THE WIPP PROJECT, READY FOR SITE DEVELOPMENT

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INTRODUCTION

The recent Presidential statement defining his radioactive waste management program has created much uncertainty on the future of the Waste Isolation Pilot Plant, planned for construction in the southeastern corner of New Mexico. Whether or not the project, as presently scoped, will go forward is in the hands of the Congress and the President. This paper summarizes the current technical status of the project.

The WIPP project has gone through a series of design changes, reflecting development and evolution of the U.S. Government's program for radioactive waste management, and congressional mandates for WIPP as provided in the legislative process. A brief review of the evolution of the design will put the current status of the project in perspective.

BACKGROUND

Work on the WIPP project was initiated shortly after the abandonment of the Lyons, Kansas,salt repository project in 1972 with a view to developing a geologic repository for transuranic wastes from the defense program. The project was discontinued in 1974 in favor of concentrating efforts on a Retrievable Surface Storage Facility (RSSF). With the demise of that project in 1975, work was resumed on the WIPP facility and its scope expanded to include high-level defense wastes.

The conceptual design was performed by Sandia Laboratories in Albuquerque. It was done over a three-year period. Sandia was supported by Holmes & Narver and Fenix & Scisson in this work. This conceptual design was started after it was determined that the site at Lyons, Kansas, was not feasible for a repository, and USGS recommended that the Permian Basin area in New Mexico and Texas be studied.

Specifications stated that the plant be designed so it could be licensed if that became a requirement. This design had five shafts from the surface, two storage horizons, and two waste handling buildings: one for high-level TRU and one for low-level TRU waste. It was intended for the receipt and storage of 1.2 million cu. ft./year of contact-handled transuranic wastes, 250 thousand cu. ft./year of remote-handled wastes, and up to 300 canisters of high-level wastes for experiments.

Title I, or preliminary design work, on WIPP began in January 1978. The conceptual design developed by Sandia was the basis for this effort. It was anticipated that Title II, detailed design work, would commence the first quarter of 1979. However, in May of 1978, conceptual work was begun on a revised mission concept. This concept developed out of recommendations made in the course of the work of the Interagency Review Group (Deutsch Group). It reduced the remote-handled TRU waste to 10 thousand cu. ft./year, maintained the same contact-handled waste, and added 1,000 spent unreprocessed fuel canisters to the experimental area. This concept included only one waste handling building, reduced the lower horizon considerably because of the reduction in the quantity of high-level waste, and reduced the number of shafts from five to four after having started with two in the design criteria.

By the end of 1978, full attention was being given to the revised mission concept design. Title I engineering was scheduled for completion at the end of September 1979 with Title II, or detailed design work, to begin on October 1. Input by the Congress, and resulting actions by the Department of Energy during the summer of 1979, produced another change in the scope and concept of WIPP. The concept of experimentally storing up to 1,000 unreprocessed spent fuel elements was discarded. With this change, the lower horizon was eliminated. Work began to redesign the underground facilities to put all of the waste and the underground shops and support activities on a single level, and to place the experimental facilities on that same horizon. The Title I design of this new WIPP concept, called RMC-2, was completed in December 1979.

DESIGN FEATURES

Summary Description

The RMC-2 WIPP facility is designed to store:

1. Six million ft^3 of Contact-Handled (CH) TRU waste.

2. 1,000 canisters of Remote-Handled (RH) TRU waste.

3. 60 canisters of high-level experimental waste.

It will be capable of handling 500,000 ft^3 per year of CH waste, assuming one shift operation. Throughput capacity can be increased to 1,200,000 ft^3 per year by going to a three-shift operation. The single waste handling building is designed to handle two canisters per shift of either RH waste or high-level experimental waste.

WIPP consists of necessary surface facilities, four inter-connecting shafts, and one underground repository level. The principal surface facilities at WIPP are:

1. Waste handling building, where all waste is received and prepared for transport to the underground repository level.

2. Administration building, where central control systems, fire and security headquarters, medical facilities, and administrative offices are located.

3. Underground personnel building, where all offices and change rooms for personnel working in the underground storage and construction areas are located.

4. Storage exhaust filter building, where all equipment exhausting and filtering the ventilation air from the waste storage areas is located.

5. Salt handling equipment and salt storage area, where salt removed from the underground areas is transported and stored.

Waste Handling Building

All nuclear waste received at WIPP is unloaded, inspected and prepared for storage in the waste handling building. The building is a two-story steel framed building with insulated metal siding and composition roof. The CH and RH waste handling facilities are located in the main building which is 178 ft. by 453 ft. by 60 ft. high. Offices, laboratory, change rooms utilities, and site generated waste rooms are located in a 75 ft. by 329 ft. area on the south side of the main building. The CH airlocks extend 120 ft. to the east. The concrete floor of the building is about 6 in. above grade.

The building has separate areas for the receipt, inventory, inspection, and transfer of CH and RH wastes to the waste shaft. Facilities for CH waste include rail and truck transporter airlocks, an unloading/loading area, an inventory and preparation area, overpack and repair room for damaged containers, surge storage area, shielded storage area, and a forklift battery recharge area.

Facilities for RH wastes include a waste transporter unloading/loading area, a cask preparation area, a cask unloading room, a hot cell for canister inspection and overpacking, a canister transfer cell, a cask loading room, and various supporting areas for hot cell operation. The waste hoist headframe is an integral part of the waste handling building. The waste hoist, located between the CH and RH areas, transports CH and RH wastes to the underground storage horizon.

The site generated waste area houses the equipment that collects and processes the liquid and solid radwastes generated at WIPP. The rooms within the area include a waste compaction area, solidification and drum storage area, liquid waste area, and future waste treatment room.

Various support areas within the waste handling building provide space for personnel offices, change rooms, laboratories, ventilation equipment, electrical equipment, and utility air compressors. Air-cooled water chillers for the HVAC system are located outside of the waste handling building.

RH Waste Emplacement/Retrieval System

The RH waste handling system provides the means for processing RH canisters from receipt at the facility in a shipping cask to delivery at the underground repository level for disposal. This system interfaces with the underground repository transfer station.

The RH waste emplacement/retrieval system is designed to do the following:

1. Receive and locate transporters for unloading and loading.
2. Transfer a shipping cask from a transporter to the shipping cask pallet.
3. Move the pallet with the shipping cask from the receiving area to the cask preparation station, then to the cask unloading room, and return.
4. Prepare shipping casks for unloading RH canisters.
5. Mate the shipping cask to the hot cell.
6. Transfer RH canisters from shipping cask into the hot cell.
7. Inspect and overpack, if required, RH canisters in the hot cell.
8. Store, identify, and inspect overpack canisters in the hot cell.
9. Provide means for the future capability to leak test overpacked canisters and decontaminate RH waste canisters.
10. Transfer RH canisters and overpack canisters from the hot cell to the transfer cell.
11. Store RH canisters in the transfer cell.
12. Load RH canisters into the facility cask, at the transfer cell-cask loading room port.

13. Move the facility cask from the cask loading room to the waste shaft conveyance cage, and return.

14. Retrieve RH waste canisters which shall, in essence, require the performance of operations described above in reverse order.

CH Waste Emplacement/Retrieval System

The CH waste handling system provides the means for processing CH waste containers from receipt at the facility to delivery at the underground repository level for disposal. This system interfaces with the underground repository transfer station.

The CH waste emplacement/retrieval system is designed to perform the following:

1. Transfer the CH road or rail transporters through the facility airlocks.

2. Unload shipping containers from the transporters. Contaminated shipping containers are transferred onto a dolly and moved to the overpack facility.

3. Remove the CH waste containers from the shipping or cargo container by forklift. Inspect, inventory, and transfer the waste containers to the pallet loading area.

4. Transfer the loaded pallet to the waste shaft cage or to a surge storage area. Two days' surge storage capacity, based on single-shift operation, and shielded storage for eighty 55-gal. drums are provided.

5. Overpack damaged or contaminated waste containers in the overpack and repair room.

6. Transfer pallets, containing waste containers, into the waste shaft airlock and place on the cage loading car which deposits the pallets onto the waste hoist cage.

7. Remove the loaded pallets, after the hoist reaches the repository level, with a cage-loading car and move them to a location where the pallets can be transferred, by forklift, onto the underground CH waste transporter.

8. Retrieval operations are essentially a reversal of the emplacement handling procedures.

Solid and Liquid Radwaste Handling Systems

The solid radwaste handling system provides for collection, volume reduction, and packaging of site generated solid radwaste. The system consists of the following:

1. Portable collection containers located throughout the WIPP facilities.

2. Volume reduction and packaging equipment located in the waste compaction area of the waste handling building.

3. The resultant waste will be stored as CH waste in the repository.

Contaminated liquid waste is collected in portable 55-gal. and 300-gal. tanks throughout the WIPP facility and transferred to the suspect waste collection tank. The waste is then transferred to a solidification system. Solidified waste will be stored as CH waste in the repository.

Administration Building

The administration building contains office space for management and administrative personnel, a cafeteria and food preparation area for 150 people, a security center for monitoring all personnel and vehicles entering or leaving the site, a fire and dispensary area that houses a fire truck and medical first aid room, the central monitor and control room, and the computer room. The building is a 44,100 ft^2 single-story steel framed structure with insulated metal and concrete siding.

Underground Personnel Building

The underground personnel building functions as a surface base for all persons working in or visiting the underground facilities. It includes change rooms for men and women, training facilities, first aid and mine rescue equipment rooms, and office space for those involved in the day-to-day planning and supervision of the underground operations. The building is connected to the ventilation supply and service shaft by an enclosed corridor.

The building is a one-story, 12,000 ft^2 fully air-conditioned steel framed structure with insulated metal siding and composition roof.

Storage Exaust Filter Building

The exhaust blowers and exhaust filters for the underground waste storage rooms are located in the storage exhaust filter building which is located adjacent to the storage exhaust shaft. The storage exhaust filter building is a single-story building with concrete siding and composition roof.

Three 100,000 cfm exhaust fans and three 33,000 cfm HEPA filter banks are provided. Each filter bank has two stages of prefilters and two stages of HEPA filters. During normal operation, two fans exhaust 200,000 cfm of air from the storage areas, up the storage exhaust shaft, by-passing the HEPA filters and discharge through a stack to the atmosphere

In the event that radioactive contamination is detected, the air flow is reduced to 100,000 cfm by shutting off one fan and diverted through the HEPA filters before exhausting to the atmosphere.

The system's normal flow rate of 200,000 cfm to the waste storage areas is adequate to supply a second waste repository level.

Surface Salt Handling and Storage

The surface salt handling system transports excavated salt from the CE&SH shaft to the salt storage pile. Facilities for reclaiming stored salt for backfill in the mine may be installed in the future.

Salt is received from the surface surge bin at the CE&SH shaft and transported by covered belt conveyors to the salt storage area. A water spray is applied at the conveyor discharge to the pile to suppress dust.

These facilities, as well as miscellaneous support facilities, occupy approximately 180 acres of land. 120 acres of this area are enclosed by a security fence.

The four shafts connecting the surface facilities to the storage horizon have the following functions:

1. Waste shaft, where waste will be transported from the surface to the underground repository. The head frame for waste hoist is an integral part of the waste handling building.

2. Ventilation supply and service shaft, which will be used to transport personnel and materials from the surface to the underground storage and construction areas. This shaft will be the supply shaft for all ventilation air to the underground areas.

3. Construction exhaust and salt handling shaft, which will be used to exhaust the ventilation air from the construction areas, and to transport salt from the underground areas to the surface.

4. Storage exhaust shaft, which will be used to exhaust ventilation air from the underground waste storage areas.

Waste Shaft

The waste hoist, operating in the waste shaft, transports the CH and RH waste from the waste handling building at the surface to the repository level. The equipment provided has the capability for two-level operation without major changes.

The waste hoist is a friction-type hoist with six hoisting ropes and four tail ropes. It has a payload capacity of 35 tons, travels 500 ft. per min. and is driven by two 300-hp dc-motors. The hoist cage is about 9 ft. by 14 ft. by 24 ft. high. It is guided in the shaft by guide ropes, with fixed guides at each station. The cage is equipped with a chairing device which will position and support the cage at each station floor.

Arrestors are provided at the top and bottom of the shaft to decelerate the cage in the event of overtravel, and crash beams are provided to stop the cage should the arrestors fail to fully stop the cage. The tower above the shaft is equipped with catch gear which will engage with the sprags on the cage to prevent downward movement if the cage hits the upper crash beam.

The waste shaft is 19 ft. in diameter and 2,272 ft. deep. The shaft collar extends from the surface to the bedrock formation. It is constructed of reinforced concrete and supports the hoist tower.

Below the shaft collar, there is 545 ft. of 10-in. thick, and 265 ft. of 18-in. thick cast-in-place, unreinforced concrete lining. The lining extends through the upper rock formation and terminates in a reinforced concrete key and skirt located in the top of the Salado Formation. The key is 30 in. thick and 24 ft. long. A skirt 16 in. thick and 26 ft. long will be provided below the key if so dictated by the geological formations encountered. Styrofoam, 12 in. thick, will be placed between the skirt and the salt to accommodate salt creep.

In the unlikely event that the cask should drop, provision has been made for installing energy absorbing material in the bottom of the shaft to mitigate damage to the facility cask.

Ventilation Supply and Service Shaft

The service hoist, operating in the ventilation supply and service shaft, transports personnel, supplies, and equipment from the surface to the two underground storage horizons. This shaft is the main ventilation air intake for all underground facilities.

The service hoist is a friction-type hoist with six hoisting ropes and two tail ropes. It has a capacity of 12-1/2 tons, operates at 800 ft. per min. and is driven by one 350-hp dc-motor. The cage has two decks each with a floor space of about 9 ft. by 7-1/2 ft. The upper deck is removable to accommodate equipment components with a maximum height of 23 ft. The cage is guided in the shaft by guide ropes, with fixed guides at each station. The service hoist and related equipment has the capability for two-level operation without major changes.

Arrestors are provided at the top and bottom of the shaft to decelerate the cage in the event of overtravel, and crash beams are provided to stop the cage should the arrestors fail to fully stop the cage. The tower above the shaft is equipped with catch gear which will engage with sprags on the cage to prevent downward movement if the cage hits the upper crash beam.

The ventilation supply and service shaft is 16 ft. in diameter and 2,272 ft. deep. The shaft collar extends from the surface to the bedrock formation. It is constructed of reinforced concrete and supports the hoist tower. The ventilation air intake plenum is incorporated in the shaft collar.

Below the shaft collar, there is 300 ft. of 8-in. thick, 235 ft. of 10-in. thick and 265 ft. of 14-in. thick cast-in-place, unreinforced concrete lining. The lining extends through the upper rock formation and terminates in a reinforced concrete key located in the top of the Salado Formation. The key is 30 in. thick and 26 ft. long. A skirt 14 in. thick and 24 ft. long, will be provided below the key if so dictated by the geological formations encountered. Styrofoam, 12 in. thick, will be placed between the skirt and the salt to accommodate salt creep.

Construction Exhaust and Salt Handling Shaft

Two skips, operating in the construction exhaust and salt handling shaft, transport the excavated salt from the underground horizon to the surface. This shaft is the ventilation exhaust shaft for the underground construction areas and provides an emergency escape route from the repository level to the surface.

The salt handling hoist is a double-drum, skip-type hoist, rated at 200 ton per hour. Each drum is clutched to allow rope adjustment for multi-level operation with the two skips in balance. The hoist drive has two 500-hp dc-motors. Each skip is a bottom discharge type with inside dimensions of about 4 ft. by 5 ft. by 34 ft. Each skip holds 10 tons and travels 1,300 ft. per min. On top of each skip is an enclosed covered platform for shaft inspection and for hoisting personnel in an emergency. The skips are guided in the shaft by fixed guides. Crash beams are provided to stop the skip in the event of an overtravel. The salt handling hoist has the capability for two-level operation without major changes.

542 The repository level is equipped with skip loading pockets, consisting of a 20-ton loading hopper and a 10-ton measuring hopper. At the surface, the skips discharge into a 50-ton surge bin from which the material is drawn by a belt feeder, and conveyed to the salt storage pile.

The construction exhaust and salt handling shaft is 14 ft. in diameter and 2,287 ft. deep. The shaft collar extends from the surface to the bedrock formation. It is constructed of reinforced concrete and supports the hoist tower. The ventilation exhaust plenum is incorporated in the shaft collar.

Below the shaft collar, there is 310 ft. of 8-in. thick, 235 ft. of 10-in. thick and 265 ft. of 14-in. thick cast-in-place, unreinforced concrete lining. The lining extends through the upper rock formation and terminates in a reinforced concrete key and skirt located in the top of the Salado Formation. The key is 30 in. thick and 24 ft. long. A skirt 1 ft. thick and 26 ft. long will be provided below the key if the geological conditions encountered so dictate. Styrofoam, 12 in. thick, will be placed between the skirt and salt to accommodate salt creep.

Storage Exhaust Shaft

Ventilation air, from the waste storage areas, is exhausted through the storage exhaust shaft to the storage exhaust filter building.

The storage exhaust shaft is 10 ft. in diameter and 2,272 ft. deep.

The shaft above the surface connects to a duct leading to the storage exhaust filter building. There is no permanent shaft collar. Below the surface, there is 420 ft. of 5/8-in. thick, 200 ft. of 1-in. thick, and 200 ft. of 1 1/4-in. thick steel lining. The lining is installed after downhole drilling of the shaft. It is grouted tight against the rock and terminates in a reinforced concrete key located in the top of the Salado Formation. The key is 2 ft. 6 in. thick and 24 ft. long; a skirt 1 ft. thick and 26 ft. long will be installed if the geological formations encountered so dictate. Styrofoam, 12 in. thick, will be placed between the skirt and salt to accommodate salt creep.

All shafts are unlined in the salt formation below their keys and skirts. They are oversized to allow for salt creep.

Each has two annular chemical expansive seals to prevent water migration from the rock formation into the shafts.

Repository Level Design

The storage area consists of a total of eight panels, four on either side of the main entries, situated in the northwest and northeast quadrants at an elevation of 2,162 feet below surface.

Each panel consists of two subentries 1,031 feet long with a cross section 33 feet wide and 13 feet high. Each panel contains seven rooms perpendicular to the subentries. Each room is 300 feet long, 33 feet wide and 13 feet high. These rooms are spaced with a 100 foot pillar between each. The final room nearest to the subentries is separated by a 200 foot abutment pillar from the main entries.

Panels are separated from each other by 200 foot abutment pillars. Traversing each abutment pillar are three equally spaced cross cuts 33 feet wide by 13 feet high. Panels on the west side are connected with panels on the east side by connecting the subentries across the main entries with cross cuts. These cross cuts, like the main entries they traverse, are 25 feet wide by 12 feet high.

Four main entries connect the shaft pillar area with the storage area. The entries are 25 feet wide by 12 feet high and are separated by pillars 132.5 feet wide.

The function of the four entries is as follows:

1. Ventilation exhaust and salt removal from the construction area.

2. Ventilation supply and personnel entry to the construction area.

3. Ventilation supply and waste transport to the waste storage area.

4. Ventilation exhaust from the waste storage area.

Waste Storage

The CH waste will be stored in the rooms, subentries, cross cuts and main entry system as far south as the commencement of the E-W subentries to the experimental areas.

CH waste storage will commence in the second panel and proceed through the eighth panel. Not until the completion of the storage in the eighth panel will storage commence in the first panel. The first panel will remain open with no CH waste stored in it for almost 13 years.

During the almost 13-year storage period just referred to, the first panel and the three cross cuts connecting it to the second panel will remain open for random storage of 1,000 RH waste canisters, which will be emplaced in the ribs of the openings and plugged off. Should retrieval be required, this too can take place during this period.

Experimental Areas

Experimental areas are reached by subentries perpendicular to the main entries.

The non-waste experimental area is located east of the main entries. Access is by two subentries 20 feet wide by 10 feet high. The northern subentry is 1,869 feet long and the southern subentry is 2,494 feet long. These subentries are connected by experimental rooms perpendicular to them and 300 feet long.

Within this complex, there is one pillar 60 feet long by 20 feet wide completely surrounded by 20 feet wide by 12 feet high entries. This pillar will be used for experiments involving heating of the salt (thermal test area).

A set of four rooms 33 feet wide by 13 feet high separated by 100 foot pillars will be used to test the presently planned room configuration.

Two additional sets of rooms are provided for testing other spacing possibilities. These are a set of four rooms 25 feet wide and 13 feet high separated by 20 foot wide pillars and a set of four rooms 33 feet wide and 13 feet high separated by 25 foot pillars.

There is also a section for special rock mechanic experiments and tests.

Two hundred foot abutment pillars separate the respective experimental sections.

The waste experimental area is located west of the main entries. Access is by two subentries 20 feet wide by 10 feet high and 1,515 feet long. These subentries are connected by experimental rooms perpendicular to them and 200 feet long. All rooms are 15 feet wide by 15 feet high separated by abutment pillars 135 feet wide.

The room nearest the main entries is separated from the main entries by an abutment pillar 450 feet wide.

Underground Nuclear Facilities

A CH and RH waste transfer station, a radsafe check station and a decontamination station are located on the repository level. At the waste transfer station, the pallets of CH waste are off-loaded from the waste hoist cage by a motorized pallet loading car running on rails through an airlock to the haulage entry. The pallets are transferred to the underground CH transporter with a 15-ton forklift. At the same station, the facility casks for the RH waste and motorized railcar are off-loaded from the waste shaft cage, through the airlock into the waste haulage entry. The facility cask is removed from the facility cask car by a 30-ton forklift which transports the casks to the storage room.

The radsafe check station is located in an airlock between the storage and construction areas. It is located near the ventilation supply and service shaft. It serves for personnel and vehicle entry and exit between the storage area and the construction area. Radiation monitoring equipment and a personnel decontamination station are located in this area.

The decontamination station is about 30 ft. wide by 50 ft. long. It is located in the storage area. Mobile equipment used to handle waste is decontaminated in this area. Internal housing provides space for personnel checks and change areas. A work bench, lockers for hand tools, and a sink with a 5-gal. portable drain tank are provided.

The floors and walls of the radsafe check station and the decontamination station are lined with concrete and the surfaces sealed with nuclear protective coatings.

Underground Excavation Equipment

One 150 ton per hour continuous miner is provided for excavating salt. Three five cubic yard load-haul-dump vehicles (LHD) are provided, two to transport the mined salt from the continuous miner to the underground salt handling system and one to transport salt for backfilling stored waste.

Underground Salt Handling System

The 300 ton per hour underground salt handling system consists of a portable crushing plant, belt conveyors, storage bins and apron feeder.

The LHDs dump salt into the feeder crushers which reduce the salt to a maximum 3 inch size and feed the 36 inch wide mainline belt conveyors. These conveyors are extended in 100 foot sections or as required to match excavation locations.

The salt is conveyed to a 600 ton surge pocket, then to a skip loading hopper (located at the salt handling shaft station) which feeds a measuring hopper that loads the skips. From the shaft station the salt is transported to a surface storage bin.

When backfilling is started, the salt will be diverted from the existing conveyors. Individual rooms will be backfilled by backfill stacking equipment provided with dust suppressors.

Underground Ventilation

The underground ventilation system serves both the construction and the storage areas of the repository level. It is an integrated system from the standpoint of air supply and overall system control. The system features two separate ventilation environments in the main underground areas: one for the construction areas in which excavation is performed, and the other for the waste handling and storage operations.

The system utilizes the four shafts connecting the underground horizons with the surface facilities. These shafts and their function in the ventilation system are:

1. The ventilation supply and service shaft serves as a common air intake for the construction and storage areas.

2. The construction exhaust and salt handling shaft serves as the exhaust for the construction area.

3. The storage exhaust shaft serves as the exhaust for the waste storage area.

4. The waste shaft is a downcast shaft carrying only a low volume of air, which flows to the storage exhaust shaft directly.

The underground ventilation system capacity is approximately 350,000 cfm. About 200,000 cfm is supplied to the waste storage areas, and the remaining 150,000 cfm is supplied to the construction areas where it is distributed among shops, service areas, and the development headings.

The shaft diameters are adequate for future ventilation for a second level. Additional fans and a change in fan arrangement would be required.

During normal operation, the combined supply depends on the control systems near the shaft for regulating air quantity. In the event of an emergency involving a fire, the fire doors in the drifts leading to the storage areas are closed automatically to separate the storage and construction ventilation systems. Also, louvers at the inlet of the waste shaft open, and the waste shaft becomes the air supply shaft for the storage areas. At the same time, the ventilation door separating the waste shaft station from the storage exhaust entry closes automatically. The airlock doors between the waste shaft station and the storage supply entry opens automatically. Three 75,000 cfm fans, two operating and one spare, exhaust air from the construction ventilation system. The fans are variable-pitch vane-axial type, equipped with reversing starters.

Three 100,000 cfm fans, two operating and one spare, are provided for storage exhaust. The fans are variable-pitch, vane-axial type.

Three 33,000 cfm HEPA filter banks are provided for the storage exhaust. Each filter bank has two stages of prefilters and two stages of HEPA filters, all in series.

During normal operation, air from the storage areas is bypassed around the HEPA filter banks and discharged directly to the atmosphere. In the event of radioactivity detection in the storage area exhaust, the exhaust air is diverted through the HEPA filters and the exhaust flow is reduced from 200,000 to 100,000 cfm.

Special Features

The RMC-2 design of WIPP has maintained flexibility for a second storage level, should it be appropriate to return to that concept in the future.

1. The waste shaft hoist is designed for two levels and a 35 ton cask without major changes.

2. The waste hoist cage is designed to accept a 35 ton, 22 ft. vertical cask.

3. The headroom in the waste handling building is adequate to handle 16 ft. canisters.

4. The underground ventilation system flow rates are adequate for a two-level operation with minor underground fan revisions.

CURRENT STATUS

The Title I design for the single horizon facility was completed in January 1980. During the course of the Title I design, it became apparent that additional site information would be beneficial in order to validate the suitability of the site and the engineering design. In order to provide this information, work started in late 1979 on the design and preparation of construction packages for a 10-ft. diameter shaft to the storage level, another small ventilation shaft and underground development to permit the installation of experimental test rooms. The 10-ft. diameter shaft is to become the storage exhaust shaft when the general construction for the facility is undertaken. The ventilation shaft will be at the center of the waste shaft and will be slashed out to form the waste shaft during the construction phase of the project. Information to be obtained from the sinking of the exploratory shaft and the conduct of early experiments includes:

1. Validation of geological data.

2. Stress design data including creep, stability and closure rates.

3. Performance data on emplacement-heated experiments including creep, stability, closure rates and brine migration.

Detail design of the exploratory shafts was completed in December 1979. Design of the experimental rooms and necessary support facilities is scheduled for completion in April 1980 and is presently on schedule. From a technical standpoint, the packages will be ready for release on a schedule to start construction of the exploratory shaft and experimental rooms by July 1980.

WIPP is now ready for site development. The design has been carried forward through Title I, and all facilities are clearly defined. A Draft Environmental Statement was prepared. Hearings were held, and a final Environmental Statement is now under review within the Department of Energy. A Safety Analysis Report has been written to satisfy DOE requirements and to provide a basis for cooperation and consultation with the State of New Mexico. Design of the exploratory shafts has been completed, and the project team is ready to go to the field to begin the site phase of the project.

Regardless of whether or not WIPP is allowed to proceed as planned to serve as a nuclear waste repository for transuranic wastes or, instead, the site is to be banked for evaluation with other possible sites as a commercial waste repository as described in the President's statement on waste management policy, the exploratory work should now proceed. Without it, the questions and uncertainties constantly being raised by many concerned people will not be answered and the final validation of the site will not occur. The President's policy still recognizes this need. We are ready to proceed.