

**WP 04-AU.01  
Revision 0**

# **Panel 2 Mining Project Plan**

Cognizant Department: Operations

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## **1.0 INTRODUCTION①**

The panel mining charter is a direct descendent of the Waste Isolation Pilot Plant (WIPP) Project Mission to demonstrate safe disposal of transuranic (TRU) waste in the geological setting of the Salado Formation salt beds in southeastern New Mexico. To accomplish this mission, disposal chambers are to be mined at approximately one-half mile below ground surface within the bedded salt.

The configuration of the disposal chambers is in groups of seven rooms that share common entrance and ventilation passageways. Each group of commonly connected disposal rooms is designated as a panel.

The production of disposal panels will be by the application of mining methods and mining machinery that are specifically designed and controlled to remove the rock salt efficiently and safely. Mining will be accomplished to dimensions and locations within the disposal horizon as mandated by the project design documents.

Written panel mining plans and work orders will be produced to describe all mining sequences and activities required to complete the mining and outfitting of the disposal panels and make the panels ready for the receipt of TRU waste containers.

Personnel and activities required for the production of the disposal panels will be provided, controlled, and monitored by skilled and timely management of the following processes and conditions:

- Project Planning
- Project Integration and Scheduling
- Project Costs and Budgeting
- Panel Mining and Outfitting
- Quality and Inspection Factors
- Human Resource Allocations
- Project Communications
- Risk Projections and Mitigation
- Project Procurement Efficiency

The owner and other project participants are listed and described as follows:

- United States Department of Energy (DOE) – Project Owner
- Carlsbad Area Office (CAO) – Owner's Controlling Representatives
- Westinghouse Government Environmental Services (WGES) – Management and Operating Contractor
- Waste Isolation Division (WID) – WIPP Operating Group of WGES
- Other subcontractors as required

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The WID working sections or departments that are directly and indirectly responsible for panel mining are as follows:

- Underground Operations (Direct)
- Engineering (Direct)
- Environment, Safety, and Health (Indirect)
- Quality Assurance (Indirect)
- Human Resources (Indirect)
- Controller (Indirect)
- Training (Indirect)
- Program Integration (Indirect)

## **2.0 PURPOSE**

Panel mining is a complex and time-consuming process. As such, considerable resources, planning, budgeting, and control are required to successfully and efficiently complete the construction and outfitting of a panel for use in disposal of radioactive wastes. This project plan enumerates and describes the processes and interfaces necessary to commence, control, and complete the construction of a waste disposal panel. This project plan provides the ability to understand the processes involved, visualize the steps leading to finalization, and track or monitor the progress of important milestones and conditions while the work is ongoing. The focus of this document, while being generally applicable to the mining of all the WIPP disposal panels, is unique in its particulars for the mining and outfitting of Panel 2.

## **3.0 SCOPE**

The scope of the Panel 2 mining project comprises all aspects and activities from initial planning through mining and outfitting with the required electrical and ventilation services. The panel will be configured to enable the contact-handled (CH) and/or remote-handled (RH) waste disposal processes to begin. Several situations make the mining of Panel 2 unique, including:

- Accelerated mining schedule – The normal production time to complete a panel is approximately 2.5 years on a one-shift-per-day, five-days-per-week schedule. This schedule is compatible with the facility design capacities for salt removal from the mine and the time required to fill a panel with waste. Due to uncertainties associated with waste receipt and aging of Panel 1, the CAO has determined and directed WID that the schedule for Panel 2 be accelerated for completion in one year from October 1999.
- Two-shifts-per-day mining – The reduced calendar days to produce Panel 2 mandates that mining be conducted on more than one shift/day. Two shifts/day will be utilized. Initially, the CAO considered that Panel 2 would be required to be completed by June 1, 2000. For this occurrence, a three-shift-per-day, seven-days-per-week operations schedule would have been necessary.

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- Training new crews – The hiring and training of additional personnel is required to accomplish mining on more than one shift. This requirement applies not only for the mining crews and operators but also for underground maintenance staffing, hoisting plant operators, and underground surveying crews.
- Accelerated muck handling – Mining at an accelerated rate produces mined salt in excess of what can be handled on an as produced basis by the WIPP salt hoisting plant. This condition requires special accommodations in the mine to temporarily stockpile muck until hoisting time is available for its skipping and removal to the surface salt storage pile. Temporary salt storage produces inefficiencies in the mining process in that the mined salt must be loaded in the underground haul trucks and moved twice before its removal to the surface. To mitigate these muck handling bottlenecks to the greatest extent possible, some unused areas in the northern portion of the mine will be reopened and used to provide space where mined salt can be gobbled, thus relieving the need to re-handle and skip the muck.
- Mining equipment restoration for duty – It has been approximately ten years since major mining activities that utilize the total mining fleet of equipment have taken place at WIPP. The result is that a significant portion of the mining fleet has been basically idle for a long time. This idle condition naturally leads to additional minor maintenance problems from deteriorated hydraulic and electrical systems. These become manifest upon restoration of the equipment to continuous duty. Not only is the mining equipment subject to these problems, but also the mine face ventilation fans and ducting.
- New equipment – To accommodate the accelerated mining schedule and assure that equipment failures can not jeopardize the mining performance requirements, several new machines are necessary. New equipment purchases that are prompted by the accelerated mining schedule include new surface haulage trucks, an additional underground haulage truck, a new continuous drum mining machine, new face ventilation fans and duct work, a new probe hole production drill and carriage, and a new surface rubber-tired loader.

To complete the mining of Panel 2 by the required date, some constraints on present activities and assumptions regarding possible future impacts are necessary as follows:

- The north end of the mine will be available to gob/surge muck.
- Rooms 1 through 6 in Panel 1 can be used as surge capacity to temporarily store muck.
- Room 1 rock bolt detensioning will no longer be required.
- Actual mining of Panel 2 beyond the main access drifts will not be administratively delayed after October 19, 1999.

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- The E0 and E140 back removal project will not be required until after Panel 2 mining is complete.
- No additional mining work will be required in Panel 1 until after Panel 2 is complete.
- Mining support for CARUS (Center for Applied Repository and Underground Science) activities will not be required until after Panel 2 mining is complete.
- The radiological waste currently disposed in Room 7 of Panel 1 will not require relocation.
- Tours will not impact the salt handling hoist availability.

The final configuration of Panel 2, following completion of this scope of work by October 1, 2000, will be sufficient to enable the panel to be qualified as a Hazardous Waste Disposal Unit by the New Mexico Environment Department.

#### **4.0 TERMS AND DEFINITIONS**

Back – Mining terminology that designates the roof of a mine drift.

Drift – A horizontal opening or passageway in a mine.

Gas bleeder hole – Vertical holes drilled up from the back of a drift to allow mine gases to slowly purge or bleed from rock layers above the mine horizon.

Gob/Gobbing – A mining term meaning mined waste material that is permanently disposed in underground openings rather than hoisting it to the surface. The act of such disposing of mine spoils.

Mine roof support – Any of a number of methods to support the roof or back in a mine, including bolts, cribs, mesh, cables, etc.

Muck – The mining term for material that has been mined.

Probe hole – A small diameter hole that is drilled into the mine face or heading prior to continuing mining in that direction. The purpose is to intercept large amounts of pressurized air to prevent the blowing out of the mining face in an uncontrolled fashion.

Ribs – The sides or walls of a mine drift.

Rock bolt/Roof bolt – Long bolts specifically made and used to support the surfaces in underground mines.

Salt handling hoist – The machine at WIPP that raises the mined salt from the mine through the salt handling shaft for disposal on the surface.

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Salt storage pile – The large pile on the surface where the mined salt is placed.

Shaft – A vertical opening into the ground that connects with and provides access and egress to underground mines.

Skip/Skipping – The container portion of the salt handling hoisting mechanism that the mined salt is placed into for hoisting to the surface; shipping the mined salt out of the mine.

## **5.0 PANEL MINING PROCESSES AND CONTROL**

Panel mining requires consideration and utilization of specific processes and controls including planning, scheduling, costing, mining, quality assurance (QA), human resources, communication, risk management, and procurement. These subjects and conditions are an integral part of this project plan and are here described as how they are applicable and accomplished at WIPP. Each topic is discussed for total understanding as well as identifying the responsible parties/organizations and denoting the methods and controls that are used when changes become necessary.

### **5.1 Project Planning**

Project planning for mining of the disposal panels begins with the Mine Engineering group that produces the mining plan for Panel 2, which is designated Work Order 9804109J – Mining of Panel 2 and Access Entries (Mining Plan). The timing for initiation of preparation of the Mining Plan is determined by the need date to begin the actual waste disposal process and sufficient lead time is provided to write the Mining Plan, mine the panel, and outfit the panel with the required electrical and ventilation services. The Mining Plan is the master document that describes all the individual tasks and conditions required to complete the panel mining process including:

- Mining sequencing
- Mining safety aspects including a job hazards analysis
- Mine drawings depicting the locations, sizing of drifts, and design requirements
- Probe hole requirements
- Gas bleeder hole requirements
- Mine and face ventilation requirements
- Prerequisites to the mining process
- Precautions and limitations during mining
- Mining equipment required
- Shop work required
- Field work required
- Quality control and acceptance requirements
- Surveying processes and controls
- Change processes
- Final documentation and sign-offs

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The Mining Plan normally is written by the Cognizant Engineer (CE) of the AU00 System – Underground Facilities and Equipment. During preparation of the Mining Plan, the CE solicits input from the miners and supervisors in the field for assurance that the plan incorporates, the best safety practices, highest mining efficiencies, and most cost-effective mining methods.

The Mining Plan is structured in the format of a work instruction and upon completion it is submitted to the Work Control Section of the Operations Department. The Work Control Section assigns a work order number to the Mining Plan and assumes control of the plan for administration and working of the project. The administrative portion of the Work Control includes reviews of the plan and approval documentation by all involved organizations and the CAO counterpart(s). The work control process also includes the preparation of an engineering change order (ECO) per the procedure WP 09-CN3007, Engineering and Design Document. The ECO enables the changes to the WIPP facility that are produced by the mining activity to be incorporated into the controlled site drawings.

Should changes to the Mining Plan be required due to unforeseen conditions, a work change notice is prepared in accordance with the procedure WP 10-WC3011, Maintenance Process.

### **5.2 Project Integration and Scheduling**

At the establishment of the need date for an engineering project such as panel mining, the Program Integration Section of the Program Management Department is notified, a meeting is arranged between the assigned scheduler and the CE, and an initial schedule is produced. The schedule will contain all elements necessary to track the progress of the project. Milestones and critical events for the project's success are highlighted as well as the normal expected progress and activities. This schedule and any needed sublevel schedules will be statused and updated on a basis to assure adequate project control.

Before a schedule is finalized it is reviewed by all affected members of WID management and revised accordingly to assure the needed level of detail. Upon management approval, this schedule becomes the final tracking vehicle for monitoring project progress and changes thereto are only made through concurrence of the original approving parties.

The project scheduling and integration process is formalized in the document Management Control System Program, WP 15-2. The Master Mining/Emplacement Schedule for Panel 2 is shown in Attachment 1.

In addition to the overall Project Management Department Schedule, Mine Operations Section makes its own detailed schedules and plans for Panel 2 mining. These are used to manage and control the day to day activities. Also shown in Attachment 1 are examples of the Weekly Mine Plan drawing, the written weekly plan for mining machine and probe hole activity, and the Advance Sequences schedule.

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### **5.3 Project Costs and Budgeting**

WID performs the panel mining work at WIPP under a management and operating contract on a fixed price incentive basis by providing the necessary personnel and management staff to perform the work as described in this document.

Budgeting is performed on a yearly basis to provide funding for the required scope of work and the necessary personnel to perform the work. The direct budgeting for the Panel 2 Mining Project is controlled under the WBS number W153305. The current Statement of Work (SOW) Document and Budget Expenditure Plan are shown in Attachment 2 for the costs to be incurred by the U/G Operations Section in producing Panel 2 (including U/G Services and Opening Maintenance). In addition to the direct costs that are shown in this plan, some other direct costs from supporting groups are also applicable to the Panel 2 mining effort. The support groups that contribute time and other direct services are:

- Engineering (Mine, Geotechnical, Systems)
- Hoisting
- Procurement
- Safety
- Zone1 Maintenance
- Zone 5 Maintenance

In general, the costs from the support groups are not differentiated between general mine support and specific efforts applicable to Panel 2 only and these costs are not shown in the plan. Other indirect costs that are not allocated separately and are not shown here would include:

- Controller
- Human Resources
- Senior management
- Electrical power and utilities
- Emergency services
- Training, etc.

Occasionally program necessities require changes that affect the baseline budget. In this event, the Baseline Change Request (BCR) process is used. The BCR process is controlled and described in the procedure WP 15-FC3207, Baseline Change Control. The responsibility for preparation of the BCR is with the organization whose budget is affected.

### **5.4 Panel Mining and Outfitting**

The Underground (U/G) Operations (OPS) Section is responsible for performance of the actual panel mining activities. In this effort they are supported by specialized groups within U/G OPS that accomplish the ancillary functions that are needed for total mine operation. These functions include:

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Openings Maintenance – Personnel that install mine roof support systems, scale loose rock from the ribs, and maintain the U/G roadways.

Hoists and Shafts – This group operates the WIPP hoisting plants that provide access to the disposal horizon for personnel, supplies, and materials, and hoists the mined salt to surface. Shaft inspections and shaft maintenance duties are also their responsibilities as well as transporting the mined salt from the salt handling head frame to the surface salt storage pile.

Underground Services – The U/G Services personnel are responsible for operations of the U/G utility systems. The utility facilities include the U/G electrical systems, the U/G ventilation system, and the U/G diesel fuel dispensing facility. U/G Services also establishes and maintains the temporary barriers that are used for notifications of hazards that may be present in the mine as well as controlling the U/G personnel accountability system. Another important function of the U/G Services personnel is performance and documentation of the Lock Out/Tag Out requirements in conjunction with the responsible operating and/or maintenance persons.

Maintenance – The U/G Maintenance Group (Zone 1) is responsible for preventive maintenance and general repairs for the U/G mining fleet. This group also maintains and inspects the various U/G utility systems in consort with the system CEs. The Hoisting Maintenance Group (Zone 5) provides the preventive maintenance, repairs, and system upgrades for all of the WIPP hoisting plants. Guidance and documentation are provided by the CEs for the hoisting systems.

Engineering – Engineering is involved with all aspects of the U/G mining, operations, and maintenance. The following systems and their applicable subsystems have CEs that directly support the panel mining functions, as follows.

- AU00 – U/G Facility and Equipment
- CA00 – Compressed Air System
- CM00 – Central Monitoring System
- PC00 – Plant Communication System
- ED00 – Electrical Distribution System
- FP00 – Fire Protection System
- UH00 – U/G Hoisting Systems
- VU00 – U/G Ventilation System

Safety – Personnel specifically trained in underground safety practices and regulations are assigned to assist in the panel mining efforts and advise workers towards the safest accomplishment of the mining tasks. The guidelines and regulations from the Mine Safety and Health Act, the Occupational Safety and Health Act, and the New Mexico Mine Safety Code are followed for personnel health and safety. Emergency medical services are immediately available as well as rescue and fire fighting capabilities.

Procedures and Training – Written procedures are adhered to throughout the mining and ancillary tasks. Mining equipment operators are initially trained by representatives

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of the mining equipment manufacturers. During the manufacturer's training periods, subject matter experts (SME) are assigned and trained for each different piece of equipment. The SMEs for the equipment then develop Qualification Cards and guidelines to which the subsequent operators are trained. To qualify as an SME, oral boards and written exams are sponsored by the Technical Training Section and supported and attended by the specifically responsible CE. The procedures, programs and plans that are directly applicable to the panel mining and ancillary tasks include those shown in Attachment 3.

During the completion stage of panel mining when final trimming and mining clean up is under way, the panel outfitting stage begins. Panel outfitting comprises furnishing the panel with the utility systems that are required for the waste disposal process such as electrical service and lighting, alarm systems, communications, and health physics and rad con facilities. Also installed at this time are the bulkheads and regulators that control the ventilation in the panel during waste disposal activities. The ventilation requirements are contained in the master WIPP Mine Ventilation Plan.

The panel outfitting components are designed by the individual system CEs with input from the field users of the system. The CEs also write the construction work packages, order the necessary materials, and approve the work upon completion. The Zone 1 maintenance personnel are responsible for installation of the panel utility systems. Mine Operations workers build and install the bulkheads for ventilation control.

The mining and outfitting of Panel 2 began in October of 1999 and will be completed by October 1, 2000. Administrative changes that could affect the panel mining and outfitting process would be considered major scope changes and would be accomplished through written directive(s) from the CAO to WGES.

### **5.5 Quality and Inspection Factors**

The QA Department maintains personnel that are cognizant of the underground mining and maintenance processes. The quality requirements for panel mining are included in the controlled mining work order package. The QA Department is included in the review process as part of the initial work control activities for approval of the mining work order. Witness points and hold points are included in the package to assure the proper quality control in the mining activities. As portions of the mining work are completed, QA inspections are conducted and signatures obtained in the package for documentation that the QA objectives were met or proper alternatives were performed.

In addition to the QA activities, a final inspection of the mined and outfitted panel is performed by a Certified Professional Engineer. This inspection is recorded and certified in a Certificate of Compliance type document and attests that the construction and furnishing of the disposal panel is in compliance with the WIPP Resource Conservation and Recovery Act (RCRA) Permit. The manager of the WID Geotechnical Engineering Group is so qualified and will perform the final RCRA compliance inspection and documentation.

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## **5.6 Human Resource Allocations**

The Operations Department is responsible for budgeting for the proper staffing level to accomplish the underground mining work that needs to be performed. Panel mining is included in the overall mining requirements. As openings in the mining staff become manifest the Human Resources (HR) Department is notified of the condition. Efforts are initially directed toward filling the open job with a presently employed person that is desirous of the position and is also qualified. It is most efficient to promote individuals from within the project when possible. Internal posting of the job opening accomplishes this objective. If internal placement into the open position is not possible, HR then posts the position to external sources until properly qualified personnel are obtained.

To support the accelerated mining schedule for Panel 2, HR was required to hire and process approximately two dozen additional personnel to increase the staff for two shifts per day of mining operations.

## **5.7 Project Communications**

The formal and informal communications channels that are applicable to the mining of the disposal panels are most easily described with a flow diagram (see Attachment 4). An important feature that enhances project communications for panel mining is the U/G Waste Disposal Working Group. This group, chartered through Management Charter (MC) 9.24, includes representatives from all departments who use the underground facilities.

Also participating in the U/G Waste Disposal Working Group is a member of the Program Integration Section, which performs the scheduling of major WIPP projects. The U/G working group meets nominally on a two-week basis, whereby all concerned parties have input and receive project scheduling updates.

To enhance project communications during the mining of Panel 2, several special purpose documents are prepared and distributed by the Mining Operations Section on a weekly basis. Examples of these documents are shown in Attachment 4 and include the Weekly Mining Status Sheet, updated Production Rate chart, Tonnage Goal vs. Actual Tons Mined chart, and a percentage of completion chart. These communications media allow all interested groups and parties to monitor the progress of the Panel 2 mining project.

## **5.8 Risk Projections and Mitigation**

Panel mining, to be accomplished on a finite and conservative schedule, must recognize and control project risks. The risks at WIPP that could impact the panel mining processes and schedule are listed and discussed below. These factors, along with the risk levels and mitigation actions, are tabulated in Attachment 5.

- Insufficient mining and haulage equipment
- Mining equipment breakdowns

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- Insufficient hoisting capacities for mined salt, materials, and personnel
- Hoisting facilities breakdowns
- Insufficient work force to perform the work
- Additional work projects outside the panel mining scope
- Public tours in the U/G facility

Mitigation of project risks is a function that must not be hindered nor neglected for successful project results. The continuation of panel mining at the WIPP directs thought processes into forward looking directions with the objectives of enhancing mining efficiencies and removal of mining obstructions. This process is effectively controlled and focused within, and by direction of, the U/G Waste Disposal Working group. Through this group's activities risk management is effected and negative conditions are recognized and mitigated; most often before they become problems.

Mitigating actions accomplished to prepare for Panel 2 mining include:

- A weakness was recognized in that only one surface haul truck was available; also its age was such that its reliability was questionable. Two new trucks were purchased to remedy this condition. Additional U/G mining equipment was also obtained.
- With increased usage of mining equipment, breakdowns could be increased as well. A comprehensive search of the mining equipment spare parts inventory was conducted and the inventory enhanced accordingly.
- Hoisting capacity for mined salt skipping to the surface was seen to be marginal during mining with more than one mining machine. This condition was relieved by reopening some closed areas in the north end of the mine to be used to dispose of mined salt when it could not be hoisted to the surface as needed. Also Rooms One through Six of Panel 1 were assigned for use as temporary salt storage areas.
- Increased usage of the hoists could lead to increased down time. The hoists spares inventories were also researched and enhanced, particularly in regard to long lead-time items. In addition, a team was appointed to conduct a study into the feasibility of man-rating the Air Intake Shaft (AIS) Hoist. If man-rating the AIS and hoist is feasible, some usage can be assumed there in relief of the other two hoisting plants.
- The mining of Panel 2 within a one-year time period requires more than one crew and one shift/day operation. Staffing was increased not only for the mining crews and supervision, but also for the hoisting, maintenance, and surveying groups. Sufficient lead-time was provided for the extensive training and qualification processes necessary to assure a safe, efficient, second-shift work force. The option remains to engage a third-shift complement should it be required. The major drawback with three-shift operations is the issue of potential layoffs after

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completion of Panel 2, as the future panels would not need to be mined on an accelerated schedule based on the projected waste throughput rate.

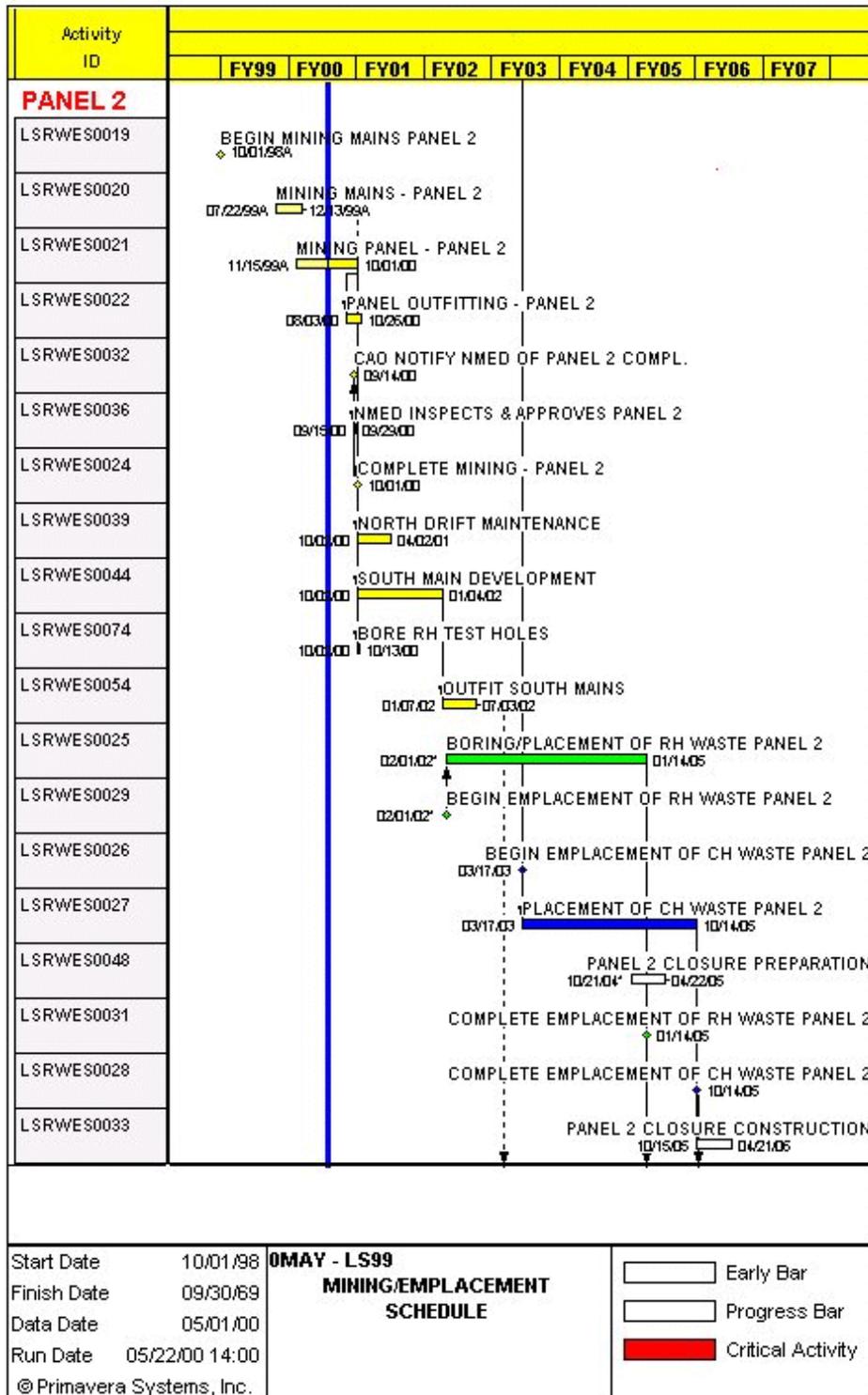
- To assure accomplishment of Panel 2 mining on schedule, other mining projects were re-prioritized so as not to present a conflict for resources.
- Public tours are a necessary part of the WIPP public relations strategy and are important to the public understanding and acceptance of the waste disposal mission of WIPP. At the same time, tours are a time and manpower intensive intrusion into the mining activity. Every effort is required to assure tours will not produce an impact to the availability of the salt handling hoist. Other activities of scientific and experimental natures by Sandia National Laboratories and CARUS are monitored to assure they will not present conflicts to the Panel 2 mining schedule.

**5.9 Project Procurement Efficiency**

It is recognized that all production efforts utilizing heavy construction equipment, including the mining of the WIPP waste disposal panels, are subject to high usage of materials and supplies. Also the procurement of replacement parts, despite the most extensive inventories of spares, must be efficient and timely for successful, tight schedule, projects. In support of the WIPP Panel 2 mining endeavors, the Procurement Services Section maintains office space and a dedicated buyer on site to provide rapid response to extraordinary needs, should they arise. Streamlining of purchasing processes is ongoing at WIPP. Efficiencies include the use of credit cards by specific buyers and technicians to speed the process and reduce unnecessary paperwork and waiting for approval signatures.

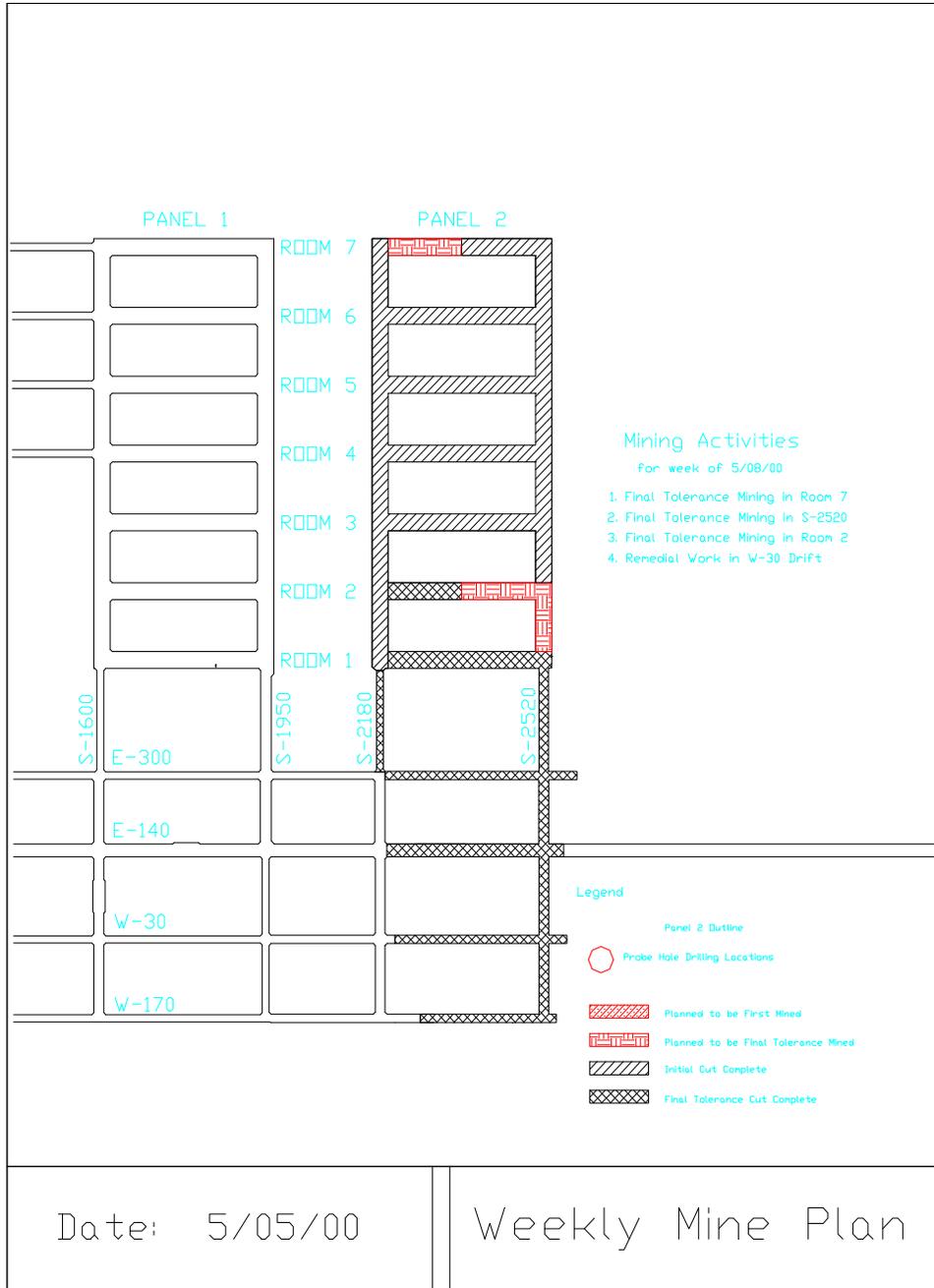
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### ATTACHMENT 1 - MASTER MINING/EMPLACEMENT SCHEDULE AND DETAILED WEEKLY SCHEDULES



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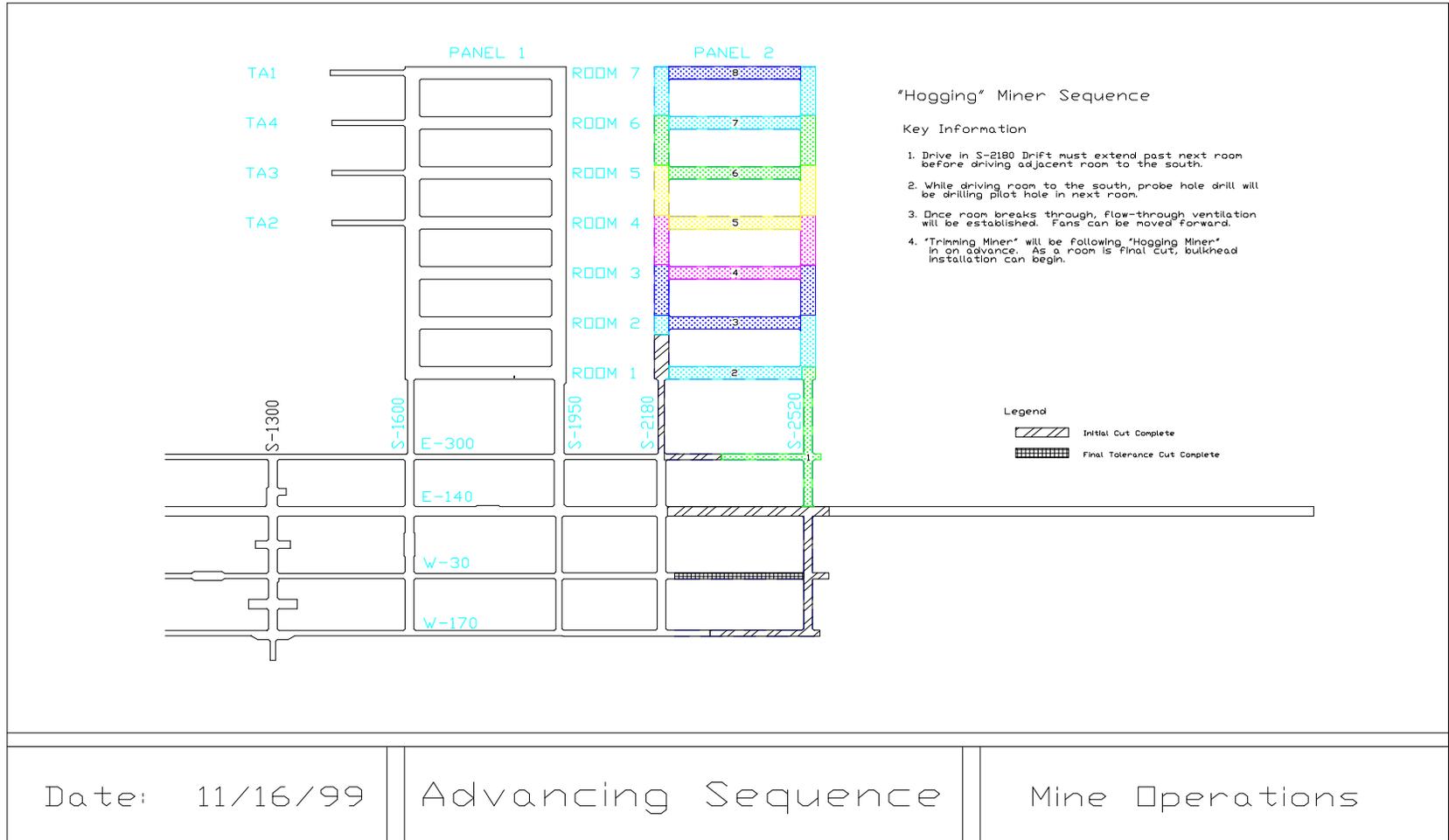
**ATTACHMENT 1 - MASTER MINING/EMPLACEMENT SCHEDULE AND DETAILED WEEKLY SCHEDULES**

Plan for the  
Week of  
5/08/00

	<b>Day Shift</b>	<b>Night Shift</b>
Monday	1.) Eimco in Room 7 2.) Marietta in Room 2 3.) Dosco in W-30 4.) PM's @ Salt Shaft in the Morning	1.) Eimco in Room 7 2.) Marietta in Room 2 3.) Haul from Stockpiles
Tuesday	1.) Eimco in Room 7 2.) Marietta in S-2520 3.) Dosco in W-30 4.) PM's at Waste Shaft in the Morning a.) Books closed at 8:00 AM	1.) Eimco in Room 7 2.) Marietta in S-2520 3.) Haul from Stockpiles
Wednesday	1.) Power Swap Feed #4 to Feed #1 a.) Eimco Down 2.) Marietta in S-2520 3.) Dosco in W-30 4.) Bolting E-300 Overcast 5.) Inspection at Waste Shaft in the Morning	1.) Eimco in Room 7 2.) Marietta in S-2520 3.) Haul from Stockpiles
Thursday	1.) Eimco in Room 7 2.) Marietta in S-2520 3.) Dosco in W-30 4.) Bolting E-300 Overcast 5.) Down-Loading of Waste 6.) Inspection at the Salt Shaft in the Morning a.) Books closed at 8:00 AM	1.) Eimco in Room 7 2.) Marietta in S-2520 3.) Haul from Stockpiles

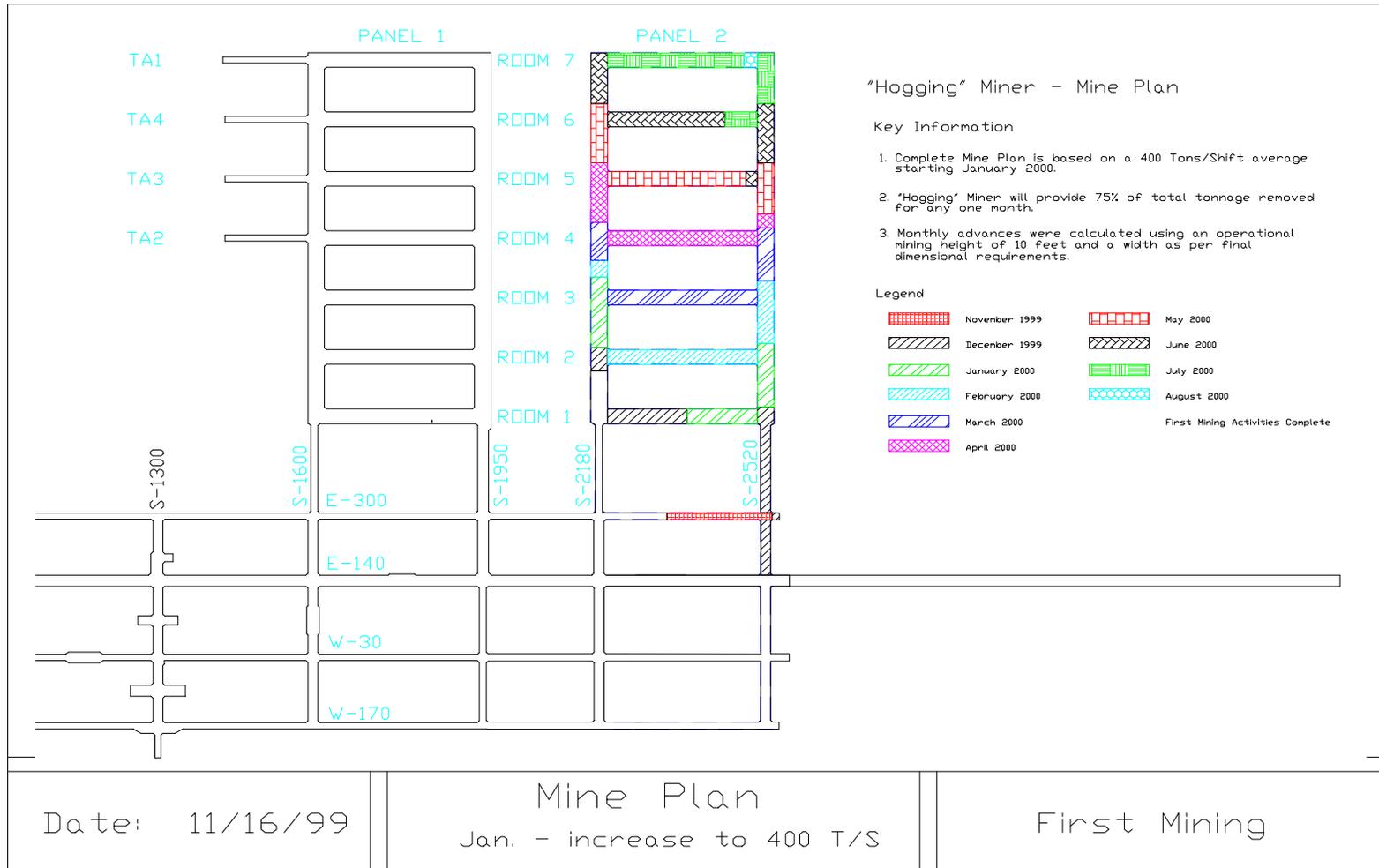
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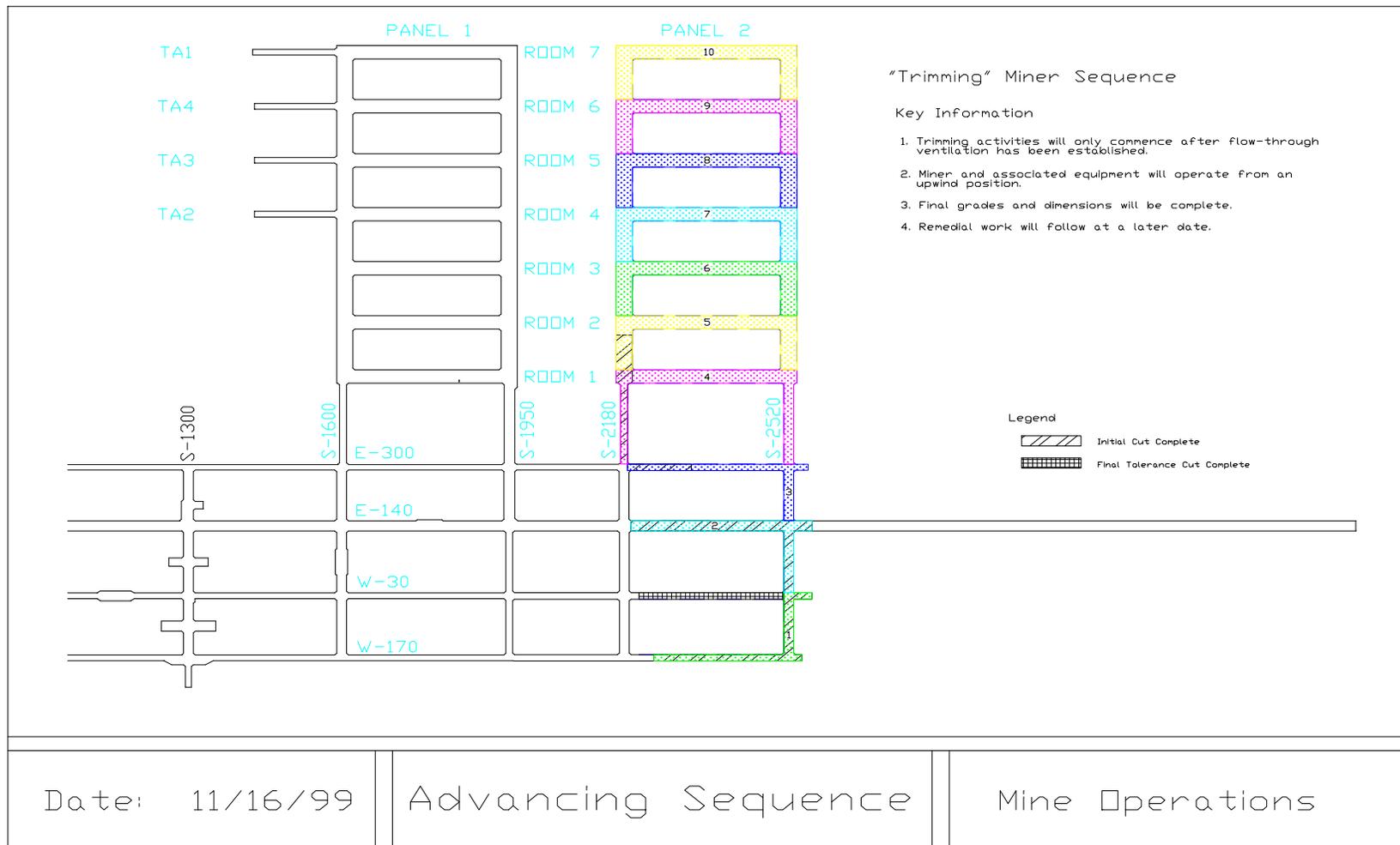
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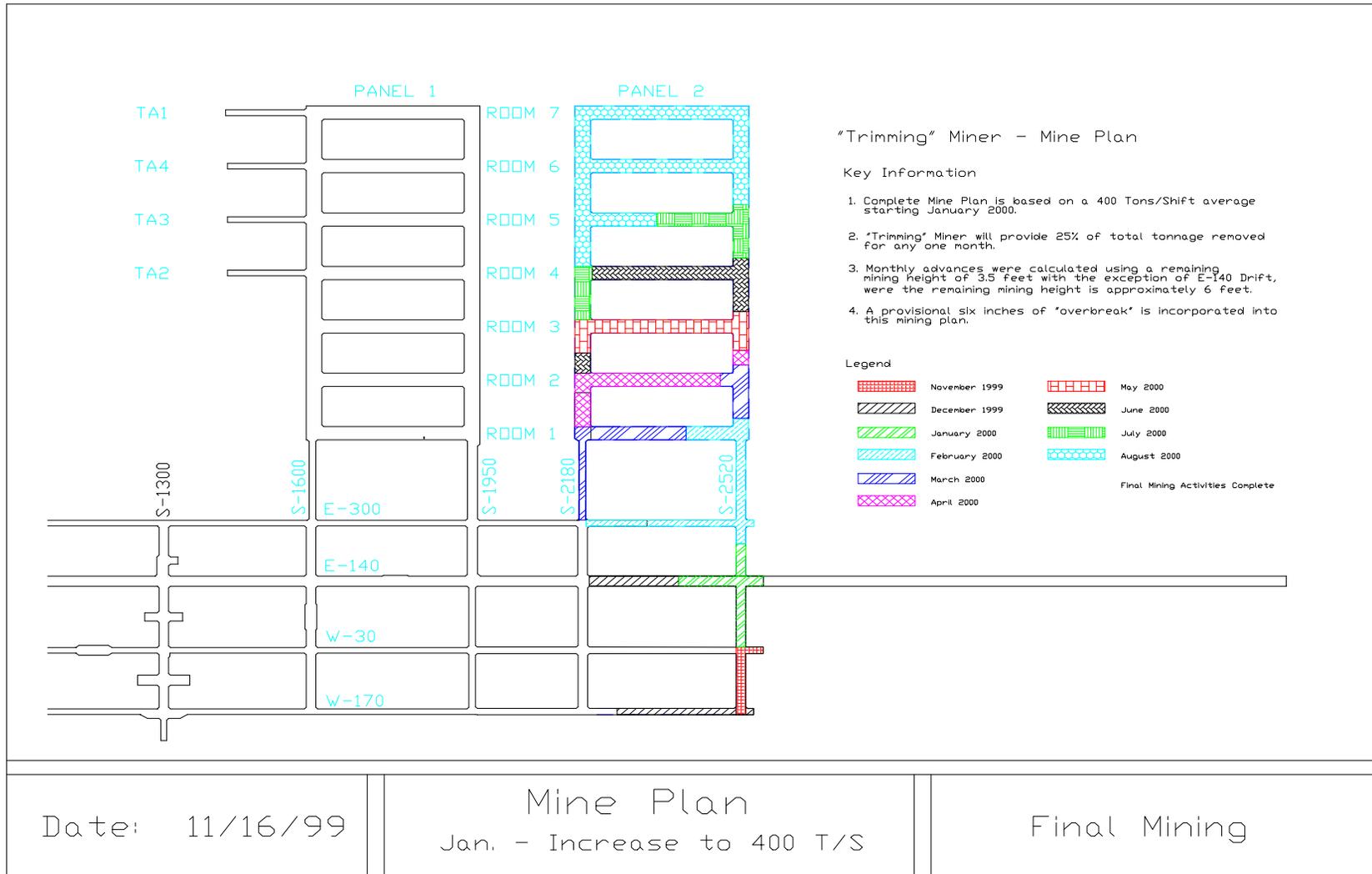
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### ATTACHMENT 1 - MASTER MINING/EMPLACEMENT SCHEDULE AND DETAILED WEEKLY SCHEDULES



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### ATTACHMENT 1 - MASTER MINING/EMPLACEMENT SCHEDULE AND DETAILED WEEKLY SCHEDULES



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**ATTACHMENT 2 - MINING STATEMENT OF WORK AND BUDGET EXPENDITURE  
PLAN**

**STATEMENT OF WORK  
FIXED PRICE INCENTIVE PORTION OF  
CONTRACT DE-AC04-86AL31950**

**SCOPE OF WORK**

The Contractor shall perform the following work under the M&O contract on a fixed price incentive basis. The Contractor will provide the necessary personnel and management staff to perform the work effort described in the following pages in support of the Department of Energy's Waste Isolation Pilot Plant (WIPP) at Carlsbad, New Mexico.

The Contractor shall ensure that all work is performed in accordance with applicable DOE and local regulations, orders, and instructions. Environmental, Safety, and Health (ES&H) work under this portion of the contract shall be performed in accordance with the DOE-approved initial or subsequent DOE-approved revisions of the WID Standards/Requirements Identification Document (S/RID).

**UNDERGROUND OPERATIONS - MINING - OPENINGS MAINTENANCE W153305**

**1.0 INTRODUCTION**

- 1.1 Underground Operations maintains the structural integrity of the underground portion of the Waste Isolation Pilot Plant in compliance with the applicable Codes of Federal Regulations, DOE Orders and the New Mexico Mine Safety Code for all Mines. Daily, weekly, and yearly inspections are made of the underground openings and their support fixtures. Mechanical and hand scaling are performed, and standard, supplemental, and specialized ground control systems and fixtures are installed and maintained. Underground bulkheads are fabricated, maintained, and replaced as required.
- 1.2 Planned mining consists of extensions of primary access drifts and excavations of ventilation drifts and excavations of panel two including the removal of excavated salt. Panel mining also includes the trimming of the ribs, backs, and floors with the mechanical mining machines. This will provide the travel and air-ways necessary to maintain and operate the underground in a safe and efficient manner.
- 1.3 The Underground Services function maintains a structured accountability system for all personnel entering and exiting the underground, and provides safety overview for all underground activities. Operate and monitor the WIPP underground facilities systems and equipment as required by scheduled or abnormal conditions. Maintain cognizance of the underground utility system such as the electrical distribution system, the

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**ATTACHMENT 2 - MINING STATEMENT OF WORK AND BUDGET EXPENDITURE PLAN**

compressed air system, ventilation systems, communications systems and fire detection and suppressions systems. Configure underground ventilation to support plant operation modes. Align underground utility systems and perform maintenance work release. Perform re-entries following anticipated or unscheduled ventilation outages lasting over two hours.

2.0 SCOPE

2.1 Openings Maintenance

- 2.1.1 Perform mining activities based on the directions received from Engineering Work Package specifications, oral instructions or sketches as detailed in the work packages or Engineering Change Orders.
- 2.1.2. Fabricate, maintain and replace underground bulkheads, including ventilation structures.
- 2.1.3. Perform installation of specialized ground control systems based on the directions received from Engineering Work Package specifications, oral instructions or sketches as detailed in the work packages or Engineering Change Orders.
- 2.1.4. Install and relocate utilities as required by Engineering Work Packages in a timely and efficient manner.
- 2.1.5. Operate according to the Conduct of Operations principles.
- 2.1.6. Provide personnel to support quarterly MSHA and annual state mine inspections.
- 2.1.7. Provide annual reviews of the openings maintenance procedure and 26 qualification cards.
- 2.1.8. Provide approval for the scheduling of work packages and preventive maintenance for mining operations.
- 2.1.9. Maintain and operate the underground wash bay as required.
- 2.1.10. Collect contaminated water from the Exhaust Shaft catch basins and the underground wash bay, and dispose of the water in accordance with procedures.

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- 2.1.11 Perform ground control inspections in accordance with CFR 30.
- 2.1.12 Remove or secure unstable material from the underground back, ribs, floors and roadways.
- 2.1.13 Support staffing for the First Line Initial Response Team, the Emergency Response Team, and the Mine Rescue Teams.
- 2.2 Panel Mining
  - 2.2.1 Excavate and completely outfit Panel 2 to be ready by October 1, 2000 to be inspected and qualified as a Hazardous Waste Disposal Unit (HWDU) by the New Mexico Environmental Department (NMED).
  - 2.2.2 Perform ground control inspections according to CFR 30.
  - 2.2.3 Remove or secure unstable material from the underground back, ribs, floors and roadways.
  - 2.2.4 Operate according to Conduct of Operations principles.
- 2.3 Underground Services
  - 2.3.1 Ensure on a daily basis only qualified personnel enter the underground unescorted, and all visitors are properly equipped and escorted.
  - 2.3.2 Post and monitor daily the restricted access areas in the underground and periodically monitor all areas for safe work practices.
  - 2.3.3 Document all evacuations and accountability of underground personnel in a timely and effective manner.
  - 2.3.4 Operate according to Conduct of Operations principles.
  - 2.3.5 Determine daily personnel qualifications for access to underground areas.
  - 2.3.6 Maintain and ensure daily that Personnel Protection Equipment (PPE) is operational for underground access.

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- 2.3.6 Operate and monitor daily the facility systems and equipment to maintain a high degree of facility availability and in accordance with Conduct of Operations principles.
- 2.3.8 Provide final approval for scheduling of maintenance and operational tasks in a timely and effective manner.
- 2.3.9 Perform Lockout/Tagout on all underground systems and utilities in a timely and effective manner.
- 2.3.10 Review and approve engineering work packages.
- 2.3.11 Provide personnel to support quarterly MSHA and annual state mine inspections.

**3.0 TECHNICAL REQUIREMENTS**

- 3.1 Openings Maintenance
  - 3.1.1 Provide personnel for the First Line Initial Response Team, the Emergency Response Team, and the Mine Rescue Teams and maintain the training requirements.
  - 3.1.2 Perform various mining and drilling activities of underground openings as directed by approved work packages.
  - 3.1.3 Maintain approximately 58 bulkheads and other ventilation structures. Fabricate and install bulkheads in the new waste storage panel.
  - 3.1.4 Operate various pieces of drilling equipment for installation of standard and specialized ground control systems as required. Drill holes of various sizes, depths, and tolerances in support of geotechnical evaluations.
  - 3.1.5 Operate various pieces of equipment to remove, install and relocate underground electrical, compressed air, and ventilation utilities.
  - 3.1.6 Operate various pieces of equipment for the removal of unstable material from the back, ribs, floor and roadways.

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- 3.1.7 Review of the Openings Maintenance procedure and 26 qualification cards. Generate new qualification card requirements, including initial training of new operators.
- 3.1.8 Operate the facility and equipment according to Conduct of Operations principles.
- 3.1.9 Washing of underground vehicles to ensure clean and safe operating equipment.
- 3.1.10 Removal and disposal of water from the Exhaust Shaft catch basin and the wash bay basin according to procedure.
- 3.1.11 Provide support personnel for the quarterly MSHA and annual state mine inspections. Identify, report and facilitate corrective actions.
- 3.1.12 Review, approve and release preventive maintenance and work packages for the underground operation.
- 3.1.13 Provide travel for personnel to attend the annual MSHA and state mining convention and other training requirements.
- 3.1.14 Operate haulage equipment to support removal of excavated salt from the underground.
- 3.1.15 Perform and document daily, weekly and annual ground control inspection. Identify, report and correct findings.
- 3.2 Panel Mining
  - 3.2.1 Perform various mining and drilling activities of the underground openings as directed by approved work packages for panel two.
  - 3.2.2 Perform and document daily, weekly and annual ground control inspections. Identify, report and correct findings.
  - 3.2.3 Operate various pieces of drilling equipment for installation of standard and specialized ground control systems.
  - 3.2.4 Operate the facility according to Conduct of Operations principles.

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PLAN**

- 3.3 Underground Services
  - 3.3.1 Issue brass and required personal protective equipment in accordance with the Code of Federal Regulations.
  - 3.3.2 Provide underground rovers, controller, and dispatcher during each working shift. Monitor all areas in the underground to ensure proper access and accountability during each working shift.
  - 3.3.3 Maintain the daily underground access log.
  - 3.3.4 Perform required daily maintenance on miner's lamps to ensure proper working order.
  - 3.3.5 Develop, implement, revise, and perform periodic annual reviews of nineteen operating procedures and eight qualification cards to ensure plant operability and compliance with current regulatory requirements. Perform technical review and/or field validation of procedures.
  - 3.3.6 Work overtime as required or scheduled to ensure plant availability or underground access for personnel.
  - 3.3.7 Verify that personnel are qualified to operate an electric cart in the underground.
  - 3.3.8 Perform quarterly PM's on self rescuers.
  - 3.3.9 Coordinate with Public Affairs to support daily and weekly tour schedules for approximately two thousand visitors per year.
  - 3.3.10 Verify monthly all personnel entering the underground have completed required training.
  - 3.3.11 Update daily the information maps at the shaft stations and lamp room.
  - 3.3.12 Perform daily inspections of the air quality monitoring systems and perform inspections of the underground facility. Provide air quality monitoring and control to ensure personnel and equipment habitability in the underground during each shift and as needed.

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- 3.3.13 Operate and monitor daily the underground systems and utilities, including electrical power distribution, ventilation, compressed air, communications, and fire detection and suppression.
- 3.3.14 Maintain a daily narrative log of all events and actions affecting the overall operation of the underground.
- 3.3.15 Maintain communications to the Central Monitoring Room and serve as the primary interface for direction of underground activities during emergency or off-normal events.
- 3.3.16 Assist cognizant and maintenance engineers in analyzing equipment/system problems and preparation of corrective actions in a timely and effective manner.
- 3.3.17 Support facility maintenance with review of approximately twenty to fifty work packages per week. Perform Lockout/Tagout of equipment or systems during inspections, post-maintenance testing, and surveillance. Perform monthly Lockout/Tagout audits by procedure.
- 3.3.18 Prioritize and assess facility maintenance instructions, preventive maintenance procedures, and acceptance test procedures.
- 3.3.19 Review and approve corrective maintenance instructions, preventive maintenance procedures, and acceptance test procedures.
- 3.3.20 Develop and implement training and qualification programs for managers and technicians. Achieve and maintain required qualifications, maintain at least two Subject Matter Experts for each required system or piece of equipment. Provide refresher training on systems and equipment for Underground Operations personnel.
- 3.3.21 Provide initial training on systems and equipment for qualification of new operators.
- 3.3.22 Provide support personnel quarterly MSHA and State Mine inspections. Identify, report and facilitate correction of findings.
- 3.3.23 Review Engineering Change Orders, System Design Descriptions, and changes to existing operational procedures for

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applicability, safety and technical content; as applied to existing or planned systems and installations.

3.3.24 Initiate corrective action for plant design deficiencies and equipment/system malfunctions. Provide operational input to engineering for plant improvements.

3.3.25 Provide travel and training for personnel to meet the requirements of job descriptions.

**4.0 DRIVERS, DOCUMENTS, SPECIFICATIONS**

4.1 Applicable DOE Orders and Directives

4.2 30 CFR, Minerals Resources

4.3 40 CFR, Protection of Environment

4.4 29 CFR, OSHA Requirements

4.5 The environmental, safety, and health (ES&H) requirements contained in applicable federal, state, local laws (including DOE regulations), listed in the Standards/Requirements Identification Document (S/RID) in accordance with the WID operating contract.

4.6 New Mexico Mine Safety Code for all Mines, 1990

**5.0 REPORTS, DATA, AND DELIVERABLES**

Completion of all work to excavate and outfit Panel 2 by October 1, 2000 sufficient to enable the panel to be qualified as an HWDU by the NMED.

**6.0 OTHER SPECIAL CONSIDERATIONS**

6.1 The underground Neutrino experiment being conducted by Los Alamos National Laboratory will continue at the same FY99 level of effort.

6.2 New experiments in the underground will require additional resources. Support for U/G experimentation will be funded through the BCR process if experimental effort requires additional FTE and M&S support.

6.3 The following assumptions apply to WID's commitment to complete Panel 2 by October 1, 2000:

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- The North End will be available to gob/surge the muck.
- Rooms 1-6 in Panel 1 can be used to gob/surge the muck.
- Room 1 detentioning will no longer be required.
- The actual mining of Panel 2 (S-2180 and S-2520 east of E-300) can proceed by October 19, 1999.
- The removal of the back in E-0 and E-140 north of N-150 will not occur until Panel 2 mining is complete.
- No additional mining/panel work is required in Panel 1 until after Panel 2 is complete.
- Mining support of CARUS activities will not occur until Panel 2 mining is complete.
- The waste currently stored in Room 7 will not require relocation.
- Tours will not be conducted via the salt hoist.
- The completion of the construction air split will be scheduled to compliment the needs of panel 2 mining.

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**ATTACHMENT 2 - PANEL 2 MINING STATEMENT OF WORK AND BUDGET EXPENDITURE PLAN**

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BUDGET EXPENDITURE PLAN (in thousands of dollars)

Page 1

WORK PACKAGE W15330505 PANEL MINING

CONTRACT TYPE: FIXED PRICE INCENTIVE

INITIATIVE NUMBER 033 PANEL MINING

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
2000													
DIRECT LABOR (FTEs):													
Exempt - FTE	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Exempt - Overtime	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.4
Exempt - Shift Dick	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.4
NonExempt - FTE	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	144.0
NonExempt - Overtime	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	13.2
NonExempt - Shift Diff	0.8	0.7	0.8	0.8	0.7	0.8	0.7	0.8	0.7	0.8	0.7	0.8	9.1
Total FTEs:	16.3	16.2	16.3	16.3	16.2	16.3	16.2	16.3	16.2	16.3	16.2	16.3	195.1
Cumulative FTEs:	16.3	32.5	48.8	65.1	81.3	97.6	113.8	130.1	146.3	162.6	178.8	195.1	195.1
DIRECT LABOR COSTS:													
Exempt Labor	14	14	14	14	14	14	14	14	14	14	14	14	168
Exempt - Overtime	1	1	1	1	1	1	1	1	1	1	1	6	17
Exempt - Shift Diff	1	1	1	1	1	1	1	1	1	1	1	6	17
NonExempt Labor	46	46	46	46	46	46	46	46	46	46	46	44	550
NonExempt - Overtime	6	6	6	6	6	6	6	6	7	7	7	7	76
NonExempt - Shift Diff	5	4	5	5	4	5	4	5	4	5	4	2	52
Direct Labor Costs:	73	72	73	73	72	73	72	73	73	74	73	79	880
Cumulative Labor Costs:	73	145	218	291	363	436	508	581	654	728	801	880	880
DIRECT MATERIAL COSTS:													
Material and Supplies	1	11	12	14	14	15	14	14	14	13	4	7	133
Direct Material Costs:	1	11	12	14	14	15	14	14	14	13	4	7	133
Cumulative Material Costs:	1	12	24	38	52	67	81	95	109	122	126	133	133
G&A:													
G & A	11	12	13	13	13	13	13	13	13	13	11	8	146
Total G&A:	11	12	13	13	13	13	13	13	13	13	11	8	146
Cumulative G&A:	11	23	36	49	62	75	88	101	114	127	138	146	146
Subtotal for 2000:	85	95	98	100	99	101	99	100	100	100	88	94	1,159
Subtotal Cumulative Costs:	85	180	278	378	477	578	677	777	877	977	1,065	1,159	1,159

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**ATTACHMENT 2 - PANEL 2 MINING STATEMENT OF WORK AND BUDGET EXPENDITURE PLAN**

05/09/2000

BUDGET EXPENDITURE PLAN (in thousands of dollars)

Page 2

WORK PACKAGE W15330505 PANEL MINING

CONTRACT TYPE: FIXED PRICE INCENTIVE

INITIATIVE NUMBER 033 PANEL MINING

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Subtotal FIXED PRICE INCENTIVE:	85	95	98	100	99	101	99	100	100	100	88	94	1,159
Subtotal Cumulative Costs:	85	180	278	378	477	578	677	777	877	977	1,065	1,159	1,159
Total for W15330505:	85	95	98	100	99	101	99	100	100	100	88	94	1,159
Total Cumulative Costs:	85	180	278	378	477	578	677	777	877	977	1,065	1,159	1,159

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**ATTACHMENT 3 - DOCUMENTS APPLICABLE TO PANEL MINING**

<b>Document Number</b>	<b>Document Title</b>
04-AD3011	Equipment Tagout/Lockout
04-AD3013	Underground Access Control
04-CO	Conduct of Operations
04-AU1007	Underground Openings Inspections
04-AU1026	Self Rescuer Inspection
04-HO1001	Portable Diesel Hoist Operation
04-HO1002	Salt Handling Hoist Operation
04-HO1003	Waste Handling Hoist Operation
04-HO1004	Air Intake Shaft Operation
04-HO2002	Salt Hoist Dynamic Covering
04-HO2003	Waste Hoist Dynamic Hoisting and Lowering,
04-HO4002	Salt Hoist Alarm Response
04-HO4003	Waste Handling Hoist Alarm Response
04-HO4010	Mine Hoist Emergency Responses
04-VU1608	Underground Ventilation Plan
04-VU1610	Reentry
10-2	Maintenance Operations Instruction Manual
10-5	WIPP Welding Guide
10-AD3007	Use and Control of Rigging Components
10-AD3018	Use and Control of Personal Fall Protection
10-AD3031	M&TE Inspections
EA10-2-8-0	Job Hazard Analysis Checklist
10-WC.01	Cross Connection Control Program
10-WC.02	Predictive Maintenance Program
10-WC3010	Maintenance PM/MW1 Control
10-WC3011	Maintenance Process
12-ER4911	Underground Fire Response
12-ER4912	Underground Medical Emergency
12-807	Underground Diesel Vehicle Emissions
12-FP.01	Fire Protection Program
12-IH.02	Industrial Hygiene Program
12-IS.01	Industrial Safety Program
12-IS1004	Noise Surveying
12-IS1832	Emergency Eye Wash and Shower
13-1	WID Quality Assurance Program Description

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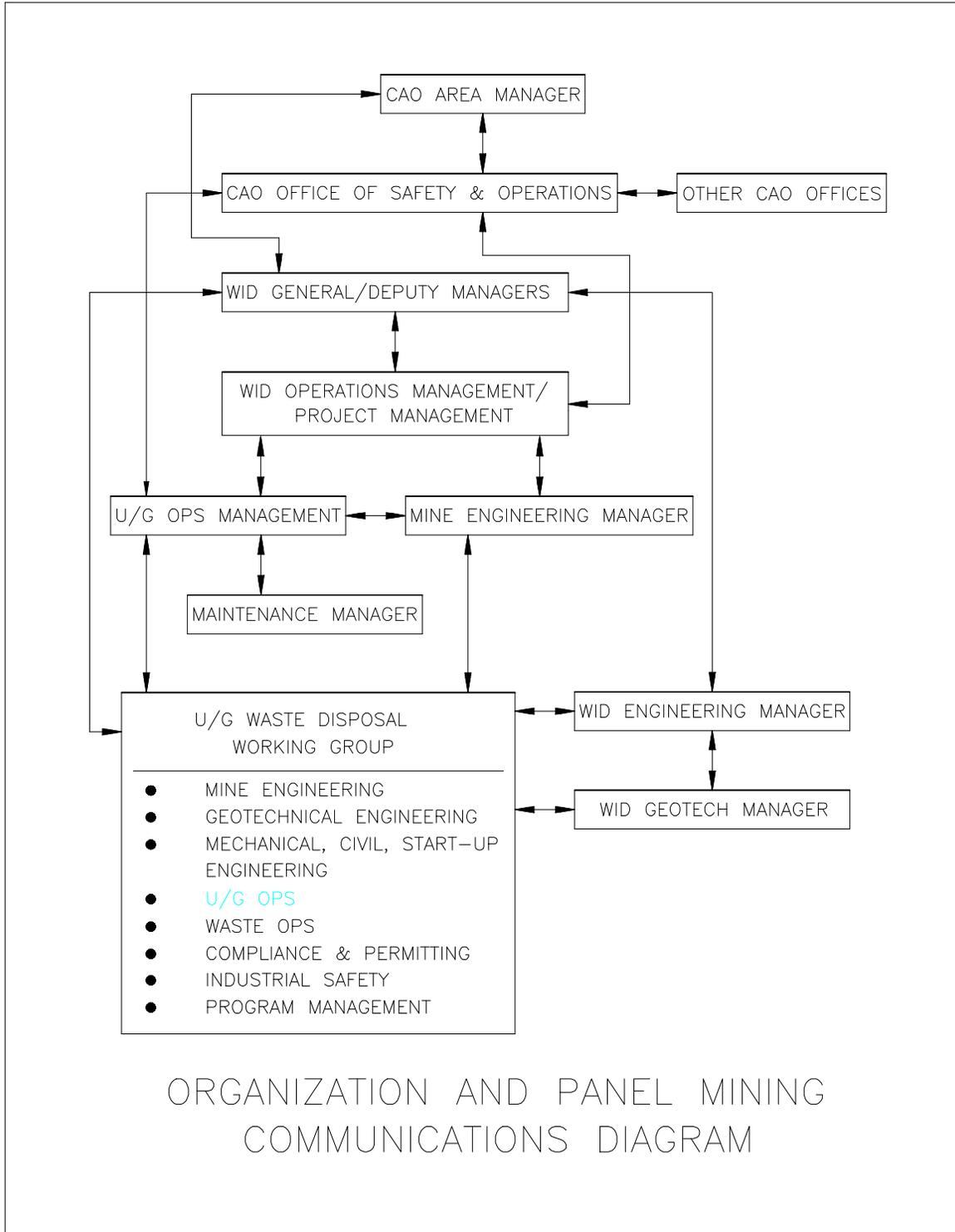
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**ATTACHMENT 3 - DOCUMENTS APPLICABLE TO PANEL MINING**

<b>Document Number</b>	<b>Document Title</b>
14-TR.01	WIPP Training Program
14-TR3307	Qualification Programs
14-TR3308	On-The-Job Training
14-TR3309	Training Evaluation Program
15-078	Fitness-for-Duty
15-MD3100	Lessons Learned Program
MC 7.1	Controller's Department
MC 9.24	Underground Waste Disposal Working Group
	Zone 1 Maintenance Procedures, 94 Each
	Zone 5 Maintenance Procedures, 171 Each

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**ATTACHMENT 4 - PROJECT COMMUNICATIONS MEDIA**



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## ATTACHMENT 4 - PROJECT COMMUNICATIONS MEDIA

Mining Status  
 Week of May 8, 2000

### Mining Advance

W-170	Rough cut to S-2561, Probe hole completed past S-2750 Final tolerance cut in main entry only
W-30	Rough cut to S-2563, Probe hole completed past S-2750 Final tolerance cut from S-2180 to S-2563
E-140	Rough cut to S-2555 Final tolerance cut with Marietta to S-2520 Drift Access barricaded south of S-2555, end of trimmed back.
E-300	Probe hole drilling completed past S-2580 Final tolerance complete to S-2565
S-2180	Rough cut complete to E-1325 (Room 7) Final tolerance completed from Room 1 in Panel 2 to E-300
S-2520	Rough cut completed to E-1335 (Room 7) Final tolerance completed from Room 1 in Panel 2 to W-170
Room 1	Final tolerance cut complete, mitered corners remain to be cut.
Room 2	Rough cut complete. Mining final tolerance with Marietta continuous miner.
Room 3	Rough cut complete.
Room 4	Rough cut complete.
Room 5	Rough cut complete.
Room 6	Rough cut complete.
Room 7	Rough cut complete. Mining final tolerance with Eimco continuous miner.

### Hoisting

- Salt Hoist - Operational
- Waste Hoist - Operational, manned on the afternoon shift starting Monday, January 24, 2000

### Manpower

- Three new mining personnel in training.
- Staffing of mine operations, hoisting and underground services group complete.

### Schedules

- Mining schedule on track
  - EIMCO cutting final tolerance in Room 7 south of S-2180 Drift
  - Dosco staged in W-30 Drift to cut miters
  - Marietta cutting final tolerance in Room 2, mining south off S-2180 Drift
- Fabrication and installation of Bulkheads and Utilities for Panel 2
  - Fabrication of bulkheads in progress.
  - Work package for the installation of electrical utilities prepared and in review.
  - Work package for the installation of compressed air lines being prepared.
- Second shift began on October 4, 1999.
  - Days shift working the current 9/80 schedule
  - Swing shift working a 4/10 schedule, Monday through Thursday, 1530 to 0130.
- Production schedule ramp-up for January through October 2000 is 400 tons per shift.

### Equipment

- Dust filter – staged in S-2520 Drift
- One Haul Truck (#6B) in shop for bolts in articulation joint
- Two LHDs (#105 & #117) in shop working on hydraulic problems
- One LHD (#39) in shop with fuel problems
- Milling Machine experiencing hydraulic problems, maintenance personnel troubleshooting problem
- All other equipment available for use

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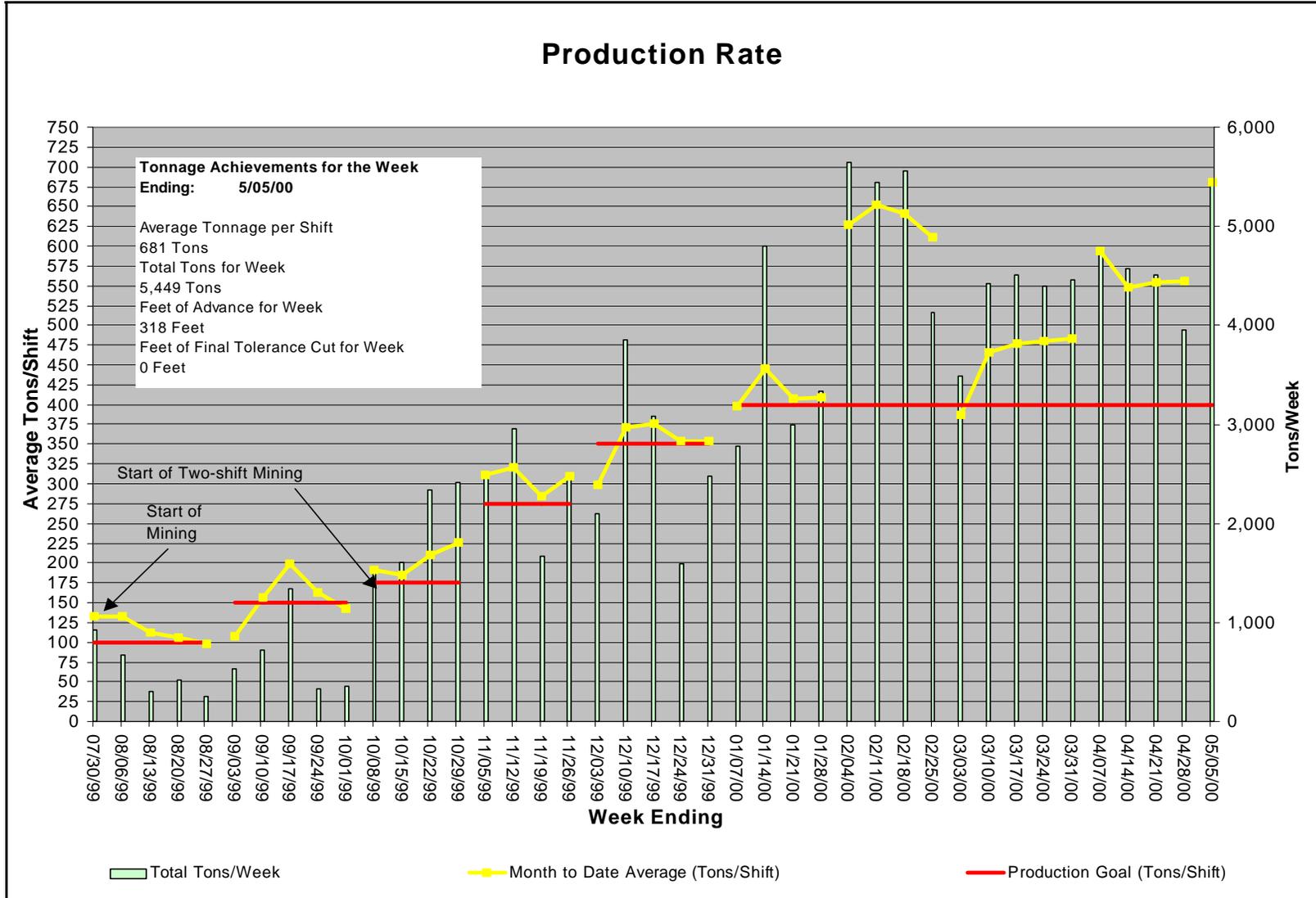
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**ATTACHMENT 4 - PROJECT COMMUNICATIONS MEDIA**

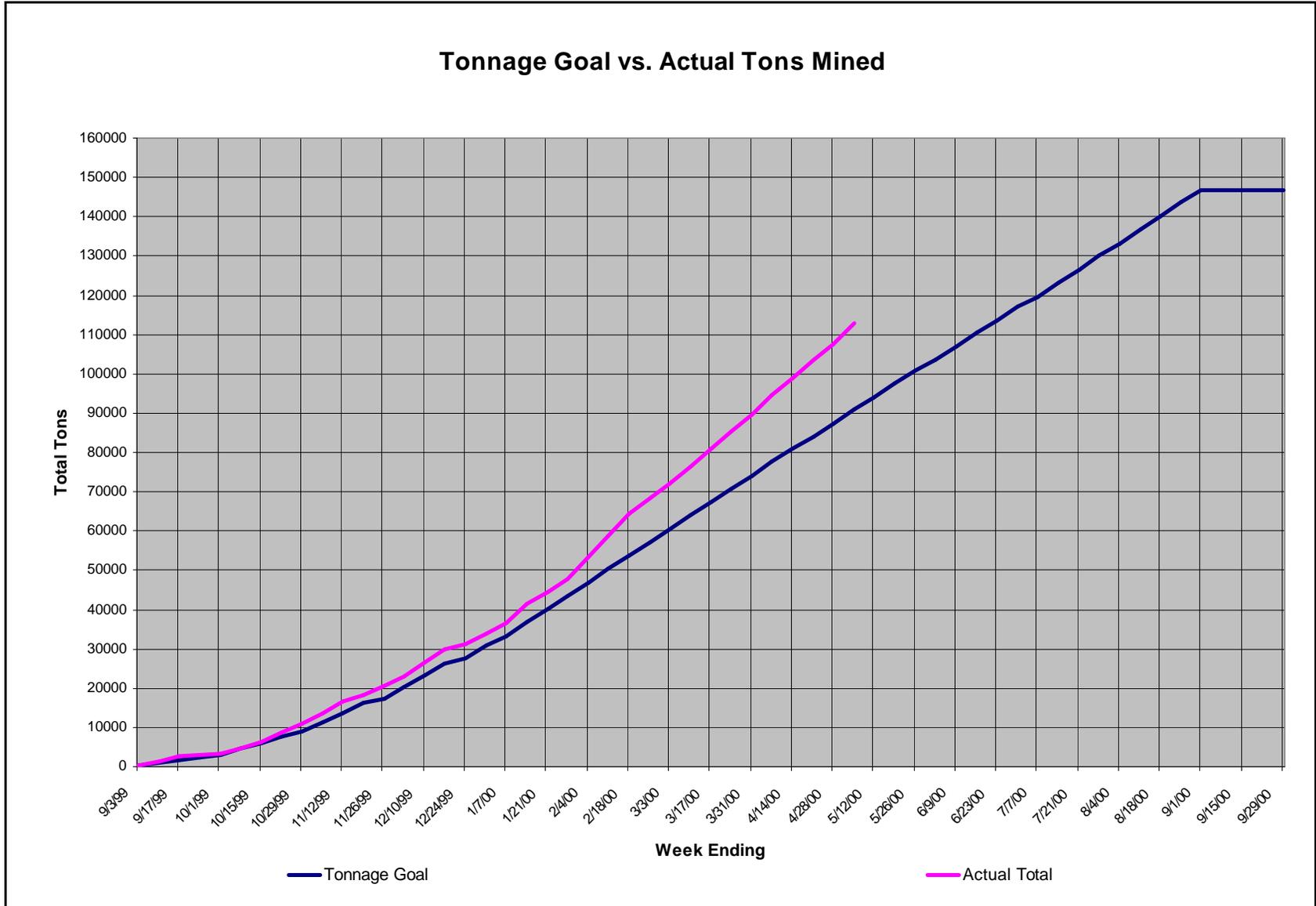
Other

- Work package to re-enter north end opened and working. Re-entry activities have progressed north in E-0 Drift to N-1100, west in N-1100 Drift to SPVD Room 4, north in SPVD Room 4 to N-1400 Drift, east in N-1400 Drift to E-140 Drift and south in the E-140 Drift to N-780 Drift. Exploratory entry made west in N-1100 Drift to Room D and east in Room D to N-1400 Drift. Re-entry advance completing work east in the E-140 Drift south off N-1100 and moving into alcoves L-3 and L-4 north off N-1100 Drift. Power advanced into the area to support ventilation of the alcoves for ground control work. Access to Rooms L-1 through L-4 completed for salt storage.
- Mined salt in the underground is stockpiled in Panel 1, Rooms 4 (two-thirds full) and 5 (one-quarter full), E-140 Drift between S-2180 Drift and S-2520 Drift (one-third full), Room 1 of Panel 2 (full). Salt was moved to the E-140 Drift in the north end and into Rooms L-1 (full), L-2 (full), L-3 (full) and L-4 (empty, started filling)

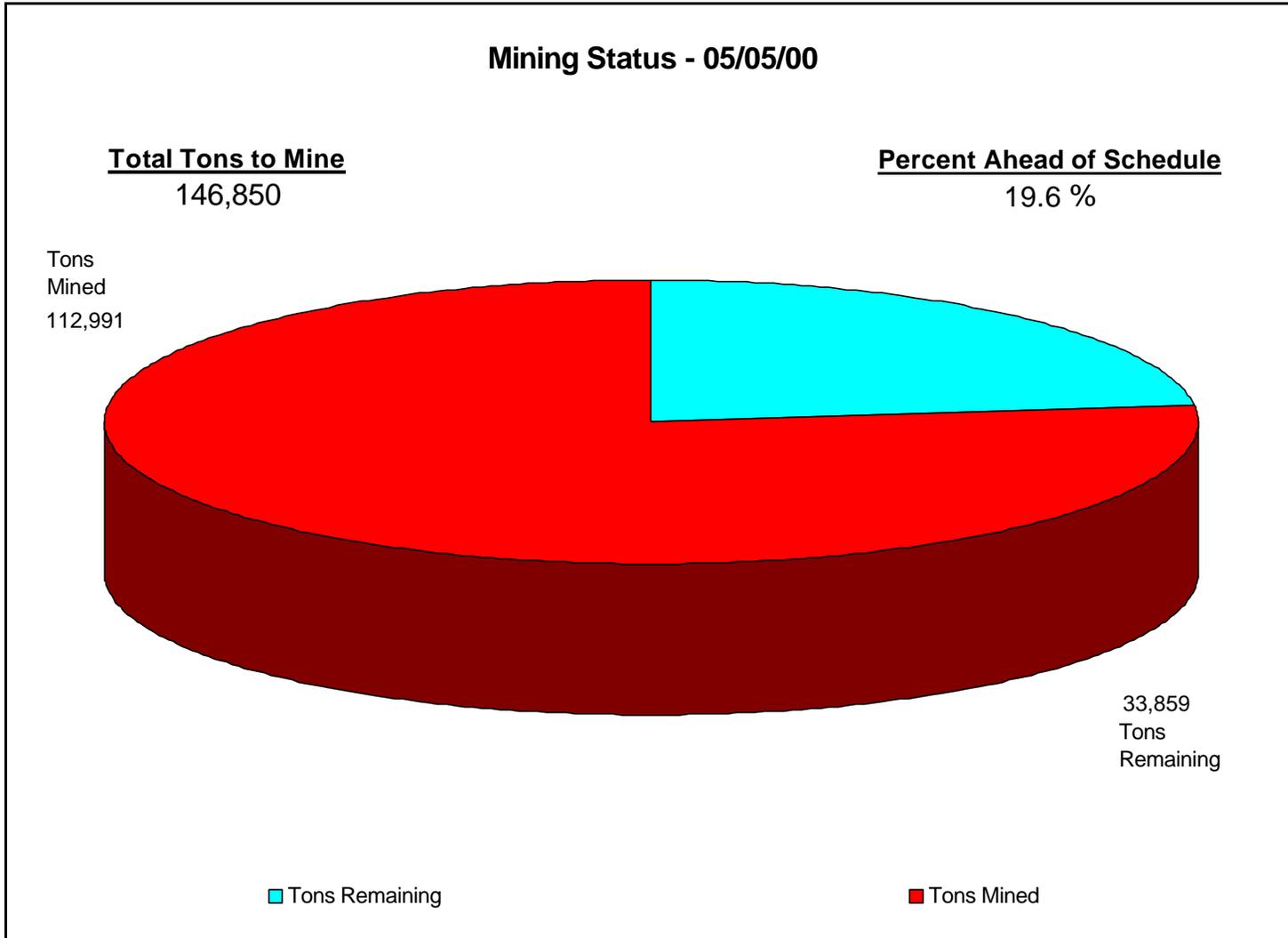
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### Panel 2 Mining Project Plan 04-AU.01, Rev. 0



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**ATTACHMENT 5 - TABLE OF PROJECT RISKS AND MITIGATIONS**

The listed mitigation activities reduce the risk to low acceptable levels.

<b>Risk Factors</b>	<b>Risk Level</b>	<b>Risk Mitigations</b>
1. Insufficient mining and haulage equipment to support two-shifts-per-day operations	High	<ul style="list-style-type: none"> <li>• Two new surface haul trucks purchased</li> <li>• One new underground haul truck leased</li> <li>• One new continuous drum mining machine purchased</li> <li>• New face ventilation fans, duct work, and dust filter system purchased</li> <li>• New probe hole drill and carriage purchased</li> <li>• One additional surface rubber-tired loader purchased</li> </ul>
2. Mining equipment breakdowns	Medium	<ul style="list-style-type: none"> <li>• Comprehensive review of spares inventories</li> <li>• Augmentation of spares inventories</li> <li>• Increased vigilance during preventive maintenance cycles</li> </ul>
3. Insufficient hoisting/skipping capacities	High	<ul style="list-style-type: none"> <li>• Reopen portions in the north end of the mine for muck gobbing and the avoidance of skipping to surface</li> <li>• Assign space in Panel 1 to be used for temporary muck storage</li> </ul>
4. Hoisting facilities breakdowns	Medium	<ul style="list-style-type: none"> <li>• Comprehensive review of spares inventories</li> <li>• Increase stock of long lead-time items</li> <li>• Augmentation of general spares inventories</li> <li>• A shaft usage study to determine feasibility of man-rating the air intake shaft hoisting plant to provide more salt skipping time at the salt shaft</li> </ul>
5. Insufficient work force	High	<ul style="list-style-type: none"> <li>• Increase and train operating staff for two shifts per day</li> <li>• Increase and train hoisting staff for two shifts per day</li> <li>• Increase and train maintenance and surveying staffs for two shifts per day</li> <li>• Option available to increase to three shifts-per-day operations</li> </ul>
6. Work projects beyond the panel mining scope	Medium	<ul style="list-style-type: none"> <li>• Evaluate the need to de-tension the rock bolts in Room 1, Panel 1</li> <li>• Re-prioritize the back removal projects in EO and E140</li> <li>• Re-prioritize floor mining and milling in Panel 1</li> <li>• Minimize support work for experimental activities conducted by Sandia National Laboratories and the Center for Applied Repository and Underground Science</li> <li>• Allow no conflicts for mining resources</li> </ul>
7. Public tours in the underground facility	High	<ul style="list-style-type: none"> <li>• Tours will not be scheduled for mine access via the salt hoist</li> <li>• Tours in the active mining area to be minimized or eliminated</li> <li>• Experimental effort tours restricted to non-mining areas</li> </ul>