criteria needed to determine the adequacy of the initial checkout and testing of the Data Acquisition System (DAS) are not provided in the procedures which govern this program.

Findings:

- WIPP procedure 013, Rev. 8, "Cable Testing" states that voltage drop readings "may not vary more than +/- .010 volts between readings" and that the cable should be repaired if this limit is exceeded. The procedure and the attached data sheet do not explain which voltage readings should be taken and compared.

- In the above procedure, there is no requirement to record if repairs were made. The procedure should direct that all repairs and before-repair and after-repair voltage readings be recorded.

- WIPP procedure 346, Rev. 1, "Bin-Scale Instrumentation Board, Oxygen Sensor and Thermocouple (Removal/ Installation /Checkout)" and its data sheet contain a multitude of readings for critical instruments such as pressure transmitters, oxygen sensors, solenoid operated valves (SOVs), and flow meters. No acceptance criteria are specified for these devices except for the SOVs.

- WIPP procedure 352, Rev. 1, "Connection and Activation of Bin-Scale Gages into DAS," includes a data sheet with no references to the relevant procedural steps, thus making it difficult to evaluate the data. No tolerances are specified on the data sheet.

B. VENTILATION SYSTEM

The underground ventilation system at the WIPP facility has undergone a series of tests by Westinghouse and its consultant, Mine Ventilation Services, Inc., starting in July 1988. These tests revealed some problem areas (including the possibility of flow reversal) in the design and operational control of the system, which led to a number of modifications and enhancements that have now been implemented and tested. These modifications are documented in the report, "An Assessment of the Underground Ventilation System at the WIPP Facility," DN-560-3, April 1991, prepared by Mine Ventilation Services, Inc.

It is evident from the above study that, because the system handles large volumes of air at small pressure differentials, minor changes in the configuration can cause undesirable flow conditions. Therefore, whenever changes are made in the configuration of the underground rooms, including new excavations, the system must be checked to assure proper flow balancing.

NS does not have any concerns or findings on this issue.

V. OPERATIONAL READINESS

A. CONDUCT OF OPERATIONS

1. Assessment Basis

(1) DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities."

(2) DOE 5480.11, "Radiation Protection for Occupational Workers."

(3) DOE 5480.18, "Accreditation of Performance-Based Training for Category A Reactors and Reactor Facilities."

(4) DOE 5480.1B, "Environment, Safety, and Health Programs for Department of Energy Operations."

(5) DOE 5480.5, "Safety of Nuclear Facilities."

(6) DOE 5000.3A, "Occurrence Reporting and Processing of Operations Information."

2. Discussion

DOE 5480.19 requires that operation of WIPP be conducted in a manner that ensures that an adequate level of performance is achieved. Well-defined policies and programs to govern the operation of WIPP must be effectively implemented. Operational activities must recognize that safety, environmental compliance, and productive work are compatible goals. The technical aspects of specific operations and measures for accident mitigation must be clearly defined, and facility management must establish standards for operating activities that are integrated into facility procedures and programs. Sufficient staff, equipment, and funding must be allocated, personnel must be well trained, and effective performance monitoring systems must be in place so that performance levels can be measured, evaluated, and guided to excellence.

DOE 5480.5 establishes that DOE nuclear facilities such as WIPP will be operated and maintained in accordance with "generally uniform standards, guides, and codes" consistent with those applied to comparable commercially licensed nuclear facilities.

DOE 5480.11 requires that an As Low As Reasonably Achievable (ALARA) program and radiation exposure control programs be in place.

3. Concerns and Findings

Concern WIPP-NS-91-01-06:

There are general deficiencies in the quality of conduct of operations throughout the WIPP facility.

Findings:

- o After discussion with some 12 staff members at the plant, the NS team concluded that the operators have not developed an adequate safety culture. For example, when one of the managers was asked why so many instruments were out of calibration (see below), the response was that WIPP was in a "casual mode of operation at that time."

- o Instruments were out of calibration in the Waste Handling Building, HEPA Filter and Blower Building, and the Diesel Generator Building. There was a sticker with expired dates, and a sticker with an indication not to use the instrument.

- o Procedures have been revised and assigned new numbers instead of revision numbers, which presents potential problems with document control. Examples: PM 025035 "Annual Inspection and Maintenance of Diesel Generators", 10/5/90 was 25P-E-503 M07C & M08C; PM 02536 "Quarterly Inspection and Maintenance of Diesel Generator", 9/27/90 was 25P-E-503.

- o Several simple procedural changes, such as use of power tools instead of manual tools, could reduce the "contact time" with the waste bin by the workers and reduce worker exposure.

- o The following observations made by the NS team indicate deficiencies in the maintenance program:

  There were drops of oil on the floor leaking from manual valve gearboxes operating the ventilation duct dampers in the HEPA Filter Building.

  Exposed battery terminals were observed in the backup diesel station. The batteries are located close to the diesel generators. A dropped tool used in maintenance could easily cause a short.

In the Waste Handling Building HVAC area, one effluent CAM and two area CAMs were tagged out for over 1 month.

No maintenance backlog procedures are available and numerous calibrations and preventive maintenance of equipment are overdue.

B. NUCLEAR CRITICALITY SAFETY

1. Assessment Basis

(1) DOE 5480.4, Section 8.

(2) DOE 5480.5, Section c.

(3) ANSI/ANS-8.1, Sections 4.1.1 and 4.1.3.

(4) ANSI/ANS-8.19, Sections 4.5, 5.3, 5.4, and 7.

2. Discussion

The type, amount, concentration, and configuration of the Contact Handled TRU waste that may be available at the site during the Dry Bin Scale Tests cannot result in a criticality event for waste that are certified to meet WIPP Waste Acceptance Criteria.

3. Concerns and Findings

None.

C. ADMINISTRATION & MANAGEMENT

1. Assessment Basis and Discussion

The activities at WIPP during the Bin-Scale Test Phase will have the involvement of several organizations: WID, SNL, DOE WPO, DOE AL, and EM. In order to make the test program successful, the individual organizations need to be sound, and the interfaces between them must be clear and unambiguous. The NS team reviewed the organization charts, interviewed management at different levels about their perception of responsibilities, degree of job satisfaction, problem areas, organizational strengths and weaknesses, and interfaces with other organizations. The responses provided clues as to whether the fundamental principles of good business and management practice were being followed.

2. Concerns and Findings

Concern WIPP-NS-91-01-07:

The management system in place at the facility has demonstrated certain dysfunctional characteristics; the interfaces of responsibilities between organizations are not always clear.

Findings:

- Overall responsibilities and accountabilities of WIPP (SNL and WID) managers are unclear and, coupled with inadequate document control and lack of explicit procedures, could lead to problem. For example, when interviewed, the perceptions of SNL and WID management about respective responsibilities during the Bin Scale Test was found to be inconsistent.

- While mechanisms for raising and periodically reviewing scientific and technical concerns are in place, not much thought has been given to what process, if any, might be appropriate for closure and resolution of such issues. Similarly, closure of maintenance items, occurrence reports and other open items are not handled in an efficient manner, as indicated by the presence of numerous open items.

- Both the SNL and the WID management complained about differing, and often conflicting, instructions received directly from DOE HQ, AL, and WPO, which has led to confusion and delay.

- Recruiting good technical people is a primary need at the facility; recruiting and staffing problems have delayed progress of the WIPP project.

- The facility has numerous indicators and instruments out of calibration. It was clear from discussions with the site staff that most of about 600 occurrence reports during the year 1991 were calibration related, and that a substantial maintenance backlog existed. The concern is whether, when the bin scale tests proceed, there will be sufficient resources available to keep up with the schedule as well as eliminate the backlog.

D. INTEGRATED SYSTEM CHECKOUT

1. Assessment Basis

   (1) "Observers Handbook for the Integrated System Checkout," which was provided to all observers during the ISC exercise and contains the WIPP Waste Handling Operations Normal Operations Procedures Manual, WP 05-NO.

   (2) DOE/WIPP 90-002, "WIPP Dry Bin-Scale Integrated System Checkout Plan," April 1991.

2. Discussion

   The Integrated System Checkout Plan was developed to provide assurance that operational activities dedicated to supporting the Dry Bin-Scale Tests can be achieved safely and the experiments conducted successfully. The plan included development of detailed procedures for operation and monitoring of equipment, training of personnel, development of acceptance criteria with capability of corrective actions, and documentation of results.

   The ISC exercise followed the entire operation to be performed at the facility during the Bin-Scale Test Phase. It involved receiving the TRUPACT containers from the trailers, checking them for contamination, transporting them to the surface and underground test areas, performing tests and monitoring them, and finally loading the TRUPACTs back to the shipping trailer.

   The NS team observed these exercises, both above and below ground. The team was provided with two copies of the Observers Handbook which contained procedures to be followed during the exercise.

3. Concerns and Findings

   Concern WIPP-NS-91-01-08:

   A number of problems were encountered during the Integrated System Checkout (ISC) which indicated (1) inadequate in training of operators, and (2) deficient in operating procedures.

   Findings:

   o There were an inordinate number of procedural discrepancies and nonconformances found during the tests witnessed on July 17 and 18. Examples are:

(1) WP 05-WH1010 Section 9.1.1 was not in full compliance with RCRA during the ISC, and (2) The personnel observed were not fully trained and were not able to identify problems (WP 05-WH1801 varian leak test, and WP 05-WH1809 for air pressurization and leak test procedure). In addition, it appears that the WID procedure audit process is not uniformly effective.

- o A Varian leak tester was determined to be faulty on July 17, and a second Varian was brought into the underground bin test area during the morning of July 18. Following three attempts to achieve equilibration, it was determined that there was a problem with the second unit, and the test was abandoned. The Varian had a valid calibration sticker. This incident left us concerned that Waste Handling Operations personnel were not well trained in the use of equipment and instrument procedures that will be standard for the bin test experiments. This perception was reinforced by the following two findings:

  On July 17, the apparatus used to getter oxygen in the bins was improperly shut down. Operating procedure WP 05-WH1801 required the recirculation pump to be shut down prior to complete system shutdown. The procedure was subsequently amended.

  On July 18, the getter system was being regenerated (procedure WP 05-WH1802). The required regeneration gas (3%-5% hydrogen in argon) was not connected to the system. Connected in its place was a cylinder of 10% methane in argon. WIPP staff were not immediately aware if this was an alternative agent or not. Later it was found that it was a mistake, caused by the use of the DOT shipping number (NOS 1956) as a unique identifier for replacement gas cylinders. The immediate safety implication is judged to be small, with the potential for a small fire. However, NS is concerned that a more hazardous gas or gas mixture bearing the same DOT number could have been connected to the gettering system.

E. EMERGENCY PREPAREDNESS

1. Assessment Basis

DOE 5500 series Orders, in particular DOE Order 5500.3 (and 5500.3A), "Emergency Planning and Preparedness for Operational Emergencies", require that DOE facilities and

operations establish and maintain emergency preparedness programs to protect the health and safety of the public as well as DOE and contractor personnel. In addition, both INPO and the NRC have issued a number of reference sources which serve as standards and good practices for assessing emergency preparedness programs. These include:

(1) INPO 88-019 Institute of Nuclear Power Operations Drill and Exercise Manual.

(2) INPO 85-014 "Generic Guidance for Emergency Preparedness Review."

(3) U.S. Nuclear Regulatory Commission Inspection Procedure 82302 "Review of Exercise Objectives and Scenarios for Power Reactors."

(4) U.S. Nuclear Regulatory Commission Temporary instruction 2515/55 "Emergency Preparedness Implementation Appraisal Program."

(5) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82201 "Emergency Detection and Classification."

(6) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82202 "Protective Action Decisionmaking."

(7) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82203 "Notifications and Communications."

(8) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82204 "Changes to the Emergency Preparedness Program."

(9) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82206 "Knowledge and Performance of Duties (Training)."

(10) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82207 "Dose Calculation and Assessment."

(11) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82209 "Public Information Program."

(12) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82210 "Licensee Audits."

(13) U.S. Nuclear Regulatory Commission IE Inspection Procedure 82211 "Emergency Worker Protection."

(14) 29 CFR 1910.120.

2. Discussion

Emergency preparedness programs are expected to be developed consistent with the type and magnitude of hazards applicable to a given facility or operation. Since emergency preparedness program reliability can only be verified under actual emergency conditions, indirect measurements are used to determine if programs are developed and maintained in a fashion that provides reasonable assurance that actual emergencies could be adequately managed. This concept of reasonable assurance requires that specific program elements be developed in a logical sequence. These include plans, procedures, facilities, equipment, training, drills and exercises. The process for verifying reasonable assurance involves three steps. First, the plan must be found to correspond to accepted standards. Next, the procedures, facilities, equipment and training must be judged satisfactory to implement the plan. Finally, drills and exercises must be conducted to determine if personnel can perform emergency functions in an adequate fashion.

In the case of WIPP, it is important to note that there is a significant difference between mine safety and emergency preparedness. Mine safety programs typically focus on protection of mine personnel from structural collapse or release of hazardous substances in the mine itself. Emergency preparedness programs are focused on protection of the public, as well as workers, from accidents resulting in releases of hazardous materials into the atmosphere. The principal requirements of emergency preparedness are to identify a problem, categorize the severity, notify members of the public and personnel on site of the problem, initiate measures to prevent or minimize exposure to the hazardous substance, and rectify the problem. While it is conceivable that a single program could address both mine safety and emergency preparedness, the focus of each is different.

The NS assessment of emergency preparedness at WIPP focused on determining if the ORR followed acceptable methodologies consistent with the concept of reasonable assurance. The findings of the ORR were evaluated as an indicator of the status of WIPP emergency preparedness.

Concern WIPP-NS-91-01-09:

The emergency preparedness program at WIPP has fundamental deficiencies and is not consistent with accepted standards for establishing reasonable assurance that the public and personnel will be protected in the event of an emergency.

Findings:

- The WIPP emergency plan and its supporting documents do not adequately address key emergency response functions and responsibilities. For example, there is no procedure for classifying WIPP emergencies; there is no procedure for recovery/reentry except in response to natural disasters; there is no procedure for control of public visitors or tour groups on site during an emergency.

- There is no training and qualification program to ensure that emergency response personnel at WIPP and supporting DOE sites are prepared to perform their emergency duties. Training that has been developed for Hazardous Material Emergency Response personnel does not comply with OSHA requirements.

- Provisions are not in place for maintenance of emergency equipment. For example, there is no procedure for surveillance of equipment and material inventories in the Emergency Operations Center (EOC); Radiological Emergency Response Kits are not tamper controlled and some kit equipment was missing or inoperable during the July exercise; the trailer housing the Hazardous Material Emergency Response equipment is unsealed, uncontrolled and there is no inventory describing the specific material and equipment that should be maintained to respond to an emergency situation.

- The emergency public information program is not currently ready to respond to an emergency. For example, the public information plan, procedures and response organization are not complete. Similarly, orientation briefings to inform the media of how they would be provided information during an emergency have not been conducted.

- AL office duty officer procedures, necessary to respond to a transportation accident, are not formalized and are incomplete.

- Via interviews and document reviews, it was determined that the WIPP Emergency Plan and supporting documents are not based on an assessment of the full spectrum of potential hazards possible at WIPP. As a result, it is not possible to determine that vital emergency response program elements such as emergency categorization, protective actions, response personnel selection and training, facilities and equipment are sufficient to handle accidents that could occur at WIPP.

- AL office Emergency Operations Center (EOC) personnel are not trained to respond to WIPP emergencies although the WIPP emergency plan states that AL is responsible for overall executive direction of WIPP emergency response. These personnel would respond to the EOC to perform emergency duties, yet they are not required to receive EOC training; it was found that some personnel had not been trained.

- WIPP communication systems for on-site notification and emergency response call out are not adequate. The public address system (PA) is the only available means for notifying site of emergency conditions and protective actions. The PA system is not officially categorized as an emergency system and is known to be inaudible in several areas, including the main gate building and the Waste Handling Building. The notification process to mobilize the EOC personnel is time consuming (over 20 minutes to accomplish) and there is no verification system to determine if EOC personnel were successfully notified or if they will respond.

- Not all personnel who are expected to assume incident command in an emergency are trained in Fire Brigade Leadership.

- Emergency use Self-Contained Breathing Apparatus (SCBAs) were not properly inspected or tested in accordance with OSHA requirements, SCBAs were not inspected on a monthly basis, and inspection records were not maintained. Breathing air cylinders were not hydrostatically tested (once per five years at a minimum).

- Portions of the DOE emergency response organization along the transportation corridor from INEL to WIPP lack procedures, training, and overall direction.

Concern WIPP-NS-91-01-10:

Conduct of the July 18, 1991 Emergency Exercise revealed weaknesses inconsistent with demonstrating reasonable assurance that the health and safety of the public and personnel can be protected.

Findings:

- WIPP was unable to demonstrate the ability to assess off-site radiological hazards. Personnel responsible for dose assessment provided inaccurate wind direction data to the field monitoring team. As a result both field monitoring data and dose assessment data as reported to the EOC was 180 degrees in the wrong direction.

- Personnel protection practices by field monitoring personnel were inadequate. A single individual performed field monitoring. This violates accepted practices of having at least a two-person team to help ensure personnel safety and efficiency of data and sample collection. Also, the field monitor did not carry dosimetry or a radiation detection instrument into the field thus violating accepted standards of radiological protection.

- Fundamental deficiencies were noted in the development and conduct of the exercise, including: lack of clear objectives; lack of key objectives (classification, recovery, interface among teams); inadequate detail to support hypothesized events; lack of messages for controllers to use to drive the exercise; lack of communication capability within the control organization; lack of control for termination of exercise, dose assessment and mock tour group; and ineffective mockup of the fire scene. Such deficiencies precluded effective demonstration of emergency response capabilities.

F. OTHER CONCERNS

Concern WIPP-NS-91-01-11

The report entitled, "Report of the Geotechnical Panel on the Effective Life of Rooms in Panel 1", June 1991, contains considerable diversity of experts' opinion on the life expectancy of Room 1, where the test bin experiment will be

carried out. Conservatively, the experts estimate that the roof will cave in after 8 years. Room 1 excavation began in 1986 and, consequently, the conservative life expectancy is through 1994. In order to prevent roof collapse during the bin test period, it will be necessary to provide measures for roof stabilization through the Year 2000.

VI. REFERENCES

1. Waste Isolation Pilot Plant Final Analysis Report, WP 02-9, Rev. 0, May 1990.

2. Waste Isolation Pilot Plant Final Safety Analysis Report Addendum - Dry Bin-Scale Test, WP 02-9, Rev. 0, July 1991.

3. Waste Isolation Pilot Plant Dry Bin-Scale Integrated System Checkout Plan, DOE/WIPP 90-002, April 1991.

4. Environmental Restoration and Waste Management - Operational Readiness Review of the Waste Isolation Pilot Plant, Summer 1991.

5. Report of the Geotechnical Panel on the Effective Life of Rooms in Panel 1, DOE/WIPP 91-023, June 1991.

6. An Assessment of the Underground Ventilation System at the WIPP Facility, DN-560-3, April 1991.

7. Winter Testing of the Underground Ventilation System at the WIPP Facility, DN-560-2, April 1991.